SIEMENS

SIMATIC

B.Data V6.0 SP1 – Operation

Operating Manual

11/2014

A5E35309692-AA

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠DANGER
indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠WARNING
indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Siemens AG
Division Digital Factory
Postfach 48 48
90026 NÜRNBERG
GERMANY

A5E35309692-AA
Ⓟ 01/2015 Subject to change

Table of contents

Introduction 1

1.1 Why we need energy management

Energy costs take a substantial slice in the cost balance of many companies. However, it is possible to significantly reduce this cost factor by optimizing energy consumption and taking advantage of the benefits offered by the liberalized energy market. Investments in this optimization process can be amortized on a short-term basis in many cases. Utilization of the entire spectrum of energy cost reduction demands integrated system solutions: the range covers the monitoring, analysis, and evaluation of the relevant energy and operational data, as well as energy forecasts and optimization functions. Under the aspect of a continuous adaptation process that is enforced based on requirements of the liberalized energy market, it must be possible to adapt the systems used without considerable investment. The following sections provide more arguments in favor of energy management.

- Rising energy costs.
- Only partial transparency across infrastructure processes, preventing an overall assessment of all processes and media.
- Cost centers or cost units change continuously.
- The existing heterogeneous system environment poses high demands on interface management.
- Equipment for automatic measurement data recording is not available in the relevant areas.
- Poor transparency prevents further optimization of energy supply contracts.
- In many cases, energy costs represent an extremely high portion of unmanaged production costs.

1.2 How can B.Data support energy management?

B.Data provides exactly the functionalities that are indispensable for the comprehensive analysis of energy management. Thanks to its flexible **scalability**, B.Data can provide solutions for both medium-sized companies and large corporations with location-spanning requirements.

Firstly, the customizable **interface management** function supports current standards such as OPC, ODBC, ASCII, or XML. Secondly, the interface management provides direct interfaces to Siemens products such as WinCC and PCS 7. which support synchronization of the configuration of data points.

B.Data offers a highly diversified Real-time **kernel** in its interface management. The calculation core supports numerous mathematical functions, as well as the mapping of non-linear cohesions.

B.Data provides functions for **data plausibility checks** and various substitute value strategies that enhance database quality.

Transparency of the energy flows in all types of media in a company is indispensible for energy management. B.Data is the ideal tool for calculating **energy and material balances** as well as **key figures** that can be used to compare different processes, including different operations.

The diversity of the liberalized energy market demands a precise forecast of future energy consumption. Use B.Data's **Schedule Management** to make forecasts that are derived from basic load profiles and current production plans at company or division level.

Only the allocation of energy costs based on the cost-by-cause principle generates **cost transparency** and sensitization with regard to energy costs. The **Cost Center Management** tool of B.Data maps cost centers and allocates consumption accordingly based on distribution codes, area data, employees, or measured data.

It also enables the mapping of cost center changes during the year, as the calculation logic and all changes are recorded. **Reproducibility** of report results is of particular importance in this area. All changes made to the data are also recorded. This means that users can always rely on the old data for their evaluations.

An automatic reporting system that is easy to configure forms a key factor that has considerable influence on the reduction of personnel workload. At the same time, the quality of the reports is significantly improved. In addition to the fully-fledged client, you can also use **B.Data Web** to view the reports and results.

B.Data provides functions for the **batch-related** recording and evaluation of data to support more detailed analyses of the various processes.

B.Data **Trender** can be used for graphic visualization of historic and current measured values to allow rapid analysis. Moreover, online values can be displayed in a graph using B.Data visualization.

B.Data's **Document Management** enables users to generate links to their documents in the system, or to save these to the database in order to make them generally available to other users.

B.Data **Task Management** enables scheduled reporting, interfaces, calculations, etc.

1.3 Areas of application

B.Data interfaces the process and office environments in the following segments:

- Industry
- Power plant operators
- Municipal enterprises

1.4 Preface

Purpose of this documentation

This documentation contains information pertaining to the functionality of B.Data.

This documentation is aimed at plant managers, planners, and plant operators as well as service and maintenance personnel.

Basic knowledge required

General knowledge in the fields of IT, automation engineering, as well as general electrical engineering is indispensable for comprehension of this manual.

⚠ WARNING
Working with electrical systems
B.Data does not exempt users from responsibilities in terms of the handling of electrical systems.

Moreover, it is presumed that users have appropriate knowledge related to the use of computers running on a Windows operating system.

Scope of this manual

This manual is valid for **B.Data V6.0**.

Guides in the manual

The manual contains the following guides that support rapid access to the information you require:

- A complete table of contents and a list of all tables are available in the opening section of the manual.
- An overview of the topical contents is provided at the beginning of each chapter.

B.Data Plant Explorer

2

2.1 Starting B.Data

Requirement

B.Data login information are known

Procedure

To start B.Data, follow these steps:

1. Double-click the "B.Data Plant Explorer" icon on the Windows Desktop:

   Note

   If you are starting B.Data for the first time, the "B.Data configuration" dialog will be opened.

   The login dialog is opened. If "Single Sign On" is enabled for your user account, the following login procedure is omitted.

2. If you want to change your password, click "Change password".
3. If you want to generate a temporary password, click "Forgot password".
4. Type in the user name and password.

   For the user name, you can also enter the email address that is stored in your B.Data user account.

5. Click "Login".

Result

B.Data is started, and the B.Data Plant Explorer is displayed.

Forgot password

If you have forgotten your password, you can have a temporary password generated. The temporary password will be sent by email to the email address that is stored in your B.Data user account.

If you have received the email with the temporary password, click "Change password" in the login dialog.

Change password

You can change your B.Data password in the login dialog. In order to change it, you need your old password or a temporary password.

Note

You will be separately notified via email regarding a password change. If you have received such an email, without having changed your password, this can indicate a hacked user account. Please contact your administrator in this case.

See also

Plant Explorer as navigation tool (Page 17)

B.Data Configuration (Page 387)

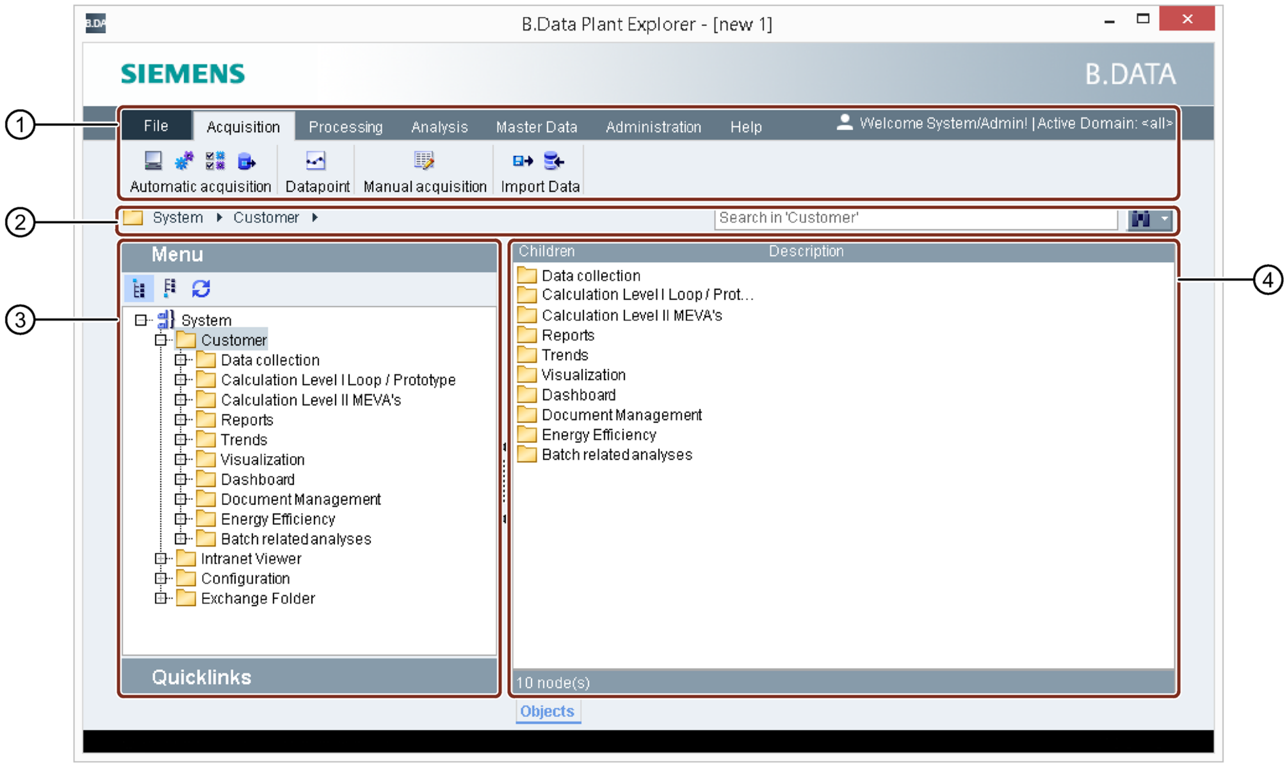
2.2 Plant Explorer as navigation tool

The Plant Explorer is the Windows-oriented user interface of B.Data. Plant Explorer is used to configure all objects that you need for energy management in your organization:

- You configure the objects that contain your operating data, such as datapoints or matrices.

  With the object-oriented approach of Plant Explorer, you can use an object in several areas, such as for the calculation of performance indicators or in reports. Modifications will automatically be applied to all points of application and are recorded simultaneously in change management to ensure reproducibility of older configurations.
- You evaluate your operating data, or performance indicators using reports or trends, or display this data clearly in a visualization or dashboard.
- You use a wizard to configure the interfaces such as WinCC or OPC, which provide you with operating data.

Plant Explorer has the following structure:



① **Menu bar**

All buttons for system operation are placed in the menu bar and organized in categories.

② **Navigation bar and Quick Search**

The navigation bar shows the current position in the project tree in text form.

The quick search is a simple full-text search. The search result is displayed in the display area ④.

③ **Project tree**

You create objects that you need for energy management in the predefined "System" root in the project tree.

You can organize the project tree, for example, according to locations or function. Create favorites to frequently required objects in the "Quicklinks" area.

④ **Display area**

The display area shows details of the object that you selected in the project tree.

See also

Objects in Plant Explorer (Page 20)

Displaying object relations (Page 31)

Object naming conventions (Page 33)

Search for object (Page 34)

Create Quicklinks (Page 36)

Configuring Quicklinks (Page 36)

Calculation level 1 "The loop concept" (Page 125)

Calculation level 2 "The MEVA concept" (Page 183)

Calculation level 3 "Report and visualization concept" (Page 189)

2.3 Objects in Plant Explorer

2.3.1 Object basics

Object definition

Objects let you configure all of the components you need for energy management in your organization in B.Data :

The following objects are available, for example.

- Folder

  Object for structuring in the project tree of Plant Explorer
- Datapoint

  Object for saving the measured values of a measuring point
- Prototype, loop

  Objects for processing measured values during import
- Parameters, measuring variables

  Objects for time-independent processing of measured values
- ERP domain, cost center relation, cost center, service type

  Objects for Enterprise Resource Planning
- Report, trend, visualization, dashboard

  Objects for the display of measured values
- User, user group, functional group, domain

  Objects for configuring authorizations in B.Data
- Hardware, process, driver source, IO buffer

  Objects for configuring data acquisition in B.Data

Object properties

A property is a characteristic that is assigned to a specific object. In B.Data, an object can have the following properties:

- Automatically generated properties

  The system automatically generate these properties,, e.g. "Name" and "Description", when you create an object.
- Manually assigned properties

  You can assign these properties to an object, such as "Created on" or "Created by".

Manually assigned properties are then subdivided into the following categories:

- Default properties

  You can assign an object a property that is already defined in B.Data, "Created on" for example.

- User-defined properties

  You can also create your own properties, which you can then assign to an object.

You can use object properties for the following purpose:

- To search for these properties
- For titles in reports

Access rights for objects

You can prevent unauthorized read access to specific objects by defining these in B.Data:

- Authority level

  You specify the authority level with a value between 0 and 1000:

  – "0"

    All users can view the object.

  – "1" to "1000"

    If you enter "50", for example, the object is visible to all users assigned authority level equal to or higher than 50.

  You can automatically assign the authority level of an object to all nested objects.

- Domain

  The domain represents a location of a business, for example. Users can be assigned to one or several domains.

  Only the objects of the domain you activated are displayed. Newly objects are assigned exclusively to this domain.

Using and copying objects

Once an object is created, you can use it elsewhere in the project tree, e.g. in a report or calculation. You can also create a clone of the object in order to create a similar object.

This is done using the following B.Data commands:

- Using "Copy and paste", you use the same object elsewhere.
- "Disconnect", to cancel the use of the object.
- "Delete", to remove the object from the project tree.

  "Delete" removes all instances of an object in the project.

- Using "Clone", you receive a copy of the object's contents.

2.3.2 Creating an object

Overview

If you are installing B.Data for the first time, the project tree contains only one default object: the "System" root.

Note

You cannot edit or delete the "System" root.

You may create and configure further objects in the project tree. Rule: Objects are always created as child object of the selected parent object.

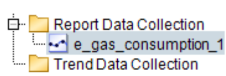
Procedure

1. Select the folder in which you want to create the object.
2. Click the object that you want to create in the menu bar, for example, "Data point".

   The object configuration dialog opens.
3. Select the respective object and click "OK".

Result

The object is created in the project tree in the selected folder.



You can view the object properties of the object, or create new properties for the object.

See also

Displaying object relations (Page 31)

Object naming conventions (Page 33)

Object properties (Page 23)

2.3.3 Object properties

2.3.3.1 Opening properties

Requirement

You have created the object.

Procedure

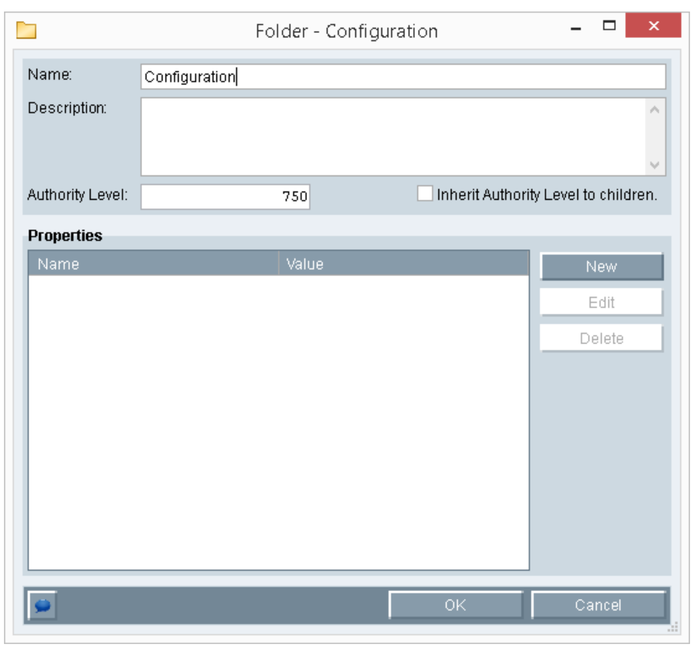
1. Select the object and click the "Properties" command in the shortcut menu.

   The object properties dialog opens.
2. Edit the name and description of the object as required.
3. Enter a value in "Authorization level" to specify the access rights for the object.

   The authority level is set to "0" by default.
4. You can transfer the authority level to all child objects by activating the "Children inherit authority level".

Result

The object properties are open.



You can assign new properties to the object.

See also

Assigning properties (Page 24)

Creating an object (Page 22)

Object basics (Page 20)

2.3.3.2 Assigning properties

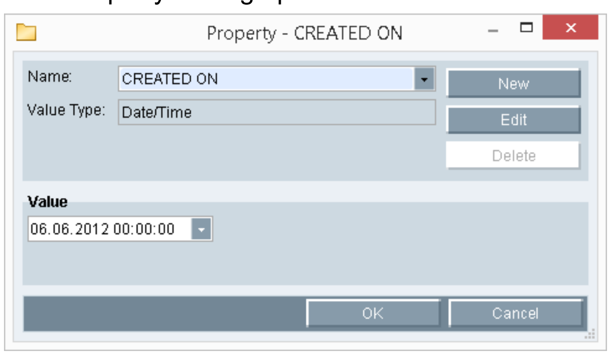
Requirement

- You have created the object.
- The object properties are open.

Procedure

1. Click "New" in the "Properties" area.

   The "Property" dialog opens.

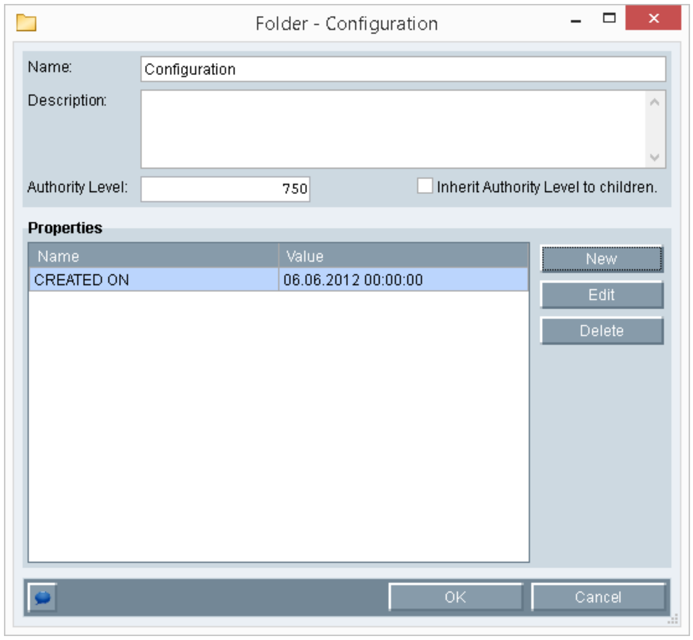
   

2. Select the property in the "Name" area.

   The data type of the selected property is automatically entered in "Value type".
3. Enter a value.
4. Click "OK".

Result

The selected property is assigned to the object.



You can assign a new property to the object. You can also define custom properties and assign these to the object.

See also

Creating an object (Page 22)

Opening properties (Page 23)

Object basics (Page 20)

Defining custom properties (Page 26)

2.3.3.3 Defining custom properties

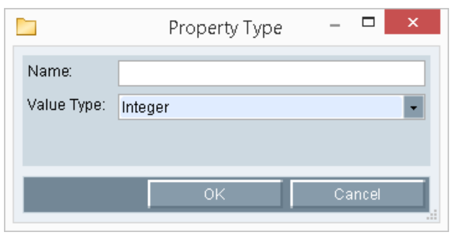
Requirement

- The object properties are open.
- The "Property" dialog is open.

Procedure

1. Click "New".

   The "Property type" dialog opens.

2. Type in a name for the property.
3. Select the data type for the property in "Value type".
4. Click "OK".

Result

You have defined a custom property. You can now assign this new property to the object.

See also

Assigning properties (Page 24)

2.3.4 Object management

2.3.4.1 Object management basics

Overview

The following B.Data commands are available for managing objects in the project tree:

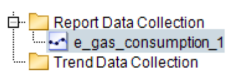
- Move
- Copy and disconnect
- Clone and delete

Moving objects

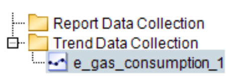
Use the "Move" command to move an object to a different location.

Example:

1. You have created the "e_gas_consumption_1" data point in the "Report Data Collection" folder:



2. However, you no longer need the "e_gas_consumption_1" data point for evaluation in a report; now you need it for visualization in a trend. Move the data point to the "Trend Data Collection" folder:

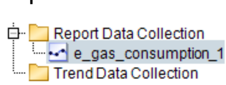


Reusing objects

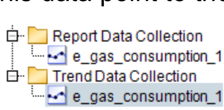
Use the "Copy" command to use an object in another location. Copied objects always have the same name. If you edit the object at one location, any changes will be applied to all other points of application.

Example:

1. You have created the "e_gas_consumption_1" data point for evaluation in a report in the "Report Data Collection" folder:



2. You also need the "e_gas_consumption_1" data point for visualization in a trend. Copy this data point to the "Trend Data Collection" folder:

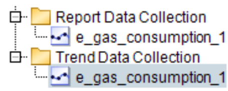


Revoke re-use of objects

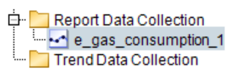
To revoke the re-use of an object in one location, use the "Disconnect" command.

Example:

1. You are using the "e_gas_consumption_1" data point in the "Report Data Collection" and "Trend Data Collection" folders:



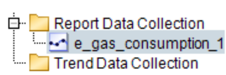
2. You no longer need the "e_gas_consumption_1" data point for visualization in a trend. Disconnect the data point in the "Trend Data Collection" folder. This data point is deleted in the Trend Data Collection folder. The data point is retained in the "Report Data Collection" folder:



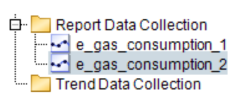
Copying objects

You copy an object by using the "Clone" command. Use this command if you want to create several objects with similar properties. Example:

1. You have created the "e_gas_consumption_1" data point for evaluation in a report in the "Report Data Collection" folder:



2. For evaluation in a report, you require a further data point for the gas consumption of a different plant. Clone the "e_gas_consumption_1" data point, rename this data point "e_gas_consumption_2" and customize the properties accordingly:

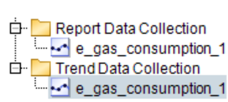


Deleting objects

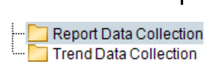
Use the "Delete" command to irrevocably delete an object from the project tree.

Example:

1. You are using the "e_gas_consumption_1" data point in both the "Report Data Collection" folder and the "Trend Data Collection" folder:



2. You no longer need the "e_gas_consumption_1" data point. Delete this data point. All instances of the data point in the project tree are deleted irrevocably. You can no longer restore the data point.



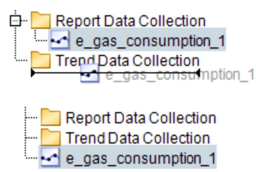
2.3.4.2 Managing objects

Requirement

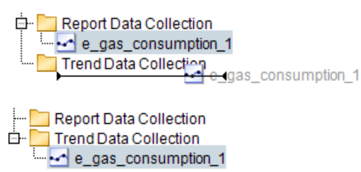
The objects have already been created.

Moving or re-using objects

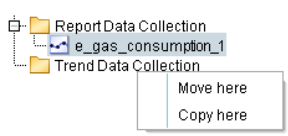
1. Right-click the object and drag-and-drop it to the selected position. Observe the position of the guide line:
   – If you place the guide line directly underneath the object, the selected object is copied to the same structure level in the project tree for re-use.

   – If you place the guide line to the right of the object, the selected object is copied to the next nested level in the project tree structure, or re-used.

   The shortcut menu for moving and re-using is displayed.

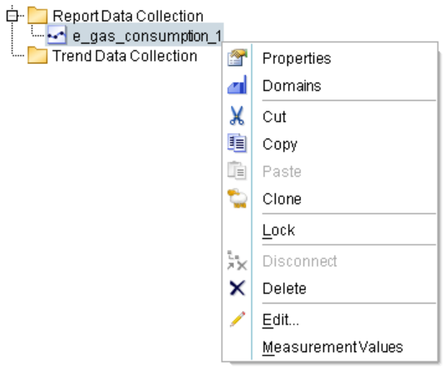
   

2. To move the object, click "Move here".

   The object is moved.
3. To re-use the object, click "Copy here".

   The object is re-used.

Deleting/copying/canceling the re-use of an object



1. Click "Delete" in the shortcut menu to delete a selected object.

   The object is deleted irrevocably from the project tree.
2. You cancel the re-use of a selected object by clicking "Disconnect" in the shortcut menu.

   The object is no longer used at that location, but remains available for use in other locations.
3. Proceed as follows to co copy the object:
   – Select the object and click "Clone" in the shortcut menu.

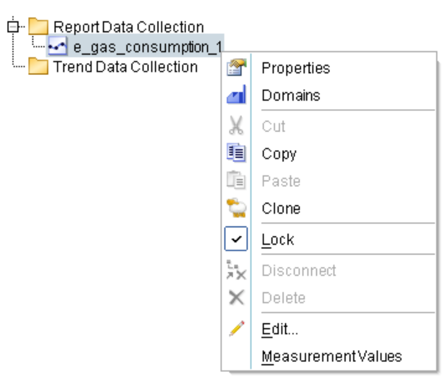
     The object configuration dialog opens.
   – Edit the object and then click "OK".

     The copied object is created in the project tree.

Locking objects

You can lock the objects you created in the project tree of Plant Explorer. This prevents the objects from being moved unintentionally within the project tree.

1. Select the object and click "Lock" in the shortcut menu.



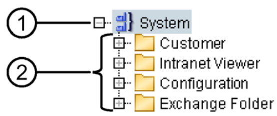
   You can no longer move the object and its nested objects in the project tree.
2. Deactivate the "Lock" command if you want to move a child object in the project tree.

   You can now move the child object. The parent object remains in locked state.

2.3.5 Displaying object relations

Overview

An object created in B.Data forms a relation to other B.Data objects. The relation between objects in B.Data is termed "parent-child relation":



① Parent object: This object can have more than one child object.

② Child objects: While each child object can only have one parent object, it can also be the parent object for other child objects.

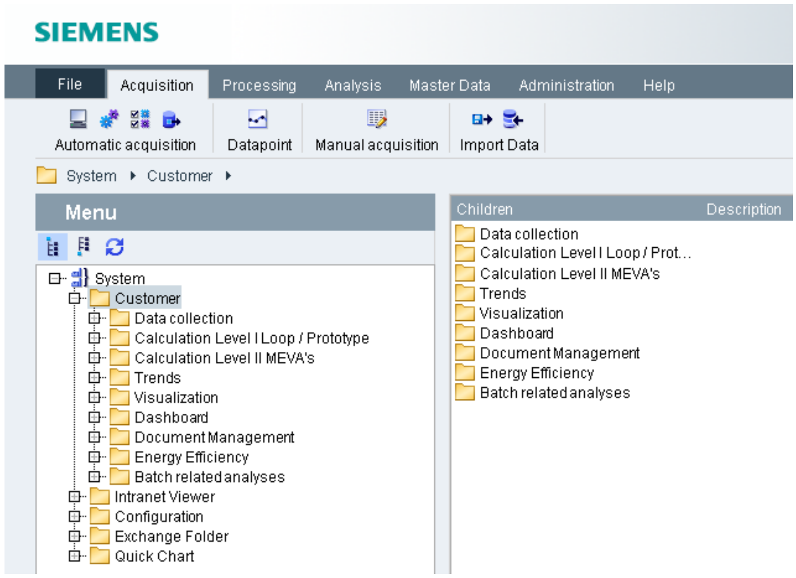
Requirement

You have created the object.

Procedure

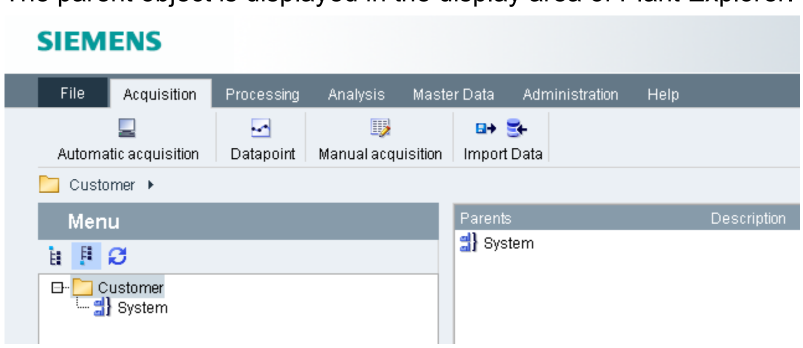
1. To display all child objects that you have created directly under a parent object, select the parent object from the project tree and click the "Father to Child" button.

   The child objects are displayed in the display area of Plant Explorer.

2. To display the object under which you have created other objects, select the child object from the project tree and click the "Child to Father" button.

   The parent object is displayed in the display area of Plant Explorer.

See also

Creating an object (Page 22)

2.3.6 Object naming conventions

Notes on the naming of objects

Observe the following when naming objects:

- Use an unambiguous name.
- Use a maximum of 255 characters.
- Use the following characters:
  - "A" to "Z"
  - "a" to "z"
  - "0" to "9"
  - "_"

Name prefixes

In order to enable the unambiguous identification of B.Data objects for acquisition and calculation of measured values, the following name prefixes were defined.

Prefix	Object
a_	Derived data point
d_	Data point
e_	Generic data point
k_	Constant
p_	Prototype
l_	Loop
t_	Parameters
m_	Measuring variable

Note

When you create an object, the prefix is automatically entered in the name field.

Recommendation for naming objects

In order to ensure the uniqueness of the names, create a concept for naming the objects in B.Data before you start to configure your system. Use the following syntax. for example:

Prefix_FIS_physical measuring variable_[plant unit]_plant

2.3.7 Search for object

Overview

The B.Data search function evaluates the following information:

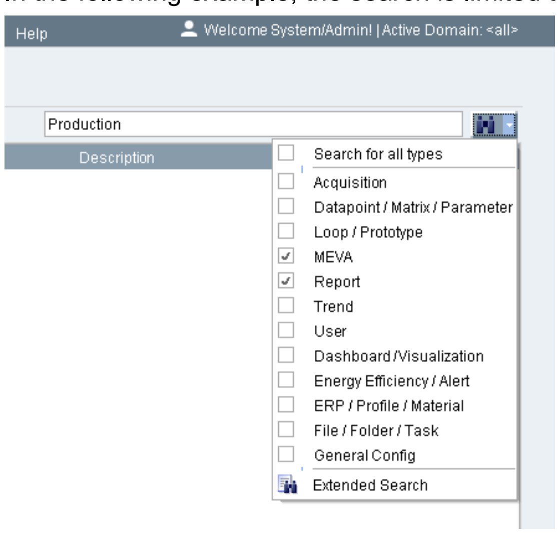
- Object name
- Description of the object
- Object properties
- Object ID

A separate tab with search results is created for each search in the display area of the Plant Explorer. All tabs with search results are deleted when you close the B.Data client.

Procedure

1. In the project tree of the Plant Explorer, select the folder in which you want to search.
2. To limit the search to specific objects, activate one or more object types in the selection menu of the search.

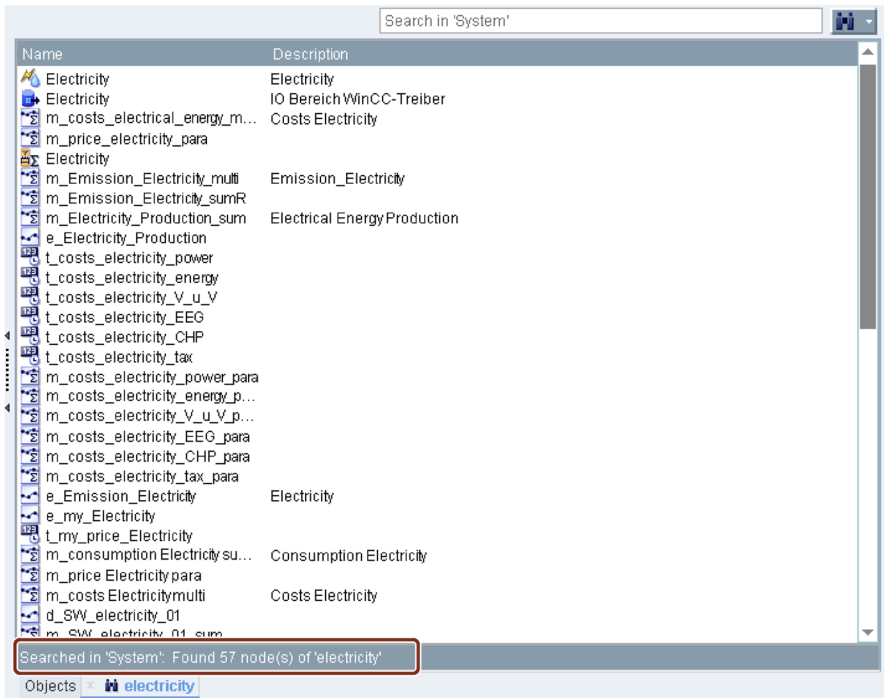
   In the following example, the search is limited to reports and measuring variables:

3. Enter your search term in the search field.

4. Click .

   A tab with the search result is created in the display area.



5. To refine the search result, enter another search term.

   The search results are filtered.

6. As soon as you use the <Return> key in the search field, another tab is created for the new search term.

2.4 Configuring Quicklinks

2.4.1 Create Quicklinks

Overview

Quicklinks are references to objects in B.Data that are used frequently, for example, reports. Quicklinks are available to the user for which you have created the Quicklinks.

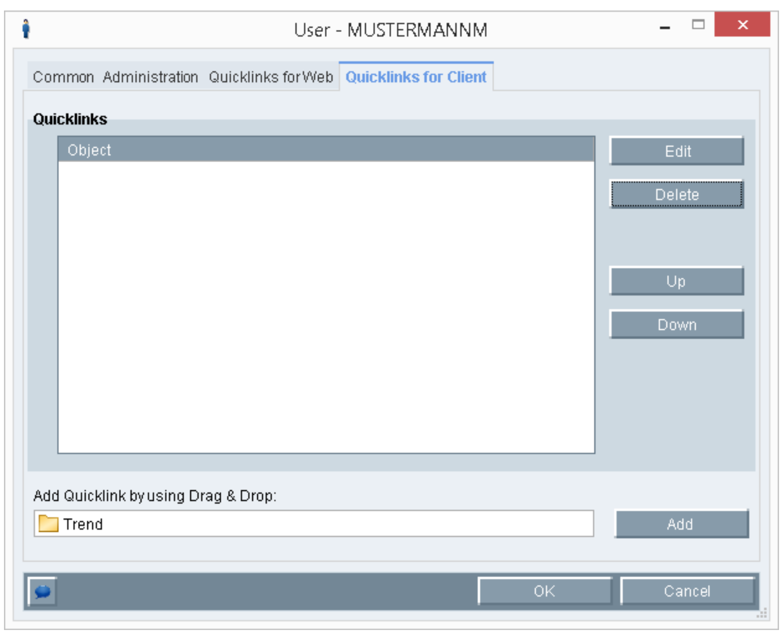
You can create Quicklinks for the B.Data Client as well as the B.Data Web.

Requirement

You have the "Create Quicklinks" authorization.

Procedure

1. Open the configuration dialog for the required user.
2. Select either the "Quicklinks for Web" or the "Quicklinks for Client" tab.
3. Use drag&drop to drag the object from the project tree of the Plant Explorer to the "Add Quicklink using drag&drop" field.



4. Then click "Add".

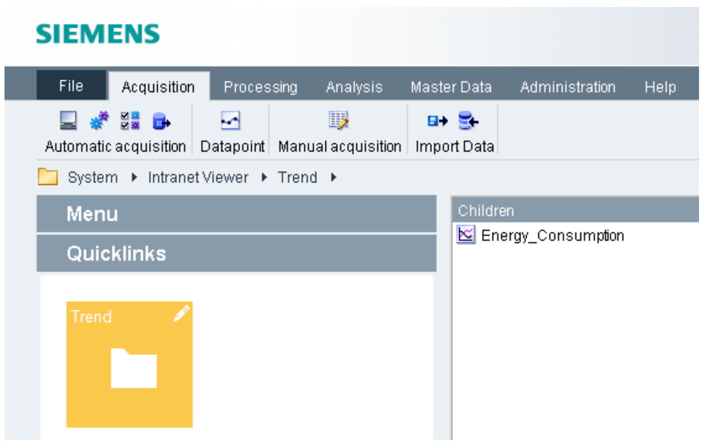
   The Quicklink is displayed in the "Quicklinks" area.
5. If you have created several Quicklinks, specify the sequence with the "Up" and "Down" buttons.

Result

The Quicklink is displayed in the "Quicklinks" area:

- The object name to which the Quicklink points becomes the title.
- The default icon and background color for this object type is used.

Depending on the used tab, the Quicklink is displayed in B.Data Web or in the Plant Explorer.



Note

You can change the order of the Quicklinks in the "Quicklinks" area with drag&drop.

See also

Edit Quicklinks (Page 38)

Configuring Quicklinks (Page 446)

Plant Explorer as navigation tool (Page 17)

2.4.2 Edit Quicklinks

Overview

You can change the following properties of a Quicklink with the "Edit Quicklinks" function:

- Name
- Icon
- Color

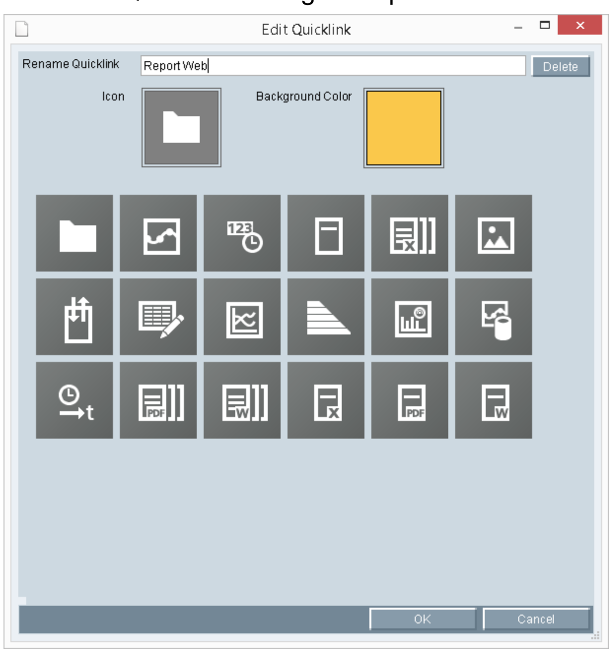
Requirement

- You have the "Edit Quicklinks" authorization.
- The Quicklink is created.

Procedure

1. Right-click the Quicklink in the "Quicklinks" area in the Plant Explorer.

   The "Edit Quicklink" dialog box opens.



2. Edit the Quicklink as required.

Alternative procedure

You can also edit the Quicklinks in the configuration dialog of the respective user.

3 Configuring master data

3.1 Configuring data acquisition

3.1.1 Creating hardware

Overview

If you want to acquire data automatically with B.Data, you must map at least one acquisition component as object of the type "Hardware". An acquisition component is, for example, a PC or a mobile device (PDA). You configure the data acquisition for this hardware in an additional step by means of a wizard.

Note

In the B.Data database's example project, under "System > Customer > Data collection > Interfaces / Drivers" there is already a "Hardware" object named "h_Siemens_PC" that is completely configured and enabled.

If you do not want to use the preconfigured object, disable the "Active" option. This will release the license that is bound to it.

Procedure

1. Select the folder in which the hardware is going to be created.
2. Click "Add hardware" in the menu bar under "Acquisition > Automatic acquisition".

   The "Hardware" configuration dialog opens.
3. Enter a name and, if necessary, a description.

   Recommendation: Also use the prefix "h_" as unique identification.
4. Assign the PC or the mobile device to the "Hardware" object using the "..." button.

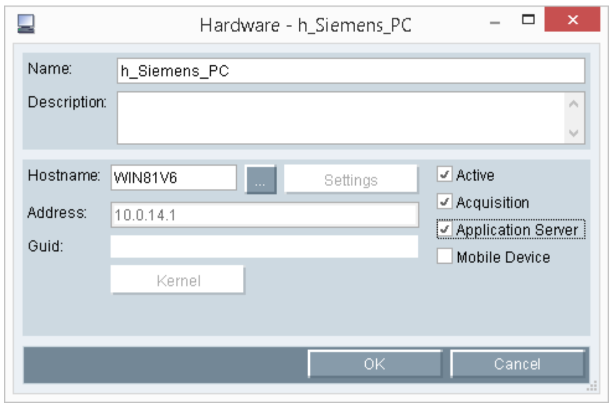
   Note

   The name "localhost" is not permitted as computer name.

   ---

5. Select the "Active" option to use the hardware for data acquisition.
6. Activate the type of acquisition component depending on the use:
   – Acquisition
   – Application server

     Only necessary if the application server is installed on the acquisition component.
   – Mobile device



Result

The "Hardware" object has been configured.

Note

The acquisition ID is entered automatically under "Guid" when you have configured the acquisition component in the B.Data acquisition configuration. The acquisition ID uniquely identifies the connection between the B.Data server and the acquisition component.

See also

Configuring mobile devices in B.Data (Page 461)

Logging the acquisition component onto the B.Data server (Page 41)

Logging the acquisition component onto the B.Data server for the first time (Page 41)

3.1.2 Logging the acquisition component onto the B.Data server

3.1.2.1 Logging the acquisition component onto the B.Data server for the first time

Overview

In the B.Data acquisition configuration, you establish the logical connection between the acquisition component and the B.Data server. The B.Data acquisition component is installed together with the "B.Data Acquisition" software component. The acquisition component supports communication via a proxy server.

To set up the connection to the B.Data server, you have the following options available:

- Configuring the connection manually

  You can configure the connection to the B.Data server with or without access to the B.Data server. The connection is created when saving the configuration data. If the B.Data server cannot be reached, the configuration is saved locally. Upon restarting the B.Data acquisition configuration, an attempt is made to establish the connection using the saved configuration.

- Setting up a connection using the wizard

  Configuration with the wizard requires a connection to the B.Data server: The wizard performs a step by step check of the connection data that have been entered. Details on the connection wizard can be found in section Areas in the B.Data acquisition configuration (Page 48).

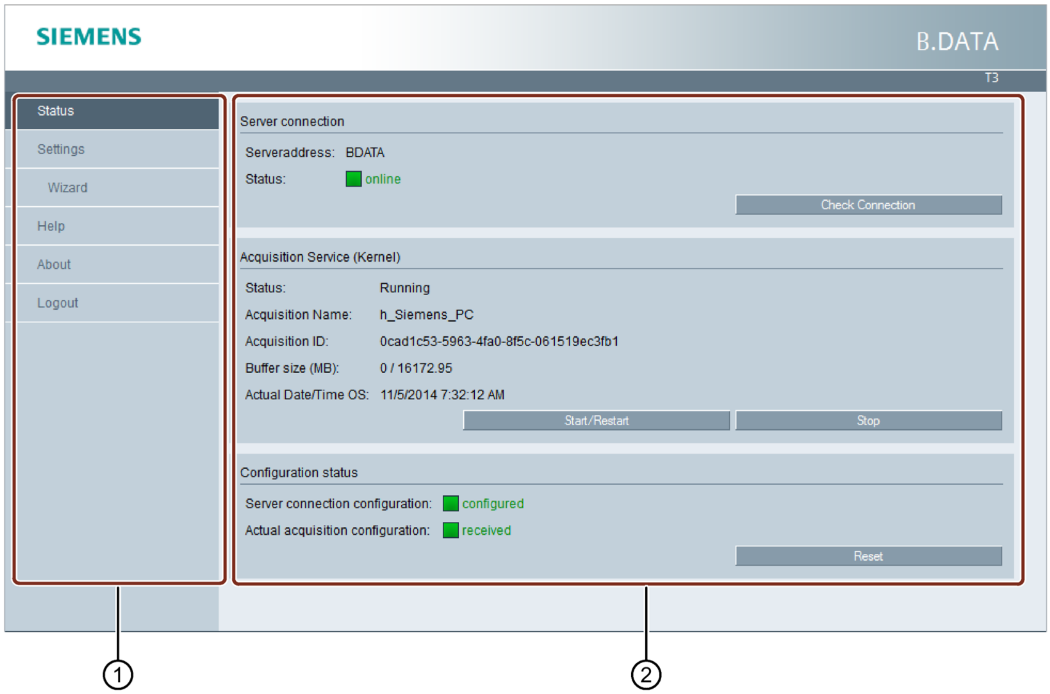
Configuration of the connection to the B.Data server with the wizard is described below.

Required data

You need the following data to log the acquisition component in to the B.Data server:

- Address and port of the B.Data server
- B.Data user name and password
- Name of the "Hardware" object in B.Data

The figure below shows the layout of the B.Data acquisition configuration after login:



① Navigation area

② Display and configuration area. The content depends on the selection in the navigation area.

Requirement

- The "B.Data Acquisition" software component is installed on the PC.
- Microsoft Internet Information Service (IIS) is installed on the PC.
- The PC is connected to the B.Data server.
- The "Hardware" object is set up on the B.Data server.
- A user with the "Configure acquisition" authorization is set up on the B.Data server.
- For communication via proxy:
  - A proxy server must be available in the network.
  - The URL and login data must be known.

Procedure

1. Start the web browser on the acquisition component and enter the following address:

   http://[computer name]/BDataAcquisition/Login.aspx
2. Login using your Windows user data of the acquisition component.

   The "Status" page of the B.Data acquisition configuration is displayed. If the acquisition component is not yet logged in to the B.Data server, the "Configure the acquisition" dialog is displayed.
3. Select the "Start connection wizard" option in the "Configure the acquisition" dialog.

4. Enter the following connection data:
   – Address and port of the B.Data server
   – B.Data user name and password
   – Name of the "Hardware" object in B.Data
5. As needed, select "Configure proxy settings", and enter the following connection data depending on the configuration of the proxy server:
   – Address and port of the proxy server
   – User name and password

Note

If you use the "Anonymous" setting, there is no need to enter "Port" and "User name".

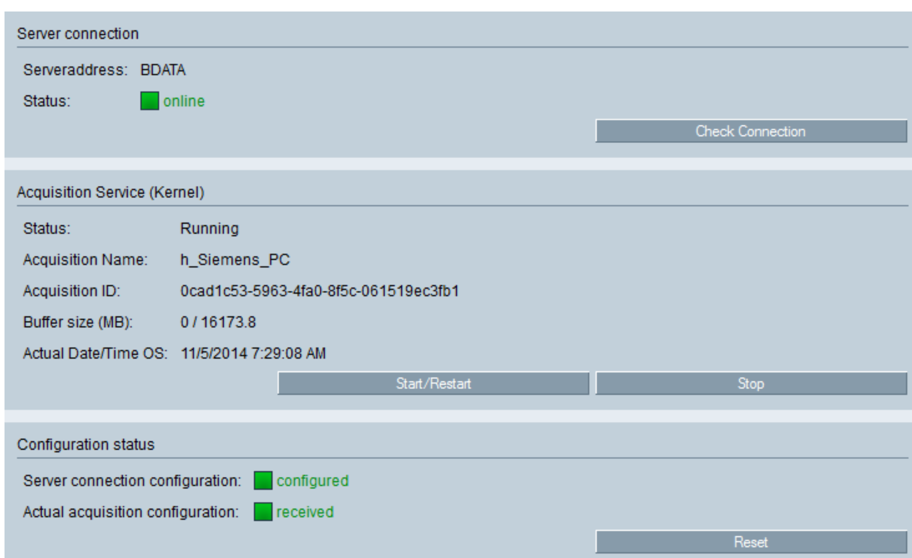
---

6. Save your entries.

Result

The "Acquisition ID" is generated and entered for the connection between the acquisition component and the B.Data server.

The figure below shows a correctly configured connection to the B.Data server:



See also

Creating hardware (Page 39)

Setting up users (Page 88)

Managing the acquisition component (Page 46)

Configuring the acquisition component manually (Page 44)

3.1.2.2 Configuring the acquisition component manually

Overview

You can configure the acquisition component with or without a connection to the B.Data server.

Requirement

- The "B.Data Acquisition" software component is installed on the PC.
- Microsoft Internet Information Service (IIS) is installed on the PC.
- The PC is connected to the B.Data server (optional).
- The "Hardware" object is set up on the B.Data server.
- A user with the "Configure acquisition" authorization is set up on the B.Data server.
- For communication via proxy:
  - A proxy server must be available in the network.
  - The URL and login data must be known.

Procedure

1. Start the web browser on the acquisition component and enter the following address:

   http://[computer name]/BDataAcquisition/Login.aspx
2. Log in to the acquisition component using your Windows user data.

   The "Status" page of the B.Data acquisition configuration is displayed.

   If the acquisition component is not yet logged in to the B.Data server, select the "Manually configure connection" option in the "Configure the acquisition" dialog that is displayed.
3. Enter the following connection data in the "Settings" area:
   - Address and port of the B.Data server
   - B.Data user name and password
   - Name of the "Hardware" object in B.Data

4. As needed, select "Configure proxy settings", and enter the following connection data depending on the configuration of the proxy server:
   - Address and port of the proxy server
   - User name and password

Note

If you use the "Anonymous" setting, there is no need to enter "Port" and "User name".

5. Save your entries.

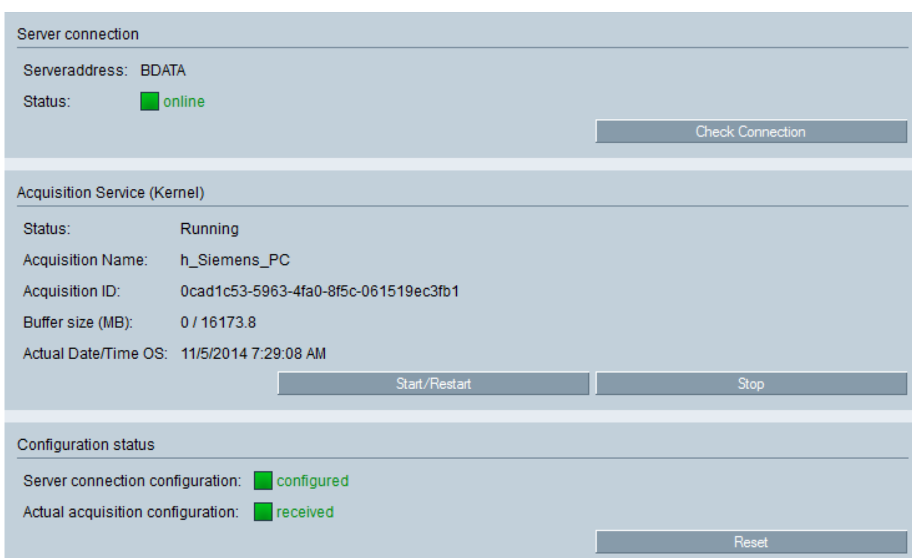
   The attempt to connect to the B.Data server is started.

   If connection to the B.Data server is not possible, your configuration is saved locally. Upon the next restart of the acquisition component, a connection will be attempted using the saved configuration.

Result

The acquisition ID is generated and entered as soon as the B.Data server can be reached. An attempt is made to establish the connection with the specified data upon each restart of the acquisition component. Provision of the acquisition configuration depends on the configured start delay time of the acquisition service.

The figure below shows a correctly configured connection to the B.Data server:

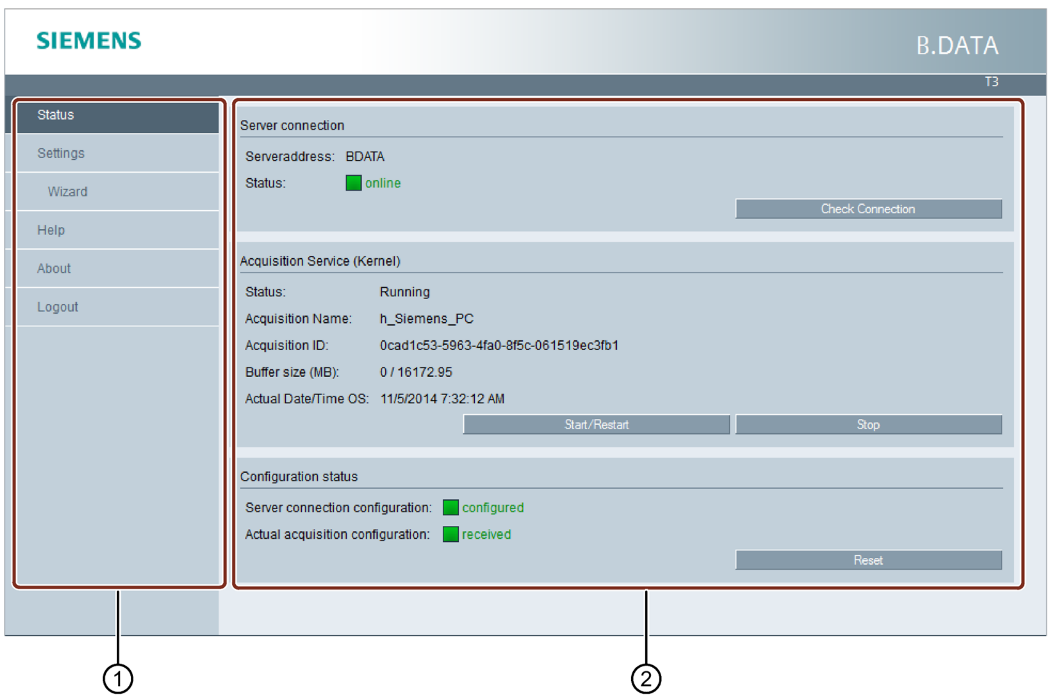


3.1.2.3 Managing the acquisition component

Overview

You use the B.Data acquisition component for the following tasks:

- Start or stop acquisition service
- Modify or reset the connection data
- Configuring a proxy server for the communication
- Execute the software update for the acquisition component



① Navigation area

② Display and configuration area. The content depends on the selection in the navigation area.

Requirement

- The B.Data acquisition configuration is displayed in the Web browser.
- The acquisition component is connected to the B.Data server.

Start or stop acquisition service

1. Click "Status" in the navigation area.
2. Click the appropriate button.

If the acquisition service is stopped, data is not acquired.

Changing configuration settings

1. Click "Status" in the navigation area.
2. If you want to assign the acquisition component to another "Hardware" object, reset the acquisition service.
3. If you want to change the user data, stop the acquisition service.
4. Click on "Settings" or "Wizard" in the navigation area.
5. Enter the connection data.

Reset configuration settings

1. Click "Status" in the navigation area.
2. Click the appropriate button.

   The configuration settings of the acquisition component are deleted after confirmation. The acquisition component is not acquiring data any longer.
3. Log the acquisition component in to a B.Data server again afterward.

Configuring a proxy server for the communication

1. Click "Status" in the navigation area.
2. Click "Configure proxy settings"
3. Depending on the configuration of the proxy server, enter the following connection data:
   – Address and port of the proxy server
   – User name and password

   Note

   If you use the "Anonymous" setting, there is no need to enter "Port" and "User name".

Updating acquisition software

1. Click "About" in the navigation area.
2. Enter the path and file name of the setup file under "Software update", for example, "C:\Installation\Setup.exe".
3. Click "Update".

The acquisition service is stopped and the acquisition software is updated. The acquisition service is started once again when the installation is complete.

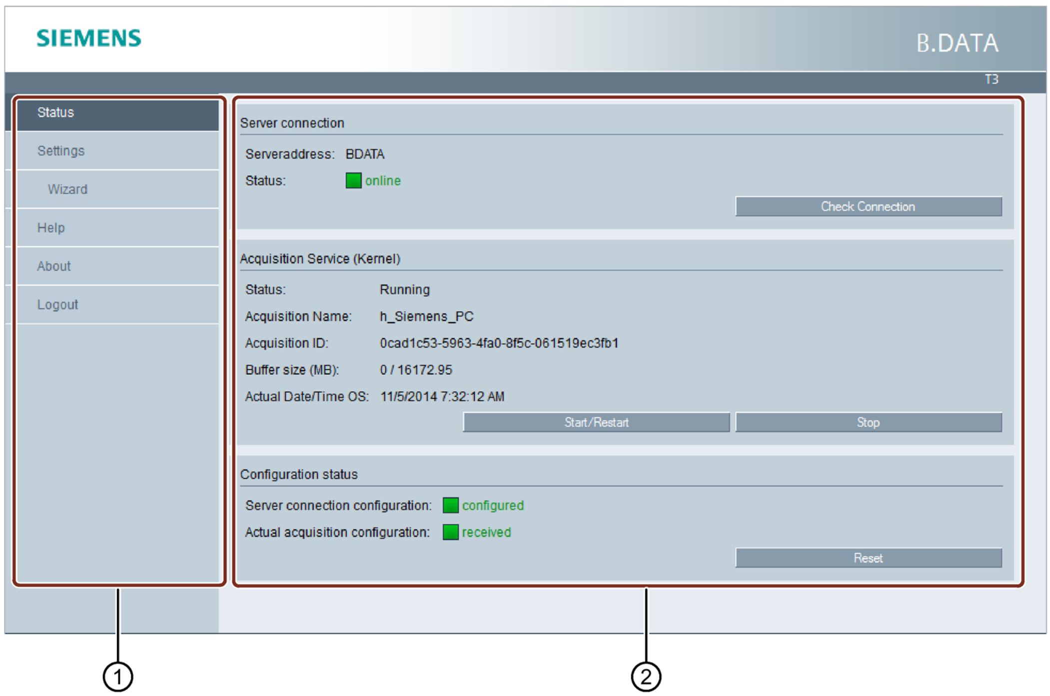
See also

Logging the acquisition component onto the B.Data server for the first time (Page 41)

3.1.2.4 Areas in the B.Data acquisition configuration

Layout of the B.Data acquisition configuration

The figure below shows the layout of the B.Data acquisition configuration after login:

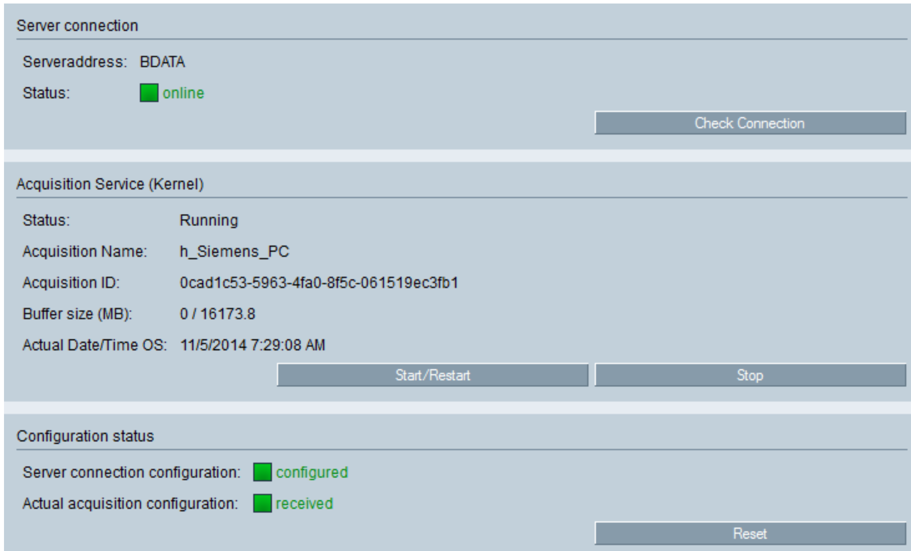


① Navigation area

- Status: Indicates the connection status of the acquisition component.
- Settings: Displays the current configuration settings.
- Wizard: Starts the wizard for input of the configuration settings.
- Help: Opens the documentation on the B.Data acquisition component in PDF format.
- About: Displays the installed software version. You can update the software version.
- Logout: Displays the login window of the B.Data acquisition configuration again.

② Display and configuration area. The content depends on the selection in the navigation area.

"Status" area

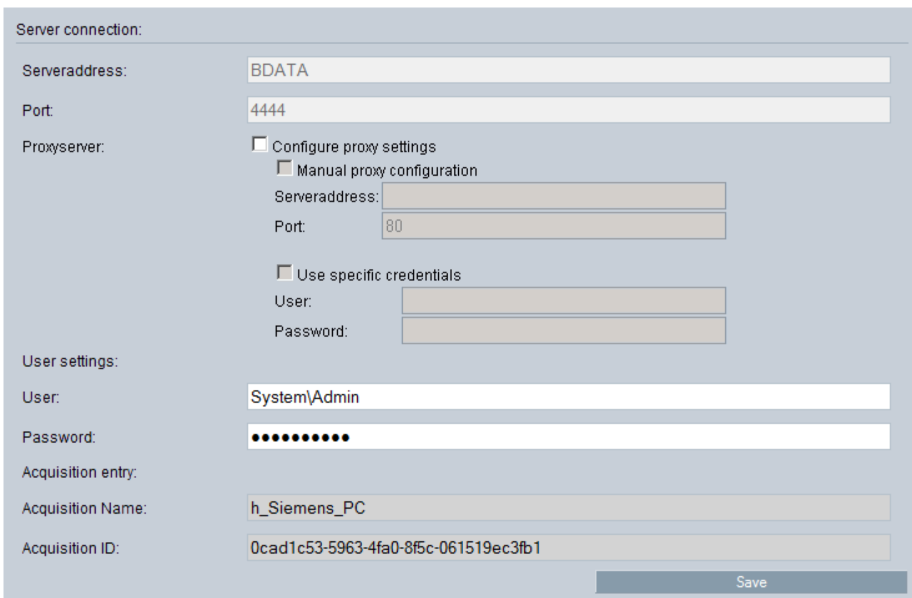


The "Status" area of the B.Data acquisition configuration consists of the following areas:

Area	Entry	Description
Server connection	-	-
	Server Address	Displays the name of the B.Data server.
	Status	Displays the status of the connection to the B.Data server. The following statuses are possible: • Green/online: The acquisition component is connected to the B.Data server. • Gray/offline: The acquisition component is not connected to the B.Data server.
Acquisition Service (Kernel)	-	-
	Status	Indicates the acquisition state. The following statuses are possible: • Started: The acquisition has started and is running. • Stopped: The acquisition is stopped.
	Acquisition Name	Displays the name of the hardware object.
	Acquisition ID	Displays the acquisition ID which uniquely identifies the connection between the B.Data server and the acquisition component.
	Current Date/Time OS	Shows the current date and time of the PC on which the acquisition is running.
Configuration Status	-	-
	Connection Configuration	Shows whether the connection to the B.Data server has already been configured.

Area	Entry	Description
	Current Acquisition Configuration	Displays the status of the current acquisition configuration. The following statuses are possible: • Received: The acquisition configuration has been successfully synchronized with the B.Data server. • Not Received: The acquisition configuration has not been successfully synchronized with the B.Data server.

"Settings" area



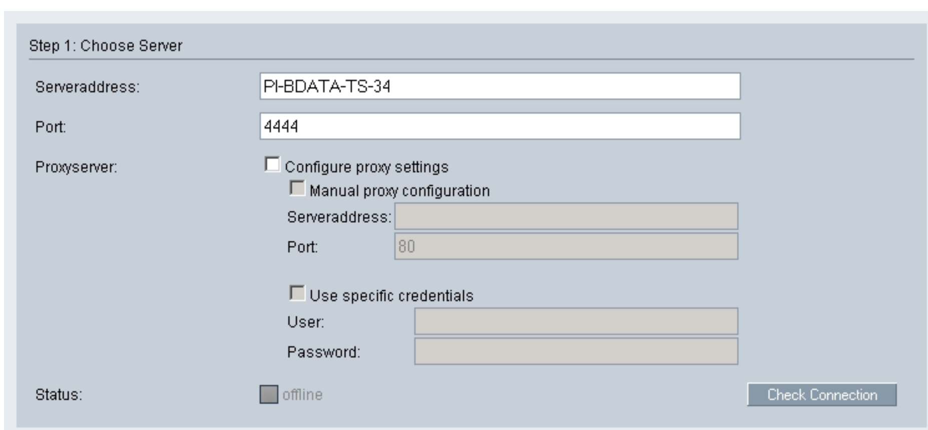
The "Settings" area of the B.Data acquisition configuration consists of the following areas:

Area	Entry	Description
Server	-	-
	Server Address	Displays the name of the B.Data server.
	Port	Displays the port of the B.Data server.
		Displays the status of the connection to the B.Data server. The following statuses are possible: • Green/online: The acquisition component is connected to the B.Data server. • Gray/offline: The acquisition component is not connected to the B.Data server.

Area	Entry	Description
Proxy server	Configure proxy settings	Indicates whether a proxy server will be used for the communication. The following statuses are possible: • Use system proxy settings: The proxy server that is configured in the operating system will be used. • Manual proxy configuration: Proxy server is manually configured: Server address and port are required. The type of authorization depends on the proxy server that is used.
User settings	-	-
	B.Data user name	B.Data user name
	Password	Password of the B.Data user (encrypted)
Acquisition entry	-	-
	Acquisition Name	Name of the "Hardware" object
	Acquisition ID	Uniquely identifies the connection between the B.Data server and the acquisition component.

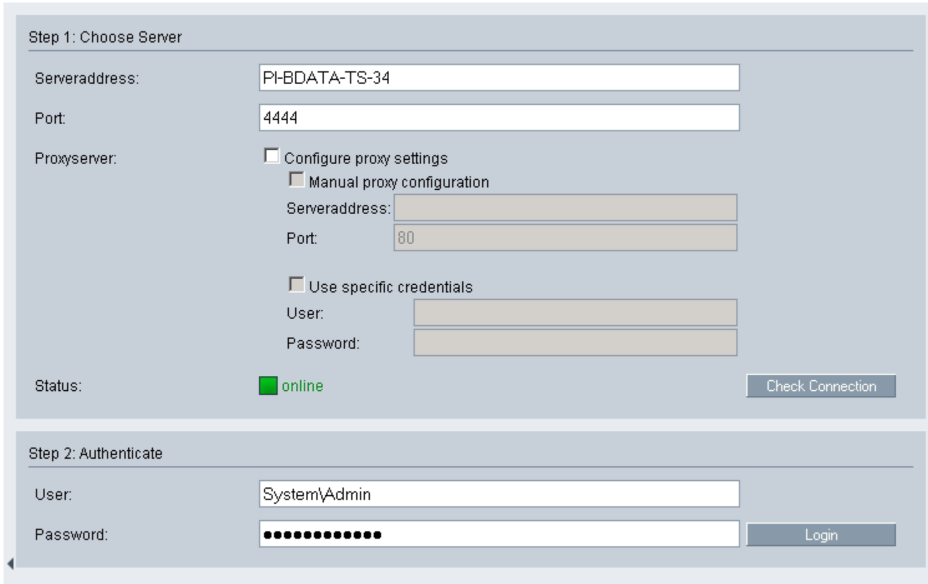
"Wizard" area

The "Wizard" guides you through three steps for logging the acquisition component in to the B.Data server. To run the wizard, the acquisition component must be connected to the B.Data server.



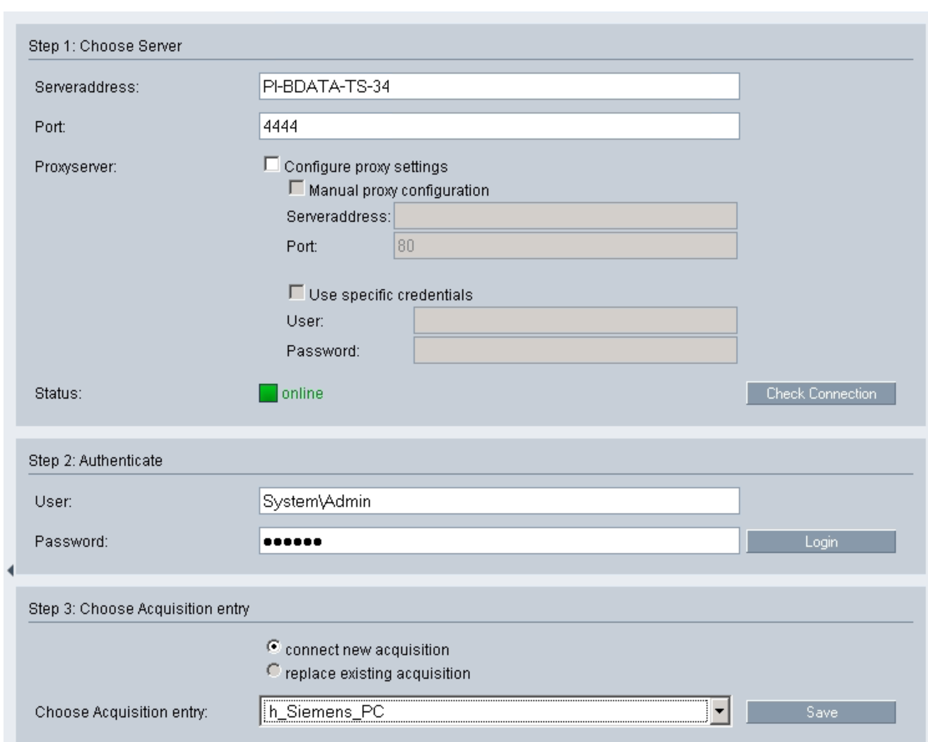
The area of the wizard in "Step 1" contains the following entries:

Entry	Description
Server Address	B.Data server name
Port	Port number of the B.Data server
Proxy server	Activates configuration of a proxy server.
Status	Displays the status of the connection to the B.Data server.
Test connection	Checks the connection between the B.Data server and the acquisition component. The next step is only displayed when the check is successfully completed.



The area of the wizard in "Step 2" contains the following entries:

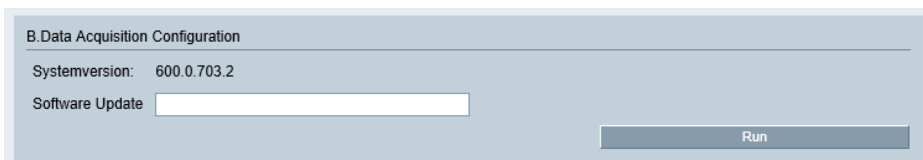
Entry	Description
User	B.Data user name
Password	Password of the B.Data user (encrypted)
Login	Registers the user in B.Data. The next step is only displayed when the login is successfully completed.



The area of the wizard in "Step 3" contains the following entries:

Entry	Description
Connecting new acquisition	Shows only the "Hardware" type objects configured in B.Data under "Select acquisition" that have not yet been connected to an acquisition component.
Replace existing acquisition	Shows all the "Hardware" type objects configured in B.Data under "Select acquisition".
Select acquisition	Assigns the acquisition component to the "Hardware" type object configured in B.Data. If you have enabled the "Replace existing acquisition" option, the existing assignment to this object is deleted.
Save	Generates the acquisition ID, which uniquely identifies the connection between the B.Data server and the acquisition component.

"About" area



The "About" area of the B.Data acquisition configuration consists of the following areas:

Entry	Description
System version	Shows the software version installed on the acquisition component.
Software update	Path and file name of the Setup file for updating the software, for example, "\\UpdateServer\BData\Setup.exe".
Execute	Starts the software update. The acquisition component is restarted following the update.

3.1.3 Configuring interfaces for data acquisition

3.1.3.1 Interface management basics

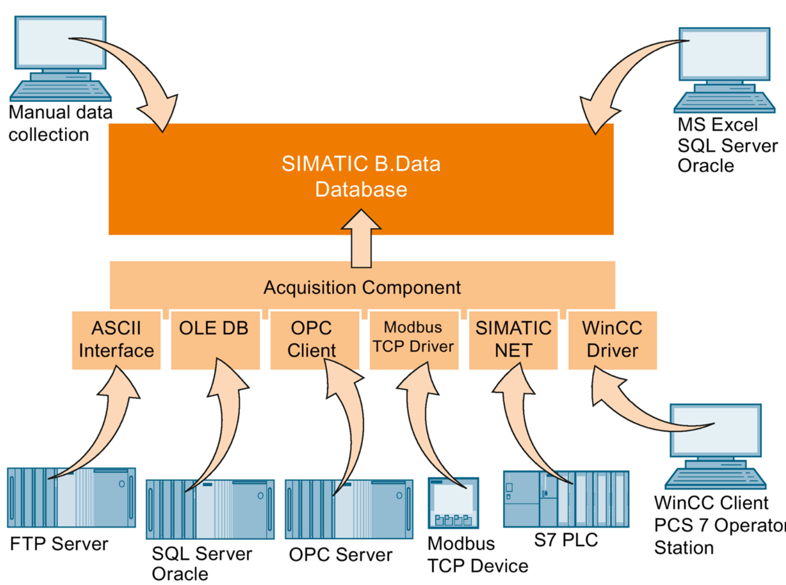
The data you need for energy management often exist in different formats and systems:

- Data from analog and digital measuring devices
- Data from other production sites
- Archived consumption data from the previous year

In addition to the standardized interfaces to Siemens products such as WinCC or PCS 7, B.Data supports conventional standards so that you can acquire data from different sources:

- Acquisition of energy and operational data from the field level via OPC or Modbus.
- Acquisition of data from S7 controllers via SIMATIC NET.
- Acquisition of data from measurement value archives via OPC.
- Acquisition of data from maintenance, production planning and ERP system databases.
- Import of ASCII data from the company wide file system, such as CSV or XML.
- Manual input of the measured and counter values.

Depending on the interface used, the data is either imported directly into the B.Data database, or pre-processed in the acquisition component:



3.1.3.2 Acquisition wizard for interface configuration

Overview

Use the "Acquisition wizard" to configure the interface for data acquisition from a selected data source. B.Data supports the following interfaces for data acquisition:

- S7
- WinCC/PCS 7
- Modbus
- OPC DA, OPC HDA, OPC UA
- OLE DB
- FTP, sFTP
- Simulation

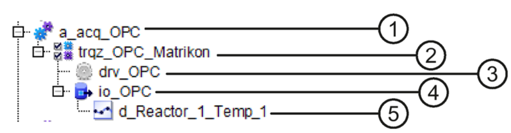
Note

SAT interface

The SAT interface is only available upon request. Contact Siemens Customer Support.

Acquisition structure in the Plant Explorer

The acquisition wizard creates the following acquisition structure under the "Hardware" object:



①	Process: Represents the data acquisition for an interface, e.g., "WinCC" or "Modbus". Includes all configuration data of the interface.
②, ③	Driver source and driver type: Defines the interface to be used for data acquisition.
④	IO buffer: Defines from where the data is read, for example, a device, a file or a logical group for a time interval for reading.
⑤	Datapoints that you created or selected during the configuration.

Action overview

The acquisition wizard guides you through the configuration of the interface. The following configuration steps are basically required for all interfaces after starting the acquisition wizard:

1. Define the channel name
2. Select the device configuration
3. Configure the connection
4. Define the datapoints
5. Define the data transmission

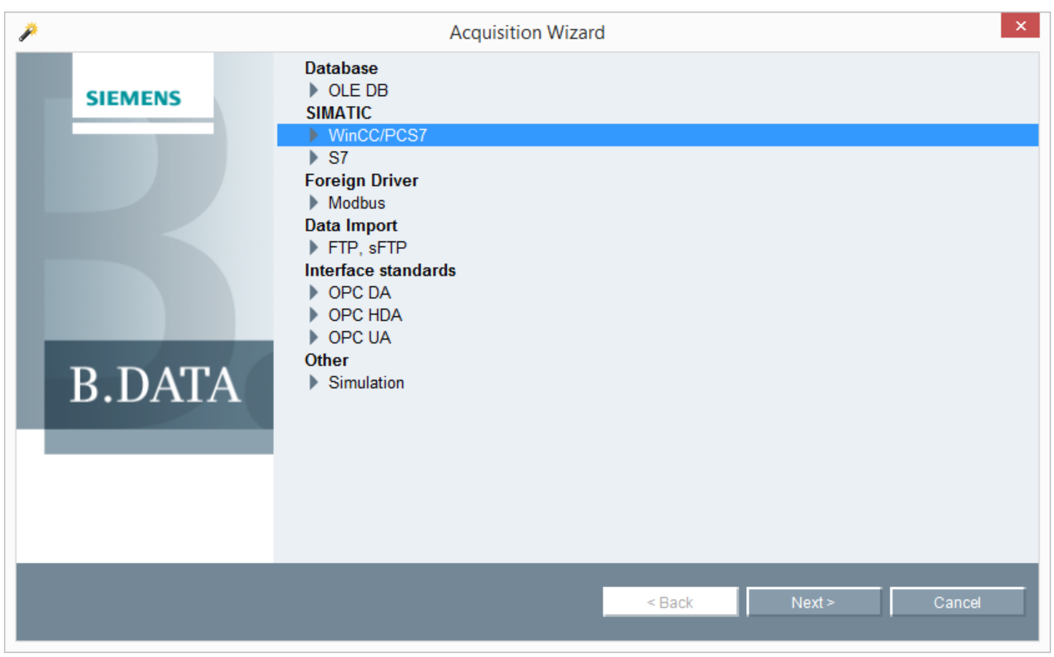
   After this step, you can create another link or create the acquisition structure.
6. Create the acquisition structure

Example

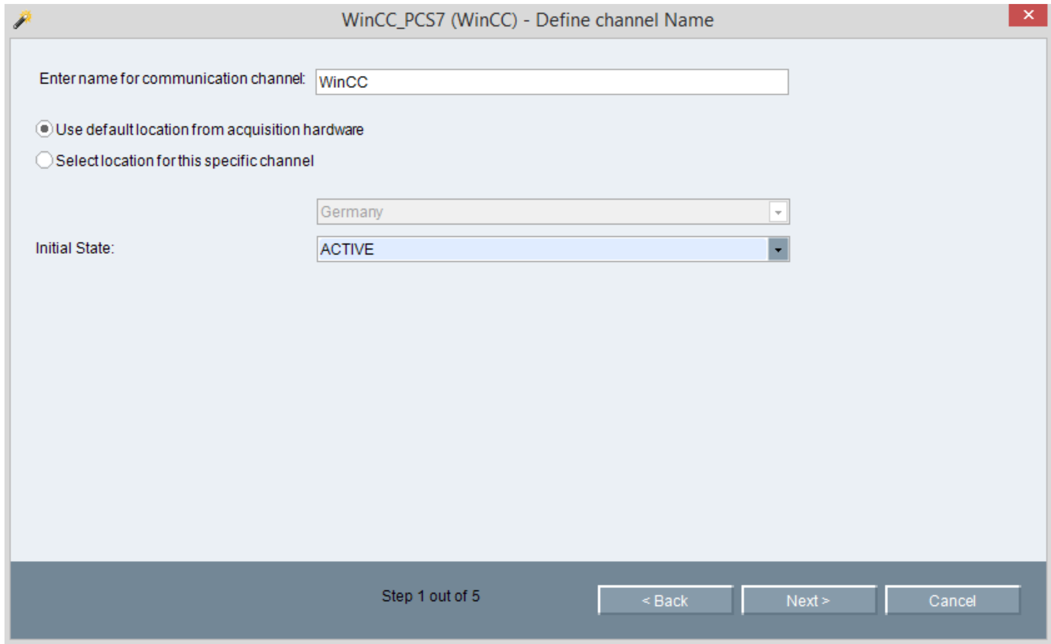
The following example shows how to acquire data from a WinCC log via the "WinCC / PCS 7" interface using the acquisition wizard.

1. Select the "Wizard..." command from the shortcut menu of the "Hardware" object.

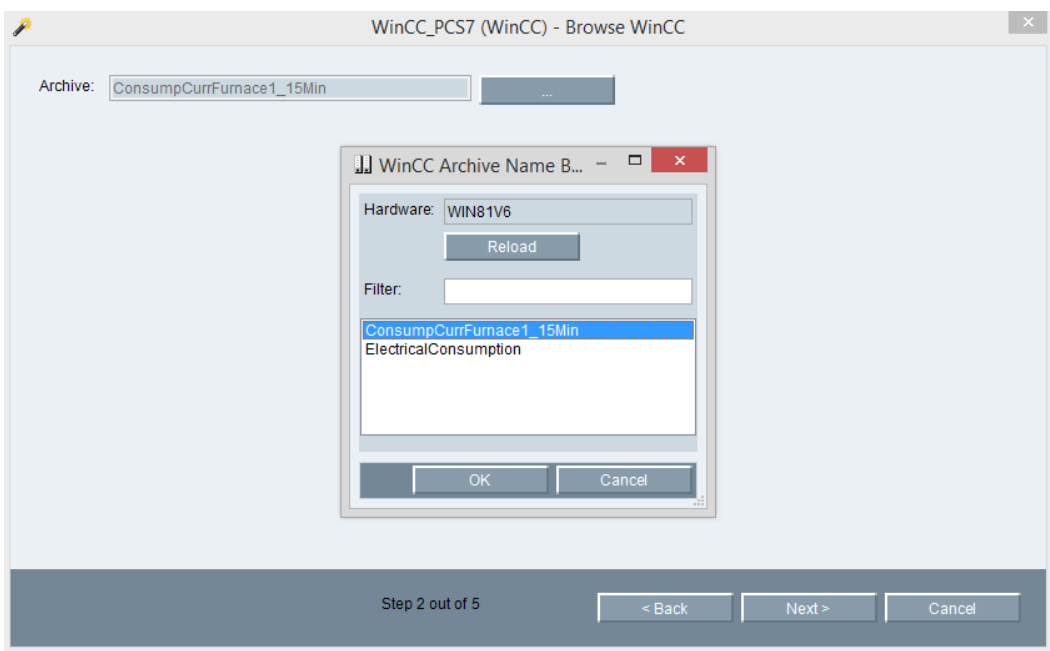
   The "Acquisition Wizard" dialog opens.
2. Select the interface.



3. Enter the channel name and select the initial state for the acquisition:

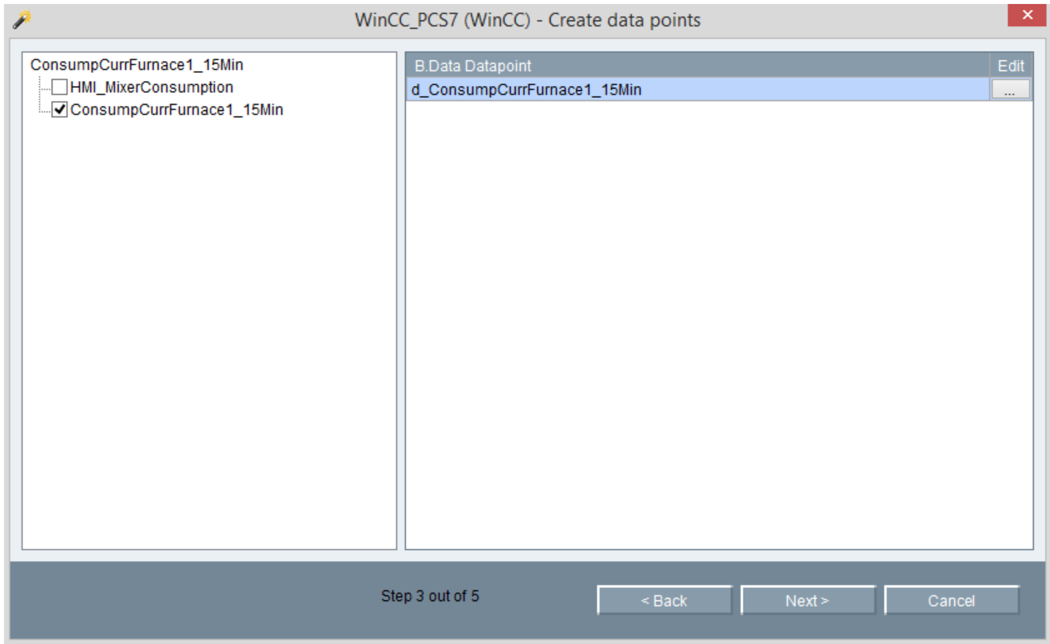


4. Select the WinCC log from where the data is to be acquired:

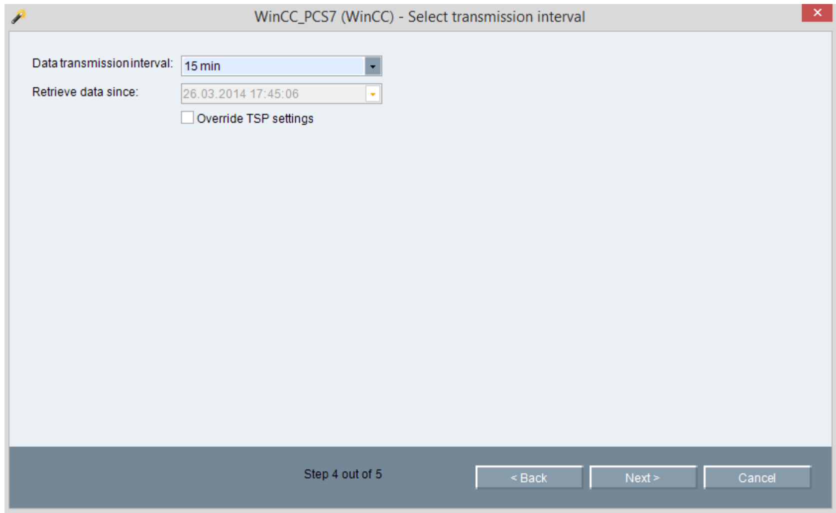


5. Select the logging tag with the values to be acquired.

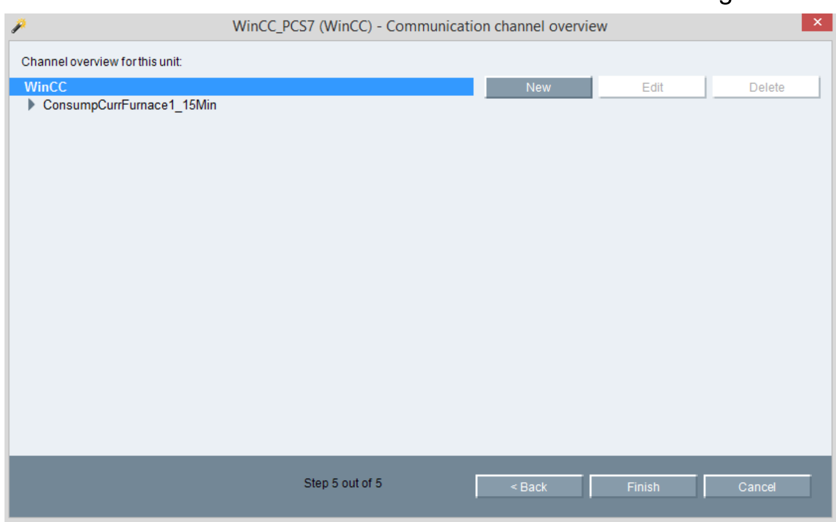
   The corresponding datapoint is created automatically.



6. Define the transfer interval:



Interim result: The connection is established to the WinCC log:

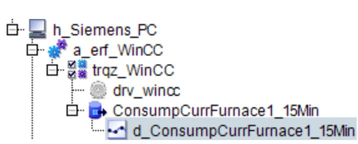


7. Define an additional connection to another WinCC log with "New".

   - or -

   Create the acquisition structure with "Finish".

The following figure shows the acquisition structure created with the acquisition wizard:



3.1.3.3 Configuring data acquisition via the "S7" interface

Overview

You use the "S7" interface to retrieve data from an S7 controller with the help of SIMATIC NET. You address the memory areas of the S7 controller absolutely.

Requirement

- The "Hardware" object has been created.
- The acquisition component is logged on to the B.Data server and switched on.
- SIMATIC NET is installed on the acquisition component and licensed.
- An understanding of addressing and communication with S7 controllers.

Starting the wizard

1. In the project tree of the Plant Explorer, select the "Hardware" object and select the "Wizard..." command from the shortcut menu.

   The "Acquisition Wizard" dialog opens.
2. Click the "S7" entry.

Define the channel name

1. Enter a meaningful channel name, for example, "Acq_S7_ColorMixing_Consumption".
2. Select the country whose time zone is used for the time stamp of the acquired values.
3. Specify the status of the data acquisition on the acquisition component:
   - ACTIVE: Data are acquired.
   - NOT ACTIVE: Data are not acquired.

Select the device configuration

1. Activate "Create user-defined configuration".

Configure the connection

1. Enter a meaningful channel name for the IO buffer under "Connection name", for example, "IO_S7-CleaningStation".
2. Enter the following data under "Acquisition":
   – Number of the CPU slot.
   – Connection Resource
3. Enter the connection data to the S7 controller under "Partner":
   – Used interface
   – Address of the S7 controller depends on the selected interface
   – Numbers of the rack and the slot
   – Connection Resource

Define the data points

1. Click "New definition" under "New address".
   The "Data Point" dialog opens.
2. Enter a meaningful name for the data point.
3. Under "Object" select the source from which you want to retrieve the values:
   – DB: Data block
   – I: Input
   – M: Bit memory
4. Enter the "Data type", "Address" and "Bit no." depending on the "Object".
   The "Number" is only relevant for "DB" and identifies the data block.
5. Activate the data point type under "New address".

Define the data transmission

1. Select the interval in which the acquisition component acquires the values.

Result

The acquisition structure for the "S7" interface is created below the "Hardware" object. Data acquisition starts once you have restarted the B.Data kernel on the acquisition component.

You can change the acquisition structure at any time with the wizard or add additional connections.

3.1.3.4 Configuring data acquisition via the "WinCC/PCS7" interface

Overview

You use the "WinCC / PCS 7" interface to retrieve values from a process value log or compressed log. You need a separate channel for each log.

Requirement

- The "Hardware" object has been created.
- The acquisition component is logged in to the B.Data server.
- A WinCC client or WinCC server is installed on the acquisition component.
- A WinCC project is activated.

Starting the wizard

1. In the project tree of the Plant Explorer, select the "Hardware" object and select the "Wizard..." command from the shortcut menu.

   The "Acquisition Wizard" dialog opens.
2. Click on the "WinCC / PCS 7" entry.

Define the channel name

1. Enter a meaningful channel name, for example, "Acq_WinCC_ProcessValues".
2. Select the country whose time zone is used for the time stamp of the acquired values.
3. Specify the status of the data acquisition on the acquisition component:
   – ACTIVE: Data are acquired.
   – NOT ACTIVE: Data are not acquired.

Browse WinCC

1. Select the log whose data you want to retrieve.

Define the datapoints

1. Activate the logging tags whose values you want to retrieve.

Define the data transmission

1. Select the interval in which the acquisition component acquires the values.
2. To change the start of the acquisition period, activate "Overwrite TSP settings".

   Archive data from the defined start of the acquisition period until the interface was started are transmitted in their entirety. Current values since starting the interface will be cyclically transmitted depending on the selected interval.

Result

The acquisition structure for the "WinCC / PCS 7" interface is created below the "Hardware" object. Data acquisition starts once you have restarted the B.Data kernel on the acquisition component.

You can change the acquisition structure at any time with the wizard or add additional connections.

3.1.3.5 Configuring data acquisition via the "Modbus" interface

Overview

You use the "Modbus" interface to retrieve data from measuring devices with Modbus support and Ethernet interface, for example, SENTRON PAC measuring devices. The "Modbus" interface supports the following modes:

- Modbus TCP
- Modbus RTU over TCP

All data points acquired by the SENTRON PAC 3200 / 4200 measuring devices are pre-configured in B.Data. You define the addresses of the parameters for all other measuring devices using the associated operating instructions.

Requirement

- The "Hardware" object has been created.
- The acquisition component is logged on to the B.Data server and switched on.
- TCP/IP connection data of the measuring device are available.
- Operating instructions of the measuring device are available[1].
- An understanding of the Modbus protocol[1].

[1]: Only required for manual configuration of a measuring device.

Starting the wizard

1. In the project tree of the Plant Explorer, select the "Hardware" object and select the "Wizard..." command from the shortcut menu.

   The "Acquisition Wizard" dialog opens.
2. Click the "Modbus" entry.

Define the channel name

1. Enter a meaningful channel name, for example, "Acq_Modbus".
2. Select the country whose time zone is used for the time stamp of the acquired values.
3. Specify the status of the data acquisition on the acquisition component:
   - ACTIVE: Data are acquired.
   - NOT ACTIVE: Data are not acquired.

Select the device configuration

1. If you acquire data from a SENTRON PAC 3200 / 4200, activate "Select device type from database".
2. If you want to acquire data from any measuring device, activate "Create user-defined configuration".

Configure the connection

1. Enter a meaningful channel name for the IO buffer under "Device name", for example, "IO_CleaningStation".
2. Select the Modbus mode.

   The default port is entered. You can adapt the port number for specific devices.
3. Enter the TCP/IP connection data of the measuring device.
4. If the measuring device is connected with the acquisition component, check if it is available with "Test connection", if necessary.

   The Modbus protocol is used to establish the connection.

Define the data points

1. If you acquire data from a SENTRON PAC 3200 / 4200:
   - Activate the required parameters.

     The data point names are made up of the "Device name" and the "Parameter".
2. If you are creating a user-defined configuration:
   - Click "New definition" under "New address".

     The "Data Point" dialog opens.
   - Enter a meaningful name for the data point.
   - Enter the parameter addresses using the operating instructions of the measuring device.

     Note

     The word sequence for 32-bit values and the byte sequence for 16-bit values are not clearly specified in the Modbus specification. Device manufacturers often use the "Big Endian" coding for 32-bit values. This coding is therefore the default in data point configuration.
   - Activate the data point type under "New address".

Define the data transmission

1. Select the interval in which the acquisition component acquires the values.

Result

The acquisition structure for the "Modbus" interface is created below the "Hardware" object. Data acquisition starts once you have restarted the B.Data kernel on the acquisition component.

You can change the acquisition structure at any time with the wizard or add additional connections.

3.1.3.6 Configuring data acquisition via the "OPC-DA / OPC-HDA" interface

Overview

You use the "OPC" interface to retrieve the data provided by an OPC server. The "OPC" interface supports the OPC specifications "OPC-DA" and "OPC-HDA" as well as the following data types:

- Integer
- Float
- Boolean

  The "OPC" interface converts the Boolean values "True" and "False" to "1" and "0".

Note

You can select the values for the datapoints directly under the following prerequisites:

- OPC server is installed on the acquisition component.
- OPC server supports reading of OPC items.

Note

OPC server is not installed on the acquisition component

If possible, use "OPC TCP Tunnelling" software to establish the connection to the OPC server. Accessing an external OPC server via DCOM is not supported for security reasons.

Requirement

- The "Hardware" object has been created.
- The acquisition component is logged in to the B.Data server and switched on.
- OPC server and / or OPC client are installed on the acquisition component.
- An understanding of addressing and communication with OPC.

Starting the wizard

1. In the project tree of the Plant Explorer, select the "Hardware" object and select the "Wizard..." command from the shortcut menu.

   The "Acquisition Wizard" dialog opens.
2. Click the "OPC-DA" or "OPC-HDA" entry.

Define the channel name

1. Enter a meaningful channel name, for example, "Acq_OPC-DA".
2. Select the country whose time zone is used for the time stamp of the acquired values.
3. Specify the status of the data acquisition on the acquisition component:
   – ACTIVE: Data are acquired.
   – NOT ACTIVE: Data are not acquired.

Select the device configuration

1. Activate "Create user-defined configuration".

Configure the connection

1. Enter a meaningful channel name for the IO buffer under "Group name", for example, "IO_OPC-DA".
2. Select the OPC server under "OPC-DA datapoints" or "OPC-HDA datapoints.
3. If you have selected "OPC-HDA", select the "OPC-HDA aggregate type", if necessary.

   The acquired values are compressed accordingly, for example, the mean of the reading interval is formed.

Define the datapoints

1. If the OPC server supports browsing:
   – Activate the required datapoints.

     The datapoint names are made up of the "Group name" and the "Datapoint".
2. If you are creating a user-defined configuration:
   – Click "New definition" under "New address".

     The "Datapoint" dialog opens.
   – Enter a meaningful name for the datapoint.
   – Enter the identification of the OPC datapoint under "Datapoint ID".
   – Activate the datapoint type under "New address".

Define the data transmission

1. Select the interval in which the acquisition component acquires the values.
2. Only for OPC-HDA: To change the start of the acquisition period, activate "Overwrite TSP settings".

   Archive data from the defined start of the acquisition period until the interface was started are transmitted in their entirety. Current values since starting the interface will be cyclically transmitted depending on the selected interval.

Result

The acquisition structure for the "OPC" interface is created below the "Hardware" object. Data acquisition starts once you have restarted the B.Data kernel on the acquisition component.

You can change the acquisition structure at any time with the wizard or add additional connections.

3.1.3.7 Data acquisition via the OPC UA interface

Overview

"OPC Unified Architecture" is a specification for the transmission of process values and archive data. Using the OPC UA interface, you read data from a server that supports the "OPC UA" interface.

Security policy

The OPC UA server uses the TCP/IP protocol for data exchange. For authorization, certificates are exchanged between server and client. In addition, you can encrypt the data traffic.

Note

When configuring the OPC UA server, activate at least one "Security policy" and its associated "Security mode". Otherwise the OPC UA server and the clients will communicate insecurely.

Requirement

- The "Hardware" object has been created.
- The acquisition component is logged in to the B.Data server and switched on.
- An OPC UA server is installed on the acquisition component.
- The Discovery server for OPC UA is enabled as a windows service, and the URL is known.
- Good knowledge of addressing and communication with OPC UA, and of authorization using security certificates.
- The certificate exchange is provided for at the time that the interface is configured.

Starting the wizard

1. In the project tree of the Plant Explorer, select the "Hardware" object and select the "Wizard..." command from the shortcut menu.

   The "Acquisition Wizard" dialog opens.
2. Click on the "OLE UA" entry.

Define the channel name

1. Enter a meaningful channel name, for example, "Acq_OPC-UA".
2. Select the country whose time zone is used for the time stamp of the acquired values.
3. Specify the status of the data acquisition on the acquisition component:
   – ACTIVE: Data are acquired.
   – NOT ACTIVE: Data are not acquired.

Configure the connection

1. Enter a meaningful group name for the IO buffer, for example, "IO_OPC-UA".
2. Under the "Search address", enter the URL of the OPC UA Discovery Server.
3. Click "Discover".

   All available OPC UA servers will be listed under "Import datapoints".
4. Select the desired OPC UA server and click on "Connect".

   If the OPC UA server demands authorization, the "Server configuration" dialog will be opened.
   – Depending on the OPC UA server, either enter "User name / Password" or the "Token".
5. If you have selected "OPC UA HDA access", select the aggregation type if necessary.

   The acquired values are compressed accordingly, for example, the arithmetic mean of the reading interval is formed.

Define the datapoints

The "Browse access points" dialog indicates the datapoints that are available on the OPC UA server.

- Activate the required datapoints.

  The datapoint names are made up of the "Group name" and the "Datapoint".

Define the data transmission

1. Select the interval in which the acquisition component acquires the values.
2. If you have enabled "OPC UA HDA", you can change the start of the acquisition period. For this, select "Overwrite TSP settings".

   Archive data from the defined start of the acquisition period until the interface was started are transmitted in their entirety. Current values since starting the interface will be cyclically transmitted depending on the selected interval.

Result

The acquisition structure for the "OPC UA" interface is created below the "Hardware" object. Data acquisition starts once you have restarted the B.Data kernel on the acquisition component.

You can change the acquisition structure at any time with the wizard or add additional connections.

3.1.3.8 Configuring data acquisition via the "OLE-DB" interface

Overview

The "OLE DB" interface allows access to Excel tables as well as complex databases such as SQL Server or Oracle. You have to install the OLE-DB providers required for access separately, if it has not been installed with the Windows operating system.

Requirement

- The "Hardware" object has been created.
- The acquisition component is logged in to the B.Data server and switched on.
- The OLE-DB data source can be accessed from the acquisition component.
- An understanding of OLE-DB.

Starting the wizard

1. In the project tree of the Plant Explorer, select the "Hardware" object and select the "Wizard..." command from the shortcut menu.

   The "Acquisition Wizard" dialog opens.
2. Click on the "OLE-DB" entry.

Define the channel name

1. Enter a meaningful channel name, for example, "Acq_OLE-DB".
2. Select the country whose time zone is used for the time stamp of the acquired values.
3. Specify the status of the data acquisition on the acquisition component:
   - ACTIVE: Data are acquired.
   - NOT ACTIVE: Data are not acquired.

Select the device configuration

1. Activate "Create user-defined configuration".

Configure the connection

1. Select the "OLE-DB Provider".
2. Enter the "Connection String".

   Additional information on the Connection String is available on the Internet under "http://msdn.microsoft.com/de-de/library/ms254500(v=vs.110).aspx".
3. Click on "Test connection".

Server connection

1. Enter a meaningful channel name for the IO buffer under "Interface name", for example, "IO_OLEDB".
2. Select the table.
3. Then select the columns which contain the data acquisition information:
   – Address of the datapoint that is to be acquired.
   – Acquired measured value
   – Time stamp of the measurement acquisition
   – Measurement acquisition state (optional)
4. If necessary, enter those values under "Status mapping" which are to be recognized as valid in connection with the status selection.

   If you enter the value "0" under "Status mapping", for example, the values with status "0" are recognized as valid. Separate multiple entries with commas.

Define the datapoints

1. Click "New definition" under "New address".

   The "Datapoint" dialog opens.
2. Enter a meaningful name for the datapoint.
3. Enter the name of the datapoint from the table under "Datapoint ID".
4. Activate the datapoint type under "New address".

Define the data transmission

1. Select the interval in which the acquisition component acquires the values.
2. To change the start of the acquisition period, activate "Overwrite TSP settings".

   Archive data from the defined start of the acquisition period until the interface was started are transmitted in their entirety. Current values since starting the interface will be cyclically transmitted depending on the selected interval.

Result

The acquisition structure for the "OLE-DB" interface is created below the "Hardware" object. Data acquisition starts once you have restarted the B.Data kernel on the acquisition component.

You can change the acquisition structure at any time with the wizard or add additional connections.

3.1.3.9 Configuring data acquisition via the "FTP" interface

Overview

You use the "FTP" interface to retrieve data from ASCII files. The "FTP_Import_Task" task is configured in the Windows Task Scheduler to transfer ASCII files from the FTP directory to the B.Data acquisition component . This task is started automatically with the B.Data function, "HotFolder".

After successful data transfer, the files are moved from the FTP directory to a directory under "..\BDATA\mcl\...". This means the user who runs the "Hotfolder Manager" service must have write access to the FTP directory.

Requirement

- The "Hardware" object has been created.
- The acquisition component is logged in to the B.Data server.
- The FTP server is available.
- Connection data for the FTP server are available.

Starting the wizard

1. In the project tree of the Plant Explorer, select the "Hardware" object and select the "Wizard..." command from the shortcut menu.

   The "Acquisition Wizard" dialog opens.
2. Click the "FTP, sFTP" entry.

Define the channel name

1. Enter a meaningful channel name, for example, "Acq_FTP".
2. Select the country whose time zone is used for the time stamp of the acquired values.
3. Specify the status of the data acquisition on the acquisition component:
   – ACTIVE: Data are acquired.
   – NOT ACTIVE: Data are not acquired.
4. If the FTP server supports "sFTP", activate "Secure connection".

Select the device configuration

1. Activate "Create user-defined configuration".

Configure the connection

1. Enter a meaningful channel name for the IO buffer under "Group name", for example, "FTP_S7-CleaningStation".
2. Enter the connection data for the FTP server, for example "ftp:\\[Hostname[:Port]]\[FTP directory]".

   The port number does not have to be specified. If you do not specify a port number, "21" is used by default.

   The "FTP directory" is the directory in which the ASCII data are stored.
3. For secure connections, you must enter the user name and password.
4. Select the format in which the data exist in the ASCII files.

Define the datapoints

1. Click "New definition" under "New address".

   The "Datapoint" dialog opens.
2. Enter a meaningful name for the datapoint.
3. Enter the name under "Datapoint ID" which uniquely identifies the datapoint in the ASCII file.
4. Activate the datapoint type under "New address".

Define the data transmission

1. Select the interval in which the acquisition component acquires the values.

Result

The acquisition structure for the "FTP" interface is created below the "Hardware" object. Data acquisition starts once you have restarted the B.Data kernel on the acquisition component.

You can change the acquisition structure at any time with the wizard or add additional connections.

3.1.3.10 Configuring data acquisition via the "Simulation" interface

Overview

You use the "Simulation" interface to simulate data acquisition.

Requirement

- The "Hardware" object has been created.
- The acquisition component is logged on to the B.Data server and switched on.

Starting the wizard

1. In the project tree of the Plant Explorer, select the "Hardware" object and select the "Wizard..." command from the shortcut menu.

   The "Acquisition Wizard" dialog opens.
2. Click the "Simulation" entry.

Define the channel name

1. Enter a meaningful channel name, for example, "Acq_Simulation".
2. Select the country whose time zone is used for the time stamp of the acquired values.
3. Specify the status of the data acquisition on the acquisition component:
   – ACTIVE: Data are acquired.
   – NOT ACTIVE: Data are not acquired.

Select the device configuration

1. Activate "Create user-defined configuration".

Configure the connection

1. Enter a meaningful channel name for the IO buffer under "Group name", for example, "IO_Simulation".

Define the data transmission

1. Select the interval in which the acquisition component acquires the values.

Result

The acquisition structure for the "Simulation" interface is created below the "Hardware" object.

You can edit the acquisition structure at any time with the wizard.

3.1.4 Advanced configuration

Overview

The interface configuration of objects of the "Hardware", "Driver Source" or "IO Buffer" type is saved to an INI file. If you are an administrator and want to adjust the interface configuration of an object, use the integrated editor in B.Data. The editor lists all interfaces that are available for the object, including the corresponding values.

You can open the INI file in the following cases:

- You can **always** open the INI file of the "Hardware" type object.
- You can open the INI file of the "Driver Source" type object if one of the following two interfaces is configured: "WinCC" or "OPC".
- You can open the INI file of the "IO Buffer" type object if this object contains data.

Note

Changes to the INI file may lead to unpredictable system behavior. Edit the INI file **only** in exceptional situations. Always contact Customer Support beforehand.

Requirement

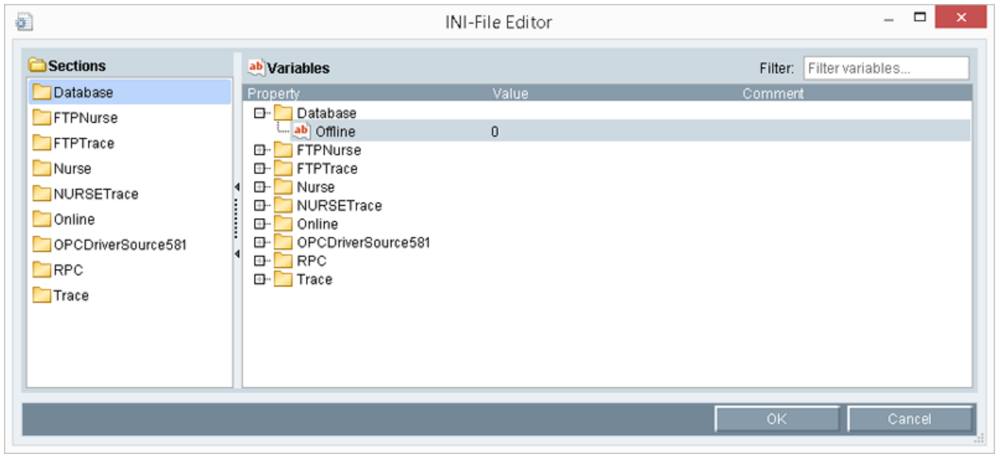
The object from one of the following types is created:

- "Hardware"
- "Driver Source"
- "IO Buffer"

Procedure

1. Select the "Open INI file" command from the shortcut menu of the "Hardware", "Driver Source" or "IO Buffer" type object.

   The editor for editing the INI file opens.



2. Select the relevant section.
3. Double-click the value you want to change in the "Tags" section.
4. Edit the value and close the editor.

Result

You have modified the interface configuration. Restart the Kernel service to activate your changes to the interface configuration.

See also

Creating hardware (Page 39)

3.1.5 Starting the kernel service

Overview

The kernel service acquires measured values cyclically and transmits them to the application server. The kernel service is automatically installed with the B.Data acquisition component.

Note

If you do not configure the kernel service properly, it prevents the automatic transfer of measured values to the application server.

You need to restart the kernel service whenever you modify the interface configuration of the acquisition component.

Requirement

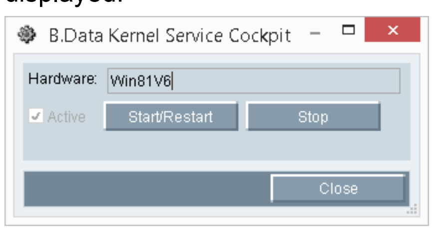
- The "Hardware" object has been created.
- Interfaces are configured.

Procedure

1. Double-click the "Hardware" object in the project tree of the Plant Explorer.

   The "Hardware" dialog opens.
2. Click "Kernel".

   The "B.Data Kernel Service Cockpit" dialog opens. The status of the kernel service is displayed:

	Active
	Stopped
	Undefined status
3. Click "Start/Restart".

Result

Data acquisition is started or continued via the interfaces configured on the acquisition component.

Alternative procedure

You can also restart the kernel service for an acquisition component from the Service Cockpit.

3.2 Create printer and directory

3.2.1 Fundamentals of creating printer and directory

In B.Data you can automatically print reports, send them by e-mail or save them to a directory.

To automatically print reports, send them by e-mail or save them to a directory, follow these steps:

1. Create a printer or a directory in the selected hardware.
2. Create a user with an e-mail address.
3. Copy the printer, the directory and/or the user in the query type of the required report.
4. Activate the "Print automatically" and/or "Mail/save automatically" options in the query type of the selected report.
5. Run the Windows service "B.Data Report Server".

   Restart the Windows service "B.Data Report Server" after having made changes.

See also

Creating a printer (Page 82)

Creating a folder (Page 84)

Configuring the query type for a report (Page 195)

Setting up users (Page 88)

3.2.2 Creating a printer

Overview

Create a printer in B.Data to enable automatic printing of report results.

Requirement

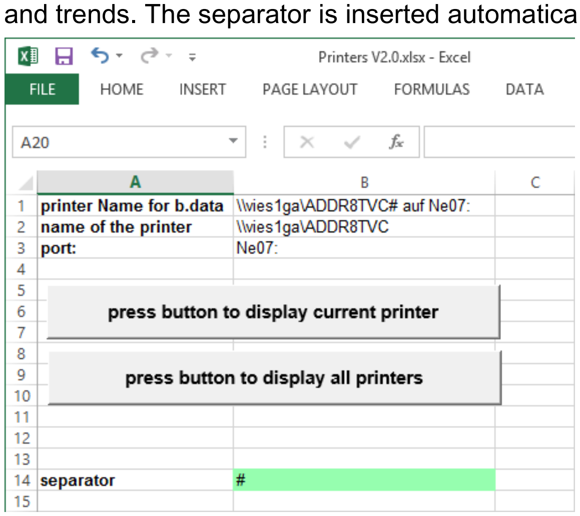
- The printer is connected to the application server.
- The hardware is configured in B.Data .
- The "Print automatically" option is activated in the query type of the report.
- The Windows service "B.Data Report Server" is started.

Procedure

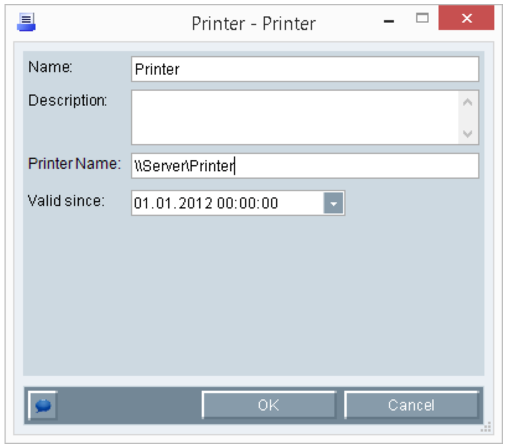
1. Select the hardware folder in which you want to create the printer.
2. Click the "Insert Printer" button in the menu bar under "Master Data > Output".

   The "Printer" dialog opens.
3. Enter a unique name and an optional description for the printer.
4. Enter the printer name in the "Printer name" field, including the port.
5. To determine the printer port, open the Excel file "Printers V2.0.xls" under "Options\Features\Tools" on the SIMATIC B.Data product DVD.

   Separate the printer name with the "#" separator to enable automatic printing of reports and trends. The separator is inserted automatically.



6. Enter the date and time as of which the printer will be valid.



7. Confirm the configuration with "OK".

Result

You have successfully created the printer. To use it for printing reports, copy and paste the printer under the query type of the report.

See also

Creating hardware (Page 39)

Fundamentals of creating printer and directory (Page 81)

Configuring the query type for a report (Page 195)

Object naming conventions (Page 33)

3.2.3 Creating a folder

Overview

To enable the automatic saving of report results to a folder on the PC, create this folder in B.Data .

Requirement

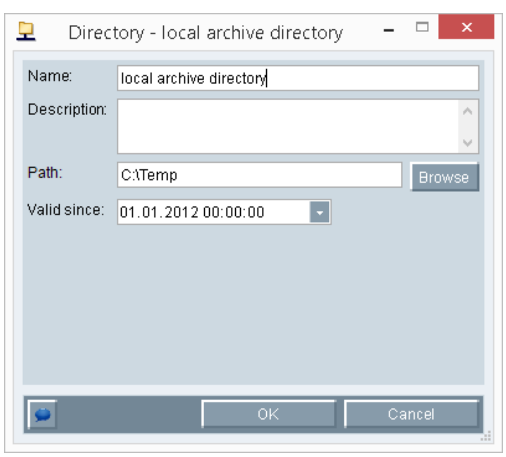
- The folder is available on the PC.
- The "Hardware" object has been created in B.Data .
- The "Mail/save automatically" option is activated in the query type of the report.
- The Windows service "B.Data Report Server" is started.

Procedure

1. Select the hardware folder in which you want to create the directory.
2. Click the "Insert Directory" button in the menu bar under "Master Data > Output".

   The "Directory" dialog opens.
3. Enter a unique name and an optional description for the directory.
4. Enter the selected directory in the "Path" field.

   Use the UNL notation to specify the directory to prevent the network drives from being mapped on the application server.
5. Enter the date and time as of which the directory will be valid.



6. Confirm the configuration with "OK".

Result

You have successfully created the directory. To save the report results in this directory, copy and paste the directory to the query type of the report.

See also

Fundamentals of creating printer and directory (Page 81)
Creating hardware (Page 39)
Configuring the query type for a report (Page 195)
Object naming conventions (Page 33)

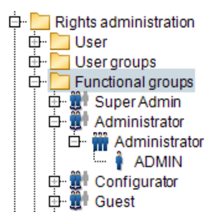
3.3 Configuring authorizations

3.3.1 Basic information on authorizations

Overview

The B.Data authorization concept is basically split into two parts. First you can restrict the viewing of objects based on the authority level and domain membership settings. Second you can restrict functions such as the calculation of reports.

Each user is assigned to one or several user groups, which are assigned to one or several user groups. The functional groups determine the user's functional permissions, e.g. for starting reports or editing measured values. The most important functional groups are stored in the system. The definition of functional rights is split into two sections. Firstly, the authorizations for functional groups are stored in tables. Secondly, folders that reflect authorizations have been assigned and are used in Plant Explorer. The following example demonstrates this setup for the functional group of administrators.



The user receives an authority level by means of the functional group. All objects in B.Data are assigned an authority level.

Example: An object is assigned authority level 750. The user is assigned authority level 500, based on functional rights. As the user's authority level is lower than that of the object, the object and its nested objects are hidden to this user.

Each user group may be assigned to one or several domains. A domain in this context represents an organization unit. Likewise, all objects are assigned to one or several domains. If the user group corresponds to the object domain, the object is visible to the user.

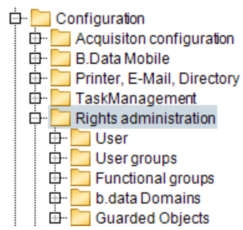
Exchange folders are provided that can be used to exchange objects such as reports or datapoints between the domains.

This section provides instructions related to the following actions:

- Selecting folders
- Creating users
- Creating a user group
- Creating a functional group
- Assigning authorizations
- Changing passwords
- Configuring authority levels
- Views of different domains

- Configuring domains
- Authorization in B.Data Web

You configure the authorization concept in the project tree. The corresponding objects are available in the project tree structure under "Configuration > Users, Groups, User rights administration":



See also

Setting up users (Page 88)

Configuring authorizations (Page 93)

Navigation in B.Data Web (Page 418)

Managing users (Page 90)

3.3.2 Setting up users

Introduction

A user is required in B.Data, in order for a user to be able to login to B.Data, B.Data Web or B.Data Mobile. Even if a user only receives emails from B.Data, he/she requires user access.

B.Data supports automatic logout of users after a period of inactivity. The duration of inactivity is configurable via the functional group.

If a user has entered the wrong password several times during login to B.Data, this user is locked out by the system. Only an administrator can remove this lock.

Requirement

- Authorization to create users exists.
- Access to an email server is set up in B.Data.

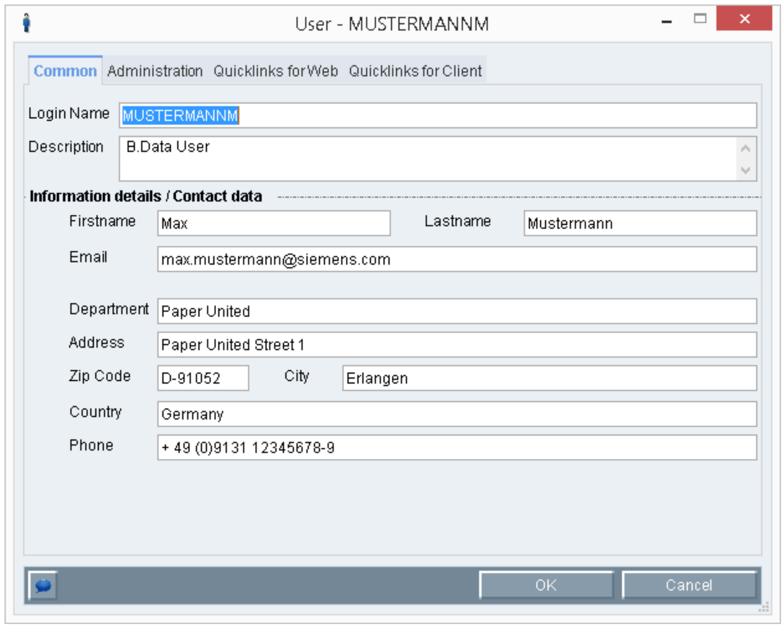
Setting up users

1. Select the folder in which you want you create the user.
2. Click the "Insert user" button in the Plant Explorer menu bar under "Master data > Authorization".

   The "Users" dialog opens. The "General" tab is displayed.
3. Enter the selected B.Data user name for the user, for example, the last name of the user and the first letter of the first name. Alternatively you can specify an account ID as the user name.
4. Enter the email address of the user.

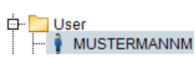
   Notifications about password changes and temporary passwords will be sent to this email address. This email address can also be used to login to B.Data.

5. You can also enter a user description.
6. As needed, enter additional contact information for the user.



Result

The B.Data user is created in the project tree of the Plant Explorer.



See also

Basic information on authorizations (Page 86)

Configuring the query type for a report (Page 195)

Fundamentals of creating printer and directory (Page 81)

Object naming conventions (Page 33)

Configuring Quicklinks (Page 36)

Configuring authorizations (Page 93)

Managing users (Page 90)

B.Data options (Page 373)

3.3.3 Managing users

Introduction

Changes to user data take effect the next time the user logs in.

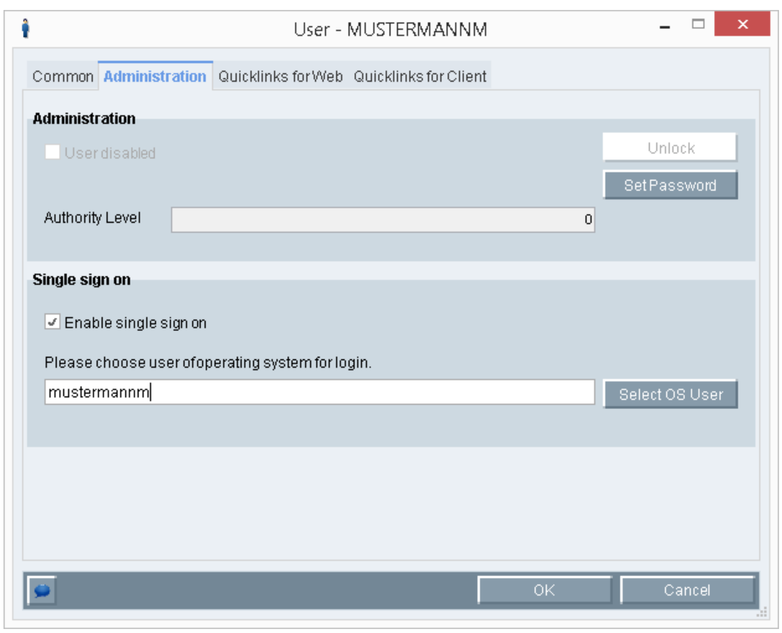
Requirement

- User is created
- A Windows user account exists for the user (only Single Sign On)

Procedure

1. Double-click the user's entry in the project tree in Plant Explorer.

   The "Users" dialog opens.
2. Select the "Administration" tab.

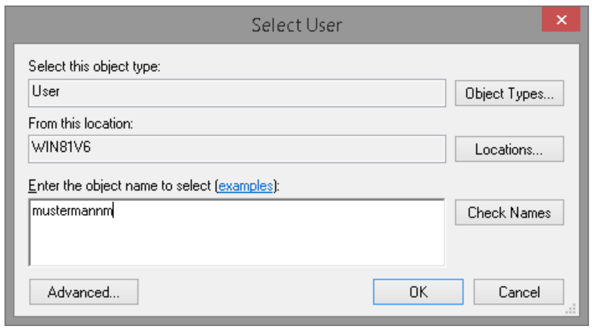


Enabling Single Sign On

When a user starts the B.Data- Plant Explorer, the system checks whether his/her Windows user name is entered in B.Data . If B.Data can identify the name, the user does not have to reenter his/her access data.

1. Activate the option "Enable Single Sign On".
2. Click "Select System User".

   The "Select User" dialog opens.



   Alternatively, you can enter the Windows user name directly in the "Select System User" field.
3. Select the user's Windows user name and click "OK".
4. The Windows user name of the user is applied in the "Select System User" field.

Locking and unlocking a user

A locked user can no longer login to B.Data :

- B.Data Client
- B.Data Acquisition configuration
- B.Data Web
- B.Data Mobile

A locked user continues to receive email notifications that are configured for him/her, for example, emails with B.Data reports.

1. To deactivate the user, activate the "User disabled" option.
2. You can unlock user access again by clicking "Unlock".

User access has now been deactivated or reactivated.

Set password

For the initial login, by default the system uses the user name in uppercase letters as the password, for example, if the user name is "SmithJ", the password is "SMITHJ".

1. Select the "Administration" tab in the "User" dialog.
2. Click "Set password".

   The "Change Password" dialog opens.
3. Enter the selected password and confirm the password.

Creating Quicklinks for Web and Client

You can create Quicklinks for the user, for B.Data Web and B.Data Client . To do so, select the corresponding tab and create the required Quicklinks. You can find additional information on this topic in the "Configuring Quicklinks" section.

See also

Basic information on authorizations (Page 86)

Setting up users (Page 88)

3.3.4 Configuring authorizations

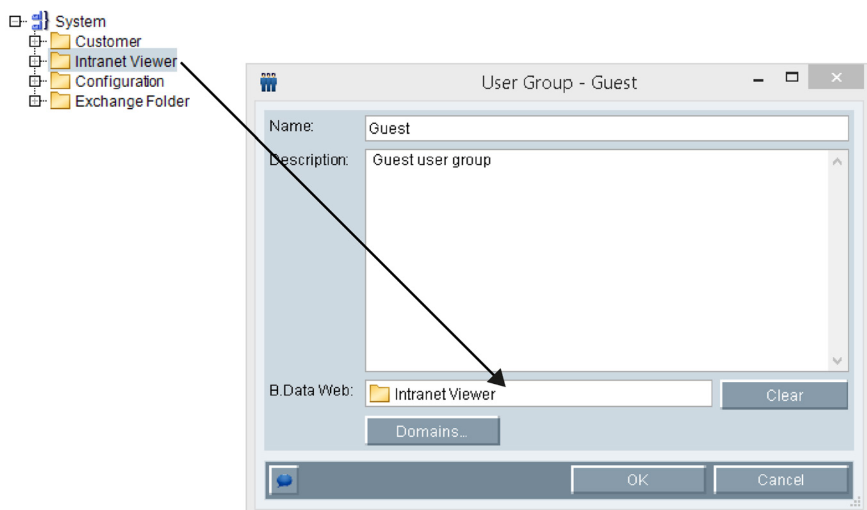
Creating user groups

1. To create a user group, click the "Insert user group" button in the Plant Explorer menu bar under "Master data > Authorization".

   The "User Group" dialog opens.

2. Enter a user "name" and an optional "description".

3. To define the entry point for B.Data Web, drag-and-drop the target folder from the plant structure to the "B.Data Web" field.

   This object and all of its nested objects are visible to these user groups on the Intranet.

   Note

   Before you can assign domains, you first have to create the user group.

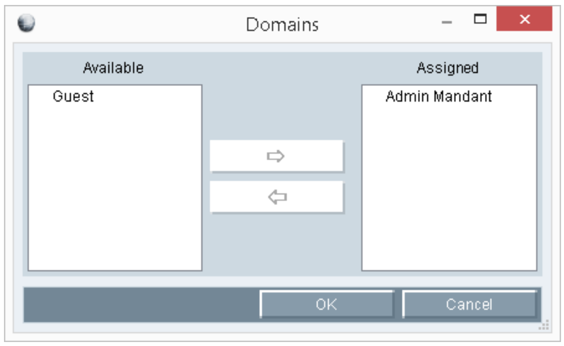
   ---

4. Save the configuration with "OK".

Assigning domains to the user group

1. To assign domains to the user group, double-click the corresponding user group in the plant tree.
2. Click "Domains" in the user group configuration dialog.

   The available domains are displayed under "Available" in the domain selection dialog.

3. Using the arrow key, assign the selected domain to the user group.

Note

The view may be restricted for the administrator as well. Only the B.Data Admin User "bdata_sys" is always assigned all domains. Another administrator who is assigned only two of four domains may pass only these two domains to user groups.

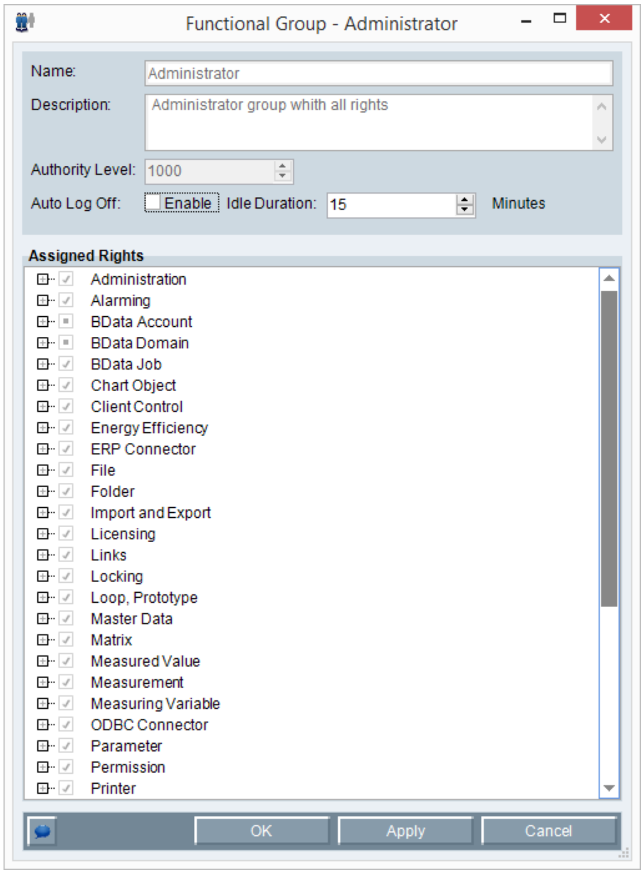
---

4. Save the configuration with "OK".

Creating functional groups

1. To create a functional group, select the "Functional Groups" folder and click the "Insert functional group" button in the Plant Explorer menu bar under "Master data" > Authorization".

   The "Functional Group" dialog opens.

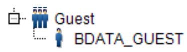
2. Enter a user "name" and an optional "description".
3. Select the "Authority level".

   If the user group is assigned several functional groups, the respective highest value is transferred to the user.
4. As needed, activate "Auto logout" and enter the number of minutes until the automatic logout.

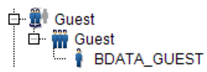
   30 seconds before the automatic logout, a dialog is opened, in which the seconds until the automatic logout are counted down.
5. Save the configuration with "OK".

Assigning user authorizations

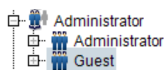
1. To actually assign authorizations to the user:
2. Assign the user to a user group in the plant tree.



3. Assign the user group to one of several functional groups in the plant tree.



4. The functional user group created above is not granted access rights for tables. You should therefore assign the user group to an existing functional group that has been assigned corresponding authorizations.



Specifying the authority level of objects

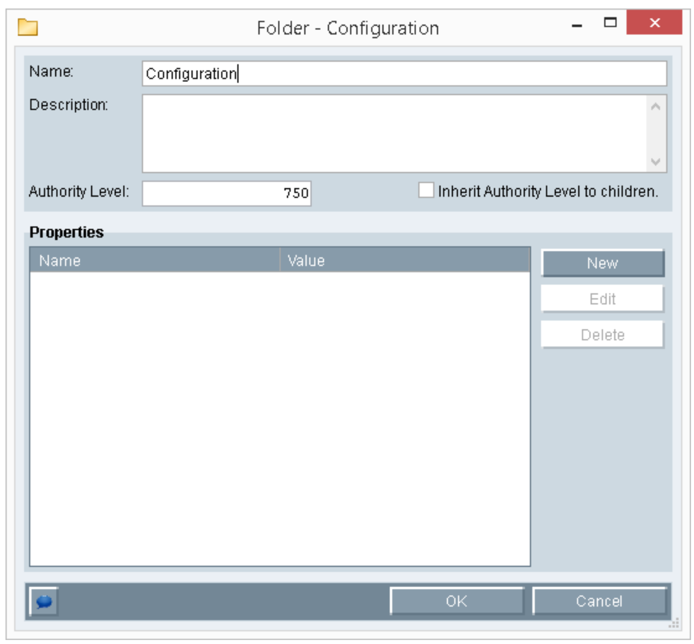
1. To specify the authority level of an object, select the "Properties" command from the shortcut menu of the object in the properties dialog.
2. Specify the "Authority level".

Note

Always assign authority level values that are greater than or equal to your authority level.

Select the "Inherit Authority Level to children" check box to enable the transfer of the authority level to all child objects.

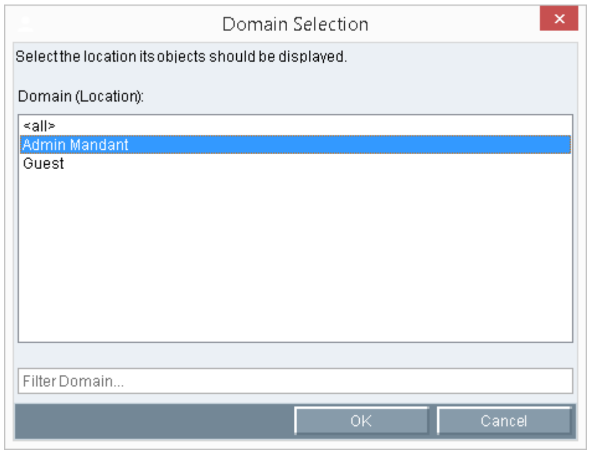
Usually, an inheritance is not required: If the parent object is not visible, the nested objects are also not visible. However, this inheritance is necessary if you make the child objects available to other domains by means of the exchange folder.



Specifying the view of different domains

1. To specify the view of different domains, click the icon in the menu bar.
2. Select the required domain and click "OK".

   Use the filter function to speed up the search for the required domain.

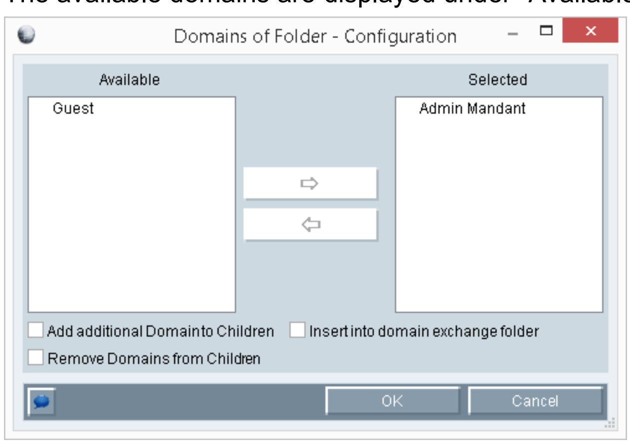
   

   Select "<all>" to make all objects in the domains that are assigned to the user visible. If the user selects only one domain from this list, only the objects that are assigned to this domain will be visible.

Configuring the domain membership of objects

1. Select the object and then select the "Domains" command from the shortcut menu.

   The available domains are displayed under "Available" in the domain selection dialog.

2. Using the arrow key, assign the selected domain to the object.
3. If the authority level that has been assigned prevents the object from being visible to all users, activate the "Insert into a domain exchange folder" function.

   In this case, a link to the object concerned is created in the exchange folder.
4. Select the "Assign domains to children" check box if you want to assign the nested objects of an object to the new domain.

5. Select the "Remove domains from children" check box if you want to remove the nested objects of an object from the domain.
6. Save the configuration with "OK".

Authorizations in B.Data Web

Specify the entry point for B.Data Web in the user group configuration dialog. Provided the corresponding authority level and domain membership have been set, the object and all of its nested objects will be visible in B.Data Web. Same as on the fully-fledged client, B.Data Web checks if the necessary authorizations exist for the actions to be executed.

See also

Basic information on authorizations (Page 86)

Setting up users (Page 88)

3.4 Configuring units

Overview

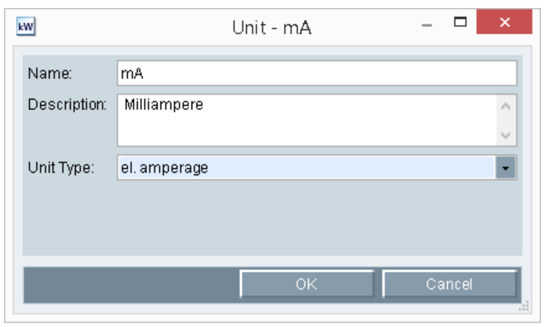
A unit may be assigned to any physical variable such as power or work, as well as to non-physical variables such as costs. You may define and generate new units if the ones that are available are inappropriate.

All available units are located in the "Constant and definitions > Unit" section of the configuration folder.

Inserting the unit

1. Select the folder in which the unit is going to be created.
2. Click the "Insert Unit" button in the menu bar under "Master Data > Configuration".

   The "Unit" dialog opens.

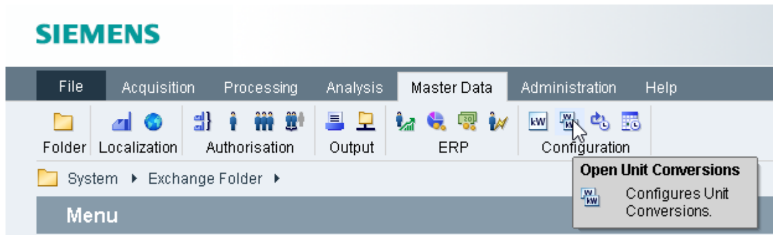
   

3. Enter the unit name in the "Name" field.
4. You may also enter a "description".
5. Then select the suitable "Unit type" for the unit.

   The unit type is used to group similar units.
6. Click "OK" to save the configuration.

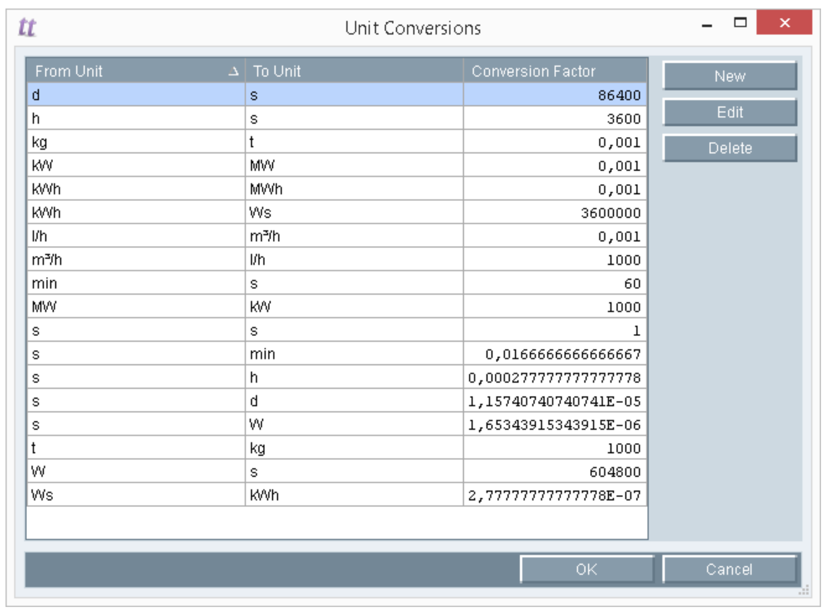
Opening the unit conversion

1. Click the "Open Unit Conversion" button in the menu bar under "Master Data > Configuration" to open the unit conversion.



2. Edit the factors for conversion between the source and target units or generate new conversion factors.

   These conversion factors are used only in a few MEVA functions for unit conversion for output, as well as in the matrix for input to storage unit conversion.



From Unit	To Unit	Conversion Factor
d	s	86400
h	s	3600
kg	t	0,001
kW	MW	0,001
kWh	MWh	0,001
kWh	Ws	3600000
l/h	m³/h	0,001
m³/h	l/h	1000
min	s	60
MW	kW	1000
s	s	1
s	min	0,0166666666666667
s	h	0,000277777777777778
s	d	1,15740740740741E-05
s	W	1,65343915343915E-06
t	kg	1000
W	s	604800
Ws	kWh	2,77777777777778E-07

3.5 Configuring cycle times

Overview

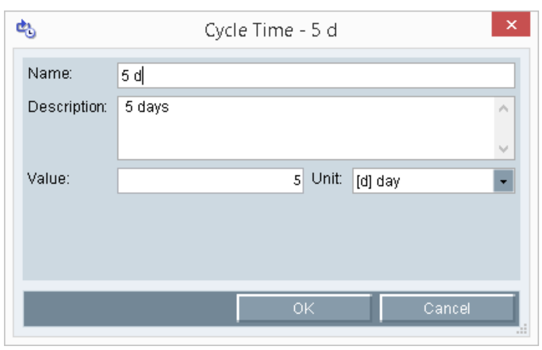
You define data acquisition intervals in B.Data by setting the cycle time, for example, 1 day. Data is acquired at daily intervals in this case. The value is generated at 00:00:00 h.

B.Data provides predefined cycle times, e.g. "1 hour", or "1 second". You may set up a custom cycle time if the list of predefined cycle times does not contain a suitable entry.

Procedure

1. Select the folder in which you want to set up the cycle time.
2. Click the "Insert Cycle Time" button in the menu bar under "Master Data > Configuration".

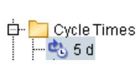
   The "Cycle time" dialog opens.
3. Type in a name for the cycle time.
4. You may also enter a description for the cycle time.
5. Enter a value in "Value" and select the unit, e.g. "5" and "[d] days".

6. Click "OK".

Result

The cycle time is configured and set up in Plant Explorer.



You can edit, clone, or delete the configured cycle time.

3.6 Configuring query types

Overview

Use a query type in B.Data to specify a time range, which is queried for example in a report.

B.Data provides predefined query types, e.g. "week", or "year". You may set up a custom query type if the list of predefined query types does not contain a suitable entry.

Specify the following values when setting a query type:

- Duration

  Use the "Duration" setting to specify the time period that is to be queried, for example 1 month.

  A period of one month is queried in the report, e.g. from 01.02.2013 to 28.02.2013.

- Offset

  Use the "Offset" setting to specify the offset for the time range that you specified in "Duration", for example 1 day.

  A period of one month with an offset of one day is queried in the report, e.g. from 02.02.2013 to 01.03.2013.

- Shift selection

  Use "Shift selection" to specify that the duration of a shift will be used as the query time range. In addition you need an object of type "shift" or "typical day", which you copy under the query type.

  This configuration is an alternative to using "Duration", "Offset", and "One-time offset" Using the subordinate "shift" or "typical day" object, you can more flexibly design the query type.

Requirement

An object of type "shift" or "typical day" type has been created (optional).

Procedure

1. Select the folder in which you want to create the query type.
2. Click the "Insert Query Type" button in the menu bar under "Master Data > Configuration".

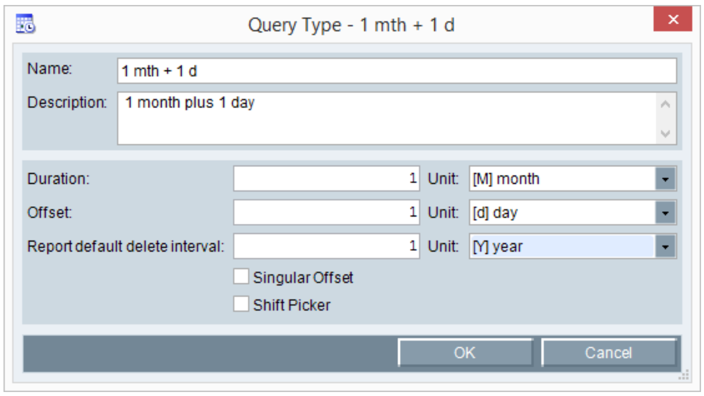
   The "Query type" dialog opens.
3. Type in a name for the query type.
4. You may also enter a description for the query type.
5. Specify the interval for automatic deletion of report results from the project tree of Plant Explorer in the "Report default delete interval" section.

   This data is activated when you select the configured query type in the "Delete interval" area in the course of report configuration. You can overwrite this activated data.

6. If you would like to define a query type based on a duration:
   – Enter a value in "Duration" and select the unit, e.g. "1" and "[M] Months".
   – Enter a value in "Offset" and select the unit, e.g. "1" and "[d] days".

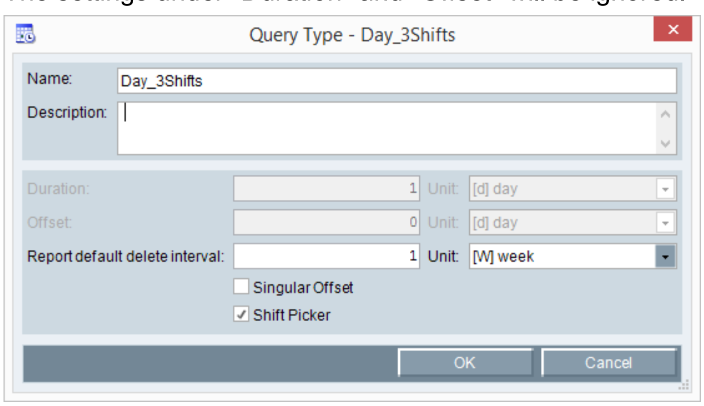
     The offset is added to the "Duration" during periodic forwarding.
   – As needed, select "One-time offset".

     The value under "Offset" will be added one time, during the first periodic forwarding. During the next forwarding, only the value under "Duration" will be used.

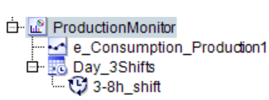


7. If you would like to define a query type based on a shift:
   – Select "Shift selection".

     The settings under "Duration" and "Offset" will be ignored.



   – Copy the "shift" or "typical day" object in the project tree under the query type.



     The sequence of the "shift" or "typical day" objects under query type has no effect. In the query, the shifts or typical days will be sorted according to the times that are actually configured.

Result

The query type is configured and set up in Plant Explorer. The query type is available in each object, in which time periods are queried, for example in dashboards or reports.

3.7 Creating objects for Enterprise Resource Planning

3.7.1 Basics on objects for Enterprise Resource Planning

Additional information is needed when booking services in ERP. In B.Data , this information is mapped in the form of the following objects:

1. ERP domain
2. Service type
3. Cost center
4. Cost center relation

3.7.2 Creating ERP domains

Overview

ERP domains are necessary for accounting by means of cost center relations and serve as criterion for selection of the respective cost centers.

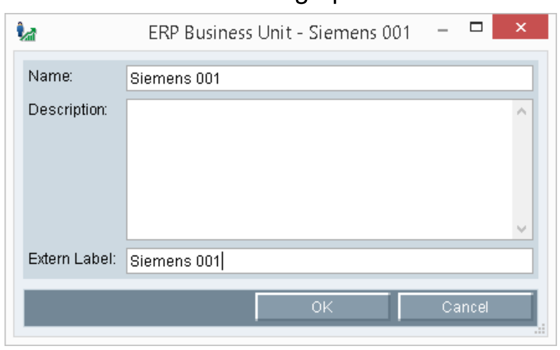
Requirement

The ERP objects have been properly installed.

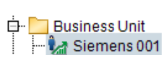
Procedure

1. Select the folder in which the ERP domain is going to be created.
2. Click the "Insert ERP Business Unit" button in the menu bar under "Master Data > ERP".

   The "ERP Domain" dialog opens.



3. Enter a meaningful "Name" and an optional "Description" as well as the "external label". Click "OK" to confirm your entries and to generate the ERP domain.



Result

You have successfully created the ERP domain and it is now ready for use by the cost centers.

3.7.3 Creating service types

Overview

Service types are required for settlement details in the cost center relations.

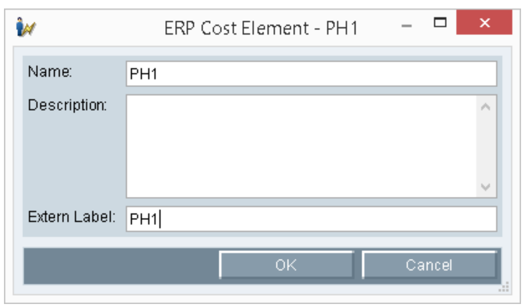
Requirement

The ERP objects have been properly installed.

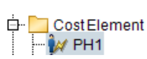
Procedure

1. Select the folder in which the service type is going to be created.
2. Click the "Insert ERP Cost Element" button in the menu bar under "Master Data > ERP".

   The "ERP Service Type" dialog opens.

3. Enter a meaningful "Name" and an optional "Description" as well as the "external label". Click "OK" to confirm your entries and to generate the service type.

Result

You have successfully created the service type and it is now ready for use in the settlement details for cost center relations.

3.7.4 Creating cost centers

Overview

Cost centers are necessary for accounting by means of cost center relations and are assigned to exactly one domain.

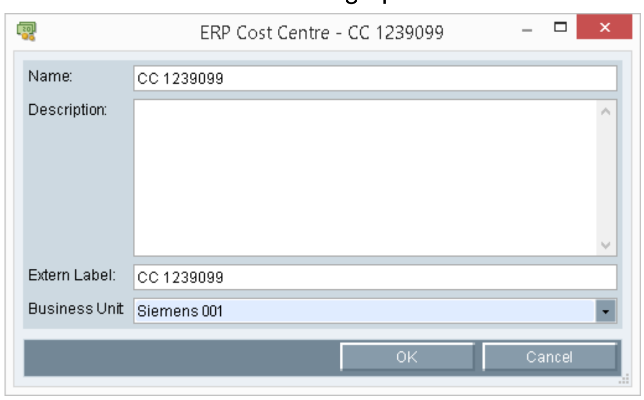
Requirement

The ERP objects have been properly installed.

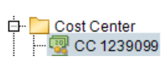
Procedure

1. Select the folder in which the cost center is to be created.
2. Click the "Insert ERP Cost Center" button in the menu bar under "Master Data > ERP".

   The "ERP Cost Center" dialog opens.

3. Enter a meaningful "Name" and an optional "Description" as well as the "external label". After having assigned the cost center to a domain, click "OK" to confirm your entries and to generate the cost center.

Result

You have successfully created the cost center and it is now ready for use with the cost center relations.

3.7.5 Creating cost center relations

Overview

Cost center relations are necessary for the settlement of values computed in B.Data in an external ERP system.

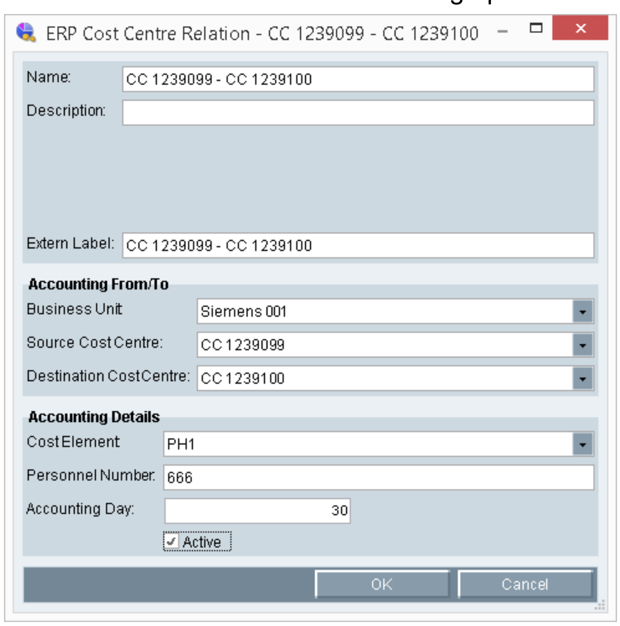
Requirement

The ERP objects have been properly installed.

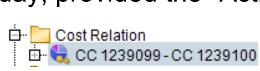
Procedure

1. Select the folder in which the cost center relation is going to be created.
2. Click the "Insert ERP Cost Center Relation" button in the menu bar under "Master Data > ERP".

   The "ERP Cost Center Relation" dialog opens.

3. Enter a meaningful "Name" and an optional "Description" as well as the "external label". Select the domain and set the source and destination cost centers in the "Settlement From/To" area. Set up the service type in the settlement details. The specified personnel number is used to launch the transaction on the ERP system on the specified accounting day, provided the "Active" state has been set.

Result

You have successfully configured the cost center relation and it is now ready for use in accounting.

3.8 Managing energy efficiency measures

3.8.1 Basics on managing energy efficiency measures

The "Energy Efficiency" module in B.Data provides company-wide transparency in the management of energy efficiency measures. The "Energy Efficiency" module in B.Data was developed in accordance with DIN EN ISO 50001.

The "Energy Efficiency" module in B.Data provides the following options for management of the energy efficiency measures:

- You can enter all energy efficiency measures for all locations of your company.
- You can enter the saving potential and cost of the energy efficiency measure and calculate its cost efficiency.
- You can assign a status that indicates the degree to which the energy efficiency measure has been implemented.

Procedure for managing energy efficiency measures

1. Create an energy efficiency measure.
2. Enter the plant and location for which you defined the energy efficiency measure.
3. Enter the financial saving potential for the plant.
4. Enter the running costs for the plant and calculate the cost effectiveness of your energy efficiency measure.
5. Define a user responsible for the energy efficiency measure.
6. Create one or several domains that are permitted to view and edit an energy efficiency measure.
7. Select a status for the energy efficiency measure.

See also

Creating energy efficiency measures (Page 113)

Entering financial saving potentials for an energy efficiency measure (Page 115)

Calculating cost efficiency for energy efficiency measures (Page 117)

Specifying responsibilities for an energy efficiency measure (Page 119)

Specifying clients for an energy efficiency measure (Page 120)

Displaying information about an energy efficiency measure (Page 122)

3.8.2 Creating energy efficiency measures

Procedure

1. Click the "Insert Energy Efficiency Measures View" button in the menu bar under "Analysis > Energy Efficiency".

   The "Energy Efficiency Measures View" dialog opens.

2. Click "New".

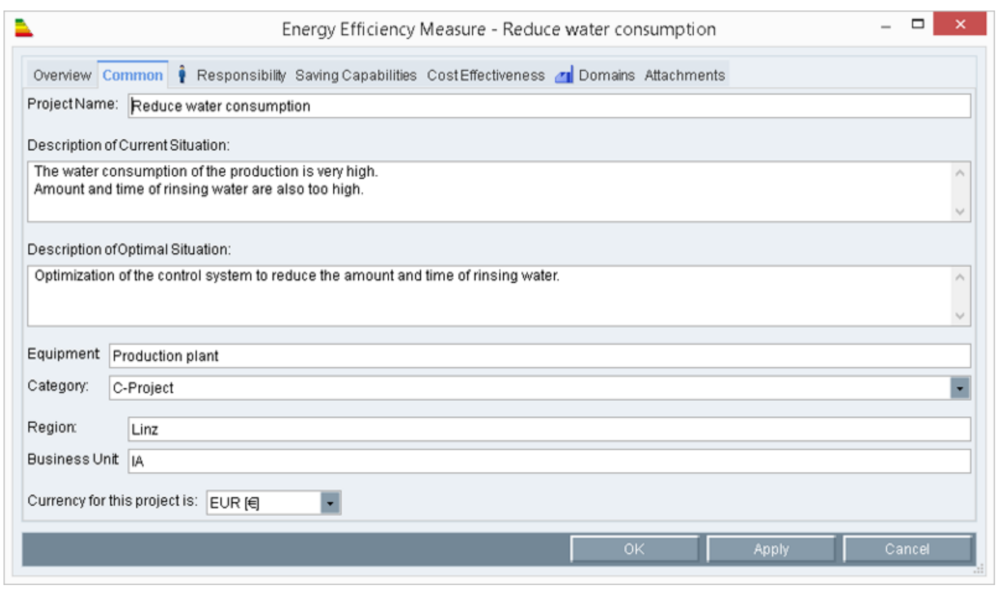
   The "Energy Efficiency Measure" dialog opens.

3. Select a name for the energy efficiency measure under "Project Name" on the "General" tab.

4. If required, also enter a description of the actual state and target state of the consumption situation.

5. Select the priority of the energy efficiency measure under "Category", for example, "A-Project" for the top priority.

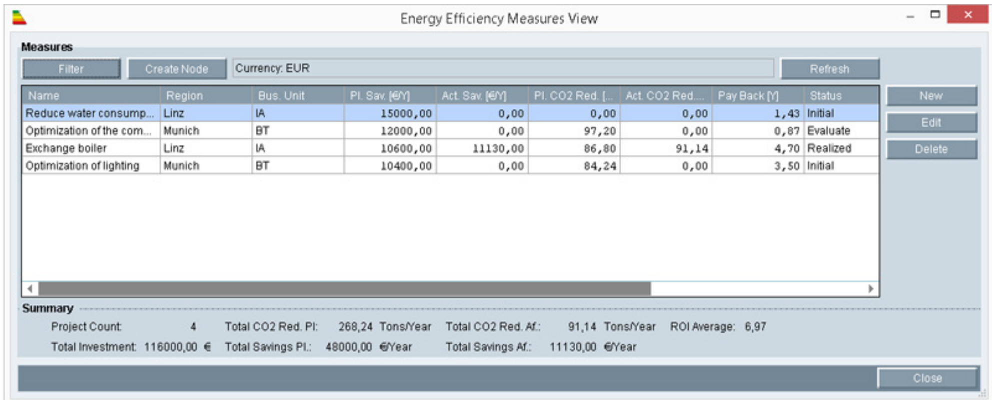
6. Enter a region, a plant and a business unit for efficient filtering of the energy efficiency measure.

7. Confirm the configuration with "OK".

Result

You created the energy efficiency measure.



You can edit or delete the energy efficiency measure, or create a new one.

See also

Configuring the plant (Page 311)

3.8.3 Entering financial saving potentials for an energy efficiency measure

Overview

Enter the financial saving potential of an energy efficiency measure in the "Saving Capabilities" tab separately for each consumption medium. The saving potentials comprise:

- Costs incurred prior to the introduction of the energy efficiency measure
- Scheduled costs following the introduction of the energy efficiency measure
- Costs incurred after introduction of the energy efficiency measure

Requirement

You created the energy efficiency measure.

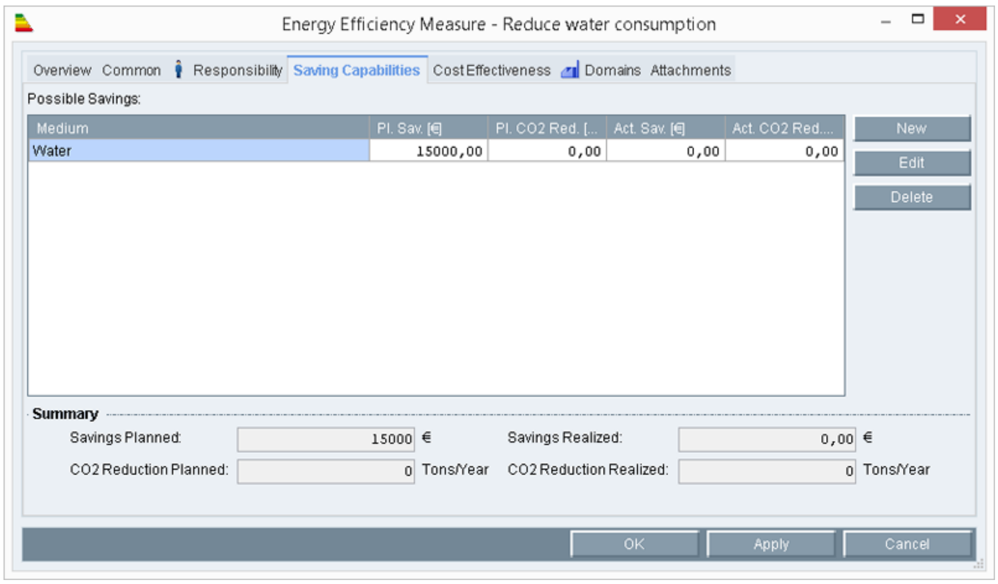
Procedure

1. Double-click the relevant energy efficiency measure in the overview of energy efficiency measures.

   The "Energy Efficiency Measure" dialog opens.
2. Select the "Saving Capabilities" tab.
3. Enter a consumption medium.
4. Select a unit for the consumption medium.
5. Select a parameter, or enter a constant value for the costs and the CO_2 production per unit.
6. Enter your values for the post measure state and the planned state of consumption.
7. Confirm the configuration with "OK".

Result

You have successfully entered the financial saving potentials for the energy efficiency measure. The total of all savings and the CO_2 reduction is calculated in the "Summary" area. The difference between the planned and the actual state of consumption is calculated under "Diff. Pl." and "Act. Diff.".



You can edit, delete, or enter new financial energy-saving potentials.

See also

Creating energy efficiency measures (Page 113)

3.8.4 Calculating cost efficiency for energy efficiency measures

Overview

Implementation of an energy efficiency measure is initially subject to costs, e.g. purchase of a generator with lower consumption figures. On the "Cost Effectiveness" tab, enter the investment costs, the running costs, and the time period for the costs of the energy efficiency measure. Continue by calculating the cost efficiency of the energy efficiency measure.

Requirement

You created the energy efficiency measure.

Procedure

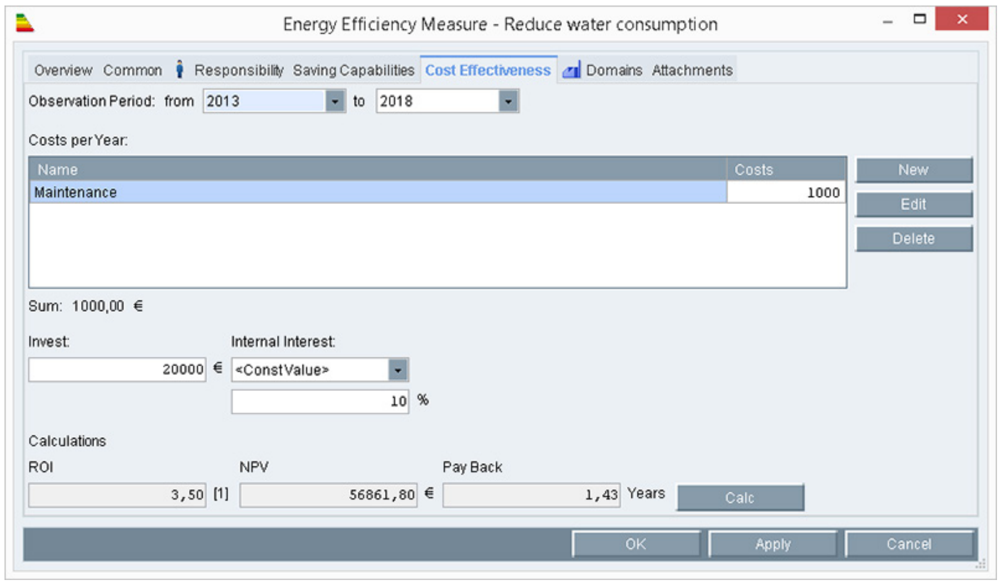
1. Double-click the relevant energy efficiency measure in the overview of energy efficiency measures.

   The "Energy Efficiency Measure" dialog opens.
2. Select the "Cost Effectiveness" tab.
3. Select a period for which you want to calculate the cost efficiency of an energy efficiency measure.
4. Enter a name and a value for the annual active costs.
5. Enter the values for the investment costs and for the internal interest rate.

6. Click "Calculate" to calculate the cost effectiveness of the energy efficiency measure.

   The result is displayed in the "Calculations" area of the following fields.

   – ROI: Displays the ID for returns on investments.
   – NPV: Displays the net present value of capital.
   – Amortization time: Displays the amortization period.



7. Confirm the configuration with "OK".

Result

You have successfully calculated the cost efficiency of the energy efficiency measure. You can edit the entries and recalculate the cost efficiency of the energy efficiency measure.

See also

Creating energy efficiency measures (Page 113)

3.8.5 Specifying responsibilities for an energy efficiency measure

Overview

On the "Responsibility" tab, you define the responsible person for an energy efficiency measure for information purposes.

Requirement

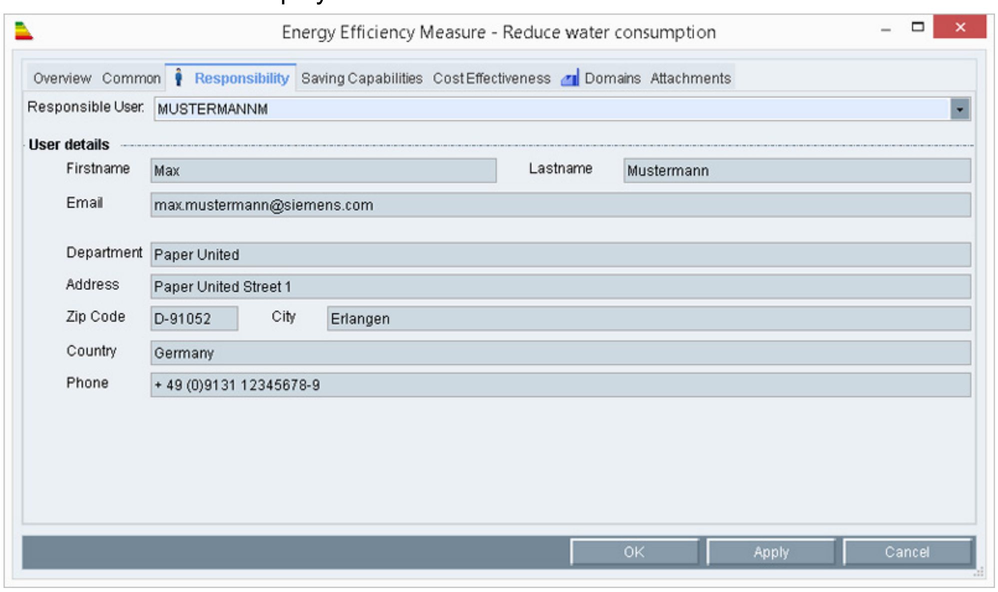
- You created the energy efficiency measure.
- The user has been created.

Procedure

1. Double-click the relevant energy efficiency measure in the overview of energy efficiency measures.

   The "Energy Efficiency Measure" dialog opens.
2. Select the "Responsibility" tab.
3. Select the responsible person.

   The user details are displayed.



4. Confirm the configuration with "OK".

Result

You have successfully specified responsibilities for the energy efficiency measure.

3.8.6 Specifying clients for an energy efficiency measure

Overview

Use the "Domains" tab to specify domains that are permitted to view and edit an energy efficiency measure.

By assigning a domain to an energy efficiency measure, you ensure that company employees will only be able to view and edit the energy efficiency measures that are implemented at their location.

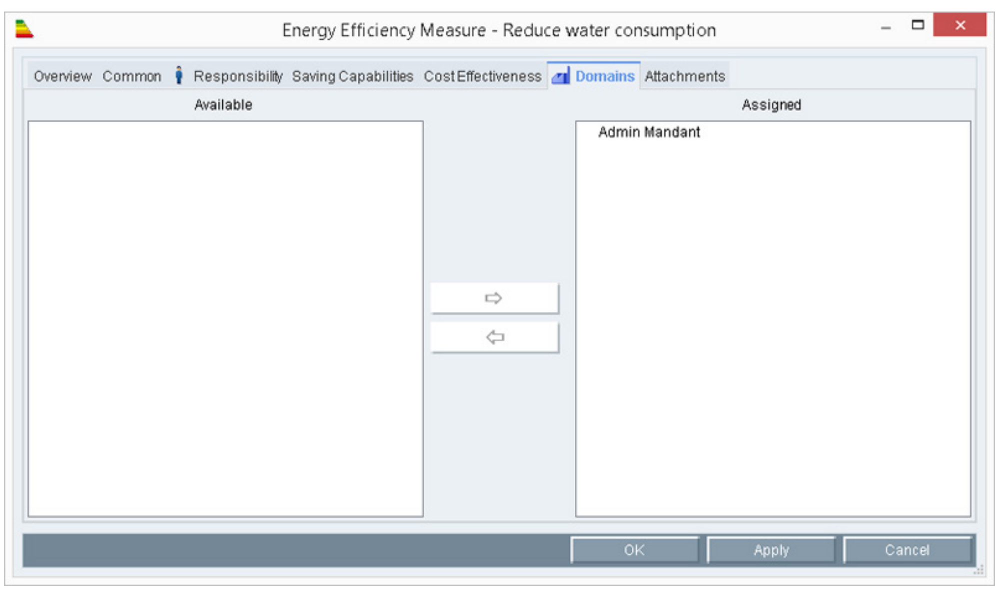
Requirement

- You created the energy efficiency measure.
- The client has been created.

Procedure

1. Double-click the relevant energy efficiency measure in the overview of energy efficiency measures.

   The "Energy Efficiency Measure" dialog opens.
2. Select the "Domains" tab.
3. Select the required client under"Available" and assign this client to the "Assigned" group.



4. Confirm the configuration with "OK".

Result

You have specified the client for use of the energy efficiency measure. You can remove the client from the "Assigned" group, or assign a new client to this group.

3.8.7 Inserting documents for an energy efficiency measure

Overview

On the "Attachments" tab, insert documents that contain additional information for an energy efficiency measure, e.g. charts or sketches. These documents are not managed in the B.Data document management.

Requirement

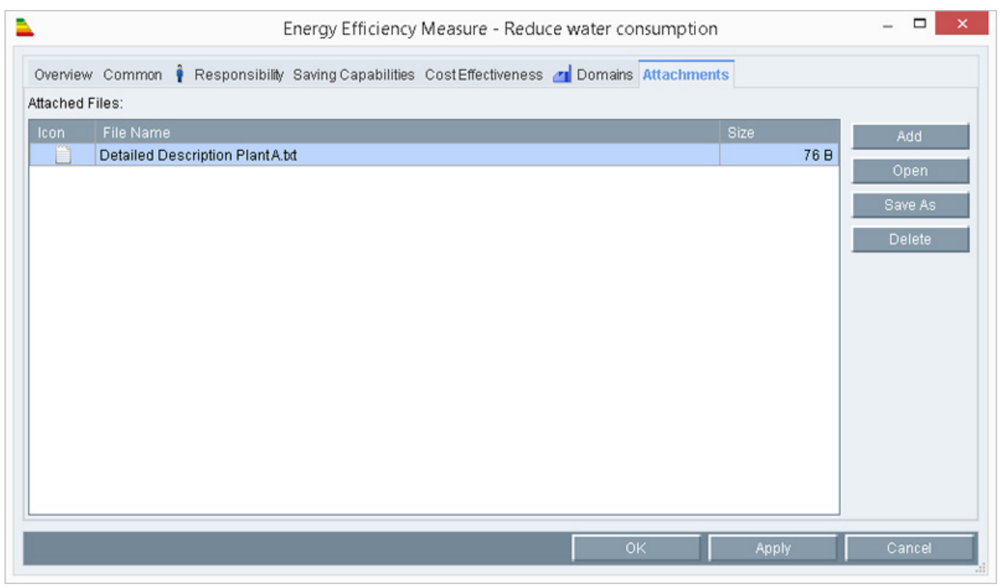
You created the energy efficiency measure.

Procedure

1. Double-click the relevant energy efficiency measure in the overview of energy efficiency measures.

   The "Energy Efficiency Measure" dialog opens.

2. Select the "Attachments" tab.



3. Click "Add" and select the document that you want to insert for the energy efficiency measure.
4. Confirm the configuration with "OK".

Result

You have successfully inserted the document for the energy efficiency measure. You can edit or delete the document, or add a new one.

3.8.8 Displaying information about an energy efficiency measure

Overview

The "Overview" tab shows you information on an energy efficiency measure, including:

- Name
- Investment costs
- Saving potentials
- Responsible person
- Location

You can also assign a status for the energy efficiency measure in the "Overview" tab and export the information on the energy efficiency measure to Microsoft Excel.

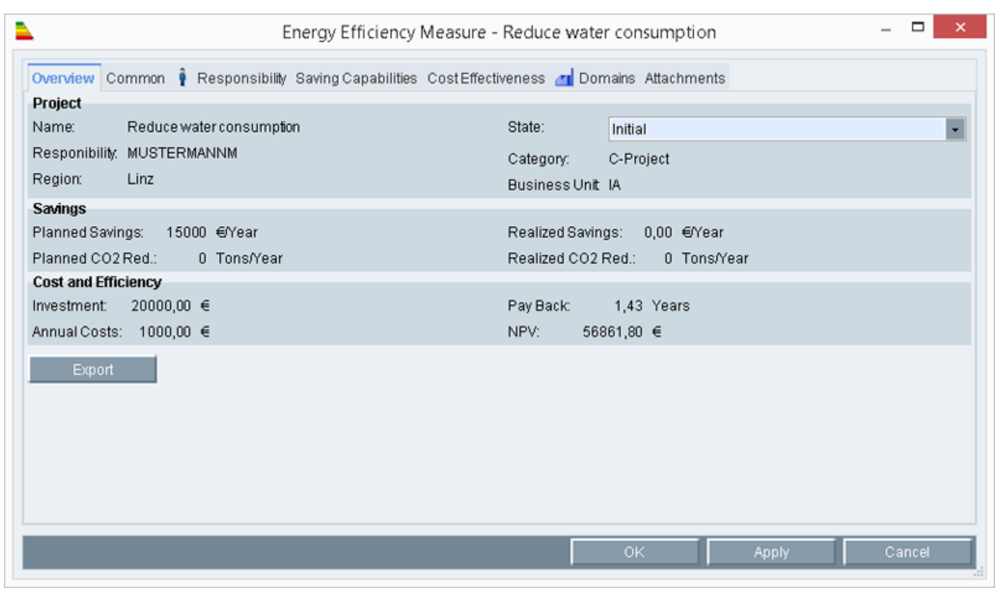
Requirement

You created the energy efficiency measure.

Procedure

1. Double-click the relevant energy efficiency measure in the overview of energy efficiency measures.

   The "Overview" tab opens in the "Energy Efficiency Measure" dialog.
2. Under "Status", select the required status to assign it to the energy efficiency measure.
3. Click "Export" to visualize the information provided on the "Overview" tab in Microsoft Excel.



4. Confirm the configuration with "OK".

3.8.9 Generating a filtered overview object

Overview

A filtered overview object provides you with an overview of all energy efficiency measures that are important to you.

If you want to generate a report that contains all data of an energy efficiency measure in Microsoft Excel , insert the filtered overview object under the module of the report.

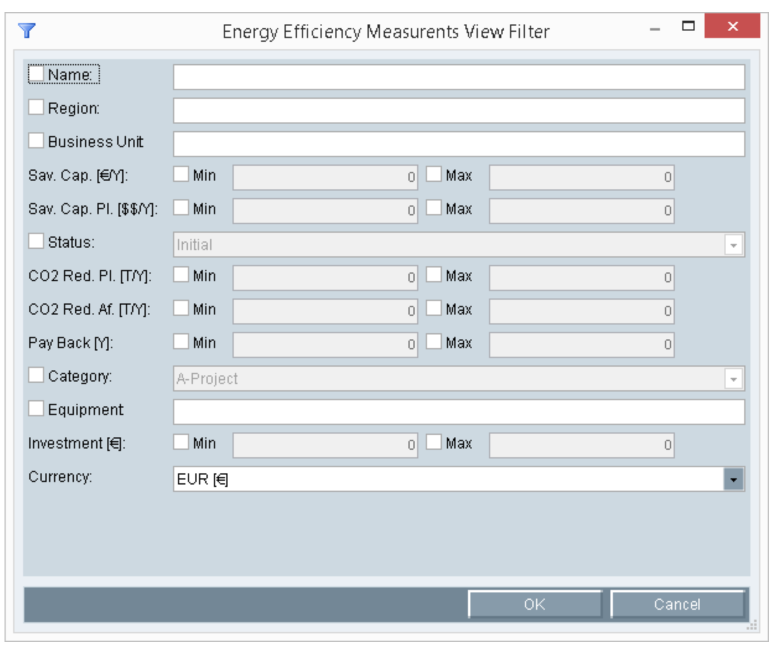
Requirement

You created the energy efficiency measure.

Procedure

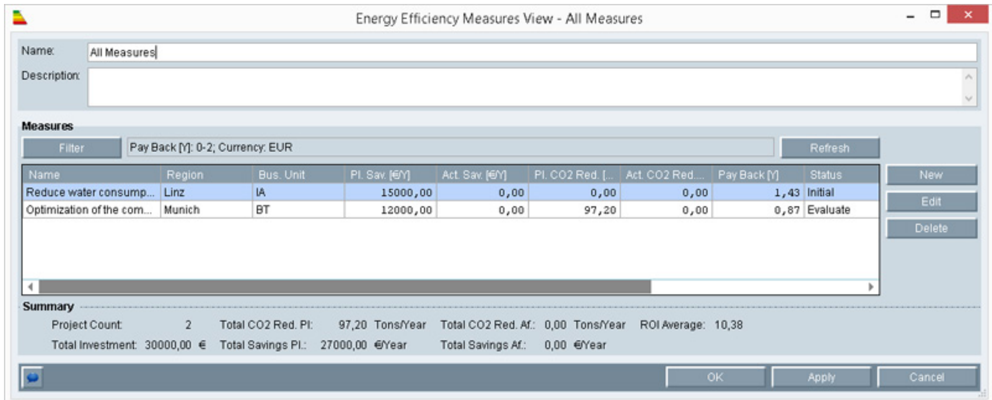
1. Select the folder under which you wish to create the filtered overview object.
2. Click "EE Overview" under "Master Data" in Plant Explorer.
   The "Energy Efficiency Measures View" dialog opens.
3. Click "Create Node".
4. Enter a unique name and an optional description for the filtered overview object.
5. Click "Filter" to filter the relevant energy efficiency measures.

   The "Energy Efficiency Measurements View Filter" dialog opens.
6. Enter the filter data.



7. Confirm your entries with "OK".

   The relevant energy efficiency measure is displayed in the "Measures" area.



8. Confirm the configuration with "OK".

Result

You have created the filtered overview object.

Double-click the filtered overview object to view the filtered energy efficiency measure.

To generate a report for the filtered energy efficiency measure, insert the filtered overview object under the report. Use the "Energy Efficiency Measure" module for this report. You can find more information on this topic in the "Module Overview" chapter, keyword "Energy Efficiency Measure".

See also

Creating a report (Page 191)

Module overview (Page 478)

Calculation level 1 "The loop concept" 4

4.1 Basic information on calculation level 1

Overview

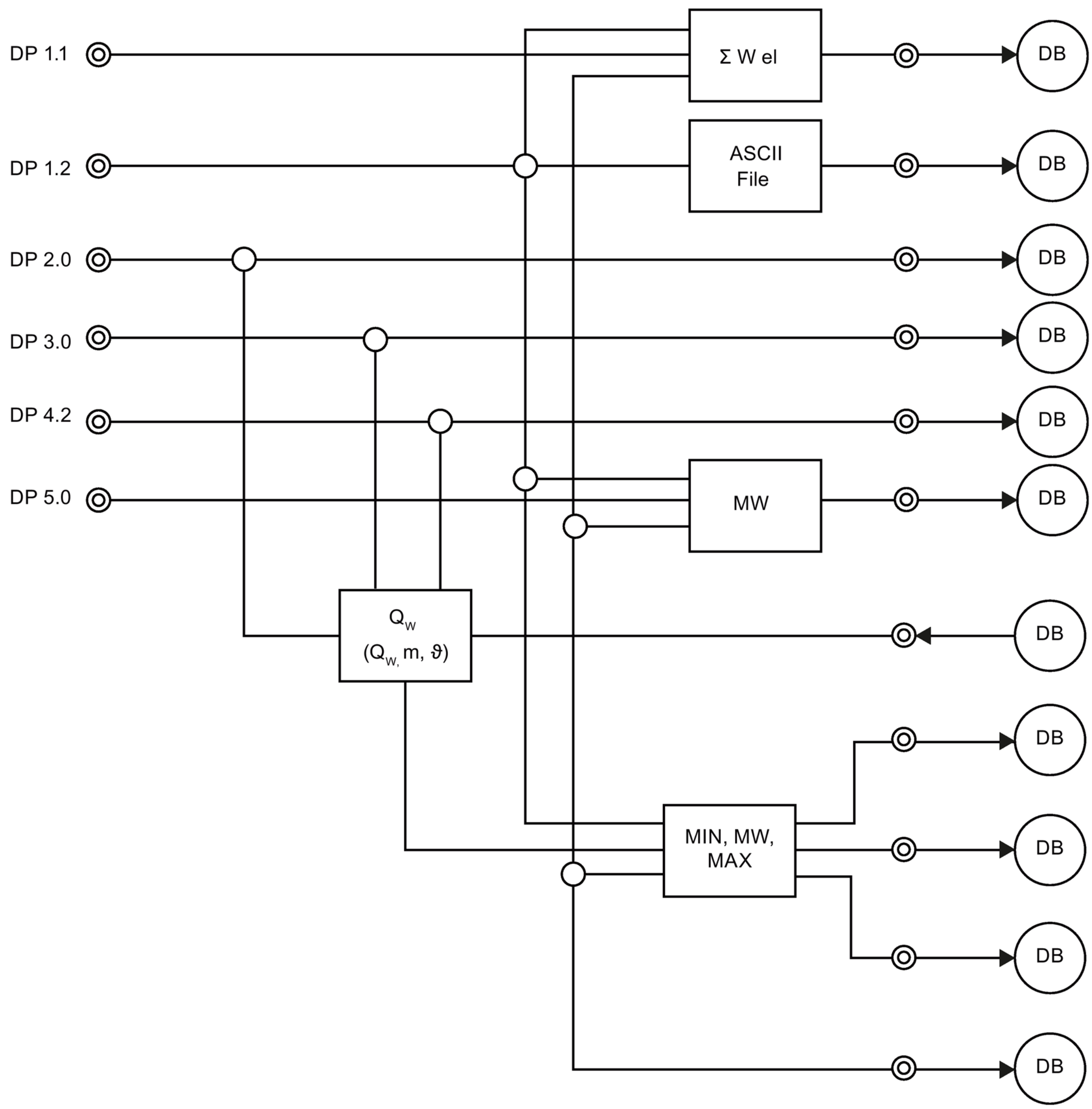
You can pre-process the measured values you import to B.Data before you save these to the database. For example, you can compress the acquisition values to daily values or calculate a conditional average value of different measurement series.

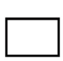
B.Data provides two options for real-time pre-processing of measured values:

- Compression of measured values during import
- Processing measured values with loops

The processing of values before entering them into the database is known as "Calculation level 1".

The following diagram illustrates the pre-processing of measured values imported to B.Data. You can use the loop concept to individually process or link the measured values of different data points: This allows you to calculate average, minimum and maximum values, for example.



	Data point
	Calculation module (Loop)
	Database entry

Compression of measured values during import

You can compress the acquisition values in the import phase. This "Online compression" is activated by default. You then configure the selected compression functions in the data point. It is also possible to configure a substitute value strategy.

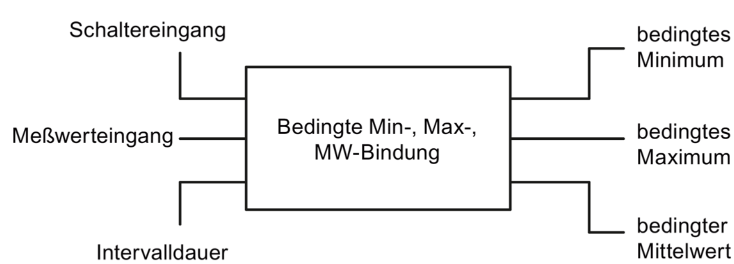
As an alternative, you can compress acquisition values with jobs at any time, or recalculate compressed values.

Application example: You wish to import counter states to B.Data. The consumption values and daily consumption values will be calculated by differentiation during the import.

Processing measured values with loops

Loops are calculation functions that you apply to one or several data points. You can use loops, for example, to calculate or link measured value series of different recording periods. B.Data allows you to use preconfigured loops, or to program your own calculation functions using the Measurement Compile Language (MCL) programming language. B.Data Provides various calculation functions, for example, conditional recordings, extensive filter functions, trigonometric functions, logic operators, compare operations, or conversion operations. You can also map non-linear processes with unknown function rules or equations in the form of tables. Users with corresponding configuration authorization may always change data point assignments, calculation modules, and logic conditions by means of the user system.

Application example: Conditional calculation of minimum, maximum and average values. The interval duration for the grouping function (e.g. ½ h), the measured values with corresponding interval duration, and the trigger input are set at the loop input for conditional calculation. The calculation is only initiated if the trigger input is set to active high state (=1). Results of the calculation are output for the corresponding period on the right side based on the conditional minimum, maximum and average values.



This functionality is defined in the Plant Explorer based on MCL (Measurement Compile Language).

Additional information

The next chapters illustrate the following contents related to "Calculation level 1":

- Creating and configuring data points
- Creating and configuring loops
- Creating prototypes
- Functions for prototypes
- Description of the MCL language

4.2 Creating data points

4.2.1 Creating generic data point

Overview

A generic data point does not receive its value directly from a particular interface, but from a different source. Such different sources could be ODBC connectors, matrices, or loops.

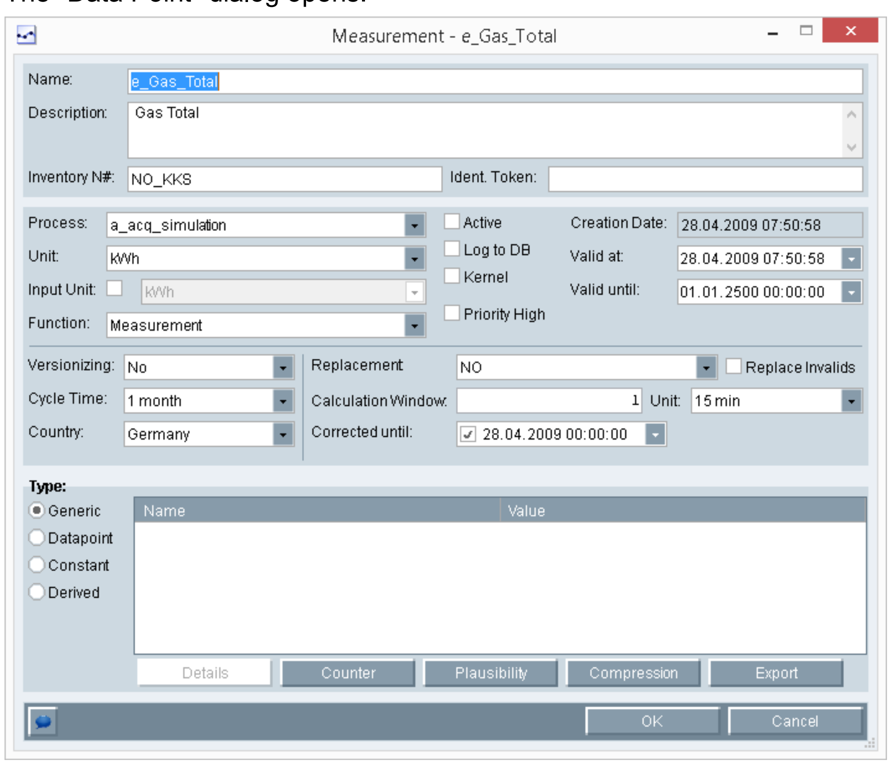
Requirement

- All software components are installed.
- All necessary objects have been configured, e.g. the hardware, driver source, process, drivers, or the IO area.

Procedure

1. Select the folder in which the data point is to be created.
2. Click the "Insert Measurement" button in the menu bar under "Acquisition > Data Point".

   The "Data Point" dialog opens.



3. Parameterize the fields.
   – Enter the "Name" for the measurement, taking naming conventions into account.
   – You may also enter a "description".
   – Enter the "Inventory N#".

     The inventory number is a KKS or FIS number. The inventory number is output if you select the "KKS Text" mode for a report.
   – Enter "Ident. Token" as additional identifier, if necessary.

     The "Ident. Token" is used only by a special import/export interface.
   – You can select a "Process" that is not actively used for data acquisition, e.g. "a_erf_null", or "a_rech_PDS".
   – Select the physical unit.

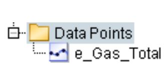
     The unit may depend on the processing routine (loop), or on the lower-level data type.
   – Select the "Input Unit" check box and select the unit.

     The "Input Unit" is used for the manual input of matrix data.

     Example: You selected the "kW" unit and defined the "MW" input unit. The value 500,000 W is stored in the database with the notation "500 kW". You can enter the value "0.5 MW" manually in the matrix.
   – Enable or disable versioning of the data of this measurement using the "Versioning" drop-down list box.
   – Enter the "Cycle Time" for cyclic availability of the values.
   – Under "Country", select the country whose time zone you want to use for the acquisition.
   – Select the "Active" check box if the measurement is used in the system (e.g. loops).
   – Select the "Log to DB" check box to write the values returned from a loop to a database.
   – Select the "Kernel" check box to enable the use of the acquisition component of this measurement.
   – Select the "Priority High" check box to enable write protection for manual matrix input.
   – Select "Measurement" from the "Function" field.
   – Accept the "NO" setting in the "Replacement" field.
   – Set the "Generic" radio button in the "Type" area.
4. Confirm your entries with "OK".

Result

The configuration dialog is closed. The server object is now generated at the corresponding tree position.



The current date is set in "Creation Date", "Valid from", and "Valid until" date fields when you create a new measurement. Further functionalities are currently not associated with these fields.

Once the measurement has been corrected, the date and time are set automatically in the "Corrected until" field.

The user name of a user who changes the configuration of the measurement is entered in the "Last changed by" field.

You successfully configured the generic point and it is now ready for use.

See also

Countries (Page 401)

4.2.2 Creating data points

Overview

This section provides instructions related to the following actions:

Creation and configuration of data points

Data points are operating data points which receive their values directly from an interface (database interface, drivers, etc.).

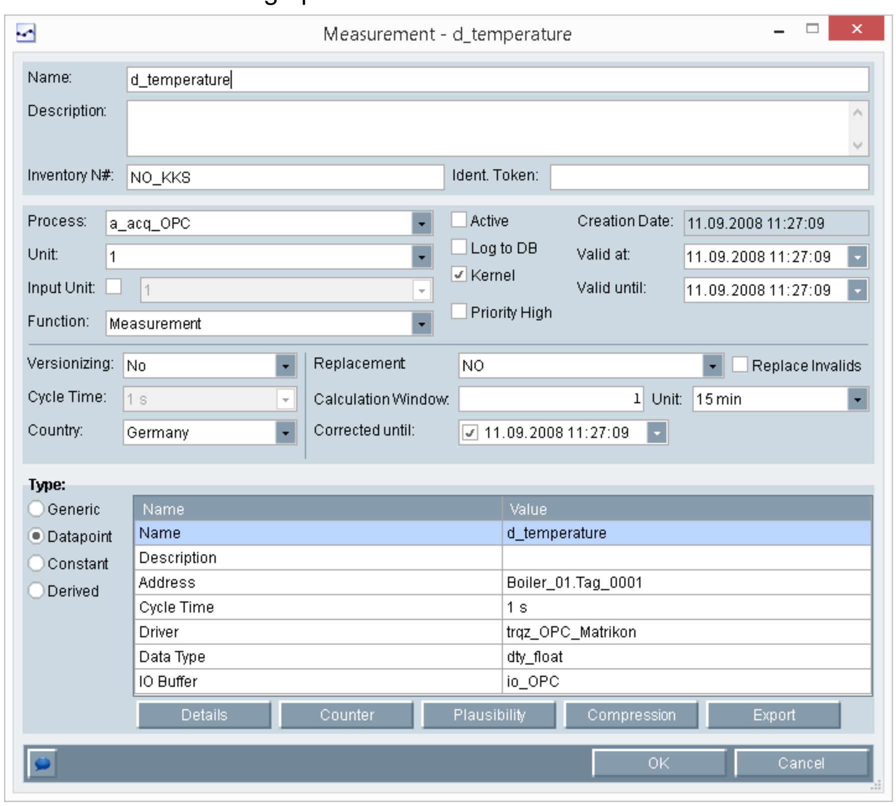
Requirement

All necessary objects have been configured: hardware, driver source, process, drivers, IO area, etc.

Procedure

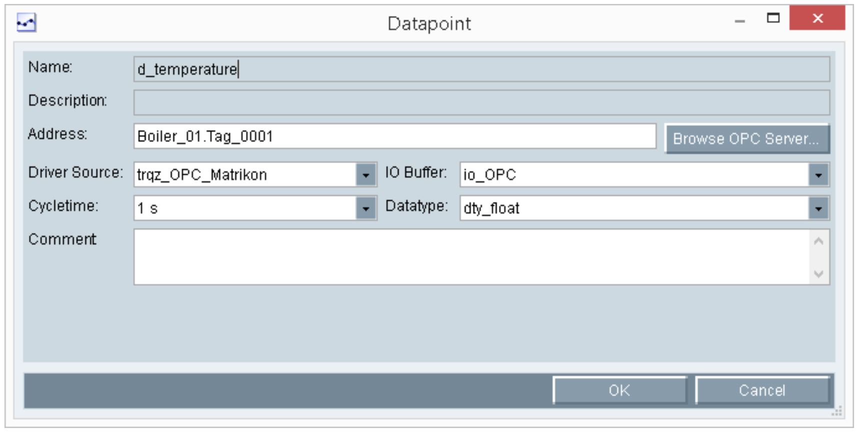
1. Select the folder in which the data point is going to be created.
2. Click the "Insert Measurement" button in the menu bar under "Acquisition > Data Point".

   The "Data Point" dialog opens.



3. Fill out or parameterize the fields as follows:
   - Enter the "Name" of the measurement (data point type). Observe the naming conventions.
   - You can enter additional information on the measurement in the Description field.
   - You can enter a KKS or FIS number, or a user-specific text in the "Inventory no." field. This text will be output, for example, if the "KKS Text" mode is selected for a report.
   - Select the process from which the data is acquired.
   - Select the required unit.
   - Select the "Input Unit" check box to use a unit for the manual input of matrix data.

     You may define the "kW" unit and the "MW" input unit. The value 500,000 W is then stored in the database with the notation "500 kW". The value is displayed or entered in the format 0.5 MW for manual matrix input.
   - The user who most recently modified the measurement configuration is entered automatically in the "Last changed by" field.
   - The Corrected until date field is set automatically by a job after the measurement has been revised. The default is set to 01/01/2007.
   - Enable or disable versioning of the data of this measurement using the "Versioning" drop-down list box.
   - In the Cycle Time field, enter the period during which the values will be available cyclically. For data points, this period is copied automatically from the cycle time entry specified the detail settings.
   - Under "Country", select the country whose time zone you want to use for the acquisition.
   - Select the "Active" check box if the measurement is to be used (logged) by the system.
   - The Log to DB check box is only set if the acquired values are transferred directly to the database without having been calculated.
   - Select the "Kernel" check box to enable the use of the acquisition component of this measurement.
   - The current date is set in "Creation Date", "Valid from", and "Valid until" date fields when you create a new measurement. The "Valid until" field is set to the default date 01/01/2500. Further functionalities are currently not associated with these fields.
   - You may enter an additional identifier in the "Ident. Token" field. However, this ID is used only by a special import/export interface.
   - Select "Measurement" from the "Function" drop-down list box.
   - The substitute value" is set to "NO" by default.
   - Select the "Data point" radio button in the "Type:" area.
   - After having selected the "Datapoint" type, click "Details…" to open the Data point dialog for detailed configuration:



– The short and long texts copied from the main dialog are displayed, but cannot be edited in this dialog.

– In the "Address" field, enter the precise address name that the particular driver needs for unique identification of the data point.

– Select the driver that acquires the data from the "Driver Source" field.

– In the "Cycle time" field, specify the interval for polling the values of this data point.

– You may enter a user-specific text in the Comment field.

– In the "IO Buffer" field, you can select all of the IO buffers that have been configured for the driver source selected (e.g. a separate IO buffer for each scan cycle).

– In the "Data type" field, you can select one of the types dty_float, dty_integer, dty_boolean, or dty_string (available only for OPC).

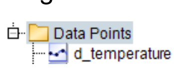
– The "Browse OPC Server..." button is activated if an OPC driver has been selected in "Driver Source". You can browse all OPC servers and their tags that are locally available on the acquisition computer running the acquisition kernel and enter these in the "Address" field with double-click.

Note

An IO buffer should always contain data points with the same cycle time. Otherwise, data points with a higher cycle time will always be included in the scan cycle.

---

4. Confirm your entries with "OK". The configuration dialog is closed. The server object is now generated at the corresponding tree position.



See also

Countries (Page 401)

4.2.3 Creating constants

Overview

A constant represents a special type of data point that is used as default for data acquisition or for generation of a substitute value. For example, if the averaging period of loops is set by means of a constant, a change to this constant will instantaneously change the averaging period of all loops concerned. Otherwise, you would have to parameterize each loop individually. A replacement value can be generated for each data point and may be used to substitute missing values, provided the "Substitute value" strategy has been selected.

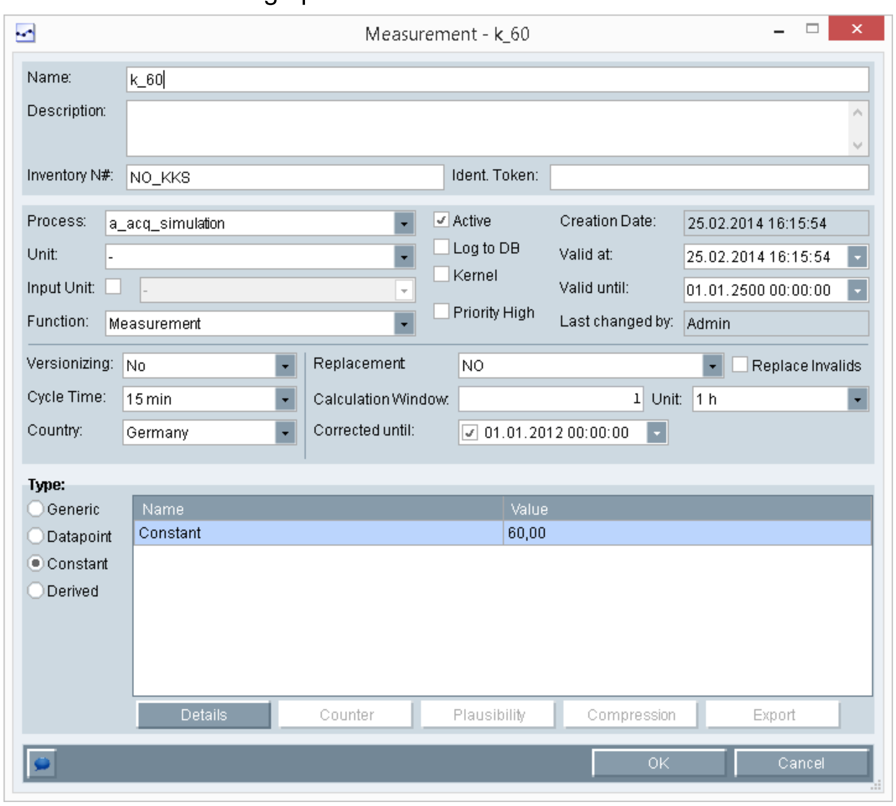
Requirement

All software components are installed.

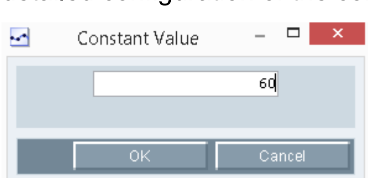
Procedure

1. Select the folder in which the constant is going to be created.
2. Click the "Insert Measurement" button in the menu bar under "Acquisition > Data Point".

   The "Data Point" dialog opens.



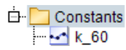
3. Fill out or parameterize the fields as follows:
   - Enter the "Name" for the measurement (data type constant). Observe the naming conventions.
   - You can enter additional information on the measurement in the Description field.
   - In the "Inventory no." field, you can enter a KKS or FIS number or a user-specific text that is not intended for further use in constants.
   - In the "Process" field, select the process that is parameterized on the PC that has to work with this constant.
   - Select the physical unit.
   - The user who most recently modified the measurement configuration is entered automatically in the "Last changed by" field.
   - The "Corrected until" date field is irrelevant for constants.
   - The "Versioning" field is irrelevant for constants. Therefore, select "NO".
   - The cycle time, too, is irrelevant and can be set to one second.
   - Under "Country", select the country whose time zone you want to use for the acquisition.
   - Select the "Active" check box to enable the constant for use in the system.
   - Do not select the "Log to DB" check box, as the value is only read from the database but not written.
   - Select the "Kernel" check box to enable the use of this constant by the acquisition component.
   - The current date is set in "Creation Date", "Valid from", and "Valid until" date fields when you recreate the measurement. Further functionalities are currently not associated with these fields.
   - You may enter an additional identifier in the "Ident. Token" field.
   - Select "Measurement" from the "Function" drop-down list box.
   - Keep the "NO" entry in the "Substitute value" field, as this function cannot be used for constants.
   - Select the "Constant" radio button in the "Type:" area.
   - After having selected the "Constant" type, click "Details…" to open the dialog for detailed configuration of the constant:

   - Enter the constant value.

     When using the constant as substitute value for the substitute value strategy, briefly change to the "Constant" type, enter the substitute value and then restore the previous type setting.

4. Confirm your entries with "OK". The configuration dialog is closed. The server object is now generated at the corresponding tree position.

Result

You successfully configured the constant and it is now ready for use.

See also

Countries (Page 401)

4.2.4 Creating derived data points

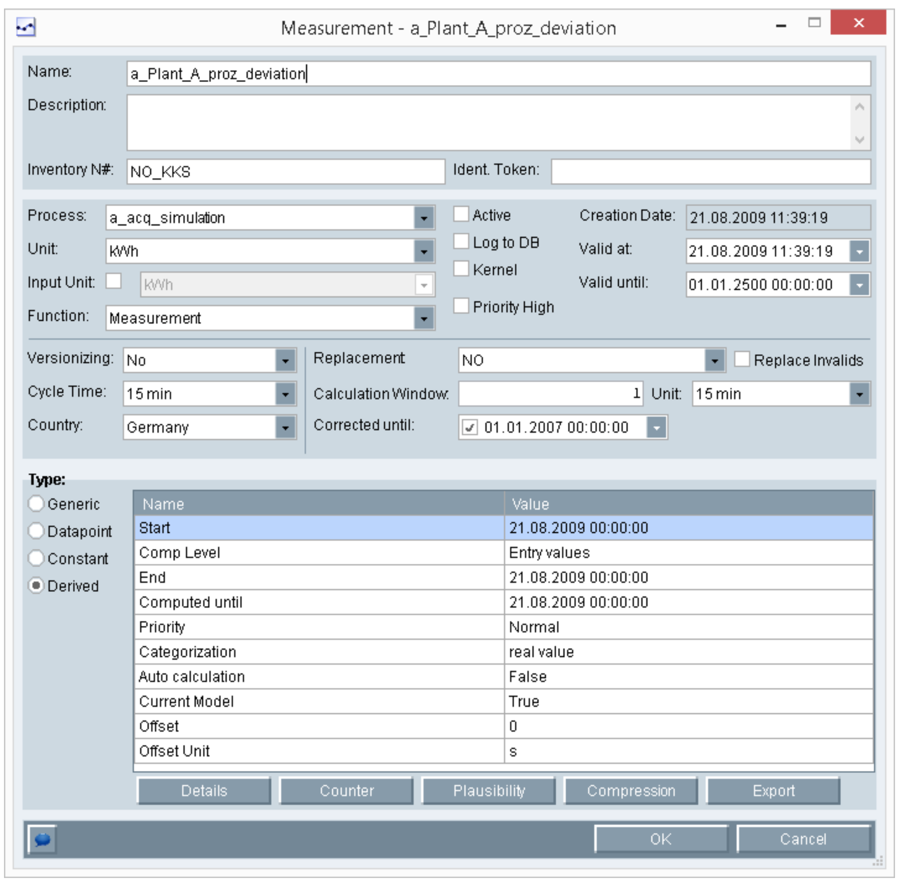
Overview

Derived data points represent operating data points that are used to write MEVA results to the database. This means instead of being provided by a sublevel control system, the values are calculated directly in B.Data. Once calculated, the values are written back to the database again as separate data stream.

Procedure

1. Select the folder in which the data point is to be created.
2. Click the "Insert Measurement" button in the menu bar under "Acquisition > Data Point".

   The "Data Point" dialog opens.

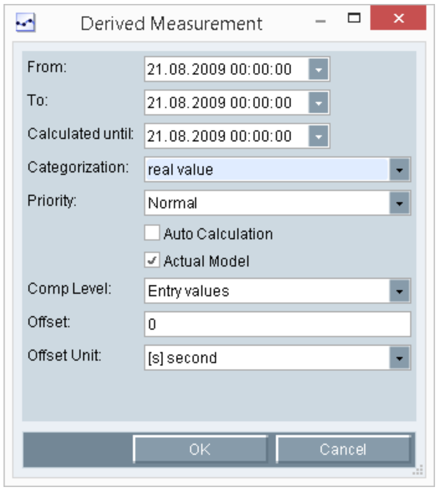
   

3. Enter the general information on the data point.

   Do not activate the "Kernel" option.

4. Activate the item "Derived" under "Type" and click on "Details".

   The "Derived Measurement" dialog opens.

5. Configure the derived data point as follows:

   – Under "From" and "To", enter a calculation time range.

     The "To" time can be in the future.

   – The "Calculated until" field shows the time up to which the derived data point is already calculated.

   – If you select the "Future values" option under "Categorization", the derived data point is recalculated if the value change time stamp of an assigned data point is in the future.

   – If you select the "Current value" option under "Categorization" the derived data point is not recalculated if the time stamp of a value change of an assigned data point is in the future.

   – Select the priority.

   – Activate "Automatic recalculation" to recalculate the derived data point if new or update values are available.

   – If you activate "Current model", the derived data point is calculated based on the current model of the MEVA structure.

   – Select a compression level.

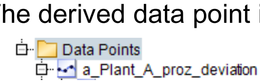
     The selected compression level is transferred to the configured measuring variable. This measuring variable calculates based on the values of the selected compression level.

   – Enter a value in "Offset" and select the unit, e.g. "6" and "[h] hours".

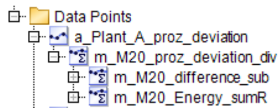
   – Click "OK".

6. Click "OK" again.

   The derived data point is now generated at the corresponding project tree position.

7. Copy the required measuring variable, which includes the calculation rule for the derived data point, under the derived data point.



Note

Automatic recalculation is discarded in the following situation:

If a derived data point is recalculated manually using the "Recalculate" function, only the actual data point and its directly nested data points are calculated. Any data points at lower levels or data points above the actual data point are not recalculated. This rule is not valid for data points transferred via interfaces.

8. Specify how to calculate the derived measurement.

   The following options are available:

   – Calculation with a task using Task Management

   – Calculation in a report using a module

   – Automatic recalculation using the "Recalculate derived measurements" job and activated "Automatic recalculation" option in the data point details.

Result

The derived data point is configured.

See also

Countries (Page 401)

4.2.5 Configuring data point versioning

This section provides instructions related to the following actions:

- Configuration of data point versioning

All values are saved along with their date of creation if you are using versioning. By using this function, you limit the view to data on a specific date of creation.

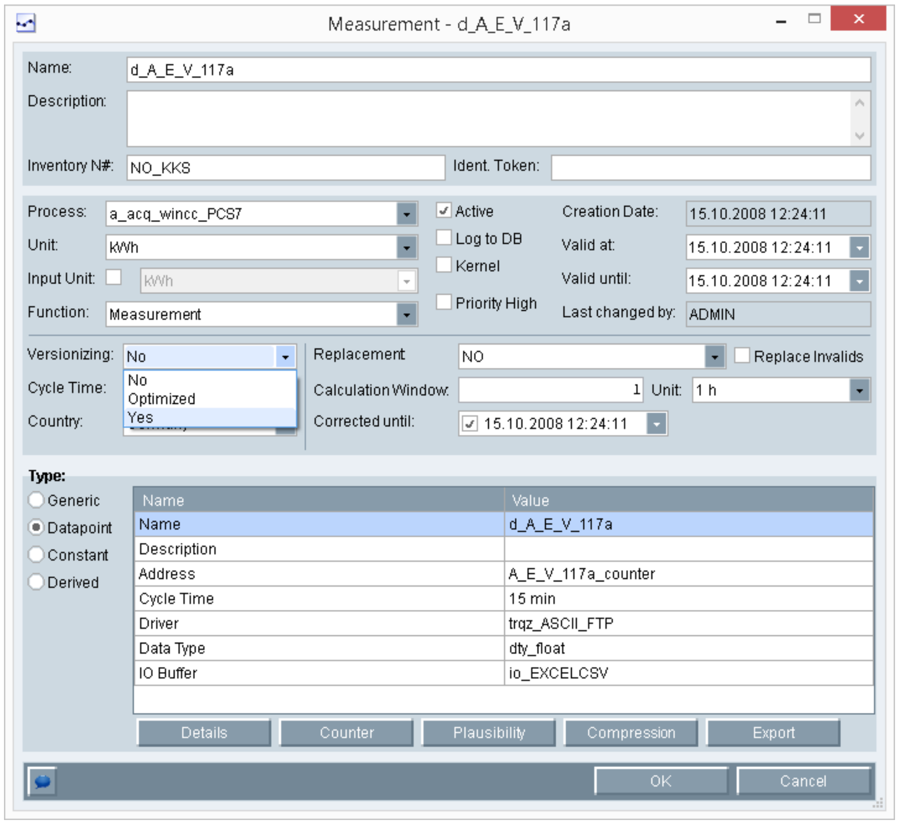
Requirement

The data point has been properly created and configured.

Procedure

1. Select the data point to be versioned in the Plant Explorer.
2. Select the "Edit" command from the shortcut menu of the data point.

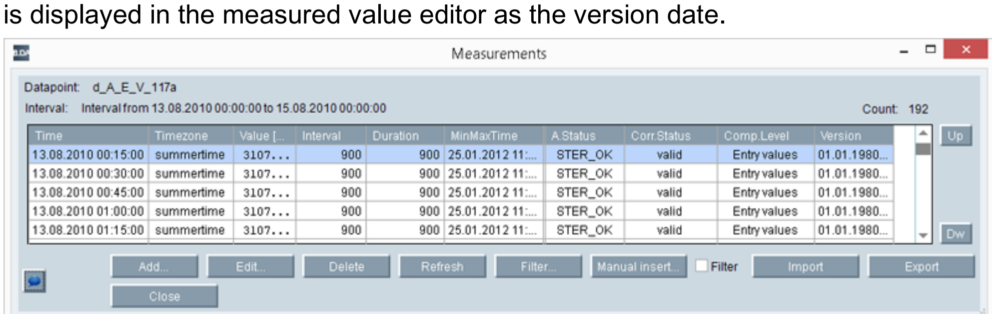
   The "Data Point" dialog opens.



3. Select the required versioning type under "Versioning".

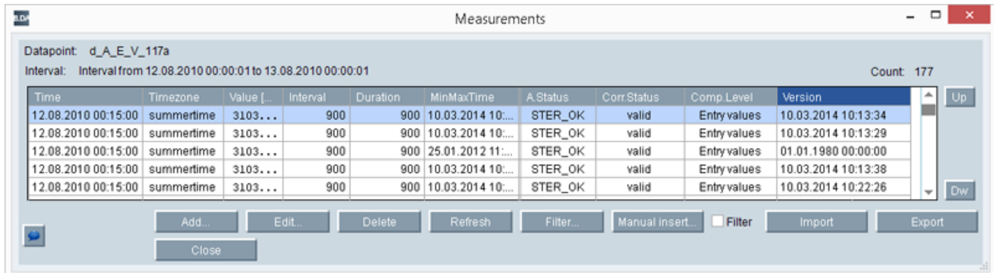
   – No

   No versioning. The time set entered last is saved in the system. 01.01.1980 00:00:00 is displayed in the measured value editor as the version date.



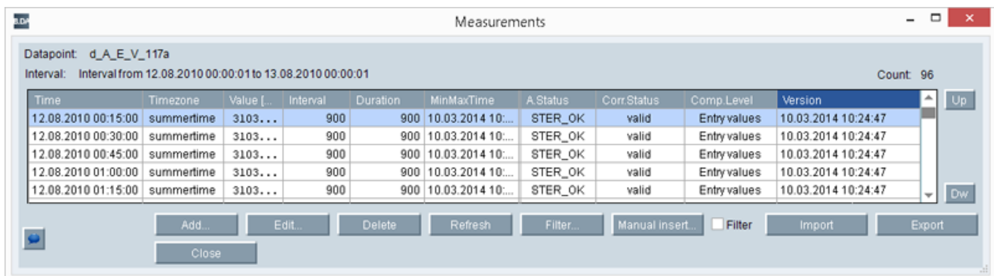
   – Yes

   All time sets are saved to the system, including the corresponding generation dates. The date and time of the system entry is displayed as version.



– Optimized

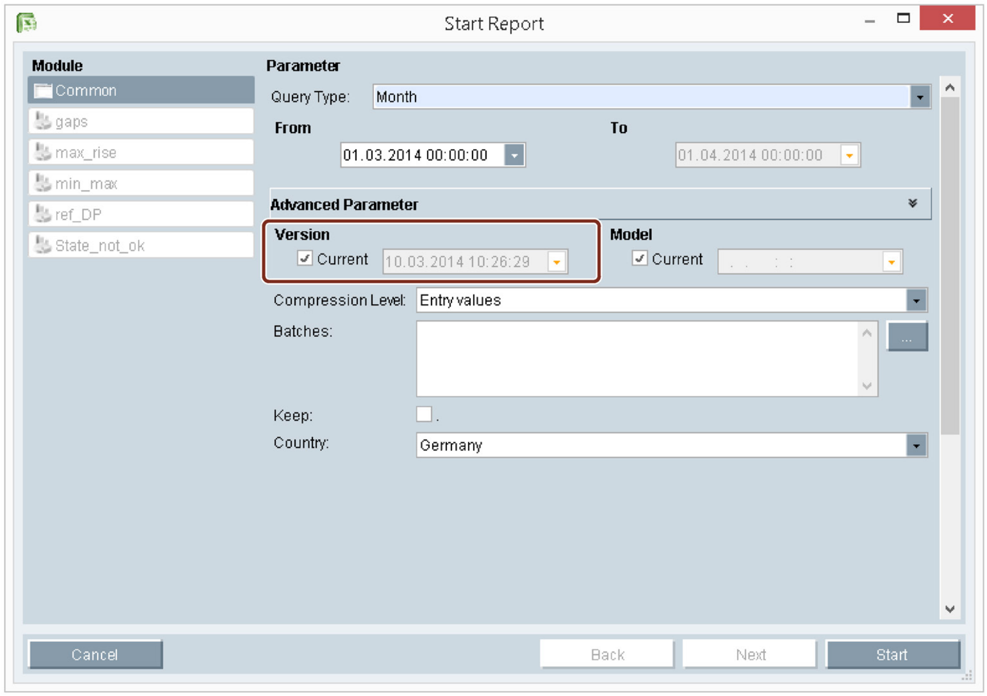
No new version is assigned as long as the measured values are entered as ascending time set. However, a new version is assigned if the time stamp of the measured values is chronologically older than the values that have been entered previously.

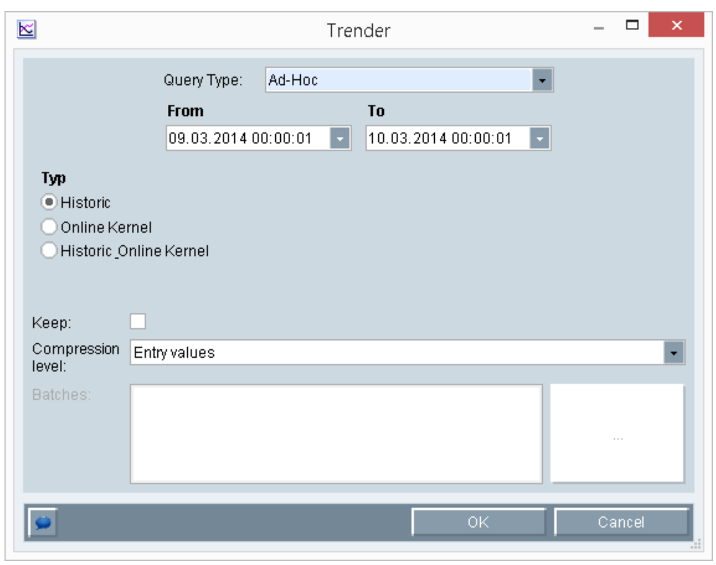


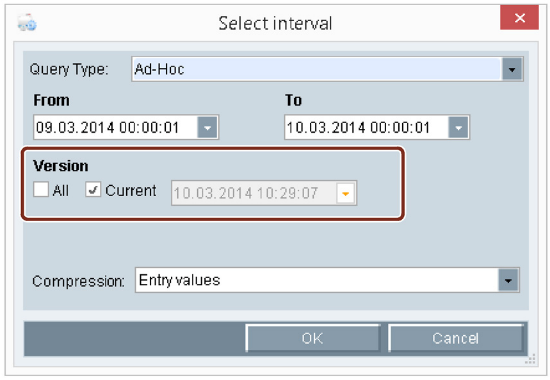
Result

You successfully configured versioning for the data point and the function is now ready for use.

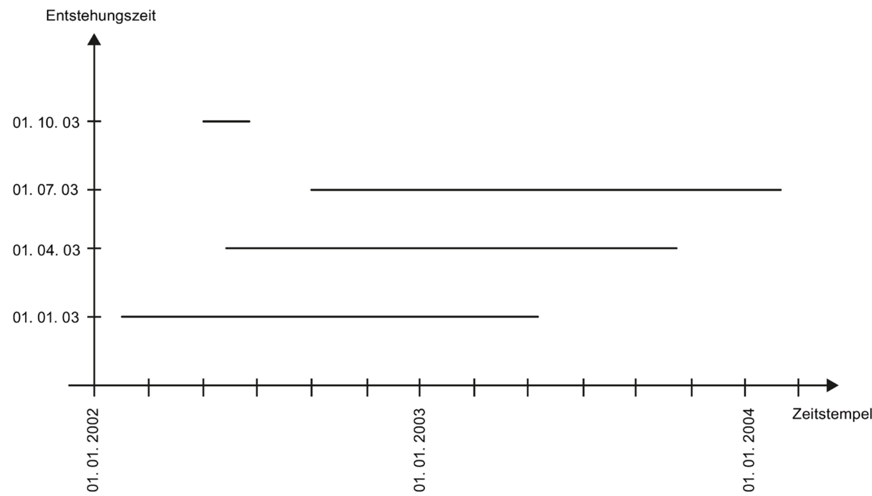
When starting a report or trend, you can use the actual version or a maximum creation date. It is also possible to display all versions in the measured value editor.


Start Report
Module
Common
gaps
max_rise
min_max
ref_DP
State_not_ok
Parameter
Query Type:
Month
From
01.03.2014 00:00:00
To
01.04.2014 00:00:00
Advanced Parameter
Version
Current
10.03.2014 10:26:29
Model
Current
Compression Level:
Entry values
Batches:
Keep:
Country:
Germany
Cancel
Back
Next
Start

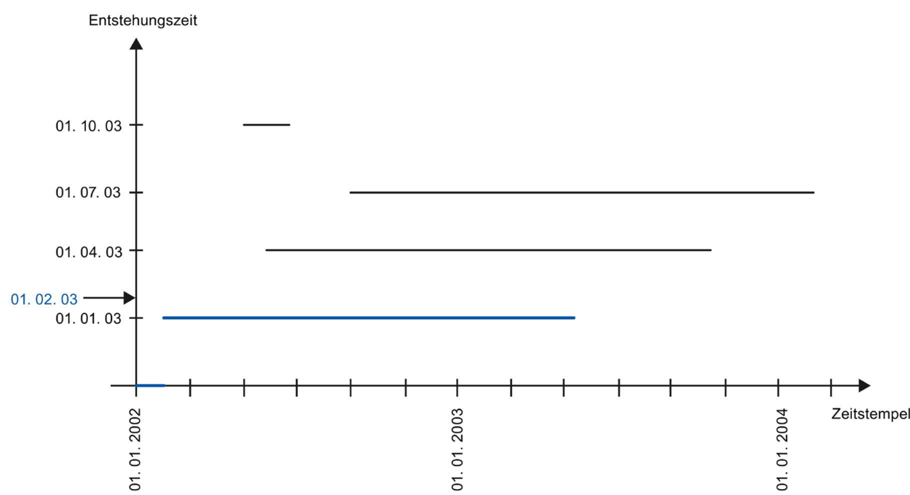

Trender
Query Type:
Ad-Hoc
From
09.03.2014 00:00:01
To
10.03.2014 00:00:01
Typ
Historic
Online Kernel
Historic_Online Kernel
Keep:
Compression level:
Entry values
Batches:
OK
Cancel


Select interval
Query Type:
Ad-Hoc
From
09.03.2014 00:00:01
To
10.03.2014 00:00:01
Version
All
Current
10.03.2014 10:29:07
Compression:
Entry values
OK
Cancel

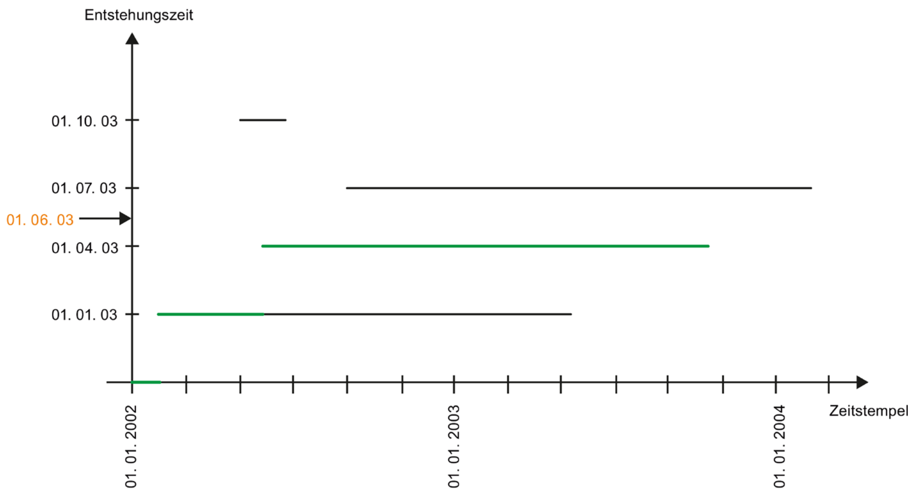
The following example shows up to four dates/times at which data sets have been entered in the system (01/01/2003, 04/01/2003, 07/01/2003, and 10/01/2003)



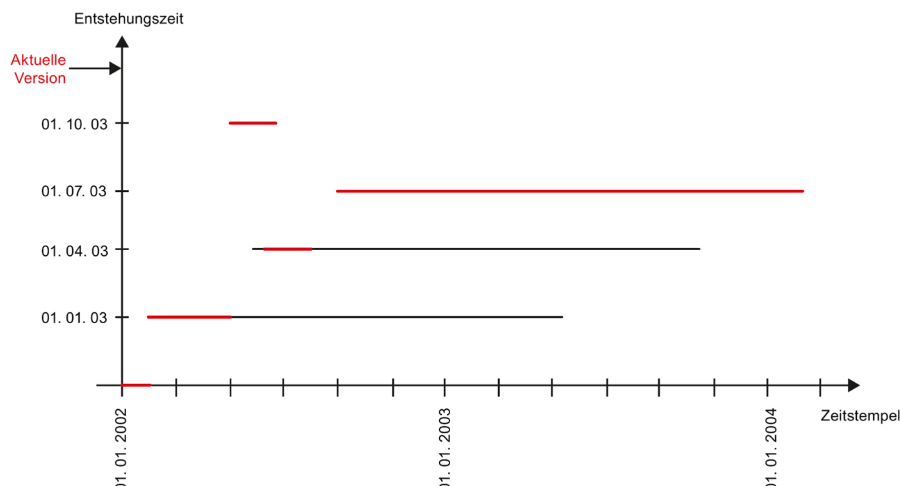
Values used for version date 02/01/2003:



Values used for version date 06/01/2003:



Values used for the "actual version":



4.2.6 Configuring substitute value strategies for a data point

Overview

The following substitute value strategies are available for closing gaps in measured values or compressed values of a data point:

- You can use the measured values of a different data point to eliminate gaps in the measured value series of a data point.
- You can use fixed values to eliminate gaps in the measured value series of a data point.
- You cannot eliminate gaps in the measured value series of a data point.
- You can use the most recent valid measured value to eliminate a gap in the measured value series of a data point.

Requirement

- The data point is configured.
- The measuring journal contains at least one entry for the data point.

Procedure

1. Click "Edit" in the shortcut menu of the selected data point.

   The data point configuration dialog opens.
2. Proceed as follows to eliminate gaps in the measured value series of a data point using the measured values of a different data point:
   – Select "PIS" under "Substitute".
   – Insert the other data point underneath the data point that contains the gap.
3. Proceed as follows to eliminate a gap in the measured value series of a data point using a fixed value:
   – Select "Substitute value" under "Substitute".
   – Select "Constant" under "Type".
   – Enter the selected substitute value under "Details" and confirm the configuration with "OK".
   – Change back to the original type of the data point.
4. Select "NONE" under "Substitute" if you do not want to eliminate the gap in the measurement series of the data point.
5. Select "LRU" under "Substitute" if you want use the last valid value to eliminate the gap in the measurement series of the data point.
6. Activate "Replace invalid" to replace invalid measured values of the data point with the selected equivalent value strategy.
7. Select the time as of which you want to replace the gap under "Corrected until".
8. Confirm the configuration with "OK".

Result

You have successfully configured the substitute value strategy for the data point. Select "Administration > Job queue" to run one of the following jobs for closing gaps with substitute values:

- If you want to close gaps in measured values series: "Job for correcting the measuring journal".
- If you want to close gaps in compressed values: "Job for general recalculation".

See also

Using the job queue (Page 371)

Database jobs (Page 599)

4.2.7 Configuring data point counters

Overview

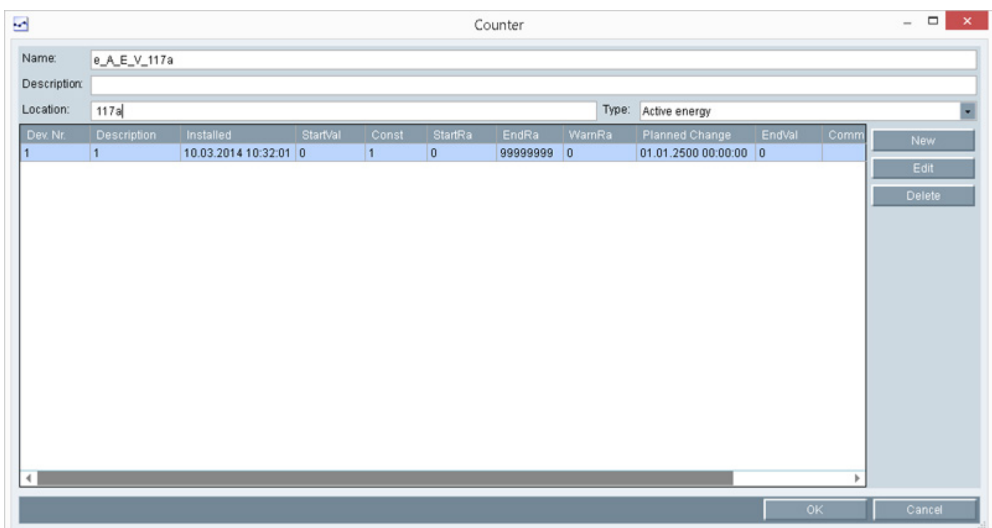
Counters represent operating data points that save count values instead of consumption values as measurement values to the database. In order to enable the correct evaluation of the differentials of these counter values by means of MEVA functions, it is necessary to provide information on the configuration of the count device.

Requirement

The data point has been properly created and configured.

Procedure

1. Select the data point for which a counter is to be created and then select the "Edit" command from the shortcut menu to open the data point configuration.
2. The "Measurement" configuration dialog opens. Select "Counter" to open the counter configuration.
3. Select the counter type (e.g. active energy) and a location (e.g. consumer 117a).

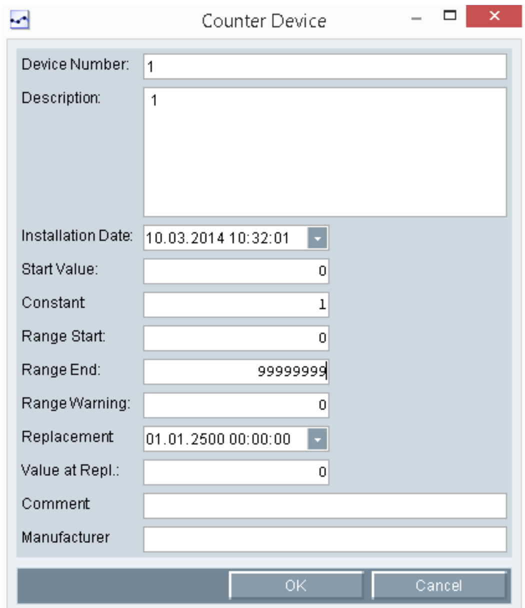


Note

The "Active energy" counter may only be used for measured values acquired by means of the scanner functionality of B.Data Mobile. The counter type is used for data points that record measured values instead of real count values to provide the device number that is necessary for identification.

---

4. Click New to to create a new counting device for which the following information is required:



5. A consecutive number should be used as counter number (not conditional, serves only for a clear overview). If the counters are read using B.Data Mobile and barcode scanners, enter the barcode of the counting device as counter number.
6. The short text that is extended with the counter number is automatically suggested as descriptive text. This description must be unambiguous.

   Enter the date of installation. This entry is of particular importance if the system already contains several counting devices and the analysis has to include counters that have been replaced.

   Note on counter replacement:

   The "Date of installation" of the new counter must be more recent than that of the last value measured with the old counter. Otherwise, the result could be an overflow error.

   Starting with installation of the second counting device, the count value is of particular importance to enable proper calculations.

7. The default counter constant is set automatically to the value 1 and can be customized. The resultant difference is then multiplied with this constant.

   The value at which the counter starts the count is entered as start value of the counting range and is of importance with regard to the proper calculation of differences upon overflow.

   The value at which the counter sets an overflow flag and resumes the count at the start of the counting range is entered as value for the end of the counting range. This, too, is of importance for the proper calculation of differences upon overflow.

   The counting range alarm is currently not functional and is merely informative.

   In the "Planned Replacements" field, enter the estimated date of counting device replacement. Currently not functional and merely informative.

   Starting with the removal of the second counting device, the count value is of particular importance to enable proper calculations.

   The "Comments" field can be used to save comments related to the counting device.
8. The name of the counting device manufacturer can be saved by entering it in the "Manufacturer" field.
9. The counting device data is saved with OK and is used by the respective MEVA functions for calculation of the differential values.

Result

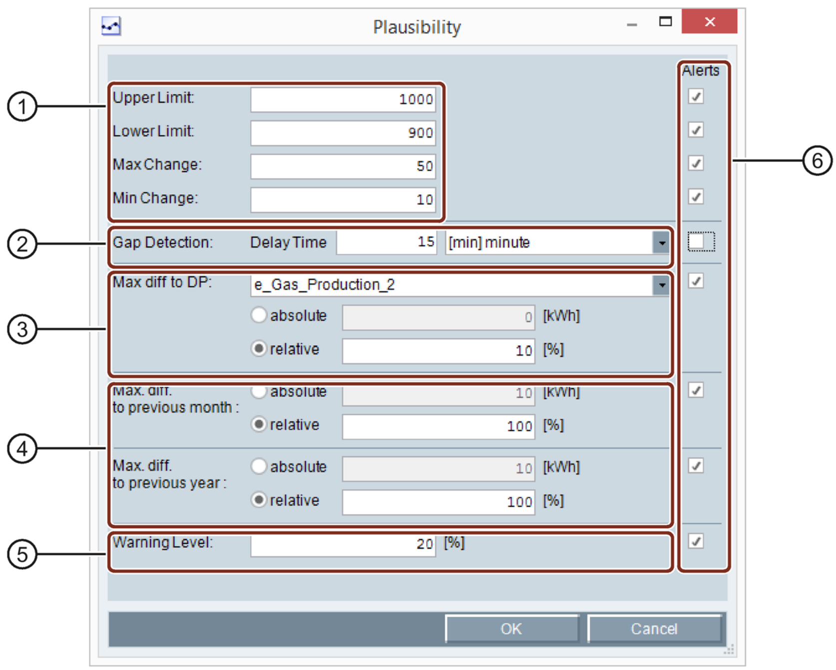
You have successfully configured the counter configuration of the data point and it is now ready for use.

4.2.8 Configuring data point limits

Overview

Configure the datapoint limits that you want to use to monitor the limits of a measured value.

You can configure different datapoint limits in the "Plausibility" dialog:



①	The high and low limit of a measured value, as well as the maximum / minimum change of a measured value between intervals
②	Time window in which it is tested whether the measured value series of a datapoint has gaps. [1]
③	Maximum difference of a measured value compared to the measured value of different data-point
④	Maximum difference of a measured value compared to the measured value of the previous month or year
⑤	Warning limit
⑥	Entry in a message list if configured limits are exceeded

[1] Example for datapoint with "15 min" cycle time and "15 min" delay time: The values are tested by the system at the full minute, for example, at 02:30:00 p.m. and not at 02:30:05 p.m. The system checks whether at least one value exists in the measured value series of the datapoint for the last cycle time + period (15 min + 15 min = 30 min), for example, from 02:00:00 p.m. to 02:30:00 p.m. If no value exists, a message is generated. In addition, the affected datapoint is listed under "GAP Detection" in the Service Cockpit.

If the cycle time of a datapoint is less than 1 minute, the number of values is also checked for completeness.

Example for datapoint with cycle time "10 s" and delay time "1 min": The values are tested by the system at the full minute, for example, at 02:30:00 p.m. and not at 02:30:05 p.m. The system checks whether at least one value exists in the measured value series of the datapoint for the last cycle time + period (10 sec + 1 min = 1:10 min), for example, from 02:28:50 p.m. to 02:30:00 p.m. In addition, the number of values is tested for completeness for the last minute, for example, from 02:27:50 p.m. to 02:28:50 p.m. / 6 values per minute at "10 s" cycle time.

Applications

The limits of the measured values are evaluated for the following applications:

- Matrix in B.Data and in B.Data Web
- B.Data Mobile
- Message lists
- Module type for "Plaus. check deviation reference datapoint" report
- Module type for "Plausibility check of max. rate of rise" reports
- Module type for "Plausibility check of MIN/MAX" reports

  The measured values at which the limits have been exceeded are marked in red color in the matrix and in B.Data Mobile .

Requirement

The datapoint is configured.

Procedure

Note

Subsequent modification of limits

Changes to the limit definitions only affect newly acquired data. Existing data is not updated.

---

1. Click "Edit" in the shortcut menu of the datapoint.

   The datapoint configuration dialog opens.
2. Click "Plausibility".

   The "Plausibility" dialog opens.
3. Enter the required limits for the measured value.
4. To determine gaps in the measured value series of a datapoint, select the desired entry in "Delay Time".

5. Proceed as follows to enter the maximum difference to a different datapoint:
   – Select "Active".
   – Select a datapoint.
   – Enter an absolute or a relative value.
6. Define a warning limit by entering the requested deviation in percent in the "Warning level" field.
7. Activate "Alarming" to generate a message in a message list if configured limits are exceeded.
8. Click "OK".

Result

You have successfully configured the datapoint limits.

See also

Message lists (Page 362)

Working with matrixes in B.Data Web (Page 433)

Using B.Data Mobile (Page 459)

Module overview (Page 478)

Service Cockpit (Page 389)

4.2.9 Configuring the compression function for a data point

Note

The compression of measured values is supported only for data points with function type "Measurement" and "Count value". The "Counter diff. (overflow, change) without range" and "Counter value diff. with overflow, counter change" compression levels are only available for the "Count value" function.

Note

Activating online compression

To enable compression of the measured values during their import in B.Data, the administrator must activate online compression in B.Data options.

1. Click "B.Data options" under "Administration" in the Plant Explorer.

   The "Administration" dialog opens.
2. Click the "Database" tab.
3. Enter the value "1" under "PREPROCESSOR_ENABLE".

Requirement

The data point is configured.

Procedure

1. Click "Edit" in the shortcut menu of the selected data point.

   The data point configuration dialog opens.
2. Click "Compression".

   The "Compression" dialog opens.
3. Click "New" in the "Compression" dialog.

   The "Compression" dialog opens.

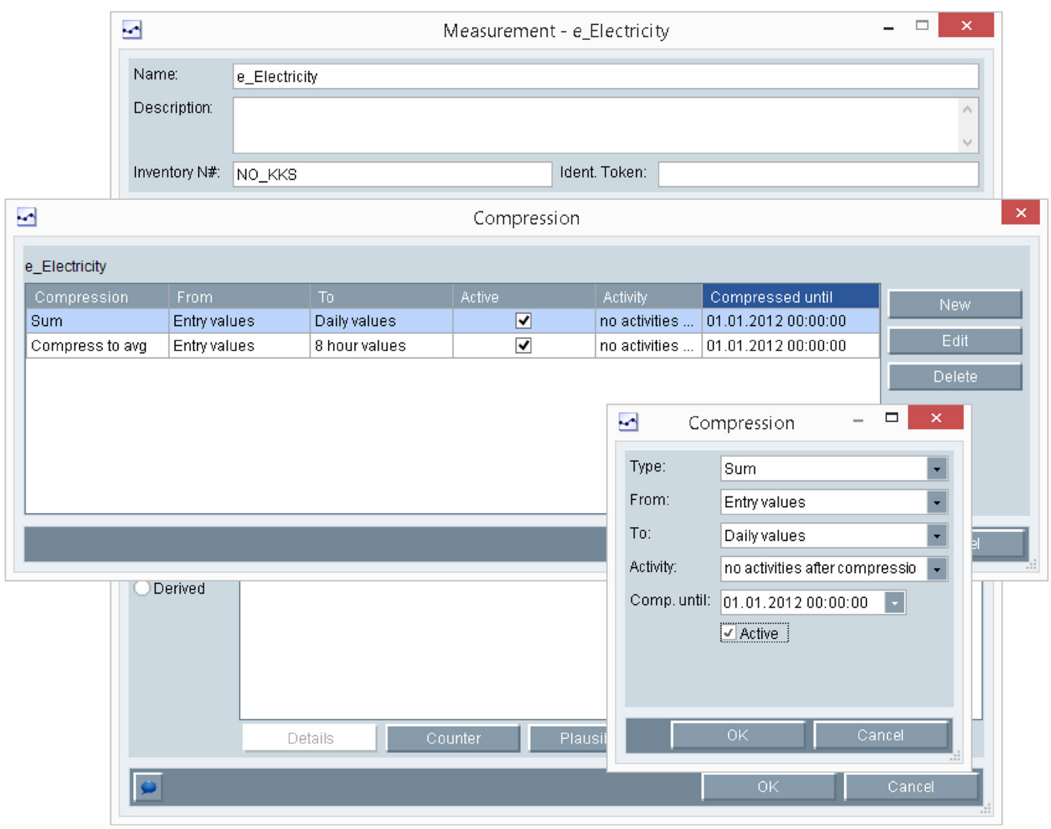
4. Configure the compression settings for the measured values of the data point:
   - Select the compression mode under "Type", e.g. "Compress to maximum".
   - Under "From:" and "To:", select the compression level, e.g. "Acquisition values" and "Hourly values". If you're compressing counter values, always select "Count value" under "From".

     When compressing values, you need to change from a higher to a lower compression level, e.g. "Hourly values" to "Daily values".

     To expand the values, you need to change from a lower to a higher compression level, e.g. "Monthly values" to "Daily values".
   - Under "Activity", select the further procedure for handling the imported acquisition values of the data points on completion of the compression.

     Note

     If you select the "Delete after compression" action, you cannot configure any further compressions on the basis of the acquisition values for this data point.
   - Select a date at which compression ends.
   - Activate "Active" to activate the configured compression.



5. Confirm the configuration with "OK".

Result

You successfully configured compression of the measured values of the data point. A separate time column with time stamp is stored in the data point for each configured compression:

- All imported measured values will be compressed if online compression is activated. Incomplete measured values are initially saved to the buffer. Select "Administration > Job queue" to run the "General post-processing job" in order to compress measured values received at a later time.
- Launch the "Job for compressing the measurement journal" under "Administration > Job queue" if online compression is not activated.

See also

B.Data options (Page 373)

Using the job queue (Page 371)

Database jobs (Page 599)

4.2.10 Configuring the export function for a data point

Overview

The export functionality is used to provide measured value sets in a specified format to other system. The result may be a file that contains the measured value sets, table entries, or viewing by means of View VW_EXPORT_VIEW.

Note

To use View VW_EXPORT_VIEW, you must be using your own Oracle version.

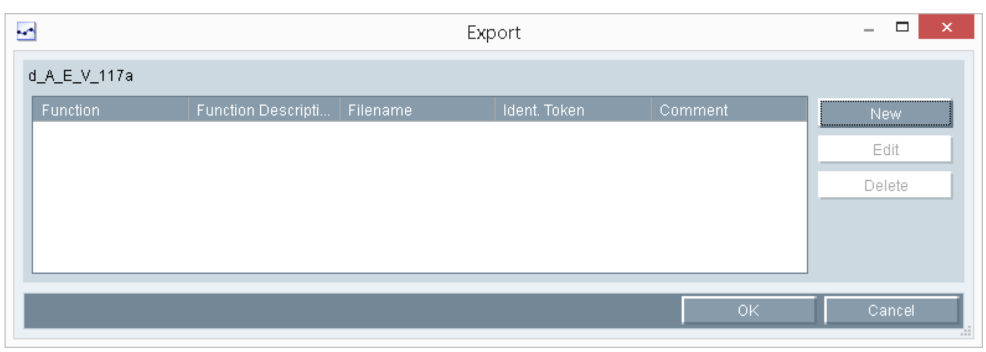
Along with the data point configuration, you also need a corresponding database job.

Requirement

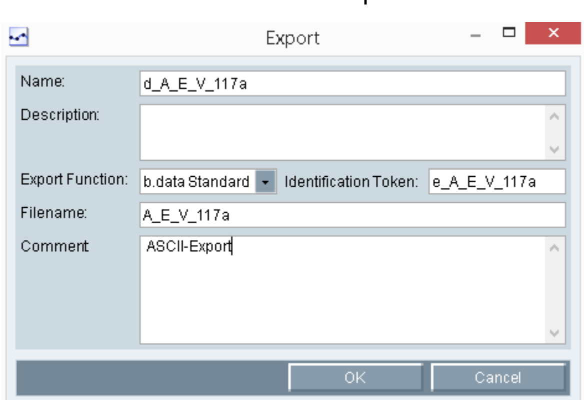
The data point has been properly created and configured.

Procedure

1. Select the data point for which the export function is to be created and then select the "Edit" command from the shortcut menu to open the data point configuration.
2. The "Measurement" configuration dialog opens. Select "Export" to open the export configuration dialog.



3. Click "New" to create a new export function for which the following information is required:



4. The name and description are transferred from the data point and cannot be edited

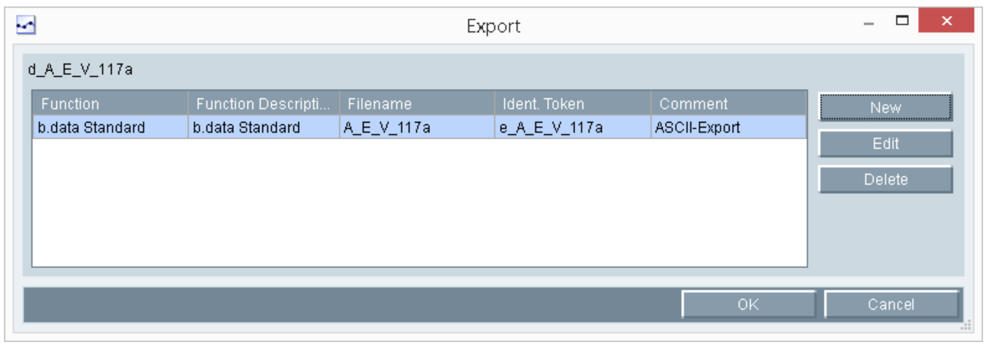
   Export function: B.Data-Standard, EDM Forecast, PDR (or SAT250 EDM), SAP PM VT historical 6h, SAP PM VVT historical 6h, VIEW

   Identification token: Used for identification in the partner system

   File name: Name of the output file

   Comment: Any descriptive text

5. Click "OK" to generate the export function.



6. Add the "Job for ASCII export B.Data standard" to the job queue to enable execution of the configured export function.

   It is not necessary to provide an active job for the VIEW export function, because as soon as a data point has been assigned to this export function, its data can be called by means of View vw_export_view.

Result

You successfully configured the export function(s) of the data point and these are now ready for use.

4.3 Creating prototypes

4.3.1 Configuring prototypes

Overview

Prototypes represent the basis for loops. The algorithms are predefined and available for further calculations.

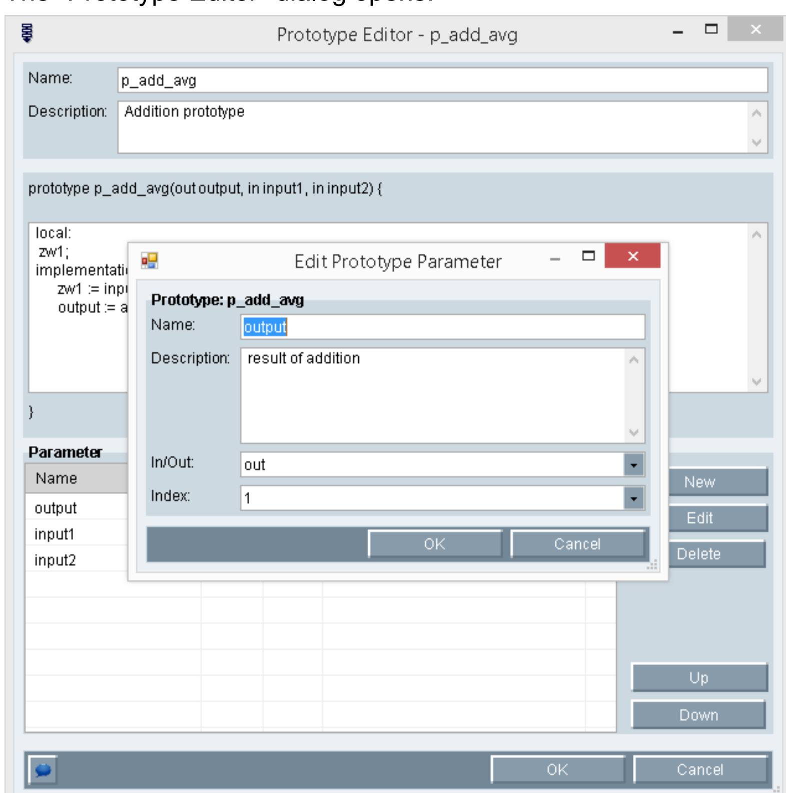
Requirement

B.Data is properly installed and the "p_test01" prototype is available.

Procedure

1. Select the folder in which the prototype is going to be created.
2. Click the "Insert Prototype" button in the menu bar under "Processing > Preprocessing".

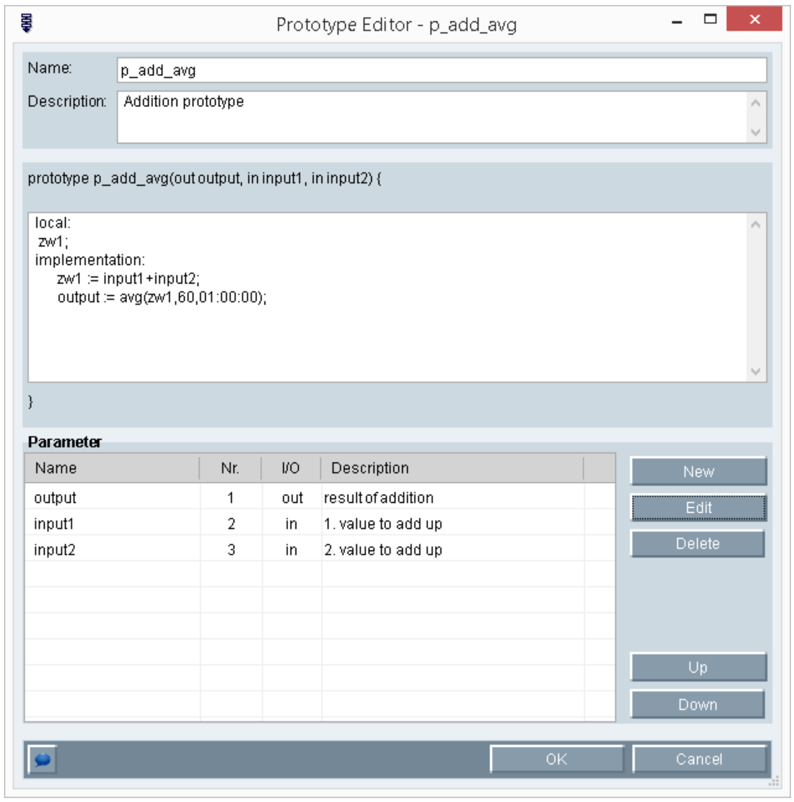
   The "Prototype Editor" dialog opens.

3. Enter the prototype name in the "Name:" input field. The "p_" prefix must be added for prototype identification. You may enter additional information on the prototype in the "Description:" field. Specify the prototype's response by means of MCL declaration. Enter

all necessary I/Os in the parameters. Click "New" and enter the "Name" and "Description". Select the output (out) or input (in) type and the order of transfer. Confirm your entries with "OK".

4. Once you have added all necessary I/O parameters, save the new prototype with "OK".



5. Select "Edit" to edit existing parameter names and declarations. You may select "Delete" to delete parameters, or change their order with "Up" or "Down" (use with caution for existing loops).

Result

A new prototype is available and can be used to configure new loops.

See also

Operations for generating calculation blocks (prototypes) (Page 522)

Description of MCL (Page 532)

4.4 Creating loops

4.4.1 Configuring loops

Overview

This section provides instructions related to the following actions:

- Creating loops
- Configuring loops

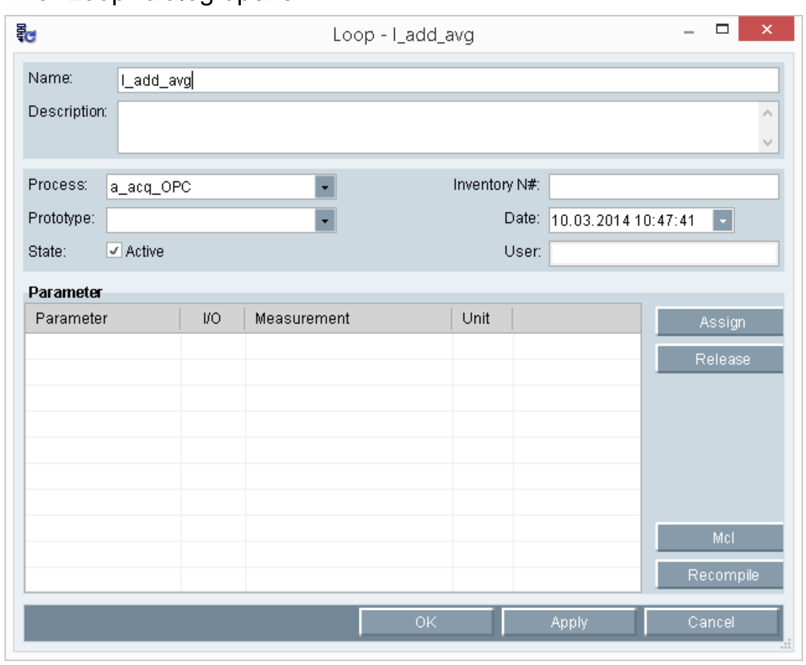
Requirement

The necessary data points and prototypes have been successfully created in the system.

Procedure

1. Select the folder in which the loop is going to be created.
2. Click the "Insert Loop" button in the menu bar under "Processing > Preprocessing".

   The "Loop" dialog opens.

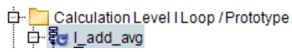
   

3. Enter the loop name in the "Name:" input field. The "l_" prefix must be added for loop identification. You may enter additional information in the "Description:" field. If available, you may also enter a KKS or FIS number as inventory ID. The current time is set by default for the date of initial creation of the loop. The logged on user is automatically entered in the "User:" field. Select the process that is to run the loop in the "Process:" field. This selection assigns the loop to a specific hardware. A separate process is usually

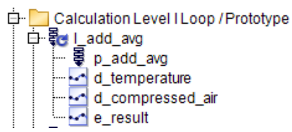
created for loop calculations. Set the ACTIVE state in the "State:" field and select the "Active" check box.

4. Confirm your entries with "OK".

   The configuration dialog is closed. The server object is now generated at the corresponding tree position.



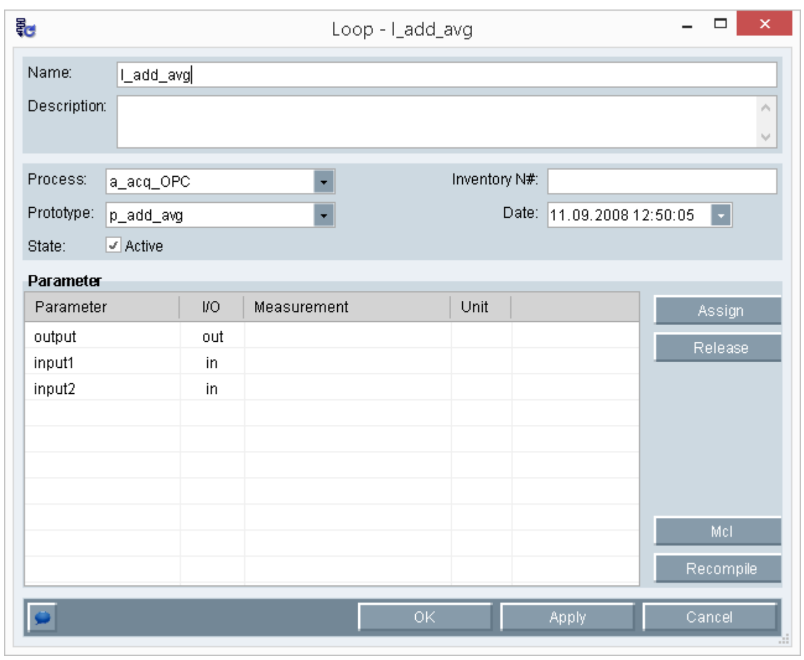
5. Copy the necessary prototype and the data points/constants to be processed to the new loop structure.



6. Select the new loop. Select "Edit..." from the shortcut menu.

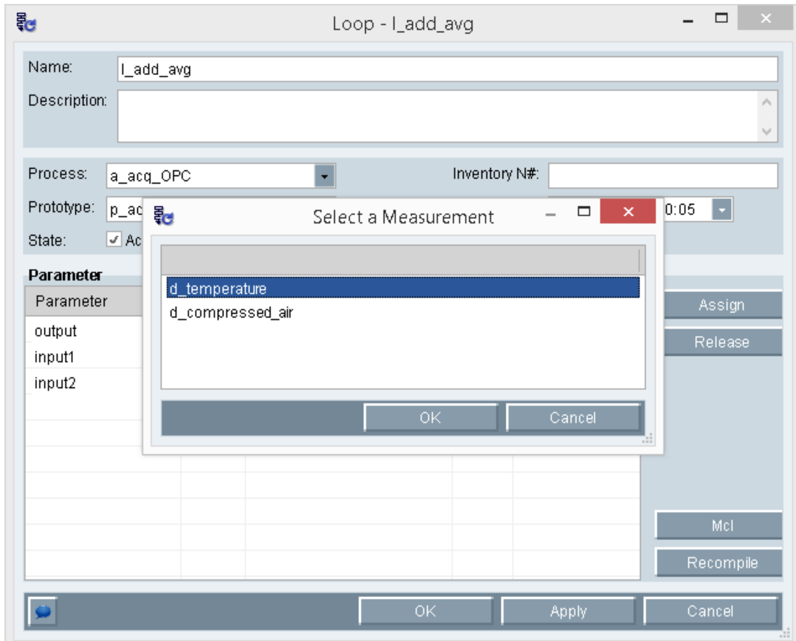
   The loop configuration dialog opens.

7. Select the prototype in the next step.

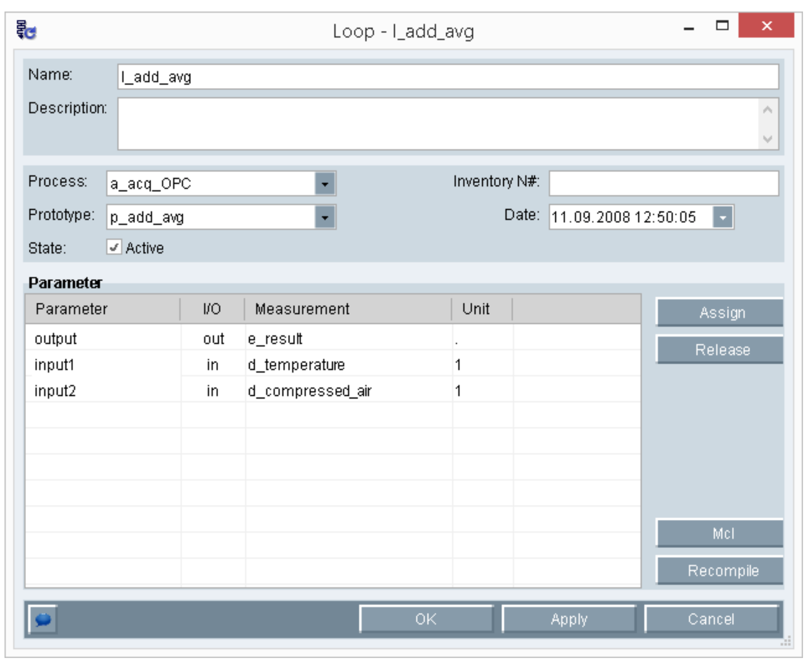


   The dialog displays the parameters and their type, depending on the respective prototype.

8. The real data points and constants are assigned to the parameters in the next step. Select the parameter to be assigned a measurement and click "Assign".

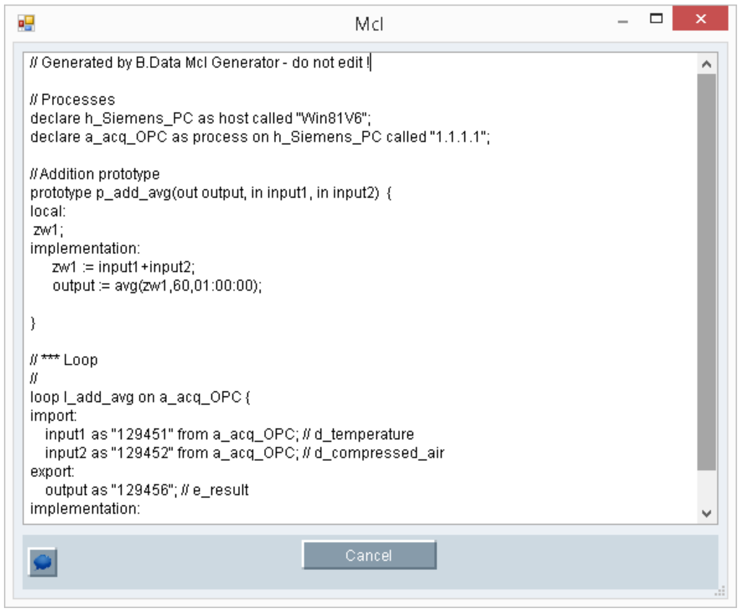


9. The next window displays all measurements that are available. Select a measurement and confirm this with OK.



The loop configuration is completed once you have assigned all data points or constants to the respective parameters. Exit the dialog with "OK".

10.You can click "MCL…" to check the appearance of the loop in the MCL language and how it is compiled by the B.Data kernel.



11.The "Recompile" function can be used at runtime to modify an existing or active loop. Example: A different scaling factor needs to be assigned because it has been changed in the PLC.

Result

You have now configured a loop that is compiled during restart by the responsible kernel, saved to an mcl file, and assigned values that are calculated online.

4.5 Manual data acquisition

4.5.1 Basics on the measured value editor

Overview

The measured value editor is used to view and edit measured values or enter new ones. The measured value editor supports data export, as well as data import from ASCII files.

Requirement

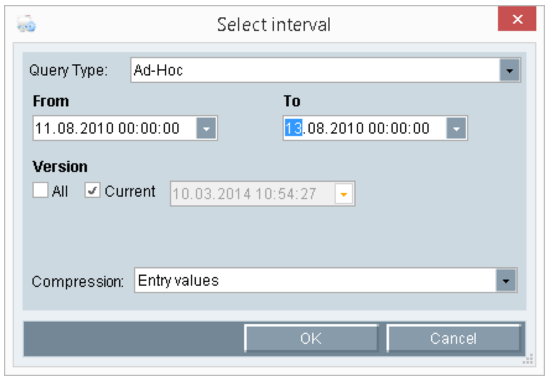
- The data points to be used for visualization have been successfully created in the system.
- Data is available for the query period.

4.5.2 Opening the measured value editor

Procedure

1. Select the data point for which you want to request the measured data.
2. Select the "Edit measured values" command from the shortcut menu of the data point.

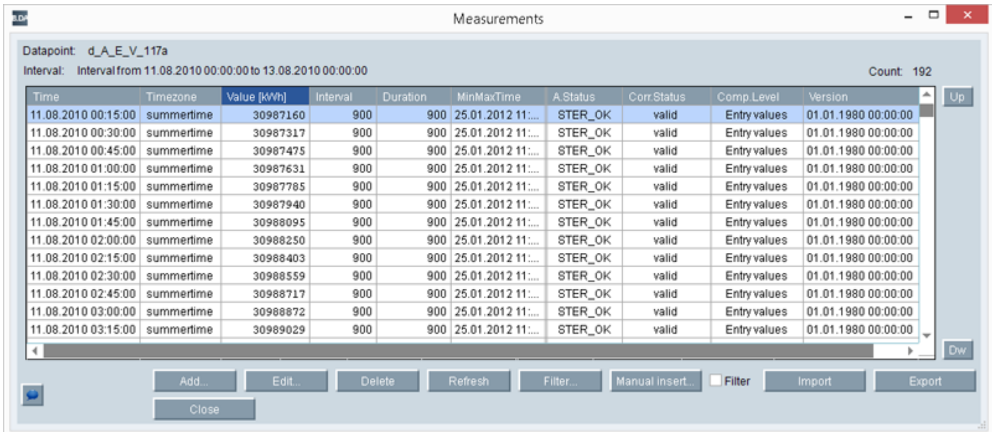
   The dialog for defining the query period opens.

3. Enter a start time in the "FROM" field.
4. Do not change the default "AdHoc" setting in the "Polling type" field if you want to enter an individual end time. Enter the end time in the "TO" field. Otherwise, the end time is set automatically in the "TO" field, depending on the selected "query type". The time range is rounded at the same time, depending on the query type.
5. If recorded data has been versioned, you can enter corresponding settings in the "Version" field.
6. Activate "All" to include all available data in the calculation.
7. Enter a time if you select the "Current" option in order to use only the data that was available in the system prior to the defined time for calculations.
8. Save your entries with "OK".

Result

The measured value editor opens.



The data point identifier and the selected interval are displayed on the top left. Click "Up" or "Down" to page the monitoring interval up or down by one step.

Select "Refresh" to reload the selected time range from the database.

Select the "Insert", "Edit", "Remove", or "Manual Input" buttons to insert, edit, or delete values.

Click "Close" to exit the measured value editor.

4.5.3 Manipulating values

Overview

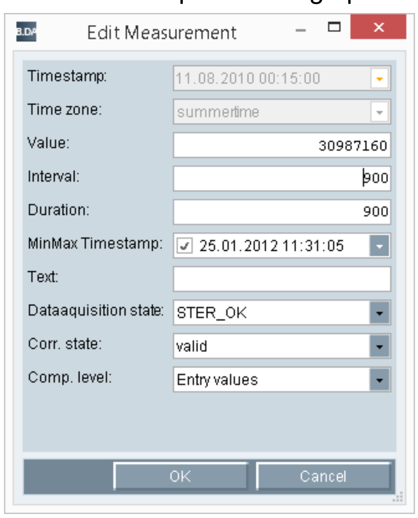
This section provides instructions related to the following actions:

- Inserting, editing, and deleting values
- Manual input
- Data structure for measured values
- Acquisition status
- Correction status

Procedure

1. To delete one or several measured values, select these accordingly and then click "Delete".
2. To edit a measured value, select it accordingly and then click "Edit".

   The "Edit data point" dialog opens.

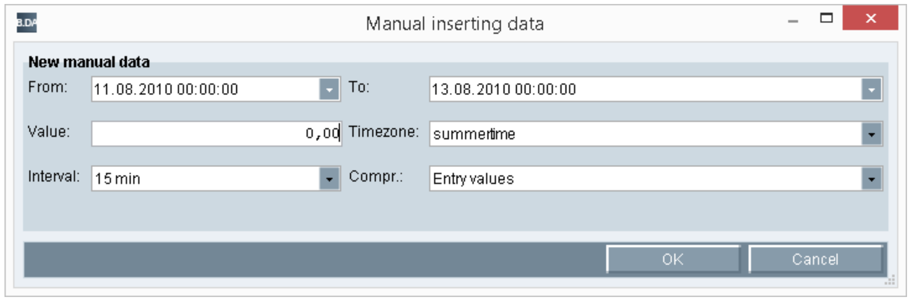
3. Edit the selected values and click "OK".

   The "Corr.Status" entry is toggled automatically to "valid with manual manipulation".

   This result is displayed in orange color in all evaluations using this corrected value for calculations. This functionality allows you to clearly determine whether the result was modified by means of system input or manual manipulation.

4. Click "Manual input" if you want to supplement specific values.

   The "Manual data input" dialog box opens.



5. Supplement the data of the new value as follows:
   - Enter the selected period in the "FROM / TO" fields.
   - Enter the "Value".
   - Select the "Interval".
   - Enter the "Time Zone" and compression ("Compr.").
6. Click "OK".

Result

All values entered, edited, or deleted in this way will be logged in the Logging Editor.

All values are saved to the B.Data system, including the following data.

- Time stamp
- Time zone (daylight saving time)
- Value
- Interval (in seconds).
- Duration (in seconds).
- MinMaxTime (entered only by few functions)
- Text (a data point configured for text input is entered in this field)
- Acquisition status (entered by the data acquisition function)
- Correction status (manual manipulation, adjustment jobs,..)
- Compression level (acquisition values; other compression levels are not generated until a compression is carried out.)
- Version date (if the data point is not configured for versioning, the version is always entered with the time stamp 01.01.1980 00:00:00)

Possible acquisition states

- STER_OK
- STER_INVALID
- STER_CONFUSE
- STER_GAP
- STER_FIRST
- STER_FIRST_INVALID
- STER_FIRST_CONFUSE
- STER_FIRST_INVALID_CONFUSE
- STER_LAST
- STER_LAST_INVALID
- STER_LAST_CONFUSE
- implemented in the NLS
- DB update locked in the NLS
- Calculated process value
- Invalid in CAD
- Adjusted in CAD
- Application-specific
- Outliers
- Substitute value

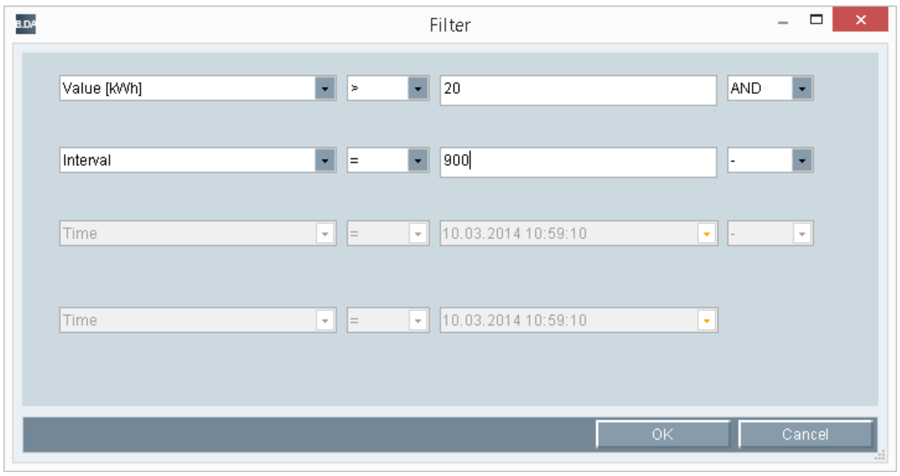
Possible correction states:

- Valid
- Invalid
- Corrected with LRU
- Corrected with substitute measurement
- Corrected with substitute value
- Valid with manual manipulation
- Valid corr. with LRU and manual manipulation
- Valid corr. with substitute m. and manual manipulation.
- Valid corr. with substitute v. and manual manipulation.
- Import
- Invalid import
- Import valid, corr. with LRU
- Import valid, corr. with substitute measurement
- Import valid, corrected with substitute value
- Import valid with manual manipulation
- Import valid, corrected LRU+manual manipulation.
- Import valid, corr. with substitute m.+manual manipulation.
- Import valid, corr. with substitute v.+manual manipulation.
- Corrected

4.5.4 Filtering in the measurement value editor

Filter options

Use the filter function for fast access to information. Click "Filter" in the measurement value editor to open the "Filter" dialog.



Select the column from the first list. Select the operator from the second list. Additional entries are available in the third column, depending on the entry you selected in the first column. You may also logically link the filters by setting an "AND" or "OR" operation in the fourth column.

Click "OK" to activate the filters. The result is displayed in the measurement value editor. Uncheck the "Filter" check box to cancel filtering.

4.5.5 Exporting and importing process data

Overview

This section provides instructions related to the following actions:

1. Exporting data
2. Editing data
3. Importing data

Requirement

The measurement value editor is open.

Exporting data

1. Select the data in the measurement value editor and click "Export".

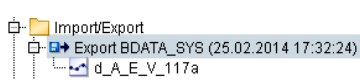
   The Save As... dialog opens.
2. Select a target folder and specify a file name. Click "Save".

The selected data is saved to a text file in B.Data standard format.

Note

Version information is not included in the export data. Data of older versions that you export and then re-import is always imported to the current version.

Data export is logged in B.Data . A corresponding export object is generated in the "Import/Export" folder. The data point whose values were exported is inserted under the export object.



Editing data

1. Double-click on the export object to edit it.

   The export object will be opened in the corresponding application, e.g. Notepad or Microsoft Excel.
2. Edit the selected data and save it again to a file in *.TXT or *.CSV format.

   Microsoft Excel replaces the separator ";" with a tab character.

Importing data

1. Click "Import" in the measurement value editor.

   The "Open" dialog opens.

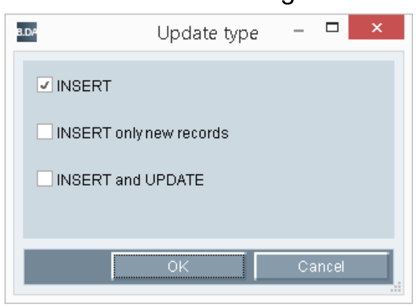
2. Select the file in B.Data standard format and click "Open".

   The data is now imported.

   If the data point is configured for saving values with versioning: All values entered are assigned a new version. If you import the data of a different data point, the following message is output: "Caution: MeasID inconsistent. Do you want to continue?" Confirm this prompt with "Yes", or cancel the import with "No". The purpose of this message is to prevent unintentional overwriting of the data of a wrong data point.

   A plausibility check of the data is discarded if you run the import using the "Edit > Import measured values" command from the B.Data menu bar.

   The "Update type" dialog is opened if the data point is configured so that the data is saved without versioning.

3. Select the option:

   – "INSERT": Inserts only values that are not yet available in the database.

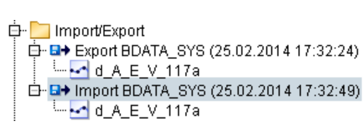
   – "INSERT only new values": Inserts only values that are not yet available in the database. Use this option whenever possible when importing large data volumes.

   – "INSERT and UPDATE": inserts new values and overwrites existing ones.

Result

On successful completion of the import, a message such as "Inserted 24 of 24 data records" is displayed.

Data import is logged in B.Data . A corresponding import object is generated in the "Import/Export" folder. The corresponding datapoint is inserted under the import object.



4.5.6 Configuring a matrix

Overview

Use the "Matrix" object to manually enter B.Data and B.Data Web data.

This section provides instructions related to the following actions:

1. Configuring matrix objects
2. Assignment of datapoints
3. Possible datapoint configurations
4. Data input

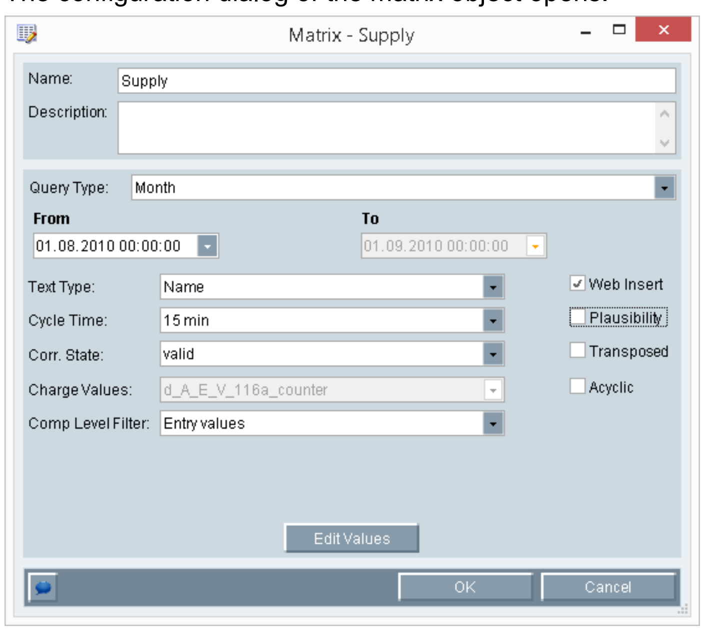
Requirement

Datapoints have been created.

Configuring matrix objects

1. Select the folder in which the matrix object is going to be created.
2. Click the "Insert Matrix" button in the menu bar under "Acquisition > Manual Acquisition".

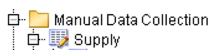
   The configuration dialog of the matrix object opens.



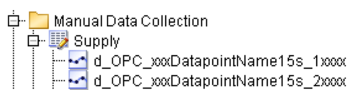
3. Enter a "Name", an optional "Description", and the Query type".

   The query type determines the time horizon that is displayed in the matrix. Example: You have entered daily values in the course of a week. In this case, the query type used is "Week", and the "Cycle time" is 1 d for the days. The system automatically calculates the "FROM / TO" time period.
4. Select the datapoint entry to display in the matrix header from the "Text Type:" list box.

5. Select the "Cycle Time: as required. Ensure that this cycle time matches the cycle time of the datapoint.
6. Adjust the "Corr. Status:" entry if applicable.
7. Select the "Web Insert" check box to enable user input of values via the Web.
8. Select the "Plausibility" check box if you want to enable the plausibility check function.
9. Select the "Transposed" check box if you want to change the time axis from vertical to horizontal mode. The same procedure applies to the datapoint name.
10. Select the "Acyclic" check box to enable the input of batch-related data in the matrix. Select the datapoint that contains the batch information from the "Charge Values" list box.
11. Click "OK" to create the matrix object in B.Data.
12. OK input saves the settings to the database and creates an object in the B.Data system.



13. Assign the datapoints to the matrix in the conclusive step. Ensure that this cycle time matches the cycle time of the datapoint.



Provided the "Plausibility" function has been enabled, the "high limit" and "low limit" are used to check the plausibility of the datapoint configuration in the matrix.

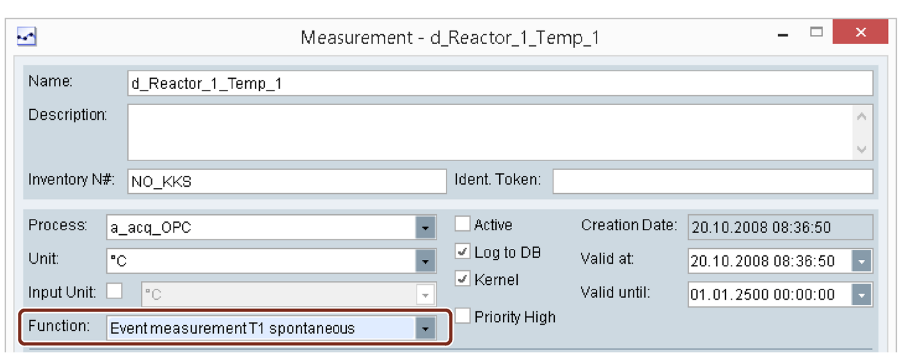
The following function types of the datapoint will affect the matrix:

- "Event Measurement T1 spontaneous", "Event Measurement T1 cyclic", and the definition of the datapoint that contains the batch information
- "Text": The values entered are saved to a text field.
- "Priority high": Although you may enter values in this datapoint, it is not possible to edit these values using the matrix.

Background: Batch-related data

To enable the display of batch information in a datapoint, select one of the following entries in the "Function" list box:

- "Event Measurement T1 spontaneous"
- "Event Measurement T1 acyclic"



The data is stored in the datapoint (Event Measurement T1 spontaneous) as follows:

Time stamp	Value
01.02.2008 14:32	0
01.02.2008 15:12	1
01.02.2008 18:20	0
01.02.2008 21:10	1

Each changing value defines the end or start of a batch. In a scenario as mentioned above, values may be defined for the following time ranges in the matrix.

- 01.02.2008 14:32 - 01.02.2008 15:12
- 01.02.2008 15:12 - 01.02.2008 18:20
- 01.02.2008 18:20 - 01.02.2008 21:10

The data is stored in the datapoint (Event Measurement T1 cyclic) as follows.

Time stamp	Value
01.02.2008 14:32	0
01.02.2008 14:33	0
01.02.2008 14:34	1
01.02.2008 14:35	1
01.02.2008 14:36	0

In this case, it is possible to define values for the following time ranges in the matrix.

- 01.02.2008 14:32 - 01.02.2008 14:34
- 01.02.2008 14:34 - 01.02.2008 14:36

  The values entered are written to the database with "TO" time stamp and are therefore available for further evaluations.

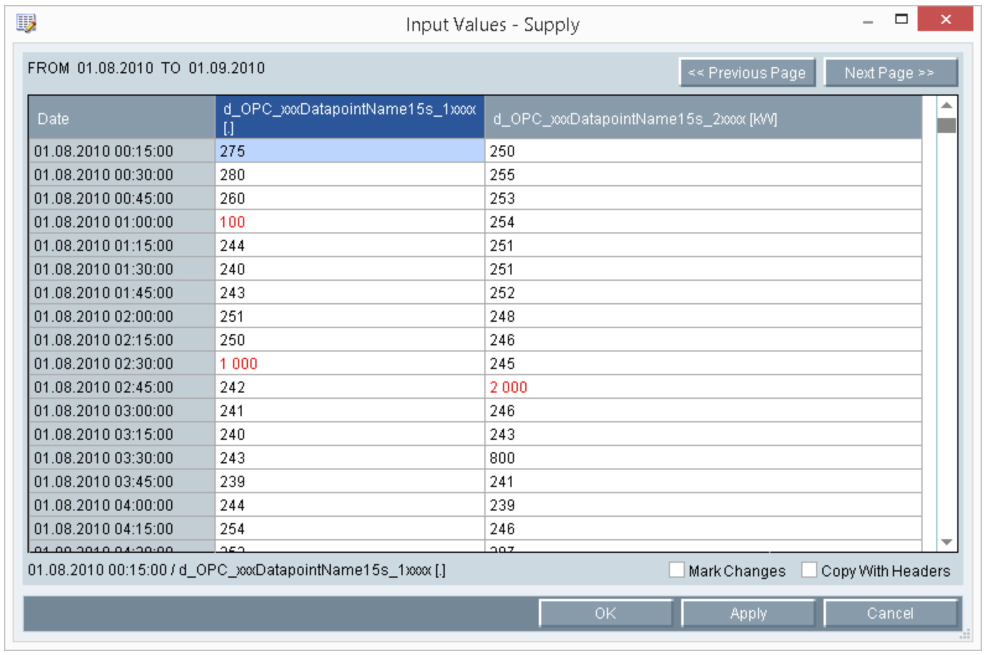
Data input via matrix

1. Double-click the matrix object to enter the data in the matrix.

   The configuration dialog of the matrix object opens.

2. Click "Input Values" to create the matrix based on the time stamps and connected datapoints.

   A separate column is generated for each datapoint connected to the matrix node.



3. Enter the values in the fields provided for this purpose.

   Provided the "Plausibility" option has been set in the matrix configuration dialog, the bottom area of the input dialog for the active field displays the valid scope along with the datapoint name. Value entries outside the valid range are marked in red color (see above). A corresponding message notifies you of this situation: "Value 8 must be >= 20!".

4. Click "Apply" to save your changes to the database.

   The result is displayed below the "Apply" button. Example: "5 values inserted, 0 values updated, 0 values removed."

5. Use the "Page up" and "Page down" keys to modify the monitoring period. The corresponding values are loaded from the database.
6. Assign the value 1 to the name "TimestampsAlignLeft " in "B.Data Options > Appl." in order to switch the representation in the matrix to the valid range.

   FROM 01.08.2010 TO 01.09.2010

Date	d_OPC_xxxDatapointName15s_1xxxx []
01.08.2010 00:00:00 - 01.08.2010 00:15:00	275
01.08.2010 00:15:00 - 01.08.2010 00:30:00	280
01.08.2010 00:30:00 - 01.08.2010 00:45:00	260
01.08.2010 00:45:00 - 01.08.2010 01:00:00	100
01.08.2010 01:00:00 - 01.08.2010 01:15:00	244

   The time stamp representation is setup by default: TimestampsAlignLeft = 0.

   FROM 01.08.2010 TO 01.09.2010

Date	d_OPC_xxxDatapointName15s_1xxxx []
01.08.2010 00:15:00	275
01.08.2010 00:30:00	280
01.08.2010 00:45:00	260
01.08.2010 01:00:00	100
01.08.2010 01:15:00	244

   These settings are valid for B.Data and B.Data Web.

See also

B.Data options (Page 373)

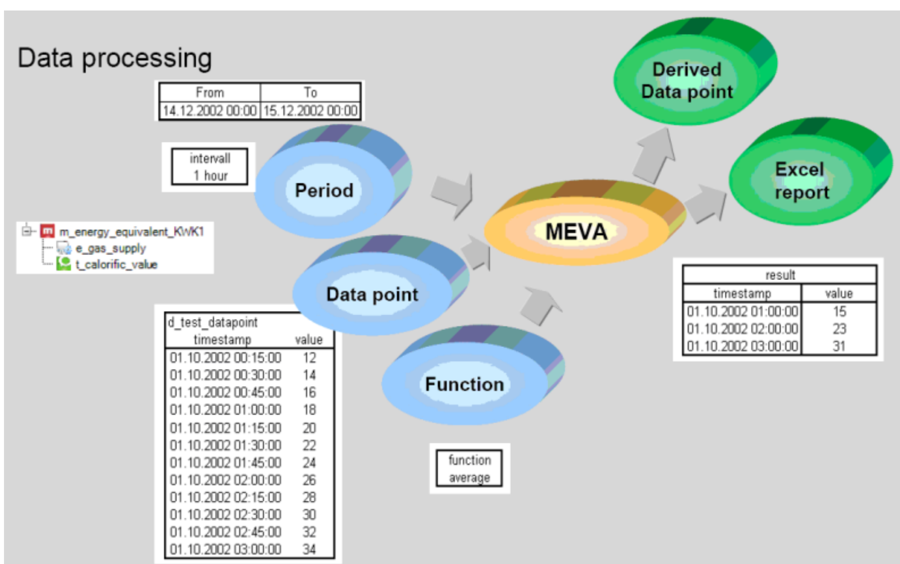
5 Calculation level 2 "The MEVA concept"

5.1 Introduction

A measurements variable, also known as MEVA in the system, forms the basis for calculating the various parameters in the analyses and reports.

MEVA concept

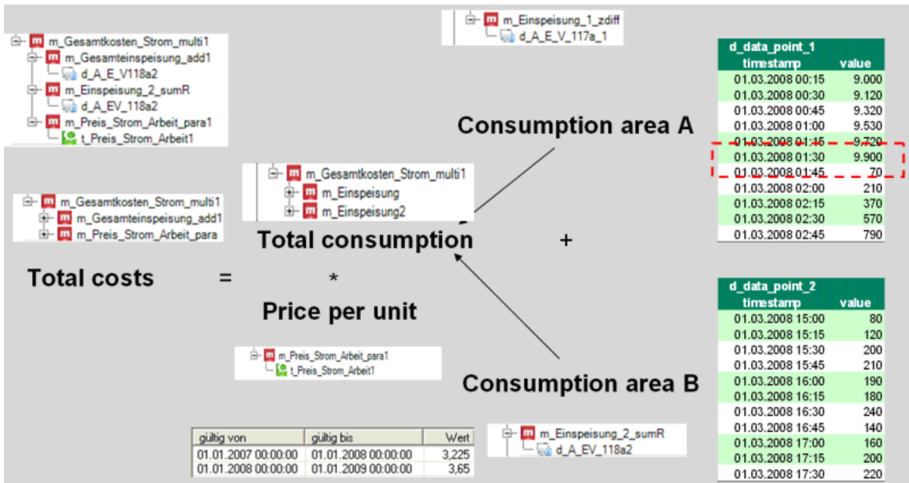
A MEVA describes the linking of one or several operating data sets, parameters or other measurement variables to the corresponding evaluation algorithm. The MEVA is calculated when a report is requested. This means that instead of providing pre-calculated accumulated process data in the database, the results of the calculation are returned on request and within a defined evaluation period.



The outstanding advantage of this concept is that the MEVAs are only calculated for the data sets that are needed for analysis within a specific evaluation period. This approach leads to a drastic reduction of database memory and archiving requirements.

The results of the MEVAs can be written to derived data points or be visualized directly in MS Excel. The quality of the values is color coded.

The mathematical rules are configured and represented directly in the Plant Explorer by arranging MEVA functionalities in a successive order.



5.2 Creating parameters

5.2.1 Configuring parameters

Overview

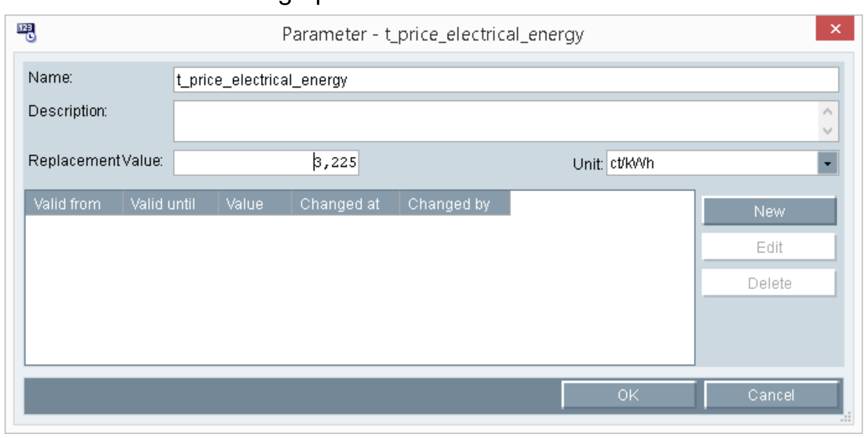
This section provides instructions related to the following actions:

- Creating parameters
- Configuring parameters
- Reading parameters by means of Meva

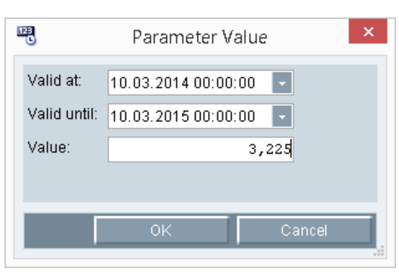
Procedure

1. Select the folder in which the parameter is going to be created.
2. Click the "Insert Parameter" button in the menu bar under "Processing > Calculation".

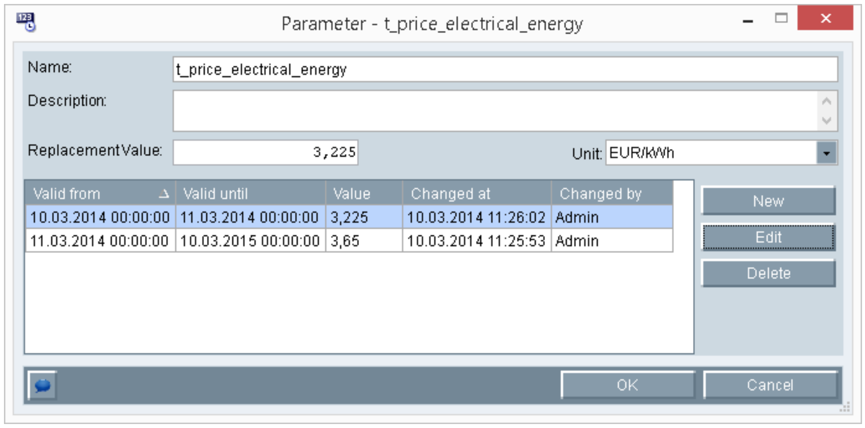
   The "Parameters" dialog opens.



3. Enter a meaningful name (t_xxx) and a description (optional). If you enter the substitute value 3.225, i.e., as long as no valid values have been defined, the value 3.225 is always returned for this parameter.
4. Click "New" to open the dialog for editing the parameter values.
5. Define the "Value" and the duration of validity. Save and confirm your entries with "OK".



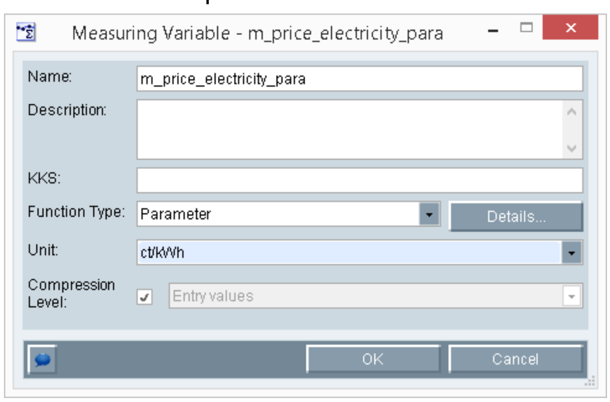
6. The value entered is now displayed, can be edited using the "Edit" function, and be deleted again with "Delete". Moreover, you can add new values for additional time ranges.



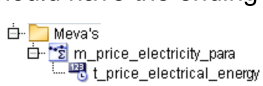
7. Click "OK" to generate the parameter with the defined values.

   When making changes to the values, you need to recalculate the reports that access the valid range of these values.

   In addition, you need MEVAs that read the parameter values and provide these for calculation or output.



8. Enter a meaningful name (m_xxx) and a description (optional). Select "Parameter" as function type. In order to deduct the function directly from the MEVA name, this name should have the ending "_para". Save and confirm your entries with "OK".



9. Connect the parameter to the MEVA node in order to complete the MEVA configuration.

See also

Configuring measurement variables (Page 187)

5.3 Configuring measurement variables

Overview

This section provides instructions related to the following actions:

- Creating a MEVA
- Configuring a MEVA

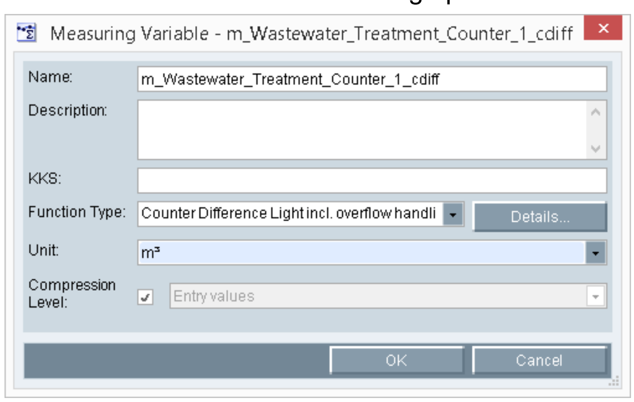
Requirement

The necessary data points and parameters have been successfully created in the system.

Procedure

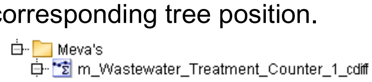
1. Select the folder in which the MEVA is going to be created.
2. Click the "Insert Measuring Variable" button in the menu bar under "Processing > Calculation".

   The "Measurement Variable" dialog opens.

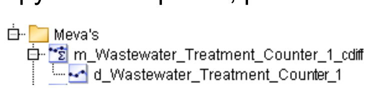
   

3. Enter the MEVA name in the "Name:" input field. The "m_" prefix must be added for MEVA identification. You may enter additional information on the MEVA in the "Description:" field. If available, you may also enter a KKS or FIS number as inventory ID. Select a processing routine as function type (click Details to view a short description of the function). Select the unit that is derived from the processing routine and sublevel data points or MEVAs.
4. Confirm your entries with "OK".

   The configuration dialog is closed. The server object is now generated at the corresponding tree position.

5. Copy the data points, parameters, or MEVAs to the new measurement variable.

Result

You have now configured a MEVA that you can use for further processing in reports or derived data points.

See also

Database functions for measurement variables (Page 535)

6 Calculation level 3 "Report and visualization concept"

6.1 Basic information on calculation level 3

Definition

"Calculation level 3" denotes the time-independent processing and visualization of measuring values in reports. You can use Microsoft Excel or Microsoft Word to visualize the reports.

You can process the data exported from B.Data using the entire functionality of Microsoft Excel or Microsoft Word , for example, statistical functions such as correlation or regression analysis from Microsoft Excel. You can also process the result data using graphics or diagrams.

Application

"Calculation level 3" supports you in the following activities:

- Creation of company-specific reports for all departments and information demands.
- IT-related, system-wide analysis of different business units for holistic assessments of your company.
- The workflow system of B.Data reduces your staff's workload:
  - Automatic and cyclical calculation of performance indicators and accounting results (task management).
  - Automatic generation of standard analyses for predefined periods, e.g. day, month, shift, year.
  - Automatic sending of evaluations to printers in the company-wide printer network.
  - Automatic dispatch of analyses and accounting bases by means of email attachment to internal and external recipients of the business unit.

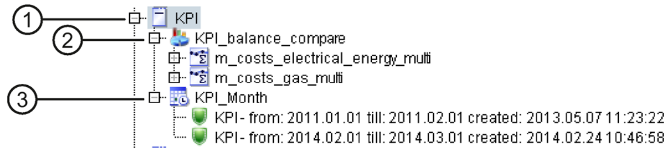
When generating reports, you can always access previous configurations (historicization), or different measured value versions (versioning).

Configuration

Specify the following when configuring reports:

- Query type: Time range that is queried in the report.
- Module: Visualization of the report in Microsoft Excel or Microsoft Word.

Each module is provided with values from its assigned measuring variables. Once the template has been generated, the final report result is stored in the project tree under the selected query type, and can be called with a double-click.



① The report employs the module "Comparative accounting" ② and query type "Month" ③ for the analysis.

② The module is provided with values from two measuring variables that calculate the measuring values by means of the database function "Multiplication of n Mevas".

③ Results of the report that was generated twice are stored at the query type.

6.2 Creating a report

6.2.1 Basics on reports

Overview

You can visualize or process the measured values that have been acquired in B.Data. B.Data generates the reports in files, in the Microsoft Excel or Microsoft Word format. The visualization of the values as a table of diagram is always based on the functionality of Microsoft Excel. Reports in Microsoft Word use embedded Excel object to visualize the values.

In both applications, all formatting and elements can be used to design the reports.

Reports can be generated manually or automatically, dispatched by email, print it, save to a file server, and view in B.Data.

Report results are stored in the structure tree of Plant Explorer. The name of report results consists of the name, calculation period and the creation date.

You can use the predefined reports provided in B.Data as the basis for your project. The default reports are available in "Customer > Reports".

Components for creating reports

You need a query type and a module to create a report.

Use a query type specify the time range of report and to configure automatic reporting.

Use a module to specify how the acquired measured values will be calculated and visualized. The following module types are available:

- Query module: Returns values without calculation, e.g. the measured values of a month on a daily basis.
- Balancing module: Returns a value for a time period, e.g. the monthly energy costs.
- Protocol module: Returns values for all intervals of a time period, e.g. the monthly energy costs on a daily basis.

Certain modules need additional parameters when you start a report. A protocol module, for example, needs interval as start parameter.

Procedure for creating reports

Proceed as follows to create a report:

1. Create a report.
2. Configure a query type and a module for the report.
3. Configure a template for the report.

4. Enter the reported values.
5. Generate the report.

See also

Creating a report (Page 193)

Configuring the query type for a report (Page 195)

Configuring a module for reports (Page 199)

Configuring a template for an Excel report (Page 204)

Entering values in reports (Page 214)

Opening report results (Page 219)

Using B.Data Web (Page 415)

Display modes (Page 519)

6.2.2 Creating a report

Procedure

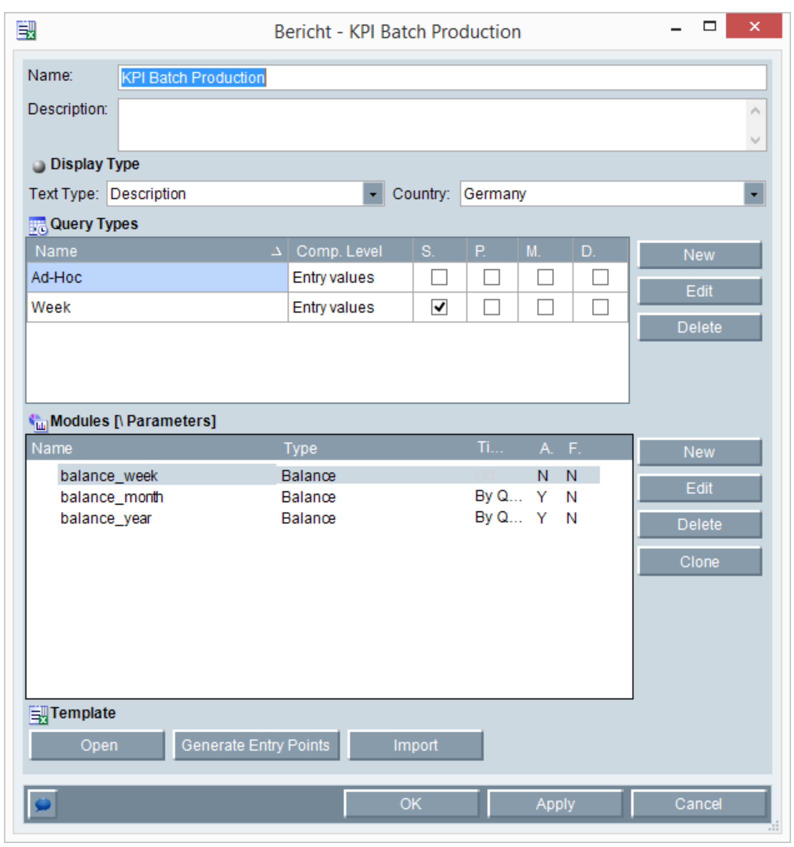
1. Select the folder in which the report is going to be created.
2. In the menu bar under "Analysis > Reporting", click the "Insert Excel report" button or the "Insert Word report" button.

   The "Report" dialog opens.
3. Enter a unique name and an optional description for the report.
4. Select a display type.

   The display type specifies the heading for the datapoint'S value column.
5. Under "Country", select the country whose time zone you want to use for the calculation.
6. Configure one or more query types (Page 195).
7. Configure one or more modules (Page 199).
8. Confirm the configuration with "OK".

Result

The report is created.



See also

Configuring a template for an Excel report (Page 204)

Entering values in reports (Page 214)

Query types (Page 469)

Module overview (Page 478)

Display modes (Page 519)

Assign time zone for acquisition or calculation (Page 405)

6.2.3 Configuring the query type for a report

Overview

Use a query type to configure the time frame that is queried in a report. You may configure several query types in the report. A folder is created in the project tree of Plant Explorer for each query type of a report.

Requirement

- The report is configured.
- For the "Print" and "Save in directory" options:
  - The printer has been created.
  - The directory has been created.
- For the "Send by Mail" option:
  - The connection to an SMTP server is configured in the B.Data options.
  - User has been created with an email address.
- For the "Send Link to Recipient by Mail" option:

  The U for B.Data Web has ben entered under "B.Data options" on the "Database tab" in the "RSERV_SMTP_WEBSERVER" field, for example "http://localhost/BDataWeb".

Procedure

1. Double-click the selected report in the project tree of Plant Explorer.

   The "Report" dialog opens.
2. Click "New" in the "Query types" field.

   The "Query type" dialog opens.
3. Select a query type and enter a description if necessary.
4. Select a compression level.

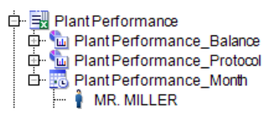
   Usually, you select "Entry values".
5. Go to "Delete interval" to set the interval for automatic deletion of report results from the project tree of Plant Explorer.

   If you want to automatically delete the report results, you also need to start the "Job for deleting analyses".
6. Activate the corresponding options for automatic generation or printing of reports.

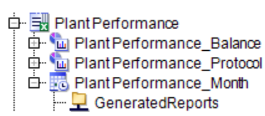
7. Proceed as follows to automatically save and email the report:
   – Activate the "Send by Mail" option.
   – Activate the report format for mailing, e.g. "PDF".
   – Activate the "Send Link to Recipient by Mail" check box if you only want to email the link to the stored report.

     The recipient will receive an email with the link instead of the file.

     The recipient accesses this report by clicking this link, logging in to B.Data Web, and opening the report.
   – After finishing the configuration, copy the "User" object under the query type.

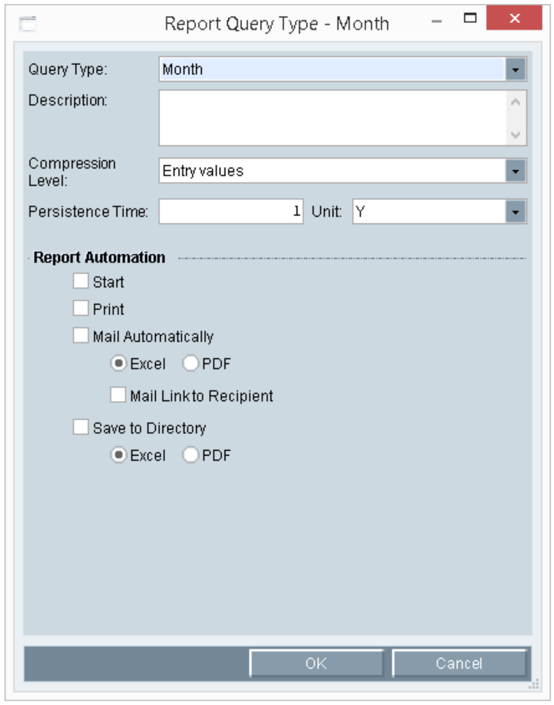


8. Proceed as follows to automatically save the report to a directory:
   – Activate the "Save in directory" option.
   – Activate the report format for saving.
   – After finishing the configuration, copy the "Directory" object under the query type.



9. If you want to generate the report automatically you should also start the job for automatic evaluations.

   You may also use B.Data Task Management for automatic generation of the report.

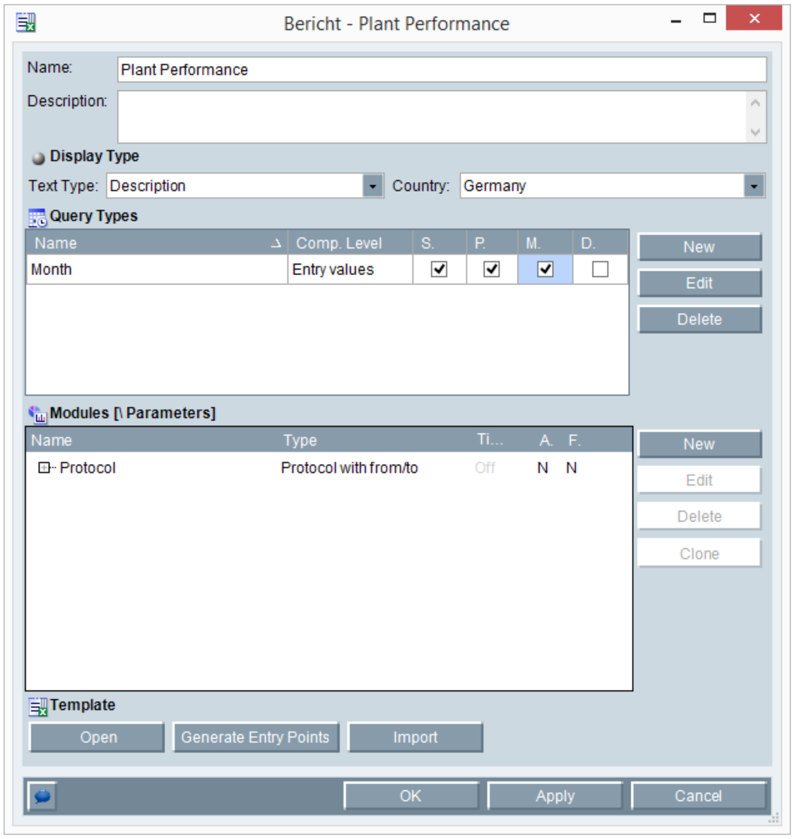
   

10. Click "OK".

Result

The query type is configured for the report.

You can edit or delete the query type, or add a new one for the report.



See also

Creating a report (Page 193)

Configuring a module for reports (Page 199)

Query types (Page 469)

Time unit abbreviations (Page 477)

Creating a printer (Page 82)

Creating a folder (Page 84)

Database jobs (Page 599)

Task Management (Page 396)

Setting up users (Page 88)

6.2.4 Configuring a module for reports

Overview

Use a module to configure the visualization of a report in Microsoft Excel or Microsoft Word. You can configure several modules for a report.

Note

Use a general name for the first protocol, e.g. "PROT", if you want to clone a report.

Requirement

The report is configured.

Procedure

1. Double-click the selected report in the structure tree of Plant Explorer.

   The "Report" dialog opens.
2. Click "New" in the "Module" area.

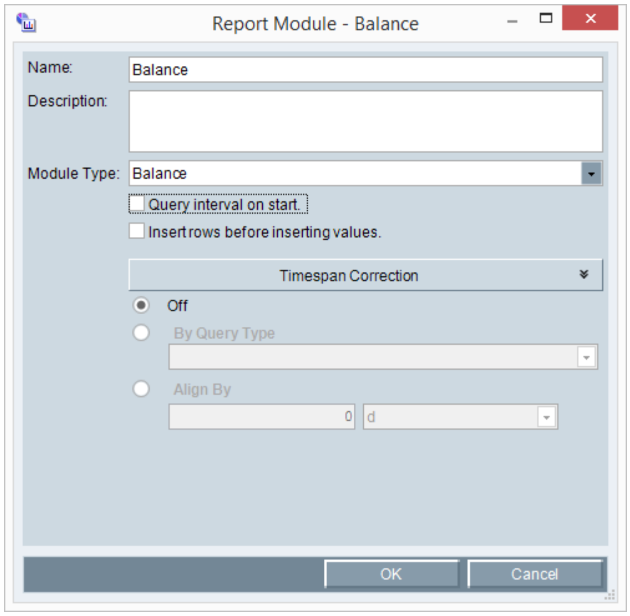
   The module configuration dialog opens.
3. Enter a unique name and an optional description for the module.

   Give the report module a name other than those for the worksheets and cells in Microsoft Excel. Otherwise B.Data will not allow creation, because B.Data is working with that name. Microsoft Excel only allows names that do not match a cell reference.

   Example: You cannot create an "A1" module, because in Microsoft Excel there is a cell named "A1".
4. Select a module type.
   – You need a datapoint to configure a query module.
   – You need a measuring variable to configure a balancing module or a protocol module.
5. Activate "Query interval at start" to enter the interval at the start of the report.
6. Activate "Insert rows before the values" in order to insert rows for the new values. Corresponding rows will be inserted prior to the wiring of values. Activate this option, for example, when using graphic objects in the template.

   Existing rows will be overwritten by default. Activate this option, for example, when using row operations in Microsoft Excel .
7. Click "time window correction" and select a time under "With query type" for starting report evaluation .

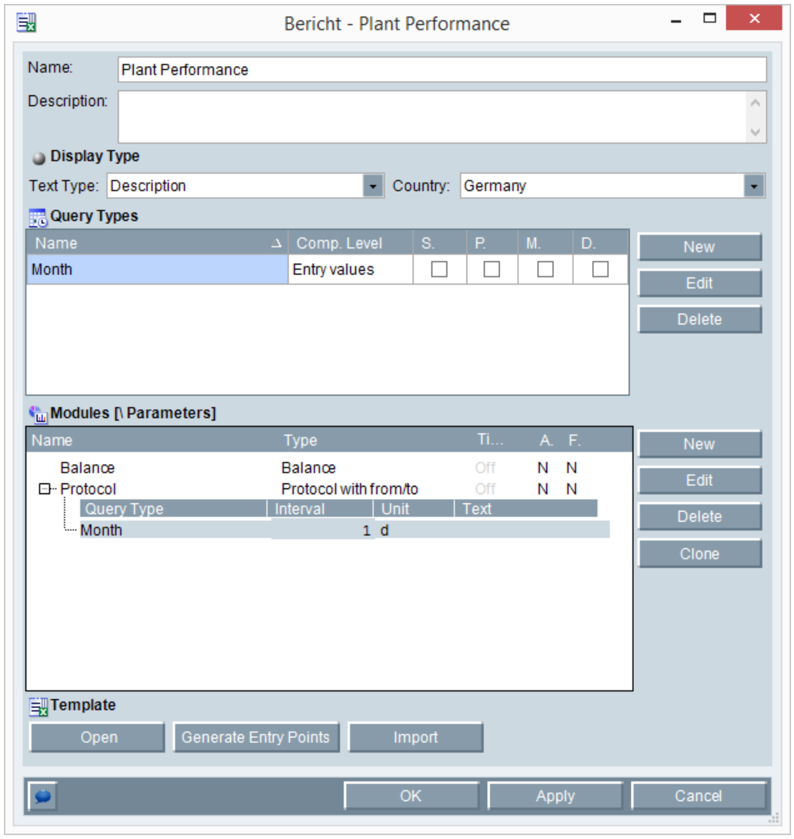
8. In order to shift the time range for the evaluation of a report, click "Time period correction" and select a value and a time unit under "Align by".



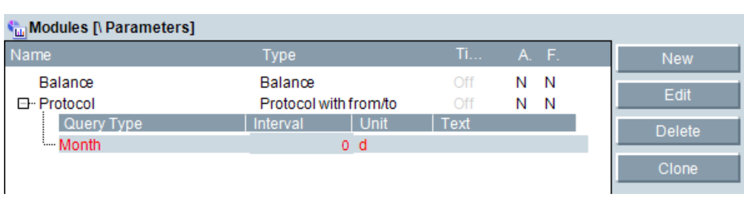
9. Confirm the configuration with "OK".

Result

The module is configured for the report. You can edit, delete, or clone the module, or insert a new one for the report.



If the module needs start parameters for the report, enter the corresponding start parameters in the "Module" area of the "Report" dialog, e.g. 1 h for the "Protocol" module. Missing start parameters for a module are marked in red color.



See also

Basics of configuring the report template (Page 202)

Creating a report (Page 193)

Time unit abbreviations (Page 477)

Module overview (Page 478)

6.2.5 Configuration of report templates

6.2.5.1 Basics of configuring the report template

Overview

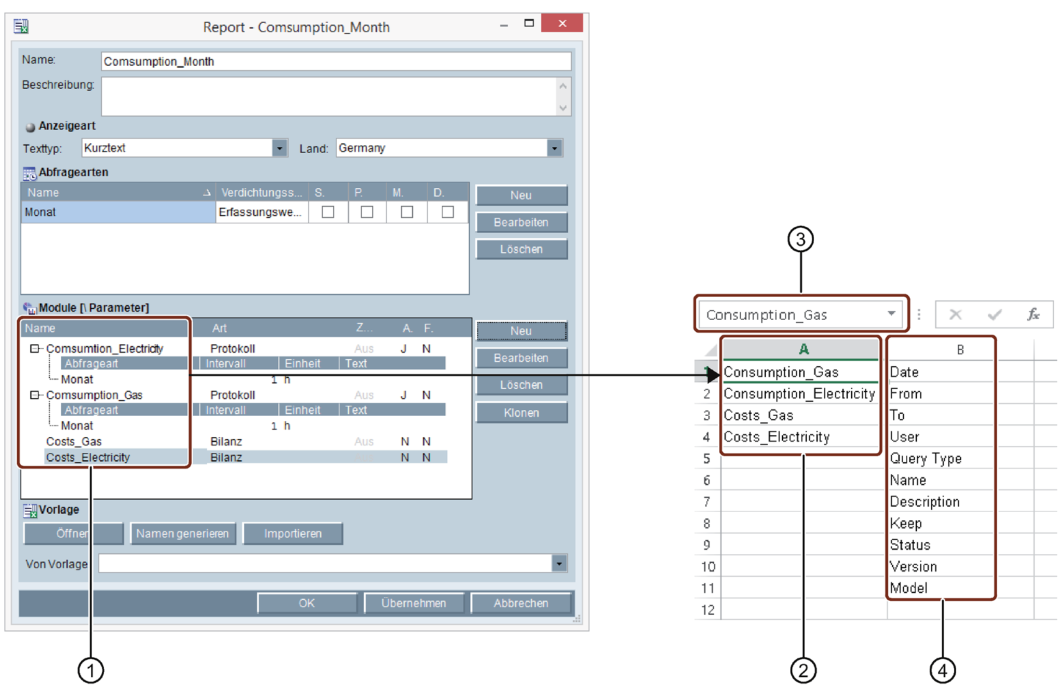
B.Data uses Microsoft Excel or Microsoft Word to visualize reports. Specify the layout and representation individually in the relevant program. In this way, for example, you can visualize consumption values in a diagram.

Principle of name generation

Note

Report templates based on Microsoft Word

In Microsoft Word, you use embedded Excel objects, into which B.Data imports values as in the figure shown below.



When you click "Generate name" in the report configuration, a new report template is created or an existing one is updated. The module names ① are entered in column "A" ②. A name with the relevant module name is created for each cell ③. In addition, the master data of the report is entered in column "B". A name with the relevant master data is created for each cell ④.

For report templates in Microsoft Word , the data are imported into the embedded Excel objects that contain the module names.

Entering values

Values are entered as follows when you generate a report:

- Modules: The values are entered as of the cell **below** the corresponding name. For this reason, you need to shift each cell with a module name from column "A" to a position where contents will not be overwritten.

  Example: The daily listing of consumption values of a month usually needs between 29 and 32 rows: One row for the header and, depending on the months, between 28 and 31 days.

  You can use the naming manager in Microsoft Excel to view and edit the names and their cell ranges.

  You may also distribute the cells to several sheets.

  Note

  If you distribute cells that contain module names to several sheets, activate the sheet that contains the original definition of names before closing.

- Master data: The values are entered as of the cell with the corresponding name.

Modifying or adding module names

Whenever you rename a module in B.Data, you also need to adjust the corresponding name of the cell in the report template. When adding an additional module for a report in B.Data, you must also assign this name to a cell in the report template.

Use the naming manager for both actions.

See also

Configuring a template for an Excel report (Page 204)

Configuring a module for reports (Page 199)

6.2.5.2 Configuring a template for an Excel report

Overview

You can configure a template for an Excel report. In this template, you specify how the measured values are displayed.

Requirement

- The report is configured.
- The query type is configured for the report.
- The module is configured for the report.

Procedure

1. Double-click the desired Excel report in the structure tree of Plant Explorer.

   The "Report" dialog opens.
2. To create a report template in Microsoft Excel, click "Generate name".

   Microsoft Excel opens and the module name is entered in column "A".
3. Move the cell containing the module name to a position at which the module has sufficient space for its measured values.
4. Structure the template. You can find additional information in the Microsoft Excel online help.
5. If you want to run a macro in Microsoft Excel after you have generated the report, follow these steps:
   - Open the macro editor in Microsoft Excel.
   - Insert the Sub OnBDataLoadDone procedure in the spreadsheet that contains the original name definitions. Note that this entry is case-sensitive.
   - Write the program code and close the macro editor.
   - Set the security level to "low" in the Microsoft Excel security settings. Activate the "Trust access to Visual Basic projects" option under "Trusted Publishers".

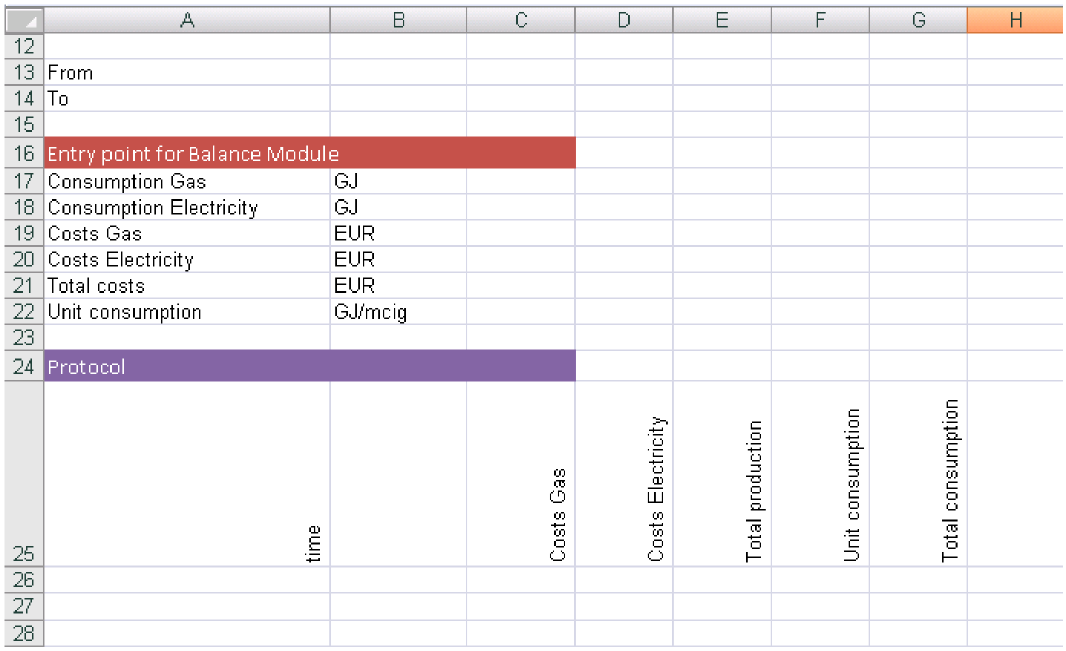
   Note

   You cannot run a macro without having made the aforementioned security settings.

   ---
6. Save the template to an Microsoft Excel file.

Result

The template is configured for the report.



Alternative procedure

Alternatively, you can import an existing template for the report. To do this, click "Import" in the "Report" dialog and select the required file. If required, you can adapt the module names in the report template using the name manager.

See also

Basics of configuring the report template (Page 202)

Creating a report (Page 193)

Configuring the query type for a report (Page 195)

Configuring a module for reports (Page 199)

6.2.5.3 Configuring a template for a Word report

Overview

You can configure a template for a Word report. In this template, you specify how the measured values are displayed.

Use the following objects to visualize the measured values:

- Tabular representation: Embedded Excel table
- Graphical representation: Trend chart

Requirement

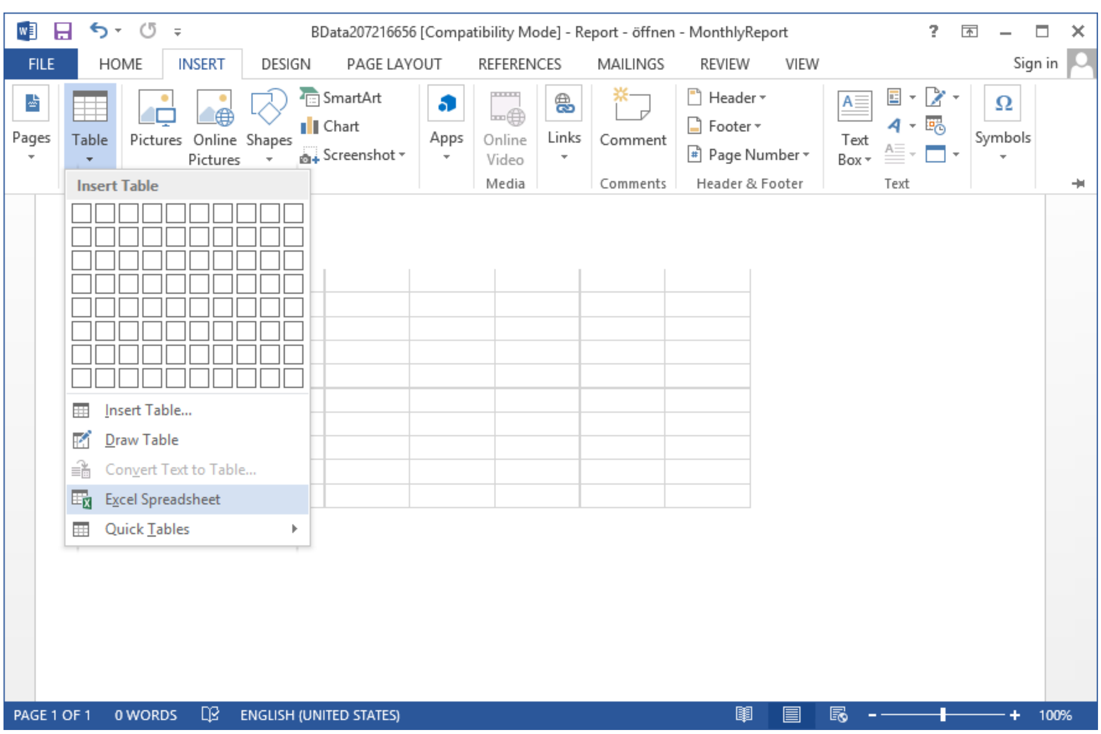
- The report is configured.
- The query type is configured for the report.
- The module is configured for the report.

Procedure

1. Double-click the desired Word report in the structure tree of Plant Explorer.

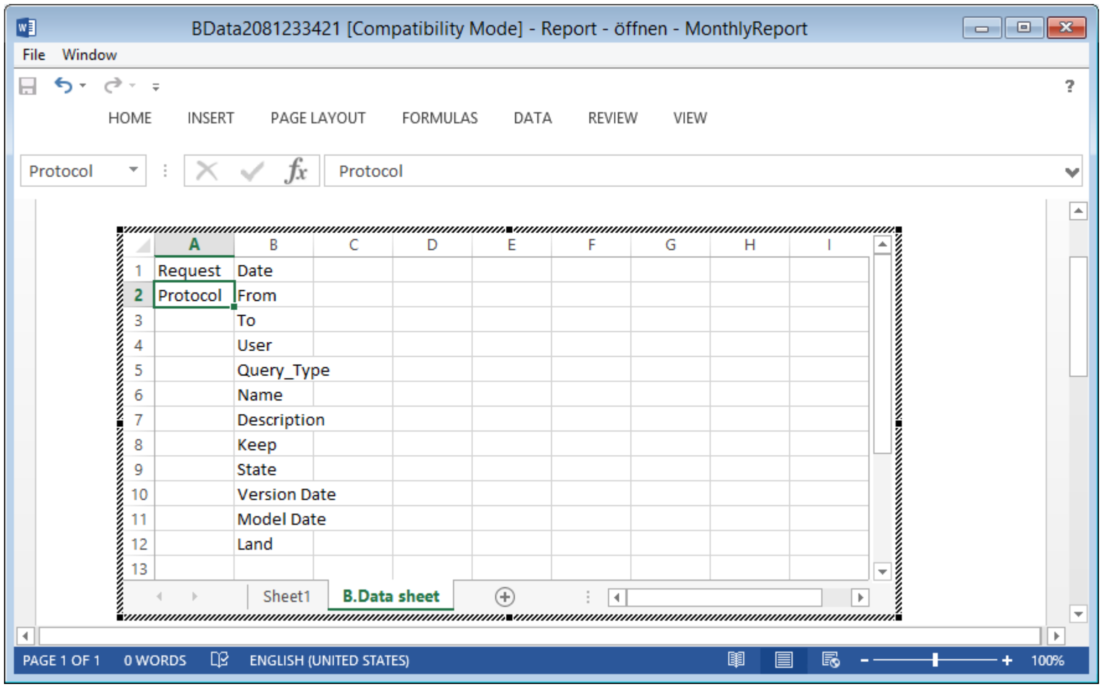
   The "Report" dialog opens.
2. In order to prepare a template for the report in Microsoft Word, click "Open".

   Microsoft Word opens.
3. Insert the desired objects, for example an embedded Excel table.



4. Save and close the template.
5. Click "Generate name".

   Microsoft Word opens. A "B.Data" worksheet is inserted into each chart or each embedded table. The module name is entered in column "A" on this worksheet.



6. Move the cell containing the module name to a different worksheet, to a position where the module has sufficient space for its measured values.

Note

During generation of the report, only those module names will be populated, which are contained on a different "B.Data sheet" worksheet.

---

7. To design the template, use Microsoft Word.'s formatting options and elements.
8. Save the template to a Microsoft Word file.

Result

The template is configured for the report.

6.2.6 Working with templates

6.2.6.1 Create a template

Introduction

In B.Data, you can use an existing report to create a template that is the basis for new reports. If you create a new report and assign a template to it, the following configurations from the template are applied:

- Display modes
- Query types
- Modules
- Report layout

Using templates for reports makes sense for similarly structured plants or sites, for example when separate reports are required for nearly identical production lines. Changes to the template affect all reports that are generated in the future, which are based on this template.

Requirement

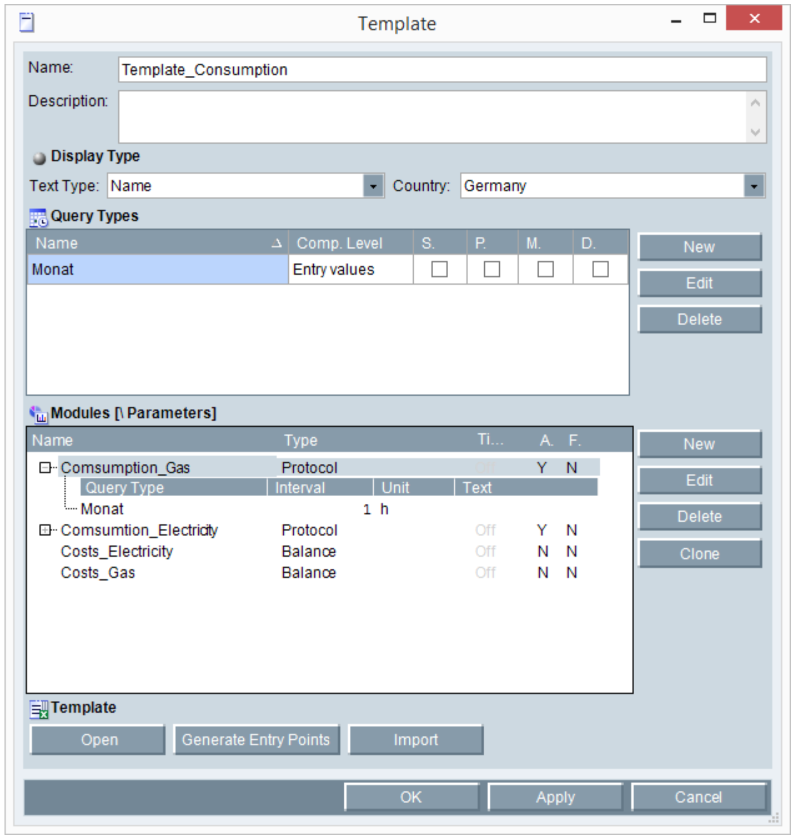
A report has been created.

Procedure

1. Select the "Report as template" command from the shortcut menu of the report.

   The "Report" dialog opens.
2. Enter a new name for the template.

3. As needed, change query types, modules or the report layout.



4. Save the template.

Result

The template has been created.

See also

Edit template (Page 211)

6.2.6.2 Using a template

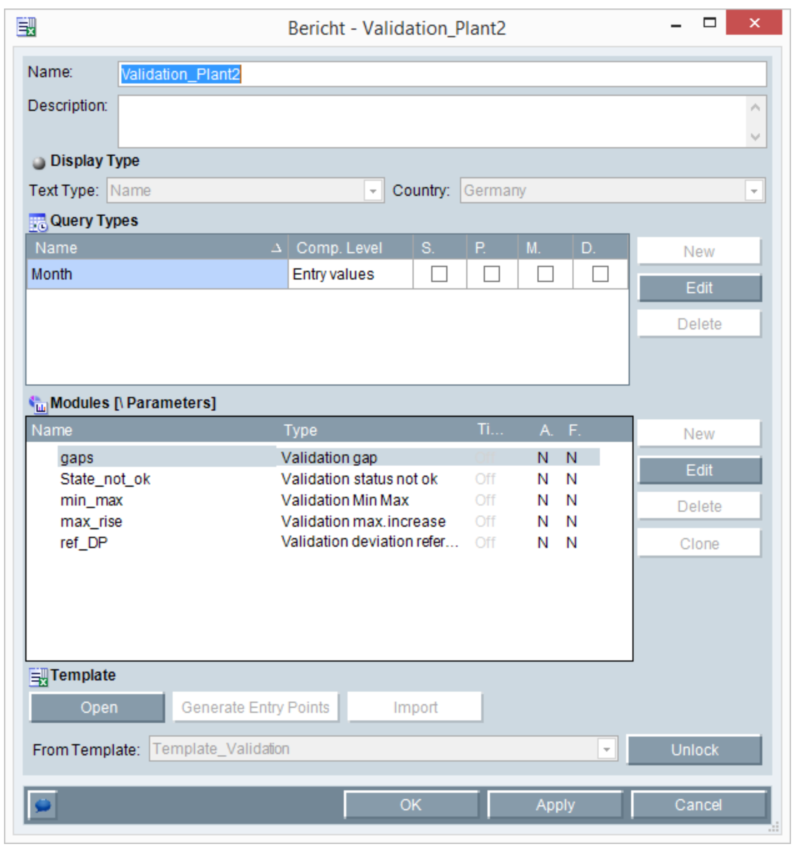
Requirement

A template has been created.

Procedure

1. Select the folder in which the report is going to be created.
2. In the menu bar under "Analysis > Reporting", click the "Insert Excel report" button or the "Insert Word report" button.

   The "Report" dialog opens.

3. Enter a meaningful name and an optional description for the report.
4. Select a template from the list under "From template", and click "Apply".

   The "Report" dialog is filled out with the template's specifications.
5. Save the report.

Result

A new report based on a template has been created.

6.2.6.3 Edit template

Introduction

Templates for reports are centrally managed in the "Templates" dialog. You can create, edit or delete templates:

- "Edit": The changes affect all reports that are generated in the future, which are based on the edited template.
- "Delete": The template is disconnected from all templates that are based on the template that is to be deleted. Then the template including the configured query types and modules is deleted.

Note

If a template has been disconnected from a report, you can never again assign a template to this report.

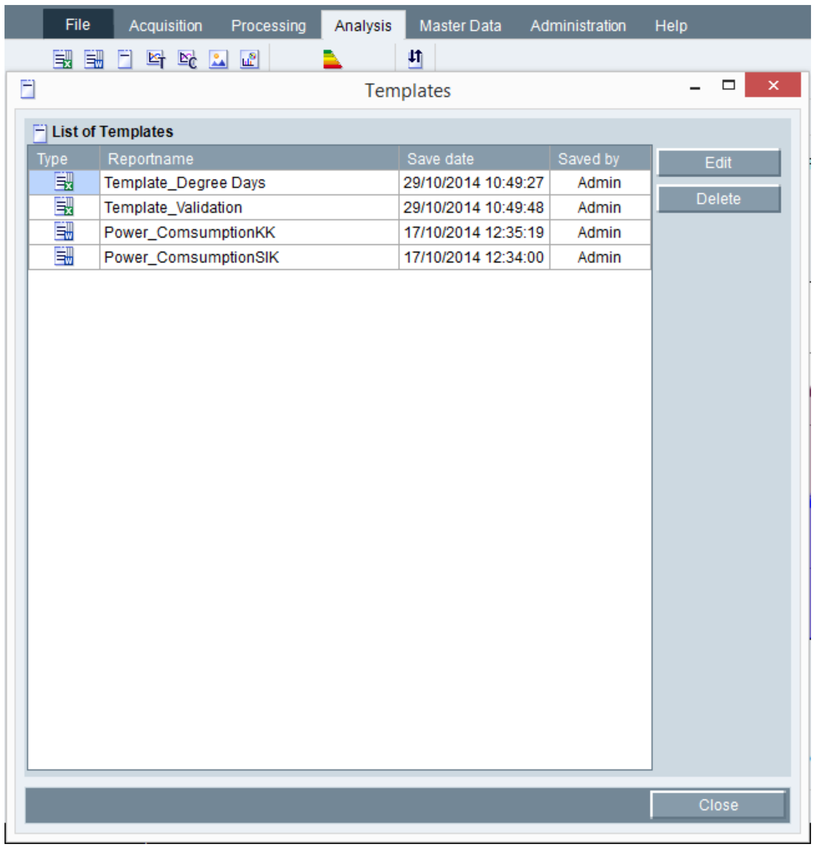
Requirement

A template has been created.

Procedure

1. Under "Analysis > Reporting", click the "Report templates" button.

   The "Templates dialog" opens, and displays the list of templates.



2. In order to edit a template:
   – Select a template, and click "Edit".

     The "Template" dialog opens.
   – Perform the changes.
   – Save the template.
3. In order to delete a template:
   – Select a template, and click "Delete".

See also

Create a template (Page 208)

Disconnecting a report from a template (Page 213)

6.2.6.4 Disconnecting a report from a template

Requirement

A report was created using a template.

Procedure

1. Open the report.

   The "Report" dialog opens.
2. Click "Disconnect".

   Note

   If you disconnect a template from a report, you can never again assign a template to this report. However, you can create a template for other reports from this report.

   ---
3. As needed, change the configured query types, modules or the report layout.
4. Save the report.

Result

The template is disconnected from the report.

See also

Edit template (Page 211)

6.2.7 Entering values in reports

Requirement

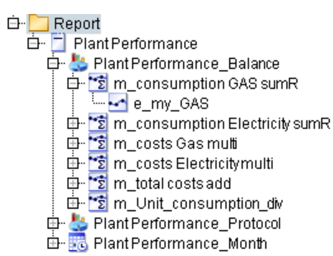
- The report is configured.
- The data point and measuring variable have been created.
- You have created the printer, the directory, and the user.
- The module and request type are configured for the report.

Procedure

1. Assign the module the corresponding data points or measuring variables in order to visualize the selected values in the report.
   - Assign the module a data point if you have configured a query module.
   - Assign the module a measuring variable if you have configured a balancing module, or a protocol module.
2. To print, save, or e-mail the report automatically, assign the corresponding printer, e-mail address and/or directory to the query type.

Result

The values are entered in the report.



See also

Configuring the query type for a report (Page 195)

Configuring a module for reports (Page 199)

Fundamentals of creating printer and directory (Page 81)

Setting up users (Page 88)

6.2.8 Generating reports

Overview

You can generate the configured report at any time.

Requirement

- The report is configured.
- The module and request type are configured for the report.
- The template is configured for the report.
- The values for the report have been set.

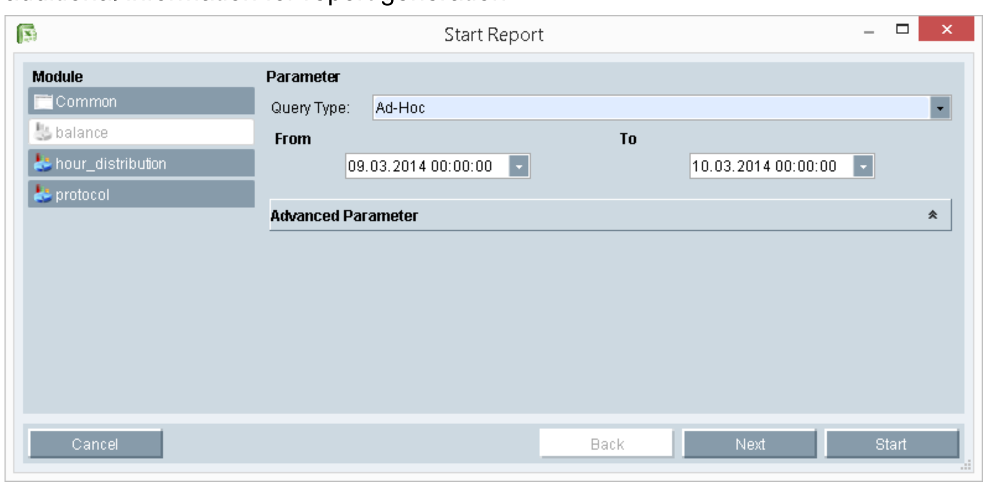
Generating reports

1. Click "Start" in the shortcut menu of the selected report.

   The "Start report" dialog opens.

   The "General" tab is activated in the "Module" area.

   The "Module" area lists modules that you have configured for the report and that require additional information for report generation.

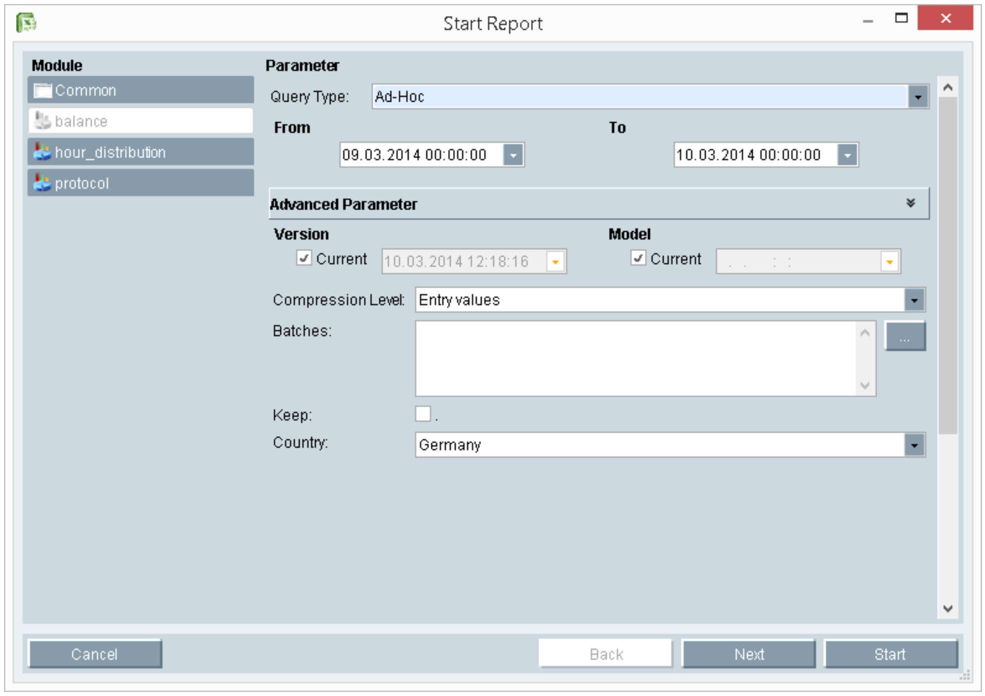
2. Select the query type for the report.
3. Specify a time range for the report.
4. Click "Advanced parameters" to specify additional parameters for report generation.
5. You can edit module start parameters by selecting and editing the selected module in the "Module" area.

   You may also click "Next" to select the module.
6. Click "Start".

Specifying additional parameters for the report (optional)

1. Click "Advanced parameters".

   The advanced parameters are displayed.



2. Disable "Current" and select a date to define the measured value version for evaluation. All measured values generated prior to this data are evaluated.

   The current date is activated by default.

3. Deactivate "Current" and enter a model date to define a calculation model for evaluation of the report.
   The report is evaluated by default based on the current calculation model.

4. Select the compression level in a report to evaluate the compression level values.

5. To select a batch, click "…" and select the batch ID from the batch list.

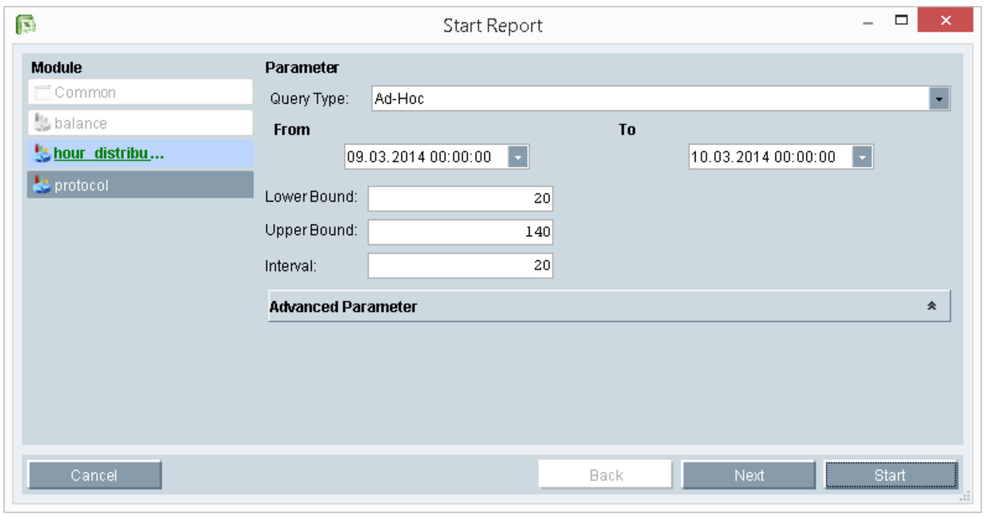
6. You can exclude the report from cyclic delete actions by activating the "Keep" option. The job for deleting analyses is executed if you do not activate this "Keep" option.

7. Under "Country", select the country whose time zone you want to use for the calculation.

Editing module start parameters (optional)

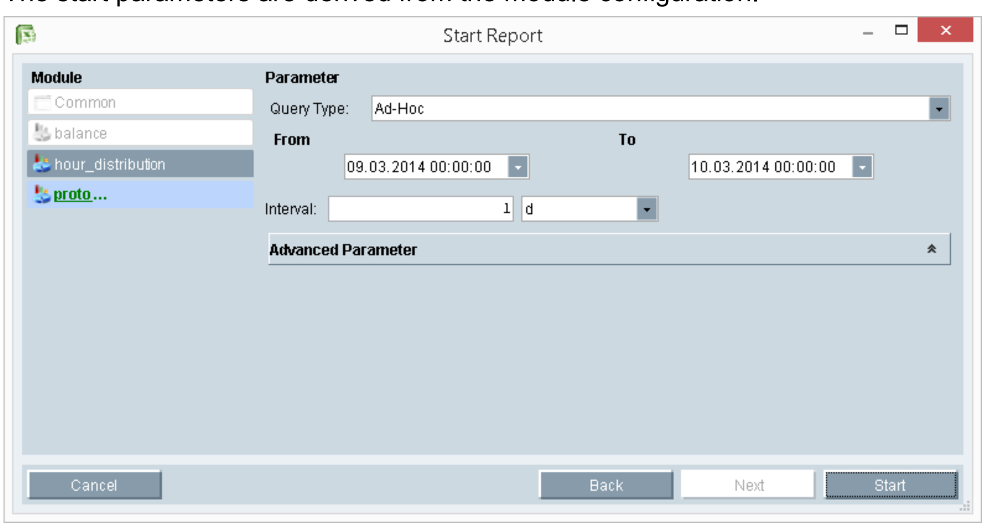
1. Select the module from the "Module" area.
2. Specify the query type and time range if you have activated the "Query interval at start" option in the module configuration.
3. You can always edit the interval, as well as the high and low limit of configured module start parameters.

   The start parameters are derived from the module configuration.



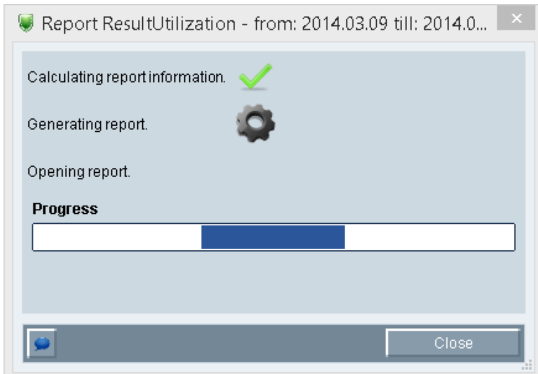
4. Edit the corresponding parameters if you have configured modules that need an interval and unit as start parameters.

   The start parameters are derived from the module configuration.



Result

The report is generated and opened automatically.



Click "Close" to prevent the reports from being opened automatically.

Alternative procedure

You can also start the report by means of the shortcut menu of the respective query type.

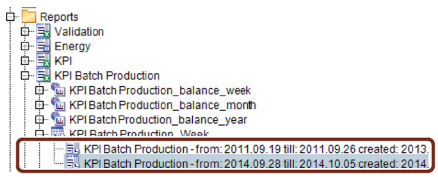
See also

Assign time zone for acquisition or calculation (Page 405)

6.2.9 Opening report results

Overview

Report results are stored in the folder for the configured query type in the structured tree of Plant Explorer.



You can open the report results as follows:

- In Microsoft Excel or Microsoft Word
- As PDF

Requirement

- The report is generated.
- Microsoft Excel or Microsoft Word is installed.
- PDF-Reader is installed.

Procedure

1. To open the report result in the visualization program, click "Open" in the shortcut menu of the selected report result.
2. Open the report in PDF format by clicking "Open as PDF" in the shortcut menu of the report result.

Result

The report result is displayed.

	A	B	C	D	E	F	G	H
12								
13	From	01.03.2012						
14	To	01.04.2012						
15								
16	Entry point for Balance Module							
17	Consumption Gas	GJ	4.936,00					
18	Consumption Electricity	GJ	6.856,00					
19	Costs Gas	EUR	20.731,20					
20	Costs Electricity	EUR	21.253,60					
21	Total costs	EUR	41.984,80					
22	Unit consumption	GJ/mcig	38,71269					
23								
24	Protocol							
25	time		Costs Gas	Costs Electricity	Total production	Unit consumption	Total consumption	
26	01.03.2012	02.03.2012	504,00	564,2	12000	39,7351	302,00	
27	02.03.2012	03.03.2012	588,00	626,2	14000	40,9357	342,00	
28	03.03.2012	04.03.2012	672,00	688,2	15000	39,267	382,00	
29	04.03.2012	05.03.2012	630,00	657,2	14000	38,674	362,00	
30	05.03.2012	06.03.2012	609,00	641,7	12500	35,5114	352,00	
31	06.03.2012	07.03.2012	596,40	632,4	13000	37,5723	346,00	
32	07.03.2012	08.03.2012	625,80	654,1	14500	40,2778	360,00	
33	08.03.2012	09.03.2012	693,00	703,7	15000	38,2653	392,00	
34	09.03.2012	10.03.2012	756,00	750,2	16000	37,9147	422,00	
35	10.03.2012	11.03.2012	924,00	874,2	19500	38,8446	502,00	
36	11.03.2012	12.03.2012	840,00	812,2	18000	38,961	462,00	

Color code of the measured values in the report

The measured values are color-coded as follows for the following status:

Status	Color code
Result OK	Black
No data available for measuring variable	Magenta
Result of manual correction	Orange
Result from substitute value	Light blue
Result not OK	Red
Missing measured values	Light green

6.3 Creating trends

6.3.1 Basics on trends

Overview

The Trender is used to create graphic evaluations that can be used to visualize current and historical process values or operational parameters.

The Trender offers you extensive functions for simple extraction of useful information from the data pool.

This chapter provides you with an overview of the corresponding functionalities in B.Data Trender. It also provides detailed information on Trender configuration and startup.

The next chapters present the following contents related to the Trender.

1. Configuring trends
2. Starting trends
3. Data transfer to the Microsoft Office environment
4. Overview of the Trender functions

Requirement

Successful installation of all software components.

6.3.2 Configuring trends

Overview

This section provides instructions related to the following actions:

- Creating trend objects
- Assigning data points
- Configuring trend objects

Requirement

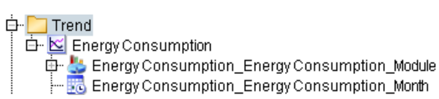
The data points to be used for visualization have been successfully created in the system.

Creating Trender objects

1. Select the folder in which the trend is going to be created.
2. Click the "Insert Trend" button in the menu bar under "Analysis > Reporting".

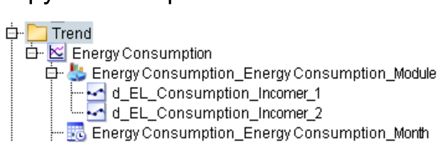
   The Trender configuration dialog opens.
3. Select the "General" tab and enter the trend name in the "Caption text" field, e.g. "target-actual comparison".
4. Click "OK".
5. To create the Trender object, select "File" > "Close and return to Plant Explorer". Confirm the following prompt with "OK".

   The Trender object will be created in the B.Data tree. A module for the data points to be visualized, including the "Ad-Hoc" and "Day" query types, will be generated automatically for this trend.

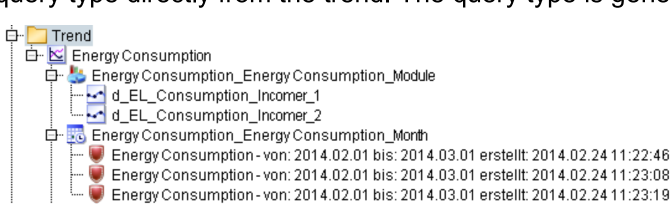
   

Assigning data points

1. Copy the data points to be used for visualization directly to the new module node.

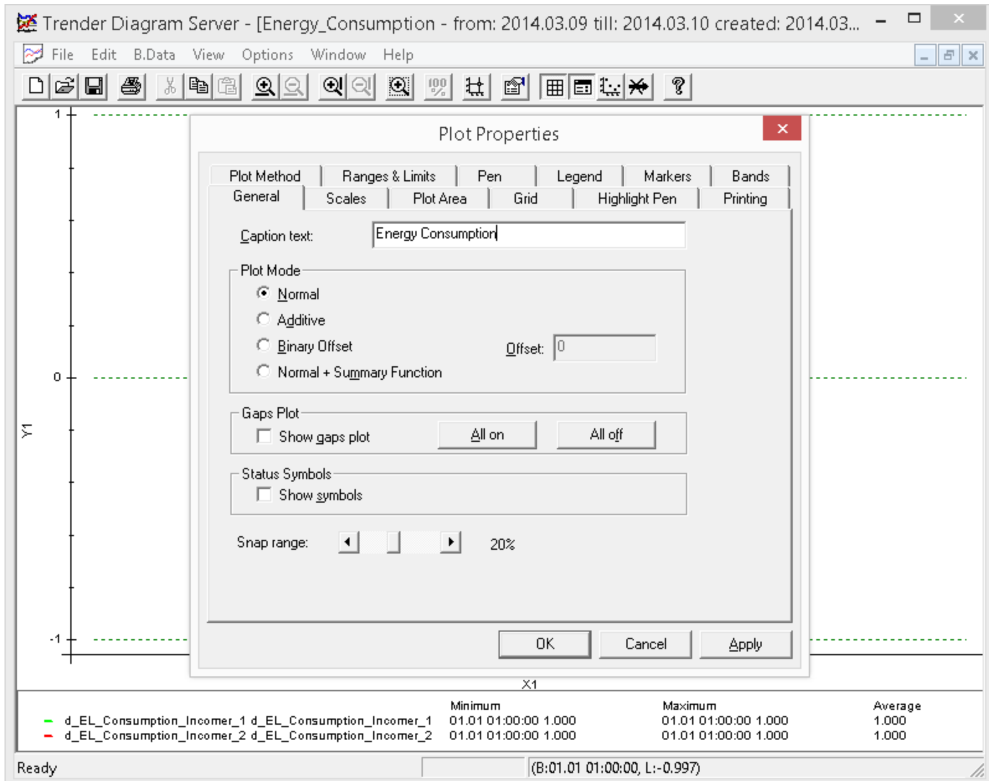
2. If you need query types other than "Ad-Hoc" or "Day", start the trend with the selected query type directly from the trend. The query type is generated automatically.

Configuring Trender objects

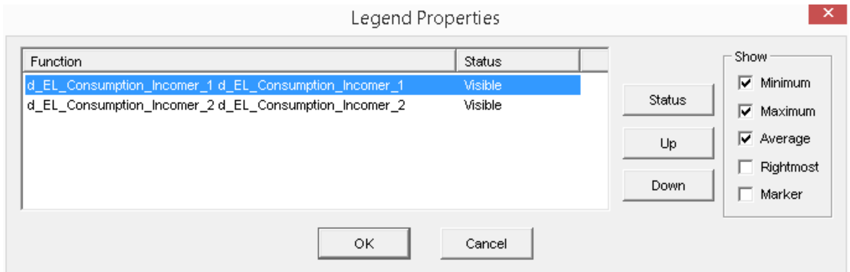
1. To configure the Trender object, select the "Configure" command from its shortcut menu.

   The Trender and the configuration dialog are opened. The dialog displays the legend for the connected data points.



2. Select the "Pen" tab in the configuration dialog.
3. Click "Color" to change the color of the selected data point.
4. Select red.
5. Likewise, change the color of the second data point.
6. Select the "Plot Method" tab in the configuration dialog.
7. Select "Polyline".
8. Likewise, change the line type for the second data point.
9. Confirm your entries with "OK" and answer with "Yes" when prompted to save the configuration.

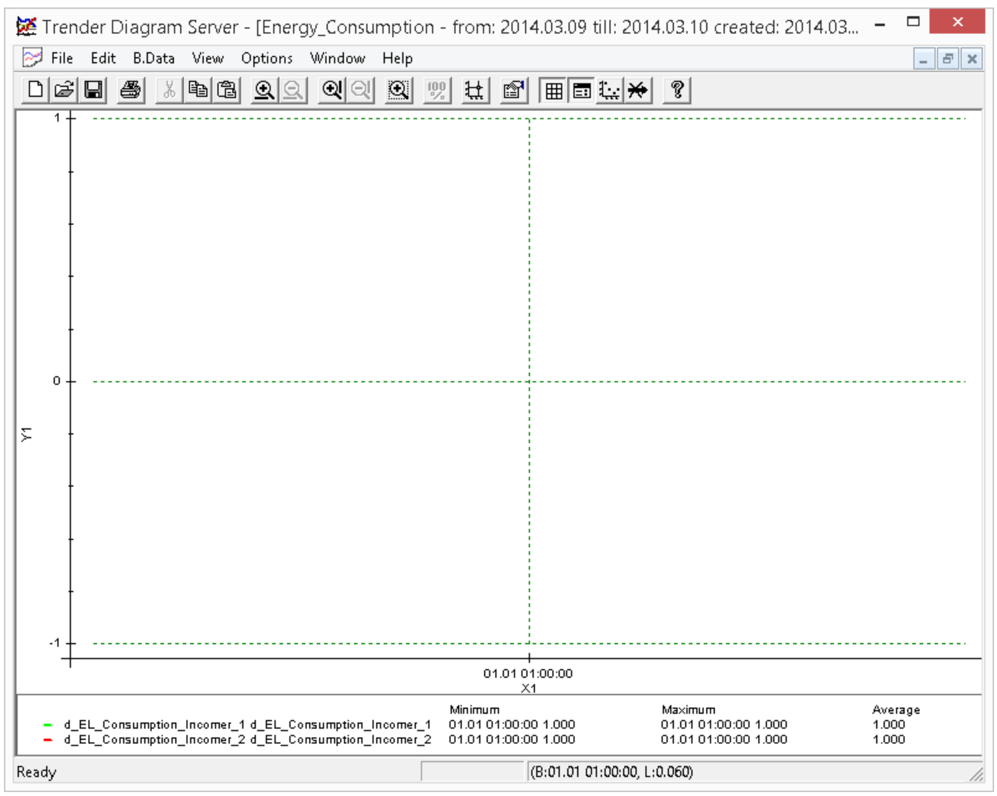
10.Right-click the legend to open its configuration dialog.



11.In the "Show" area, select the values to be displayed in the legend, e.g. "Minimum", "Maximum", and Average".

12.Click "OK" to save the configuration.

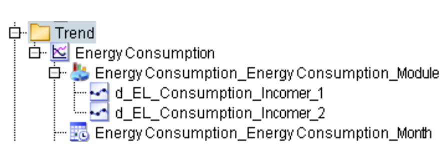
13.OK activates the configuration data.



14.Exit the Trender to complete the configuration session.

Result

You have successfully created and configured a trend in the B.Data system.



6.3.3 Generating trends

Overview

This section provides instructions related to the following actions:

- Selecting Trender objects
- Configuring an interval selection dialog

Requirement

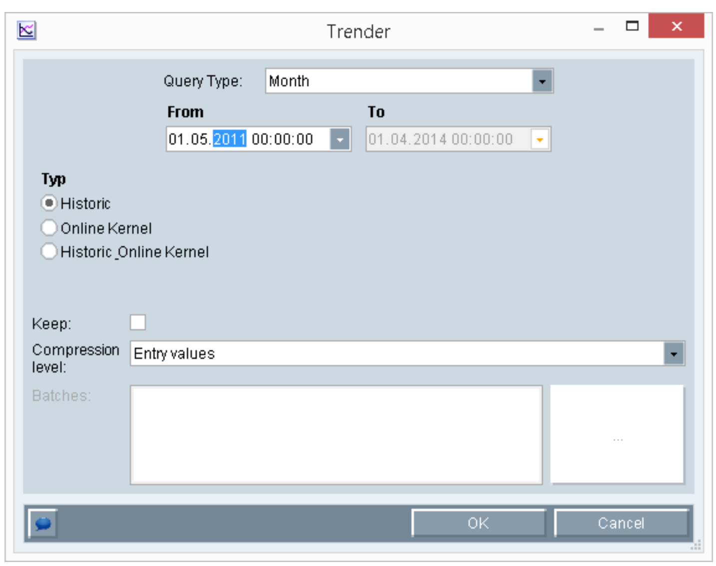
The trend to be started has been configured.

Procedure

1. Select the query type and run the "Start..." command from the shortcut menu.

   The "Trender" dialog opens.
2. Enter the start time of the evaluation period in the "FROM" field.
3. Select the "Query type".

   The end of the evaluation period is entered automatically depending on the "Query type" selected.
4. You can specify the evaluation or monitoring period in the next dialog; the default query type is set permanently.



5. If recorded data has been versioned, you can enter corresponding settings in the "Version" field.

6. Activate the evaluation type in the "Type" field.

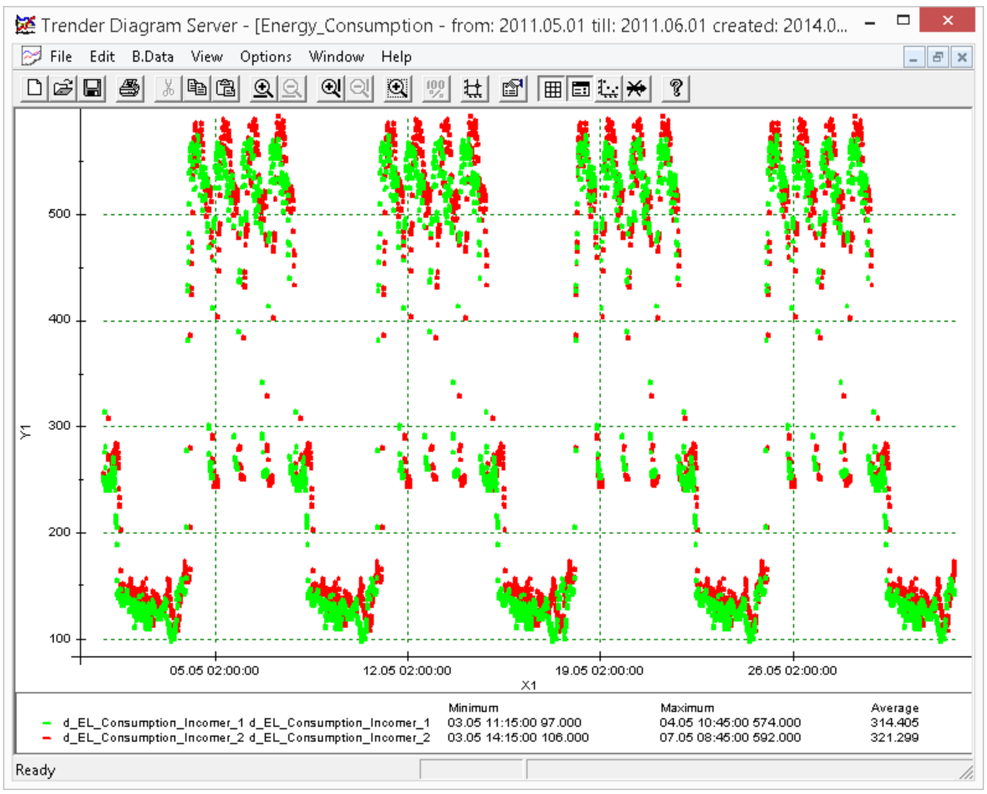
Note

The online functionality is only available if the data is acquired via the kernel.

7. Click "OK" to launch calculation and to open the trend.

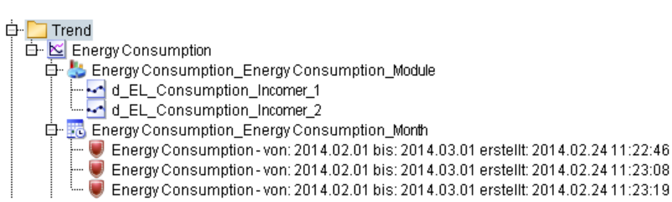
Result

The Trender outputs the graphic view of configured process data and parameters.



In the Trender, you can edit and modify the graph, or read parameters from the trend. Select "File > Close and return to Plant Explorer" to save the trend and return to the Plant Explorer.

A new node with the corresponding trend name and date is now stored in the Plant Explorer.



See also

"Trends" editor (Page 576)

6.3.4 Importing data into the MS Office environment

Overview

You can use the clipboard as a simple means of transferring data from the Trender to a Microsoft Office product (e.g. Excel, Word, or PowerPoint).

Requirement

A completely configured and calculated Trender.

Procedure

1. Select the trend and copy it to the clipboard with <CTRL+C>.

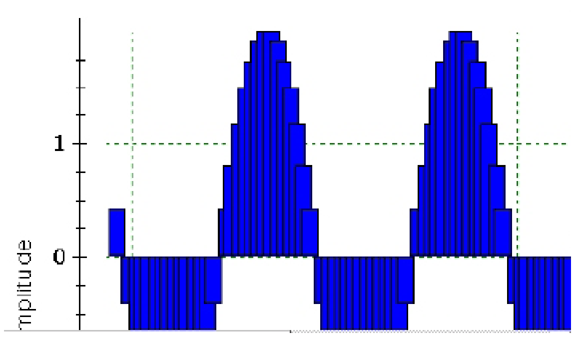
   The marking is displayed by a superimposed dotted line.
2. Open the Office application and paste the trend with <CTRL+V> to the selected position.
3. You may also drag-and-drop trends from B.Data to the Office application.

Result

A time set with time stamp and value is inserted into the Excel sheet.

	A	B	C	D	E
1			04.04.2005 00:15	162	
2			04.04.2005 00:30	157	
3			04.04.2005 00:45	158	
4			04.04.2005 01:00	156	
5			04.04.2005 01:15	154	
6			04.04.2005 01:30	155	
7			04.04.2005 01:45	155	
8			04.04.2005 02:00	155	
9			04.04.2005 02:15	153	
10			04.04.2005 02:30	156	
11			04.04.2005 02:45	158	
12			04.04.2005 03:00	155	

In MS Word, the trend is inserted as graphic image:



6.4 Creating visualization

6.4.1 Basics on visualizations

Overview

B.Data Visualization enables the online presentation of process values in diagrams.

This chapter provides you with an overview of the corresponding functionalities in B.Data Visualization. It also provides detailed information on the configuration and start of visualization.

The next chapters present the following contents related to visualization.

- Configuring visualization
- Starting visualization

Requirement

Successful installation of all software components.

6.4.2 Configuring visualization

Overview

This section provides instructions related to the following actions:

- Creating visualization objects
- Arranging data points
- Formatting data points
- Specifying data input

Requirement

- The data points to be used for visualization have been successfully created in the system.
- An image file with "*.bmp", "*.jpg", "*.gif" or "*.png" format as available as background image for visualization.

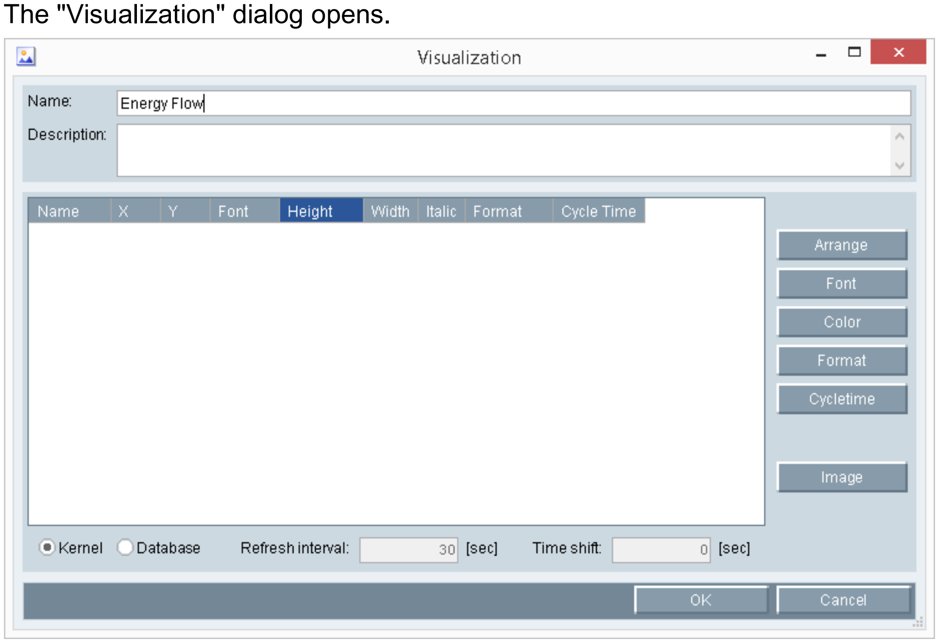
Note

The image file used should not exceed a maximum size of 100 KB so that you are able to configure the graphic object along with the visualization project.

Creating visualization objects

1. Select the folder in which the visualization is going to be created.
2. Click the "Insert Visualization" button in the menu bar under "Analysis > Reporting".

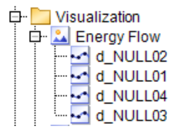
   The "Visualization" dialog opens.



3. Enter a "Name" and an optional "Description" for the visualization.

4. Click "Import image" and select the required file.
5. Click "Open".
6. Save the configuration with "OK".

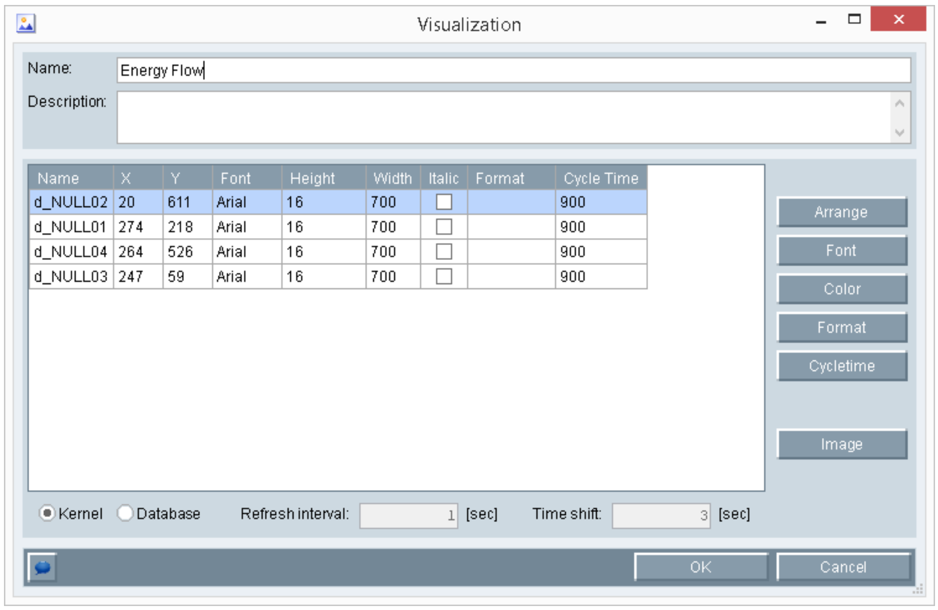
   The "Visualization" object will be created.
7. Copy the data points to be used for visualization directly to the new visualization object node.



Arranging data points

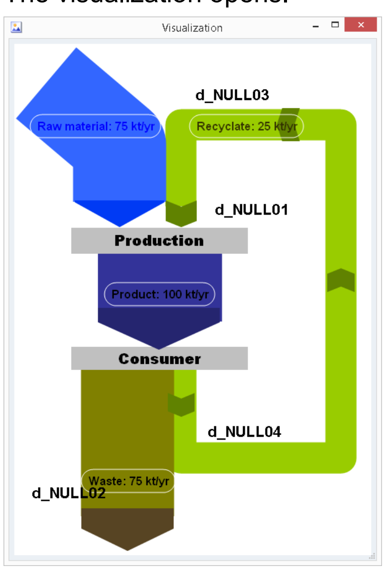
1. Select "Edit" from the shortcut menu of the visualization object to open the configuration dialog.

   The visualization is opened along with the configuration dialog. Corresponding entries are now available for the connected data points.



2. Select the data point to position in the visualization and click "Arrange".

   The visualization opens.

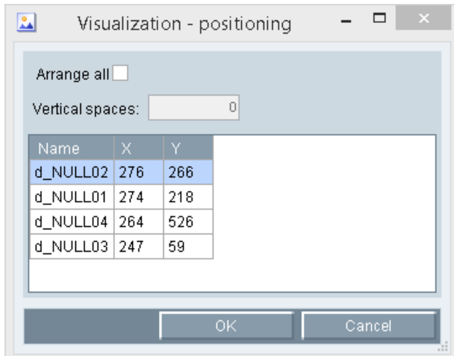


3. Double-click the insert position for the data point.

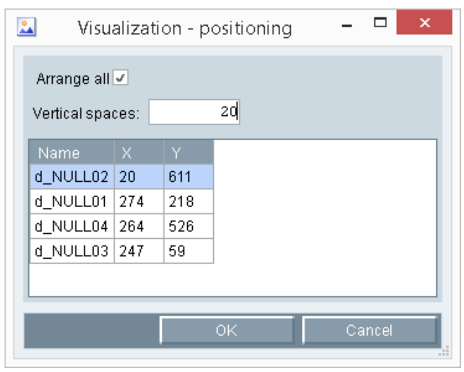
4. Click in the picture to position the data point with more precision.

   The "Visualization - positioning" dialog opens. The "X" and "Y" columns display the current coordinates of the data point.

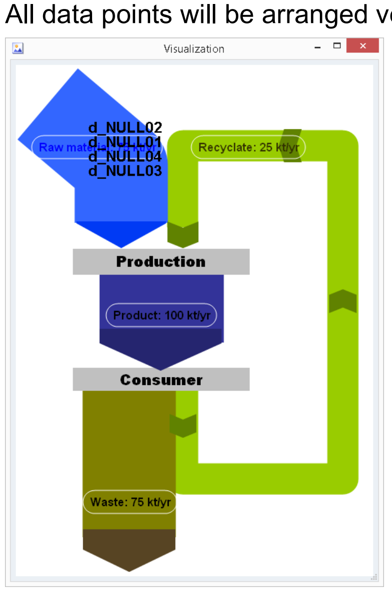
   – You can edit these "X" and "Y" values to adjust the coordinates of a data point.



   – Select the "Arrange All" check box to left align several data points. Specify the "Vertical interval".



   All data points will be arranged vertically at the defined interval.



5. Close the "Visualization" dialog to save your changes.

Formatting data points

1. Select the data points for which you want to configure the "Font" and "Color". Click the relevant button and make your changes.

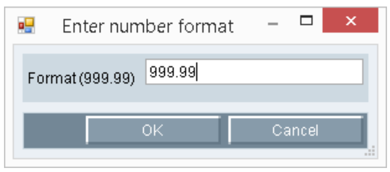
   Note

   Under the aspect that the colors red, orange, and green are used to indicate status violations, you should refrain from using these in your general design.

   ---

2. Click "Format" to define the visualization of values.

   The following example shows a visualization of values with two decimal places:

Specifying data input

Specify the data source in the conclusive step:

- "Kernel"

  No further configuration required.

  Requirements:

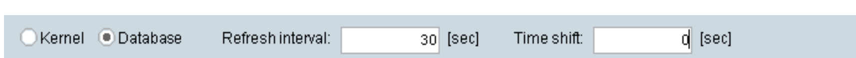
  – The Kernel is in use.

  – All data points used receive their data via interface.

- "Database"

  The data is requested at cyclic intervals from the database using a "Requester".

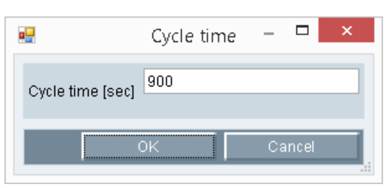
1. Select the data source, e.g. "Database".

2. If "Database" has been activated:

   – Enter the "Refresh Interval" and "Time Shift" values.

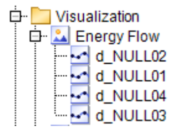
   – Define the "Cycle time" for the data points.

3. Save the configuration with "OK".

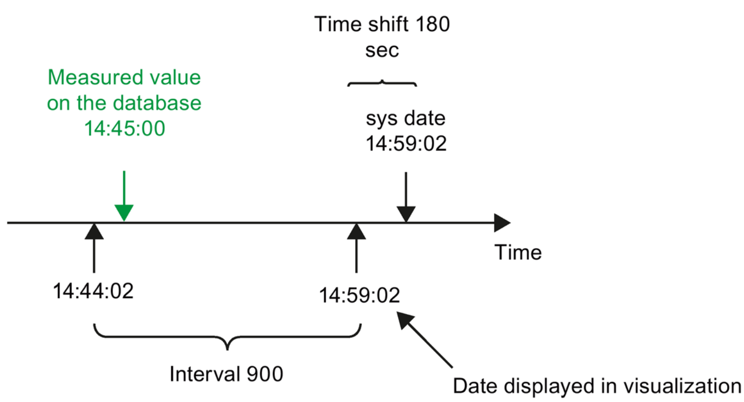
Result

You have created the visualization in B.Data.

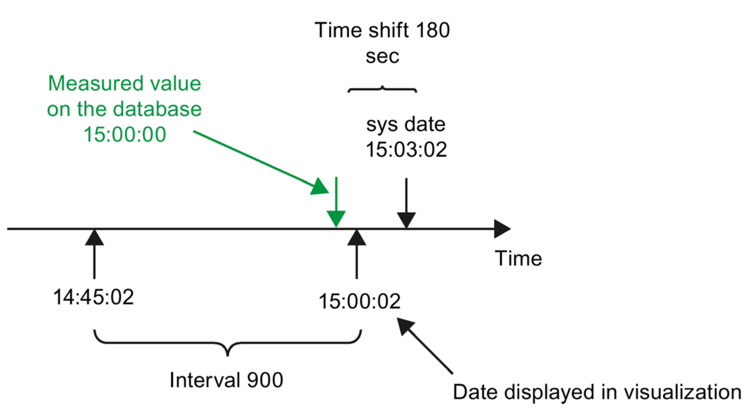


Example

The two figures demonstrate how to calculate the correct values in the database with a "Time Shift" setting of 180 s and an "Interval" of 900 s. Assumption: A maximum time of three minutes expires between creation of the measured value and its availability in B.Data. "Sys date" denotes the "current time".



The following figure shows the situation that has developed one minute later:



6.4.3 Generating visualization

Requirement

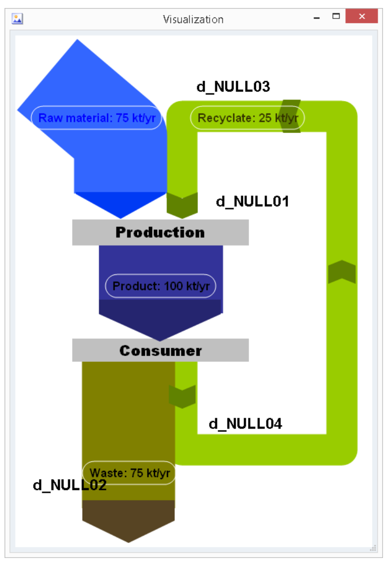
The visualization to be started has been configured.

Procedure

1. Double-click the visualization object to start visualization.

Result

The visualization is generated.



The value "NULL" is displayed if the database does not contain any values for the data point. The following table lists the color codes for the values. The acquisition status is listed before the adjustment status.

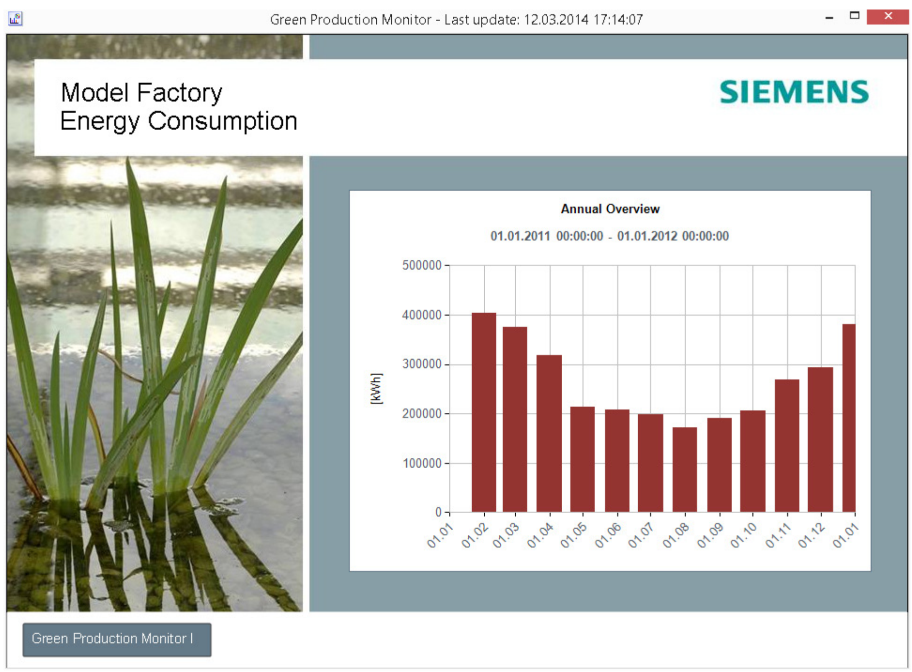
Color	Acquisition status	Correction status
Red	<> valid and no substitute value	Not relevant
Orange	valid	<> valid
Green	Substitute value	Not relevant

6.5 Creating dashboards

6.5.1 Dashboard basics

Definition of "Dashboard"

You can use the Dashboard and default objects to obtain a clear overview of history data from the B.Data database.



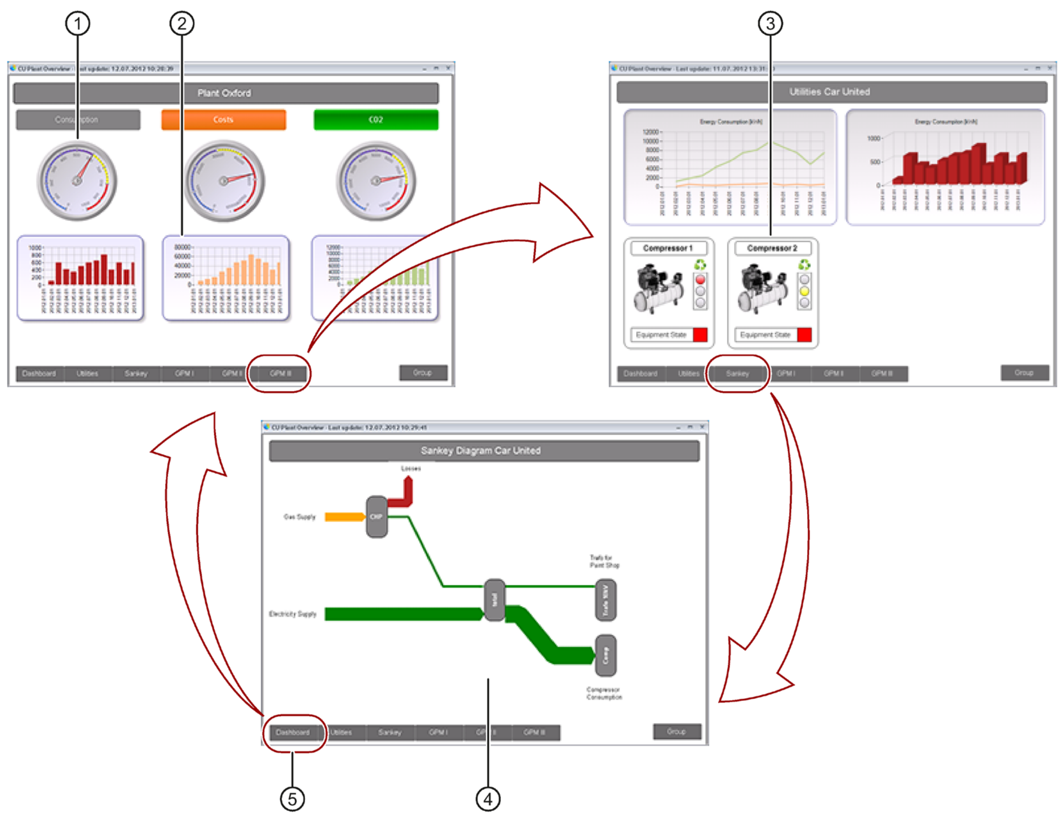
Using the Dashboard

The Dashboard provides you with an overview of your production and consumption data. You may distribute the data to be visualized to several dashboards for a clearer overview. Add a navigation button to each Dashboard to facilitate navigation between the dashboards.

Use the B.Data "Dashboard" object in the following situations, for example:

- To visualize consumption or cost parameters
- To visualize consumption or cost states
- To obtain a detailed overview of a production site, or of the combination of several production sites

You may also use B.Data Web to call the stored dashboards.



①, ②, ③	Large selection of display object templates, for example, pointer instruments, diagrams, or status displays.
④	Process visualization using dynamic Sankey objects
⑤	Buttons for navigation between multiple dashboards

Dashboard notes

Observe the following information:

- Value input

  A Dashboard visualizes only values of the following data points:

  – "Generic" data point type

  – "Derived" data point type

  – "Datapoint" data point type

  You can visualize values that are calculated based on measurement functions by assigning each measurement function a derived data point.

- Time range

  Make sure that you set the time range to be visualized to a sufficient length. Moreover, the data points must contain measurement data for the specified time range.

Rules for creating dashboards

Observe the following rules before you start to create a Dashboard:

- Plan the data quantity to be visualized and the corresponding distribution of this data.
- You can distribute large data quantities to several dashboards to improve the overview and performance.

  Use a navigation button to switch between the dashboards; create this button in each Dashboard by means of dashboard object "Panel Switch".

- Recommendation: When configuring the refresh cycle for Dashboard, enter the time in seconds e.g. 900 seconds for a refresh cycle of 15 minutes.

  You can use the B.Data object "Trend" to visualize the current values.

Configuring dashboards

Create a graphic overview as follow:

1. Create one or several dashboards in the project tree of Plant Explorer.
2. Copy the data points to be visualized as nested entry to the Dashboard you created.
3. Create the Dashboard layout by compiling the selected dashboard objects in the "Dashboard" editor.
4. Assign the selected data points to the dashboard objects used and customize the layout of the dashboard objects.
5. If you have created several dashboards for a graphic overview, add one or several buttons to the Dashboard using dashboard object "Panel Switch" and assign the respective Dashboard to each button.

   Use these buttons to switch between the dashboards.
6. Open the selected Dashboard in full-screen mode.

   The Dashboard displays the values of the data points used for a defined period.

See also

Create dashboard (Page 244)

Dashboard objects (Page 648)

Configuring the time range (Page 649)

Example of configuring a dashboard (Page 256)

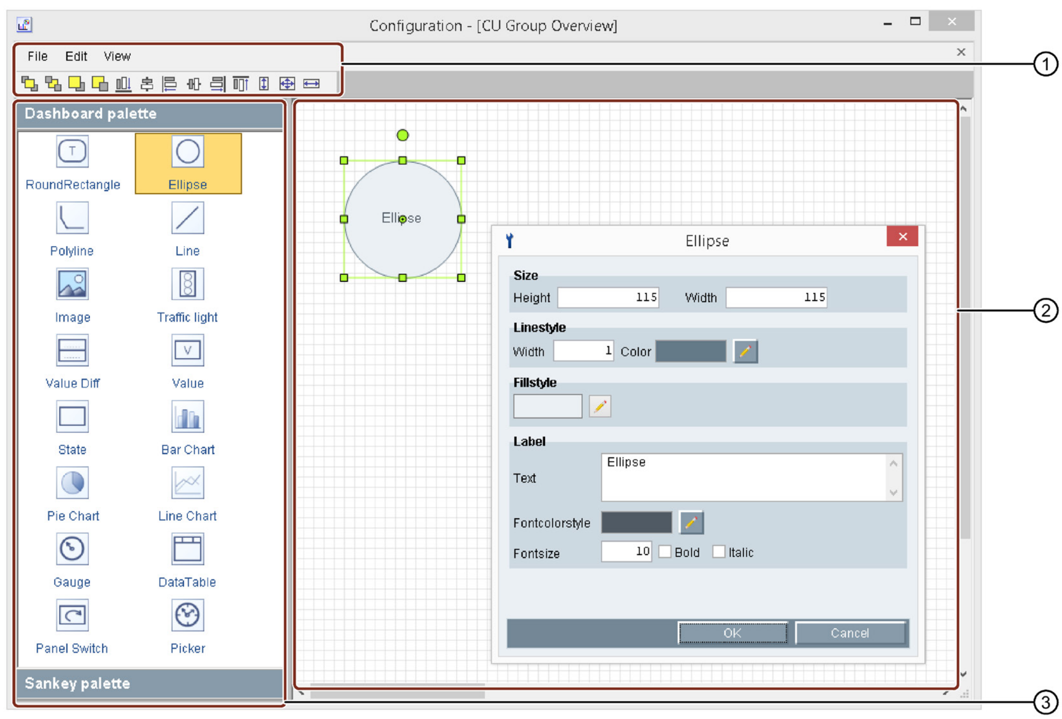
6.5.2 "Dashboard" editor

Function

Use the "Dashboard" editor to create the layout for your Dashboard.

Structure of the editor

The "Dashboard" editor has the following structure:



① Menu bar and toolbar
The menu bar and toolbar provide default commands and icons, for example, for saving files or aligning objects.

② Workspace
You visualize, compile and configure the dashboard objects for your Dashboard on the workspace.

③ Symbol palette
The symbol palette provides all dashboard objects that you can use. You can change between the Dashboard and Sankey palettes.

Menu bar of the editor

The menu bar of the "Dashboard" editor has the following structure:

- File

  The "File" menu is used to save, close or export/import the current Dashboard.

  Use the "Export"/"Import" function to make the Dashboard available to other B.Data users.

  Note

  Exporting a Dashboard

  The exported Dashboard can only be opened on a B.Data system.

- Edit

  The "Edit" menu commands are used to perform standard document editor actions such as copying or deleting objects.

- View

  The "View" menu lets you hide or unhide the pallets.

Editor toolbar

The toolbar of the "Dashboard" editor has the following structure:

- Position

  These icons are used to position dashboard objects on the workspace. These can be used, for example, to place a dashboard object into the background of a different dashboard.

- Align

  These icons are used to align dashboard objects on the workspace. You can use them, for example, to align objects to the center.

- Size

  These icons are used to resize dashboard objects on the workspace. You can use them, for example, to resize the width of a dashboard object to fit the width of a different dashboard object.

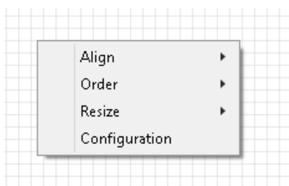
Note

Using the toolbar

The toolbar icons are only available if you select several dashboard objects on the workspace.

Press the <CTRL> key for multiple selection of dashboard objects.

Instead of the toolbar icons, you may use the shortcut menu commands of the dashboard objects:



See also

Aligning dashboard objects (Page 252)

Exporting/importing dashboards (Page 253)

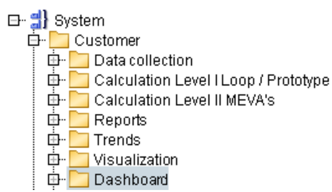
6.5.3 Create dashboard

Overview

You can create a Dashboard in B.Data setting up a Dashboard in the project tree of Plant Explorer.

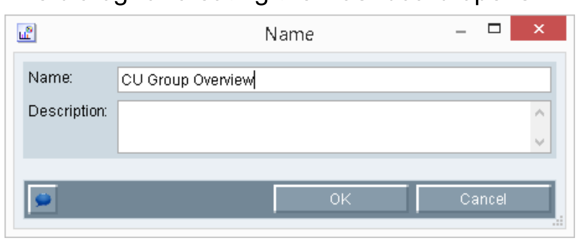
Procedure

1. In Plant Explorer, select the folder in which you want to create a Dashboard.



2. Click the "Dashboard " button in the menu bar under "Analysis > Reporting".

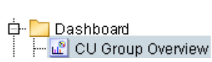
   The dialog for creating the Dashboard opens.



3. Enter a name such as "CU Group Overview" and an optional description for the Dashboard.
4. Click "OK".

Result

The Dashboard is created in the project tree of Plant Explorer.



You can edit the name and description of the Dashboard by clicking "Edit" in the shortcut menu of the Dashboard.

Create the layout for the new Dashboard.

See also

Dashboard basics (Page 237)

Creating the dashboard layout (Page 245)

Example of configuring a dashboard (Page 256)

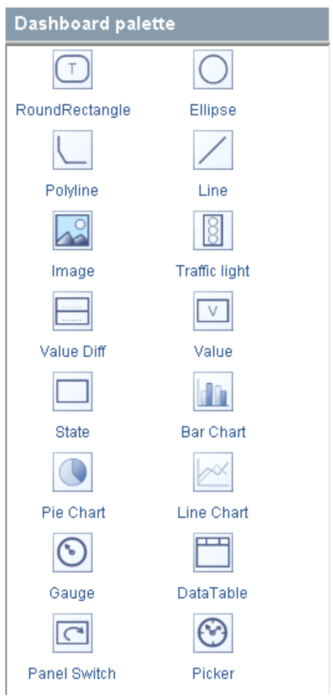
6.5.4 Creating the dashboard layout

Overview

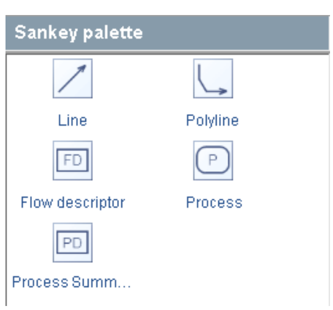
Create a layout for the Dashboard you created. This layout defines the appearance of the Dashboard.

You are provided two pallets, each containing different dashboard objects for creating the layout:

- Dashboard palette: Contains objects such as "Gauge" or "Pie Chart" for creating graphic overviews.



- Sankey palette: Contains objects such as "Process" for creating Sankey charts.

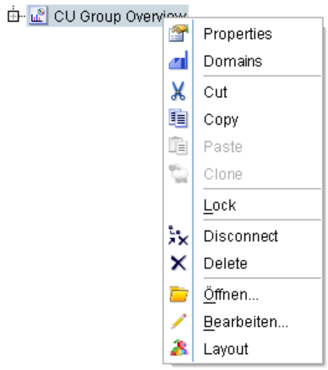


Requirement

The Dashboard is created.

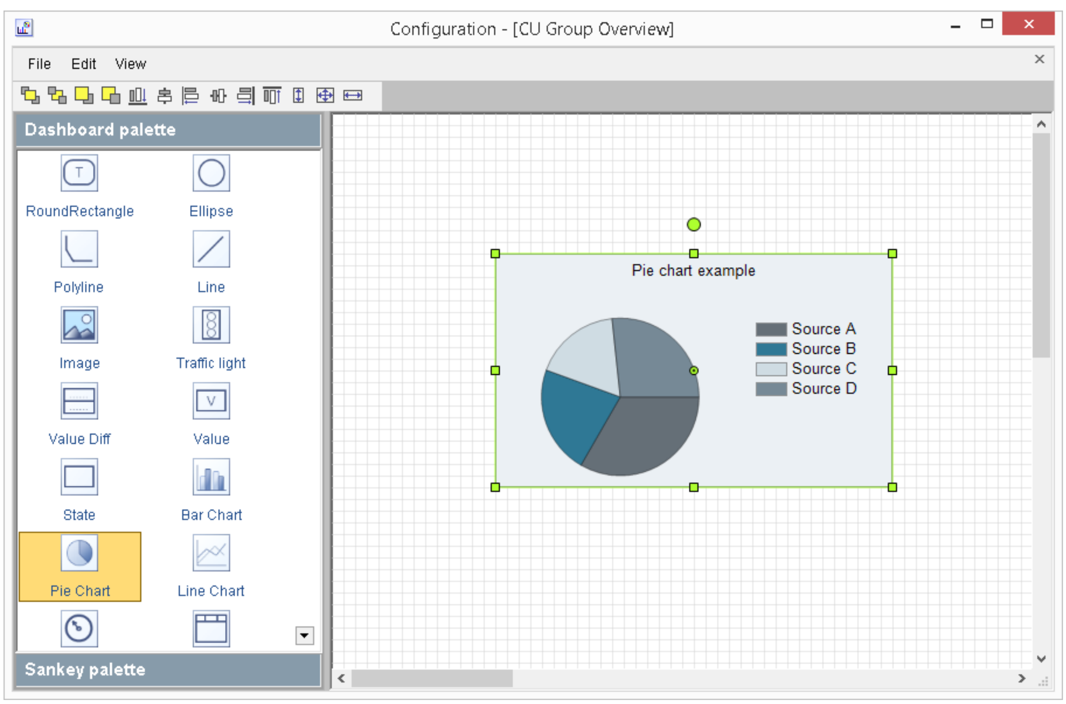
Procedure

1. Click "Layout" in the shortcut menu of the Dashboard.



   The "Dashboard" editor opens.

2. Click "Configuration" in the shortcut menu of the workspace to configure the Dashboard.
3. In the editor, select the symbol palette that contains the dashboard objects to be used in the layout: Dashboard Palette or Sankey Palette.
4. Drag-and-drop the selected dashboard objects from the symbol pallet to the workspace.



   The objects are placed into the workspace.

5. Save the layout.

Result

You have created the Dashboard layout.

Configure the dashboard objects used in order to customize them, or to link them with the selected data points.

See also

Create dashboard (Page 244)

Dashboard objects (Page 648)

"Dashboard" editor (Page 241)

Configuring dashboard objects (Page 248)

Aligning dashboard objects (Page 252)

Configuring the dashboard (Page 648)

Example of configuring a dashboard (Page 256)

6.5.5 Configuring dashboard objects

Overview

After having created the Dashboard layout, configure the dashboard objects to be used as follows:

- Link the dashboard objects with the data points containing the values to be visualized on the Dashboard.
- Customize the appearance of the dashboard objects, for example, the background color or text layout.

Note

Configuration of the dashboard objects

The following figures show the configuration of the "Pie Chart" dashboard object.

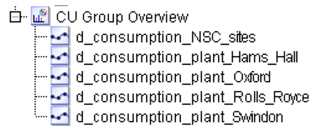
For information about the configuration of other dashboard objects, refer to chapter "Dashboard objects".

Requirement

- You have created the Dashboard layout and opened it in the "Dashboard" editor.
- The selected data points are set up in the project tree of Plant Explorer.

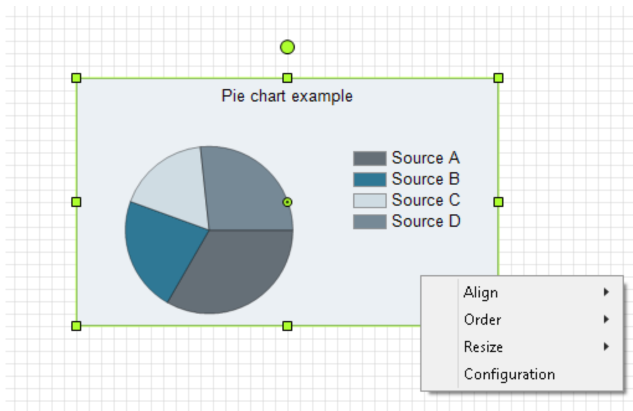
Procedure

1. Copy the data points that contain the measured values to be visualized to the nested folder of the Dashboard.



2. You configure a selected dashboard object by double-clicking it on the workspace.

   Alternatively, you can select the "Configuration" command from the shortcut menu of the dashboard object.

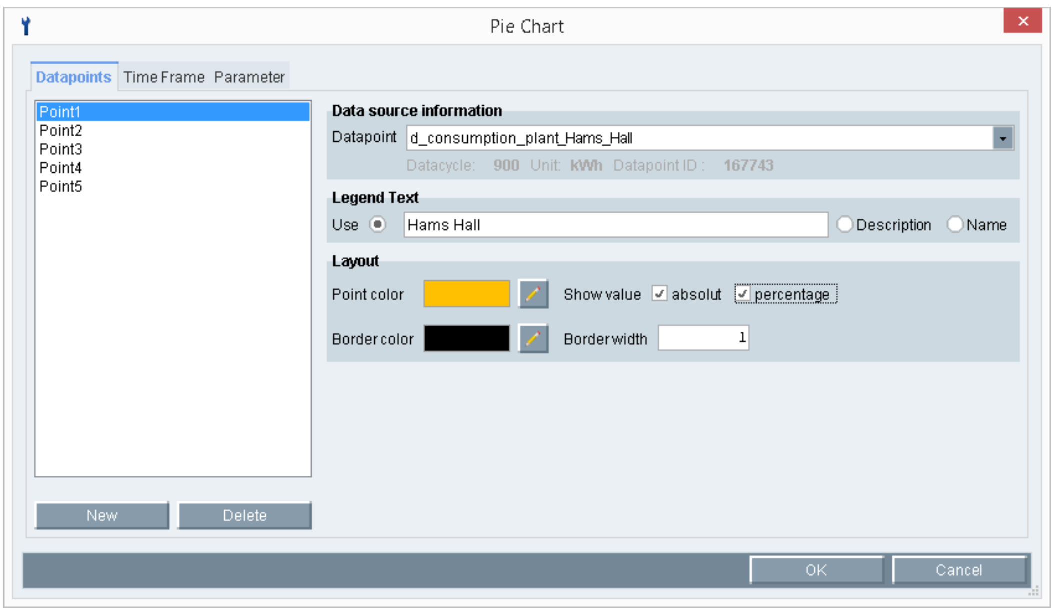


   The dashboard configuration dialog opens.

3. Configure the dashboard object to suit your requirements.

   You can customize the "Pie Chart" dashboard object as follows, for example:

   – Select "New" to set the number of bars to display in the pie chart.
   – Select "Data point" to assign each bar the data point containing the values to be displayed in the pie chart.
   – Select "Caption" to specify the text that describes the respective bar in the pie chart.
   – Select "Layout" to define the bar colors for the pie chart and activate the selected option for displaying the measured values in the pie chart.

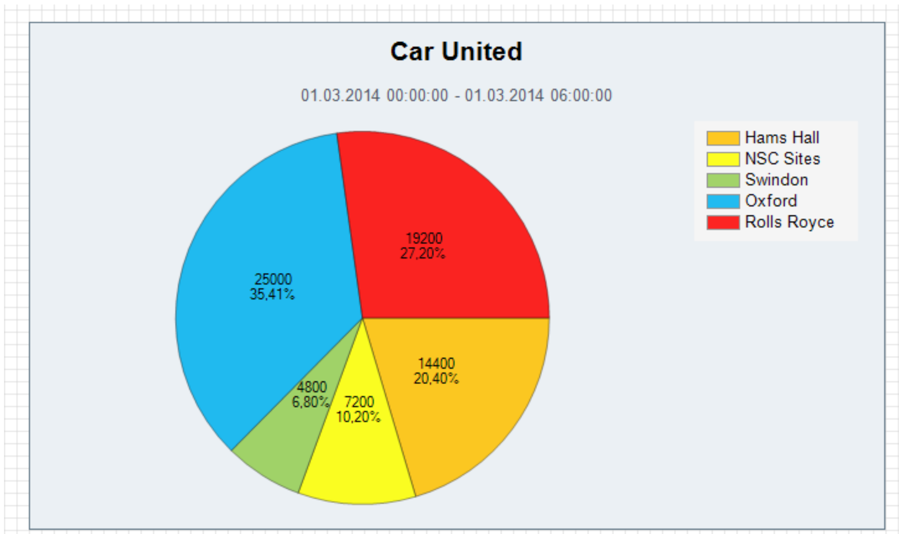


   – Select "Time range" to define the period from which the measured values are to be displayed in the pie chart.
   – Select "Parameters" to define additional settings for the pie chart, for example, the background color or title.

4. Click "OK".

Result

You have configured the selected dashboard object.



You may also configure the background on which the dashboard objects are positioned. Right-click in an empty area of the workspace and select the "Configuration" command from the shortcut menu.

Configure all other objects that are used in your Dashboard, save the layout, and open the Dashboard in full-screen mode.

See also

Creating the dashboard layout (Page 245)

Dashboard objects (Page 648)

Displaying the dashboard in full-screen mode (Page 254)

Configuring the time range (Page 649)

Example of configuring a dashboard (Page 256)

6.5.6 Aligning dashboard objects

Overview

The "Dashboard" editor lets you set up different alignments for multiple dashboard objects. You need a reference object to which you can align other objects. Start by selecting an object in the "Dashboard" editor and define it as reference object.

Requirement

- The "Dashboard" editor is open.
- You have created the Dashboard layout.

Procedure

1. On the workspace, select the reference object to which you are going to align other dashboard objects.
2. Select the dashboard objects by means of multiple selection.
3. Select the command from the toolbar, or from the shortcut menu of the dashboard objects.

Result

The selected objects are aligned.

6.5.7 Exporting/importing dashboards

Overview

You can make a Dashboard available to external B.Data users by exporting the Dashboard to a file. Distribute this file, for example, by E-Mail.

B.Data users can now import and use the export Dashboard file on their B.Data system.

Requirement

You have created the Dashboard and opened it in the "Dashboard" editor.

Exporting dashboards

1. Select "File" > "Export" from the menu bar.

   The dialog for saving the file opens.
2. Select the directory and enter the file name.
3. Save the file in EDD format, for example, "CU_Group_Overview.edd".
4. You can send the stored file by E-Mail.

Importing dashboards

1. Select "File" > "Import" from the menu bar.

   The dialog for opening the file opens.
2. Select the file in EDD format and click "Open".

   The Dashboard is displayed in the "Dashboard" editor on the workspace.

See also

"Dashboard" editor (Page 241)

6.5.8 Displaying the dashboard in full-screen mode

Overview

Once you have created the Dashboard layout and configured the dashboard objects used, you can display the Dashboard in full-screen mode. In full-screen mode, the dashboard is updated with corresponding data at cyclic intervals.

Note

Specifying the Dashboard update cycle

Specify the update cycle when configuring the Dashboard background.

The update cycle is set to 5 seconds by default.

Requirement

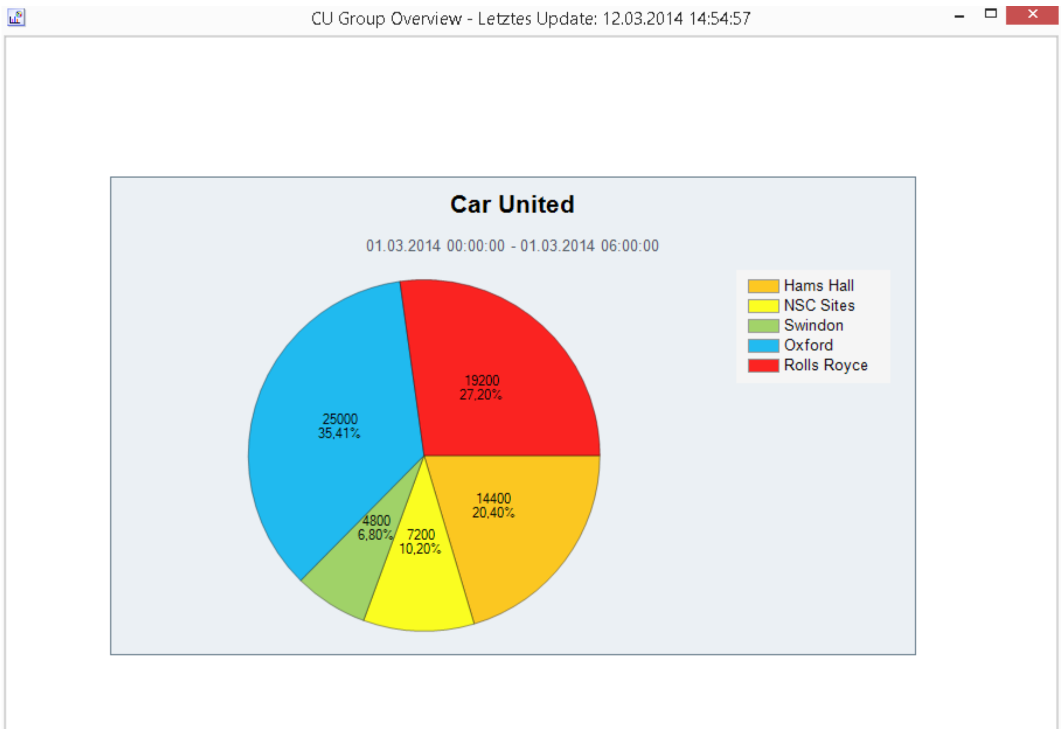
- You have created the Dashboard layout.
- You have configured the dashboard objects used.

Procedure

1. Select the Dashboard from the project tree of Plant Explorer and right-click "Open" in the shortcut menu.

Result

The Dashboard is displayed in full-screen mode.



Alternative procedure

You can also display the Dashboard in full-screen mode by means of double-click.

See also

Creating the dashboard layout (Page 245)

Configuring dashboard objects (Page 248)

Example of configuring a dashboard (Page 256)

6.5.9 Example of configuring a dashboard

6.5.9.1 Example of creating data points for the dashboard

Overview

This example shows how you can visualize daily consumption in a week as bar chart in a dashboard. High limit overshoot is also to be visualized graphically.

Preparations

You need the following objects for this example:

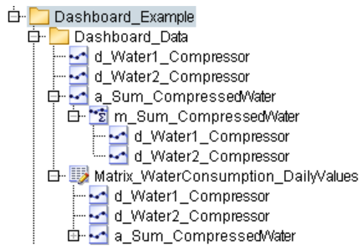
- 2 data points
- 1 derived data point
- 1 matrix
- 1 measuring variable

Name	Type	Cycle	Valid from	Query type
d_Water1_Compressor	Data point	1 d	05.11.2012	-
d_Water2_Compressor	Data point	1 d	05.11.2012	-
a_Sum_CompressedWater1)	Derived	1 d	05.11.2012	-
Matrix_WaterConsumption_DailyValues	-	1 d	-	Month (starting on 01.11.2012)
m_Sum_CompressedWater	Addition with check-sum	-	-	-

1) When configuring the data point, select "Plausibility" to set the "High limit" to "200".

Creating objects

1. Create a "Dashboard Example" folder and set up the aforementioned objects as follows:



2. Enter the following values in a matrix:

Time stamp	e_Water1_Compressor	e_Water2_Compressor
05.11.2012	50	60
06.11.2012	40	100
07.11.2012	20	60
08.11.2012	30	70
09.11.2012	60	100

3. Conclude your setup by calculating the derived data point for the time period "November 2012".

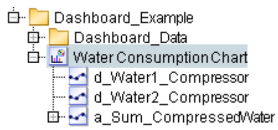
See also

Example for creating a dashboard (Page 258)

6.5.9.2 Example for creating a dashboard

Setting up the dashboard

1. Set up a new "Dashboard" object and enter the object name "Water Consumption Chart".
2. Copy the data points to the structure below the dashboard:



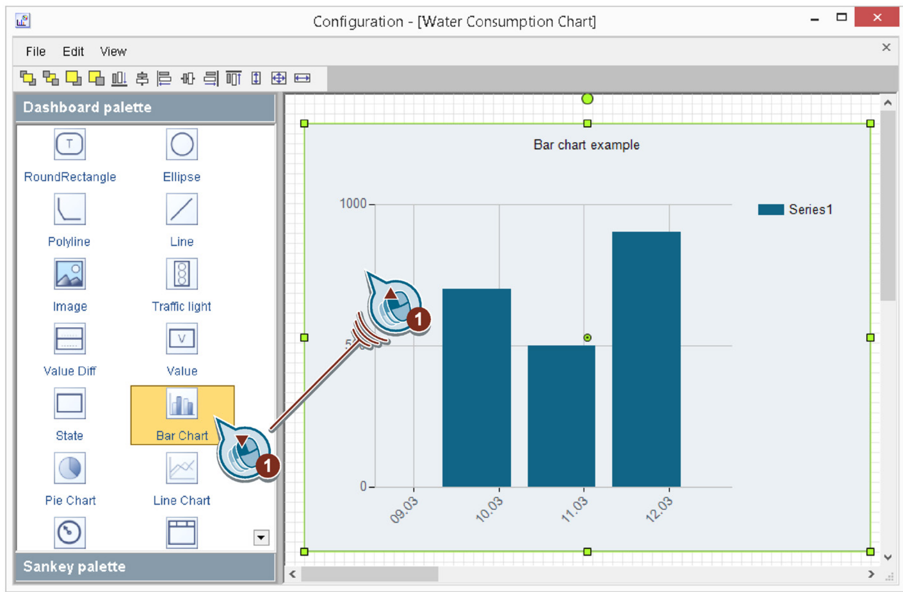
3. Select the "Layout" command from the shortcut menu of the dashboard to configure the dashboard.

   The dashboard configuration dialog opens. The left pane displays the "Dashboard palette" by default. Drag-and-drop the dashboard objects from this palette to the workspace.

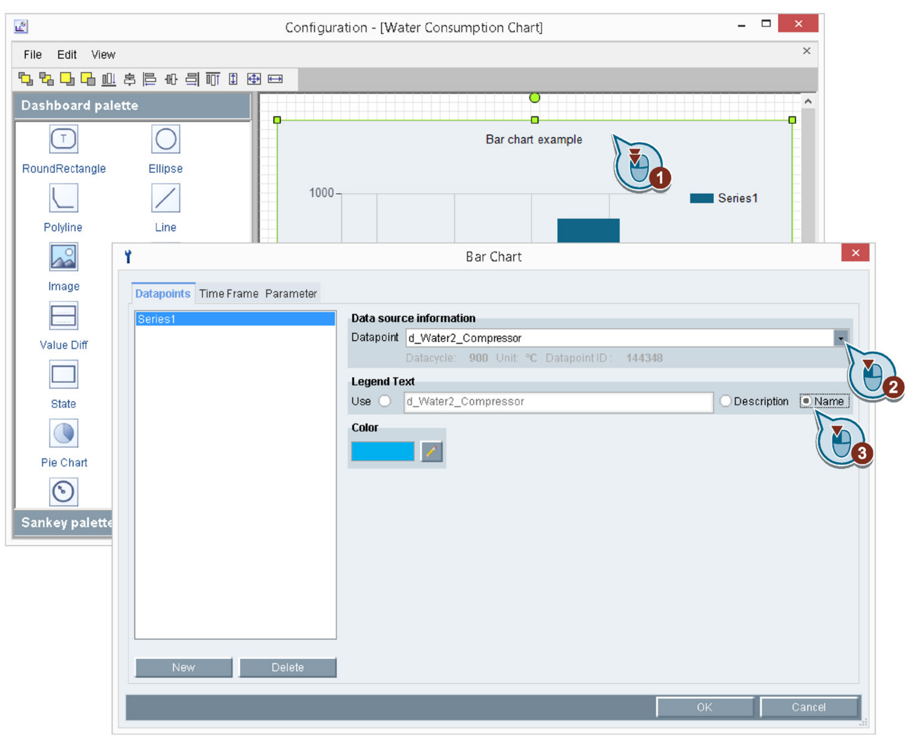
Creating bar charts with three bars

Use a bar chart to provide a clear overview of data point values.

1. Insert the "Bar chart" dashboard object to visualize consumption values:

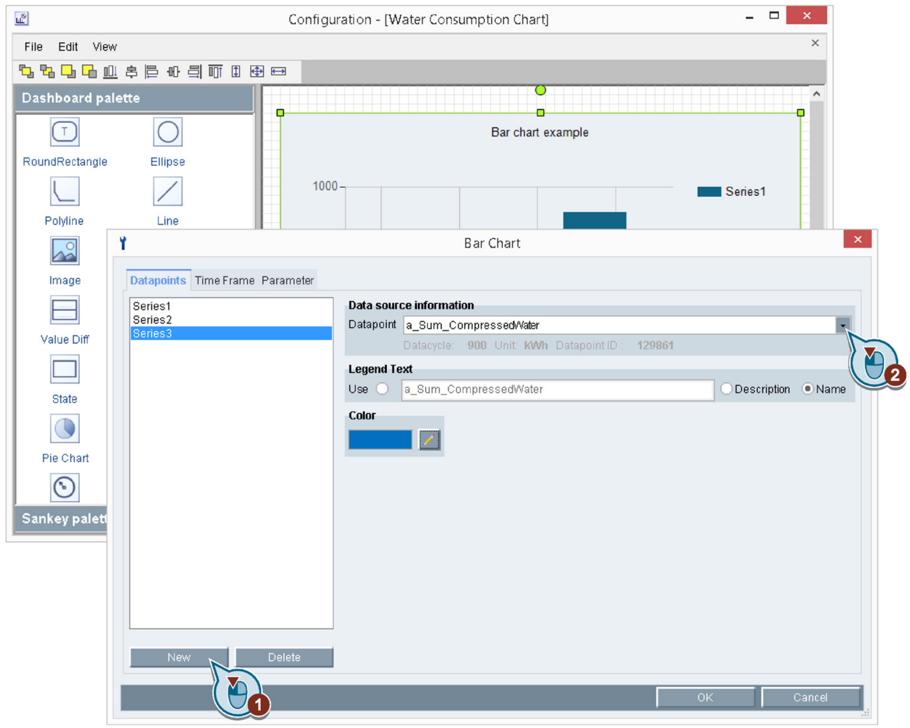


2. Select the data point to use for the input of bar values and set the caption text:



The default bar chart consists of one bar. You need three bars to visualize the three data points. Set different bar colors to highlight the difference.

3. Add two bars and assign these to the other two data points:



Interim result

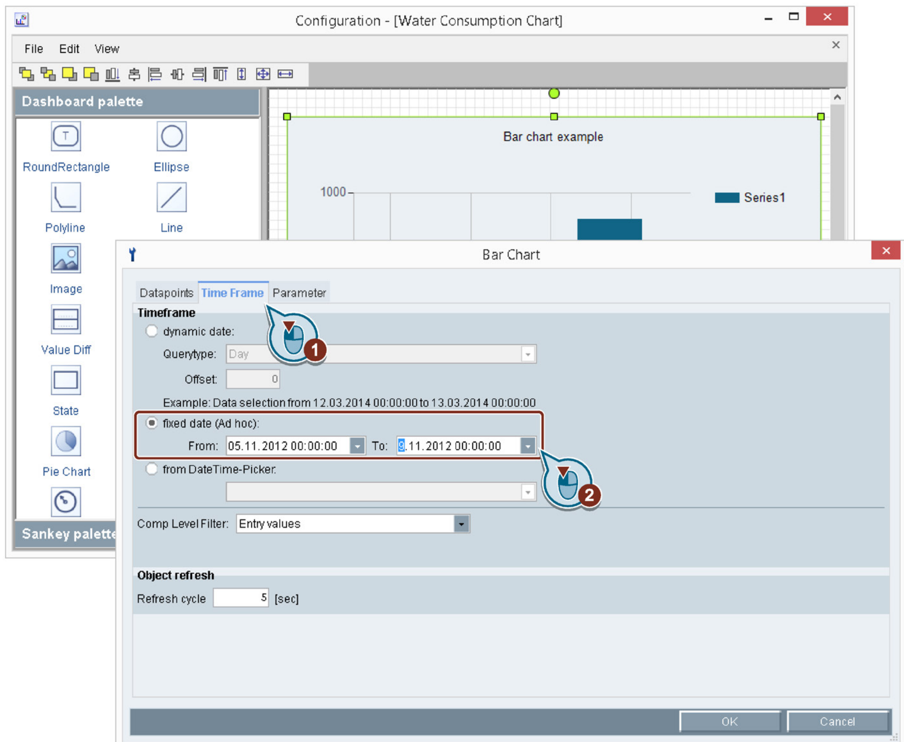
You have set up three bars with the following data point assignments:

- Series 1: e_Water1_Compressor
- Series 2: e_Water2_Compressor
- Series 3: a_Sum_CompressedWater

Set time range

Use the time range to define the data point values to be displayed. In this example you display the consumption volumes of the week in November from 05.11.2012 to 09.11.2012.

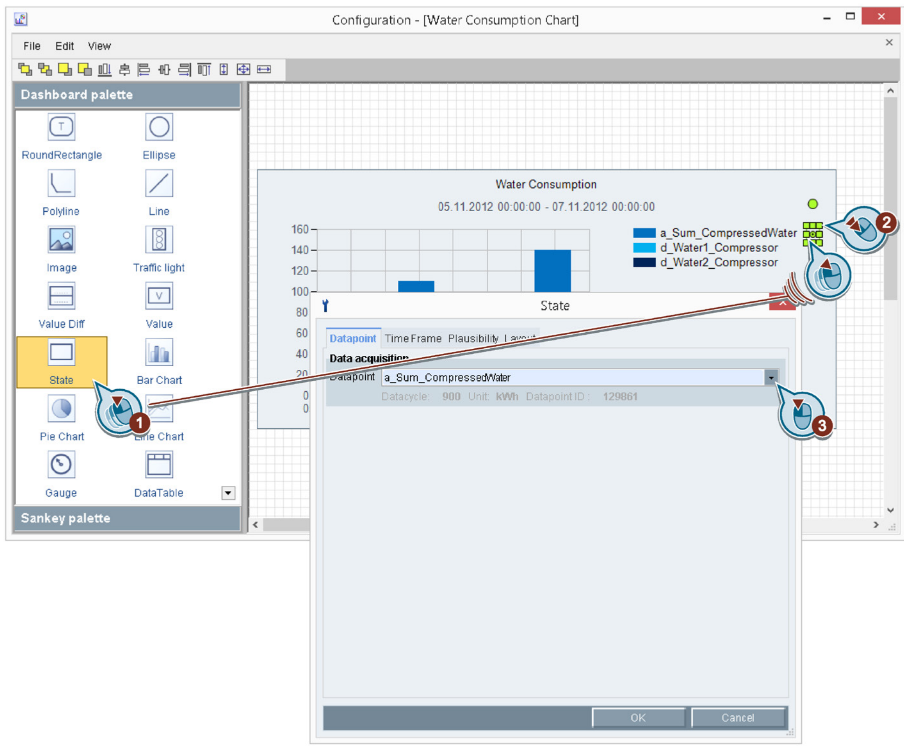
1. Enter the time range to visualize in this bar chart:



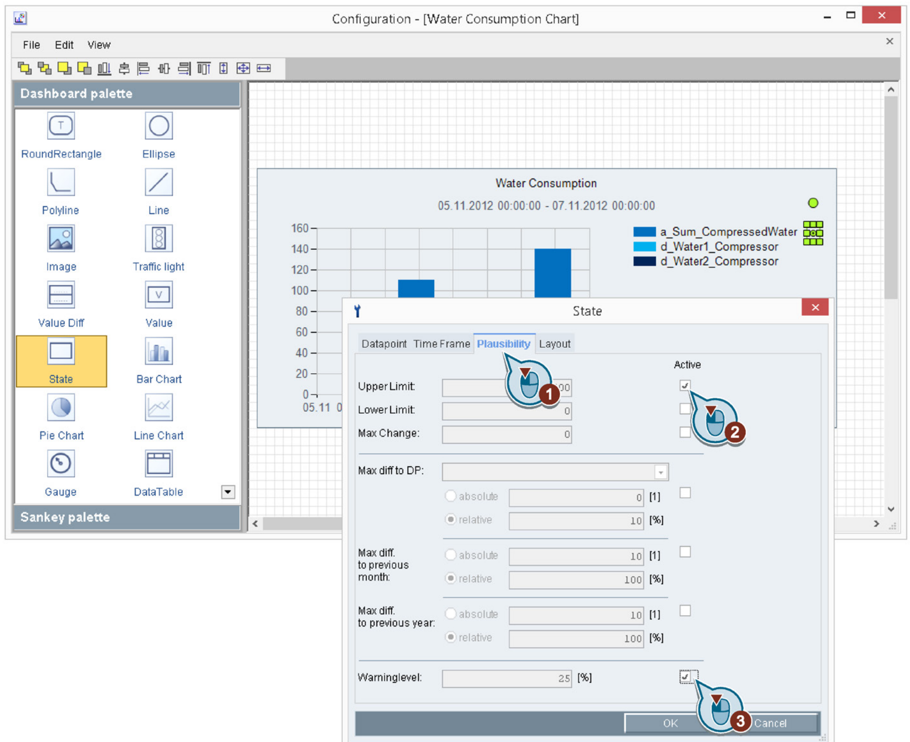
Insert warning when values are exceeded

For example, any limits that you defined for a data point in the "Plausibility" settings can be visualized with color coding in the dashboard. Rule of thumb: Always evaluate only one limit violation in a dashboard object. Use multiple dashboard objects if you have defined multiple limits.

1. Insert the "Status" dashboard object and select the data point:



2. Define the limit to be evaluated.



3. Exit the configuration dialog and save the dashboard.

Result

The dashboard is configured.

See also

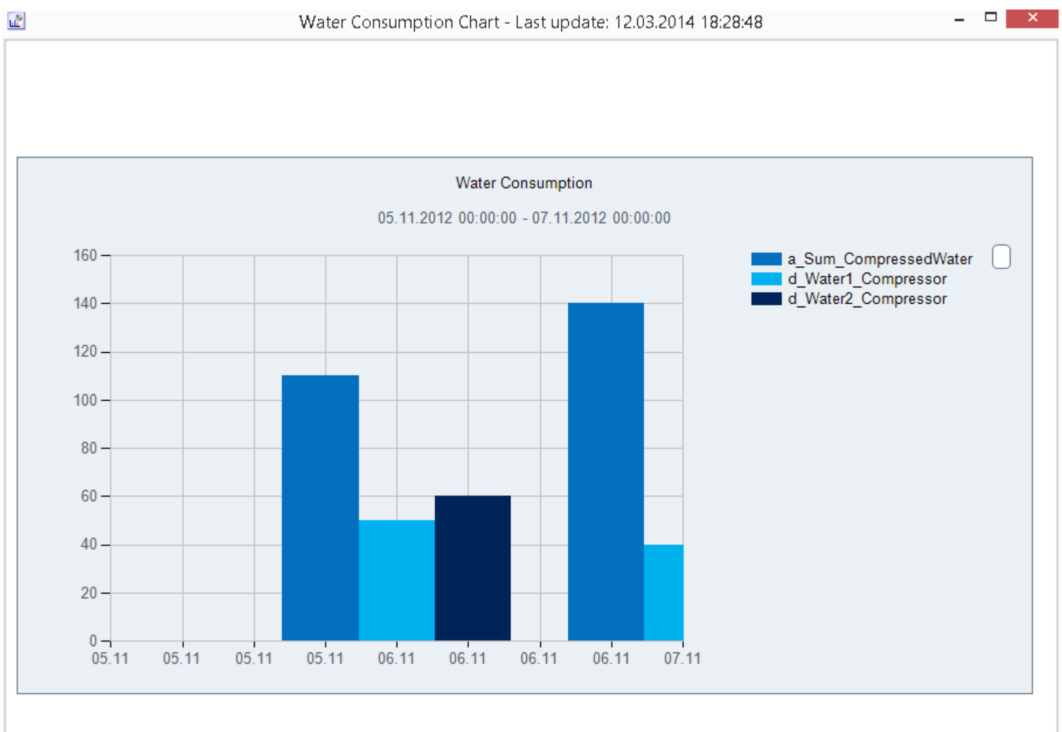
Example for displaying a dashboard (Page 264)

6.5.9.3 Example for displaying a dashboard

Procedure

1. Double-click the dashboard in Plant Explorer.

   The dashboard opens. The consumption values of the specified period are visualized graphically:

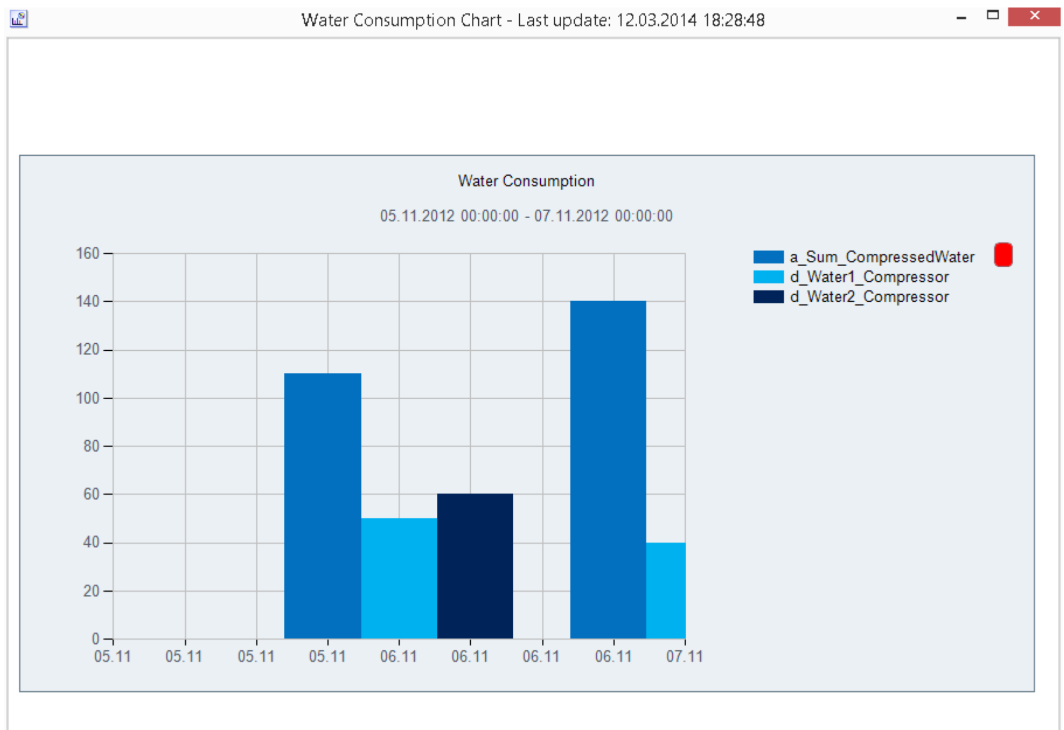


2. Change one of the values of time stamp "08.11.2012" in the matrix to "200".

3. Recalculate the derived data point.

Result

The high limit of the consumption total is exceeded. The status indicator changes to "red":



6.6 Using the Quick Chart

6.6.1 Basic information on the Quick Chart

Overview

You use the Quick Chart to display historical as well as current values as line graph. Use Quick Chart for quick visualization of measurement series.

You can display the values of the following objects in Quick Chart:

- Datapoints
- Matrix
- Report
- Trend

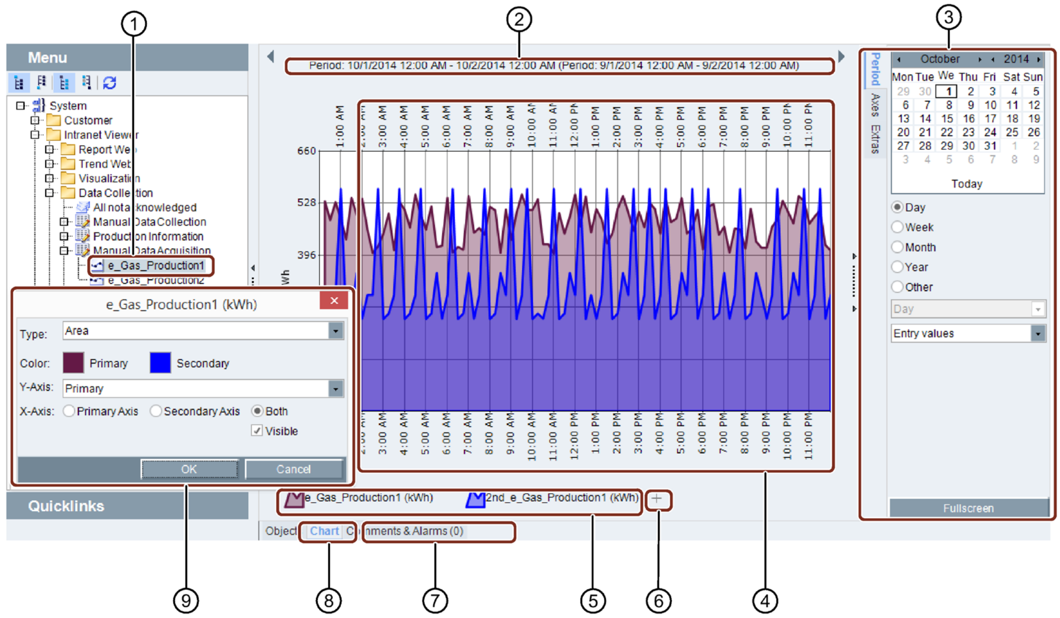
You can export the displayed Quick Chart in the following form:

- Quick Chart's values as a file in "*.csv" format
- Quick Chart as a graphic in "*.bmp", "*.jpg" or "*.png" format

Quick Chart is also supported with identical functionality in B.Data Web.

Quick Chart structure

The figure below shows the representation of the Quick Chart in the Plant Explorer:



① Object in the Plant Explorer visualized in Quick Chart

② Display of the time range

Use the arrow keys to scroll back or forth by one period.

③ Configuration area

④ Visualization of the datapoints as line graph

Current values are read gradually and displayed. The following update cycles apply to the displayed values:

- 10 seconds in the B.Data Client
- 15 seconds in B.Data Web

The displayed configuration is automatically saved for the active user. The configuration is saved with the object in the database that is displayed in Quick Chart.

⑤ Legend with the datapoints represented in the Quick Chart If you click a datapoint, the configuration dialog ⑨ opens.

⑥ Inserting an additional datapoint.

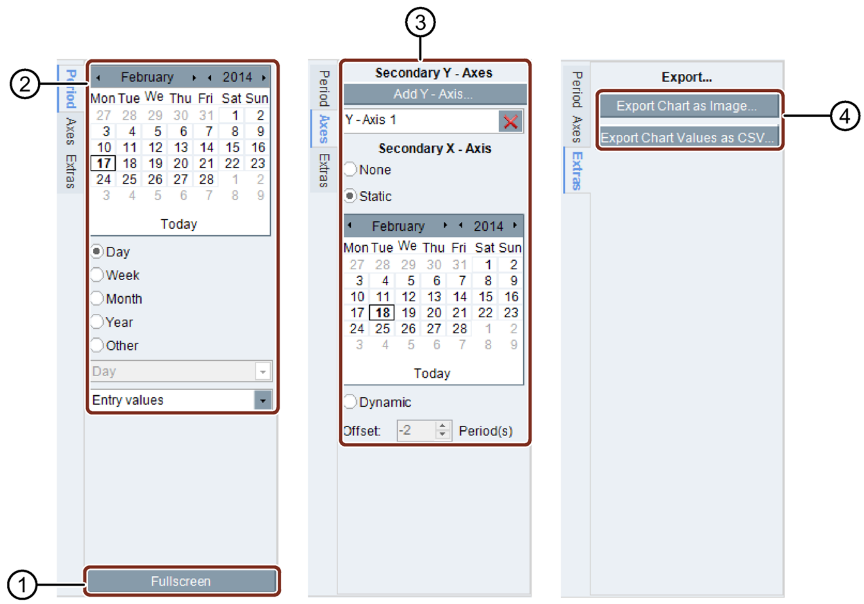
⑦ Tab with the alarms and comments that are contained in the selected time range.

⑧ "Diagram" tab in the display area of the Plant Explorer

⑨ Configuration dialog for the visualization of a datapoint in ④.

Structure of configuration area

The figure below shows the structure of the configuration area:



① Full-screen display of the Quick Chart in a separate window

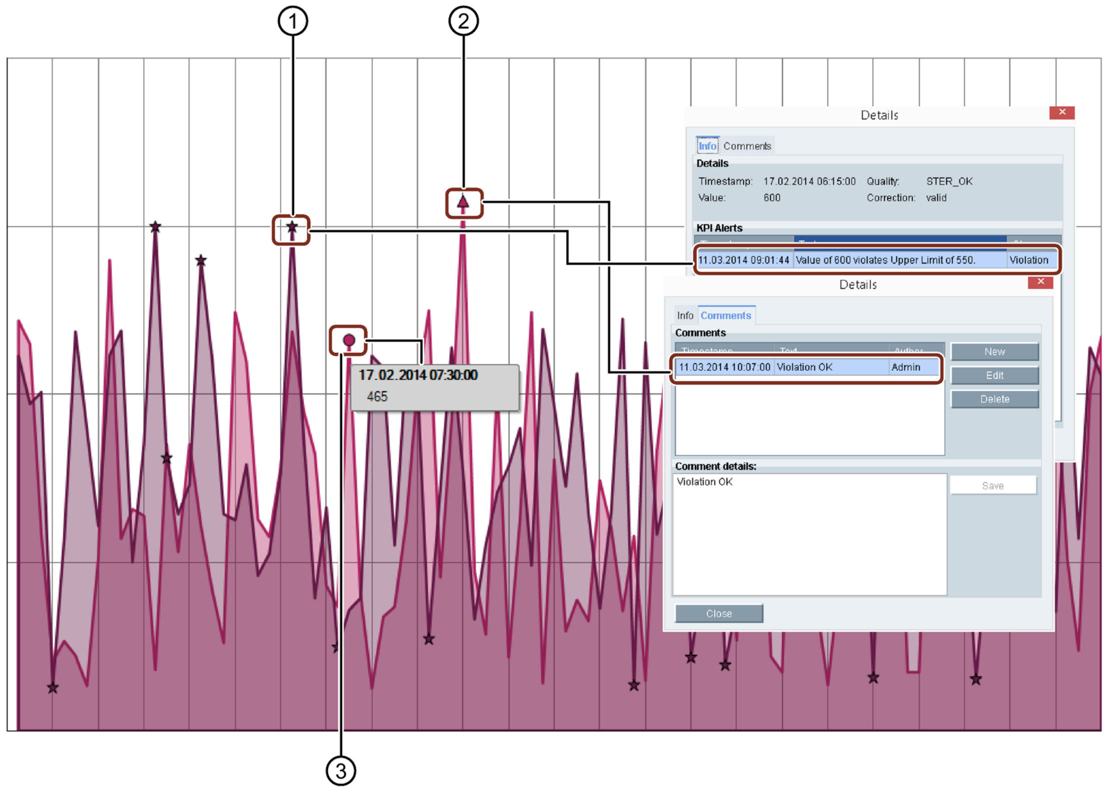
② Selection of time range and query type

③ Configuration of the X and Y axes

④ Exporting the content that is displayed in the Quick Chart

Display of details in Quick Chart

The figure below shows which details are displayed for the measured values of a measurement series in Quick Chart:



①, ②	Measured value with exceeded or undershot plausibility criterion ① and user-defined comment ②
	Click the measured value to open the "Details" dialog.
③	Measured value with display of time stamp and value
	Move the mouse pointer across the line graph to open the display.

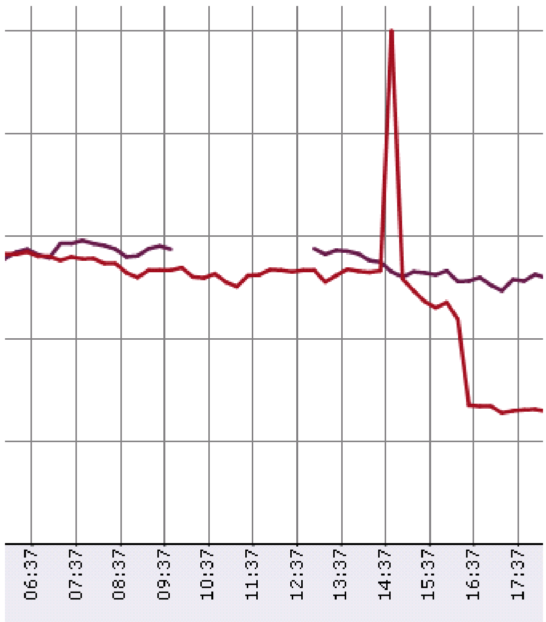
Note

The view is compressed when the Quick Chart includes more than 6,000 measured values in the displayed time range. Not all details are displayed in the compressed view.

In this case, either select a smaller time range or zoom in on an area in the Quick Chart.

Missing values

The line of the corresponding datapoint is interrupted when the values are missing in the measured value series of a datapoint.



See also

Visualizing measured values in the Quick Chart (Page 271)

Displaying details in the Quick Chart (Page 272)

Exporting a Quick Chart (Page 275)

6.6.2 Visualizing measured values in the Quick Chart

Requirement

Data point, matrix, report or trend has been created.

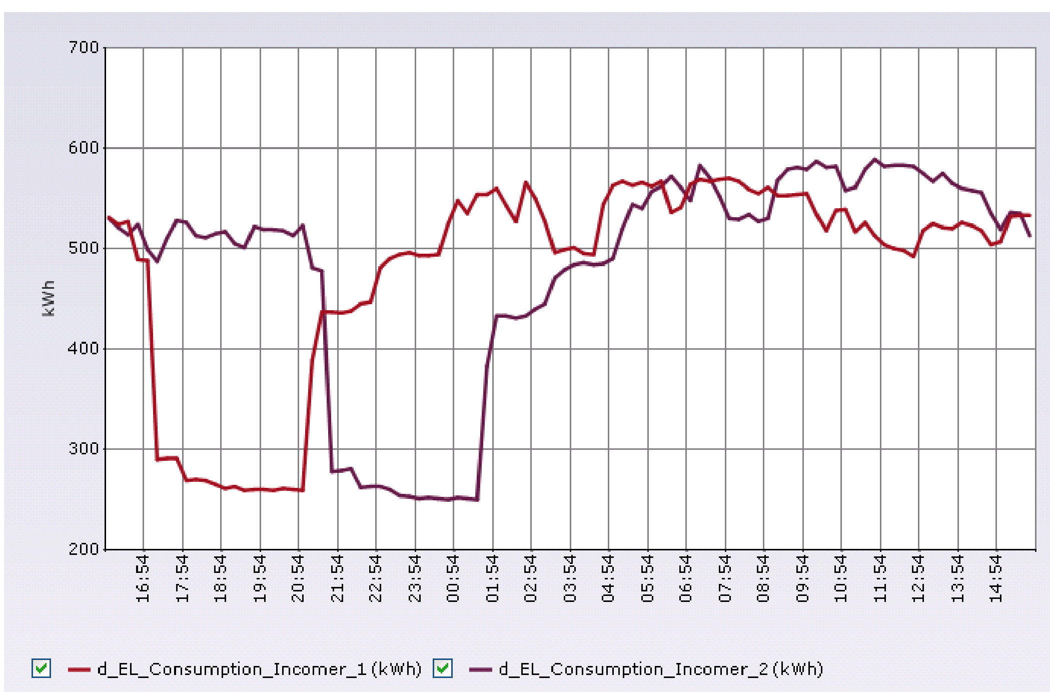
Procedure

1. In the project tree of the Plant Explorer, select the B.Data object whose values you want to analyze in the Quick Chart.
2. Click on the "Diagrams" tab in the display area.

   The Quick Chart appears. The settings of the selected object are generally applied as query type and compression level. Otherwise the configuration settings saved for the object are used.
3. Enter the query type, compression level and time range under "Time period" in the configuration area.
4. Define the axis assignment and the display for each data point under "Data points" in the configuration area.
5. Save the configuration, if necessary.

Result

The values of the object are displayed in line graph format in the Quick Chart.



6.6.3 Displaying details in the Quick Chart

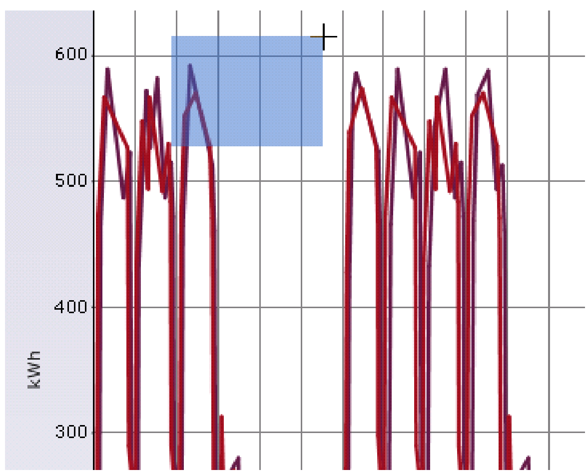
Requirement

Measured values are displayed in the Quick Chart.

Procedure

1. To enter a comment for a measured value:
   - Click on the measured value.

     The "Details" dialog opens.
   - Go to the "Comments" tab and click "Add".
   - Enter the comment text.
2. To enlarge the display area:
   - Holding down the mouse button, enlarge the required area in the display area.

     The selected area is enlarged.
   - To return to the original view, click "Original size".

See also

Basic information on the Quick Chart (Page 266)

6.6.4 Compare a datapoint's values to different time ranges

Introduction

You can compare the values of one or more datapoints that are displayed in the Quick Chart with the values from a different time range. The other time range is displayed as a secondary X axis on the upper border of the Quick Chart. Query type and compression were taken from the primary X axis.

The time range of the secondary X axis is either static or dynamic:

- Static: Fixed starting time in the past or future. Use the calendar to select the time range.
- Dynamic: Offset in periods relative to the time range of the primary X axis. A negative value means an offset in the direction of the past.

Requirement

A datapoint is visualized in the Quick Chart.x

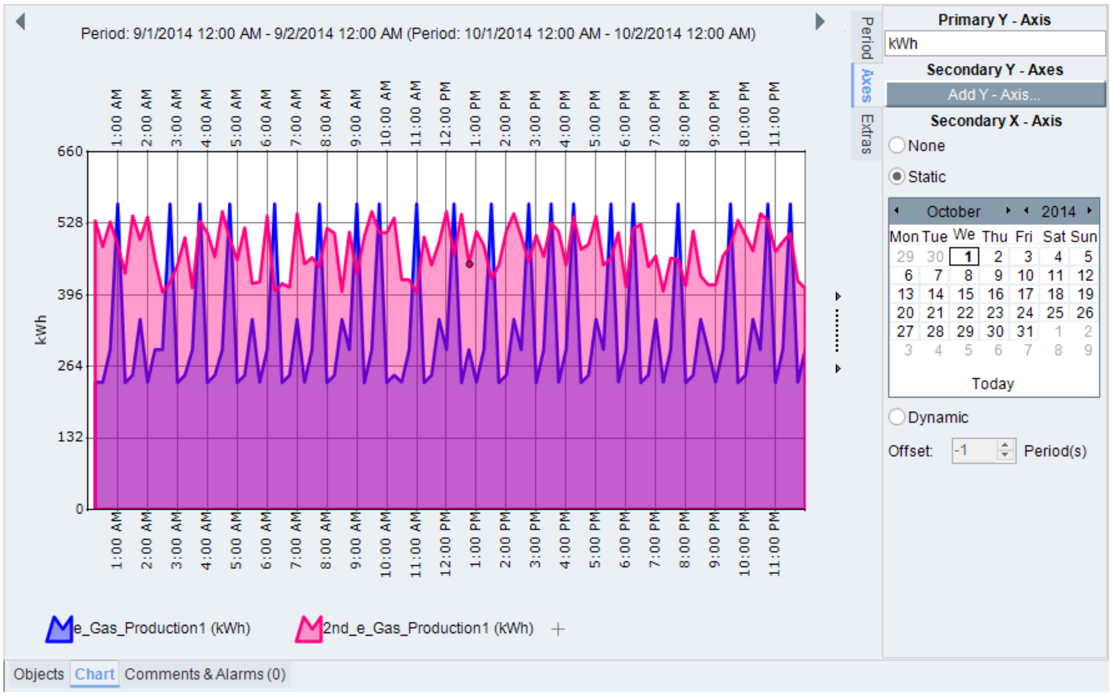
Procedure

1. In the configuration area, under "Axes", select either "Static" or "Dynamic":
2. If you have selected "Static", select the desired starting time in the calendar.
3. If you have selected "Dynamic", enter the desired value for the period offset under "Offset".
4. In the legend, click the datapoint, whose values should additionally be displayed in the secondary X axis.

   The configuration dialog is opened.
5. If you only want to display the comparison values, select "Secondary axis".
6. If you want to display the initial and comparison values, select "Both".

Result

The datapoint's values are displayed in addition to the time range of the secondary axis. The datapoint is automatically inserted into the legend with the prefix "2nd_".



6.6.5 Exporting a Quick Chart

Introduction

You can export the values from a Quick Chart that is displayed on the screen:

- as a file: Values are exported in the "*.csv" format as a comma-separated file, which you can edit for example in MS Excel.
- as an image: The graphics formats "*.bmp", "*.jpg" and "*.png" are supported.

If you enlarge a section of the Quick Chart, only the measured values that are contained in that section are exported.

Requirement

- The Quick Chart is displayed.
- The configuration area is displayed.

Exporting the Quick Chart's values to a file

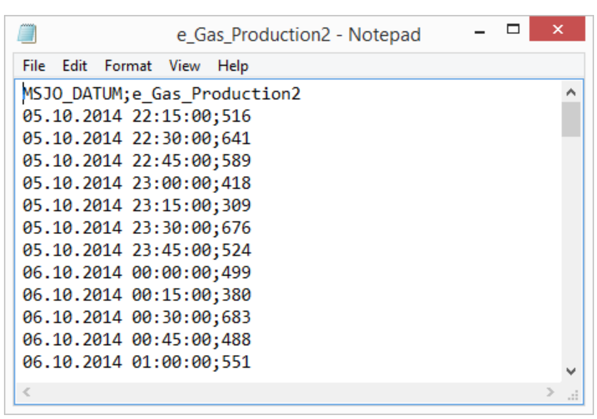
To export a Quick Chart's measured values to a file, follow these steps:

1. In the configuration area, under "Extras", click "Export values as CSV...".

   The "Save as" Windows dialog is displayed.
2. Enter a name for the file.

Result

The Quick Chart's measured values are saved in a file in "*csv" format. You can open the file, for example in MS Excel. Each datapoint contained in the Quick Chart is displayed as a separate column. The first column contains the timestamp.



Exporting a Quick Chart as an image

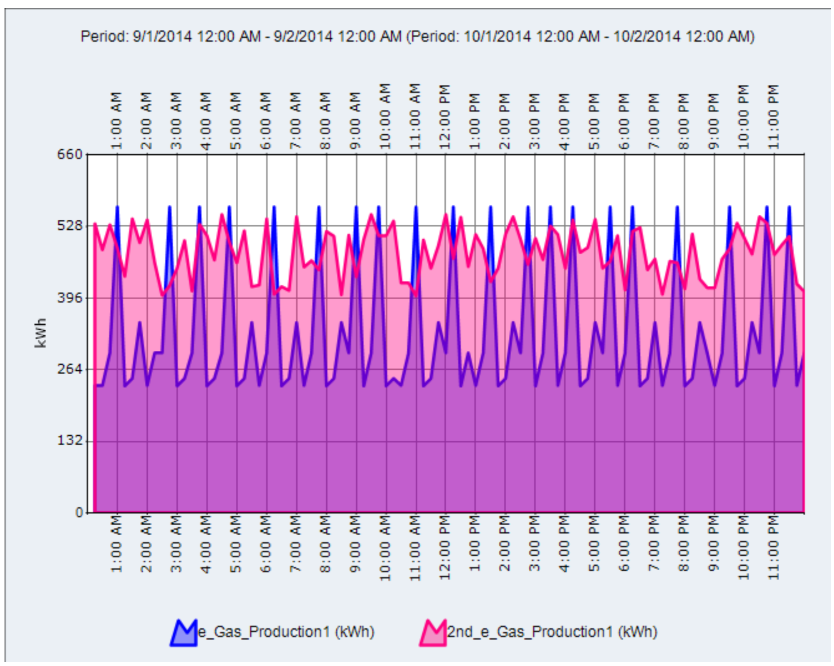
To export a Quick Chart data as an image, follow these steps:

1. In the configuration area, under "Extras", click "Export chart as image...".

   The "Save as" Windows dialog is displayed.
2. Enter a name for the image, and select the desired graphics format.

Result

The displayed Quick chart is saved as a graphic.



See also

Basic information on the Quick Chart (Page 266)

Historizing calculation logic 7

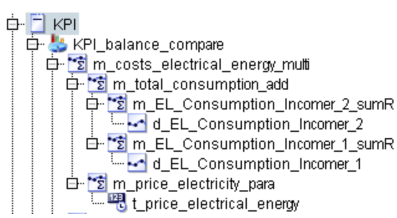
7.1 History management basics

Definition

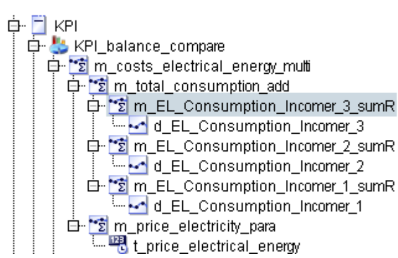
The history management in B.Data saves every change to the configuration of a calculation. This enables the tracing and reconstruction of the configuration of a calculation at any given instant.

Example

One year ago, you configured a report for the calculation of the power costs of two loads.



In the course of the year, you have added the calculation of a third load.



Now you are required to reconstruct the report for the calculation of the power costs of two loads at a specific time. To do this you use the history management of the report:

1. In the history management with monitoring time stamp, look for the configuration that you want to reconstruct.
2. When generating the report under "Model", enter the required monitoring time stamp.

   The report is generated using the configuration data saved under the specified monitoring time stamp.

Note

Versioning measured values

In order to correctly reconstruct the report, when generating the report, enter the version of the measured values valid at the time of the specified monitoring time stamp.

Objects for history management

You can display configuration changes for the following B.Data objects:

- Data point of type "Derived"
- Measuring variable
- Report

The following configuration data are displayed during the history management of objects:

Configuration	Meaning
Calculation tree	Shows objects of the calculation and their order in the calculation tree.
Type	Shows the type of the object, e.g. "Module". "Type" is only used in the history management of the reports.
Name	Displays the name of the object.
Function	Displays the function of a data point or of a measuring variable, e.g. "Measurement" or "Addition of MEVAs".
Operation	Displays the type of change to the object, e.g. "Delete".
Unit	Displays the unit of a data point or measuring variable, e.g. "kWh".
Changed on	Displays the date when the change was made to the object.
Changed by	Displays the user who made the change to the object.
Description	Displays the description of the changed object.

The following restrictions apply to the history management of reports:

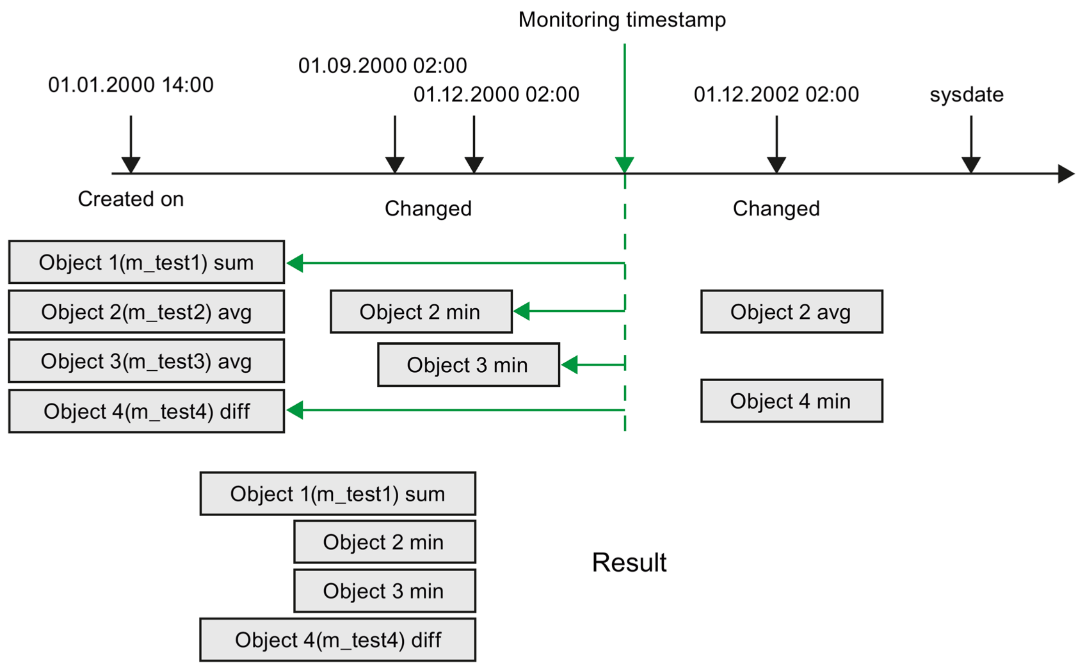
- No history is kept of report templates.
- No history is kept of start values.
- Automatically generated reports are only calculated with the current configuration data.
- Reports that are generated in B.Data Web are only calculated with the current configuration data.
- Specific modules, e.g. plausibility modules, are only calculated with the current configuration data.

Display types for history management

During object history management you can select one of the following display types:

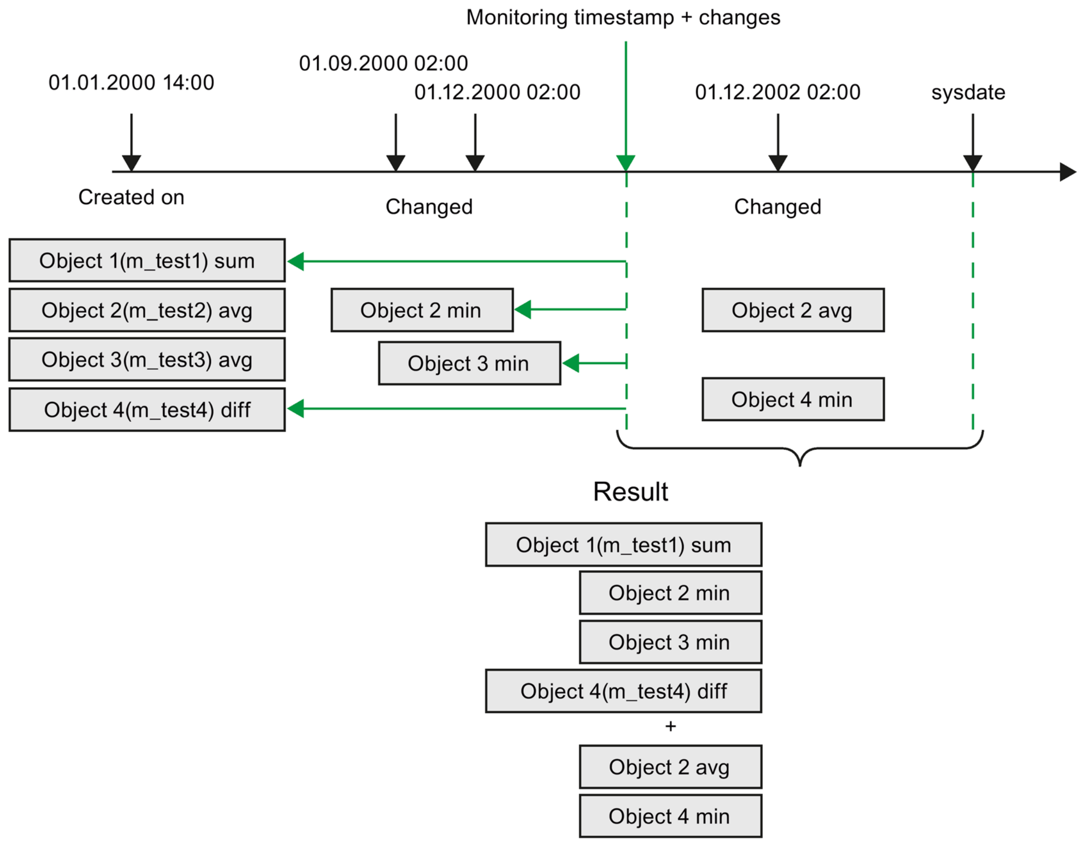
- Only state

  If you select this display type, the current calculation tree and the configuration data are displayed for the required monitoring time stamp.



- From timestamp

  If you select this display type, the current calculation tree and the configuration data up to the required monitoring time stamp are displayed, including all changes.

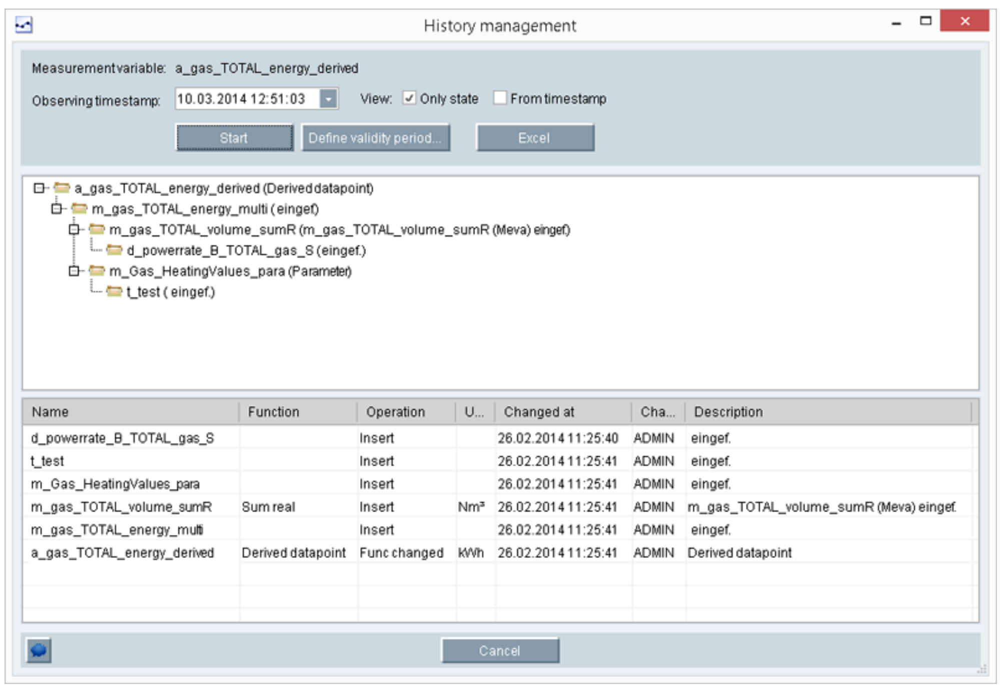

Monitoring timestamp + changes
01.01.2000 14:00
01.09.2000 02:00
01.12.2000 02:00
01.12.2002 02:00
sysdate
Created on
Changed
Changed
Object 1(m_test1) sum
Object 2(m_test2) avg
Object 3(m_test3) avg
Object 4(m_test4) diff
Object 2 min
Object 3 min
Object 2 avg
Object 4 min
Result
Object 1(m_test1) sum
Object 2 min
Object 3 min
Object 4(m_test4) diff
+
Object 2 avg
Object 4 min

7.2 History management of data points

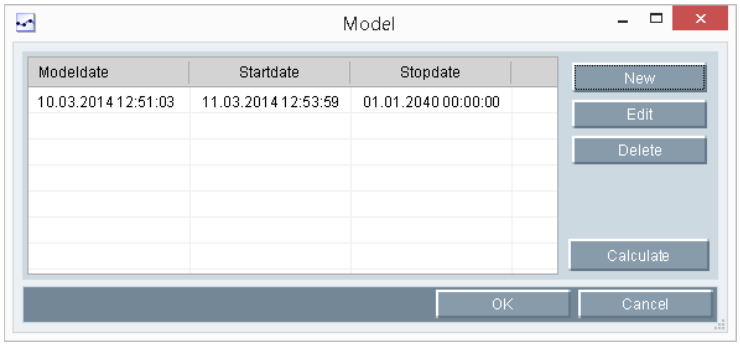
Procedure

1. Select the data point for which you want to view the historization.
2. Select the "History management" command from the shortcut menu.
3. You first have to select a date to call the corresponding configuration. After having selected the time stamp, you may also select a view.
4. Click "Calculate" to display the tree that is currently available for the selected time. Depending on the view you selected, the configuration status that is valid at the selected time is displayed in the list box. If the "From timestamp" view has been enabled, all changes up to the current time are included in the list box.

   The log for data points includes changes to units and functions. The log for derived data points also includes changes to the assigned Meva.



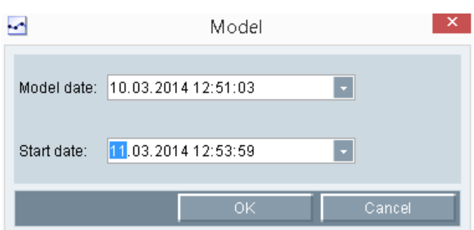
5. Select "Define validity period..." to open the "Model" dialog for specifying the models for derived data points.
6. Click "Add", "Edit", or "Delete" to specify or edit the various validities of the models.



Note

It is not permitted to conclude a model within an interval of the derived data point. Example: If a derived data point has been assigned a monthly interval, the model may only change accordingly to the first day of a month (01.xx. 00:00).

Automatic recalculation of the derived data point is not initiated when models are being changed. You can click "Calculate" to open a dialog for entering the period for recalculating the derived data point if its calculation rule has been changed. The last model is always assigned the stop date 01.01.2040.



However, this is based on the condition that "current model" was not activated in the definition of the derived data point. If activated nonetheless, the defined models are not activated and the calculation is always based on the current model.

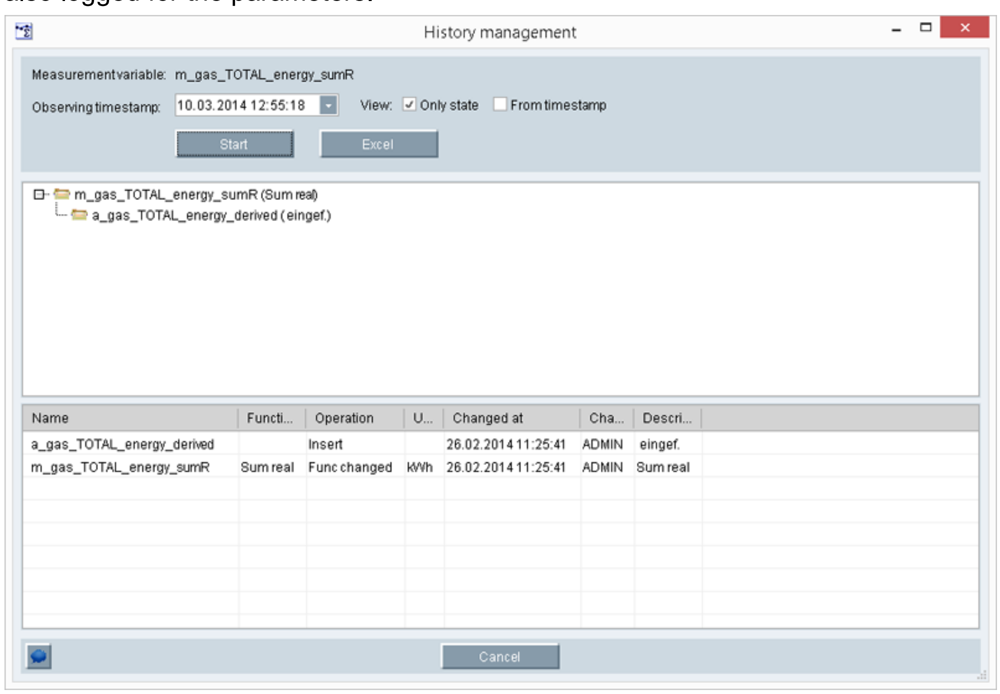
7.3 History management of measure variables

Procedure

1. Select the measuring variable for which you want to view the historization.
2. Select the "History management" command from the shortcut menu.
3. You first have to select a date to call the corresponding configuration. After having selected the time stamp, you may also select a view.
4. Click "Calculate" to display the tree that is currently available for the selected time. Depending on the view you selected, the configuration status that is valid at the selected time is displayed in the list box. If the "From timestamp" view has been enabled, all changes up to the current time are included in the list box.

   After changes have been made to a Meva function, "Func Changed" is entered as operation. The entry always contains the currently valid function. The description field contains entries for both the old and new functions. The "Unit Changed" operation is entered, or the description field lists the old or new function, after units have been changed.

   "Insert" is entered as operation after a data point has been connected to the tree. "Delete" is entered as operation if the data point is removed again. To view the "Delete" operation, switch to the "From time" mode. The "Insert", "Delete", or "Unit Changed" operations are also logged for the parameters.

5. Click "Excel" to open an Excel spreadsheet in order to insert the data that is displayed for further use. Click "Close" to exit the dialog.

The history of objects is retained for their entire life time in the system.

7.4 History management of reports

Overview

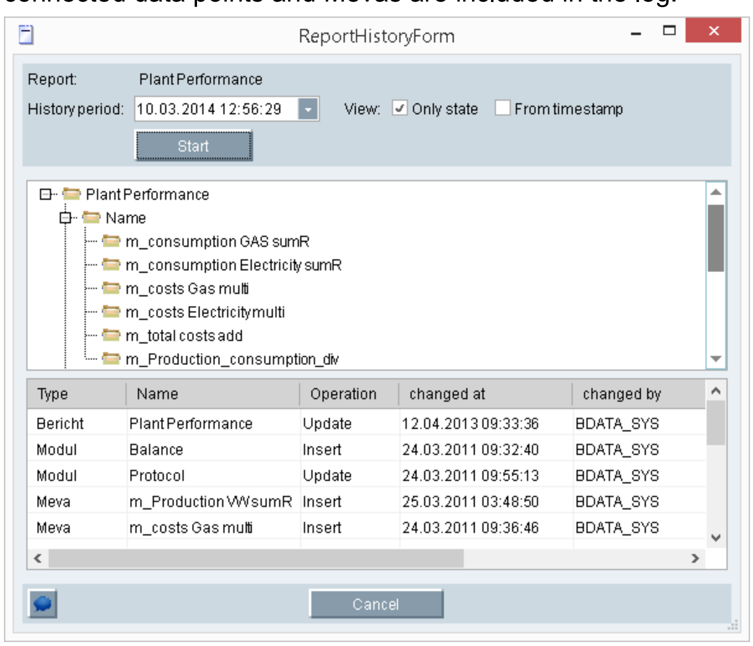
The following report attributes are included in the log:

- Objects in the calculation tree and their order. Example: Which data points or parameters were connected at a specific time to a module or Meva node and their order.
- MEVA: function and unit
- Measurement: Unit
- Parameter: Substitute value
- Module: Module type

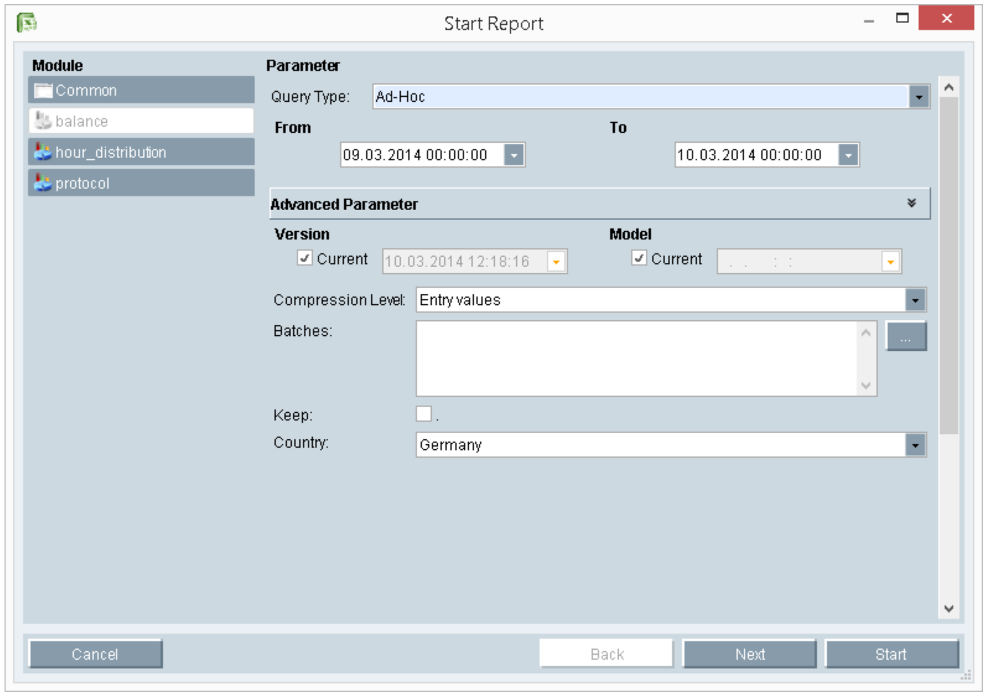
Procedure

1. Select the report for which you want to view the historization.
2. Select the "History management" command from the shortcut menu.
3. You first have to select a date to call the corresponding configuration. After having selected the time stamp, you may also select a view.
4. Click "Calculate" to display the tree that is currently available for the selected time. Depending on the view you selected, the configuration status that is valid at the selected time is displayed in the list box. If the "From timestamp" view has been enabled, all changes up to the current time are included in the list box.

   All changes with regard to "Insert", "Update" and "Delete" operations of modules, connected data points and Mevas are included in the log.



5. At the start of reporting, you can select the model(date) that is to be used to calculate the report. The measured values that are valid at this point in time (version) should be used accordingly for calculations.



6. To disable the display of the model date in the header data of the report, assign the value 0 to the name "Show Model" in "Administration > B.Data Options > Appl.".

   The model date is displayed in the header data of the report by default: Show Model = 1.

	A	B
1	Date	03.05.2009 12:07
2	From	01.04.2009
3	To	01.05.2009
4	User	
5	Query Type	Ad-Hoc
6	Name	Seabird_Report - f
7	Description	
8	Keep	no
9	State	Finished
10	Version Date	26.04.2009 12:07
11	Model Date	26.04.2009 12:07

See also

B.Data options (Page 373)

Schedule management 8

8.1 Basic information on schedule management

Definition

The B.Data schedule management is used to plan and forecast the energy requirements of your company for a time period which can be freely selected.

Usage

Planning and forecasting are preconditions for sustainable energy management. This is facilitated by generating forecasts of the energy requirements and load profiles for one or several locations, individual consumers, production areas, or buildings.

Energy requirements planning for a specific time period returns procurement benefits due to the tiered tariff systems of the energy providers. Maximum financial benefits are achieved at the following conditions:

- The difference between the expected and actual consumption is kept to a minimum.
- Load peaks are shifted to tariff times during which energy generation is at a lower cost.

Demands on an energy management system

Load peaks in industrial plants are primarily determined by production processes, as well as shift or product cycles. The forecasting methods may differ even among different plant units:

- Forecasting in pulp mills, for example, is usually based on production quantities. The shredder and waste paper units are only in operation as required, which is why forecasting is based on production plans.
- By contrast, forecasting in the automobile industry is based on shift schedules.

Implementation in B.Data

B.Data supports the following methods for planning and forecasting:

- Comparison days and shift model
- Production plans
- Daily consumption values

The forecasts can be compared with the ACTUAL data in future analyses.

Comparison day principle

The comparison day principle is based on shifts or type days that are examined across a reference time period, such as a quarter. The energy demand is calculated depending on the scheduled days and associated plant operating times.

- Examples of type days: Workday (8 hours), workday (6 hours), workday (10 hours), holiday
- Examples of shifts: Morning shift, evening shift, night shift, special shift

Usually, you plan type days on a weekly basis, while flexible planning without committing to an entire week is also possible. Holidays and other non-working days are taken into account automatically.

Use the calendar to react to changes: You can change type days or shift these to other weekdays. Therefore, your forecasts are always up-to-date.

The forecast result can be corrected, for example, to compensate for production data or temperature effects in order to provide a uniform basis for comparison. Evaluation of the forecast quality, i.e. the comparison with ACTUAL data, concludes the forecast. The result may affect the next forecast.

Forecasting based on production planning

With forecasting based on production planning, energy consumption is calculated based on the production quantities or batches to be produced. A stable relation between power consumption and batches/quantities is a prerequisite for this. The production plan defines the product and quantity to be produced. Along with each product, corresponding product parameters are defined for each medium. B.Data also supports you in calculating the product parameters.

You can define the production plan directly in B.Data or by means of a predefined Microsoft Excel file. You may also import data from a production planning system, e.g in "CSV" or "XML" format.

If you define the production plan using an Excel file, the Excel spreadsheet must have the following structure:

Note

Note that only the following entries are imported from the Excel file:

- Entries in which the "TO" time stamp is in the future.
- Entries in which the "FROM" time stamp is not older than five days.

  You can change the number of days under "B.Data Options > Database > Productplan_limit".

Before the data import, the table contents in question are deleted and reentered.

Forecasting based on daily values

Forecasting based on daily values is based on previously acquired ACTUAL values. In this case, the energy consumption is allocated to each daily production. In the forecast, you then calculate the expected energy requirements as a function of the expected production quantity.

You can analyze the daily production quantities and corresponding consumption data with the help of a regression analysis. The parameters for the linear equation $y = k \cdot x + d$ that are mapped in B.Data are derived from this analysis. Once the planned production quantity has been defined, calculate the energy demands to be expected.

See also

Configuring the plant (Page 311)

Task Management (Page 396)

8.2 Creating a profile

8.2.1 Basic information on profile

Based on the comparison day principle, you can generate media consumption forecasts at any time using a combination of master profiles, profiles, typical days, and special effects.

The next chapters cover the following components:

- Status
- Typical days
- Profiles
- Master profiles

8.2.2 Configuring states

Overview

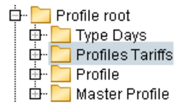
States are used to set the default values for a typical day, or, for example, to distinguish between the days in the high tariff period (HT, value=1) and in the low tariff period (LT, value=0). These values are evaluated using special measuring variable functions.

Note

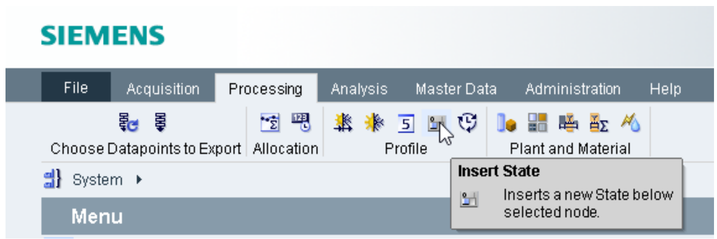
The HT (high tariff) and LT (low tariff) states have already been generated as domain data and cannot be deleted.

Procedure

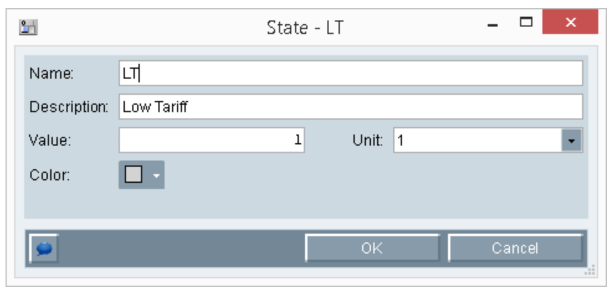
1. Select the folder in which the status is going to be created.



2. Click the "Insert Status" button in the menu bar under "Processing > Profile".



The "Status" dialog opens.



3. Enter a meaningful "Name" and optionally a "Description".
4. Enter the required "Value" and its "Unit".
5. Select a color, if necessary, and confirm with "OK".

Result

You have successfully configured the status and it is now ready for use.

See also

Configuring a shift (Page 294)

8.2.3 Configuring typical day

Overview

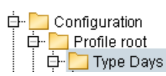
Typical days describe the progression of consumption for a defined consumption unit in the course of a day. Such days can also be used to forecast a "typical" future consumption. The typical day may also be defined based on shift data.

Requirement

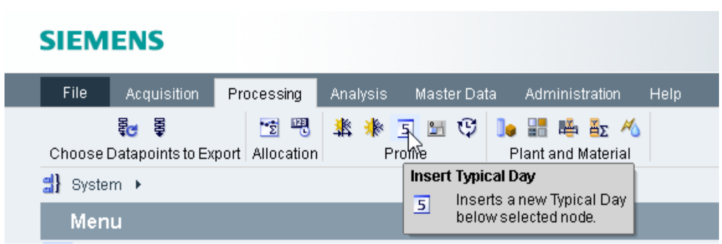
- The typical load distribution is known.
- The necessary status or shift data has been created in the system.

Procedure

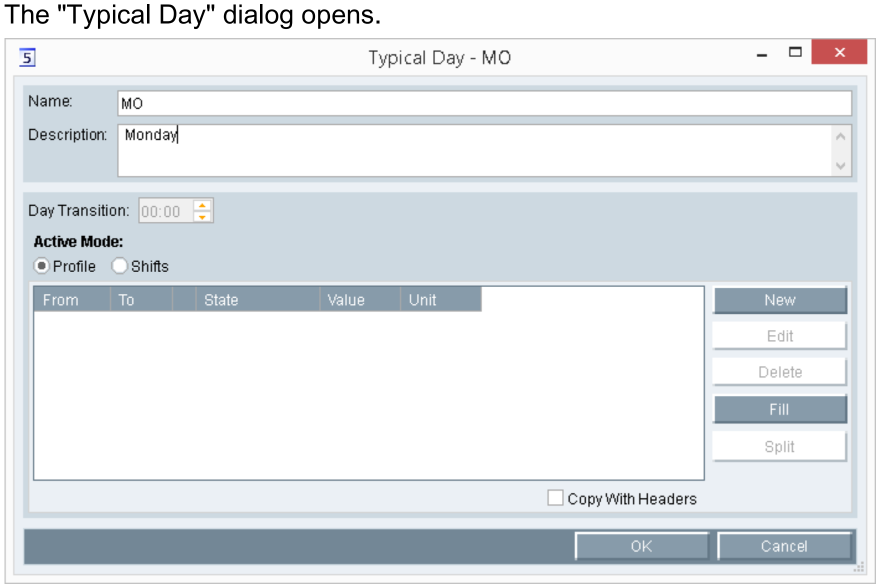
1. Select the folder under which the typical day is going to be created.



2. Click the "Insert Day" button in the menu bar under "Processing > Profile".



The "Typical Day" dialog opens.

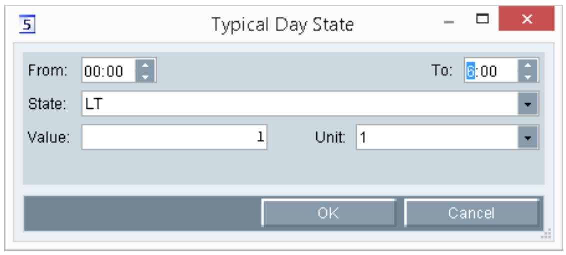


3. Enter a descriptive "Name" and an optional "Description" and confirm your entries with "OK".

4. Complete the same procedure for the remaining days of the week, including the necessary special days (holidays, special shifts, bridging days, production downtimes).
5. You can now enter the values manually for each typical day. Select "Insert…" to enter the status and the respective valid FROM-TO time range.

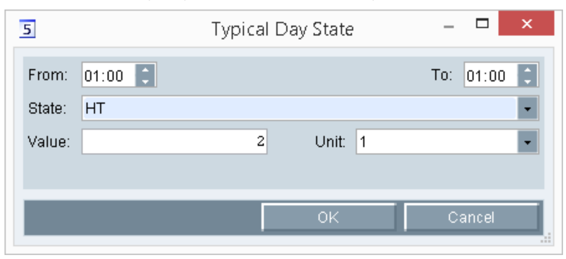
   Status corresponds with a default value that may be or has to be changed.

   This option is frequently used to handle slight periodic fluctuation of status values. Examples: "value 1" from 00:00 to 12:00 h and "value 2" from 12:00 to 24:00 h.



6. The "fill" option is used to handle a smaller pattern of values, e.g. 1 h pattern. You may also specify a cycle time.

   However, in order to form a basis for a realistic forecast, the 1 h values are determined automatically by means of analysis report and written to the database.



Result

You have successfully created the typical day and it is now ready for use.

See also

Configuring a shift (Page 294)

8.2.4 Configuring a shift

Introduction

Use the "Shift" object to subdivide a day into several shifts. In addition you can use Status, for example, to assign different tariff information to each shift. If you use a "Shift" object beneath a query type, you can query time range by shift.

Requirement

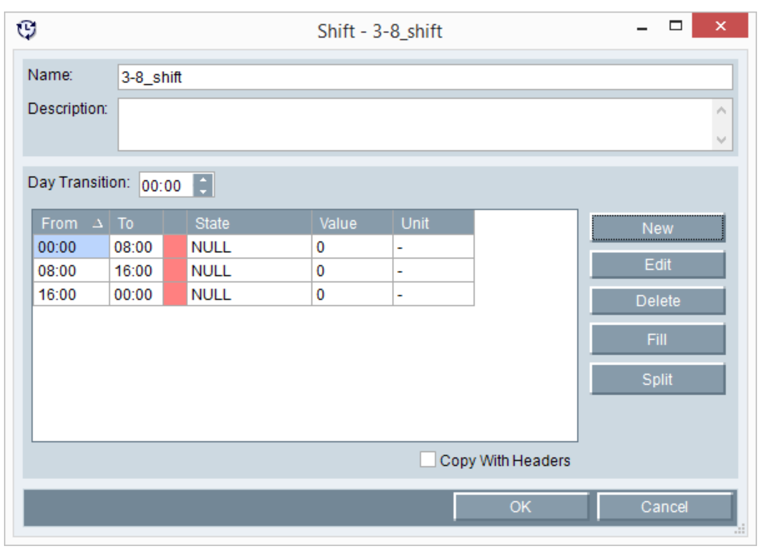
Statuses have been created.

Procedure

1. Select the folder in which the shift will be created
2. Click the "Insert shift" button in the menu bar under "Processing > Profile".

   The "Shift" dialog opens.
3. Enter a meaningful "Name" and optionally a "Description".
4. Select the time that will be interpreted as the "Day transition".
5. To define a shift, click "New".

   The "Shift status" dialog opens.
6. Enter the "Duration", and select the desired "Status".



Result

The "Shift" object has been created.

8.2.5 Configuring profiles

8.2.5.1 Configuring profiles

Overview

A profile is used to configure the consumption of a typical week with the help of type days.

You can employ two modes to configure a profile:

- "Weekly": Configuration of a fixed sequence of seven days. In the "Weekly" mode, assign type days to the weekdays. The type day "Default" is assigned to a weekday by default.
- "Day sequence": Configuration of a flexible day sequence. Select the type days for the "Day sequence" mode and specify their sorting order for the profile.

Note

You must activate the calendar to enable the use of the "Day sequence" mode.

Requirement

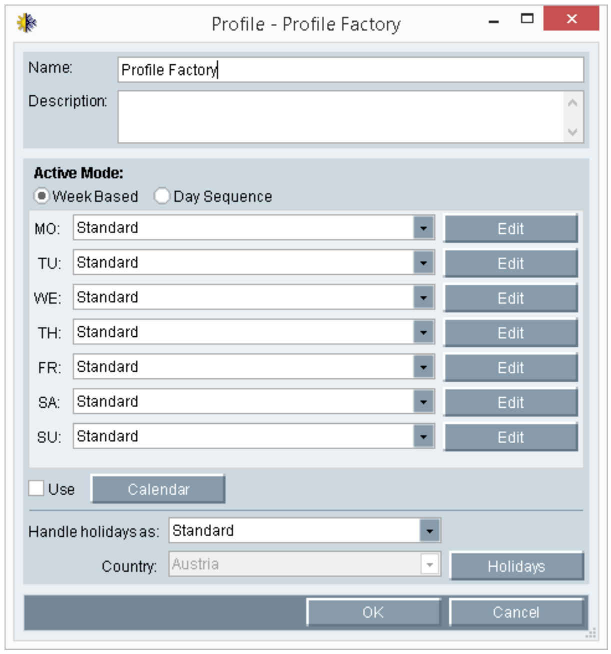
The type day is configured.

Procedure

1. Select the folder in which you want to configure a profile from the structure tree of Plant Explorer.
2. Click the "Insert Profile" button in the menu bar under "Processing > Profile".

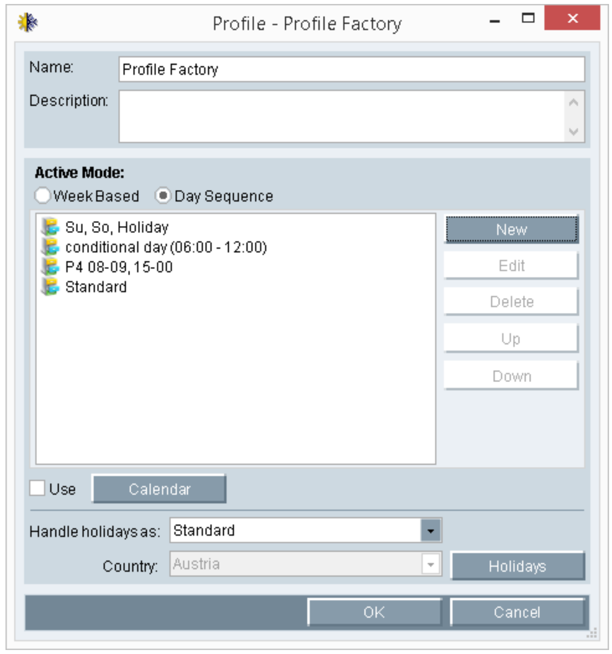
   The "Profile" dialog opens.
3. Enter a unique name and an optional description for the profile.

4. Proceed as follows to configure a profile on a weekly basis:
   – Select the "Weekly-based" mode.
   – Assign the weekday a configured type day of selecting the type day from the weekday selection list.
   – Click "Edit" click the type day.



   – Confirm the configuration with "OK".

5. Proceed as follows to configure a profile on a daily basis:
   – Select the "Daily sequence" mode and then click on "New".
   – Select one or several type days.



– Confirm the configuration with "OK".
– Select "Use" to activate the calendar.

Result

The profile is configured. Configure the holidays that you want to take into account for the profile. Open the calendar to edit the profile, or to display a graphic diagram of the profile.

See also

Configuring typical day (Page 292)

Selecting holidays for profile (Page 298)

Using a calendar for a profile (Page 300)

8.2.5.2 Selecting holidays for profile

Overview

Select the holidays that you want to take into account for the profile.

Requirement

- The profile is configured.
- You have configured the country and its regional holidays.

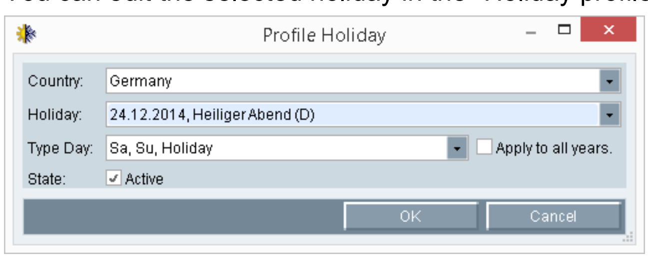
Procedure

1. Double-click the selected profile in the Plant Explorer.

   The "Profile" dialog opens.
2. If the holidays are to be treated as a type day, select the relevant type day under "Treat holidays as".
3. Click on "Holidays".

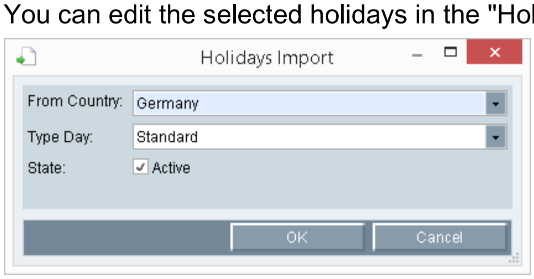
   The "Holidays" dialog opens.
4. To select a holiday of a specific country for the profile, click "New" and then select the corresponding country and its holiday.

   You can edit the selected holiday in the "Holiday profile" dialog.

5. To select all holidays of a specific country for the profile, click "import" and then select the country.

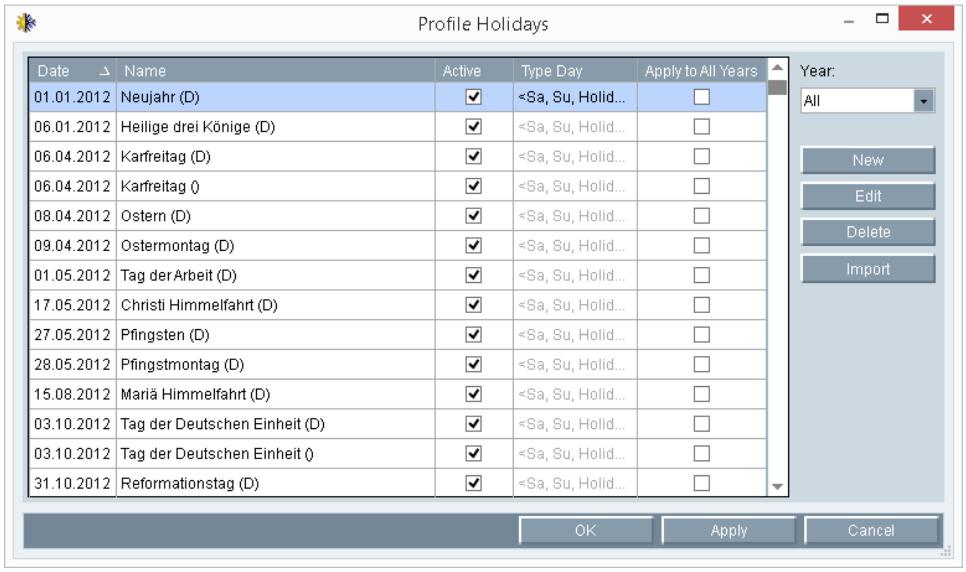
   You can edit the selected holidays in the "Holidays import" dialog.

6. Confirm the configuration with "OK".

Result

You have selected the holidays for the profile. You can edit or delete the configured holidays.



See also

Configuring profiles (Page 295)

8.2.5.3 Using a calendar for a profile

Overview

Use the calendar to edit the configured day sequence, or to display a graphic diagram of the sequence.

Application example: You define a sequence with rollout for one quarter in the calendar. You can always respond to changes such as special shifts in the calendar. This functionality always keeps your consumption data and forecasts up to date.

The calendar consists of the following components:

- Detail view: Provides a graphic view of daily and shift information. The type days and shifts configured in the profile can be modified in the detail view.
- Monthly view: Allows you to select one of several days for visualization in the detail view. You can use the <CTRL> or <SHIFT> keys to select several days.
- Type day: Shows all type days you have configured.

Requirement

The profile is configured.

Procedure

1. Double-click the selected profile in the Plant Explorer.

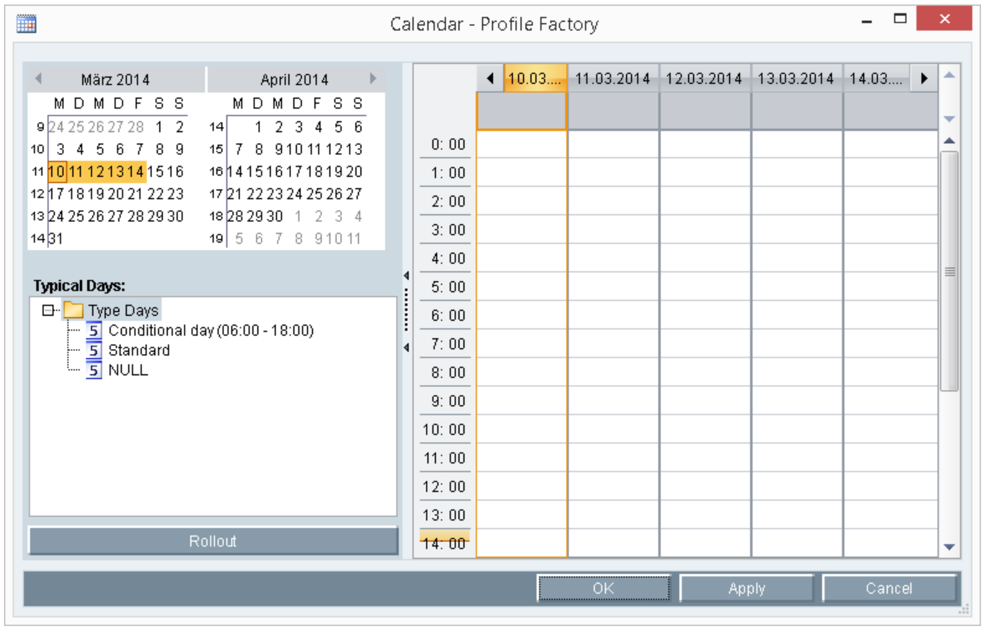
   The "Profile" dialog opens.
2. Activate "Use" and then click "Calendar".
3. To transfer the configured day sequence to the calendar, click "Rollout" and select the time range.

   The start date is set to Monday by default.
4. Confirm the configuration with "OK".

   The day sequence is entered in the calendar.
5. To select all elements of a type day, click "Select day elements" in the shortcut menu of the type day.
6. To delete a type day, click on "Delete day(s)" in the shortcut menu of the type day.
7. To add a type day, select a type day under "type day", or drag-and-drop it to the calendar.

Result

You can use the calendar for the profile. Deactivate the "Use" option in the "Profile" dialog if you no longer need the calendar. The rolled-out day sequence is retained in the calendar. Existing type days will be overwritten if you enter a new rollout for the same time range in the calendar.



See also

Configuring profiles (Page 295)

8.2.6 Configuring root profiles

Overview

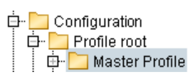
A master profile specifies how to forecast media consumption based on different profiles in the course of the year.

Requirement

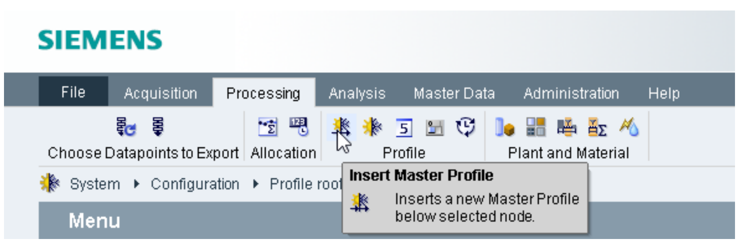
The necessary profiles have been successfully created in the system.

Procedure

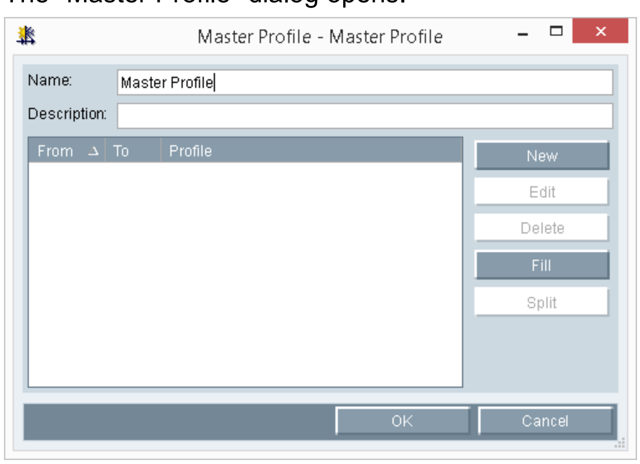
1. Select the folder in which the master profile is going to be created.



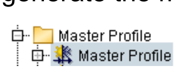
2. Click the "Insert Master Profile" button in the menu bar under "Processing > Profile".



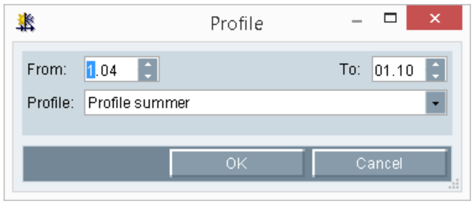
The "Master Profile" dialog opens.



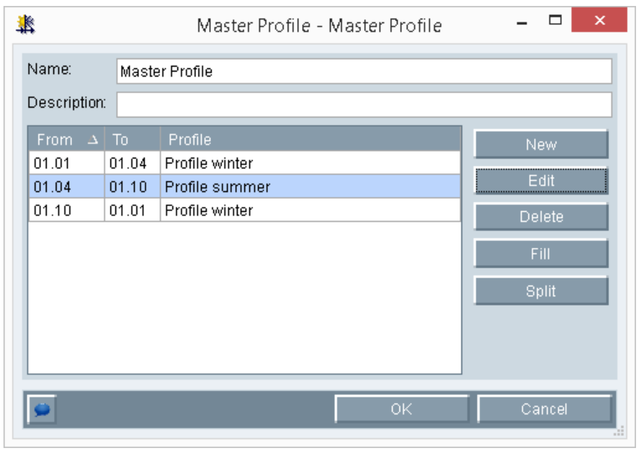
3. Enter a meaningful "Name" and an optional "Description". Confirm your entries and generate the master profile with "OK".



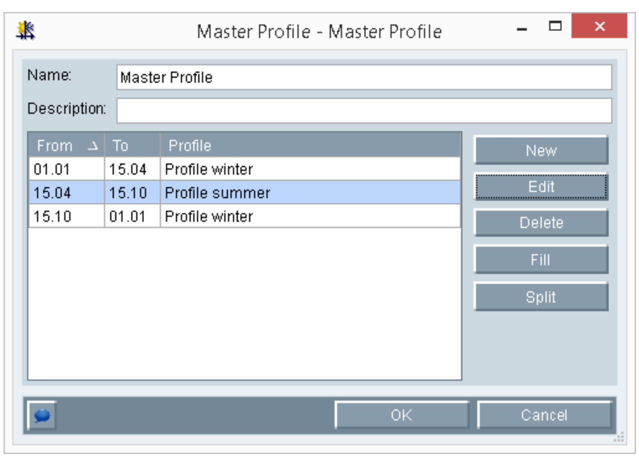
4. Double-click reopens the editing dialog. Click "New" to select a profile for the period starting on January 1 and a time as of which a different profile is to be applied. Confirm with "OK".



5. The selected profiles and FROM-TO ranges are now generated. You can edit and remove selected settings or add a new range.



6. If a different period has been configured, the profile is valid as of the new FROM time. The TO time is set automatically at the previous profile.



7. Confirm and complete the master profile configuration with "OK".

Result

You have successfully created the master profile and it is now ready for use.

8.2.7 Production-dependent forecasts

B.Data uses its internal production plans that contain the production or status data of the consumption type to forecast production-dependent load profiles. Consumption types represent, for example, factories, buildings, or machinery.

8.2.8 Special effects

Overview

In preparation for the adjustment of the basic load profile, define corresponding parameters as a correction factor that takes long-term load changes (= special effects) into account.

The correction factor adjusts the consumption value over time accordingly by a fixed value, e.g. an absolute power value in MW or kW that is added to the basic load profile. However, it is also possible to multiply the profile value by a specific factor.

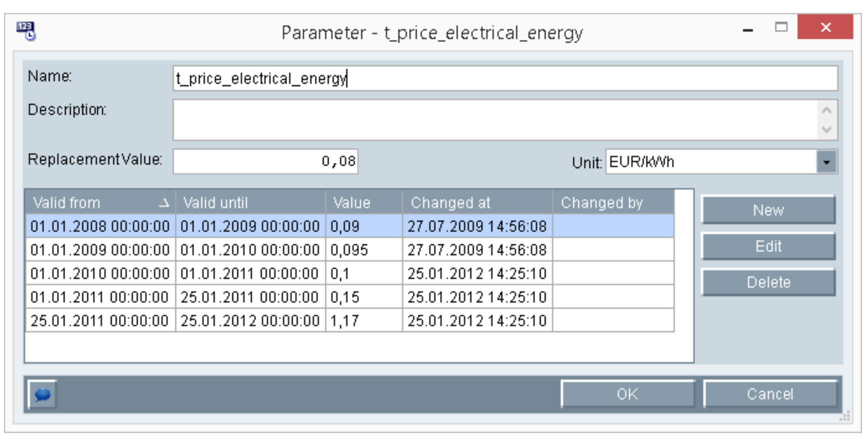
One of these parameters can be adjusted for calculation of a percentage increase , e.g. multiplication of the profile value by a specific factor.

Requirement

Successful installation of all software components.

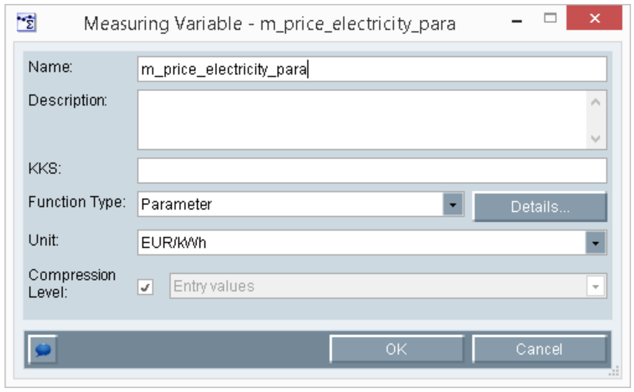
Procedure

1. Create a parameter and specify its value, including the range of validity.

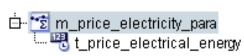


2. When changing values or their valid ranges, you must recalculate the reports accessing these valid ranges of values.

3. Create the MEVAs that fetch the parameter values and distribute these to the respective modules for calculations or output.



4. Select the "Parameter" function type and append the "_para" (for "Parameter") suffix to the MEVA name.



5. Complete the MEVA configuration by connecting the parameter to the corresponding MEVA node.

Result

You have successfully created the measuring variable and the parameter for use as adjustment factors.

8.3 Creating plants and material definitions

8.3.1 Basic information on plants and material definitions

Overview

Energy consumption is often decisively determined by individual large consumers or production lines at which various products or batches are produced. Moreover, individual production areas are frequently inappropriately synchronized from an energy aspect, or not at all. As a result, performance peaks and off peak times that may develop are often disadvantageous with regard to cost-efficient energy supply.

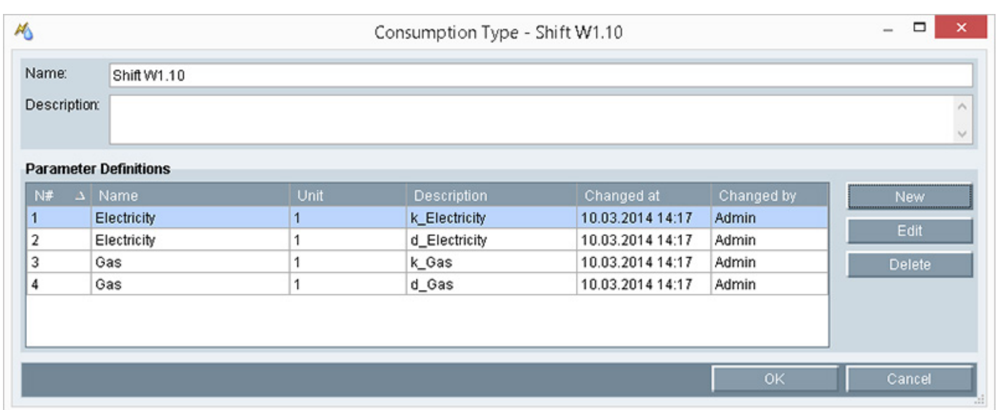
As a consequence and in order to provide a realistic forecast of energy demands, it is indispensable to create and maintain a production plan for the entire plant or specific production areas and to integrate this plan into the load forecast.

B.Data supports the creation and maintenance of a production and availability plan for entire plants (factory, production lines), or plant units (machinery, etc.).

The production plan logs all production phases that may have a significant impact on energy demands. With regard to large consumers, it is usually sufficient to determine whether or not the plant is going to be in operation. The logging of downtimes and restricted availabilities is usually of particular significance.

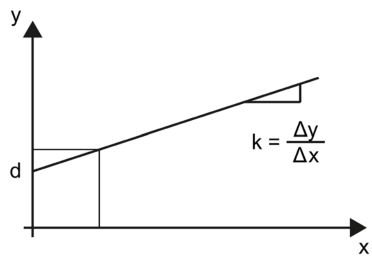
Moreover, it must be possible to plan production line throughput rates (items / time, quantity / time) that have an impact on energy demands.

In order to be able to determine the corresponding energy demand equivalent from the planned production sequence, it is necessary to create a model of the consumption parameters for the various production phases or types.



B.Data supports you in the maintenance or modification of the model parameters (consumption parameters) in every production phase (e.g. downtime, special shift, production x).

These media-specific parameters (power, gas, heat, etc.) form the basis for calculation of loads in the respective production phase in accordance with the equation y = k*x+d:



x	Quantity
y	Consumption, for example, electrical power (MW)
d	Section to y
k	Incline

Authorized end users may adjust the individual model parameters of the production phases with the aim of improving the quality of load forecasting.

The next chapters present the following contents related to production planning:

1. Consumer type
2. Material
3. Plant

Requirement

- The production planning application is licensed separately.
- Successful installation of all software components.

8.3.2 Configuring material

Overview

Material (product types) in combination with consumption parameters (=consumption types) are required to calculate respective energy demands.

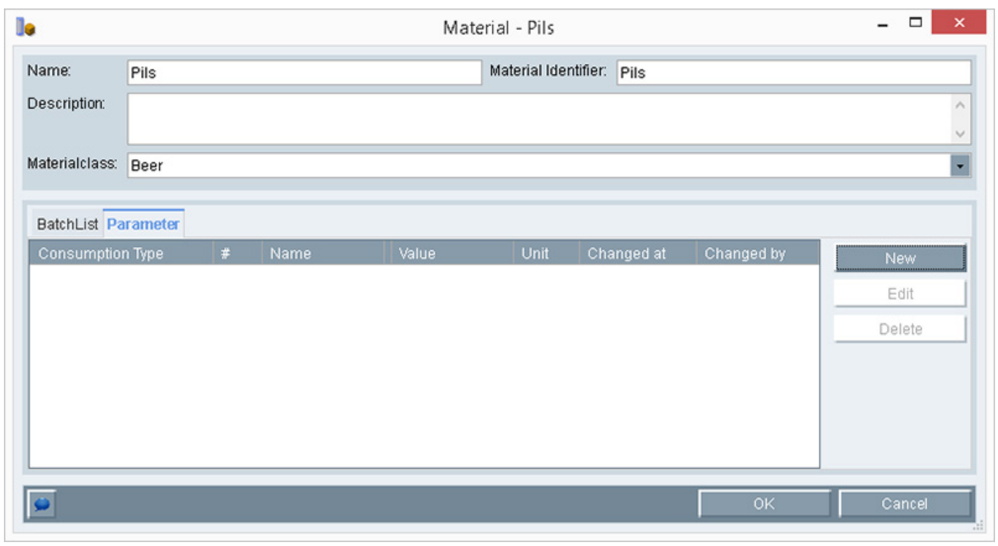
Requirement

The necessary consumption types have been successfully created in the system.

Procedure

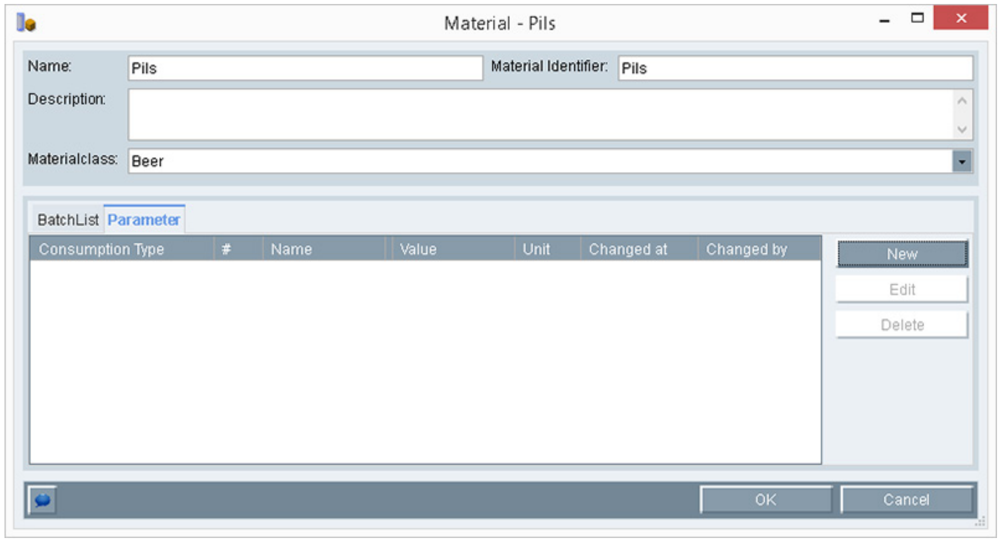
1. Select the folder in which the material is going to be created.
2. Click the "Insert Material" button in the menu bar under "Processing > Plant and Material".

   The "Material" dialog opens.

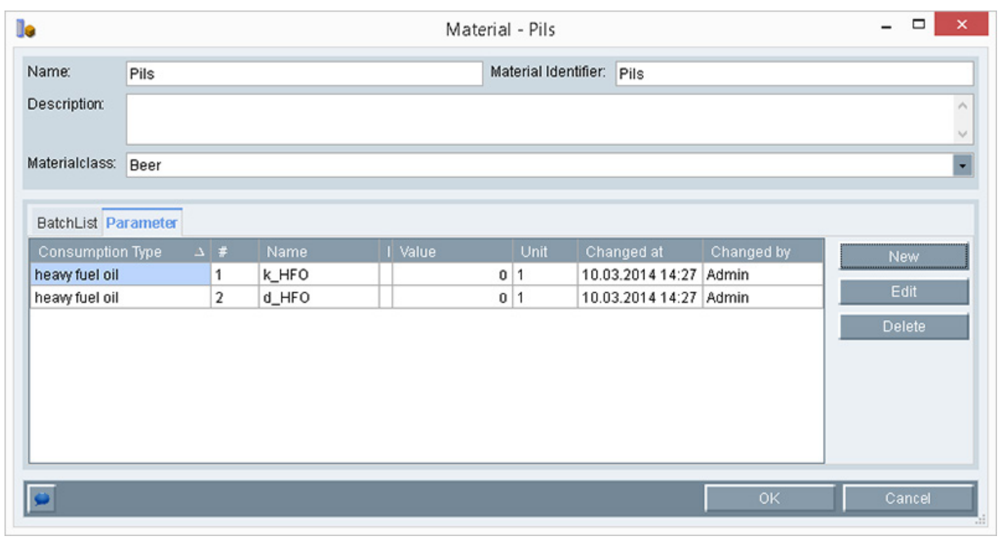


3. Enter a meaningful "Name" and an optional "Description". Confirm your entries and generate the material with "OK".

4. Double-click reopens the editing dialog.



5. Click "New" to open the dialog for editing the consumption parameters.
6. Select a consumption parameter, enter a value, and confirm your entries with "OK".



Note

Consumption types for electrical power, gas, steam_HD, steam_MD, and steam_ND have already been created as domain data and cannot be deleted. You may create additional parameters as required.

7. The value entered is now displayed, can be edited using the "Edit..." function, and be deleted again with "Delete".
8. After values have been changed, the reports accessing these values must be recalculated.

Result

You have successfully created the material that is now ready for use in plants (production plans).

8.3.3 Configuring the plant

Overview

In order to calculate production-dependent forecasts, B.Data employs integral production plans (plants) that specify the production or the status of a factory, building, machine, etc. (= material).

The forecast value of these materials is specified at the respective "Material" definition (in operation, standstill, revision, grade XXX, etc.).

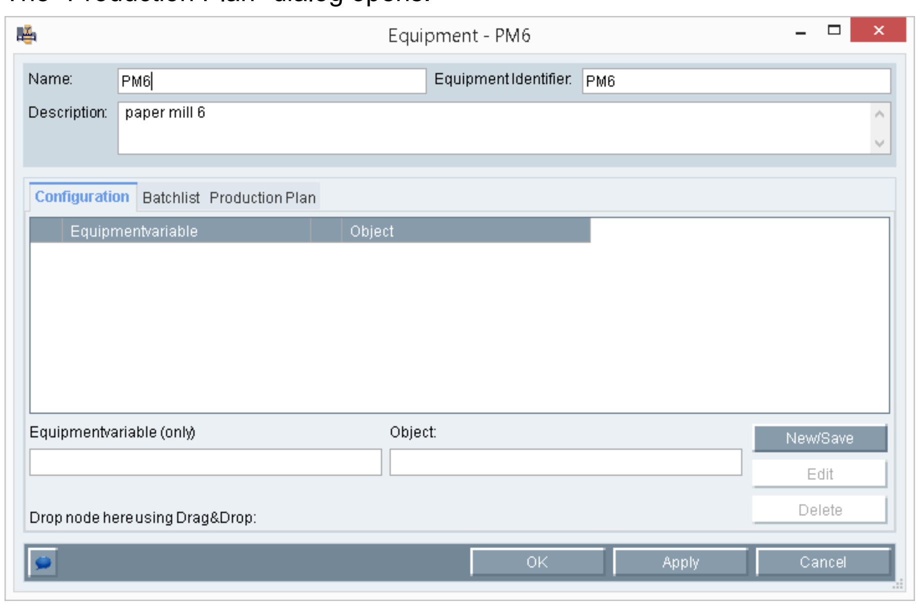
Requirement

- Cyclic (monthly) and timely allocation of the plants (production plans), as far as production has an impact on load requirements.
- The materials used (product types) have been successfully created in the system.

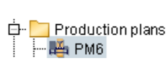
Procedure

1. Select the folder in which the plant (production plan) is going to be created.
2. Click the "Insert Equipment" button in the menu bar under "Processing > Plant and Material".

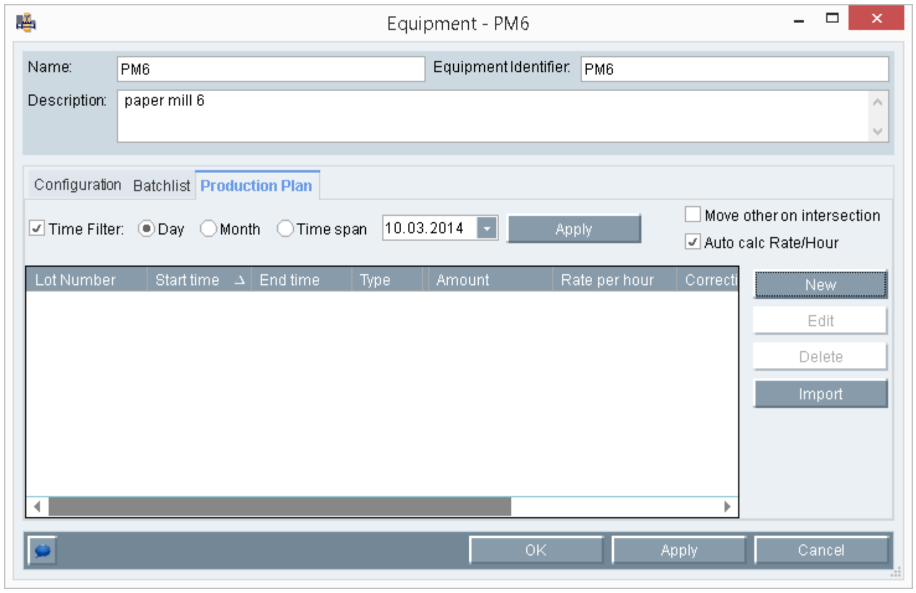
   The "Production Plan" dialog opens.

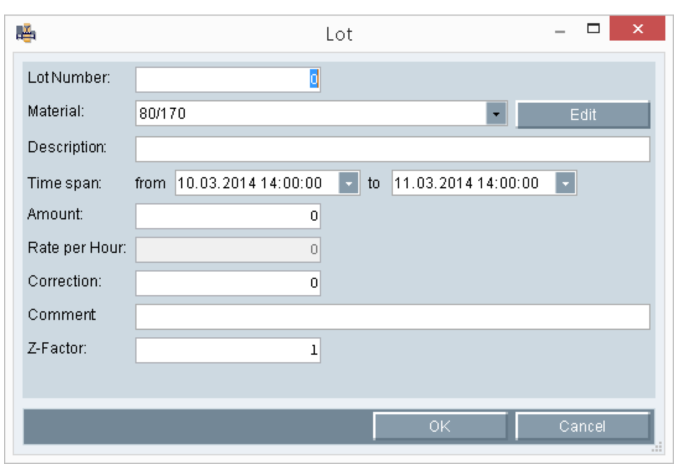
3. Enter a meaningful "Name" and an optional "Description". Click "OK" to confirm your entries and to generate the production plan.

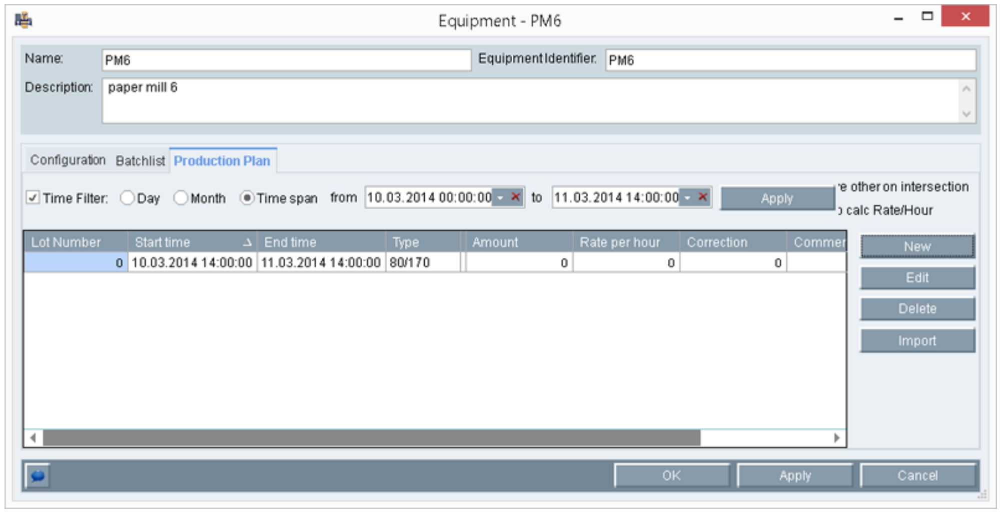
4. Double-click reopens the editing dialog.



5. Select "New..." in the "Production Plan" tab to open the editing dialog.
6. Specify the following entries for the production plan:
   – Select the required lot type, e.g., Production of XXX, Plant is in revision, etc.
   – Select the product under "Material" and enter a description of the product, if necessary.
   – Specify the time span in which the product will be produced.
   – Specify in which quantity the product will be produced.
   – Enter the correction factor and the Z factor.
   – You may enter a comment if required.
   – Click "OK" to confirm your entries.



7. The value entered is now displayed, can be edited using the "Edit..." function, and be deleted again with "Delete".



8. To import production plans from an Excel file to B.Data , click "Import..." and select the required Excel file.

   During an import from the Excel file, the existing data in B.Data are deleted in the respective production plan and new data are entered in the respective columns.

9. To automate the import process, use the predefined task "Production_Plan_Import" under "Configuration > TaskManagement".

   You can use this task, for example, to import the production plans from an Excel file each day at a specific time in B.Data.

Result

You have successfully created the plant and its production plan and these are now ready for use.

See also

B.Data options (Page 373)

Task Management (Page 396)

Functions for Task Management (Page 612)

Basic information on schedule management (Page 287)

8.3.4 Using the batch list

Overview

The batch list shows you the batches that were produced on a plant.

The following filter options are available for displaying specific batches:

- Time frame

  The batch list shows only the batches that were produced in the selected time frame.
- Plant

  The batch list shows only the batches that were produced on the selected plant.
- Material

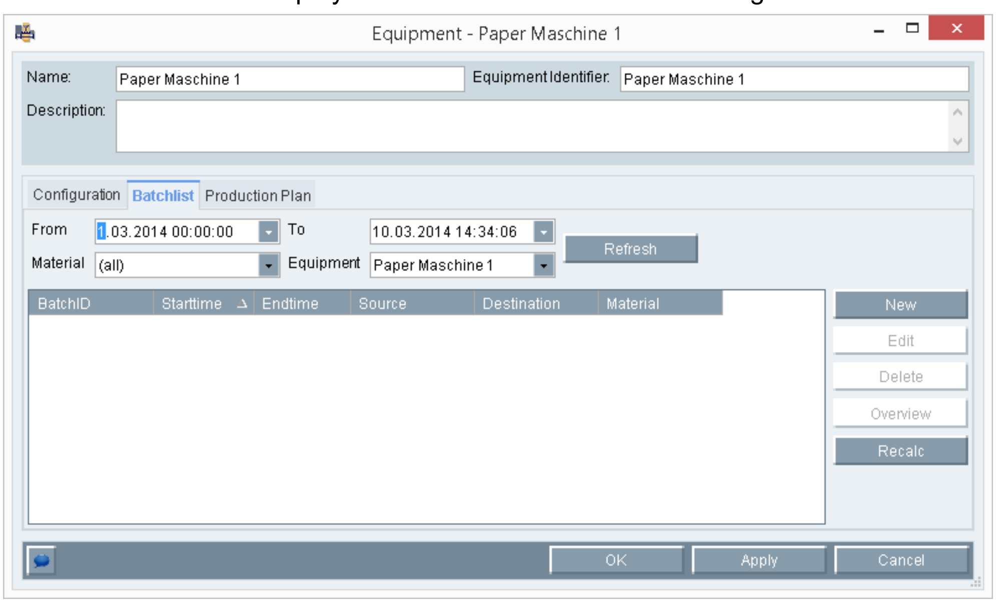
  The batch list shows only the batches that were produced on the selected production lot type.

You may also edit batches in the batch list and add new batches to the list. For example, you may view and edit the figures that were used for batch calculations.

Procedure

1. Double-click a plant or material and select the "Batch list" tab.

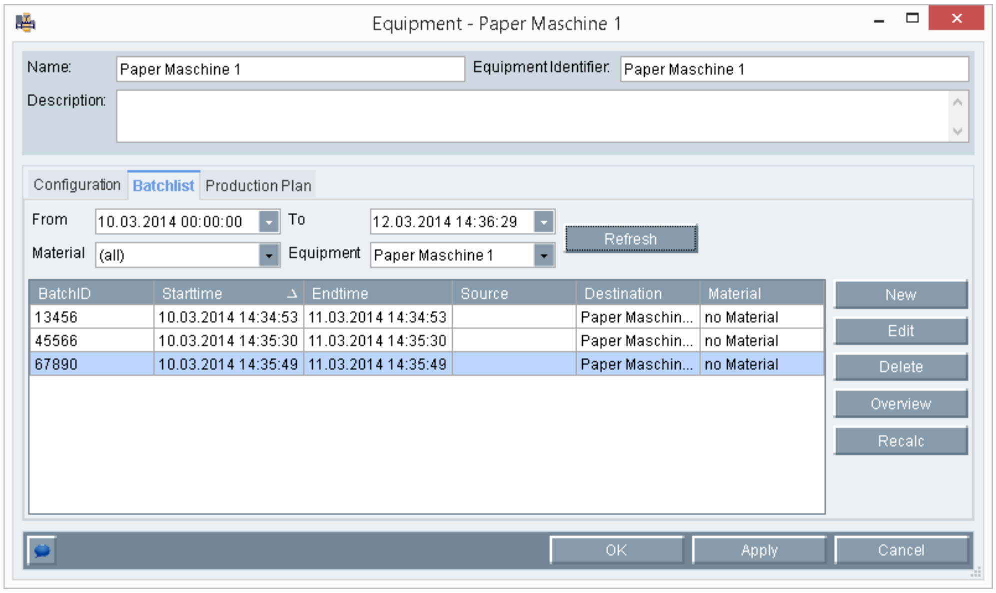
   The "Batch list" tab is displayed in the "Plant" or "Material" dialog.



2. Specify the following data to display the selected batches in the batch list:
   – Specify the required time frame in "From ... to".
   – Select the production lot type from the "Material" dialog.
   – Select the plant from the "Equipment" dialog.

3. Click "Update".

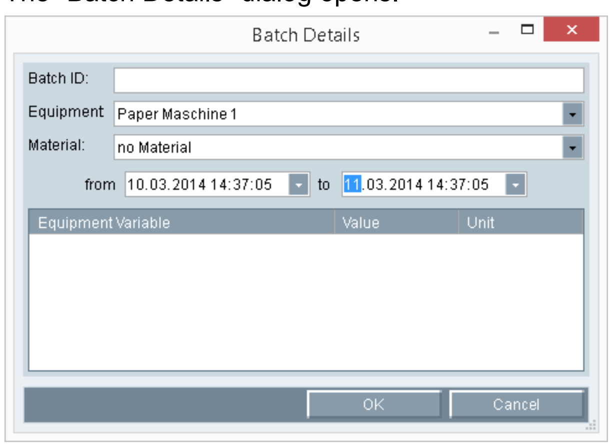
   The batches are displayed in the batch list.



4. You may create a batch manually as follows:

   – Click "New".

     The "Batch Details" dialog opens.



   – Enter a Batch ID in the "Batch ID" field.

   – Select the plant from the "Equipment" dialog.

   – Select the production lot type from the "Material" dialog.

   – Specify the required time frame in "From ... to".

   – Click "OK".

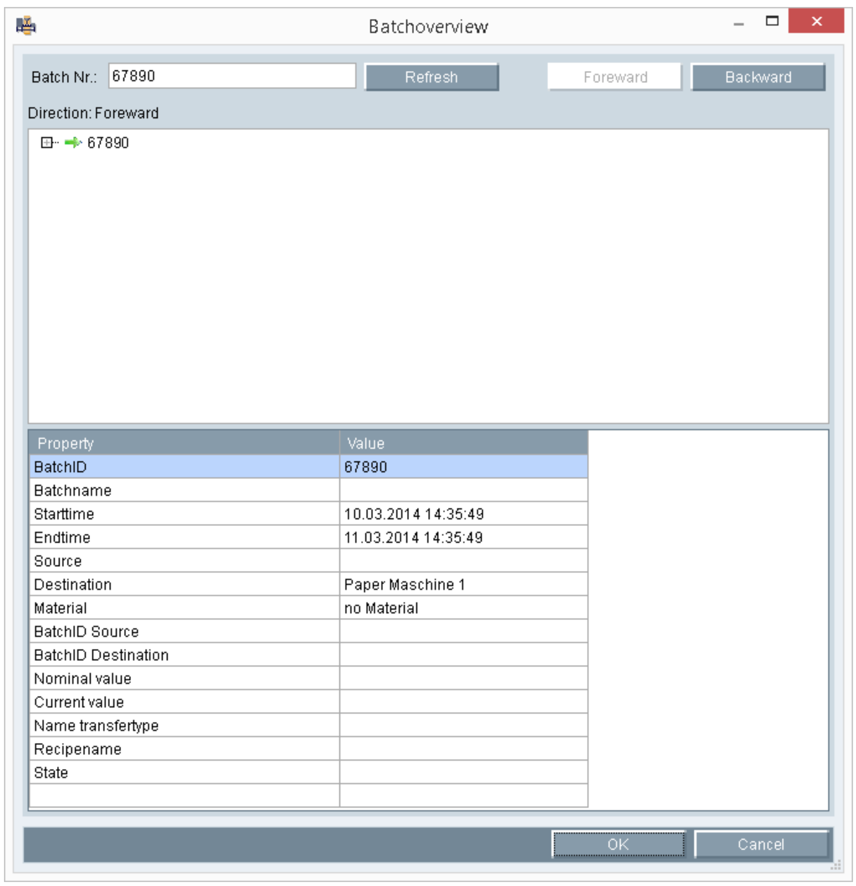
     The batch will be created. You can display the batch in the batch list by entering the corresponding filter criteria.

5. The batch figures can be viewed and edited by clicking on "Edit".

   The "Equipment Variable" area lists the plant variables that were assigned to the respective plant.

   The "Value" and "Unit" fields list the corresponding figures that were calculated based on the respective mevas.

   – You can edit figures by clicking the respective entry in the "Value" field.
6. A batch is removed from the batch list by clicking "Delete".
7. Click "Overview" to display the overview for a batch.



8. Click "Update" to recalculate the batches.

8.3.5 Creating consumption types

Overview

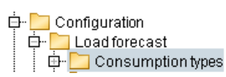
You need consumption types to create models of planned production sequences. These models are used to calculate the respective energy demands.

Requirement

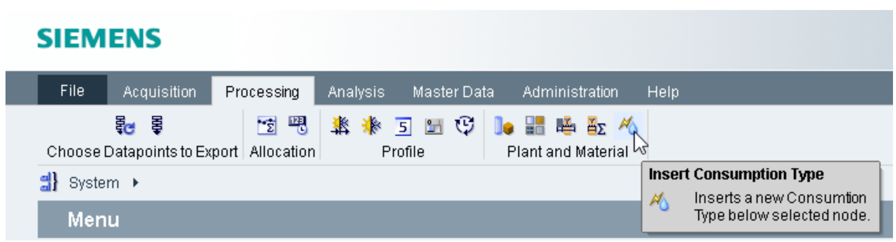
Production planning is properly installed.

Procedure

1. Select the folder in which the consumption type is going to be created.

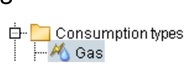


2. Click the "Insert Consumption Type" button in the menu bar under "Processing > Plant and Material".

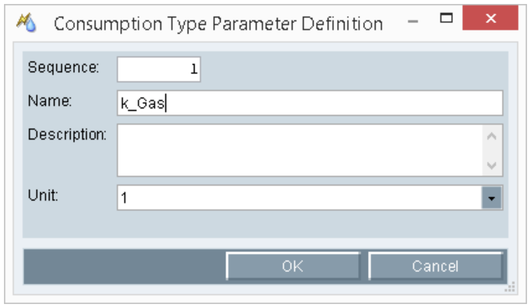


The "Consumption Type" dialog opens.

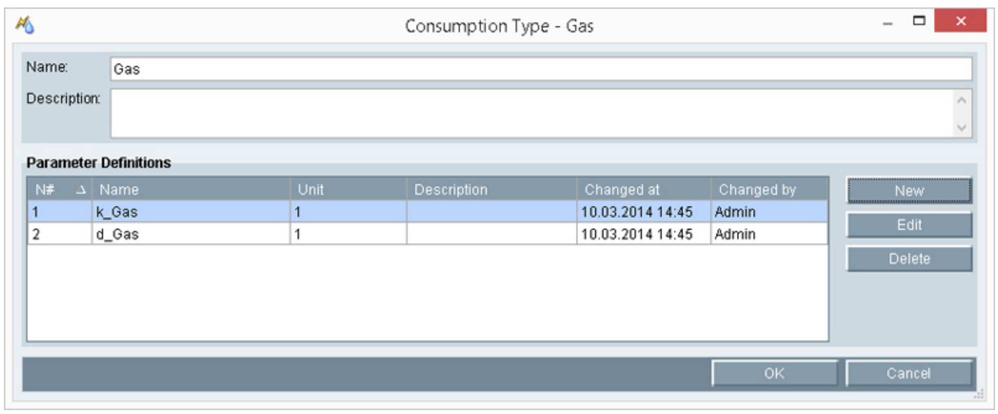
3. Enter a meaningful "Name" and an optional "Description". Confirm your entries and generate the consumption type with "OK".



4. Double-click reopens the editing dialog. Select "Insert..." to create the 1 (k) and 2 (d) parameters.



5. You only need to define parameters 1 and 2.



Note

Consumption types for electrical power, gas, steam_HD, steam_MD, and steam_ND have already been created as domain data.

Result

The consumption type has been successfully created and can now be used as consumption parameter in the product types.

8.4 Example of schedule management

8.4.1 Configuring analysis reports

Overview

Analysis reports are used to examine the load progression with regard to a profile. Load distribution is determined for all existing typical days and special days across the evaluation period. The result returns the load profile, for example, of a typical Monday or Tuesday.

If an analysis is performed, for example, for each typical "Monday" in the year, all Mondays will be used for the calculation, except for any holidays or special days that coincide with a Monday. In a year with 48 Mondays, for example, the mean value is calculated for the time window from 00:00 to 01:00 for all Mondays and output as result. The same rule is applied to all other intervals.

Note

Special days that are not created and output as such will corrupt the result, as these would be treated as standard days.

Corrupted values are ignored in the analysis. However, you can force the inclusion of corrupted values with an entry in B.Data options (BDATA_LASTPRF_QS = 0).

After the results have been reviewed and a plausibility check has been completed, the calculated values are written directly to the typical days and special days by starting the report and activating the "save" parameter.

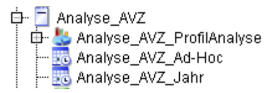
Requirement

- The module with the type "Load profile analysis module type" and a profile with the typical days and special days to be analyzed have been created.
- The measuring variable for calculating the total load average has been created.

Creating and configuring analysis reports

1. Create the "Analysis_AVZ" report with the "Load profile analysis module type" as well as the "AdHoc" and "Year" query types.

   The following structure is then generated in the Plant Explorer:

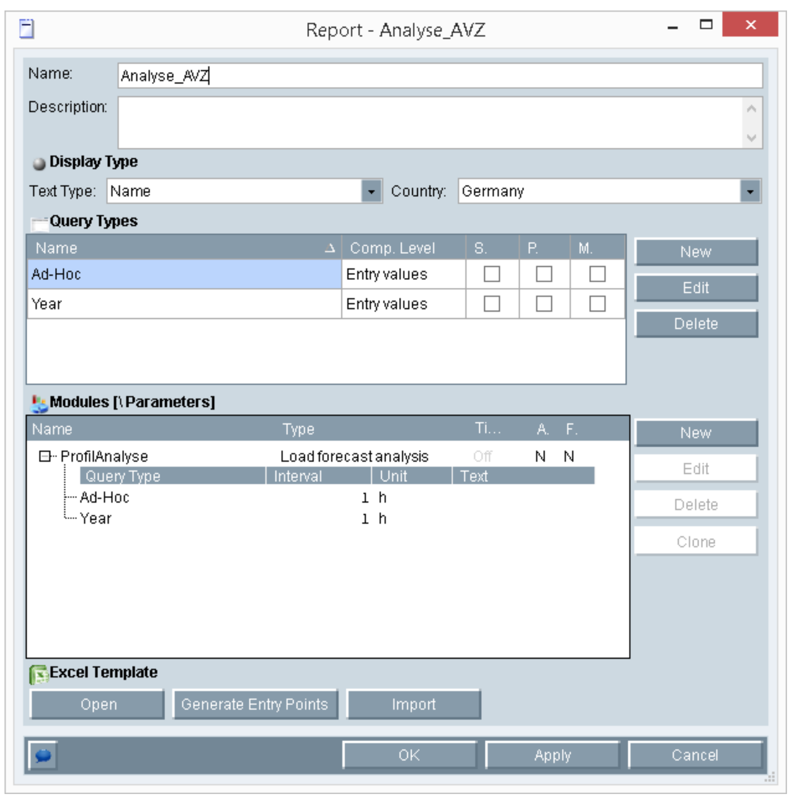
2. Assign the objects to be analyzed to the module: In this case, this is a measuring variable that calculates a total load average and a profile that is to be filled with the typical days and special days.

   You must specify the cycle for calculation of the values. Preset the value in order to simplify the procedure and to avoid incorrect entries.

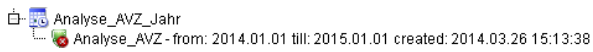
3. Select the "Edit" command from the shortcut menu of the report.

4. Select the "AdHoc" and "Year" query types. Enter interval "1" and unit "h" accordingly.

Starting analysis reports

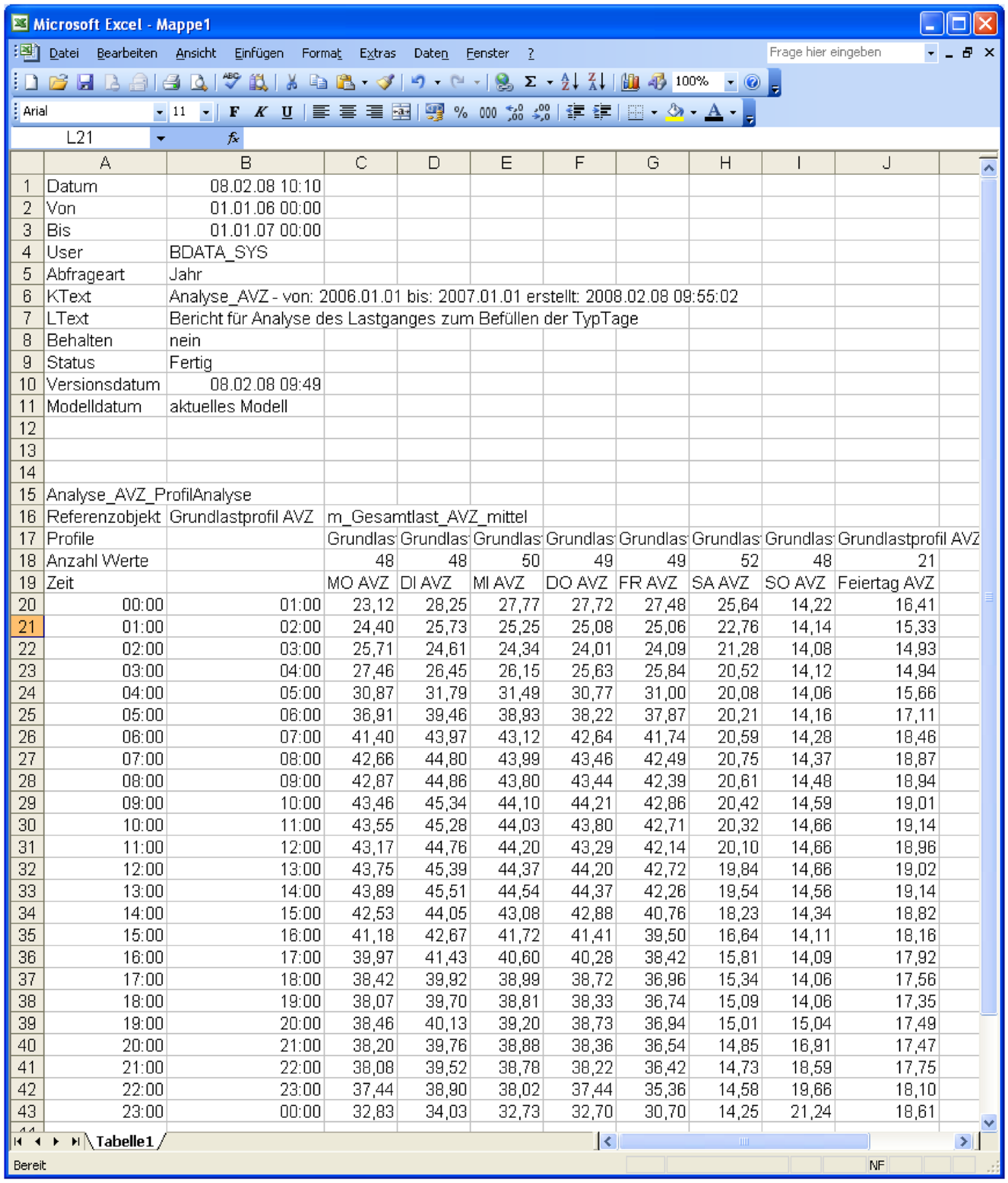
1. Start the report, e.g. for a year.
2. Select the "1 h" interval in the "Module Start/Stop Info" dialog if the interval is not set by default.
3. Click "OK to close the dialog and to start report calculation. The report is created in the "Year" query type structure.



Filling typical days

1. Load the result of the report after its calculation has been completed.

   The report result is available in the following form:



Microsoft Excel - Mappe1

	A	B	C	D	E	F	G	H	I	J
1	Datum	08.02.08 10:10								
2	Von	01.01.06 00:00								
3	Bis	01.01.07 00:00								
4	User	BDATA_SYS								
5	Abfrageart	Jahr								
6	KText	Analyse_AVZ - von: 2006.01.01 bis: 2007.01.01 erstellt: 2008.02.08 09:55:02								
7	LText	Bericht für Analyse des Lastganges zum Befüllen der TypTage								
8	Behalten	nein								
9	Status	Fertig								
10	Versionsdatum	08.02.08 09:49								
11	Modelldatum	aktuelles Modell								
12										
13										
14										
15	Analyse_AVZ_ProfilAnalyse									
16	Referenzobjekt	Grundlastprofil AVZ	m_Gesamtlast_AVZ_mittel							
17	Profile		Grundlas	Grundlas	Grundlas	Grundlas	Grundlas	Grundlas	Grundlas	Grundlastprofil AVZ
18	Anzahl Werte		48	48	50	49	49	52	48	21
19	Zeit		MO AVZ	DI AVZ	MI AVZ	DO AVZ	FR AVZ	SA AVZ	SO AVZ	Feiertag AVZ
20	00:00	01:00	23,12	28,25	27,77	27,72	27,48	25,64	14,22	16,41
21	01:00	02:00	24,40	25,73	25,25	25,08	25,06	22,76	14,14	15,33
22	02:00	03:00	25,71	24,61	24,34	24,01	24,09	21,28	14,08	14,93
23	03:00	04:00	27,46	26,45	26,15	25,63	25,84	20,52	14,12	14,94
24	04:00	05:00	30,87	31,79	31,49	30,77	31,00	20,08	14,06	15,66
25	05:00	06:00	36,91	39,46	38,93	38,22	37,87	20,21	14,16	17,11
26	06:00	07:00	41,40	43,97	43,12	42,64	41,74	20,59	14,28	18,46
27	07:00	08:00	42,66	44,80	43,99	43,46	42,49	20,75	14,37	18,87
28	08:00	09:00	42,87	44,86	43,80	43,44	42,39	20,61	14,48	18,94
29	09:00	10:00	43,46	45,34	44,10	44,21	42,86	20,42	14,59	19,01
30	10:00	11:00	43,55	45,28	44,03	43,80	42,71	20,32	14,66	19,14
31	11:00	12:00	43,17	44,76	44,20	43,29	42,14	20,10	14,66	18,96
32	12:00	13:00	43,75	45,39	44,37	44,20	42,72	19,84	14,66	19,02
33	13:00	14:00	43,89	45,51	44,54	44,37	42,26	19,54	14,56	19,14
34	14:00	15:00	42,53	44,05	43,08	42,88	40,76	18,23	14,34	18,82
35	15:00	16:00	41,18	42,67	41,72	41,41	39,50	16,64	14,11	18,16
36	16:00	17:00	39,97	41,43	40,60	40,28	38,42	15,81	14,09	17,92
37	17:00	18:00	38,42	39,92	38,99	38,72	36,96	15,34	14,06	17,56
38	18:00	19:00	38,07	39,70	38,81	38,33	36,74	15,09	14,06	17,35
39	19:00	20:00	38,46	40,13	39,20	38,73	36,94	15,01	15,04	17,49
40	20:00	21:00	38,20	39,76	38,88	38,36	36,54	14,85	16,91	17,47
41	21:00	22:00	38,08	39,52	38,78	38,22	36,42	14,73	18,59	17,75
42	22:00	23:00	37,44	38,90	38,02	37,44	35,36	14,58	19,66	18,10
43	23:00	00:00	32,83	34,03	32,73	32,70	30,70	14,25	21,24	18,61

   The typical day is output in line 19. The "Number of values" above that specifies the number of days used to calculate the typical day. The result is marked in blue color if this value is less than three.

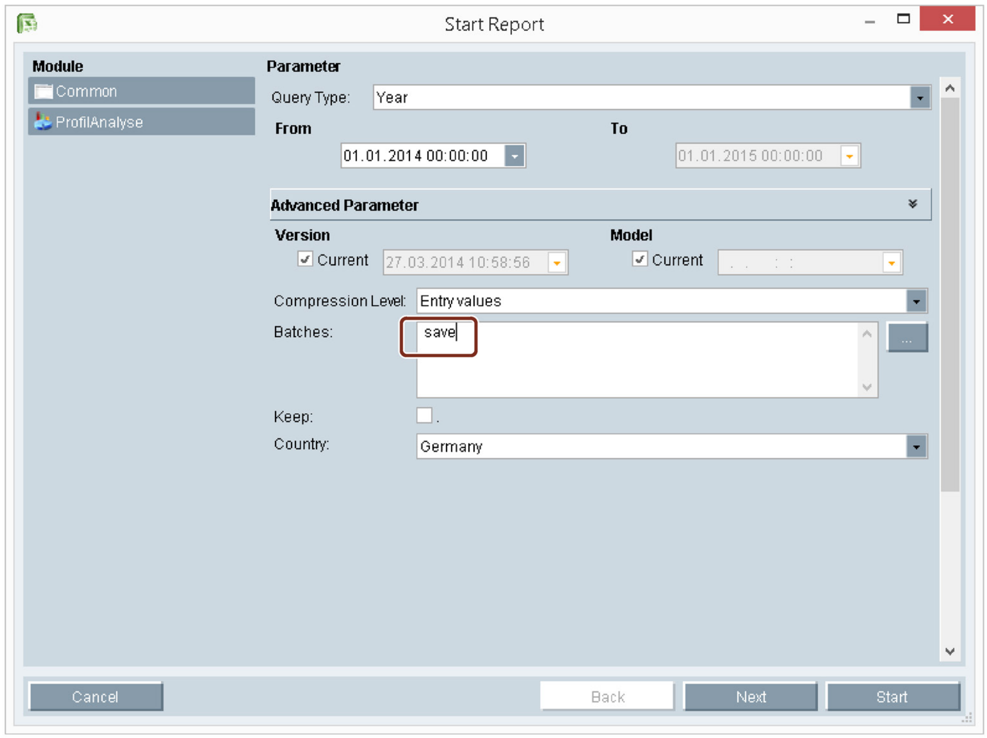
   Line 16 displays the measuring variable and the profiles used as the basis for calculation of the typical days.

2. If the current load profile has caused implausible calculation results, find and eliminate these "outliers" until your calculation seems plausible.

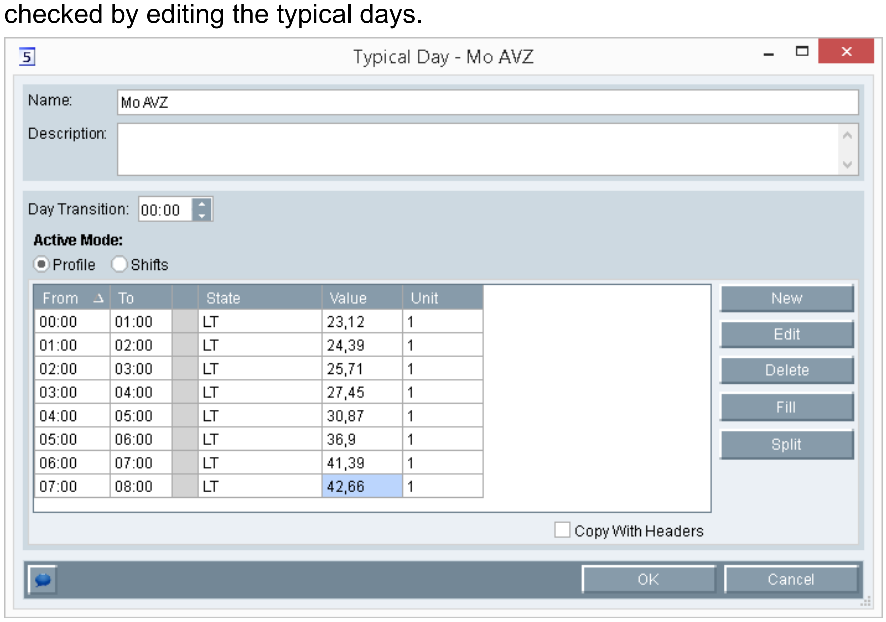
Note

As an alternative, you can fill in the typical days and manually correct the outliers in the typical days.

Initiate the filling of typical days by entering the "save" command in the text batches field when starting the report.



The calculated values were written to the typical days or special days. This status can be checked by editing the typical days.



Result

You have completed the configuration of the profile, including its assigned typical and special days, so that the profile can now be used in forecasting.

Note

Adjust the typical day setting annually, i.e. recalculate the values on the basis of the load profile of the previous year.

8.4.2 Configuring long-term forecast reports

Overview

An overall forecast is calculated for the following year at the end of each annual period (e.g. end of December). The basic load profiles that have been calculated and adjusted by the customer, including the future holidays calendar in B.Data, form the basis for an overall forecast. This long-term demand forecast is calculated once in B.Data (initiated manually). and forms the basis for calculating demands of the following year or of the next years (2-year forecast). The results of this forecast are retained without changes in the B.Data system for the entire year. The long-term forecast has a resolution of one hour.

Requirement

- A profile that contains the typical and special days has been created in the system.
- A measuring variable for forecast calculation and the derived data point has been created in the system.

Creating derived data points

1. Create a derived data point that you can use to create the long-term forecast.
2. Set the cycle time to 1 hour.

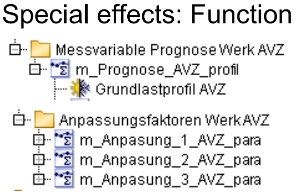
   The data point is then ready for use.

Creating measuring variables

1. To create the long-term forecast, create a measuring variable that adds up the profile values and special effects.

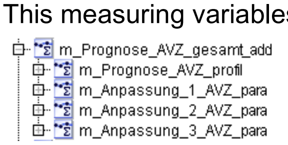
   Profile values: Function type "Profile value

   Special effects: Function type "Parameter"



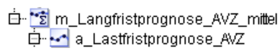
2. Create the "m_Forecast_AVZ_total_add" measuring variable (function type "Addition of n MEVAs") in the same way. Copy the measuring variables in the order displayed to the "m_Forecast_AVZ_total_add" measuring variable node.

   This measuring variables adds up the profile value and the adjustment values.



3. Configure this measuring variable as input of the derived data point (author's remark: that was created above).

4. Create the "m_Long-term forecast_AVZ_average" measuring variable with function type “Average“. Copy the derived data point "a_longtermforecast_AVZ" to this measuring variable node.

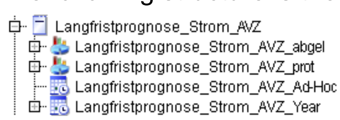


Configuring "long-term forecast" reports

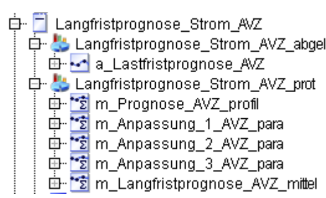
1. Create the report “Long-term forecast_electrical power_analysis_AVZ“ with the module types “Module derived measurement“ and “Log with from/to” as well as the “Ad-Hoc“ and "Year" query types.

   Import a configured template so that the necessary macros are available.

   The following structure is then generated in the Plant Explorer:

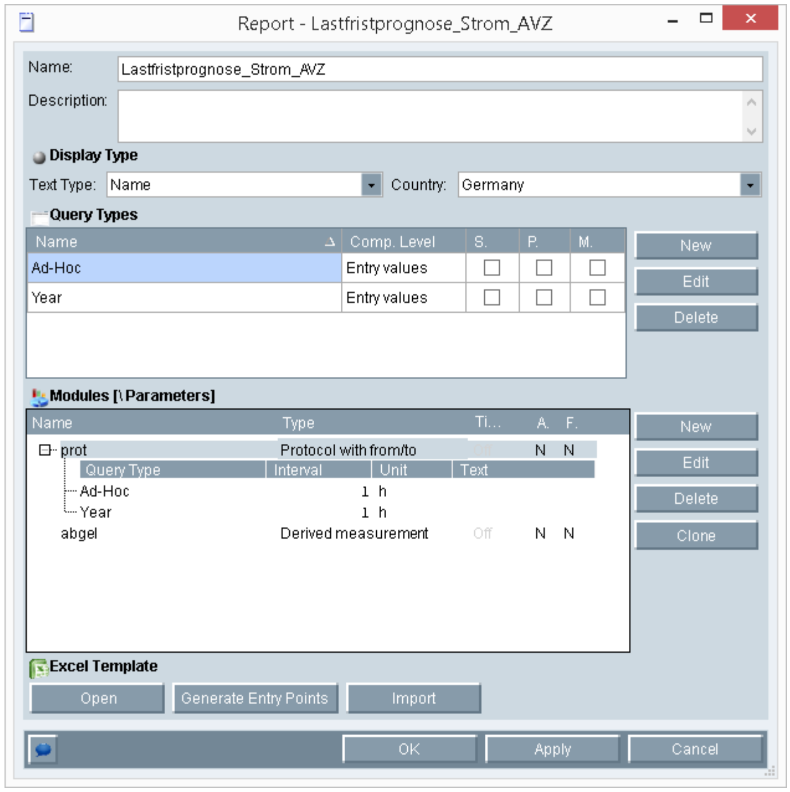


2. Assign the objects to be evaluated to the modules.



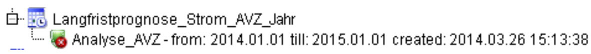
3. Copy the derived data point for the total consumption forecast (profile + adjustments) to the "Derived measurement" module structure.
4. Copy the measuring variable for profile calculation, the three measuring variables for the adjustment factors, as well as the measuring variable for the calculated total consumption to the "Report module" structure.
5. You must specify the cycle for calculation of the values. Preset this value to avoid incorrect entries.

6. Select the "Edit" command from the shortcut menu of the report.
7. Select the "AdHoc" and "Year" query types. Select interval "1" and unit "h" accordingly.

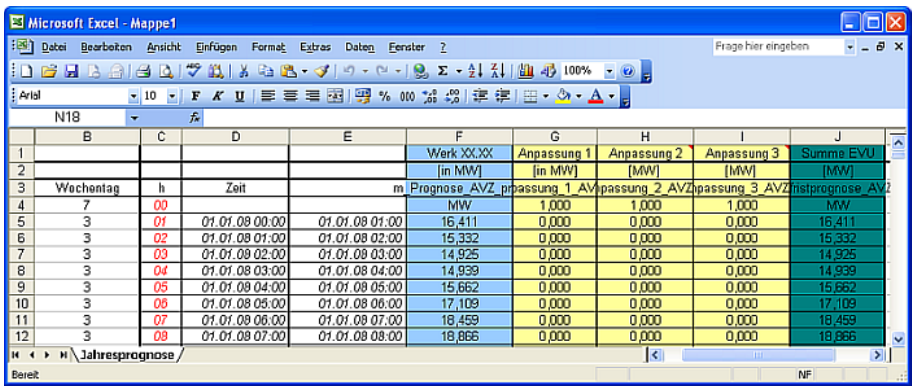


Starting report calculation

1. Start the report, e.g. for a year.
2. Select the "1 h" interval in the "Module Start/Stop Info" dialog if the interval is not set by default.
3. Click "OK to close the dialog and to start report calculation. The report is created in the "Year" query type structure.



The report result is available in the following form:

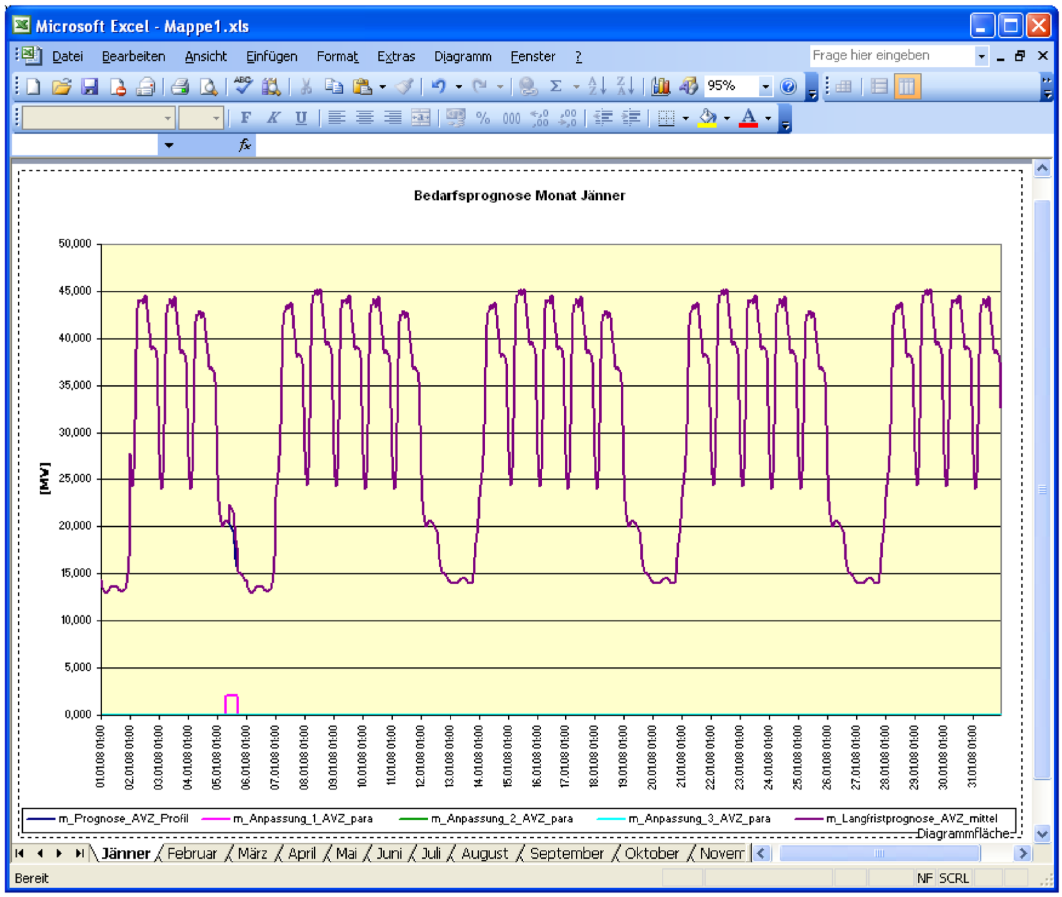


	B	C	D	E	F	G	H	I	J
1					Werk XX.XX	Anpassung 1	Anpassung 2	Anpassung 3	Summe EVU
2					[in MW]	[in MW]	[MW]	[MW]	[MW]
3	Wochentag	h	Zeit	m	Prognose_AVZ_pr	passung_1_AV	passung_2_AVZ	passung_3_AVZ	fristprognose_AVZ
4	7	00			MW	1,000	1,000	1,000	MW
5	3	01	01.01.08 00:00	01.01.08 01:00	16,411	0,000	0,000	0,000	16,411
6	3	02	01.01.08 01:00	01.01.08 02:00	15,332	0,000	0,000	0,000	15,332
7	3	03	01.01.08 02:00	01.01.08 03:00	14,925	0,000	0,000	0,000	14,925
8	3	04	01.01.08 03:00	01.01.08 04:00	14,939	0,000	0,000	0,000	14,939
9	3	05	01.01.08 04:00	01.01.08 05:00	15,662	0,000	0,000	0,000	15,662
10	3	06	01.01.08 05:00	01.01.08 06:00	17,109	0,000	0,000	0,000	17,109
11	3	07	01.01.08 06:00	01.01.08 07:00	18,459	0,000	0,000	0,000	18,459
12	3	08	01.01.08 07:00	01.01.08 08:00	18,866	0,000	0,000	0,000	18,866

Column F displays the forecast values, while columns G, H, and I display the adjustments. Column J displays the sum of the profile value + adjustments. Columns D and E display the time range of the values.

Enter the <CTRL+D> keystroke to start generation of the diagrams for all 12 months of the calculated year.

The profile value and sum trends are identical if no adjustments were made. The data in the following screenshot was manipulated to visualize an adjustment.



Result

You have successfully configured the long-term forecast and it is now ready for use.

8.4.3 Configuring schedule reports

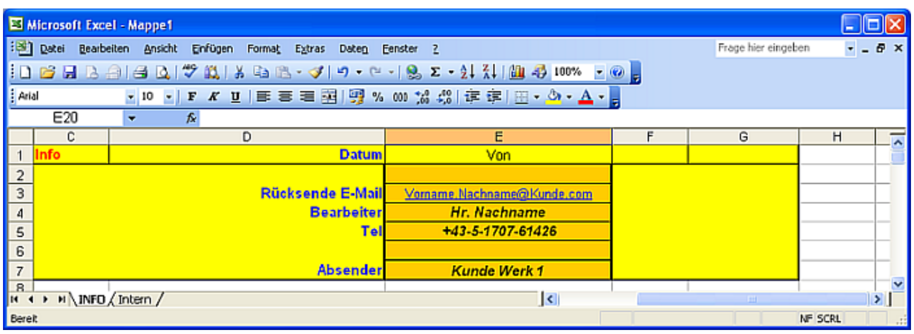
Overview

Every month a schedule is calculated for the next month and the result is reported to the energy supplier. The schedule is created in B.Data in the last working week of the month. The Excel file is communicated manually to the energy supplier by a team member of the customer. A resolution of 1 h is specified for the load data of the schedule registration.

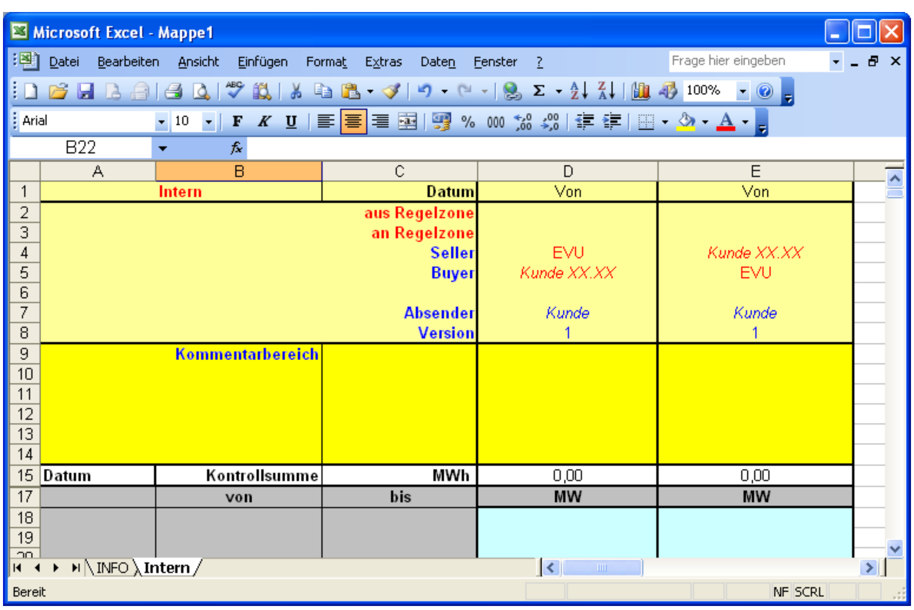
Layout of the report template

This report template consists of two worksheets:

- "INFO" worksheet: General information on the reporting instance.
- "Internal" worksheet: Actual values.



With the exception of dates, the contents of INFO are constants and defined in the template.

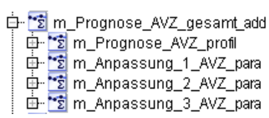


The "Internal" sheet in schedule format consists of the following columns and rows:

- Columns A, B, and C contain the schedule structure and may not be modified.
- Date row 1 and header rows 2 to 17 can be applied without changes. Exception: Name of the balancing group member; to be supplemented accordingly.
- Columns D and E contain hourly performance values, with column D containing the figures of ENERGIE_LF consumption and column E containing the figures of possible energy returns to the ENERGY supplier. Only one of the figures, i.e. supply or return, may be unequal to zero in any hour. Performance figures are always entered as positive numbers.

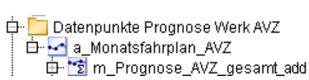
Requirement

- A profile that contains the typical and special days has been created in the system.
- A measuring variable for forecast calculation and the derived data point has been created in the system.
- The "m_Forecast_AVZ_total_add" measuring variable for calculating the forecast value has been created in the system.

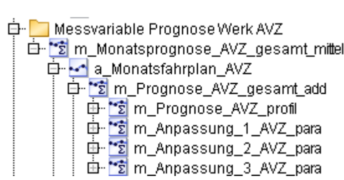


Configuring "Schedule" reports

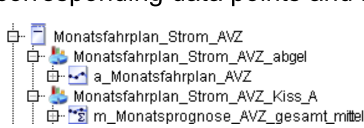
1. Create a derived data point "a_Monthly schedule_AVZ" for monthly forecasting (= schedule). Copy the "m_Forecast_AVZ_total_add" measuring variable to this data point structure.



2. Create the "m_Monthly forecast_AVZ_total_average" measuring variable for reading the monthly forecast data. Copy the "a_Monthly schedule_AVZ" to this measuring variable structure.



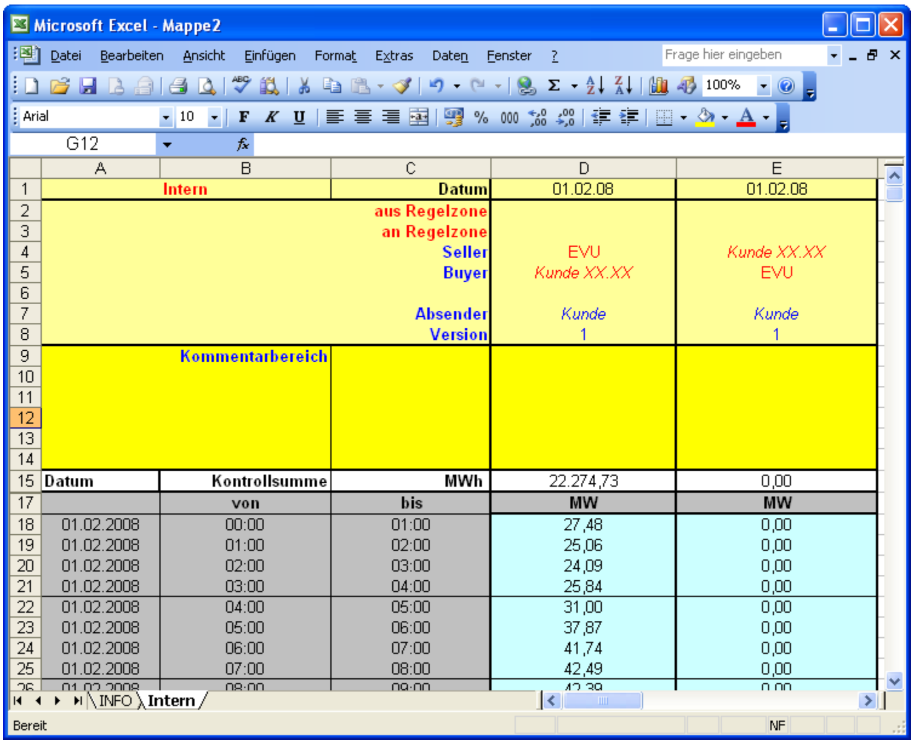
3. Create the "Monthly schedule_electricity_AVZ" report. Instead of the "Report with FROM/TO" module, select the "Schedule B/L KISS-A month" module. Assign the corresponding data points and measuring variables to the modules.



Loading report results

1. Start the report. "Load" the report result as soon as the "FI (Finished)" status is set. "Open" the report result if the "Loaded" status is already set.

As a result, the schedule is displayed in Excel. After having checked the values, forward the schedule by e-mail.



	A	B	C	D	E
1		Intern	Datum	01.02.08	01.02.08
2			aus Regelzone		
3			an Regelzone		
4			Seller	EVU	Kunde XX.XX
5			Buyer	Kunde XX.XX	EVU
6					
7			Absender	Kunde	Kunde
8			Version	1	1
9		Kommentarbereich			
10					
11					
12					
13					
14					
15	Datum	Kontrollsumme	MWh	22.274,73	0,00
17		von	bis	MW	MW
18	01.02.2008	00:00	01:00	27,48	0,00
19	01.02.2008	01:00	02:00	25,06	0,00
20	01.02.2008	02:00	03:00	24,09	0,00
21	01.02.2008	03:00	04:00	25,84	0,00
22	01.02.2008	04:00	05:00	31,00	0,00
23	01.02.2008	05:00	06:00	37,87	0,00
24	01.02.2008	06:00	07:00	41,74	0,00
25	01.02.2008	07:00	08:00	42,49	0,00

Once calculation has been completed in B.Data, the responsible instances of the controlling department must validate the tabular analyses that were generated and specify the corresponding "Version" number in line 8.

The principal is under the obligation to maintain the version number for the various analyses that were generated to identify late registrations of the schedules.

Result

You have successfully created the schedule report for further use.

8.4.4 Configuring daily load course reports

Overview

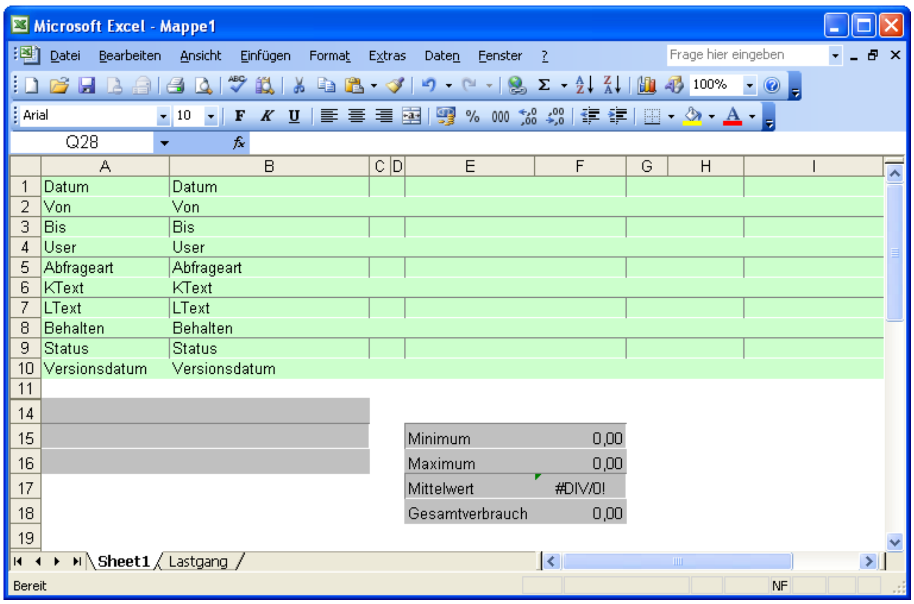
Every day, a report that contains the actual consumption figures is calculated for the previous day. The result is written to a derived data point with hourly resolution for comparison purposes (controlling report).

The values for this report are calculated on a "rolling" basis using the figures of the last 14 days to avoid non-contiguous data. Such data gaps may develop, for example, in the course of necessary maintenance on the acquisition PC.

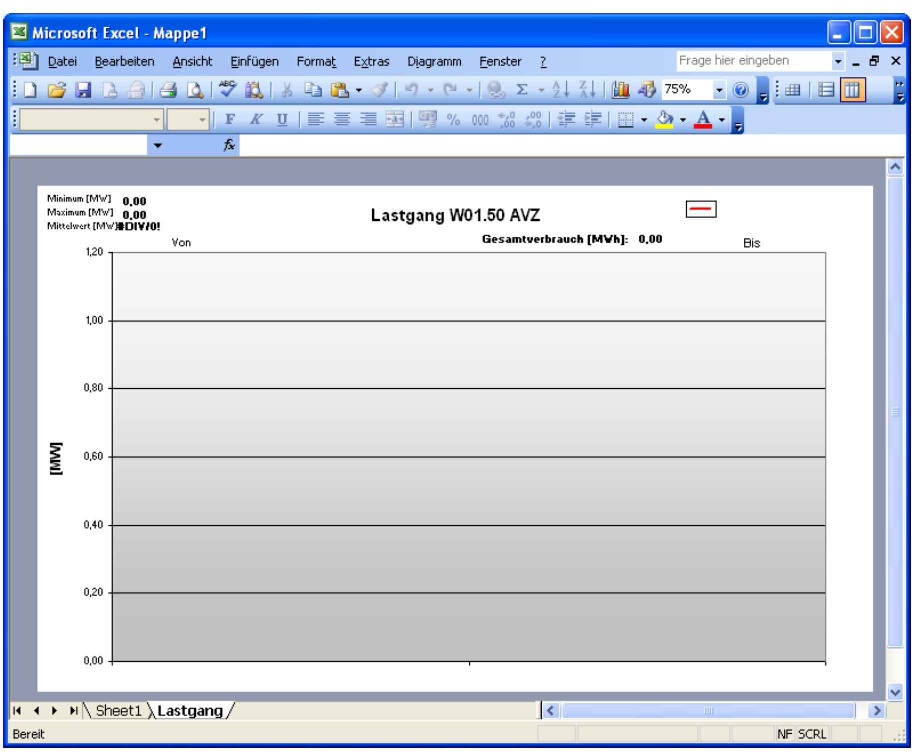
Layout of the report template

This report template consists of two worksheets:

- "Sheet1" contains the calculated progression of the load profile.



- "Load profile" represents the corresponding diagram that is filled automatically.



Note

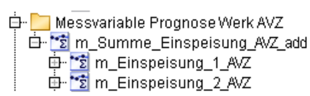
When using templates with a user-specific graphic worksheet, the templates always have to be saved and closed in the data worksheet (entry point of the modules). Closing the template in graphic worksheet prevents you from loading reports using this template.

Requirement

All data points and mevas needed to calculate the daily load profile have been created in the system.

Configuring "Daily load profile" reports

1. Create the ""m_Sum_supply_AVZ_add"" meva (function type "Addition of n MEVAs") for calculating the actual value of consumption. Copy the "m_Supply_1_AVZ" and "m_Supply_2_AVZ" mevas to the structure of this measuring variable.



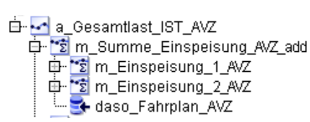
Note

Calculations depend on the respective plant concerned. The number of feed cables, necessary scaling, count value differences, etc.

2. Create a derived data point "a_Total load_ACTUAL_AVZ" for calculating daily consumption.

   You may use the ODBC connector, for example, for the initial import of the chronological load profile.

3. Copy the "m_Sum__supply_AVZ_add" meva to the structure of this data point.



Note

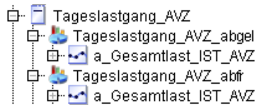
If load profile history data has already been written to this data point, the ODBC data source is also connected below this data point. However, this has no influence on the calculation of values.

4. Create the "Daily load profile_electricity_AVZ" report, similar to the "Long-term forecast" report. Instead of the "Report with FROM/TO" module, select the "Query with 1 time stamp" module. Activate the "start automatically" option for the "Day" query type and set the deletion period to one week.

Note

Strictly observe the order of the modules: The module first needs to calculate (fill) the derived data point to prepare it for reading by the query module.

5. Assign the data point to the modules.



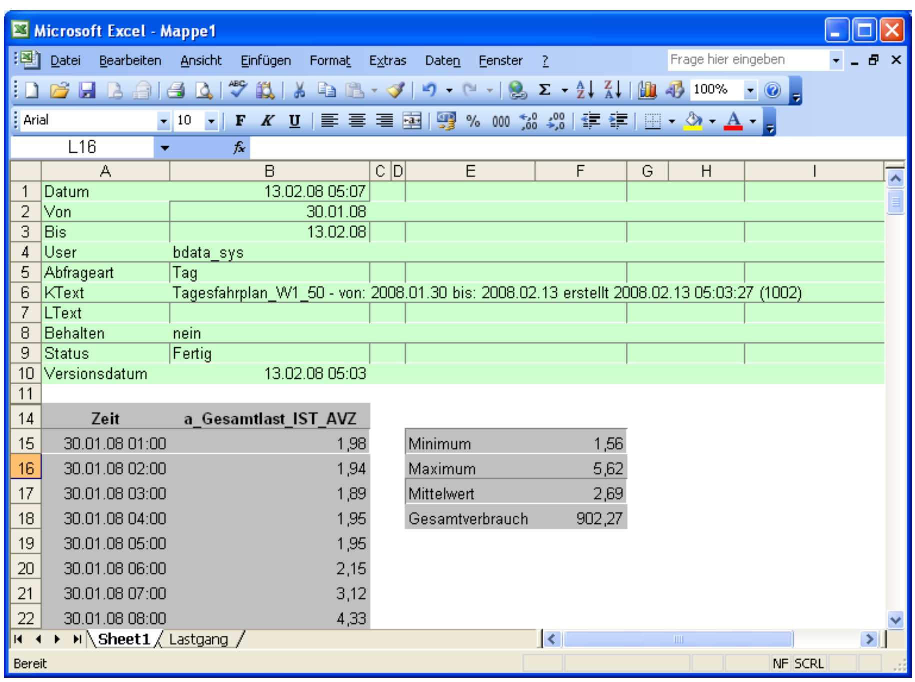
6. Create a parameter with value "14". Implement the parameter in the structure of the "Day" query type.

   This factor extends the daily queries accordingly to the last 14 days instead of the last day.

Loading report results

The report is started automatically in accordance with the configuration. Load the report result on completion of the calculation.

The result shows the supply figures of the last 14 days in Excel, including minimum, maximum, average, and total consumption figures.



Result

You have successfully created the daily load profile report that can now be put into use or be calculated automatically on a daily basis.

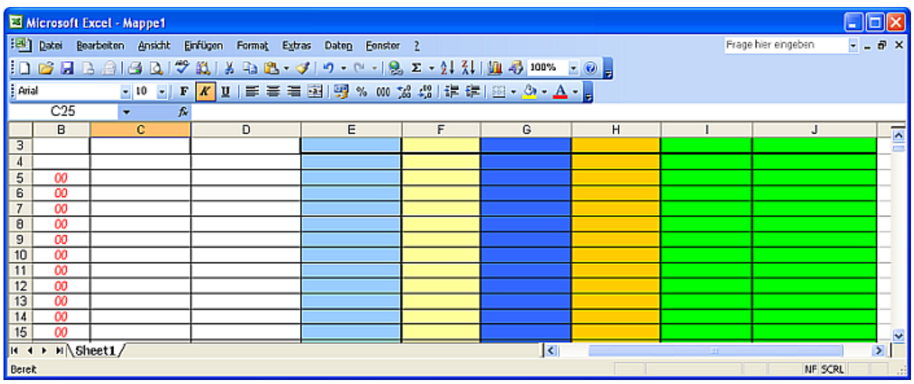
8.4.5 Configuring controlling reports

Overview

On expiration of the period (year), a retrospective report is generated; it contains the comparison of the measured load profile with forecast data (long-term forecast values) and the schedule with schedule adjustments. The offset derived from the TARGET/ACTUAL comparison is visualized in absolute (MW) and relative (%) figures. The result is provided as annual analysis (starting at the beginning of the year) in a defined format. A resolution of one hour (1h) is specified for the load data derived from the TARGET/ACTUAL comparison.

Layout of the report template

This report template consists of an "empty" worksheet, as the module has not yet calculated and generated all values and headings.



Requirement

The following data points must be created and continuously calculated:

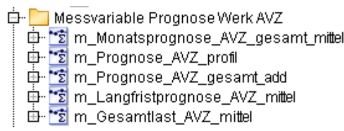
Total energy input (total performance/unit charge figures) of the factory, the derived DP for long-term forecasting, derived DP for the schedules.

Configuring "Controlling" reports

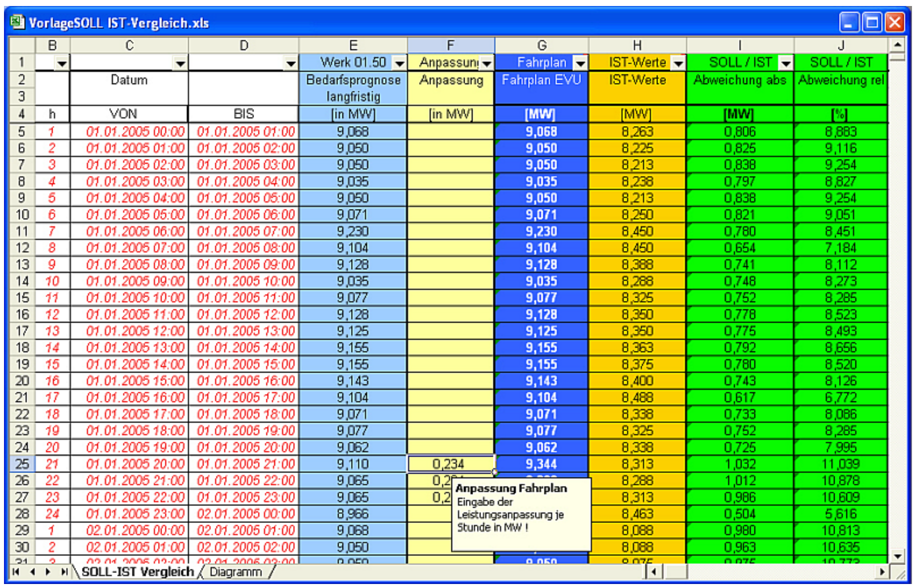
The analysis consists of general header data of the report and of the tabular view of performance figures. These performance figures are derived from the long-term forecast, the registered schedule, and total energy consumption of the respective plant.

In addition to performance figures, the list shows the deviations between the schedule and actual values measured. Deviations are calculated and listed both as absolute [MW] and relative [%] values.

These deviations are to be visualized in a separate diagram for every month of the year. You have already set up the "m_Long-term forecast_AVZ_average", "m_Monthly forecast_AVZ_total_average", and "m_Total load_AVZ_average" mevas in the system:

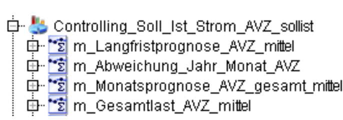


1. Set up the "m_Deviation_year_month_AVZ" meva (function type "MEVA minus MEVA") for calculating the difference between the monthly and long-term forecasts.
2. Copy the "m_Monthly forecast_AVZ_total_average" and "m_Long-term forecast_AVZ_average" mevas to the structure of this meva in the correct order.



	B	C	D	E	F	G	H	I	J
1				Werk 01.50	Anpassung	Fahrplan	IST-Werte	SOLL / IST	SOLL / IST
2		Datum		Bedarfsprognose	Anpassung	Fahrplan EVU	IST-Werte	Abweichung abs	Abweichung rel
3				langfristig					
4	h	VON	BIS	[in MW]	[in MW]	[MW]	[MW]	[MW]	[%]
5	1	01.01.2005 00:00	01.01.2005 01:00	9,068		9,068	8,263	0,806	8,883
6	2	01.01.2005 01:00	01.01.2005 02:00	9,050		9,050	8,225	0,825	9,116
7	3	01.01.2005 02:00	01.01.2005 03:00	9,050		9,050	8,213	0,838	9,254
8	4	01.01.2005 03:00	01.01.2005 04:00	9,035		9,035	8,238	0,797	8,827
9	5	01.01.2005 04:00	01.01.2005 05:00	9,050		9,050	8,213	0,838	9,254
10	6	01.01.2005 05:00	01.01.2005 06:00	9,071		9,071	8,250	0,821	9,051
11	7	01.01.2005 06:00	01.01.2005 07:00	9,230		9,230	8,450	0,780	8,451
12	8	01.01.2005 07:00	01.01.2005 08:00	9,104		9,104	8,450	0,654	7,184
13	9	01.01.2005 08:00	01.01.2005 09:00	9,128		9,128	8,388	0,741	8,112
14	10	01.01.2005 09:00	01.01.2005 10:00	9,035		9,035	8,288	0,748	8,273
15	11	01.01.2005 10:00	01.01.2005 11:00	9,077		9,077	8,325	0,752	8,285
16	12	01.01.2005 11:00	01.01.2005 12:00	9,128		9,128	8,350	0,778	8,523
17	13	01.01.2005 12:00	01.01.2005 13:00	9,125		9,125	8,350	0,775	8,493
18	14	01.01.2005 13:00	01.01.2005 14:00	9,155		9,155	8,363	0,792	8,656
19	15	01.01.2005 14:00	01.01.2005 15:00	9,155		9,155	8,375	0,780	8,520
20	16	01.01.2005 15:00	01.01.2005 16:00	9,143		9,143	8,400	0,743	8,126
21	17	01.01.2005 16:00	01.01.2005 17:00	9,104		9,104	8,488	0,617	6,772
22	18	01.01.2005 17:00	01.01.2005 18:00	9,071		9,071	8,338	0,733	8,086
23	19	01.01.2005 18:00	01.01.2005 19:00	9,077		9,077	8,325	0,752	8,285
24	20	01.01.2005 19:00	01.01.2005 20:00	9,062		9,062	8,338	0,725	7,995
25	21	01.01.2005 20:00	01.01.2005 21:00	9,110	0,234	9,344	8,313	1,032	11,039
26	22	01.01.2005 21:00	01.01.2005 22:00	9,065	0,2		8,288	1,012	10,878
27	23	01.01.2005 22:00	01.01.2005 23:00	9,065	0,2		8,313	0,986	10,609
28	24	01.01.2005 23:00	02.01.2005 00:00	8,966			8,463	0,504	5,616
29	1	02.01.2005 00:00	02.01.2005 01:00	9,068			8,088	0,980	10,813
30	2	02.01.2005 01:00	02.01.2005 02:00	9,050			8,088	0,963	10,635

3. Create the "Controlling_target_actual_electricity_AVZ", similar to the "Long-term forecast" report. This report only needs a module of the type "ACTUAL/TARGET schedule".
4. Assign the measuring variables to the module, observing the correct order.

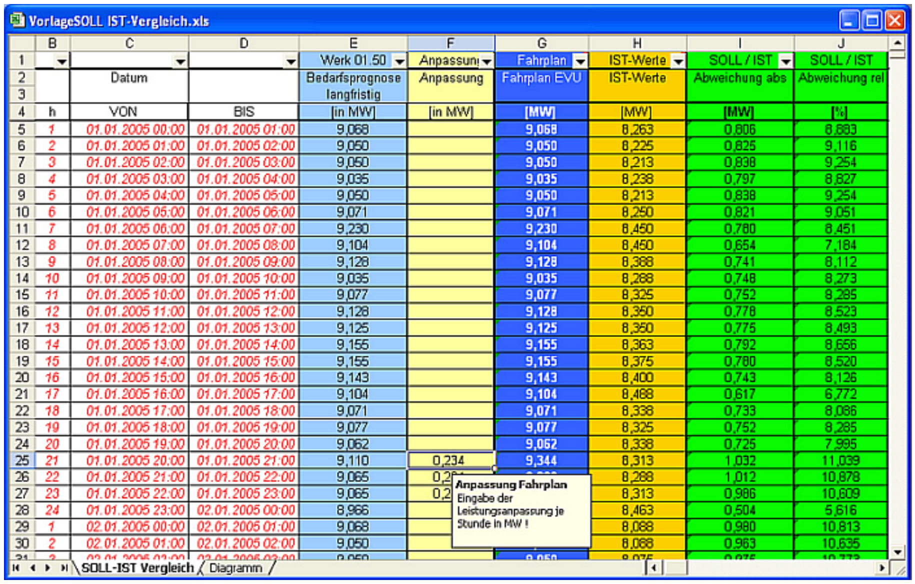


Loading report results

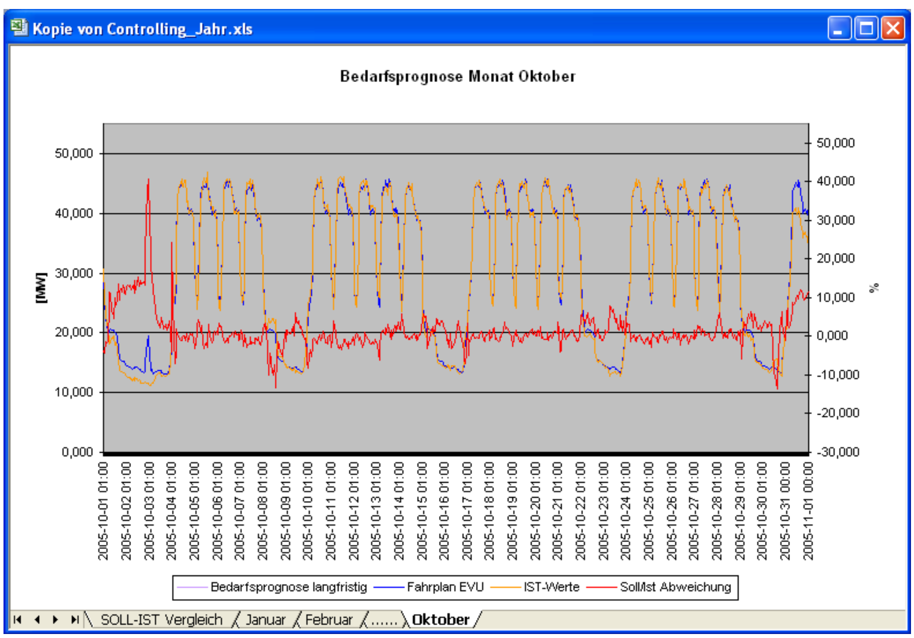
1. Start the report, e.g. for a year.

In addition to the FROM and TO times, the configured report outputs the values for long-term forecasting, possible adjustments, the schedule value, as well as the actual value.

These values are used to calculate absolute and relative deviation figures.



Enter the <CTRL+D> keystroke to start generation of the diagrams for all 12 months of the calculated year.



Result

You have successfully created the controlling report that can now be used to determine forecasting quality.

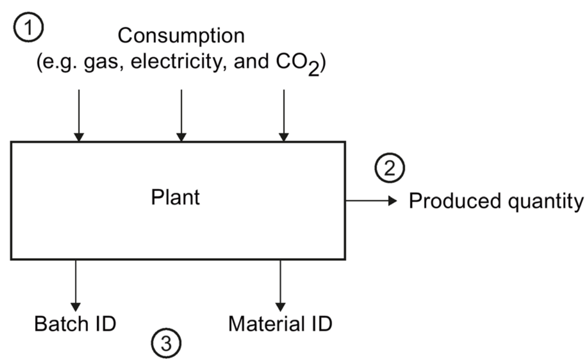
8.4.6 Configuring "Batch analysis" reports

Overview

The batch analysis helps you to evaluate the energy and media consumption for a specific batch or product per plant. The batch analysis also takes batches into account that are handled sequentially on several plants.

The "Batch analysis" report provides you with a reporting module in B.Data, which you can use to evaluate the energy consumption per batch or material.

The following figure shows the parameters that you need for this analysis.



① Consumption data

This example relates to the gas and electricity consumption. The CO_2 that develops during production, for example, is calculated based on the CO_2 equivalent of the consumers.

② Production data

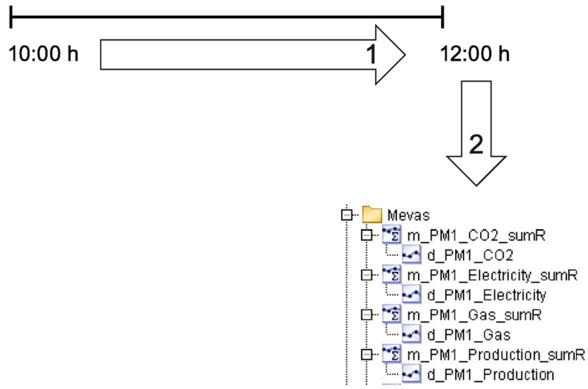
The quantity or number of products manufactured within the batch runtime.

③ Batch data

The "Batch ID" is used as unique identifier of the batch and defines the start and end of batch runtime.

The "Material ID", for example, denotes the product type manufactured in this batch.

The diagram in the following figure highlights the data acquisition process of a batch that is busy from 10:00 h to 12:00 h:



1 Consumption and production data is acquired during batch runtime at an acquisition cycle of five seconds. At a runtime of two hours, 1440 values are saved as raw data for each data point.

2 At the end of the batch, the batch data is generated and calculated in the mevas, e.g. the total, on the basis of the acquired raw data. Use the "Generate batch data" database job to generate the batch data.

You may delete the raw data on completion of your calculation, e.g. after one week.

The pre-calculation of batch data offers you two advantages:

- You acquire the consumption data of a batch in the seconds range and profit from very precise data.
- The time it takes to generate the batch analysis report is reduced, as the values of the pre-calculated MEVAs are used.

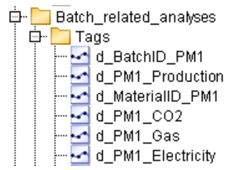
Requirement

The following data points are created for acquisition of the consumption and production data of a plant via interface, e.g. WinCC.

Name	Description	Cycle time
d_PM1_Electricity	Acquires the power consumption of a plant.	5 s
d_PM1_Gas	Acquires the gas consumption of a plant.	5 s
d_PM1_CO2	Acquires the CO_2 production of a plant.	5 s
d_PM1_Production	Acquires the quantity or number of products manufactured on a plant.	5 s
d_BatchID_PM1	Acquires the batch start and end times.	5 s
d_MaterialID_PM1	Acquires the material IDs of the product types produced per batch.	5 s

Copying data points

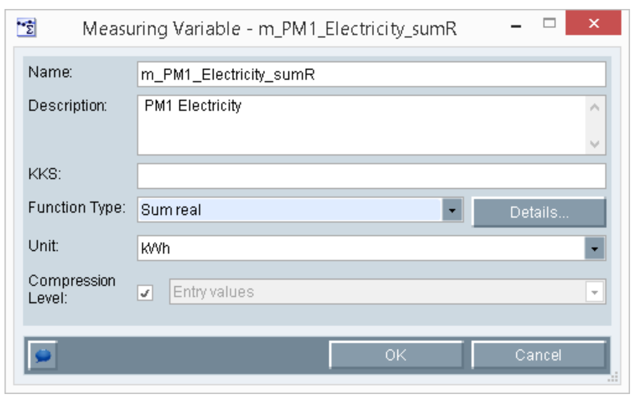
1. Copy the data points that you need for the batch analysis to the selected subfolder.



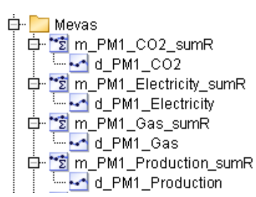
Creating MEVAs

1. Create measuring variables (MEVAs) with "Total Real" database function for each data point used in the selected subfolder.

   Example of the creation of the "m_PM1_Electricity_sumR" MEVA for the "d_PM1_Electricity" data point:

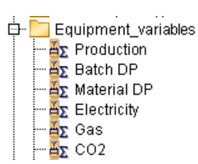


2. Copy the corresponding data points to the subfolder of the MEVA folder.



Creating plant variables

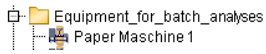
1. Create the necessary plant variables in the selected subfolder.



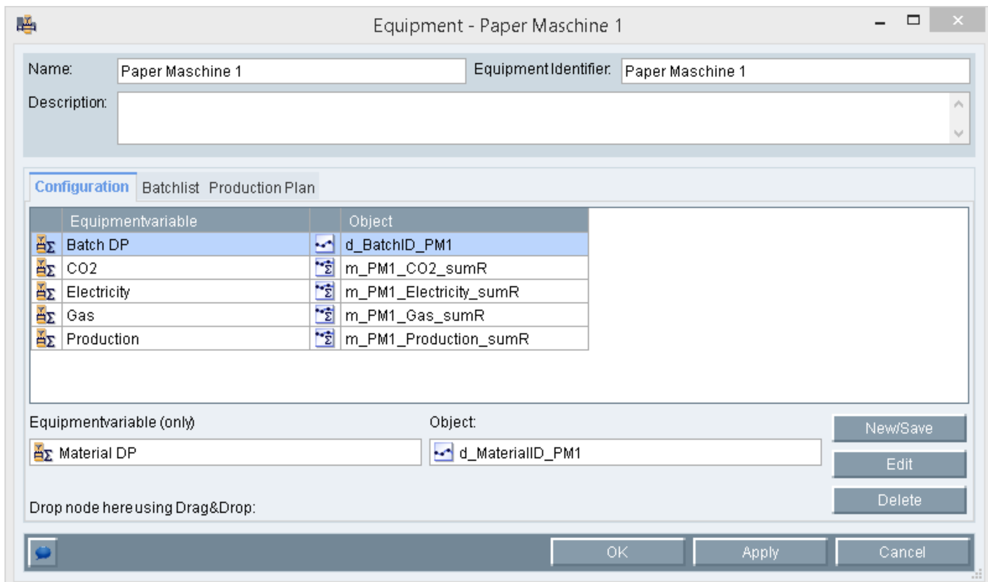
   The "Batch DP" and "Material DP" plant variables are predefined in B.Data. Copy these plant variables to the selected folder.

Creating a plant

1. Create the necessary plant variables in the selected subfolder.

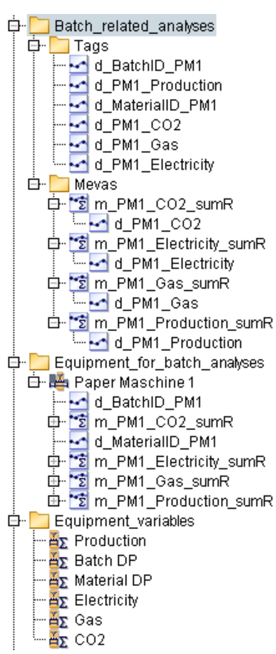


2. In the plant configuration dialog, drag-and-drop the plant variables, including the corresponding measuring variables / data points from the project tree to this folder.



Intermediate result

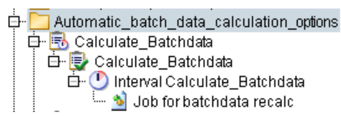
You have successfully created all objects that you need for the "Batch analysis" report.



Calculating batch data

1. Copy the "Calculate_Batchdata" task to the selected subfolder to calculate the batch data.

   The "Calculate_Batchdata" task is predefined in B.Data. It is not necessary to recreate this task.

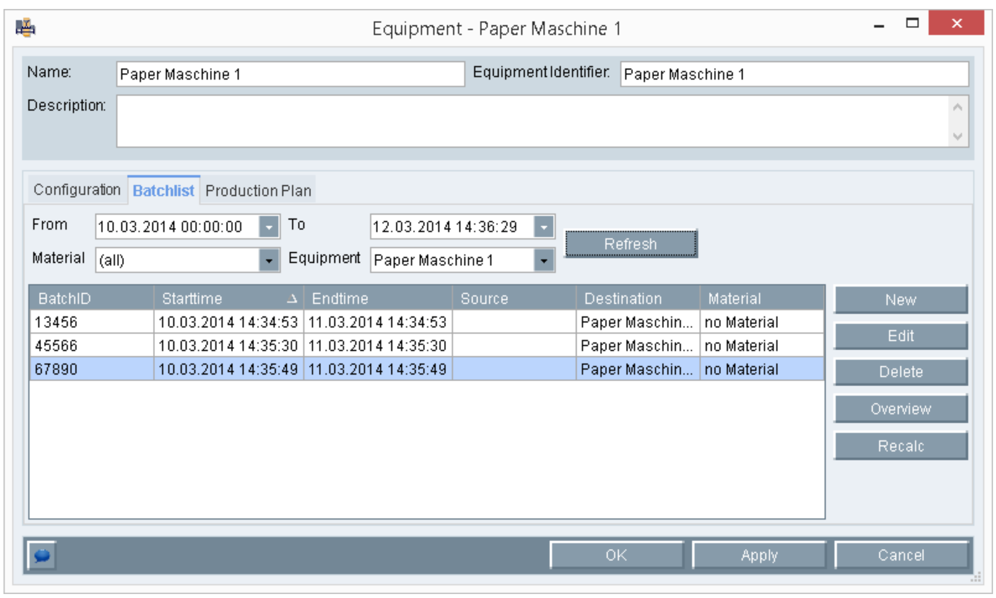
   

2. You can start the task manually by double-clicking the task and clicking "Start".

Intermediate result

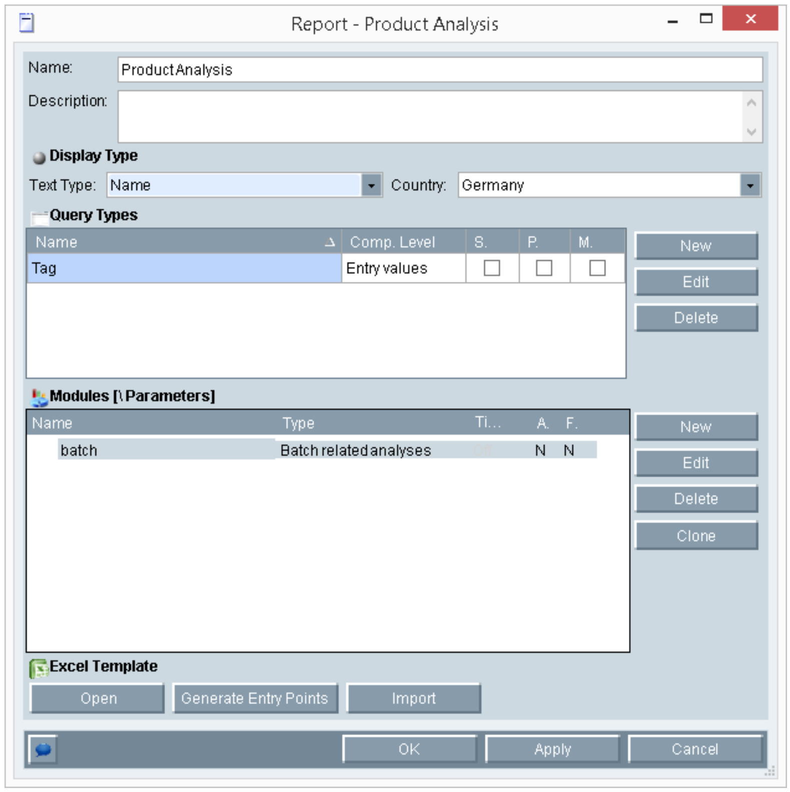
The batch data is being generated. The total of the consumption values of the period contained in the meva that is assigned to the plant is calculated automatically.

You can display the batch data in the "Batch list" tab of the "Plant" or "Material" dialog by setting the corresponding filter.

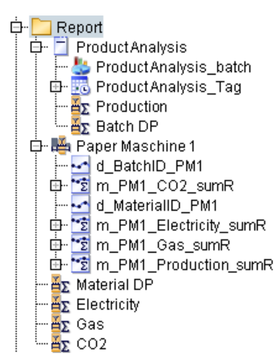


Creating reports

1. Create a report with query type "Day" and "Batch-related analyses" module in the selected subfolder.



2. Create a report template.
3. Enter the report values to be visualized. Copy the plant variables, the plant, as well as the associated mevas and data points to the subfolder of the report module.



4. Start the report with query type "Day" and query period "26.04.2012".

Result

The calculated batches are visualized in the report.

Material specific analysis

From	26.04.2012
till	27.04.2012

						Consumption				
Equipment	Material	Batch ID	from	till	hh:mm:ss	CO2	Gas	Electricity	Material DP	Batch DP
Paper Machine 1	no Material	12458	26.04.2012 06:00:00	26.04.2012 10:00:00	04:00:00	0	0	0	0	0
Paper Machine 1	no Material	132500	26.04.2012 13:00:00	26.04.2012 16:30:00	03:30:00	0	0	0	0	0
Paper Machine 1	no Material	16125	26.04.2012 20:00:00	26.04.2012 23:30:00	03:30:00	0	0	0	0	0
Paper Machine 1	Heatset 40g/m²	132500	26.04.2012 13:00:00	26.04.2012 16:30:00	03:30:00	1.344	4.438	1.547	1.680	7.462
Paper Machine 1	Newsprint 42,5g/m²	12458	26.04.2012 06:00:00	26.04.2012 10:00:00	04:00:00	2.912	5.908	2.331	3.640	9.572
Paper Machine 1	Newsprint 42,5g/m²	12550	26.04.2012 10:30:00	26.04.2012 12:00:00	01:30:00	2.564	4.580	1.789	3.245	8.560
Paper Machine 1	Newsprint 42,5g/m²	15750	26.04.2012 14:00:00	26.04.2012 16:30:00	02:30:00	2.684	5.762	1.814	3.365	10.560
Paper Machine 1	Newsprint 42,5g/m²	16125	26.04.2012 20:00:00	26.04.2012 23:30:00	03:30:00	3.640	5.908	2.912	3.140	12.460

Using the batch analysis result for regression analysis

Use the diagram functionality of Microsoft Excel for the regression analysis. The analysis is based on the recorded production and consumption data depending on the produced product.

1. Create an autofilter and filter the "Material" column according to the required product type.
2. Because consumption and produced quantity are relevant for the regression analysis, hide the columns that are not required.

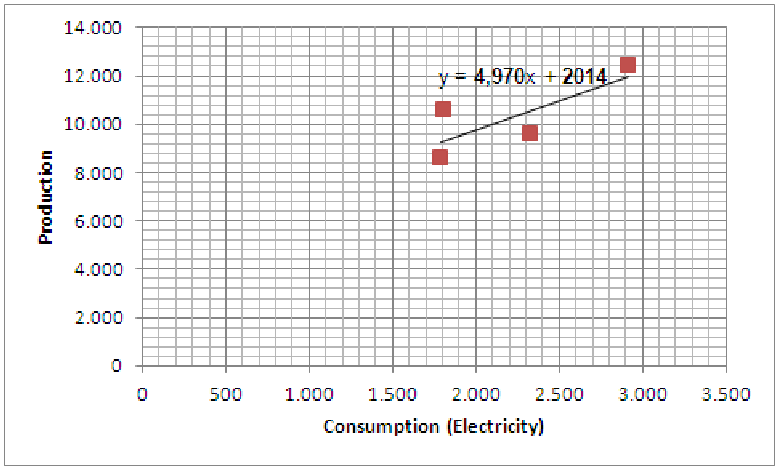
   In this example, use the data of columns I and K.

   Material specific analysis

	A	B	C	D	E	F	G	H	I	K
14	From	26.04.2012								
15	till	27.04.2012								
17							Consumption			
18	Equipment	Material	Batch I	from	till	hh:mm:	CO2	Gas	Electri	Batch I
23	Paper Machine 1	Newsprint 42,5g/m²	12458	26.04.2012 06:00:00	26.04.2012 10:00:00	04:00:00	2.912	5.908	2.331	9.572
24	Paper Machine 1	Newsprint 42,5g/m²	12550	26.04.2012 10:30:00	26.04.2012 12:00:00	01:30:00	2.564	4.580	1.789	8.560
25	Paper Machine 1	Newsprint 42,5g/m²	15750	26.04.2012 14:00:00	26.04.2012 16:30:00	02:30:00	2.684	5.762	1.814	10.560
26	Paper Machine 1	Newsprint 42,5g/m²	16125	26.04.2012 20:00:00	26.04.2012 23:30:00	03:30:00	3.640	5.908	2.912	12.460

3. Insert the diagram type "Point (X Y)", for example, on a new worksheet.
4. Select the required range as data range in the batch analysis.
5. To identify outliers more clearly, generate a trend line if necessary.

   Based on the formula, read the factors "k" and "d" which you can use as basis for a production-planning oriented forecast:



See also

Creating objects for Task Management (Page 396)

Creating a report (Page 191)

Document management 9

9.1 Document management basics

Definition

The document management function lets you manage external documents in B.Data, e.g. documents in PDF, Excel or Word format.

Note

Applications for external documents

If you want to open and edit an external document in B.Data, the correct application must be installed on your PC.

Usage

You use document management if you require additional application for energy management in B.Data.

Using document management, you can manage external documents in B.Data as follows:

- Link documents

  This option lets you insert a link for the document that is saved on your PC. Once inserted, you can use this link to call up the document in B.Data with the respective application. Please note that the document is only available to you. Other users do not have access to the document.

  Note

  General access to linked documents

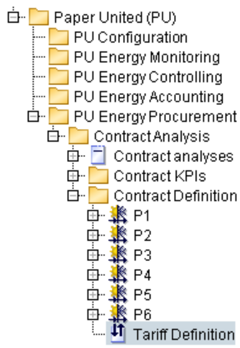
  To allow other users access to the linked document, save the document in a folder with general access.

- Load document to B.Data database

  This option lets you save the document to the B.Data database. This means that you and all authorized users can access the document.

Example

You want to use B.Data to provide an energy requirement forecast for your organization for the coming year. To do this, you require the energy tariffs of the current year. In order to access the relevant information during configuration, you need to create a link in B.Data to the document containing the energy tariffs or to save the document in the B.Data database:

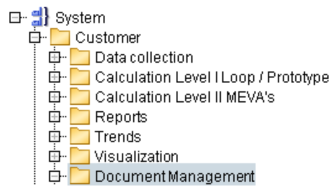


You can retrieve the document from the project tree of Plant Explorer using the respective application and edit it if required.

9.2 Inserting documents

Procedure

1. Change to Windows Explorer and select the corresponding document.
2. Copy the document to the clipboard.
3. Return to B.Data and select the object at which you want to save the link.

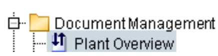


4. Paste the object from the clipboard.

Note

Documents to be shared with other clients must be stored in a public directory.

Result



9.3 Saving documents

Overview

You can save files in all standard formats, e.g. image or document files, to the database. In this way you enable access of other users to these files.

Requirement

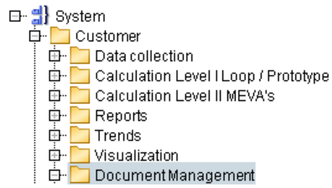
- Successful installation of all software components.
- The user has been assigned the following rights:
  - "viewing existing files" to open files.
  - "editing existing files": to save files to the database.

The following error messages are output if these rights are missing:

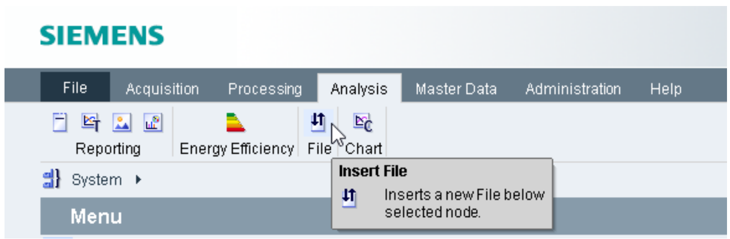
No permissions	Error message	Remedy
"viewing existing files"	<date><time> You are not authorized to open this file. BDataError 0004-00000002	Assign the corresponding authorization.
"editing existing files" ("File \ Data \ fetch")	<date><time> You are not authorized to add this file. BDataError 0004-00000001	Assign the corresponding authorization.
File size limit exceeded	The file may not exceed the size of <value>.	Request your system administrator to adjust the "FILE_MAX_SIZE_KB" in B.Data options.

Procedure

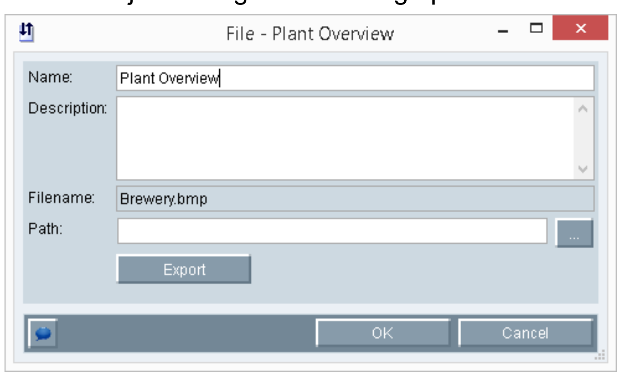
1. Select the folder in which the object is going to be created.



2. Click the "Insert File" button in the menu bar under "Analysis > File".



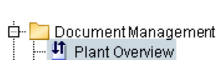
The file object configuration dialog opens.



3. Enter a "Name" and an optional "Description".
4. Enter the path and file name in the "Path" field.
5. Save the configuration with "OK".

Result

You have successfully created a data object and saved a file to the database.



9.4 Editing documents

Requirement

- At least one link and one file have been saved to the database.
- The user is authenticated accordingly.

Procedure

1. Double-click the link or the file object.

Result

The file opens in the corresponding application on the client.

10 Administration

10.1 Logging Viewer

10.1.1 Using the Logging Viewer

Overview

The Logging Editor displays the most important system messages and error messages.

This section provides instructions related to the following actions:

1. Opening the Logging Editor
2. Fields in the Logging Editor
3. Filter options
4. Archiving messages

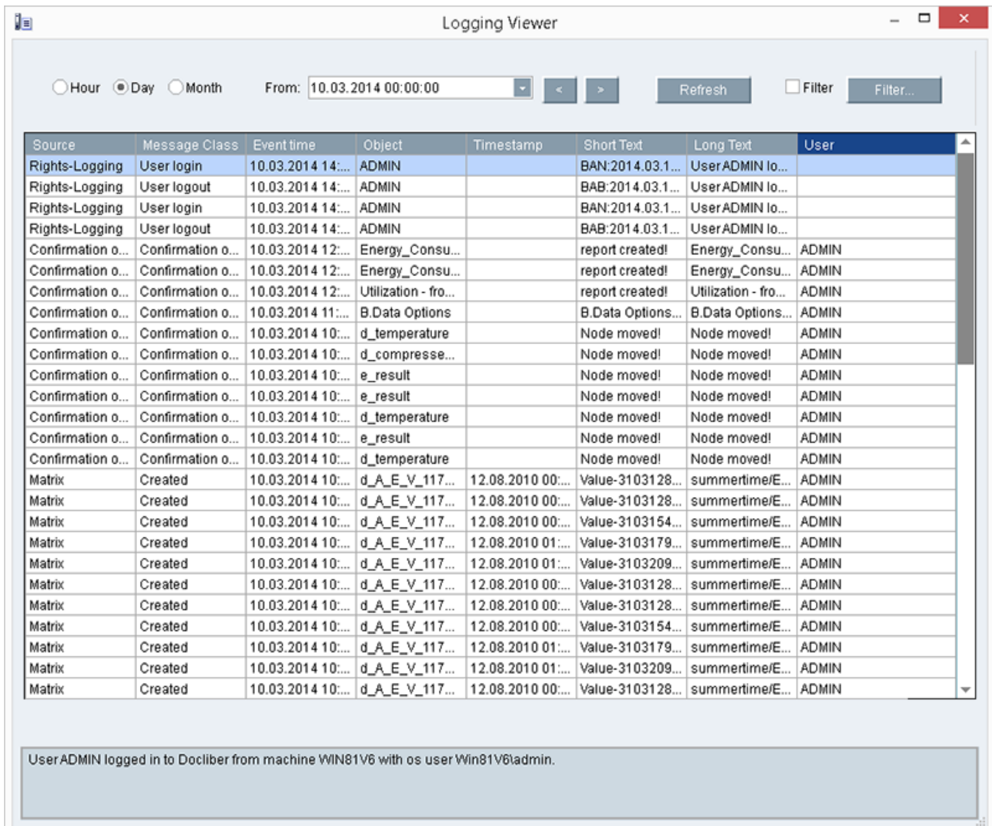
Requirement

Successful installation of all software components.

Opening the Logging Editor

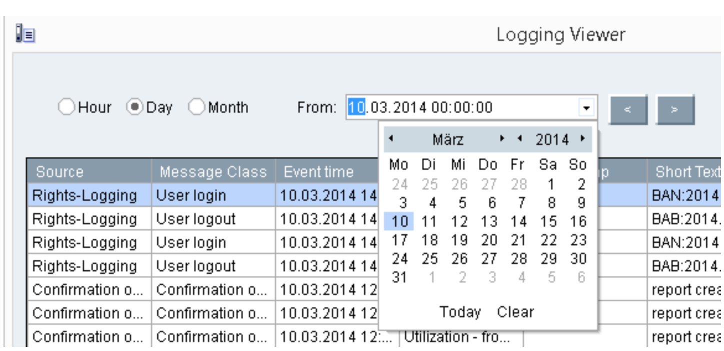
1. Click the "Open Logging Viewer " button in the menu bar under "Administration > Management and Monitoring".

   The Logging Viewer is opened.



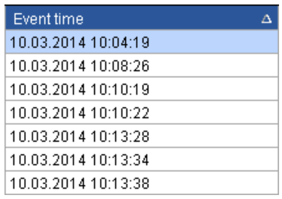
The LoggingViewer always displays the messages of the current day; the most recent message is displayed on top. In the case of a message surge, the time filter automatically sets the "hour" mode to reduce the waiting time.

You may select the monitoring period. Select "Refresh" to view the messages of the selected monitoring period, e.g. of the selected day:



Use the "<" and ">" buttons to page the scroll the selected time interval towards the past or future.

All columns can be sorted in ascending or descending order. Click in the header of the respective column to sort it.



Fields of the LoggingViewer

The following columns functions are available in the LoggingViewer:

- Source

  The error source is the first sorting criterion. Three error sources are currently implemented in the system: Kernel, database, and measurements editor.

- Error class

  The error class can be used to refine message filtering, e.g. evaluation error, job management error, deleted, or modified.

- Event time

  The event time is used to record the time of error or event occurrence.

- Object

  Certain messages include details on the object in this area. For example, the measurements editor logs the data point with name and the MESS_ID that has been processed.

- Time stamp

  The specific time stamp affected by changes, deletion of creation of new measured values is logged in this area.

- Stext

  The short text, for example, logs the way in which a value has been changed: Value 12.88 -> 13.54

- Ltext

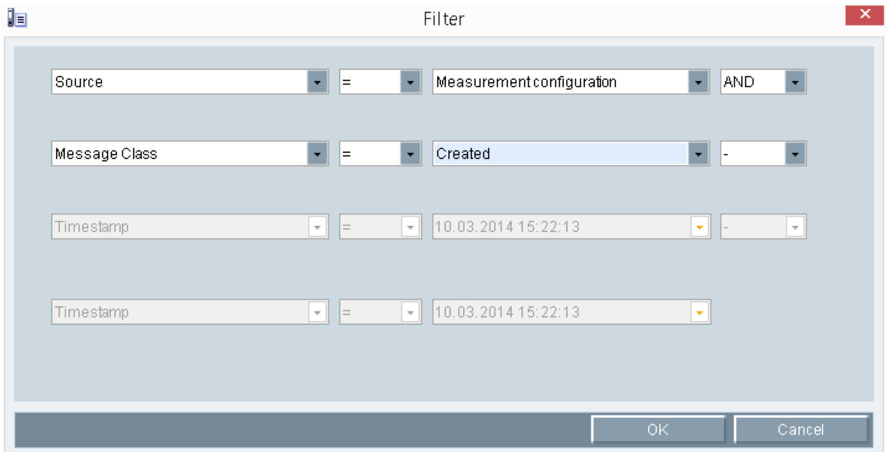
  The measurements editor logs the daylight saving and winter time as well as the compression level in this column. The remaining sources log the error message in plain text in this column.

- User

  The user having triggered the event is logged, e.g. BDATA_SYS for automatic jobs and the respective user for changes in the measurements editor.

Filter functions of the LoggingViewer

Use the filter function for fast access to the correct information. Click "Filter" in the Logging Viewer to open the "Filter" dialog.



Select the column from the first list. Select the operator from the second list. Additional entries are available in the third column, depending on the entry you selected in the first column. You may also logically link the filters by setting an "AND" or "OR" operation in the fourth column.

Click "OK" to activate the filters. The result is displayed in the Logging Viewer. Uncheck the "Filter" check box to cancel filtering.

The system provides several database jobs for archiving messages. For information on jobs and settings, refer to Job queue (Page 371).

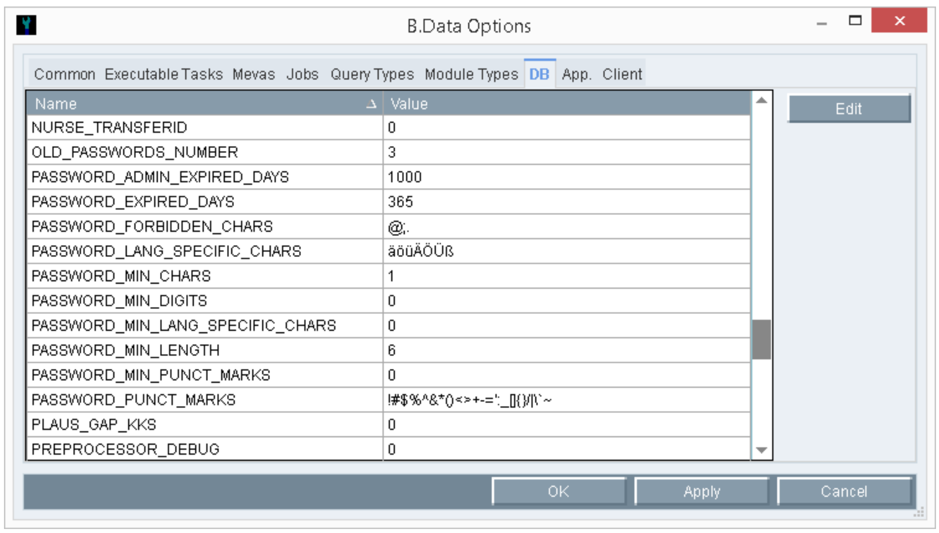
10.1.2 Security settings / Logging

Requirement

All software components are installed.

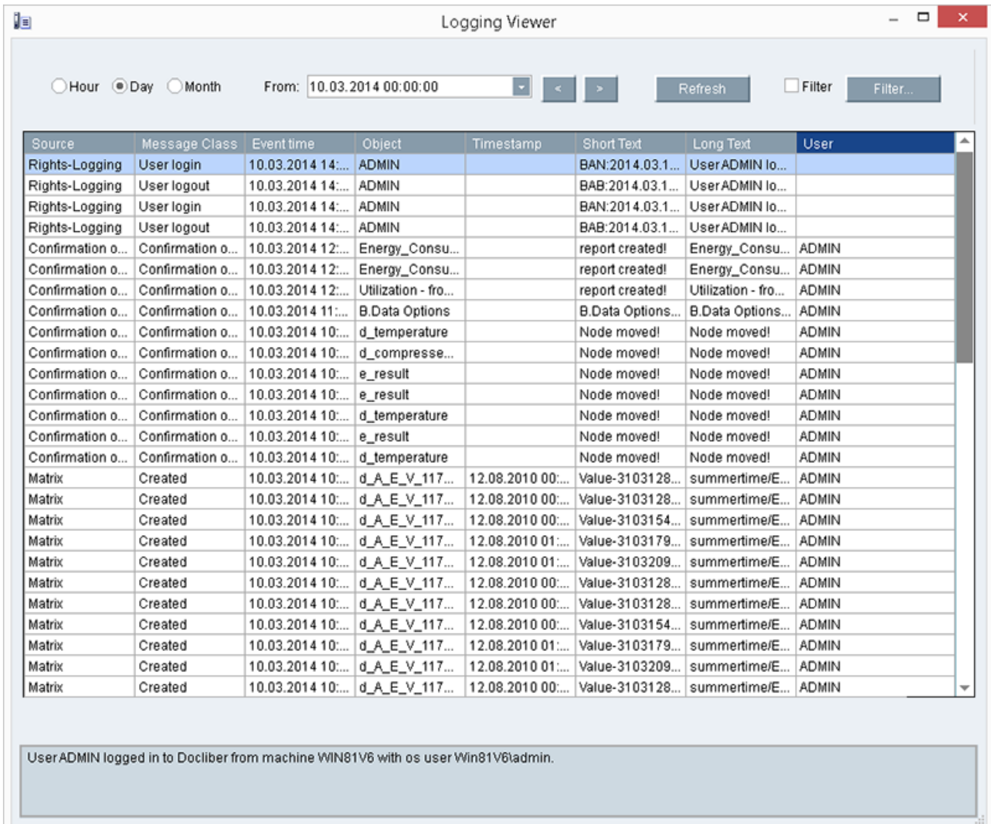
Password policies

Administer the password policies under "File > B.Data Options > Database".



Logging of specific actions

The following actions are logged in B.Data and can be viewed in the LoggingViewer.



The LoggingViewer stores all information pertaining to security settings and the rights logging source.

B.Data reporting also provides modules that can be used to output log information in Excel reports. These are the "User rights changes" and "Security changes" module types.

The "User rights" module type may be used to call an overview of all system users and their rights.

The following example shows some actions that are logged in the system:

- Each successful login or logoff, e.g. "User BDATA_SYS logged in to DocLiber from atw11565@ATPC0BAD".
- Each failed login attempt, e.g. "Unknown user TEST attempted to login to DocLiber from atw11565@ATPC0BAD", or "User BDATA_SYS failed to log in to DocLiber from atw11565@ATPC0BAD".
- An unauthorized user carrying out an action.
- Authorization changes, e.g. "User FLORIAN was added to group Administrators".

See also

B.Data options (Page 373)

10.2 Message lists

10.2.1 Basic information on message lists

Overview

A message list informs you of defined deviations of the measured values of a data point. You can view this information as follows:

- by means of a message list view
- by means of e-mail

Configure the deviation criteria for the measured values of a data point in the "Plausibility" area of a data point.

Message lists contain three categories:

- "Predefined": contains predefined message lists. The following predefined message lists are available:
  - All: contains all messages and warnings.
  - All Violations: contains all messages generated when a measured value violates a limit.
  - All Warnings: contains all warnings generated when a measured value approaches a configured limit.

  The predefined message lists cannot be edited or deleted.
- "Public": contains published message lists that can be used by all users.
- "My": contains message lists that you have configured.

Notes on message lists

NOTICE
Messages in B.Data do not replace the message configuration in the process control system
The message is not linked to the process control system. If you want to react to the message, you have to configure limit monitoring in the process control system.

To view the messages in a message list, you need to configure the limits for the required data point and activate their message.

Messages are disabled in the project by default. Contact your administrator if you want to enable the message for the project.

Procedure for configuring a message list

To configure a message list, follow these steps:

1. Configure a message list.
2. Define the message list contents by means of a filter.
3. You can also configure a message notification, if necessary.

10.2.2 Configuring custom message list

Overview

You may configure a custom alarm list. In this alarm list you use filters to define which messages are displayed.

Requirement

- The data point is configured.
- The data point limit is configured.
- The message is activated for the limit.

Procedure

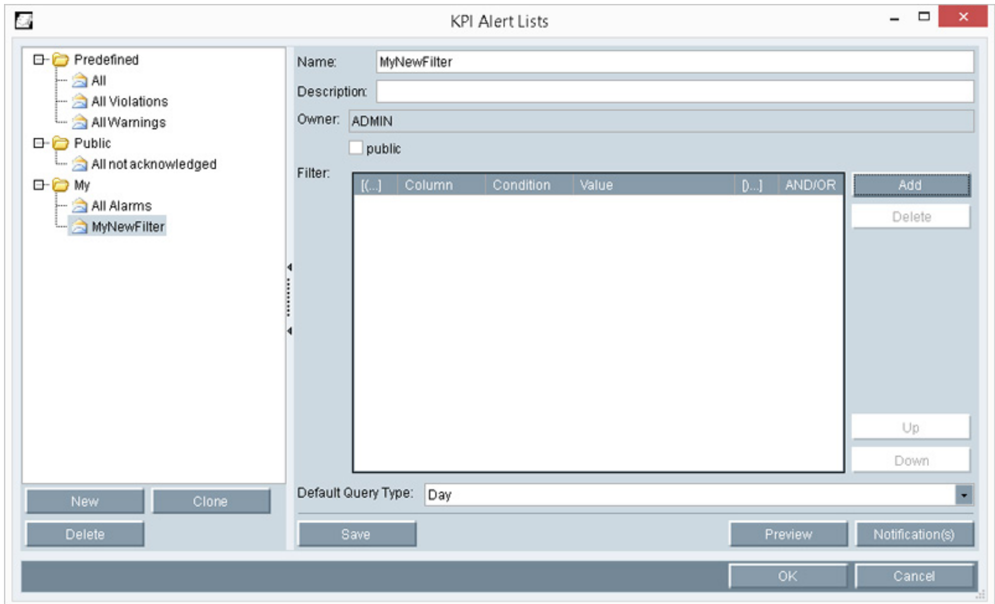
1. Click the "Open KPI Message Lists" button in the menu bar under "Administration > Management and Monitoring".
2. Then click "New".

   The alarm list configuration dialog opens.
3. Enter a unique name and an optional description for the alarm list.

   The "Owner" field displays the name of the user who configures the alarm list.
4. Activate "Publish" to make the alarm list available to all users.
5. Confirm the configuration with "Save".

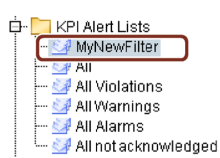
Result

The custom alarm list is configured.



Configure one or more filters to specify the contents of the alarm list. You can use the "Clone" function to copy the custom alarm list for configuring a different alarm list. You may delete the custom alarm list.

You can open a alarm list that you have made available to all users by selecting "Configuration > KPI Alert Lists" in the project tree of Plant Explorer.



See also

Configuring filter for a message list (Page 366)

Configuring message notification (Page 368)

Configuring the view for a message list (Page 370)

10.2.3 Configuring filter for a message list

Overview

A alarm list filter allows you to exclude messages that you do not need.

The following rules are valid for filters:

- For a alarm list configuration containing multiple filters, you need to logically link the filters by means of "AND" or "OR" operator.
- In a configuration with multiple filters, the filters in the list are evaluated from the top down.

Requirement

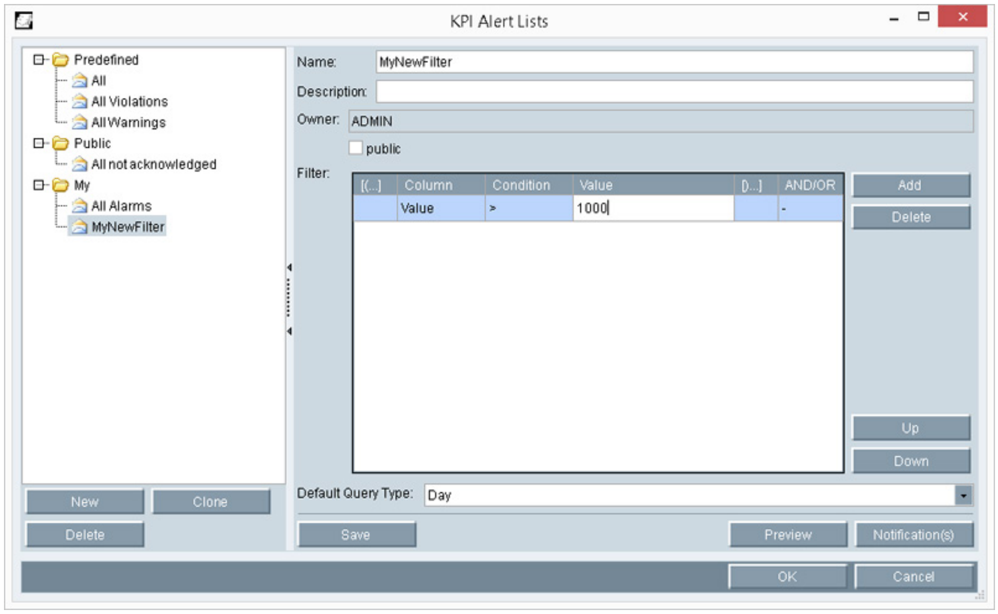
The alarm list is configured.

Procedure

1. Select the required alarm list under "Administration > Alarm lists" in the Plant Explorer.
2. Click "Add" in the "Configuration" tab.
3. You may enter filter expressions in a parenthesis.
4. Select a filter criterion and a condition, e.g. "Value" and ">".
5. Enter a value, e.g. 1000.
6. Select an operator / additional operators to interconnect multiple filters.
7. Click "Up" or "Down" to specify the sorting order by which multiple filters are to be evaluated.
8. Confirm the configuration with "Save".

Result

The filter for the alarm list is configured. With this filter, messages are included in the alarm list if their data point value is greater than 1000. You can check the result of the filter configuration in the "View" tab. You can delete the filter, or add a new one.



See also

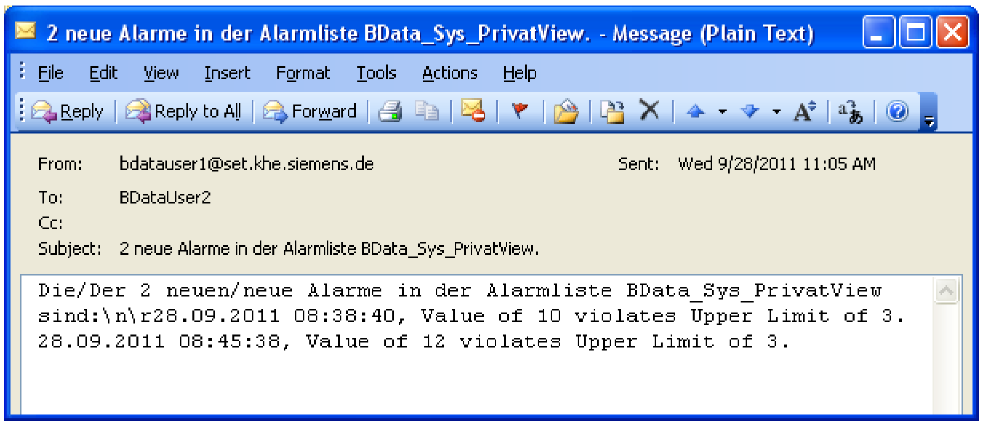
Configuring custom message list (Page 364)

Filter criteria for a message list (Page 476)

10.2.4 Configuring message notification

Overview

A message notification informs you by e-mail of unacknowledged messages from a alarm list.



Requirement

- The alarm list is configured.
- The user with the e-mail address is created.

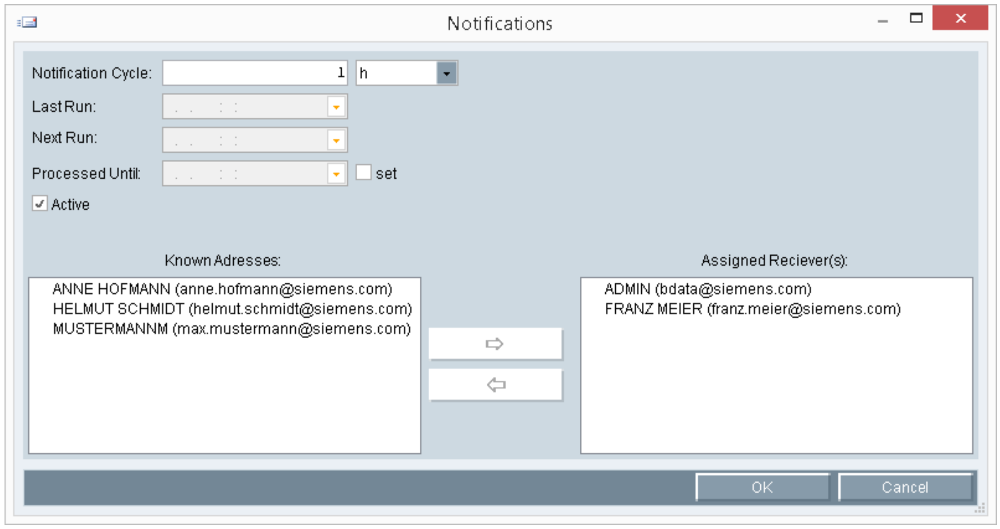
Procedure

1. Select the required alarm list under "Administration > Alarm lists" in the Plant Explorer.
2. Click "Notification(s)" in the "Configuration" tab.

   The "Message notifications" dialog opens.
3. Select a time interval and a time unit for the notification cycle.

   The "Last run" and "Next scheduled run" fields show the time stamp for the last and next verification.
4. To ignore old messages, activate "Set". Select a time for the activation of the notifications.
5. To activate the notifications, select the "Active" option.

6. Use the arrow keys to assign the e-mail address.



7. Click "OK".

Result

Message notification is configured. Open the view of the corresponding alarm list to acknowledge a message.

See also

Configuring custom message list (Page 364)

Time unit abbreviations (Page 477)

Setting up users (Page 88)

10.2.5 Configuring the view for a message list

Overview

Using the view for a alarm list you specify the period of evaluation.

Requirement

The alarm list is configured.

Procedure

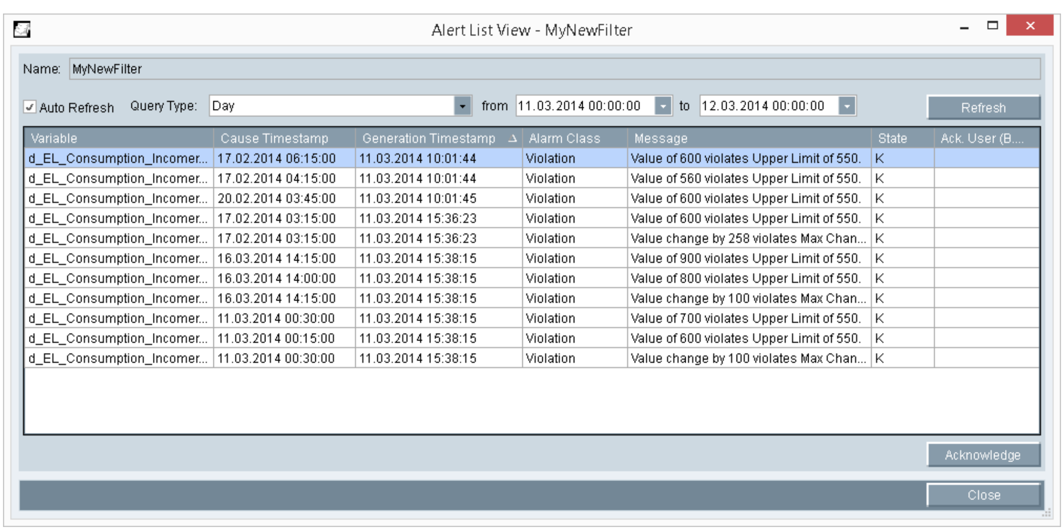
1. Double-click the required alarm list under "Configuration > KPI Alert Lists" in the project tree of Plant Explorer.

   The "Alarm List View" dialog opens.
2. Select a query type.
3. Select a start and end time.
4. To refresh the alarm list view in manual mode, disable "Automatic update" and then click "Refresh".

   "Automatic update" is activated by default for a alarm list view.
5. Confirm the configuration with "OK".

Result

The alarm list view is configured. Click "Acknowledge" to prevent a message from being sent by e-mail.



10.3 Job queue

10.3.1 Using the job queue

Overview

B.Data Job Scheduling can be used to run database jobs once or at cyclic intervals. The Job Queue lists all configured database jobs.

Fields in the Job Queue

The Job Queue provides the following information for each job.

- Job

  Unique ID for handling the job in the system.
- Function

  Name of the database job
- Tot.

  duration [sec] of job execution.
- Interval

  Job execution cycle.
- C

  Status, if the job is canceled.
- Err

  The status is entered in this item in case of a malfunction.
- Next

  Time stamp that indicates the next job start.
- Last

  Indicates the time of the last job session.
- Description

  Short description of the database job
- SQL

  SQL syntax
- User

  User having started this job or entered it in the Job Queue.

Requirement

Successful installation of all software components.

Procedure

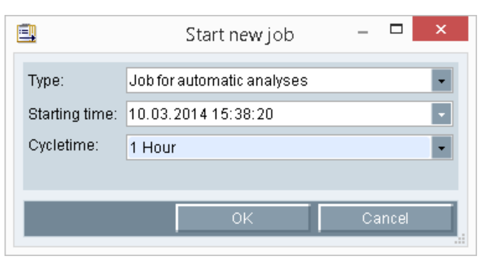
1. Click the "Open Job Queue" button in the menu bar under "Administration > Task Management".

   The B.Data Job Queue opens.

   The Job Queue contains the jobs to be executed at cyclic intervals or in the future. You can always "refresh" the view.

2. Create a new job as follows:
   – Click "New".
   – Select the "Type".
   – Select the "Start time".
   – Select the "Cycle time". The job is executed only once if you select "none".
   – Save the configuration with "OK".

3. Delete a new job as follows:
   – Select the job from the Job Queue.
   – Click "Delete job".

10.4 B.Data options

"B.Data Options" supports configuration tasks in all system areas and user-specific customizations. The following table shows the available areas:

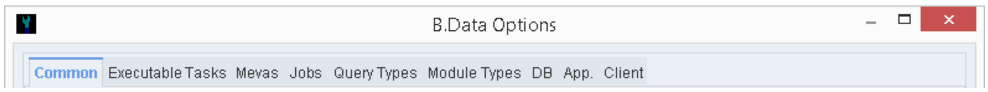
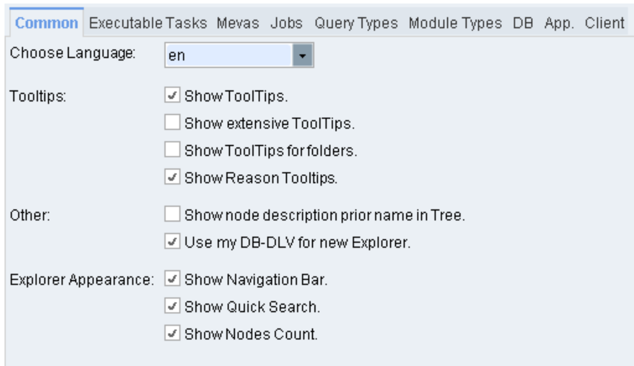
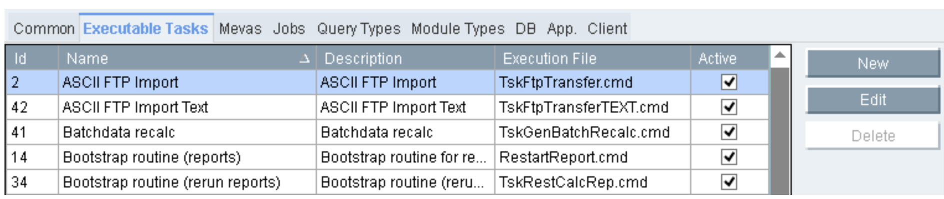
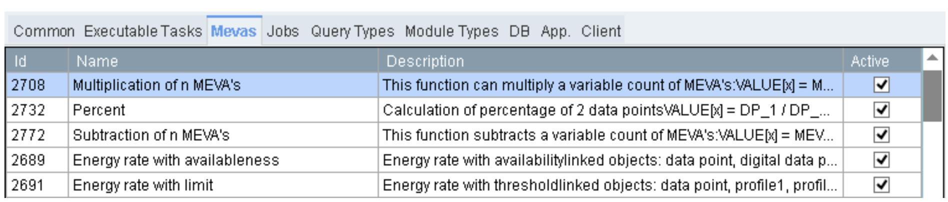
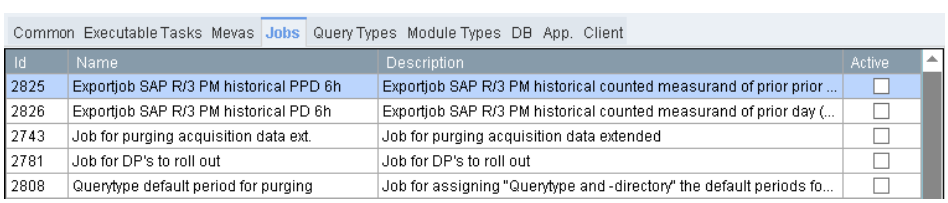


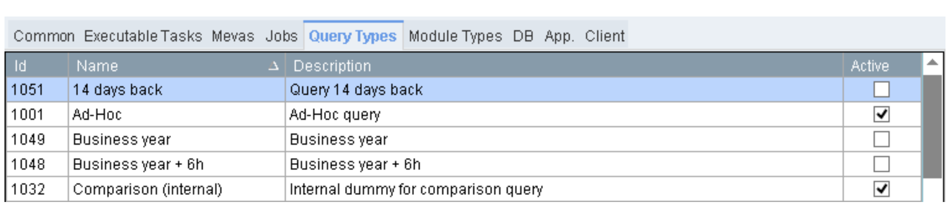
Table 10- 1 B.Data options

<table>
<tr><th>Tab</th><th>Functions</th></tr>
<tr><td>General</td><td>


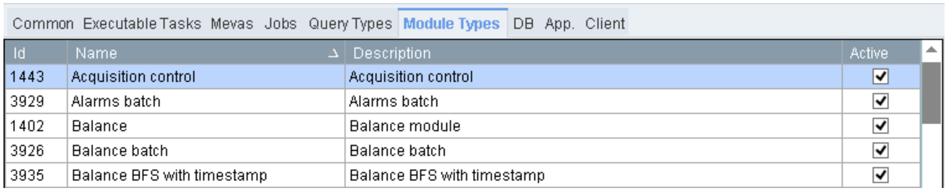
The "General" tab primarily contains user-specific settings. In this dialog, you can customize the client language, the tooltips, and the Explorer appearance.</td></tr>
<tr><td>Executable tasks</td><td>


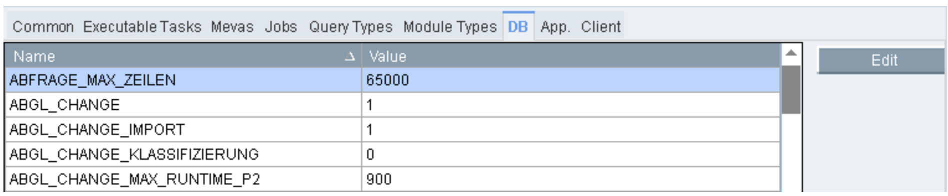
See Task Management (Page 396)</td></tr>
<tr><td>Measuring variables</td><td>


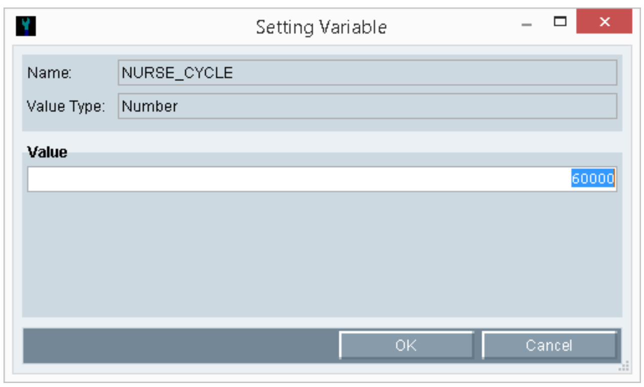
You can activate or deactivate "Measuring variables" in this tab.</td></tr>
<tr><td>Jobs</td><td>


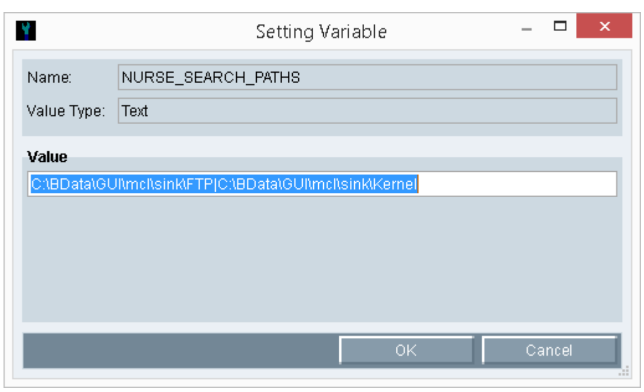
You can activate or deactivate "B.Data database jobs" in this tab.</td></tr>
<tr><td>Query types</td><td>


You can activate or deactivate "query types" in this tab.</td></tr>
</table>

<table>
<tr><th>Tab</th><th colspan="2">Functions</th></tr>
<tr><td>Module types</td><td colspan="2">

You can activate or deactivate "module types" in this tab.</td></tr>
<tr><td rowspan="4">Database</td><td colspan="2">

Tab for editing global database settings.




The tab provides corresponding number and text input fields.
Description of the various options:</td></tr>
<tr><td>Name</td><td>Description</td></tr>
<tr><td>ABFRAGE_MAX_ZEILEN</td><td>Applies to the "Query max. rows wrapper" module and specifies the number of rows leading a column break.</td></tr>
<tr><td>ABGL_CHANGE</td><td>If this value equals 1, derived datapoints will be recalculated during execution of the "Recalculate derived measurements" job.</td></tr>
</table>

Tab	Functions	
	ABGL_CHANGE_IMPORT	Import functions may set this value to indicate the number of values most recently imported. Recalculation is stopped if the value overshoots the limit of 50,000 and resumed when the value has dropped below this limit again. Recalculation should be in wait state during the import of large data volumes. This parameter is only relevant if ABGL_CHANGE_WAIT = 1.
	ABGL_CHANGE_KLASSIFIZIERUNG	Generally enables (value = 1) or disables (value = 0) differentiation between actual and forecast values for derived datapoints during execution of the "Recalculate derived measurements" job for derived datapoints.
	ABGL_CHANGE_WAIT	Specifies whether to delay the recalculation of derived datapoints during execution of the "Recalculate derived measurements" job for derived datapoints. Enabled if value = 1, disabled if value = 0.
	ABGL_DEBUG	If >= 2, all recalculations are logged to the error journal during execution of the "Recalculate derived measurements" job for derived datapoints. Logging is disabled if the value is < 2.
	AUSROLL_ANZAHL_MONATE	Number of month for "Job DP roll-out", starting with job initiation. The default value is 36, i.e. three years.
	AUSROLL_INIT_FLAG	"Job DP roll-out" issue: 1: The entire time frame that has been defined for the rollout will be processed. Existing gaps will be padded in this way. 0: Roll-out only up to the first value that exists. The default is 0.
	AUSROLL_ROOT_ORDNER	For "Job DP roll-out", this specifies the node ID of the folder that contains the derived measurements or datapoints to roll out. The job is canceled and a corresponding error message is generated if this entry is missing.
Database (continued)	AUSROLL_STATISTIK	Specifies the number of datapoints rolled out for the currently active "Job DP roll-out" job.
	BDATA_EXPORT_FILENAME_MODUS	Concerns the "Job for ASCII export to B.Data standard": 0: File name with date and time. 1: File name without date and time
	BDATA_EXPORT_PATH	Concerns the "Job for ASCII export to B.Data standard": Export directory. An error message is output and "C:\Data\Import" is returned as default directory if this entry is missing.

Tab	Functions	
	BDATA_LASTPRF_QS	Specifies whether or not to include corrupted values in the calculation for the "Load profile analysis" module. 0: Corrupted values are ignored. 1: Corrupted values are included.
	BDATA_LOG_PATH	Job PDR Import: Path for the file with non-cyclic time stamps.
	BILA_HEADER	Concerns the "Balance" module: 0: Hide header. 1: Show header.
	BILA_TS_HEADER	Concerns the "Balance with time stamp" module: 0: Hide header. 1: Show header.
	COUNTRY_CODE	Saves the regional setting the user has selected in database setup. Currently, the following countries/regions are supported: 2511 for Austria, 2512 for Germany, 2513 for Spain (Catalonia).
	DB_DATE_FORMAT	Date/time property format. Default: dd.mm.yyyy hh24:mi:ss
	DB_FEJO_THRESHOLD	Concerns the error journal: Suppression in [s] if many error messages with identical text content are being received. All new incoming error messages having a time stamp within the threshold and identical text entries in the error journal will not be entered in the error journal. All error messages are output when the value is 0.
	DB_ZAEHLER_CHECK	Specifies whether to enable or disable filtering for "MEVAs with count functionality". 0: Filtering is disabled. 1: Filtering is enabled.
Database (continued)	DB_ZAEHLER_DEBUG	Specifies whether or not to enter additional diagnostics messages in the error journal for "MEVAs with count functionality". 0: disabled. >= 1: enabled.
	DB_ZAEHLER_FILTER	Minimum value to be set for count filters in order to be taken into account for "MEVAs with count functionality".
	DEFAULT_CAHE_BEHALTEN	The "Delete analyses job" does not delete analyses (reports started manually or automatically) marked with selected "Keep" check box. This parameter defines the check box default for the creation of new analyses. 0: Do not keep 1: Keep

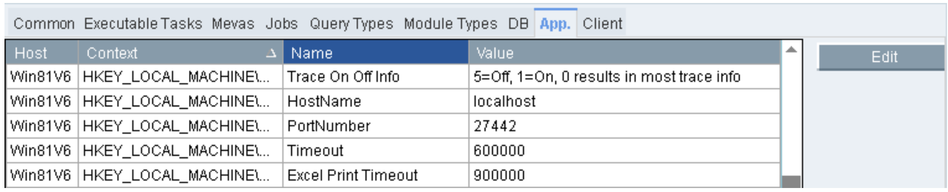
Tab	Functions	
	DELETE_BY_COMPRESS_UNTIL	For the "Compress measurement journal job", if the "Delete measured values" has been parameterized at the datapoint: Age in seconds as of which deletion is permitted. Default is "14 days" (=1209600 sec).
	DELETE_MSJO_COMMIT	For the "Delete measurement journal job": Defines the number of data records to delete before a COMMIT is set. Default: 1000
	DELETE_MSJO_UNTIL	For the "Delete measurement journal job": Age in days as of which deletion is permitted. The job is canceled and a corresponding error message is generated if this entry is missing.
	FEJO_EXPORT_FLAG	For the "Delete error journal job": If the value 1 is set, the messages are exported to a file prior to deletion; the messages are only deleted if 0 is set.
	FEJO_EXPORT_MESS_FLAG	For the "Archive MV errors" job: If the value 1 is set, the messages are exported to a file prior to deletion; the messages are only deleted if 0 is set.
	FEJO_EXPORT_MESS_PATH	For the "Archive MV errors" job: Specifies the export directory for messages to be deleted. The file name "FEJO_EXPORT_MESS_PATH_" plus the date (DD-MM-YYYY) is set permanently.
	FEJO_EXPORT_MESS_UNTIL	For the "Archive MV errors", this parameter specifies the number of days the entries from the MV editor are retained in the database. The entries will be deleted on expiration of this time.
	FEJO_EXPORT_PATH	For the "Delete error journal job": Specifies the export directory for messages to be deleted. The file name "FEJO_EXPORT_PATH_" plus the date (DD-MM-YYYY) is set permanently.
Database (continued)	FEJO_EXPORT_UNTIL	For the "Delete error journal job", this parameter specifies the number of days the error messages are retained in the database. The error messages will be deleted on expiration of this time.
	FILE_MAX_SIZE_KB	Specifies the maximum size in KB for files to be saved to the database. Default: 3000 KB
	IMPORT_DEBUG	Enables/disables detailed logging at the DB interfaces; enable (1)/disable (0)
	ITSEC_EXPORT_FLAG	For the "Delete old IT Security Data" job: If the value 1 is set, the error messages are exported to a file prior to deletion; the messages are only deleted if 0 is set.
	ITSEC_EXPORT_PATH	For the "Delete old IT Security Data" job: Specifies the export directory for messages to be deleted. The file name "FEJO_ITSEC_EXPORT_" plus the date (DD-MM-YYYY) is set permanently.

Tab	Functions	
	ITSEC_EXPORT_UNTIL	For the "Delete old IT Security Data" job: All security entries that are no older than ITSEC_EXPORT_UNTIL (specified in days) at the time of execution are deleted from the error journal.
	LANGUAGE_CODE	Specifies the language for the B.Data database. Set by the Database Setup program. Currently supported languages are German and English. Possible values: DEU (German), ENG (English)
	Manual Insert Offset	Defines the handling of the first time stamp during manual input: 0: Values are entered with default B.Data end time stamp. The additional time stamp entered at the start is therefore listed as start time stamp. 1 (default): Values are entered with default B.Data end time stamp.
	MATRIX_MAX_WORK_LOAD_FOR_FULL_CLIENT	Limits the number of values in a matrix to the entered number.
	MATRIX_MAX_WORK_LOAD_FOR_WEB	Limits the number of values in a matrix in B.Data Web to the entered number.
	MAX_ATTEMPS_TO_LOGIN	Specifies the maximum number of unsuccessful login attempts to tolerate before the account is locked (an administrator may release the account again)
	MEVA_CHECK_LUECKEN	1: Check for gaps in the "df_mess_plusx", "df_avg", "df_max", and "df_min" time sequences (15 min). 0: No check Can only be active if MEVA_STER_THRESHOLD is disabled (= 0).
	MEVA_STER_THRESHOLD	Specifies the threshold for the status returned for a specific Meva. 0 = disabled > 0; threshold percentage; numbers with decimal places are also permitted, e.g.: 60,8. Valid for the following Mevas: minimum, maximum, average, total, total real Can only be active if MEVA_CHECK_LUECKEN is disabled (= 0).
Database (continued)	MODULE_EINHEIT	Valid for the "Log with from/to" and "Continuous trend" modules. The units specified in the integrated Mevas are not output in the header unless MODULE_UNIT = 1. Also valid for the "Query with 2 time stamps (from/to)" module. The units of the integrated datapoint are output accordingly in the header.
	NO_DST	Global parameter; usually configured by means of Database Setup. Daylight saving time YES (value = 0) / NO (value = 1). Example: 0=Europe with daylight saving time, or 1=China without daylight saving time.

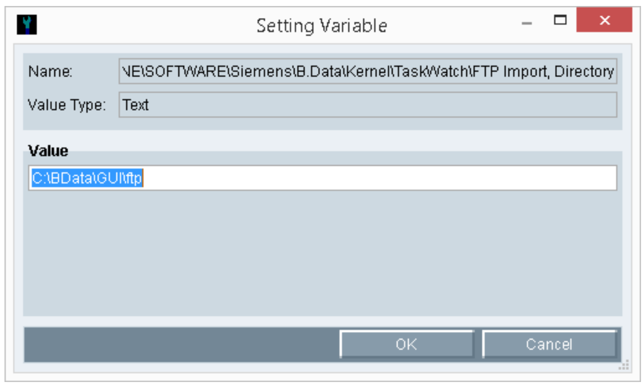
Tab	Functions	
	NURSE_CYCLE	Cycle in ms during which "autonurse.exe" is launched
	NURSE_SEARCH_PATHS	Path(s) scanned by "autonurse.exe" for existing sink files. The paths are separated by the '|' character (without single quote)
	NURSE_STORAGE_DAYS	Specifies the number of days to expire before the imported sink files are deleted from the import folder.
	NURSE_TABLE	Specifies the table to use for entries (MSJO, or MSJO4)
	NURSE_TRANSFERID	1 for MSJO, 0 for MSJO4
	OLD_PASSWORDS_NUMBER	User: Specifies the number of recent passwords that the system remembers to prevent redundant assignments by users. Example: The last three passwords may not be used to assign a new PWD.
	PASSWORD_ADMIN_EXPIRED_DAYS	User: Specifies the number of days (z. B.: 90 days) to expire before administrators must change their password (it never expires in bdata_sys).
	PASSWORD_EXPIRED_DAYS	User: Specifies the number of days to expire until the password must be changed.
	PASSWORD_FORBIDDEN_CHARS	Password: Invalid characters in the password.
Database (continued)	PASSWORD_LANG_SPECIFIC_CHARS	Password: Definition of valid country-specific special characters
	PASSWORD_MIN_CHARS	Password: minimum character length of the password.
	PASSWORD_MIN_DIGITS	Password: Minimum number of digits the password must contain.
	PASSWORD_MIN_LANG_SPECIFIC_CHARS	Password: Minimum number of country-specific special characters the password must contain.
	PASSWORD_MIN_LENGTH	Password: minimum length of the password (>= MIN_CHARS+MIN_DIGITS+MIN_PUNCT_MARKS+ MIN_LANG_SPECIFIC_CHARS)
	PASSWORD_MIN_PUNCT_MARKS	Password: minimum number of special characters the password must contain.
	PASSWORD_PUNCT_MARKS	Password: Definition of valid special characters
	PLAUS_GAP_KKS	Specifies whether or not to display the KKS text for the "Plausibility check gaps". 0: No 1: Yes
	PREPROCESSOR_DEBUG	Specifies whether or not additional debug information is entered in the error journal while online compression is activated. 0: No 1: Yes 2: Yes (extensive debug information)

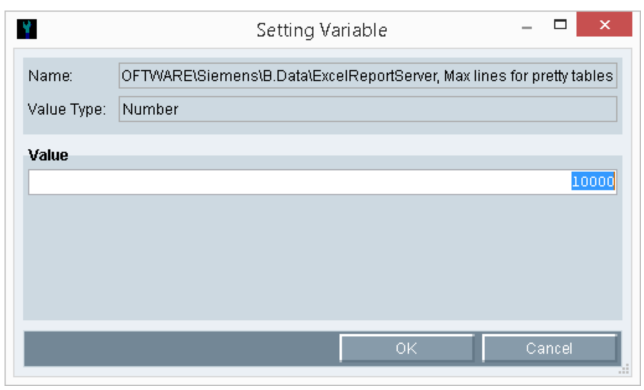
Tab	Functions	
	PREPROCESSOR_ENABLE	Activates online compression of measured values during import to B.Data. Online compression is only executed if one of the several compression functions have been configured at the corresponding datapoint. You can always run the compression functions by means of the "General recalculation" or "Compression of the measurement journal" jobs. 0: No 1: Yes
	PRINT_VOLLZUGS_MELDUNG	Compress, expand: Defines whether or not to display completion reports. 0: No 1: Yes
Database (continued)	Productplan_limit	Specifies the number of recent days for which users may still modify production plans.
	REPA_LOES_ADHOC_DEF	Specifies the period for deleting storage folders of the type "ad hoc" for the "Storage folder deletion period defaults" job. All specifications in days.
	REPA_LOES_JAHR_DEF	Specifies the period for deleting storage folders of the type "year" for the "Storage folder deletion period defaults" job. All specifications in days.
	REPA_LOES_MONAT_DEF	Specifies the period for deleting storage folders of the type "month" for the "Storage folder deletion period defaults" job. All specifications in days.
	REPA_LOES_MONATVAR_DEF	Specifies the period for deleting storage folders of the type "current month" for the "Storage folder deletion period defaults" job. All specifications in days.
	REPA_LOES_TAG_DEF	Specifies the period for deleting storage folders of the type "day" for the "Storage folder deletion period defaults" job. All specifications in days.
	STP_HOTFIX	Hotfix number: Set by the Database Setup during the B.Data package updates.
	STP_LAST_UPDATE	Date of last update: Set by the Database Setup during the B.Data package updates.
	STP_SERVICE_PACK	Service pack number: Set by the Database Setup during the B.Data package updates.
	STP_VERSION	Version: Set by the Database Setup during the B.Data package updates.
	VERBOSE	If > 0, additional debug information is written to the error journal during calculation of modules and mevas. Possible values are 0, 1, and 2; no debug information is entered if the value = 0, the most debug info is entered when the value = 2.

Tab	Functions
Appl. "Application Server"	



Open this tab to edit registry values on the "Application Server".



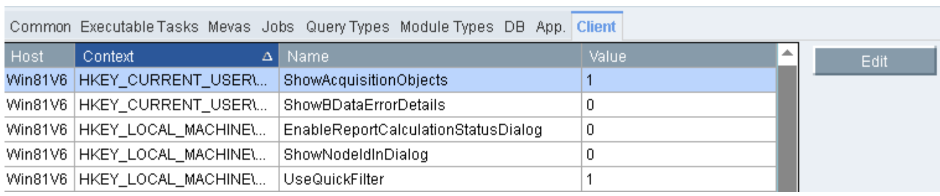


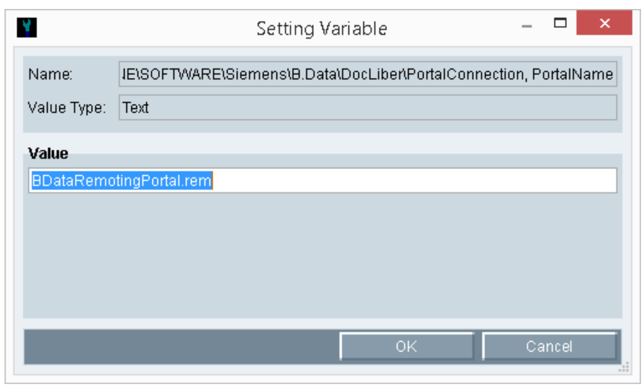
The tab provides corresponding number and text input fields.

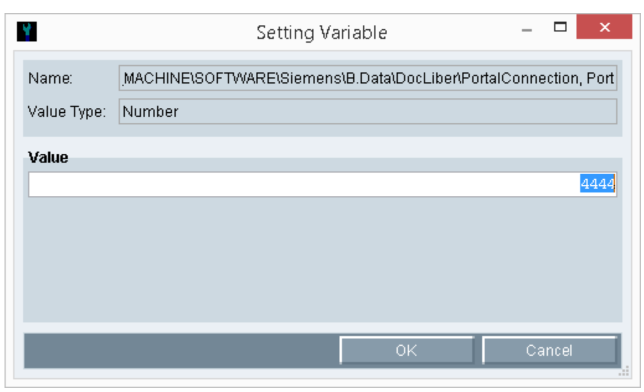
Description of the various options:

Context	Name	Description
SOFTWARE\Siemens\B.Data	Autoprint Cycle	Cycle in seconds for automatic reporting. In this cycle, the function checks whether to calculate or print the reports, or transfer these by email in automatic mode.
SOFTWARE\Siemens\B.Data\ Error Reporter	FileName	File name (including the path) for error reporting on the application server.
SOFTWARE\Siemens\B.Data\ Error Reporter	Trace level	Depth of detail for error reporting. Range of values from 0 to 5. 0: maximum detail depth.

Tab	Functions		
	SOFTWARE\Siemens\B.Data\ Error Reporter	Trace On Off Info	Description of the Trace Level value 0: error reporting is enabled. Maximum scope of error information. 1: error reporting is enabled. 5: error reporting is disabled
	SOFTWARE\Siemens\B.Data\ ExcelReportClient	HostName	Host name of the PC running ExcelReportServer.
	SOFTWARE\Siemens\B.Data\ ExcelReportClient	PortNumber	Communication port of the ExcelReportServer.
	SOFTWARE\Siemens\B.Data\ ExcelReportClient	Timeout	Timeout in milliseconds for communication with the ExcelReportServer.
	SOFTWARE\Siemens\B.Data\ ExcelReportServer	Excel Print Timeout	Wait state interval between two print jobs, initiated upon print job problems.
Appl. "Application Server" (continued)	SOFTWARE\Siemens\B.Data\ ExcelReportServer	Kill Excel	Activation of Excel killer: If = 0: disabled. If = 1: enabled.
	SOFTWARE\Siemens\B.Data\ ExcelReportServer	Max. lines for pretty tables	Limits the number of lines for ExcelReportServer at which the color coding of values is disabled automatically (due to their value status).
	SOFTWARE\Siemens\B.Data\ ExcelReportServer	PortNumber	Port used to communicate with the ExcelReportServer.
	SOFTWARE\Siemens\B.Data\ ExcelReportServer	Set Cell Colors	Specifies whether to enable or disable color coding of the report values based on their value status. 0: disabled. 1: enabled.
	SOFTWARE\Siemens\B.Data\ ExcelReportServer	Show Model	Specifies whether to enable or disable the display of a selected report model in the report header data. 0: Inactive 1: Active
	SOFTWARE\Siemens\B.Data\ Kernel	Startup Delay	Waiting time in milliseconds at the kernel start before the start of program execution of the kernel.
	SOFTWARE\Siemens\B.Data\ Mail	Mail Text	Mail text template for automatic emailing
	SOFTWARE\Siemens\B.Data\ Mail	my email address	Sender address that B.Data enters for automatic transmission.
	SOFTWARE\Siemens\B.Data\ Mail	SMTP server	SMTP Server for automatic transmission of emails.

<table>
<tr><th>Tab</th><th colspan="3">Functions</th></tr>
<tr><td></td><td>SOFTWARE\Siemens\B.Data\
Matrix</td><td>TimestampsAlignLeft</td><td>Defines whether to display a valid range instead of time stamps for matrix value input.
If = 0: disabled; "time stamp", e.g.:
"<code>01.10.2010 03:00:00</code>"
If = 1: enabled; "valid range", e.g.:
"<code>01.10.2010 02:00:00 - 01.10.2010 03:00:00</code>"</td></tr>
<tr><td>Client</td><td colspan="3">


Use this tab to edit registry values on the "Client PC".


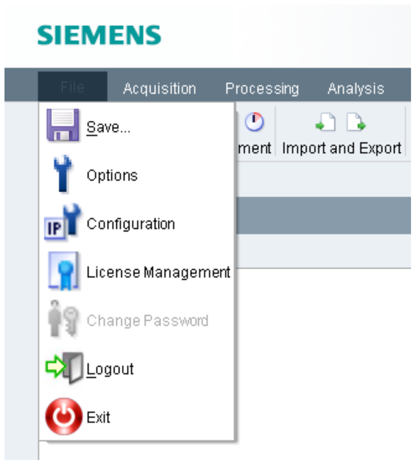


The tab provides corresponding number and text input fields.
Description of the various options:
</td></tr>
<tr><td></td><td>Context</td><td>Name</td><td>Description</td></tr>
<tr><td></td><td>SOFTWARE\Siemens\B.Data\
DocLiber\Logging</td><td>EnableOutputFlags</td><td>Concerns logging: Output flags that will be set.</td></tr>
<tr><td></td><td>SOFTWARE\Siemens\B.Data\
DocLiber\Logging</td><td>Log-
Files_DeleteLogsOlder
ThanDays</td><td>Concerns logging: Maximum time in days of log file availability.</td></tr>
</table>

Tab	Functions		
	SOFTWARE\Siemens\B.Data\DocLiber\Logging	LogFiles_RootPath	Concerns logging: root directory for log files.
	SOFTWARE\Siemens\B.Data\DocLiber\Logging	Log-Files_UntouchableFreeDiscSpaceInMb	Concerns logging: minimum available hard disk space that is not affected by logging actions in log files.
	SOFTWARE\Siemens\B.Data\DocLiber\Logging	SendTraceOut-put2LogFiles	Concerns logging: enable output to log files. If = 0: disabled. If = 1: enabled.
	SOFTWARE\Siemens\B.Data\DocLiber\Logging	SendTraceOut-put2TraceToolViewer	Concerns logging: enable output to TraceToolView. If = 0: disabled. If = 1: enabled. This option requires an installation of TraceToolViewer that is independent on B.Data.
Client (continued)	SOFTWARE\Siemens\B.Data\DocLiber\Logging	SuppressOutputFlags	Concerns logging: output flags that will be cleared.
	SOFTWARE\Siemens\B.Data\DocLiber\PortalConnection	Host	Host name of the Portal computer. **Caution**: Do not modify this value unless you know exactly what your are doing.
	SOFTWARE\Siemens\B.Data\DocLiber\PortalConnection	Port	Port for use by the Portal for client connections. default is 4444. **Caution**: Do not modify this value unless you know exactly what your are doing.
	SOFTWARE\Siemens\B.Data\DocLiber\PortalConnection	PortalName	Portal name. Default is "BDataRemotingPor-tal.rem". **Caution**: Do not modify this value unless you know exactly what your are doing.
	SOFTWARE\Siemens\B.Data\ExcelReportClient	HostName	Host name of the PC running Ex-celReportServer.
	SOFTWARE\Siemens\B.Data\ExcelReportClient	PortNumber	Communication port of the ExcelRe-portServer.
	SOFTWARE\Siemens\B.Data\ExcelReportClient	Timeout	Timeout in milliseconds for communi-cation with the ExcelReportServer.
	SOFTWARE\Siemens\B.Data\Matrix	TimestampsAlignLeft	Defines whether to display a valid range instead of time stamps for matrix value input. 0: disabled; "time stamp", e.g.: "`01.10.2010 03:00:00`" 1: enabled; "valid range", e.g.: "01.10.2010 02:00:00 - 01.10.2010 03:00:00"

Access

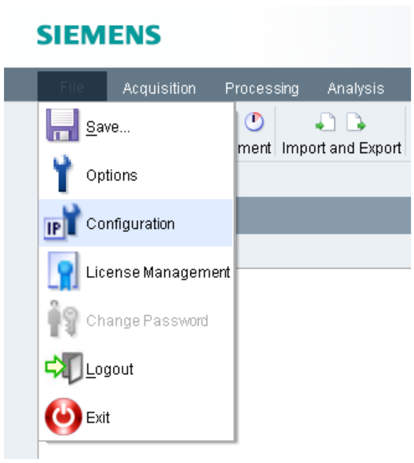
To open "B.Data Options", click the "B.Data Options" button in the menu bar under "File".



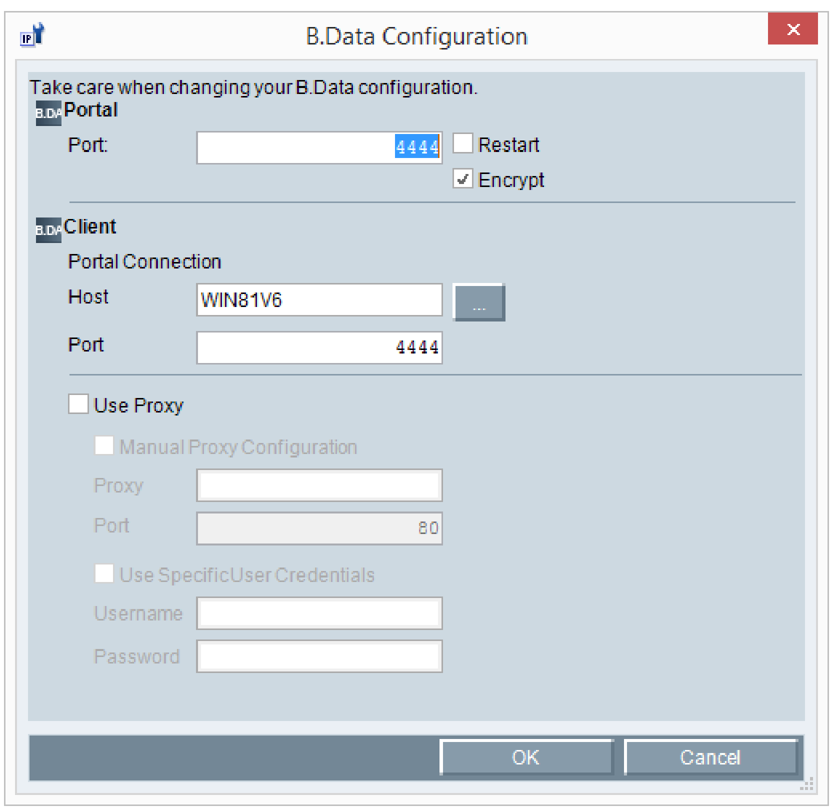
10.5 B.Data Configuration

The "B.Data Configuration" dialog can be used to edit the connection settings of the B.Data Portal.

On completion of B.Data Setup, enter the connection settings once at the beginning of the startup process using the main menu: "File > B.Data Configuration".

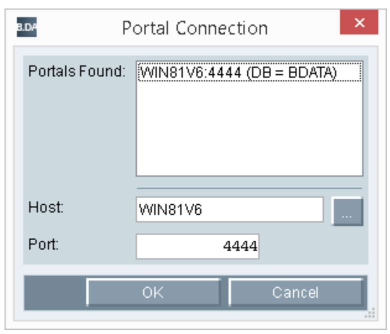


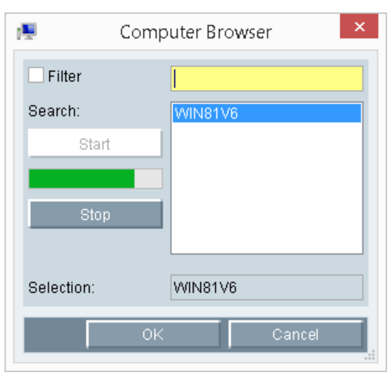
The "B.Data Configuration" dialog cautions you that modified connection settings may have a negative impact on B.Data system functionality. Be careful when making changes!



You can edit the connection settings for the components that have been installed in the corresponding group settings.

Table 10- 2 B.Data Configuration

<table>
<tr><th>Option</th><th>Description</th></tr>
<tr><td>Portal</td><td>Port number at which the B.Data Portal listens.
The currently set port is displayed; default is "4444".
Select the "Restart" option to restart the Portal service with "OK".
Both options are active once only and are disabled again at the next startup.</td></tr>
<tr><td>Client</td><td>Portal connection:
"Computer": Name of the PC/server on which the Portal is running.
"Port": Number of the port of the PC/server port on which the Portal is listening.




"Use proxy": Activates use of a proxy server, through which communication with the portal is established.
"Manual proxy configuration": Activates configuration of a proxy server. Enter its URL and the port. If you do not activate this option, the proxy server that is configured in the operating system will be used.
"Use specific user login information": Activates entry of login data for the proxy server.</td></tr>
</table>

You are always prompted to confirm your changes to connection settings. Your changes will be discarded of you click "No".

10.6 Service Cockpit

10.6.1 Service Cockpit basics

Definition

The Service Cockpit provides you with an overview of the status of the acquisition components that are configured in the system.

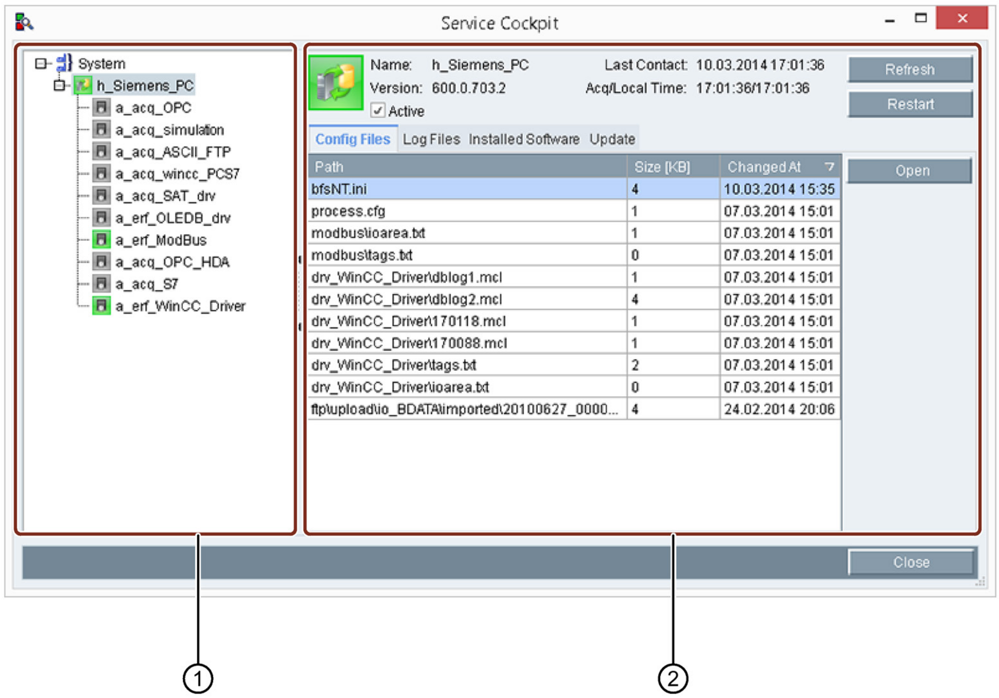
Usage

You can also use the Service Cockpit for the following purposes:

- To obtain an overview of all configured acquisition components.
- To view the log files that log all actions of an acquisition component.
- To determine the status of an acquisition component. To show whether the acquisition component is acquiring data, or whether an error has occurred.
- To control an acquisition component: You can restart the acquisition component if its fails to run.

Layout

The Service Cockpit has the following layout:



① The left window pane lists the acquisition components that are configured in the system.

② The right window pane displays information about the acquisition component or interface selected in ①:

- Name and version of the acquisition component
- Time of last communication between the acquisition component and the B.Data client
- Configuration files
- Log files
- Gap detection during data acquisition

You can also perform a software update of the acquisition component here.

Status color code

The following status color code is valid in the Service Cockpit:

- Green: The acquisition component is acquiring data.
- Red: The acquisition component is interconnected with the system, but is not acquiring data.
- Gray: The acquisition component is not interconnected with the system.

10.6.2 Using the Service Cockpit

Overview

You use the Service Cockpit to manage the available acquisition components and the drivers installed on them.

Requirement

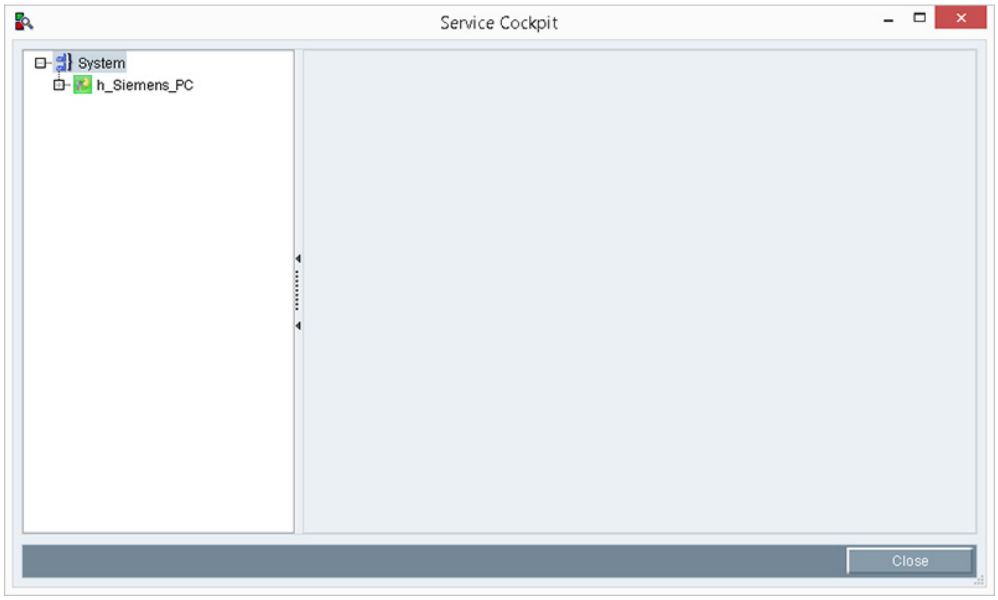
For the software update of the acquisition component:

- The acquisition component is installed on the PC.
- The PC is connected to the B.Data server.

Starting the Service Cockpit

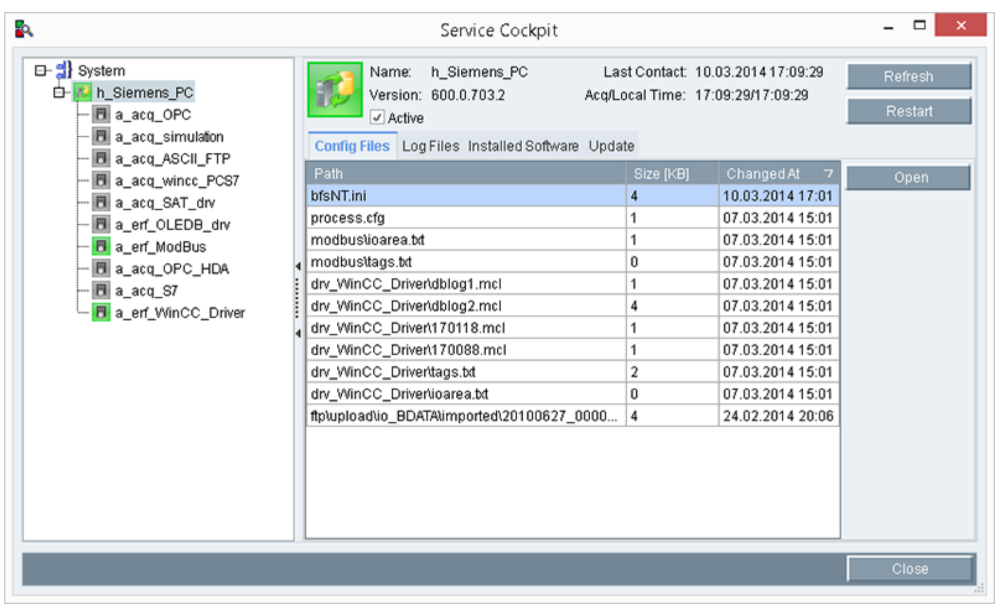
1. Click the "Open Service Cockpit" button in the menu bar under "Administration > Management and Monitoring" to open the Service Cockpit .

   The "Service Cockpit" dialog opens.



2. Select the acquisition component.

   All information about the acquisition component is displayed. If the time information of "Acq/Local Time" deviates by more than five seconds from each other, the time is shown in red.



3. Click the "Update" button to manually update the information about the acquisition component.

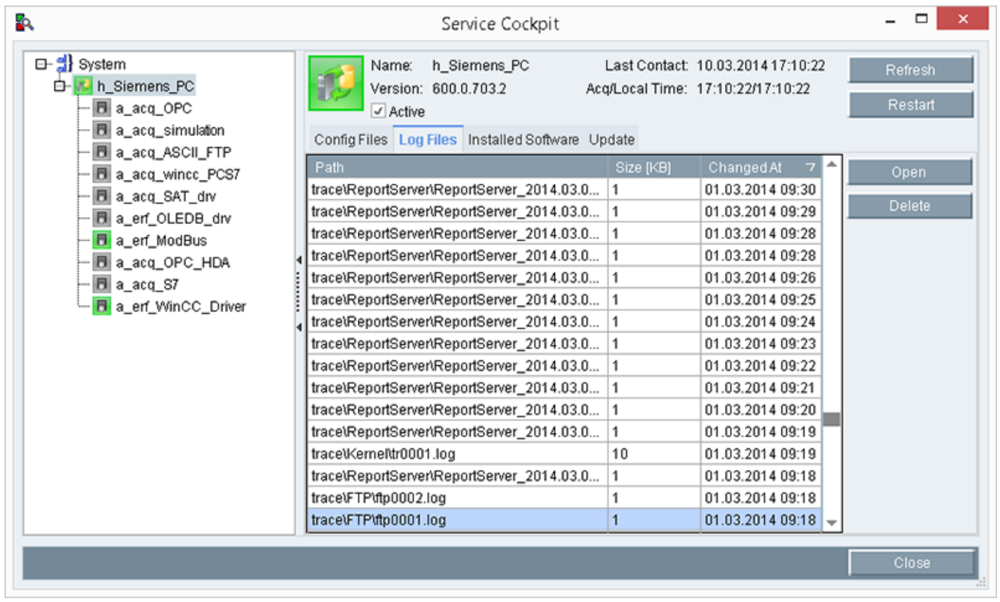
   The information in the Service Cockpit is refreshed automatically at intervals of ten seconds.

4. To restart the acquisition component, click the "Restart" button.
5. To deactivate the acquisition component, activate the "Disabled" option.

Managing log files

1. Select the "Log Files" tab to view the log files.

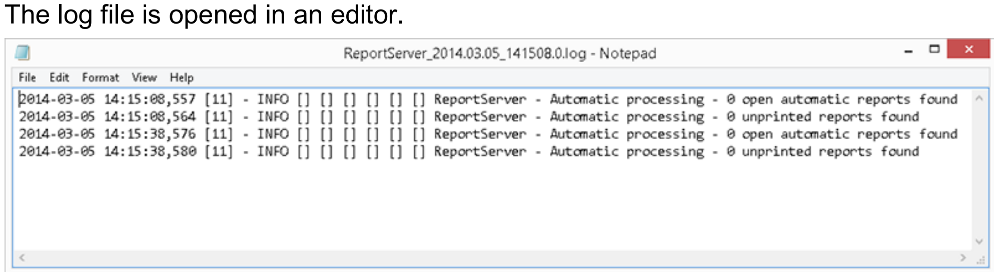
   All log files of the selected acquisition component are displayed.



2. You can open a log file with double-click.

   Alternatively, you can click the "Open" button to open a log file.

   The log file is opened in an editor.



3. You can select a log file and then delete it by clicking the "Delete" button.

Display installed software

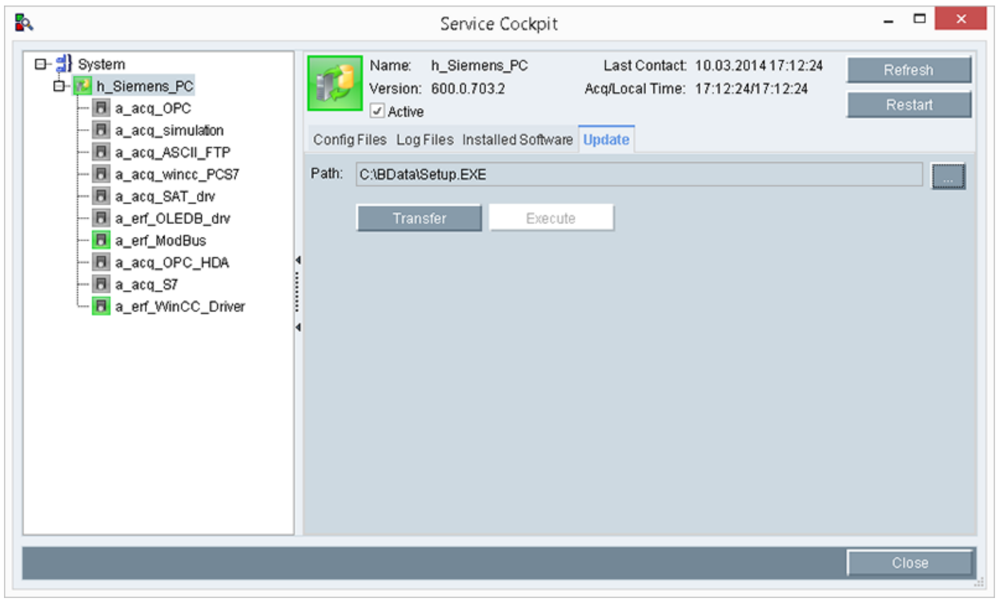
1. Click the "Software" tab to display the software installed on the acquisition component.

Performing a software update

Note

Note that the software update of the acquisition component is only possible if the acquisition component and the B.Data server are installed on different PCs.

1. To perform a software update of the acquisition component, select the "Update" tab.
2. Select the required file "Setup.exe" with the "..." button and confirm your selection.



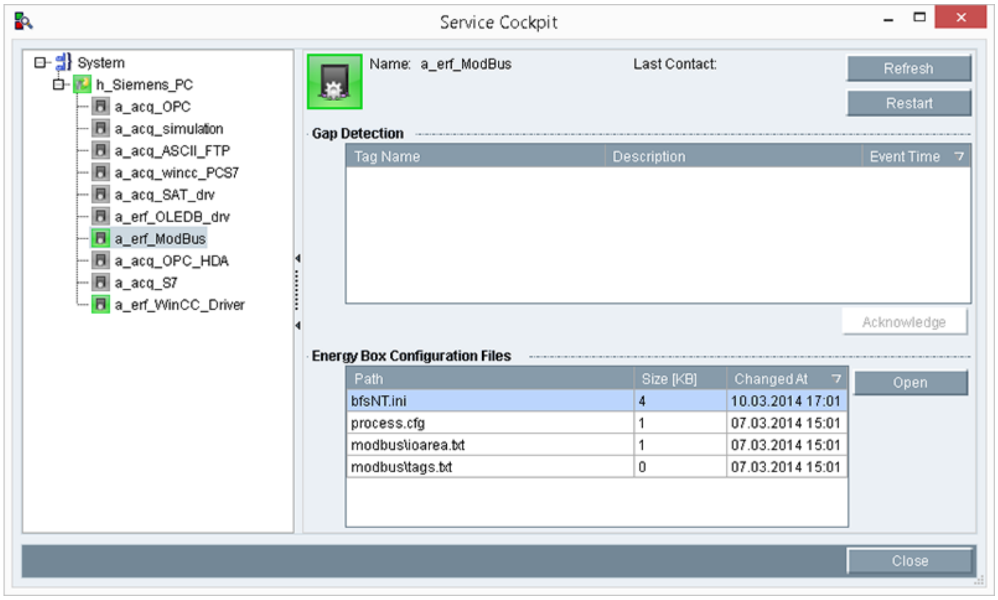
3. Click the "Transfer" button to transfer the selected file to the system.
4. Then click the "Run" button.

   The software update of the acquisition component is performed.

Managing interfaces

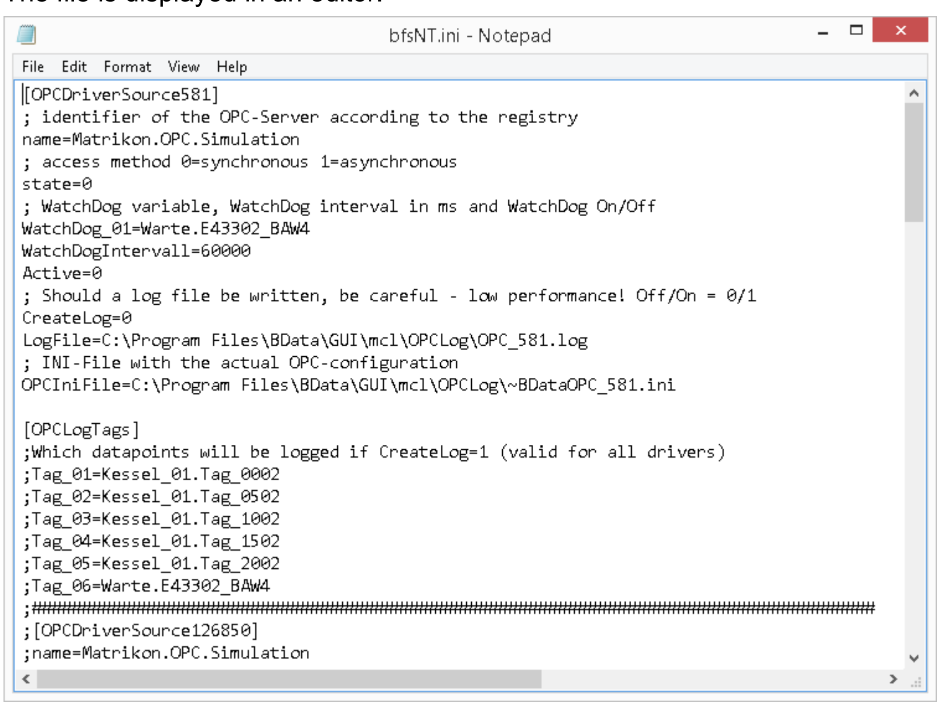
1. Select the required interface in the right-hand window area.

   The information about the interface is displayed, for example, gaps in the data acquisition or configuration files of the acquisition component.



2. If there are gaps in the data acquisition, you can acknowledge these if required.
3. To open a configuration file of the acquisition component, select the required file and click the "Open" button.

   The file is displayed in an editor.



10.7 Task Management

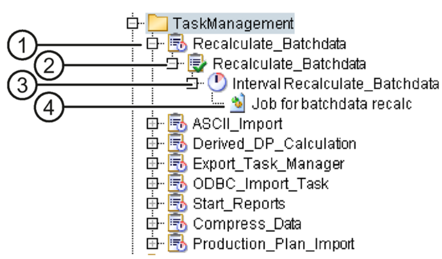
10.7.1 Creating objects for Task Management

Overview

B.Data Task Management is used to perform different actions, e.g. starting reports, importing / exporting data, or initiating calculations.

Configure Task Management in the Plant Explorer. The task also has to be set up on the application server, as tasks are executed by means of the Microsoft Scheduler. You may start a configured task manually from any client.

The system provides a number of predefined tasks. The following section describes the general structure of Task Management.



①	Task Manager serves as grouping object and to define the hardware that is to run a task.
②	The task object contains information on the function to be executed and the schedule.
③	The interval definition becomes necessary as soon as a time frame that is relative to the current time has to be defined.
④	Objects required for the task.

Note

The task is used to execute a *.cmd file that is stored in the "CMD" section of the B.Data installation folder on the application server. For this reason, the task schedule needs to be created on the application server. The user running the task must have corresponding Administrator privileges.

This section provides instructions related to the following actions:

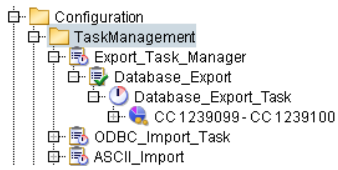
- Creating the Task Manager.
- Creating tasks
- Creating interval definitions
- Existing tasks

Requirement

Successful installation of all software components.

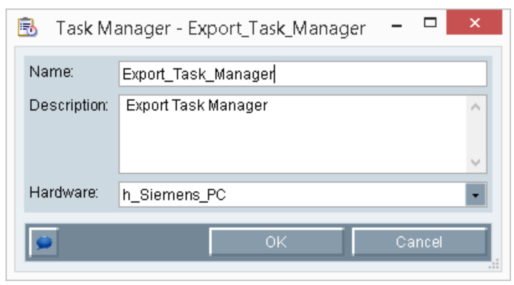
Creating the Task Manager

1. Select the folder under which the Task Manager is going to be created. Save all tasks to this folder to avoid the creation of different tasks with the same content.



2. Click the "Insert Task Manager" button in the menu bar under "Administration > Task Management".

   The "Task Manager" dialog opens.

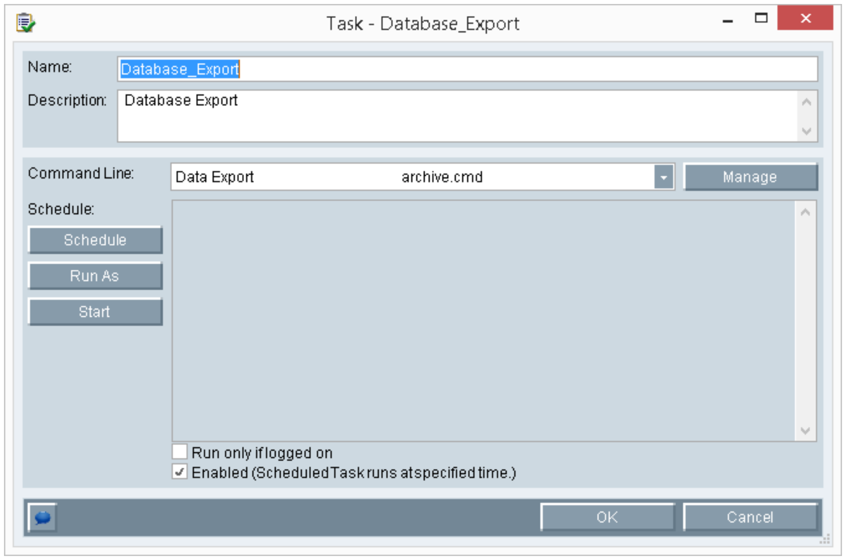


3. Enter a user "name" and an optional "description".
4. Select the PC on which Task Manager is to be set up from the "Hardware" list box.
5. Save the configuration with "OK".

Creating the task

1. Click "Insert Task" in the menu bar under "Administration > Task Management".

   The "Task" dialog opens.



2. Enter the task "name" and an optional "description". The name may not contain special characters.
3. Select the function that the task has to execute from the "Command Line:" list box.

Note

After having changed or updated the command line contents (*.CMD file), you must enter your login information once again.

---

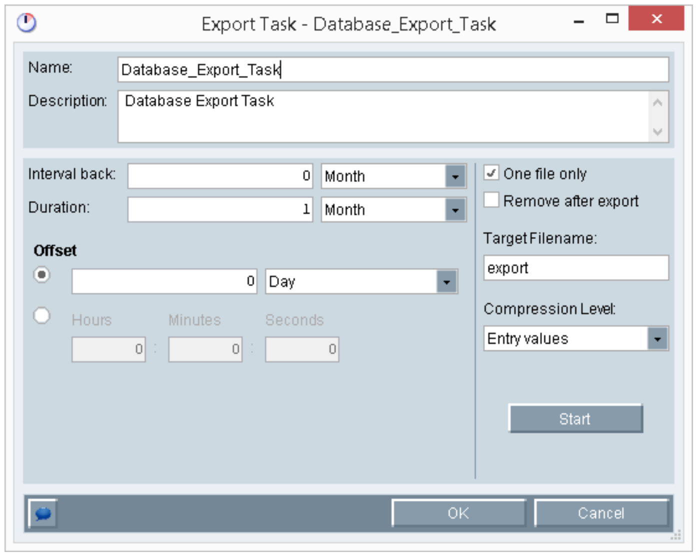
4. If you want to store a schedule that determines the start of the task, proceed as follows:
   – Click "Schedule".
   – Enter your "User name" and "Password" in the "Task Logon" dialog. Click "OK".

     The Microsoft Scheduler opens.
   – Configure the task and then close the input dialog with "OK". For more information on Microsoft Scheduler, refer to the Microsoft Windows online help.
5. Save the configuration with "OK".

Creating the interval definition

1. Click the "Insert Interval Definition" button in the menu bar under "Administration > Task Management".

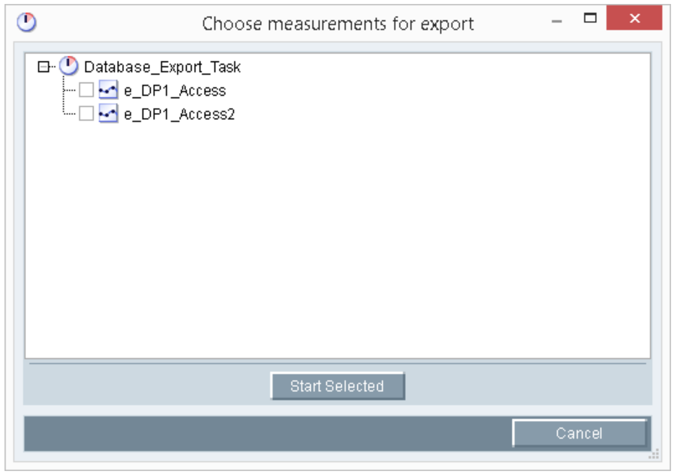
   The "Export Task" dialog opens.



2. Enter a "Name" and an optional "Description" for the interval definition.
3. Define the time window in the "Interval back:", "Duration:", and "Offset:" fields. The time window contents are always relative to the current time.
4. To export all data points to a single file, select the "One file only" check box and enter the "Target Filename". However, be aware of the fact that the size of the import file is limited to 5000 lines.

   A separate file is generated for each data point if this option is not activated.
5. Select the "Remove after export" check box to delete the files from the database on completion of the export.

6. Click "Start" to export only selected data points.
   – Select the data points to export and then click "Start selected".



7. Save the configuration with "OK".

Example

Example: Configuration of the example above

Let us assume that the task is going to be launched on January 17, 2008 at 13:57

Truncate with "Month" 01/01/2008 00:00

Interval back (6) 07/01/2007 00:00

Offset (no offset) 07/01/2007 00:00

Duration (1 day) 07/01/2007 00:00 - 07/02/2007 00:00

The interval from 07/01/07 00:00 to 07/02/07 00:00 is now defined in the example.

See also

Functions for Task Management (Page 612)

10.8 Countries

10.8.1 Basics of "Country" object type

With the "Country" object, you can map a country, a region or a federal state, for example. You can structure objects of the type "Country" hierarchically and in this way map countries with their federal states, for example:

This option is required if, for example, the individual federal states of a country have different public holidays or different time zones. Accordingly, you can store the following country-specific information in the "Country" object:

- Holidays
- Time zone

"Holidays" application

The information about holidays is required when working with objects of the "Profile" type. Here you can define the use of a typical holiday.

You can enter the holidays manually in the "Country" object or import them from a "*.HOL" type file, e.g. from Microsoft Outlook.

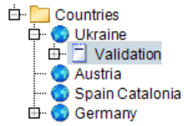
"Time zone" application

The information about time zones is required if, for example, a company has its locations in various countries with different time zones.

The data is acquired in the local time of the time zone. The information of the acquisition time zone is not used until evaluation for correct calculation of the data.

Recommendation for the structure in Plant Explorer

You can also use the object "Country" to organize the structure effectively in the project tree of Plant Explorer. If, for example, you have created a report for a specific country, attach the report below the country. This provides you with an overview of the existing reports and the corresponding countries.



10.8.2 Creating a "Country" object

Overview

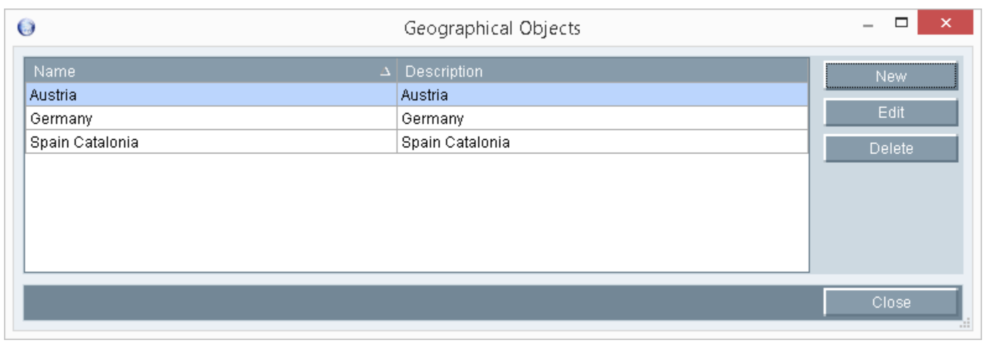
The following countries and their holidays are already defined in B.Data:

- Germany
- Austria
- Spain, Catalonia

Creating a country

1. Click the "Open Countries" button in the menu bar under "Administration > Geography".

   The "Geography Objects" dialog opens.

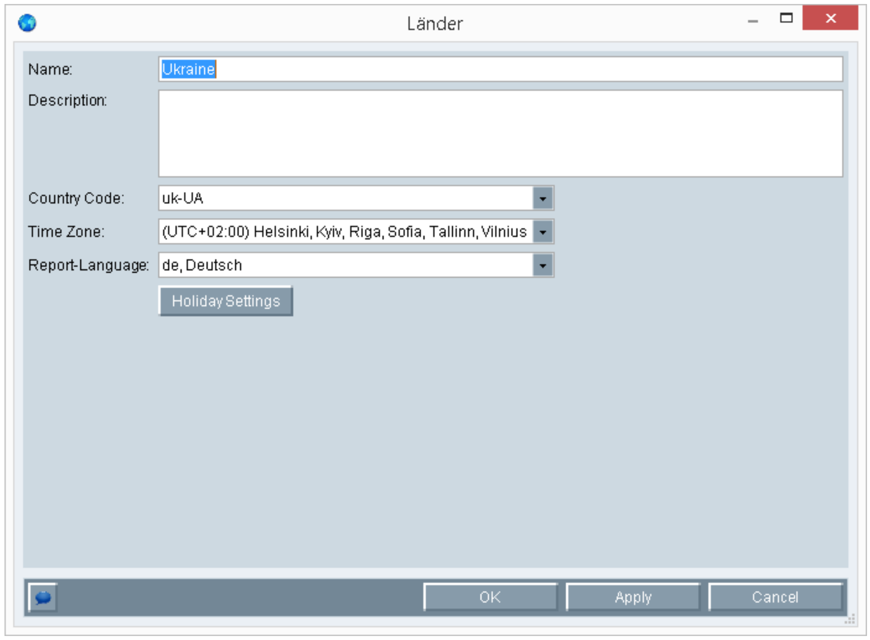
   

2. To edit or delete an existing country, click the corresponding button.
3. Click the "New" button to create a new country.

   The "Countries" dialog opens.
4. Enter a name and an optional description for the country.
5. Select the corresponding country code if necessary.
6. Select the corresponding time zone.

7. Select the required language for reports.

   English and German are supported.



8. To edit holidays for the country created, click the "Holidays" button.

   The dialog for editing holidays opens.

Editing holidays

1. Click "New" to create a new holiday.

   The "Holiday" dialog opens.

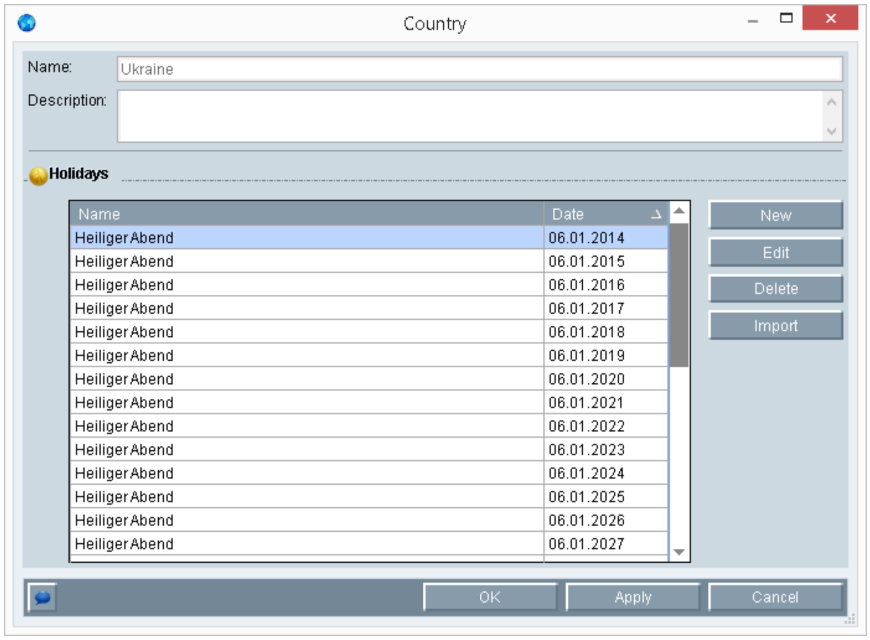
2. Enter a name and an optional description for the holiday.

3. Select the corresponding date.

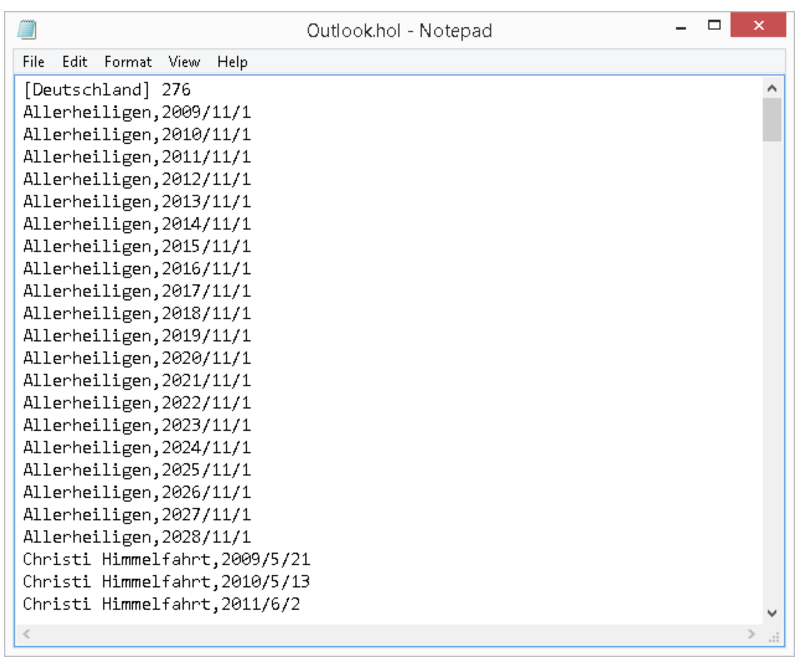
   Click "Every year" if the holiday is at the same date every year.

4. Confirm your entries.

   The holiday is created.



5. To import holidays from a HOL file, click "Import" and select the required file, e.g. "Outlook.hol":



See also

Assign time zone for acquisition or calculation (Page 405)

10.8.3 Assign time zone for acquisition or calculation

Overview

You can specify the time zone of a country for the following objects:

- Report
- Hardware
- Data point

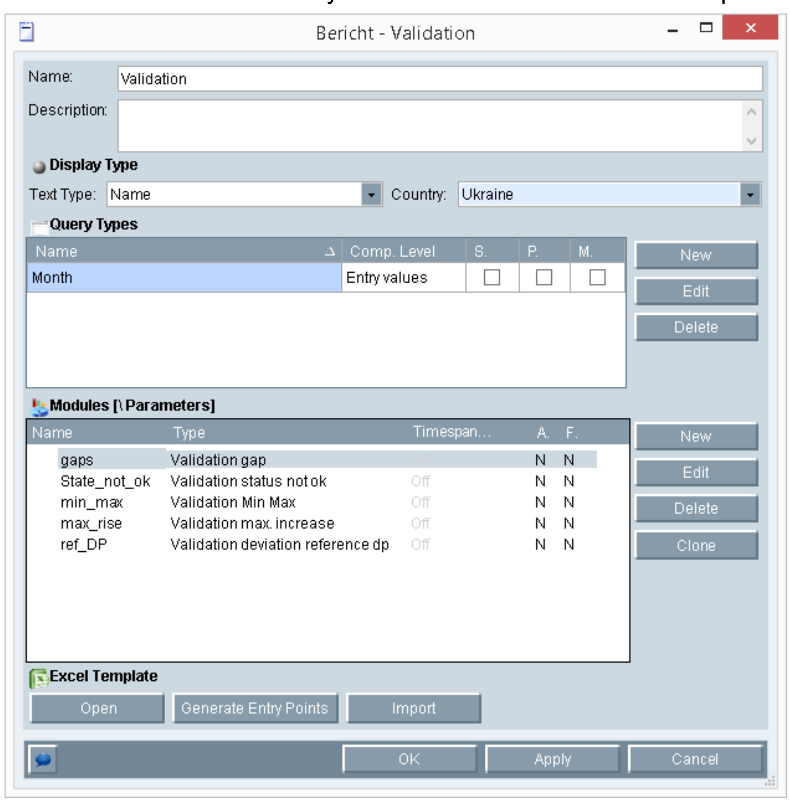
Requirement

A country is configured with its time zone.

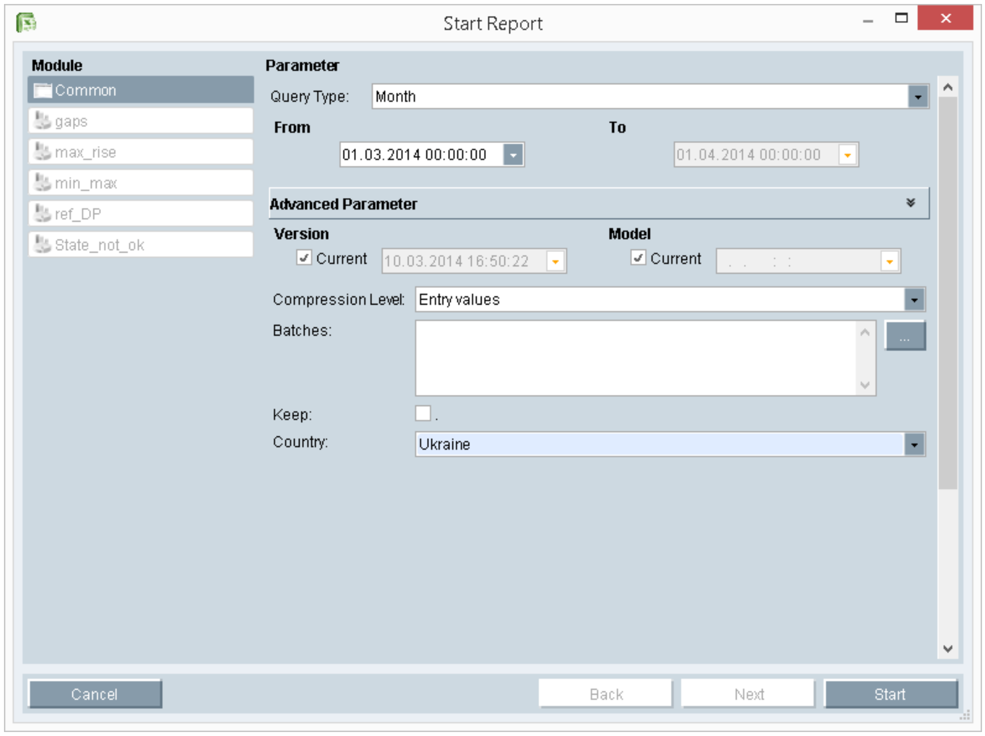
Assigning time zones for reports

1. To assign the configured time zone of a country for a report, select the required country in the "Report" dialog.

   The local time of the country is used in the calculation of a report.

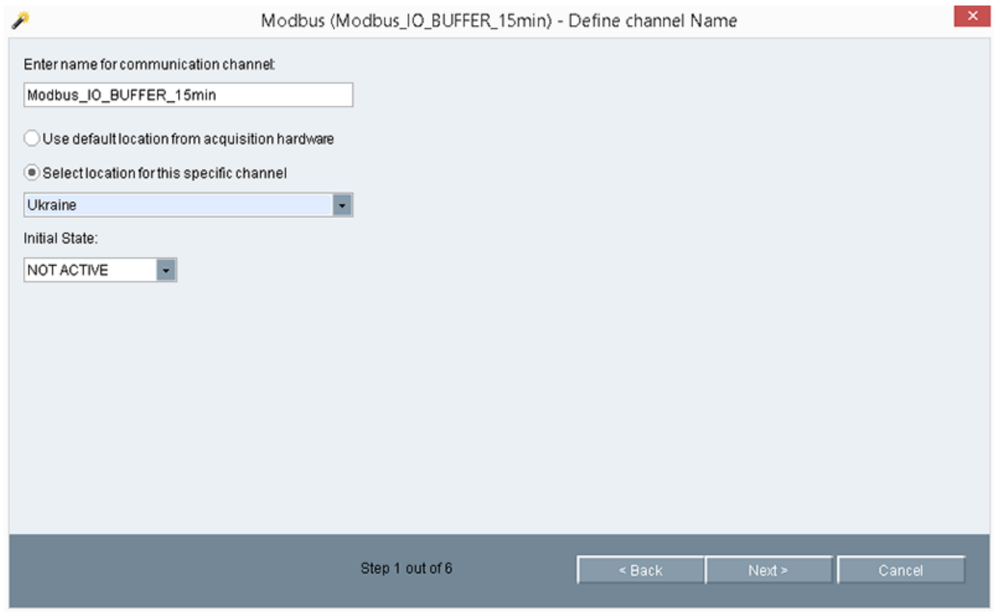


2. Alternatively, you can change the set time zone in the "Start Report" dialog.



Assigning time zones for hardware configuration

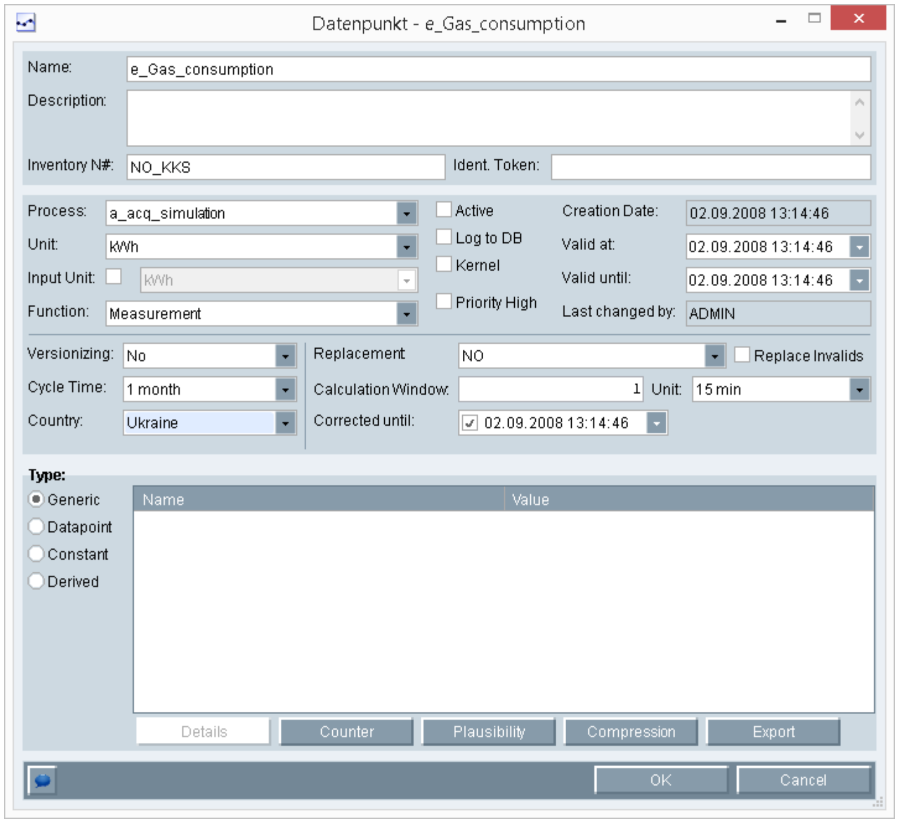
1. To assign the configured time zone for an acquisition, activate the "Select location for this specific channel" option in the wizard in the "Define Channel Name" dialog, and select the required country.



The time stamp is corrected to the specified time zone.

Assigning time zones for data points

1. To assign the configured time zone for data points, select the required country in the "Data Point" dialog.



See also

Creating a report (Page 193)

Generating reports (Page 215)

Creating generic data point (Page 129)

Creating data points (Page 132)

Creating constants (Page 135)

Creating derived data points (Page 138)

Acquisition wizard for interface configuration (Page 55)

10.9 Exporting and importing data

10.9.1 Basic principles of export and import

Overview

You can export your configuration data in XML format in B.Data and import them again. Use the "Import / Export" option, for example, to back up your configuration data.

Conflict test during import

The objects to be imported are compared with the objects in B.Data based on name and type during import. If an object already exists, you are prompted to make a selection: You can either keep the object or overwrite it.

Note

You cannot undo the data import

Overwriting of objects during import can result in inconsistent data or evaluation errors due to changed values.

Prepare the import process carefully. Check if there are conflicts with existing data prior to the import. Note the following recommendations:

- Divide a comprehensive data export into several steps.
- If possible, export only data you have created yourself.

10.9.2 Exporting data

Export options

You can export the following structures from B.Data:

- Complete folder structure

  The selected object is exported with all child objects.
- Single object

  Only the selected object is exported. Child objects are not exported.

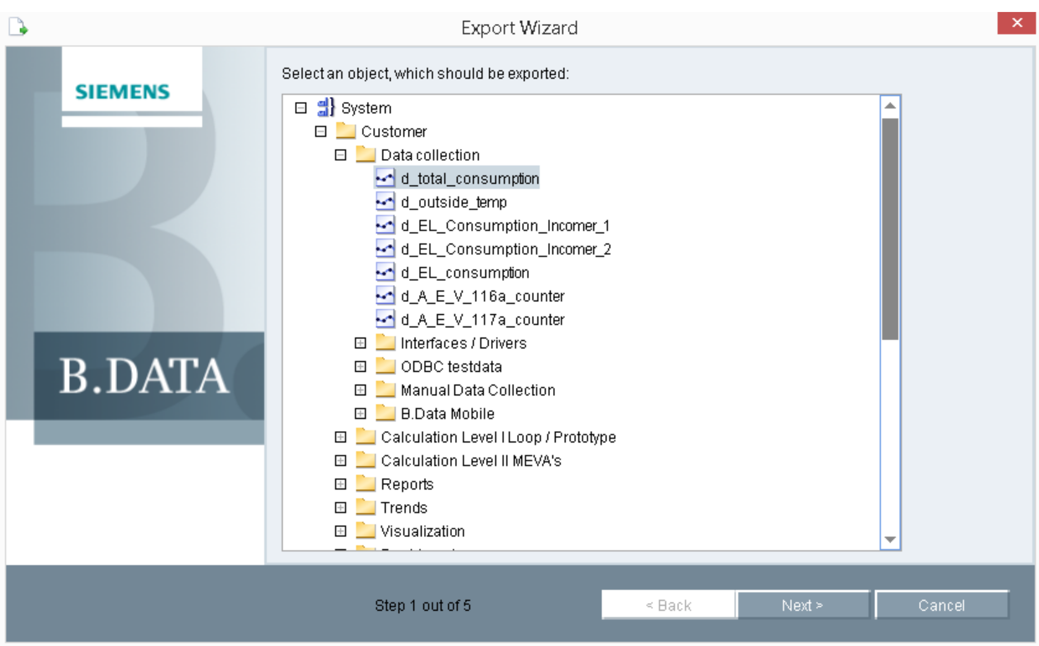
Note

Objects with an ID of less than 5000 are master data of B.Data. If this data is included in the export, the existing master data is updated during the import.

Procedure

1. Click the "Export" button in the menu bar under "Administration > Import and Export".

   The "Export Wizard" dialog opens.
2. Select the object you want to export.



3. Select the required export option.

4. Select the directory in which the export files are to be stored.

   The data is exported from B.Data. Two files are created during the export:

   – "Nodes.xml" with the exported data
   – "logdoc.txt" with detailed information on the export
5. Click "Finish".

Result

The data export is complete.

10.9.3 Importing data

Import options

You can import the following structures from B.Data:

- Complete folder structure that is saved in the XML file.
- Complete folder structure of the selected object
- Single object

Requirement

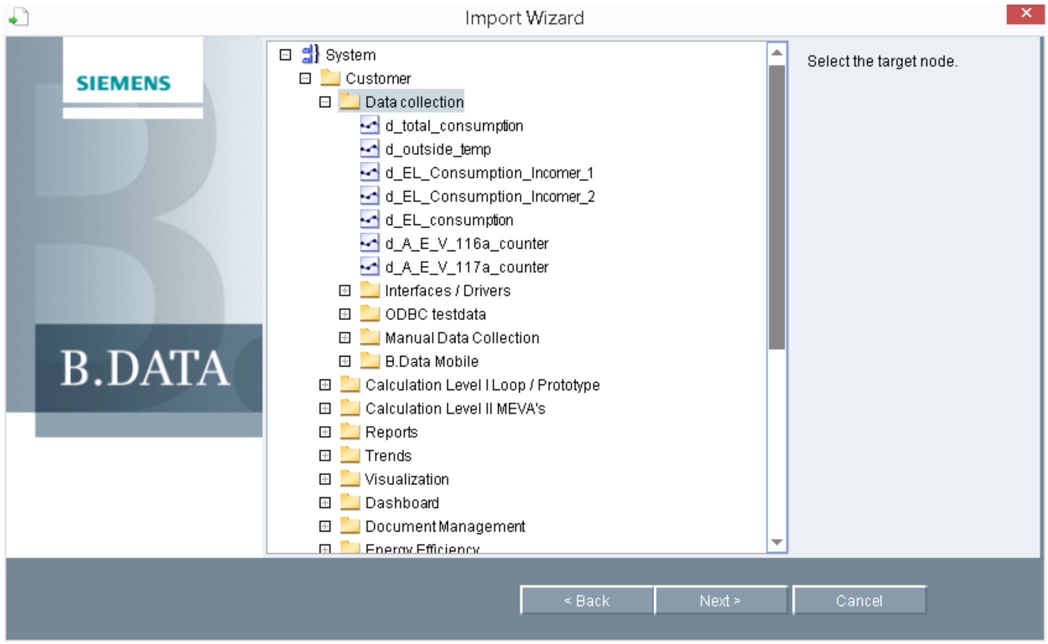
The export data is stored in the file system.

Procedure

1. Click the "Import" button in the menu bar under "Administration > Import and Export".

   The "Import Wizard" dialog opens.
2. Enter the folder in which the XML file you wish to import is located.
3. Select the required import option.

4. Select the folder in which the import data is to be stored.



The import process is started. The objects to be imported are compared with the existing objects in B.Data. If objects with identical names and types already exist in B.Data, you are prompted to make a selection for each object:

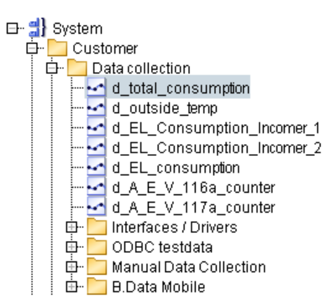
– Select for each object if the existing object is to be overwritten or kept.

The import is executed once this conflict check is complete.

5. To close the wizard, click "Exit".

Result

The import data is stored in the specified folder in Plant Explorer.



Using B.Data Web 11

11.1 Basics

11.1.1 Basic information on B.Data Web

Overview

B.Data Web is a browser-based user interface for the SIMATIC B.Data energy management system. B.Data Web is used to access B.Data via the Internet/Intranet.

The administrator configures the data you may access in B.Data .

Note

Installation of B.Data Web

You can find information on the installation of B.Data Web in the installation manual "B.Data V6.0 - Installation", section "Setting up B.Data Web ".

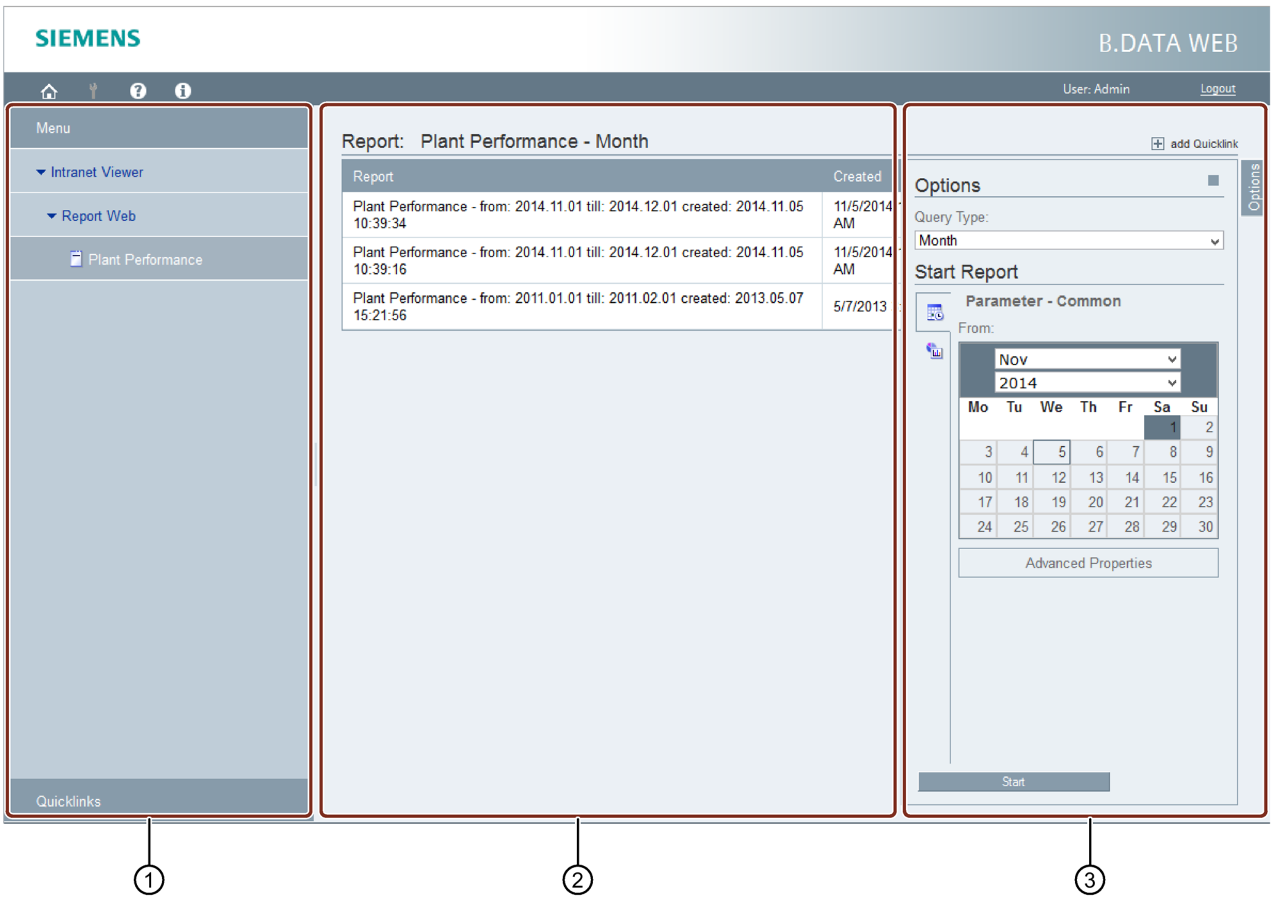
Login and logout

In order to work with B.Data Web, you need a user name, a password associated with it, and rights to the data that you want to view.

For security reasons, a user is automatically logged out after a period of inactivity. The duration of inactivity is configurable.

User interface of B.Data Web

The following figure shows the user interface of B.Data Web:



① Navigation area

In the navigation area, select the objects you want to view or edit. Use the menu or Quicklinks to navigate. The navigation options available depend on your user rights.

② Detail area

In the detail area, objects such as reports or trends are displayed. Which objects are displayed depends on the selection in ① and the query type that is selected in ③.

③ "Options" tab

Use the "Options" tab to select the query type and time range for objects such as reports or trends. The content of this tab depends on the object type that is selected in ①. By default, query type and time range are available. In addition, the generation of trends or reports can be initiated on this tab.

If you do not need this tab, hide it.

Tasks in B.Data Web

Use B.Data Web to handle the following tasks:

- Viewing reports and generating new reports
- Viewing trends and generating new trends
- Viewing visualizations
- Editing values in matrices
- Opening documents and uploading new documents in B.Data
- Viewing and editing energy efficiency measures
- Viewing dashboards

See also

Configuring authorizations (Page 93)

Working with reports in B.Data Web (Page 422)

Working with trends in B.Data Web (Page 427)

Working with visualizations in B.Data Web (Page 430)

Working with matrixes in B.Data Web (Page 433)

Using document management in B.Data Web (Page 436)

Working with energy efficiency measures in B.Data Web (Page 438)

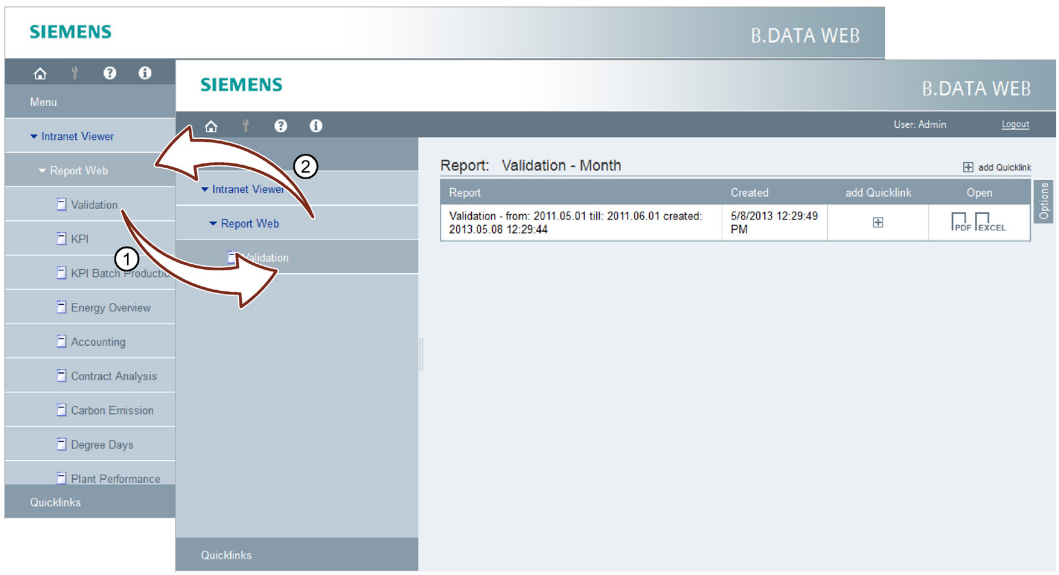
Working with dashboards in B.Data Web (Page 440)

11.1.2 Navigation in B.Data Web

Navigation via the menu

All objects enabled for B.Data Web are arranged according to the breadcrumb path method in the "Menu" area.

The resulting figure shows the navigation principle in the menu:



① When a menu command is selected, its content is displayed in the right pane (in this example "Plant Performance").

All remaining menu commands on the same level are hidden.

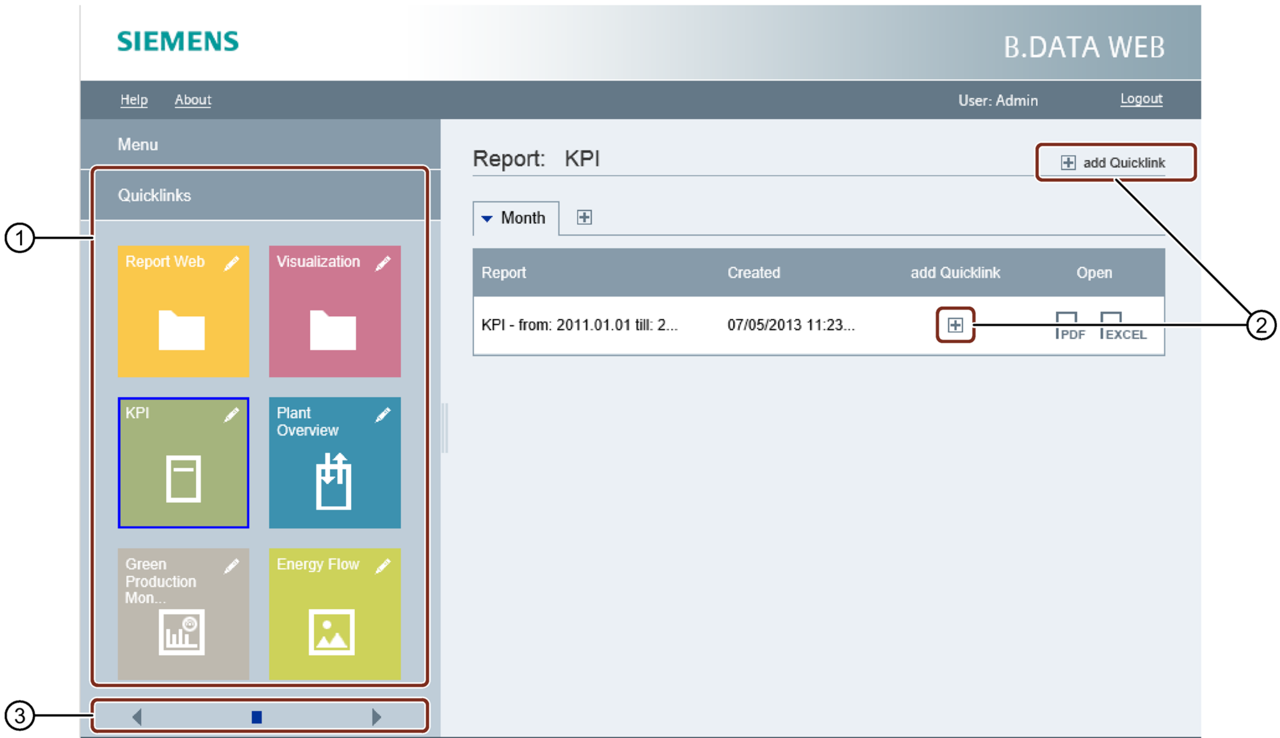
② You go back to the previous display by clicking on the parent menu command (in this example "Report Web") .

Navigation via Quicklinks

Quicklinks work like bookmarks in Internet browsers. Quicklinks give you quick access to required objects. They are stored as tiles in the "Quicklinks" area.

You can specify a Quicklink as the homepage in B.Data Web. The content of the object to which the Quicklink refers is then displayed upon the next login.

Your personal Quicklink settings are stored and linked to your user account. This means that your Quicklink settings are available on other PCs.



① Quicklinks

Design and name are copied by default from the object to which the Quicklink refers. You can edit the Quicklink by clicking the "PencilTool" icon. You can change the order of the Quicklinks using drag-and-drop.

② Create a new Quicklink for a selected object

③ Scroll through the Quicklink list

Scroll through the Quicklink list using the "<" and ">" buttons. The points show the number of pages in the Quicklink list.

See also

Configuring authorizations (Page 93)

Create Quicklinks (Page 446)

Edit Quicklinks (Page 449)

11.2 Working with B.Data Web

11.2.1 Logging on to the B.Data Web

Overview

You can open the start page of B.Data Web with the following URL:

- http://<B.Data Web Server>/BDataWeb

Contact your administrator to obtain the address or name of the B.Data Web server.

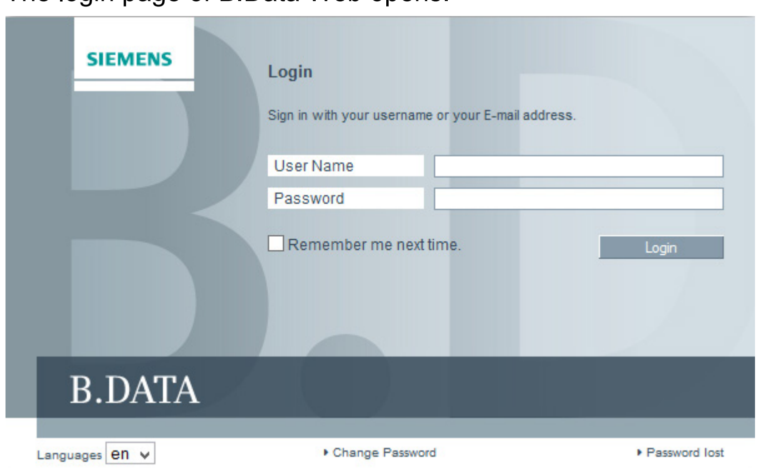
B.Data Web supports secure communication with B.Data Web-Server via HTTPS. Your administrator can provide you with all information needed to use HTTPS communication.

For more information on this topic, refer to the "B.Data V6.0 - Installation" manual, section "Setting up B.Data Web".

Procedure

1. Start an Internet-Browser and enter the appropriate URL .

   The login page of B.Data Web opens.



2. If necessary, select the language you wish to use. The following languages are available:
   - German
   - English
3. If you want to change your password, click "Change password".
4. If you want to generate a temporary password, click "Forgot password".
5. Type in the user name and password.

   To do this, use your login information for B.Data.

6. Activate the "Remember user name" check box to save the login data for the next authentication.
7. Click "Login".

Result

You are now logged in to B.Data Web .

Changing passwords

You can change your B.Data password in the login dialog. In order to change it, you need your old password or a temporary password.

Note

You will be separately notified via email regarding a password change. If you have received such an email, without having changed your password, this can indicate a hacked user account. Please contact your administrator in this case.

Forgot password

If you have forgotten your password, you can have a temporary password generated. The temporary password will be sent by email to the email address that is stored in your B.Data user account.

If you have received the email with the temporary password, click "Change password" in the login dialog.

See also

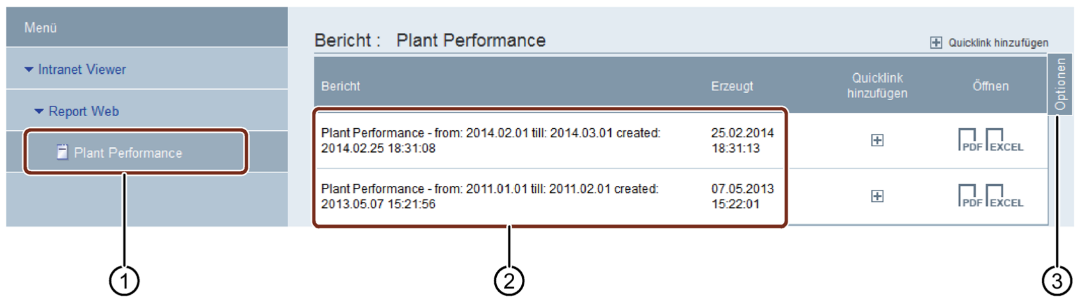
Basic information on B.Data Web (Page 415)

11.2.2 Working with reports in B.Data Web

Overview

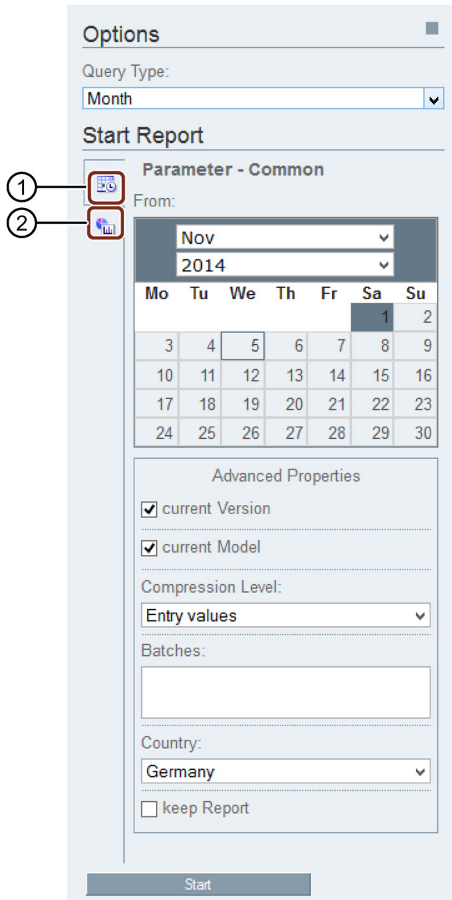
B.Data Web shows you the reports you configured in B.Data . You can also generate new reports in B.Data Web .

The structure of a report in B.Data Web consists of the following objects:



① Report
② Report results
③ "Options" tab

The figure below shows the "Options" tab for a report:



① In this area, depending on the time range, you configure the query type and as needed additional settings, such as the use of a different calculation model.

② If the report contains configurable modules, each of these modules is displayed as a separate area.

Report creation is based on the configuration for automatic reporting.

Requirement

- The report is created in B.Data .
- The report has been released for the current Web application.
- Microsoft Excel and PDF-Reader are installed on the PC.

Generating reports in B.Data Web

1. To generate the report in B.Data Web , select the desired report and then click the "Options" tab in the right window pane.

   The "Options - Start report" dialog opens.
2. In the "Options" area, select a query type for the report.
3. Under "Start report - General parameters", specify the time range for the report.
4. Click "Advanced settings" to set the additional parameters for report generation.
5. In order to change the starting parameters for the modules that are used, select the desired module on the left, and change the starting parameters as desired.
6. Click "Start".

   The report is generated.

   You can display or open the report.

Specifying additional parameters for the report (optional)

1. Click "Options" in the " Advanced Settings" dialog.

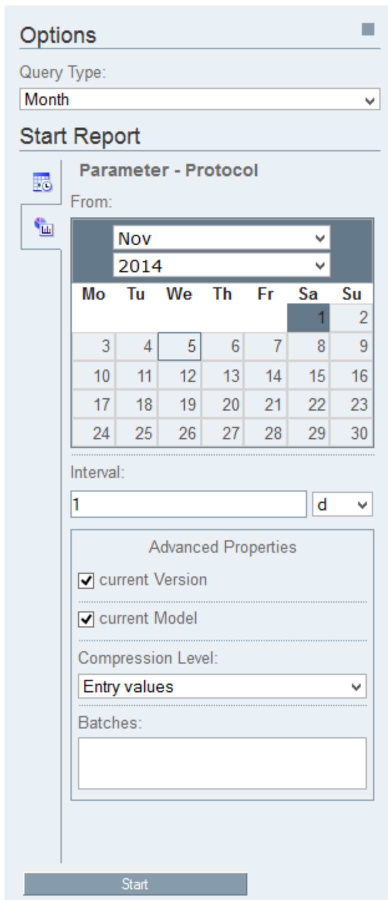
   The advanced settings are displayed.
2. Disable "Current version" and select a date to define the measured value version for evaluation.
   All measured values generated prior to this date are evaluated.

   The current date is activated by default.
3. Deactivate "Current model" and select a model date to define a calculation model for evaluation of the report.
   The report is evaluated by default based on the current calculation model.
4. Select the compression level in a report to evaluate the compression level values.
5. If necessary, select the required batch under "Batches".
6. Under "Country", select the desired country.
7. You can exclude the report from cyclic delete actions by activating "Retain report" option.
   If you do not activate "Retain report", the delete job for evaluations will be performed later.

Editing module start parameters (optional)

1. Select the tab for the desired module.
2. Specify the query type and time range if you have activated the "Query interval at start" option in the module configuration.
3. You can always edit the interval, as well as the high and low limit of configured module start parameters.

   The start parameters are derived from the module configuration.



Displaying or opening a report in B.Data Web

1. To display the report as a preview in PDF format in B.Data Web , click the report result.

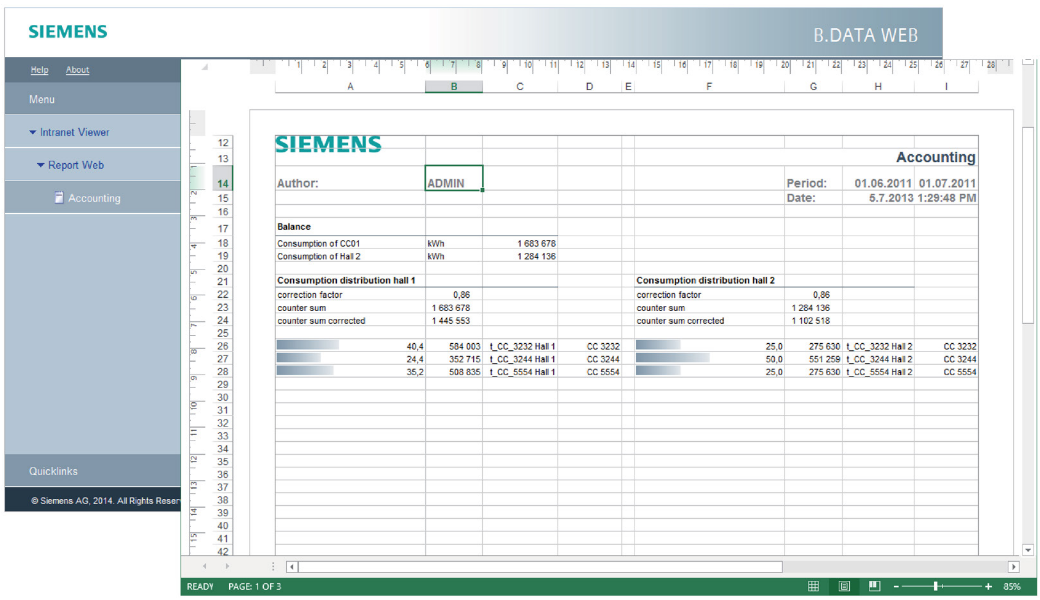
   The report is displayed in the detail area.

2. To open the report in PDF format, click the "PDF" icon in the row with the report result.

   The report is displayed in Acrobat Reader .

3. To open the report in Microsoft Excel , click the "EXCEL" icon in the row with the report result.

   The report is displayed in Microsoft Excel .



Note

If you change the result of the report, these changes are **not** saved in B.Data.

See also

Creating a report (Page 191)

Configuring authorizations (Page 93)

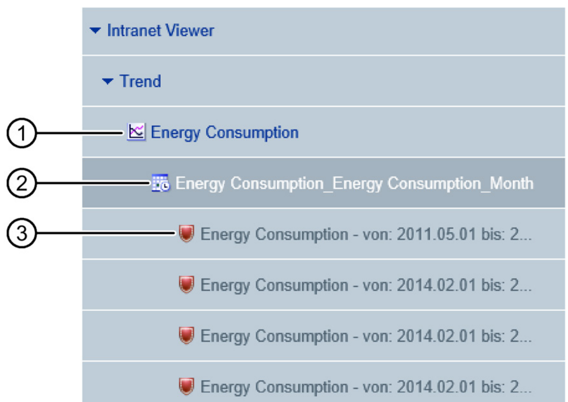
Navigation in B.Data Web (Page 418)

11.2.3 Working with trends in B.Data Web

Overview

B.Data Web shows you the trends you configured in B.Data . You can also generate new trends in B.Data Web .

The structure of a trend in B.Data Web consists of the following objects:



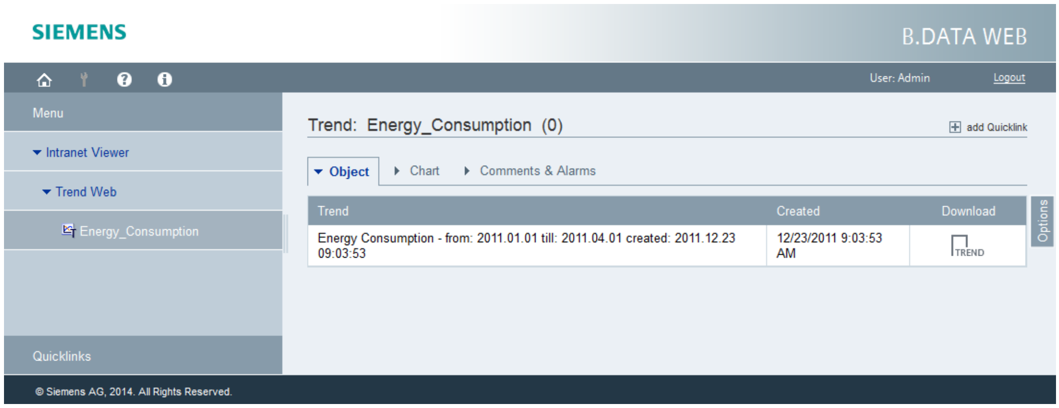
① Trend
② Query type of the trend
③ Result of the trend

Requirement

- The trend is created in B.Data .
- The trend has been released for the current Web application.

Generating trends

1. To generate a trend in B.Data Web , select the required trend in the "Menu" area and click the "Options" tab in the right window pane.



   The "Options" dialog will appear.

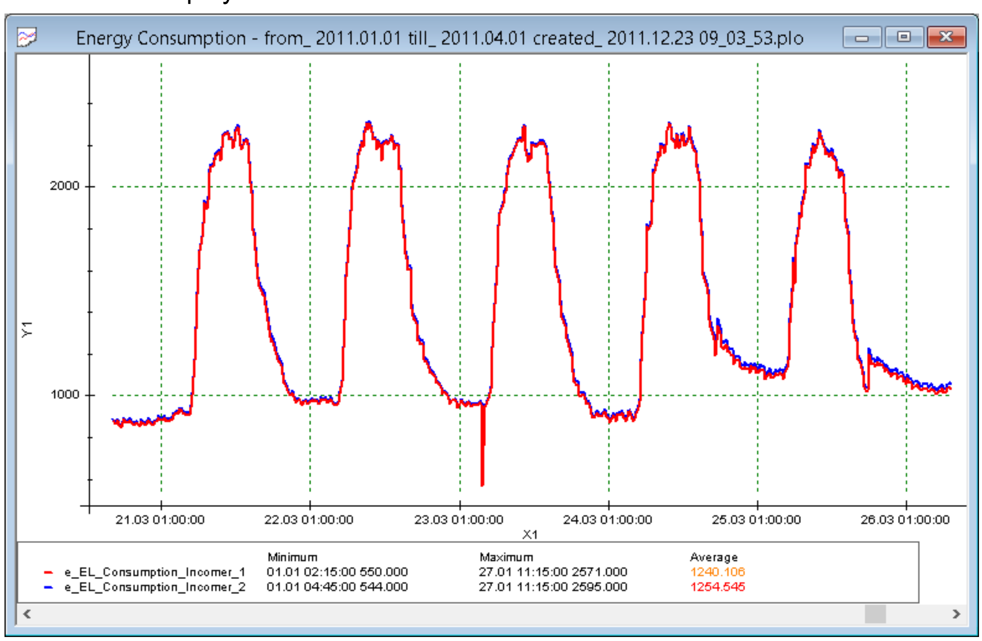
2. Select a query type and a time range.
3. Generate the trend with "Start".
4. To install the Trender on the PC, click on "Download Trender program".

5. To open the trend, select the trend result in the "Menu" area and then click "Open" in the right window pane.

The dialog for opening the trend opens.

6. Click "OK".

The trend is displayed in the Trender.



Note

If you change the result of the trend, these changes are **not** saved in B.Data.

Using the Quick Chart

You can display the values of a trend in the Quick Chart. To do this, select the required trend in the "Menu" area and click on the "Diagram" tab click in the right window pane.

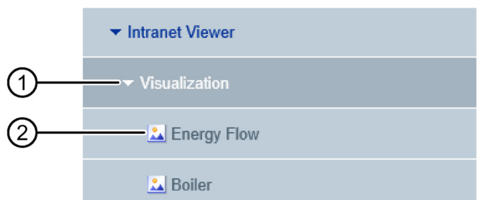
You can find additional information on this topic in the "Using the Quick Chart" section.

11.2.4 Working with visualizations in B.Data Web

Overview

B.Data Web shows you the visualizations you configured in B.Data .

The structure of visualization in B.Data Web consists of the following objects:



① Visualization

② Data point of the visualization

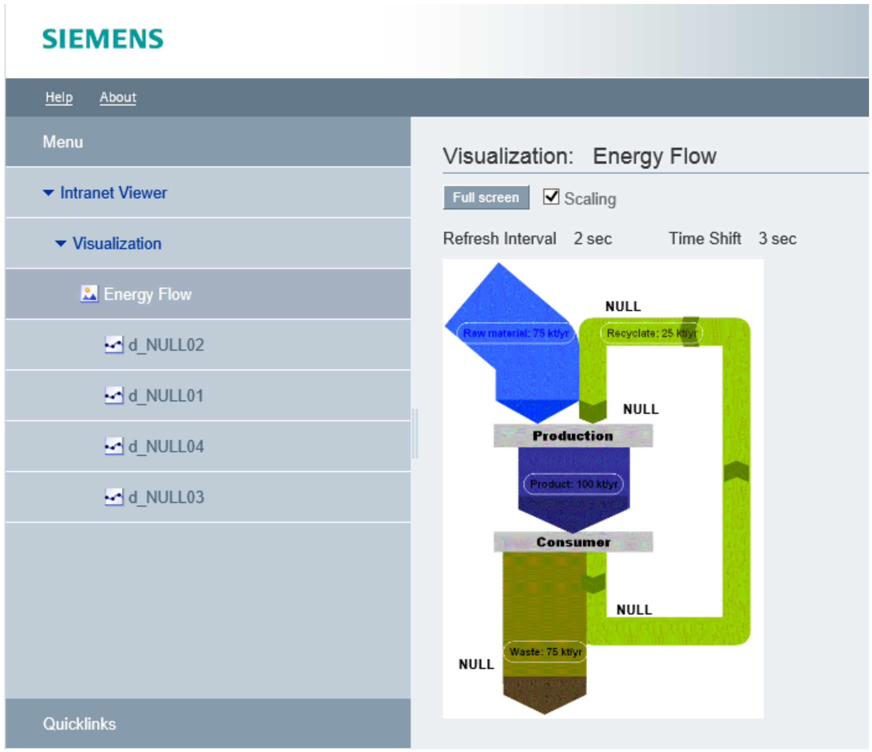
Requirement

- You have created the visualization in B.Data .
- The visualization has been released for the current Web application.

Open the visualization

1. To open the visualization in B.Data Web, select the visualization in the "Menu" area.

   The visualization is displayed in the right window pane.



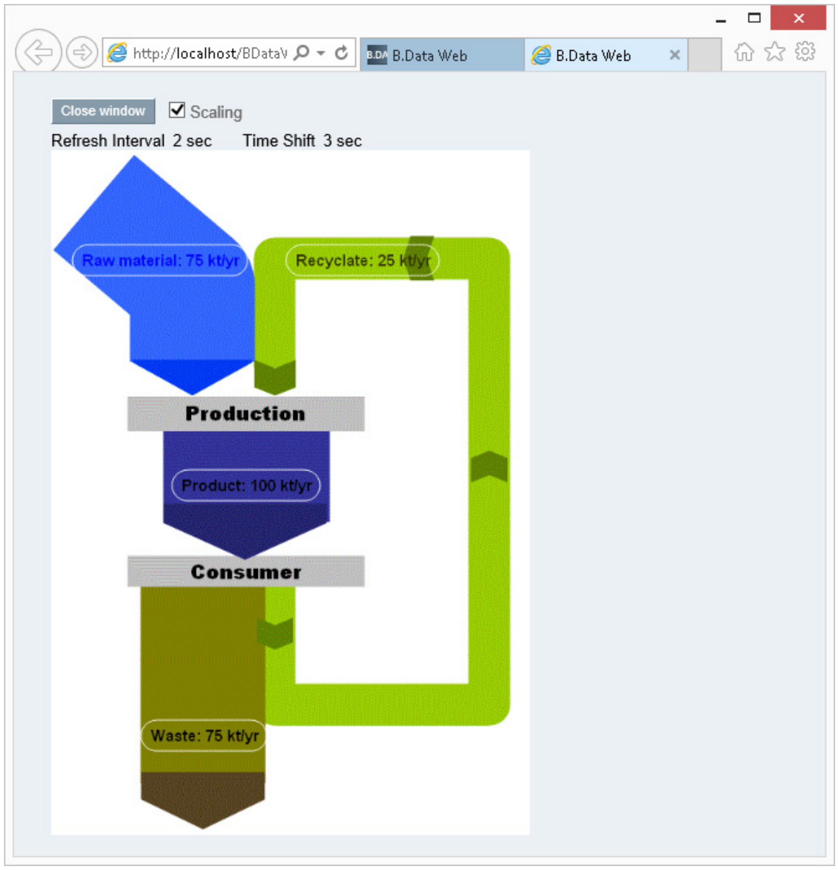
Note

It may take several minutes for a field value to become available in the database. Use the "Shift" function to simulate an adjusted system time to avoid the development of gaps during the first refresh intervals.

---

2. To adapt the visualization to the size of the window, select "Scaling".
3. Select "Full screen" to display the visualization in full-screen mode.

   The visualization is displayed in the separate window in full-screen mode.



Editing values

You can acquire the values of a visualization manually. To do this, select the required data point in the "Menu" area and click "Start Value Input" in the "Object" tab in the right window pane.

You can find additional information on this topic in the "Acquiring data manually" section.

Using the Quick Chart

You can display the values of a visualization in the Quick Chart. To do this, select the required data point in the "Menu" area and click on the "Diagram" tab in the right window pane.

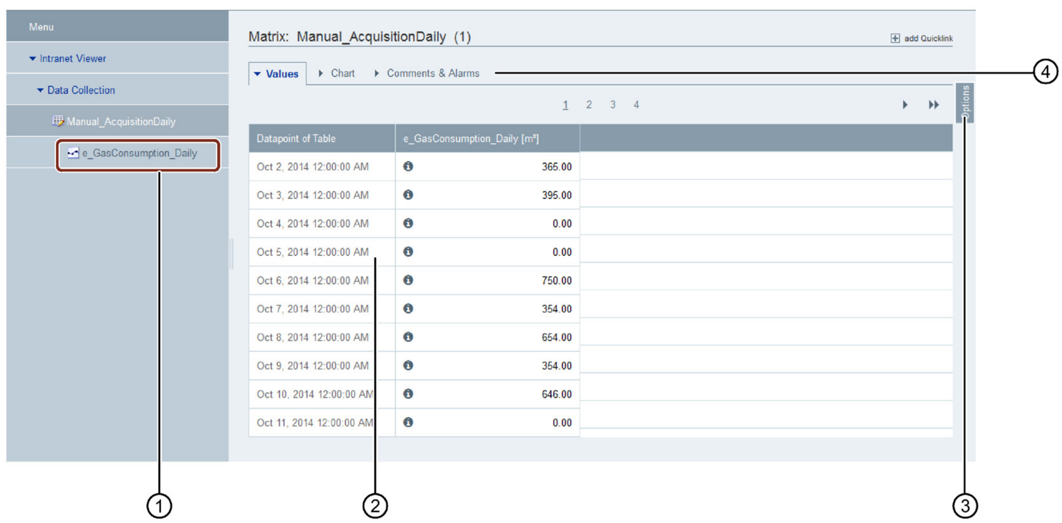
You can find additional information on this topic in the "Using the Quick Chart" section.

11.2.5 Working with matrixes in B.Data Web

Overview

B.Data Web shows you the matrixes you configured in B.Data . You can edit the configured matrixes in B.Data Web .

The structure of a matrix in B.Data Web consists of the following objects:



① Datapoint of the matrix

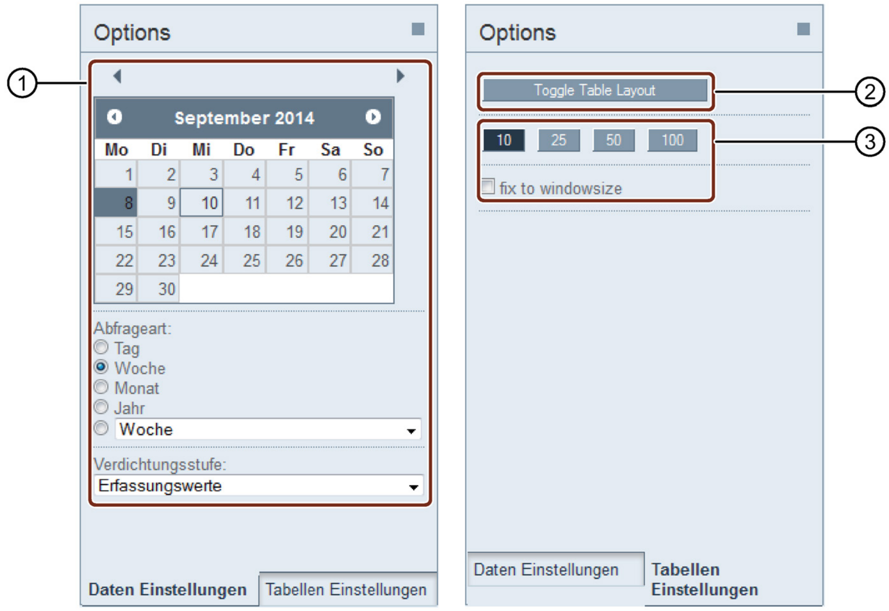
② Display area Depending on the selection under ④, the following contents are displayed:

- Values: Display and input form for values of the time range selected under ③.
- Diagram: Graphical representation as a Quick Chart of the content displayed under "Values".
- Comments & alarms: Display of comments for individual values. If the "Validity check" is additionally configured for a datapoint, alarms from violated validity criteria will also be displayed.

③ "Options" tab

④ Selection of content for ②

The figure below shows the "Options" tab for a matrix:



① Selection of time range, query type, and compression level

② Switching to transposed representation

③ Number of displayed entries per screen page.
"Adjust to window size" adjusts the number of entries to the available space.

Requirement

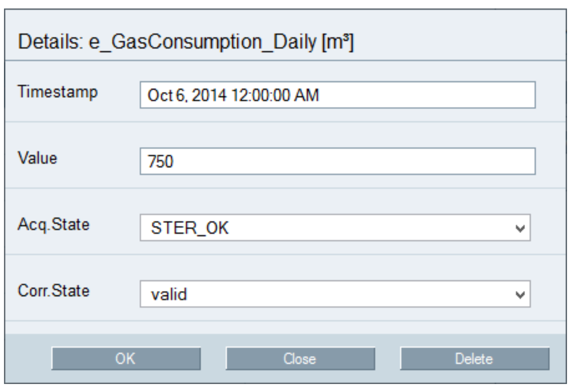
- The matrix is configured in B.Data .
- The matrix has been released for the current Web application.

Manually acquiring values

1. To open a matrix, select the datapoint in the "Menu" area.

   The matrix is started automatically.
2. Open the "Options" tab.
3. Under "Data settings" select the query type, the time range, and the compression level.
4. If required, specify the following under "Table settings":
   – Transposed representation
   – Number of entries per screen page.
5. Enter the desired values.

   The new values are displayed in the matrix. Violated validation criteria are immediately visible in the matrix.
6. In order to display details for the value, click the icon next to the value. The "Details" window is displayed:



You can find additional information on this topic in the "Acquiring data manually" section.

Using the Quick Chart

You can display the values of a matrix as a Quick Chart. To do this, select the required matrix in the "Menu" area and click on the "Diagram" tab in the right window pane.

You can find additional information on this topic in the "Using the Quick Chart" section.

See also

Working with reports in B.Data Web (Page 422)

Configuring authorizations (Page 93)

Using the Quick Chart (Page 266)

Manual data acquisition (Page 167)

11.2.6 Using document management in B.Data Web

Overview

In B.Data Web , call the documents stored in B.Data or upload new documents to the B.Data database.

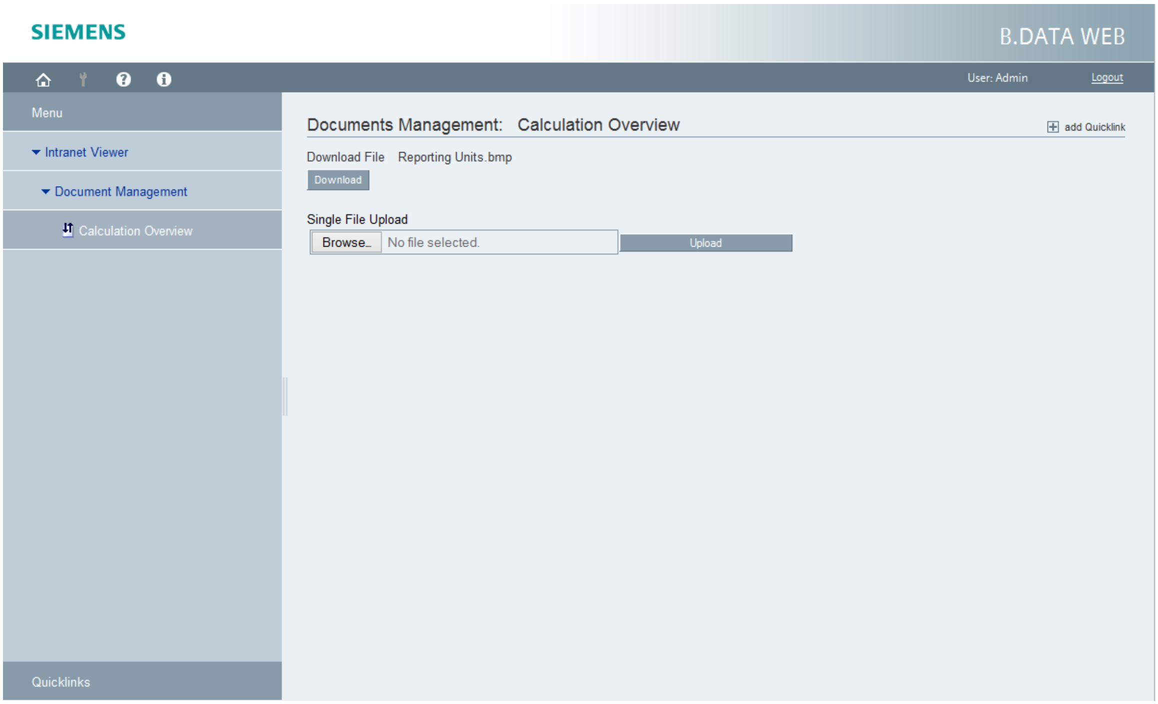
① Document

Requirement

- The document is available in B.Data .
- The document has been released for the current Web application.

Downloading a document

1. To load the document from the B.Data database to B.Data Web , select the required document in the "Menu" area and then click "Download".



   The dialog for downloading the document opens.

2. Click "OK".

   The document is opened in B.Data Web .

3. To upload the document to the B.Data database, select the document with "Browse" and then click "Upload".

The document was uploaded to the B.Data database or downloaded from the B.Data database in B.Data Web .

See also

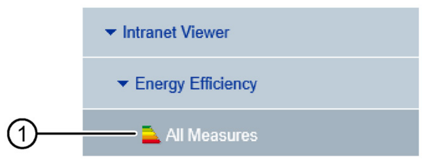
Document management (Page 349)

Configuring authorizations (Page 93)

11.2.7 Working with energy efficiency measures in B.Data Web

Overview

B.Data Web shows you the energy efficiency measures you configured in B.Data . You can edit the configured energy efficiency measures in B.Data Web or create new energy efficiency measures.



① Energy efficiency measure

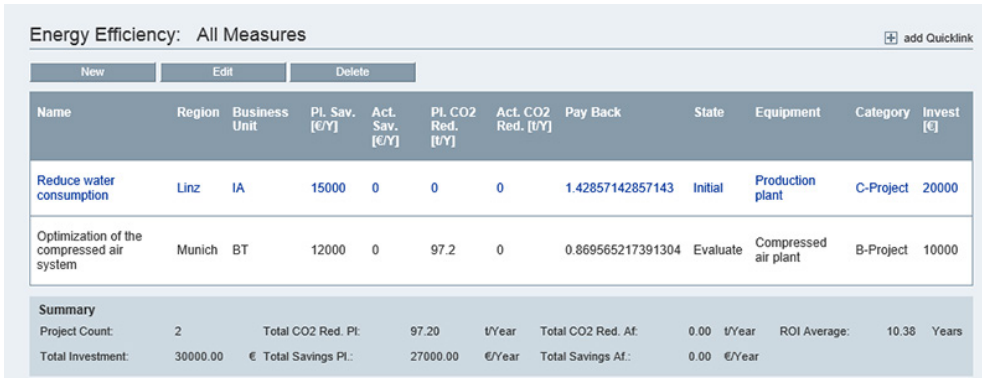
Requirement

- The filtered overview object for the energy efficiency measures is generated in B.Data .
- The filtered overview object for the energy efficiency measure is enabled for the current Web application.

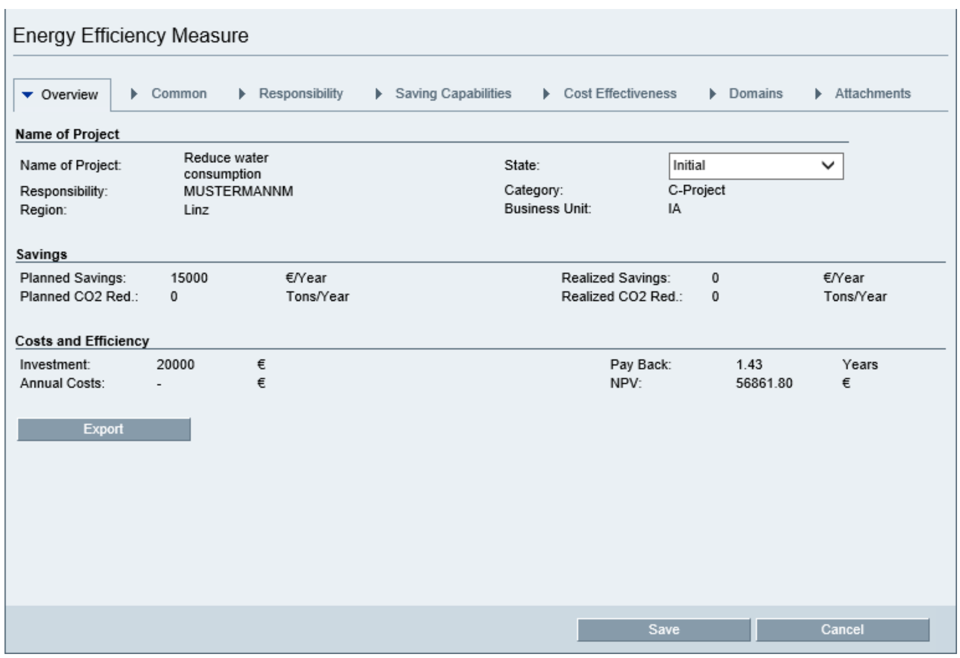
Editing an energy efficiency measure

1. To display the energy efficiency measure in B.Data Web, select the required energy efficiency measure in the "Menu" area.

   The energy efficiency measure is displayed in the right pane .



2. To create a new energy efficiency measure, click "New" and enter the required data.



   You can find additional information on this topic in the "Managing energy efficiency measures" section.

3. To change the existing energy efficiency measure or delete it, click "Edit" or "Delete".

See also

Configuring authorizations (Page 93)

Generating a filtered overview object (Page 123)

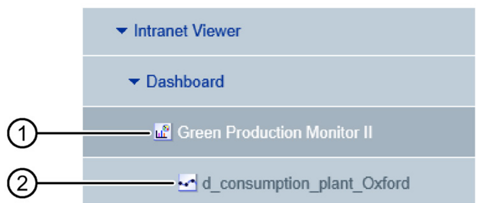
Managing energy efficiency measures (Page 112)

11.2.8 Working with dashboards in B.Data Web

Overview

B.Data Web shows you the graphic overviews you configured in B.Data .

The structure of a dashboard in B.Data Web consists of the following objects:



① Dashboard
② Datapoint of the dashboard

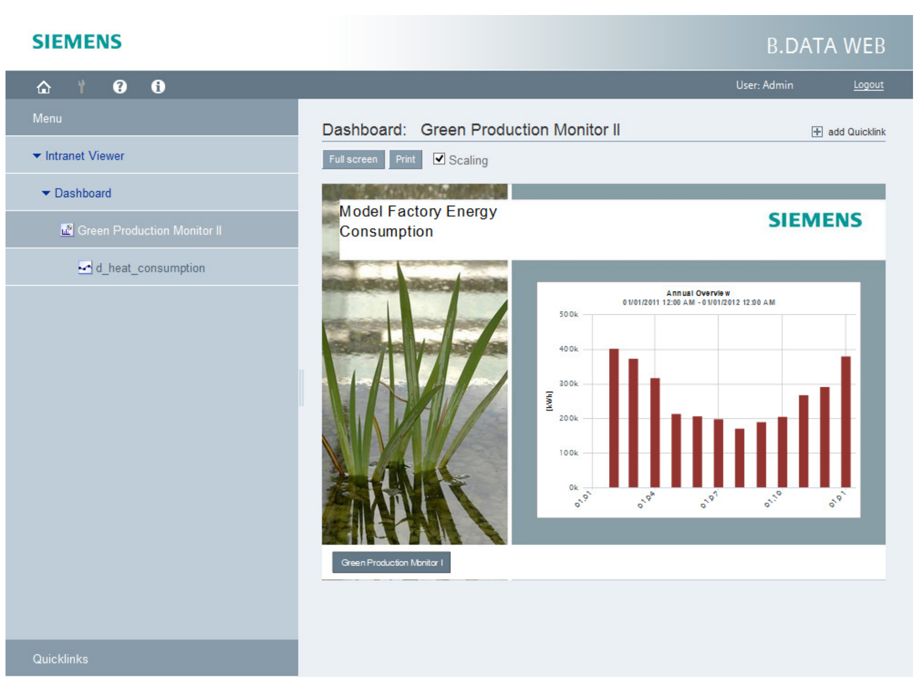
Requirement

- The dashboard is created in B.Data .
- The dashboard has been released for the current Web application.

Opening a dashboard

1. To display a dashboard, select the required dashboard in the "Menu" area.

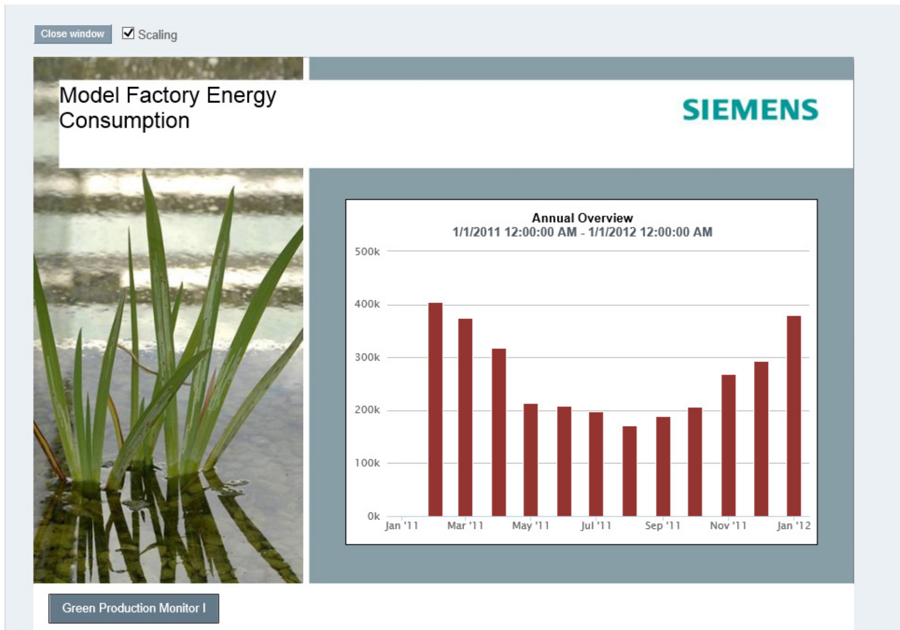
   The dashboard is displayed in the right pane of the window.



2. To adapt the dashboard to the size of the window, select "Scaling".

3. Select "Full screen" to display the dashboard in full-screen mode.

   The dashboard is displayed in the separate window in full-screen mode.



Note

A dashboard in full screen mode remains open after an automatic logout from B.Data Web. When you attempt to operate the dashboard, you must login to B.Data Web again.

4. In order to print the dashboard:

   For printed output, the browser's print settings are used.

   – For this reason, set the desired settings for page scaling or page orientation before printing.
   – Use the browser's preview feature in order to review the result.
   – Click "Print".

     The "Print" dialog for the operating system opens.

Editing values

You can acquire the values of a dashboard manually. To do this, select the required datapoint in the "Menu" area and click "Start Value Input" in the "Object" tab in the right window pane.

You can find additional information on this topic in the "Acquiring data manually" section.

Using the Quick Chart

You can display the values of a dashboard in the Quick Chart. To do this, select the required datapoint in the "Menu" area and click on the "Diagram" tab in the right window pane.

You can find additional information on this topic in the "Using the Quick Chart" section.

See also

Configuring authorizations (Page 93)

Manual data acquisition (Page 167)

Using the Quick Chart (Page 266)

11.2.9 Importing measured values into B.Data Web

Overview

In B.Data Web you can import measured values for one or more datapoints. A wizard guides you through the import procedure.

Note

If a timestamp is already present in a datapoint, the time stamp and its value are overwritten during the import.

Note

Delimiter in the import file depends on the language setting in B.Data Web

Which character is interpreted as a delimiter between value depends on the language setting in B.Data Web:

The delimiter between the individual values depends on the language with which you logged in to B.Data Web.

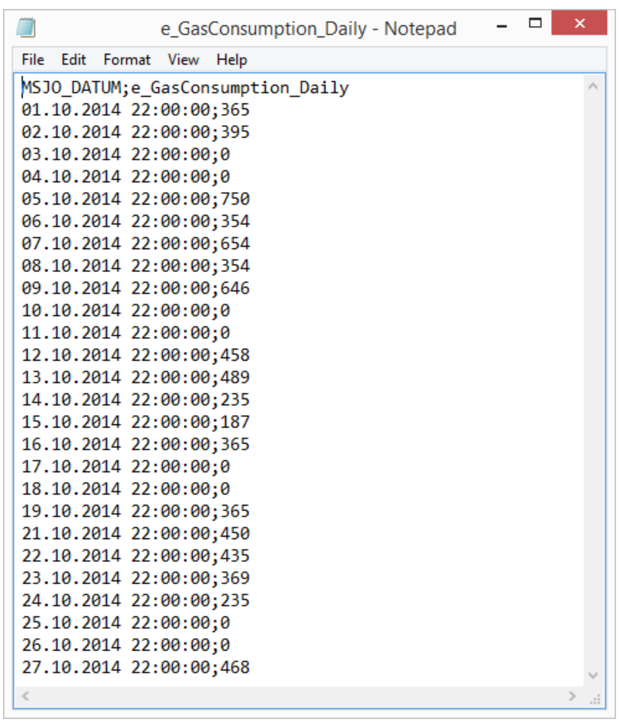
- German: ";" is interpreted as the delimiter character.
- English: "," is interpreted as the delimiter character.

Login to B.Data Web in the language, in which the import file was generated.

① Retrieving the web page for the data import.

② Selecting the file with the measured values.

The figure below shows the content of a valid import file, which was generated with a German program environment:




```
MSJO_DATUM;e_GasConsumption_Daily
01.10.2014 22:00:00;365
02.10.2014 22:00:00;395
03.10.2014 22:00:00;0
04.10.2014 22:00:00;0
05.10.2014 22:00:00;750
06.10.2014 22:00:00;354
07.10.2014 22:00:00;654
08.10.2014 22:00:00;354
09.10.2014 22:00:00;646
10.10.2014 22:00:00;0
11.10.2014 22:00:00;0
12.10.2014 22:00:00;458
13.10.2014 22:00:00;489
14.10.2014 22:00:00;235
15.10.2014 22:00:00;187
16.10.2014 22:00:00;365
17.10.2014 22:00:00;0
18.10.2014 22:00:00;0
19.10.2014 22:00:00;365
21.10.2014 22:00:00;450
22.10.2014 22:00:00;435
23.10.2014 22:00:00;369
24.10.2014 22:00:00;235
25.10.2014 22:00:00;0
26.10.2014 22:00:00;0
27.10.2014 22:00:00;468
```

③ Data checking

After selecting the file under ①, the content is automatically checked, and the result of the check is displayed.

- "Import data": Starts the import.

④ Summary of the data import

- "Display imported data": Displays the imported values on a separate web page as a Quick Chart.
- "Save log file": Saves the displayed summary as a file.

Requirement

- Datapoint has been created in B.Data.
- Measured values exist as a file in *.CSV format.
- Interval between timestamps corresponds to the datapoint's configured acquisition cycle.

Procedure

1. Switch to the web page for the data import.
2. Select the file.
3. Start the import.

Result

The measured values are imported.

11.2.10 Configuring Quicklinks

11.2.10.1 Create Quicklinks

Overview

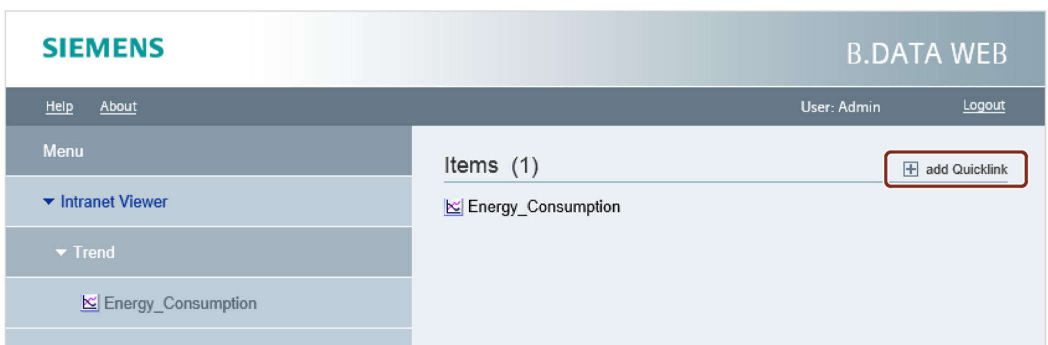
In B.Data Web you create Quicklinks to frequently used objects.

Requirement

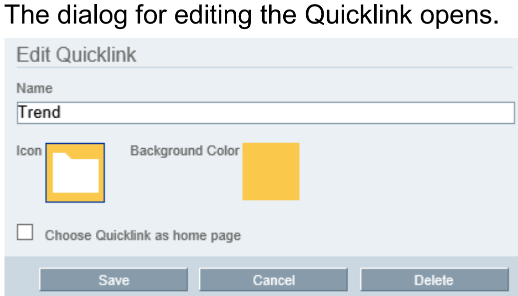
- You have the functional authorizations "Create Quicklinks" and "Configure Quicklinks".

Procedure

1. Select the object for which you want to create a Quicklink in the "Menu" area, for example, "Trend Web".
2. Click the "Add Quicklink" icon.



The dialog for editing the Quicklink opens.

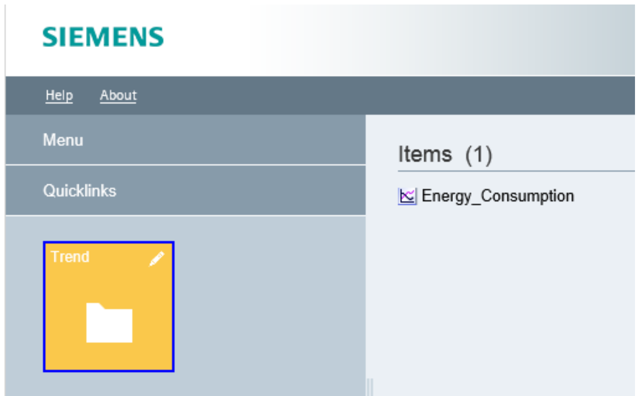


3. To create the Quicklink, click "Save".

Result

The Quicklink is created as follows:

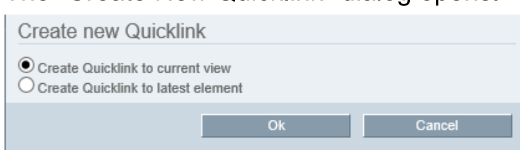
- The object name is applied.
- The preset icon and background color are used.



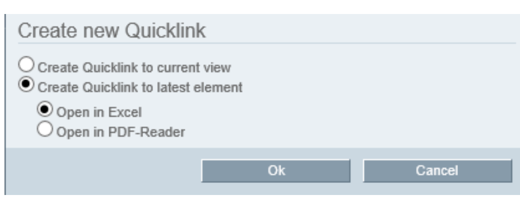
Exception: Creating Quicklinks for reports

1. Select the required report the "Menu" area and click "Add Quicklink".

   The "Create New Quicklink" dialog opens.

2. If you want to create a Quicklink to the overview of the report, select the "Create Quicklink to current view".
3. If you want to create a Quicklink to the last result of the report, select the option "Create Quicklink to the last element" and select the required format, for example, "Excel "or" PDF ".

   If you select this Quicklink, the report opens in the selected format.
4. Edit the Quicklink as desired and save your entries.

See also

Navigation in B.Data Web (Page 418)

Edit Quicklinks (Page 449)

Logging on to the B.Data Web (Page 420)

Configuring authorizations (Page 86)

11.2.10.2 Edit Quicklinks

Overview

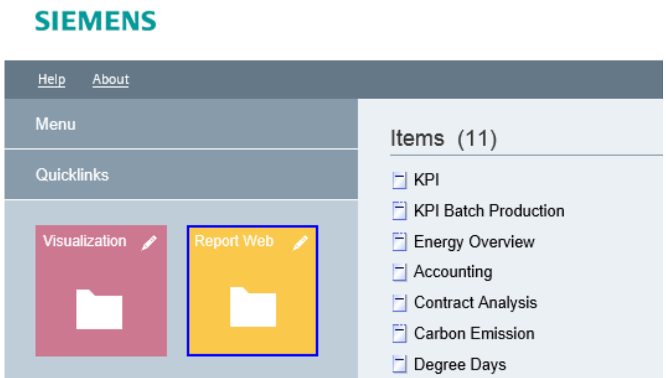
You can change the order of the Quicklinks in the "Quicklinks" area or delete them if they are no longer needed. You can also customize the Quicklinks, for example, by changing the background color or the icon.

Requirement

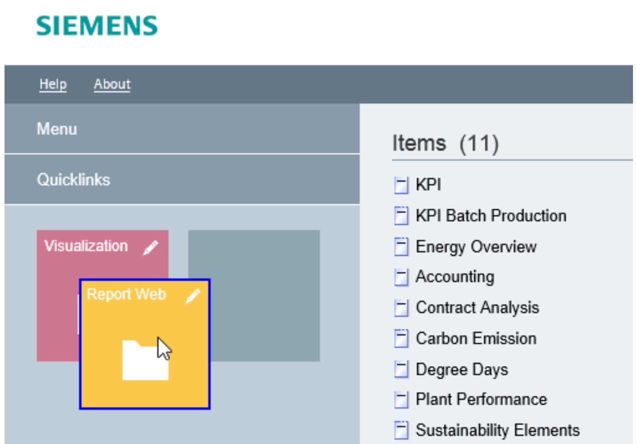
- You have the functional authorizations "Configure Quicklinks" and "Delete Quicklinks".

Change the sequence of the Quicklinks

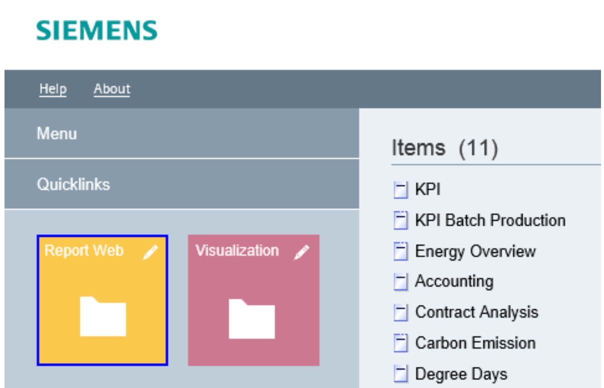
1. Open the "Quicklinks" area.



2. To move a Quicklink, use drag-and-drop to place it at the required position.

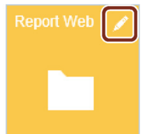


The Quicklink is placed at the respective location.

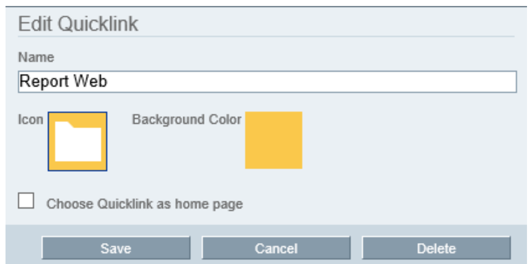


Customize Quicklink

1. Click the "PencilTool" icon in the "Quicklinks" area above the required Quicklink.

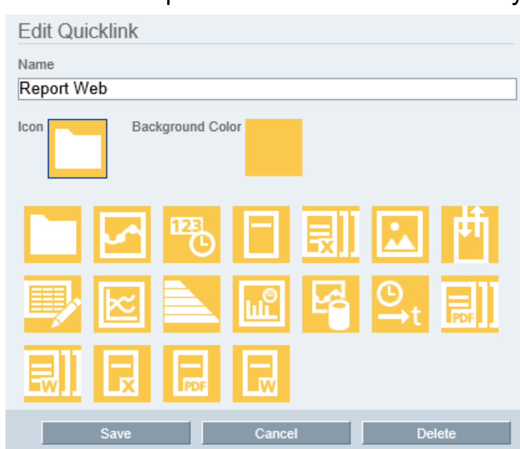


The "Edit Quicklink" dialog box opens.

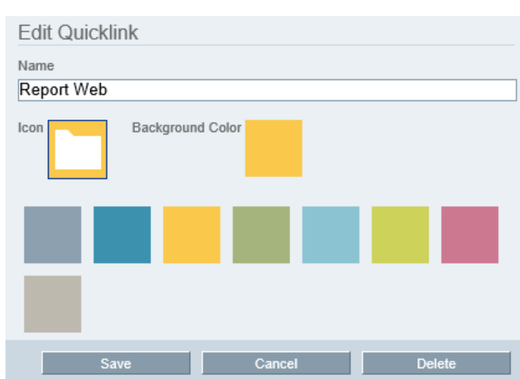


2. To rename the Quicklink, enter the desired name in the "Name" input box.
3. To change the Quicklink icon, click on "Icon" and select the desired icon.

   There are 18 predefined icons available to you.



4. To change the background color of the Quicklink, click on "Background Color" and select the required background color.



5. To specify the Quicklink as homepage, select the "Choose Quicklink as home page" check box.

Note

If you do not specify any Quicklink as homepage, the first Quicklink in the "Quicklinks" area is used as homepage page.

---

6. Save your changes to the Quicklink.

Delete Quicklink

1. Click the "PencilTool" icon above the desired Quicklink.

   The "Edit Quicklink" dialog box opens.
2. Click "Delete".

   The Quicklink is deleted.

See also

Navigation in B.Data Web (Page 418)

Create Quicklinks (Page 446)

Configuring authorizations (Page 86)

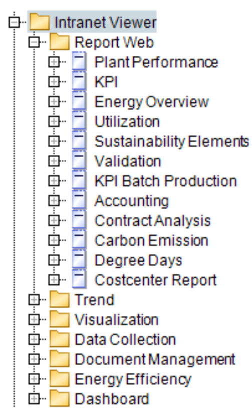
11.3 Administering B.Data Web

11.3.1 Defining an entry point

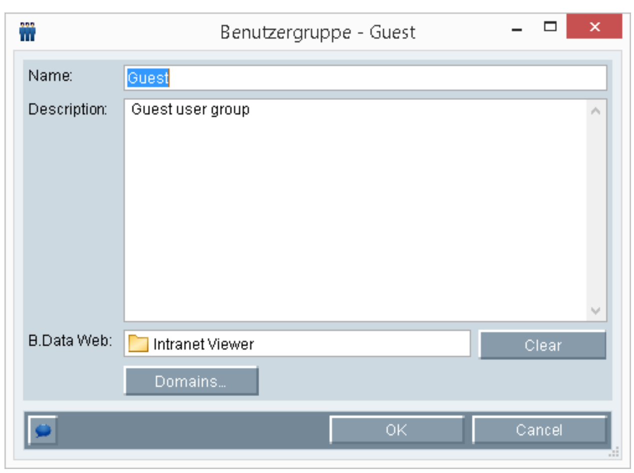
You can configure B.Data Web using the B.Data Plant Explorer. This is where you define an entry point for B.Data Web..

Procedure

1. In the Plant Explorer, create a folder, for example, "Intranet Viewer".
2. Copy to this folder the objects that the respective user should be able to view and edit in B.Data Web .



3. Assign the user group to which the user should be included for the defined entry point.



You find additional information on this topic in the "Configuring authorizations" section, keyword "Entry point".

See also

Configuring authorizations (Page 93)

11.3.2 Authorizations for navigation

As administrator, you use authorizations to specify which options are available to a specific user group for navigation in B.Data Web:

- "Menu view" for displaying the "Menu" area
- "Quicklinks view " for displaying the "Quicklinks" area
- "Quicklinks configure" for changing existing Quicklinks
- "Quicklinks create" for creating new Quicklinks
- "Quicklinks delete" for deleting Quicklinks

For information on exact procedures, refer to the "Configuring authorizations" section.

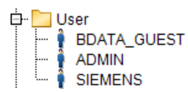
11.3.3 Configuring Quicklinks in the B.Data client

Overview

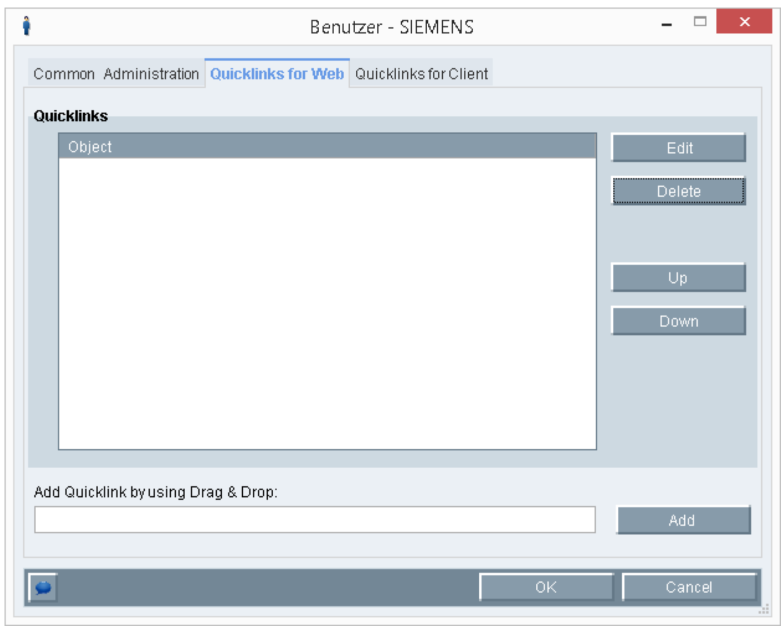
You have the option of creating and editing the required Quicklinks in B.Data Client. You can create up to 50 Quicklinks for each user.

Procedure

1. In the Plant Explorer, double-click on the desired user, e.g. "SIEMENS".



2. Select the "Quicklinks for Web" tab.

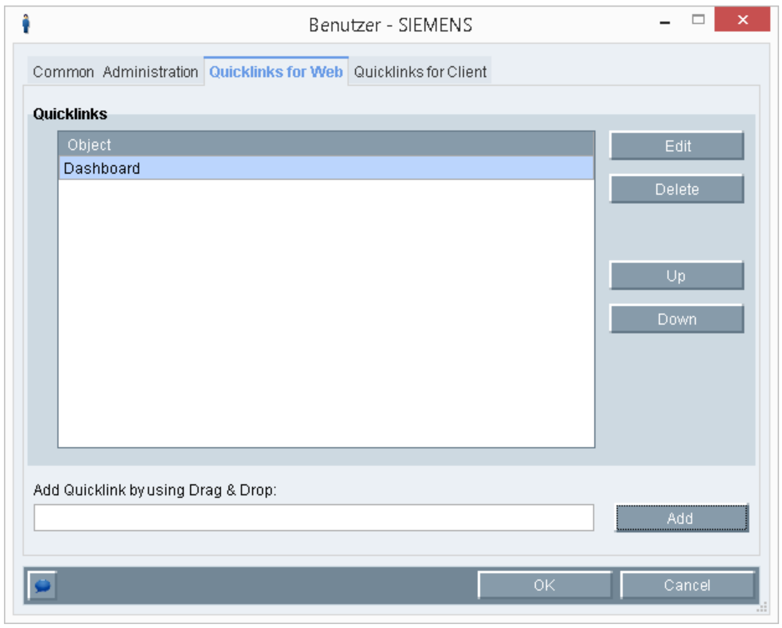


3. To create a new Quicklink for the user, drag the required object ("Dashboard" in the example) from the project tree and drop it onto the "Add Quicklink by using Drag & Drop" field. Then click "Add".

Note

The only objects you can create as Quicklinks are those listed under the entry point for B.Data Web, for example under "System > Intranet Viewer".

The Quicklink is displayed in the overview.



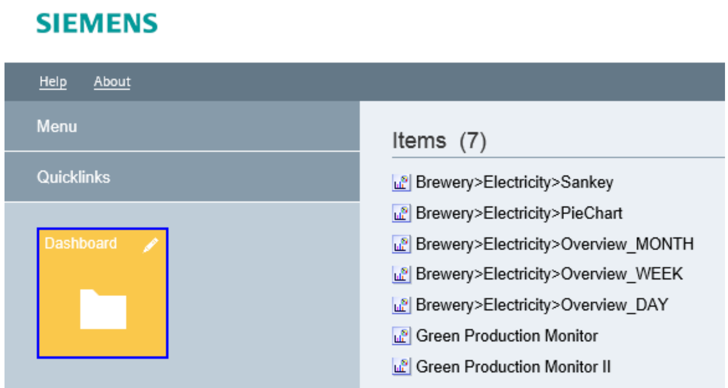
4. Click "Edit" to edit the Quicklink.

   The following editing options are available:

   – Change the name of the Quicklink
   – Specify Quicklink as homepage
   – Set the icon for the Quicklink
   – Set the background color for the Quicklink
5. To delete the Quicklink, click "Delete".
6. To change the order of the Quicklinks in the overview, click "Up" or "Down".

Result

When you log on with your user access information in B.Data Web , the created Quicklink is displayed as the homepage.



See also

Configuring authorizations (Page 86)

Using B.Data Mobile

12

12.1 B.Data Mobile basics

Definition

B.Data supports in situ manual acquisition of operational or counter values by means of mobile device such as a PDA.

B.Data Mobile is a software interface that enables the acquisition of values on a mobile device and their automatic import to B.Data .

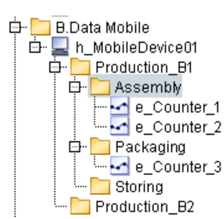
Usage

You use B.Data Mobile in the following cases:

- If automatic measured value acquisition is not possible, e.g. using a counter.
- If a link or a sensor fails during automatic measured value acquisition.

Data acquisition on mobile devices

Set up each mobile device as hardware object in B.Data. Copy the data points to be acquired by means of the hardware object to the tree below the hardware object. Once the mobile device is interconnected with a B.Data client, the data point values are synchronized automatically with the B.Data database.



You have the following options of acquiring values on the mobile device:

- Separate identification of the counters

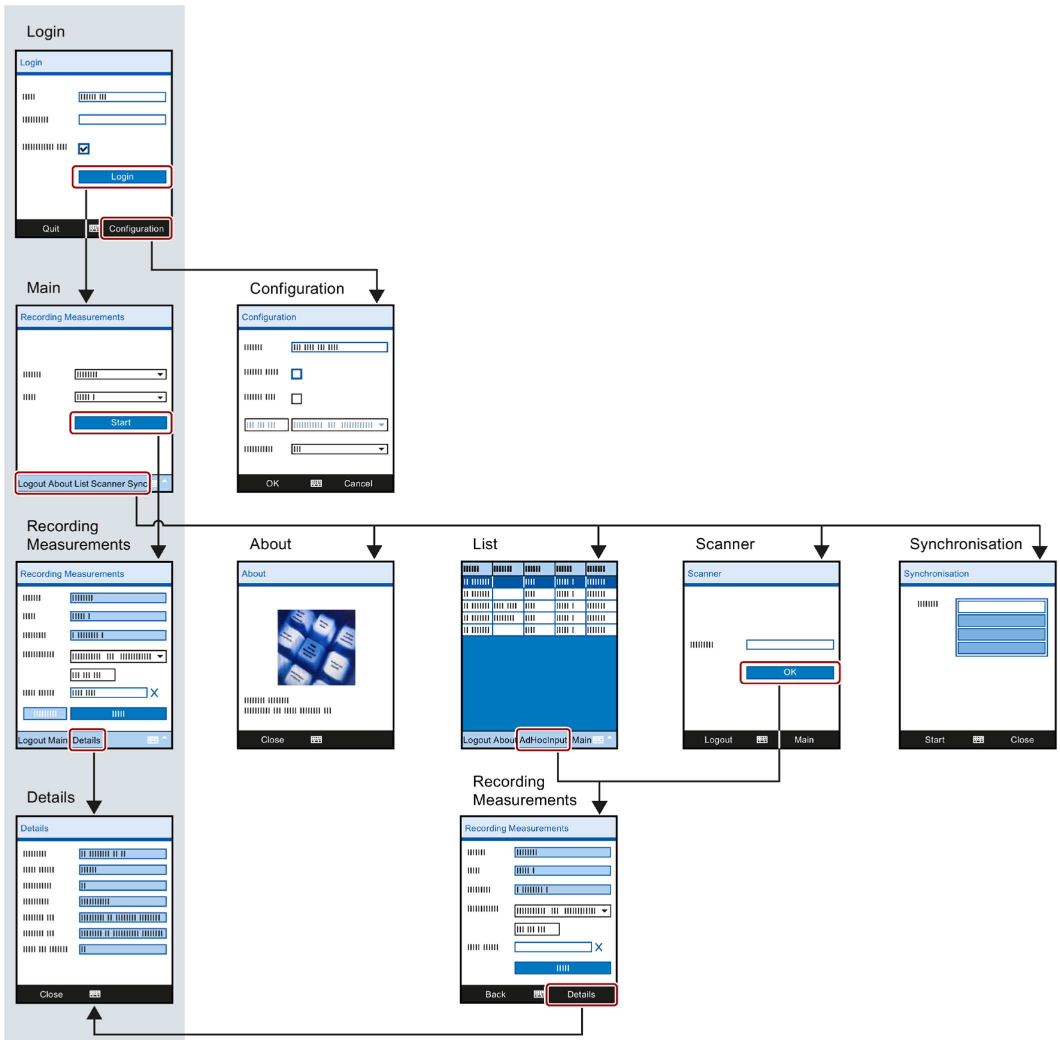
  Identify a counter from which you only take a manual reading in exceptional situations or on rare occasions on the mobile device. You can use a mobile device that features a scanner to take an unambiguous reading of the counter's barcode ID. You can access the values stored in the data point after you have identified the counter.

- Defining routes

  Define a route in B.Data for reading multiple counters at cyclic intervals. A route lets you define the order in which the devices are read locally. The mobile device guides you through the route and provides you with additional information such as the last value, as well as high and low limits.

12.2 Navigation structure of the "B.Data Mobile" application

The following diagram highlights the navigation structure of the "B.Data Mobile" application on the mobile device:



Input field or selection list

Display field

See also

Synchronizing data on the mobile device (Page 465)

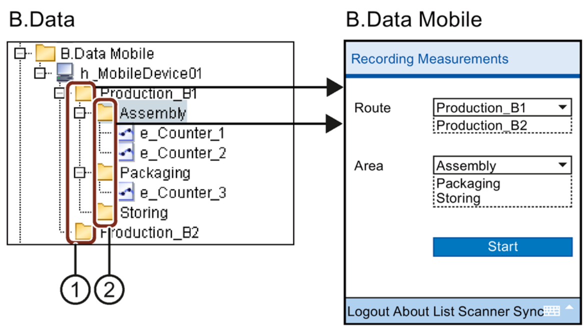
12.3 Configuring mobile devices in B.Data

Overview

In B.Data, assign the hardware object the data points that you want to acquire on the mobile device. Improve the overview by setting up a two-layer folder structure that you can use, for example, to reproduce the production site.

in addition, you may define an existing folder structure as route for a read operation.

The following figure highlights the mapping of a folder structure in B.Data to the mobile device:



① Folders of the first hierarchy level are organized on the mobile device under "Route".

② Folders of the second hierarchy level are organized on the mobile device under "Area". The content of the selection list depends on the "Route" selected under ①.

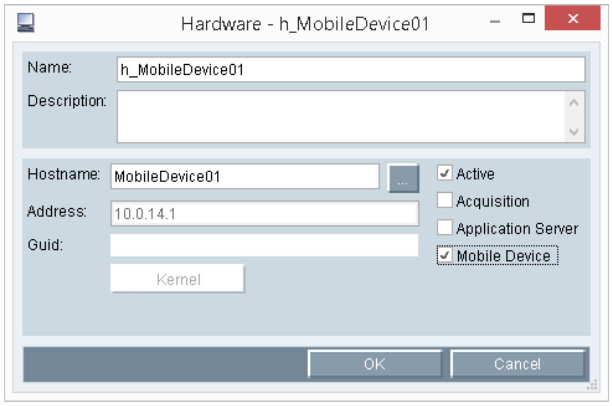
Requirements

- The mobile device is configured and interconnected with the PC.

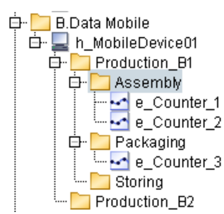
  For more information on this topic, refer to the "B.Data V6.0 - Installation" manual, keyword "Installing B.Data Mobile and configuring it on the mobile device".
- The data points are set up in B.Data.

Procedure

1. Create a hardware object in B.Data for the mobile device, for example, "h_MobileDevice01".



2. Set up a folder structure that consists of no more than two layers if you want to use routing for reading the meters.
3. Copy the data points to acquire with the mobile device to the folder structure below the hardware object. Assign the data points to the folder structure:



4. Add the "Job for route synchronization" to the job queue to generate one or several routes based on a folder structure.

Note

"Job for route synchronization" prepares the route for the synchronization process. Run this job whenever you have made changes to the folder structure.

---

5. Start synchronization on the mobile device for the initial transfer of the data points to the mobile device.

Result

The data points are inserted in B.Data below the hardware object of the mobile device. On completion of this initial synchronization, the measured values of the data points are available on the mobile device as well.

The measured values are synchronized automatically when you initially connect the mobile device with the B.Data client.

12.4 Measured value input on the mobile device

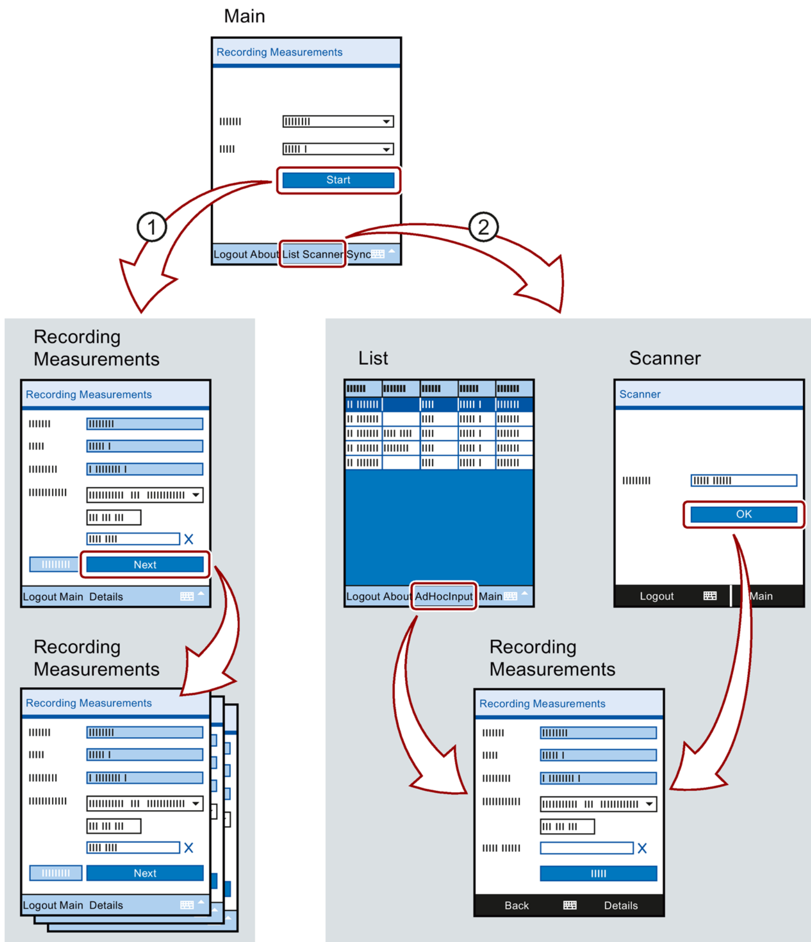
Requirement

- You are logged on to the "B.Data Mobile" application on the mobile device.
- The "Main" picture is displayed on the mobile device.
- The synchronization process is concluded.

Procedure

1. Identify the meter.
2. Enter the measured value reading on the mobile device.
3. Enter the time stamp, if necessary.

The following figure shows how to enter measured values on the mobile device, based on the "Main" picture:



① only available if one or several routes were defined in B.Data.

Acquiring measured values based on the selected route:

1. Select the route and range and launch routing with "Start".
2. Enter the measured value reading and confirm your entry with "Next".

② Separate acquisition of measured values:

1. Identify the meter using the "List" or the "Scanner" of the mobile device.

   The meter must be equipped with a barcode for identification by the scanner.
2. Enter the measured value reading and confirm your entry with "OK".

Result

The measured value readings are stored on the mobile device.

If you now connect the mobile device with the B.Data client, the measured values are transferred automatically to the B.Data database and stored in the data points.

See also

Generating barcode (Page 466)

12.5 Synchronizing data on the mobile device

Overview

The following actions are performed when you synchronize data on the mobile device:

- The routes and data points that you have configured in B.Data will be mapped to the mobile device.
- The values you have entered on the mobile device are saved to the corresponding data points in B.Data.

You can synchronize data on the mobile device as follows:

- Manually

  Synchronize the data manually if using B.Data Mobile for the first time.
- Automatically

  The measured values are synchronized automatically when you initially connect the mobile device with the B.Data client.

Requirement

- B.Data Mobile is installed and configured in B.Data and on the mobile device.

  For more information, refer to the "B.Data V6.0 - Installation" manual, keyword "Installing B.Data Mobile".
- You are logged on to the mobile device with the B.Data access data.
- The mobile device displays the "Main" screen.

Synchronizing data manually

1. Select the "Synchronization" command.

   The data is synchronized and the synchronization status is indicated in the "Synchronization" screen.

Result

The data on the mobile device and in B.Data is synchronized.

Note

Ignoring the values

The current value will be ignored if the B.Data database already contains a data point value with the same time stamp.

12.6 Generating barcode

Overview

Provided your mobile device supports scanner functionality, you can use the scanner of the mobile device to identity the meters of your plant by means of barcode. You need to generate this barcode for each meter that you have configured in B.Data.

Note

Configuring meters for barcode generation

Observe the following naming conventions when configuring meters:

- You may only use uppercase letters from "A" to "Z" and numbers from "0" to "9".
- Use the hyphen "-" as delimiter.

Requirement

- The "Free 3 of 9 Extended" font is installed on the PC.
- Microsoft Excel is installed and opened on the PC.
- The meter is configured in B.Data.

Procedure

1. Enter the name of the meter in Microsoft Excel.
2. Use the "Free 3 of 9 Extended" font to assign the barcode to the meter name, for example:

	A	B
1	COUNTER001	
2	COUNTER002	
3		

Note

Font size for the barcode

The font size of the barcodes you generate may not be smaller than 12 pt.

---

3. Print the generated barcode and attach it to the selected meter.

Result

You can now identify the meter by its generated barcode using the scanner of the mobile device.

13 Reference

13.1 Acquisition status of a value

The following value acquisition states are possible:

- STER_OK
- STER_INVALID
- STER_CONFUSE
- STER_GAP
- STER_FIRST
- STER_FIRST_INVALID
- STER_FIRST_CONFUSE
- STER_FIRST_INVALID_CONFUSE
- STER_LAST
- STER_LAST_INVALID
- STER_LAST_CONFUSE
- Implemented in the NLS
- DB update disabled in the NLS
- Calculated process value
- Invalid in CAD
- Adjusted in CAD
- Application-specific
- Outliers
- Substitute value

13.2 Correction status of a value

The following value correction states are possible:

- Valid
- Invalid
- Corrected with LRU
- Corrected with substitute measurement
- Corrected with substitute value
- Valid with manual manipulation
- Valid corr. with LRU and manual manipulation
- Valid corr. with substitute m. and manual manipulation.
- Valid corr. with substitute v. and manual manipulation.
- Import
- Invalid import
- Import valid, corr. with LRU
- Import valid, corr. with substitute measurement
- Import valid, corrected with substitute value
- Import valid with manual manipulation
- Import valid, corr. with LRU+manual manipulation.
- Import valid, corr. with substitute m.+manual manipulation.
- Import valid, corr. with substitute v.+manual manipulation.
- Corrected

13.3 Query types

The following query periods are available:

Query type	Description
Derived-E2 Discontinued, no longer available in the new version.	Derived measurement E2 Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 09.01.2008 00:00 - 26.05.2035 00:00 Interval for automatic start of reporting: 09.01.2008 00:00 - 26.05.2035 00:00
Ad-Hoc	This query type represents a user-specific query period. You must enter both the start and end time. Interval for automatic start of reporting: Query type cannot be used in automatic reporting.
Current quarter	Current quarter Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2008 00:00 - 01.04.2008 00:00 Interval for automatic start of reporting: 01.01.2008 00:00 - 01.04.2008 00:00
Analysis shift 1 or shift 1	Shift 1 queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 05:30 - 08.01.2008 13:30 Interval for automatic start of reporting: 07.01.2008 05:30 - 08.01.2008 13:30
Analysis shift 2 or shift 2	Shift 2 queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 13:30 - 08.01.2008 21:30 Interval for automatic start of reporting: 07.01.2008 13:30 - 08.01.2008 21:30
Analysis shift 3 or shift 3	Shift 3 queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 21:30 - 09.01.2008 05:30 Interval for automatic start of reporting: 07.01.2008 21:30 - 09.01.2008 05:30
Energy supplier - Year	Energy supplier queries - Years Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 31.08.2006 22:00 - 31.08.2007 22:00 Interval for automatic start of reporting: 31.08.2006 22:00 - 31.08.2007 22:00

Query type	Description
Energy supplier - Month	Energy supplier queries - Months Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 30.11.2007 22:00 - 31.12.2007 22:00 Interval for automatic start of reporting: 30.11.2007 22:00 - 31.12.2007 22:00
Energy supplier - Day	Energy supplier queries - Days Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 06.01.2008 22:00 - 07.01.2008 22:00 Interval for automatic start of reporting: 06.01.2008 22:00 - 07.01.2008 22:00
Energy supplier - Week	Energy supplier queries - Weeks Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: Sun. 30.12.2007 22:00 - Sun. 06.01.2008 22:00 Interval for automatic start of reporting: Sun. 30.12.2007 22:00 - Sun. 06.01.2008 22:00
Next year	Forecast next year Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2009 00:00 - 01.01.2010 00:00 Interval for automatic start of reporting: 01.01.2009 00:00 - 01.01.2010 00:00
Next month	Forecast next month Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 09.01.2008 00:00 - 09.02.2008 00:00 Interval for automatic start of reporting: 09.01.2008 00:00 - 09.02.2008 00:00
Next day	Forecast next day Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 09.01.2008 00:00 - 10.01.2008 00:00 Interval for automatic start of reporting: 09.01.2008 00:00 - 10.01.2008 00:00
Next week	Forecast next week Interval for manual start of reporting: 09.01.2008 00:00 - 09.02.2008 00:00 Interval for automatic start of reporting: 09.01.2008 00:00 - 09.02.2008 00:00

Query type	Description
Financial year + 6h	Financial year + 6h queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.10.2007 06:00 - 01.10.2008 06:00 Interval for automatic start of reporting: 01.10.2006 06:00 - 01.10.2007 06:00
GAS - Month	GAS month queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.12.2007 06:00 - 01.01.2008 06:00 Interval for automatic start of reporting: 01.12.2007 06:00 - 01.01.2008 06:00
GAS day	Query GAS days Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 06.01.2008 06:00 - 07.01.2008 06:00 Interval for automatic start of reporting: 06.01.2008 06:00 - 07.01.2008 06:00
Financial year	Financial year queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.10.2007 00:00 - 01.10.2008 00:00 Interval for automatic start of reporting: 01.10.2006 00:00 - 01.10.2007 00:00
Year	Query year Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2008 00:00 - 01.01.2009 00:00 Interval for automatic start of reporting: 01.01.2007 00:00 - 01.01.2008 00:00
KR-14-year	Query KR-14 year Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.12.2007 00:00 - 01.12.2008 00:00 Interval for automatic start of reporting: 01.12.2006 00:00 - 01.12.2007 00:00
Month	Query month Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2008 00:00 - 01.02.2008 00:00 Interval for automatic start of reporting: 01.12.2007 00:00 - 01.01.2008 00:00

Query type	Description
Month + 6h	Monthly queries + 6h Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2008 06:00 - 01.02.2008 06:00 Interval for automatic start of reporting: 01.12.2007 06:00 - 01.01.2008 06:00
Cur. month	Current month Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2008 00:00 - 01.02.2008 00:00 Interval for automatic start of reporting: 01.01.2008 00:00 - 01.02.2008 00:00
Current month + 6h	Queries current month + 6h Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2008 06:00 - 01.02.2008 06:00 Interval for automatic start of reporting: 01.01.2008 06:00 - 01.02.2008 06:00
Month (current + M)	Month super (2 months) queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2008 00:00 - 01.03.2008 00:00 Interval for automatic start of reporting: 01.01.2008 00:00 - 01.03.2008 00:00
Production day Discontinued, no longer available in the new version.	Query production days Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 05:30 - 09.01.2008 05:30 Interval for automatic start of reporting: 07.01.2008 05:30 - 08.01.2008 05:30
Production day T7 Discontinued, no longer available in the new version.	Query production day Converter 7 Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 05:30 - 09.01.2008 05:30 Interval for automatic start of reporting: 07.01.2008 05:30 - 08.01.2008 05:30
Production day T8 Discontinued, no longer available in the new version.	Query production day Converter 8 Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 05:30 - 09.01.2008 05:30 Interval for automatic start of reporting: 07.01.2008 05:30 - 08.01.2008 05:30

Query type	Description
Production day T9 Discontinued, no longer available in the new version.	Query production day Converter 9 Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 05:30 - 09.01.2008 05:30 Interval for automatic start of reporting: 07.01.2008 05:30 - 08.01.2008 05:30
Shift Discontinued, no longer available in the new version. Query type corresponds to day +6h	Shift queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 07.01.2008 06:00 - 08.01.2008 06:00 Interval for automatic start of reporting: 07.01.2008 06:00 - 08.01.2008 06:00
Shift 06:00-14:00	Shift 06:00-14:00 Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 06:00 - 08.01.2008 14:00 Interval for automatic start of reporting: 07.01.2008 06:00 - 07.01.2008 14:00
Shift 06:00 - 14:30	Shift 06:00-14:30 Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 06:00 - 08.01.2008 14:30 Interval for automatic start of reporting: 07.01.2008 06:00 - 07.01.2008 14:30
Shift 14:00-23:00	Shift 14:00-23:00 Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 14:00 - 08.01.2008 23:00 Interval for automatic start of reporting: 07.01.2008 14:00 - 07.01.2008 23:00
Shift 14:30-23:00	Shift 14:30-23:00 Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 14:30 - 08.01.2008 23:00 Interval for automatic start of reporting: 07.01.2008 14:30 - 07.01.2008 23:00
Shift 23:00-06:00	Shift 23:00-06:00 Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 23:00 - 08.01.2008 06:00 Interval for automatic start of reporting: 07.01.2008 23:00 - 07.01.2008 06:00

Query type	Description
Since new year	Queries since beginning of the year Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2008 00:00 - 08.01.2008 00:00 Interval for automatic start of reporting: Query type cannot be used in automatic reporting.
Since the beginning of the previous year	Queries since the beginning of the previous year Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2007 00:00 - 08.01.2008 00:00 Interval for automatic start of reporting: Query type cannot be used in automatic reporting.
Since beginning of month	Queries since the beginning of the month Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 01.01.2008 00:00 - 08.01.2008 00:00 Interval for automatic start of reporting: Query type cannot be used in automatic reporting.
Hour Discontinued, no longer available in the new version.	Hourly queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 09:00 - 08.01.2008 10:00 Interval for automatic start of reporting: 08.01.2008 08:00 - 08.01.2008 09:00
Hour with half-hour offset Discontinued, no longer available in the new version.	Queries of hours with half-hour offset Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 09:30 - 08.01.2008 10:30 Interval for automatic start of reporting: 08.01.2008 08:30 - 08.01.2008 09:30
Day	Daily queries Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 00:00 - 09.01.2008 00:00 Interval for automatic start of reporting: 07.01.2008 00:00 - 08.01.2008 00:00
Day + 6h	Daily queries + 6h Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 06:00 - 09.01.2008 06:00 Interval for automatic start of reporting: 07.01.2008 06:00 - 08.01.2008 06:00

Query type	Description
Day curr.	Current day Time of observation: 08.01.2008 09:15:12 Interval for manual start of reporting: 08.01.2008 00:00 - 09.01.2008 00:00 Interval for automatic start of reporting: 08.01.2008 00:00 - 09.01.2008 00:00
Day/shift	Daily query - 1h 45min Interval for manual start of reporting: 06.01.2008 22:15 - 07.01.2008 22:15 Interval for automatic start of reporting: 06.01.2008 22:15 - 07.01.2008 22:15
Comparison (internal)	Internal function for comparison queries
Week	Weekly queries Interval for manual start of reporting: 07.01.2008 00:00 - 14.01.2008 00:00 Interval for automatic start of reporting: 31.12.2007 00:00 - 07.01.2008 00:00
Week/shift	Weekly queries - 1h 45min Interval for manual start of reporting: 30.12.2007 22:15 - 06.01.2008 22:15 Interval for automatic start of reporting: 30.12.2007 22:15 - 06.01.2008 22:15

13.4 Filter criteria for a message list

Column	Description
Value	Value of the message
Batch	Batch ID of the message
Message	Number of the message
Class	Type of the message: Warning or violation
Status key	Status key of the message
Status description	Status description of the message
Ackn. user name (B.Data)	Name of the user on B.Data level who acknowledged the message.
Ackn. user name (field)	Name of the user on field level who acknowledged the message.
Writing user (field)	Name of the user on field level who configured the message.
Tag name	Tag name of the message
Tag ID	Tag ID of the message
Time stamp	Time as of which activated messages are displayed.

13.5 Time unit abbreviations

Abbreviation	Time unit
d	Day
h	Hour
Y	Year
M	Month
min	Minute
s	Second
W	Week

13.6 Module overview

Specific modules must be assigned different objects. The following table lists all available modules, highlights all objects to be connected, or provides examples of the layout of result presentations.

<table>
<tr><td>Query</td><td>

Inputs:
1-n data points (d_, e_, a_)
Start parameters:
none
Result:
The connected operating data points transfer all measured values of the query period from the database to Excel.

<table>
<tr><th>time</th><th>d_A_E_V_117a</th><th>time</th><th>d_A_E_V_116a</th></tr>
<tr><td>18.04.2005 00:15</td><td>170</td><td>18.04.2005 00:15</td><td>159</td></tr>
<tr><td>18.04.2005 00:30</td><td>167</td><td>18.04.2005 00:30</td><td>158</td></tr>
<tr><td>18.04.2005 00:45</td><td>168</td><td>18.04.2005 00:45</td><td>158</td></tr>
<tr><td>18.04.2005 01:00</td><td>167</td><td>18.04.2005 01:00</td><td>158</td></tr>
</table>

</td></tr>
<tr><td>Query max. wrapper rows</td><td>

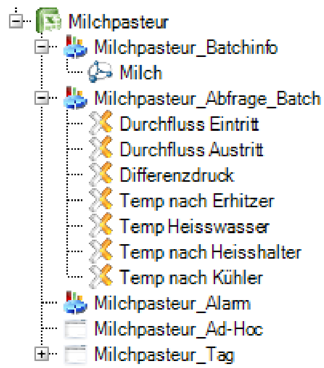
Inputs:
1 data point (d_, e_, a_)
Start parameters:
none
Result:
The connected operating data points transfer all measured values of the query period from the database to Excel. Once the row limit that is to be defined in B.Data Options has been reached, data input starts in the next two columns.

<table>
<tr><th>time</th><th>d_A_E_V_117a</th><th></th><th></th></tr>
<tr><td>18.04.2005 00:15</td><td>170</td><td>18.06.2005 00:15</td><td>159</td></tr>
<tr><td>18.04.2005 00:30</td><td>167</td><td>18.06.2005 00:30</td><td>158</td></tr>
<tr><td>18.04.2005 00:45</td><td>168</td><td>18.06.2005 00:45</td><td>158</td></tr>
<tr><td>18.04.2005 01:00</td><td>167</td><td>18.06.2005 01:00</td><td>158</td></tr>
</table>

</td></tr>
</table>

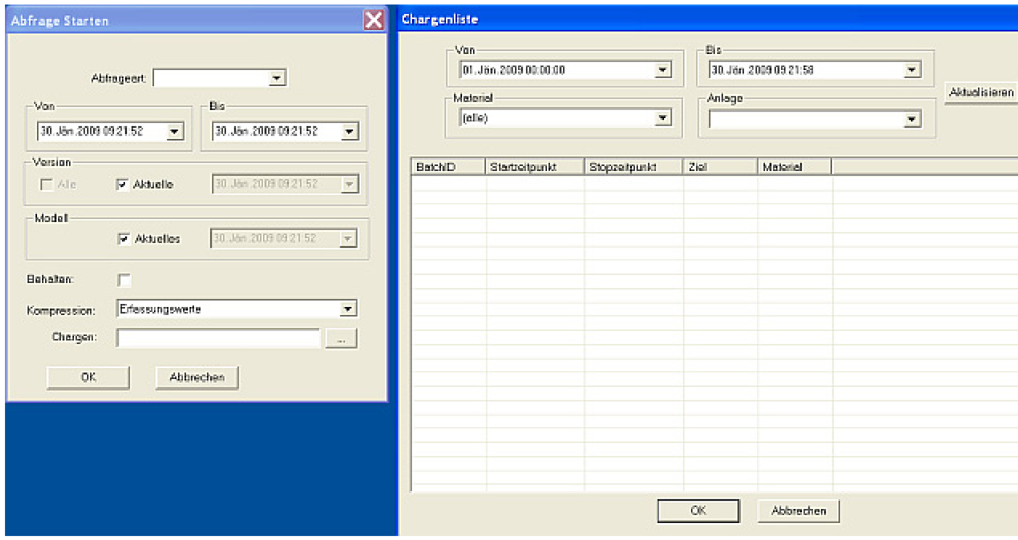
<table>
<tr>
<td>Query with 1 time stamp</td>
<td>
Inputs:
1-n data points (d_, e_, a_)
Start parameters:
none
Result:
The connected operating data points transfer all measured values of the query period from the database to Excel. The time stamp is displayed only once. A gap will develop if a value is missing for a time stamp.
<table>
<tr><th>time</th><th>d_A_E_V_117a</th><th>d_A_E_V_116a</th></tr>
<tr><td>18.04.2005 00:15</td><td>170</td><td>159</td></tr>
<tr><td>18.04.2005 00:30</td><td>167</td><td>158</td></tr>
<tr><td>18.04.2005 00:45</td><td>168</td><td>158</td></tr>
<tr><td>18.04.2005 01:00</td><td>167</td><td>158</td></tr>
</table>
</td>
</tr>
<tr>
<td>Query with 1 time stamp, transposed</td>
<td>
Inputs:
1-n data points (d_, e_, a_)
Start parameters:
none
Result:
The connected operating data points transfer all measured values of the query period from the database to Excel. The time stamp is displayed only once. A gap will develop if a value is missing for a time stamp.
<table>
<tr><td>time</td><td>18.04.2005 00:15</td><td>18.04.2005 00:30</td><td>18.04.2005 00:45</td></tr>
<tr><td>d A E V 117a</td><td>170</td><td>167</td><td>168</td></tr>
<tr><td>d A E V 116a</td><td>159</td><td>158</td><td>158</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td>Query with 2 time stamps (From/To)</td>
<td>
Inputs:
1-n data points (d_, e_, a_)
Start parameters:
none
Result:
The connected operating data points transfer all measured values of the query period from the database to Excel. The time stamp is displayed only once. A gap will develop if a value is missing for a time stamp.
<table>
<tr><th>from</th><th>to</th><th>d_A_E_V_117a</th><th>d_A_E_V_116a</th></tr>
<tr><td>18.04.2005 00:00</td><td>18.04.2005 00:15</td><td>170</td><td>159</td></tr>
<tr><td>18.04.2005 00:15</td><td>18.04.2005 00:30</td><td>167</td><td>158</td></tr>
<tr><td>18.04.2005 00:30</td><td>18.04.2005 00:45</td><td>168</td><td>158</td></tr>
<tr><td>18.04.2005 00:45</td><td>18.04.2005 01:00</td><td>167</td><td>158</td></tr>
</table>
You set the MODULE_EINHEIT parameter in B.Data Options to specify whether to enable or disable output of the unit. (0 = unit output disabled, 1 = unit output enabled)
</td>
</tr>
<tr>
<td>Query with status</td>
<td>
Inputs:
1-n data points (d_, e_, a_)
Start parameters:
none
Result:
The connected operating data points transfer all measured values of the query period, including the status, from the database to Excel.
<table>
<tr><th>time</th><th>d_A_E_V_117a</th><th></th><th>d_A_E_V_116a</th><th></th></tr>
<tr><td>4/18/2005 0:15</td><td>170</td><td>0</td><td>159</td><td>0</td></tr>
<tr><td>4/18/2005 0:30</td><td>167</td><td>8</td><td>158</td><td>0</td></tr>
<tr><td>4/18/2005 0:45</td><td>168</td><td>0</td><td>158</td><td>0</td></tr>
<tr><td>4/18/2005 1:00</td><td>167</td><td>0</td><td>158</td><td>1</td></tr>
</table>
</td>
</tr>
</table>

Batch query	**Inputs**: 1..n equipment variables or data points Equipment variables link equipment with a data point that contains the measured values.  **Start parameters**: Batch selection; optional

Result:

Along with the information of selected batches, the function outputs the corresponding measured values of the connected data points, or of the data points that are linked by means of an equipment variable. The batches can be selected explicitly in a dialog at the start of evaluation. If this specification is missing, the batches will be selected based on the evaluation query period.

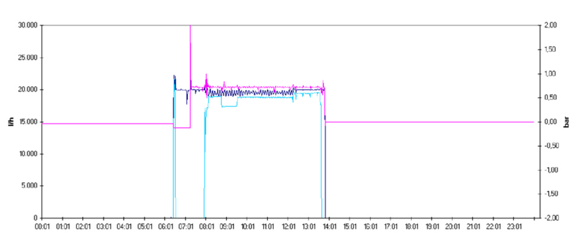


Batch selection by means of a dialog. Click the button next to the "Batches" field in the "Start query" dialog to open this selection dialog.

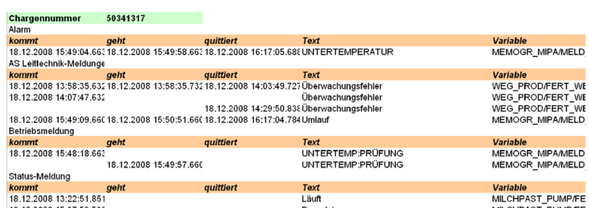
The following shows an example of the result:

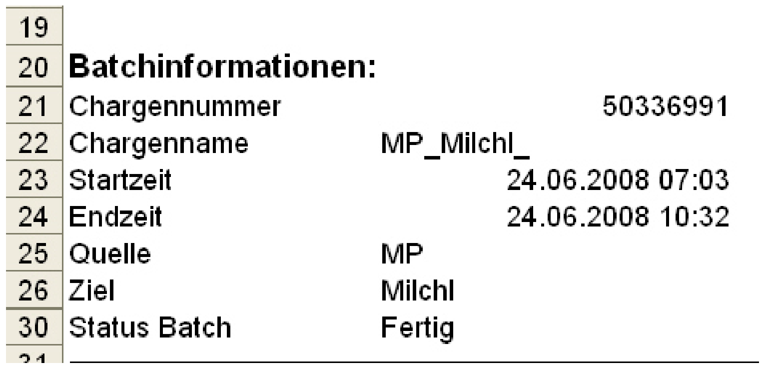
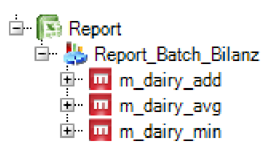
2	Zeit	m_MP_Durchfluss_Eintritt	m_MP_Durchfluss_Austritt	m_MP_Milch_nach_Erhitzer	m_MP_Milch_nach_Heißhalter	m_MP_Milch_nach_Kühler	m_MP_Heißwasser	m_MP_Differenzdruck
3	26.01.2009 00:01:00	8,68	4,34	28,83	27,74	23,98	30,73	-0,04
4	26.01.2009 00:02:00	8,68	4,34	28,79	27,73	23,98	30,72	-0,04
5	26.01.2009 00:03:00	8,68	4,34	28,73	27,71	23,96	30,73	-0,04
6	26.01.2009 00:04:00	8,68	4,34	28,74	27,63	23,94	30,72	-0,04
7	26.01.2009 00:05:00	8,68	4,34	28,78	27,65	23,97	30,70	-0,04
8	26.01.2009 00:06:00	8,68	4,34	28,75	27,62	23,93	30,60	-0,04
9	26.01.2009 00:07:00	8,68	4,34	28,70	27,62	23,96	30,61	-0,04
10	26.01.2009 00:08:00	8,32	4,34	28,70	27,54	23,94	30,60	-0,04
11	26.01.2009 00:09:00	8,68	4,34	28,68	27,52	23,91	30,60	-0,04
12	26.01.2009 00:10:00	8,68	4,34	28,73	27,54	23,93	30,53	-0,04
13	26.01.2009 00:11:00	8,68	4,34	28,67	27,49	23,93	30,49	-0,04
14	26.01.2009 00:12:00	8,68	4,34	28,70	27,49	23,91	30,49	-0,04
15	26.01.2009 00:13:00	8,68	4,34	28,63	27,50	23,92	30,49	-0,04
16	26.01.2009 00:14:00	8,68	4,34	28,64	27,46	23,91	30,49	-0,04

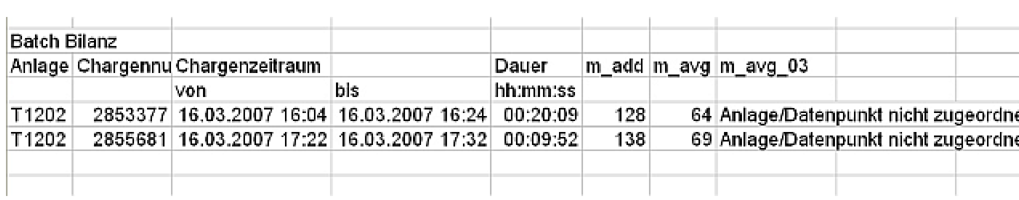
This data may also be visualized in a diagram.



<table>
<tr><td>Conditional calculation of derived measurements</td><td>Inputs:
1 measuring variable of function type "Gap check" (m_)
1 ..n derived data points (a_)
Start parameters:
none
Result:
The module evaluates the result of the measuring variable of function type "gap check". If the result = 0, the module deletes the series of measurements for the specified query period. If the result = 1, the module deletes the derived data point for the specified query period.</td></tr>
<tr><td>Batch alarms</td><td>Inputs:
1..n equipment objects, which may also be stored in a tree structure. In this case, the tree structure is scanned for equipment entries during calculation of the evaluation data.

Start parameters:
Batch selection; optional
Result:
Outputs information, for example, related to alarm, warning, or error messages that are assigned to the selected batches. The batches can be selected explicitly in a dialog at the start of evaluation. If this specification is missing, the batches will be selected based on the evaluation query period. The selection may also be restricted based on the connected equipment.

<table>
<tr><td>Chargennummer</td><td>50341317</td><td></td><td></td><td></td></tr>
<tr><td>Alarm</td><td></td><td></td><td></td><td></td></tr>
<tr><td>kommt</td><td>geht</td><td>quittiert</td><td>Text</td><td>Variable</td></tr>
<tr><td>18.12.2008 15:49:04.663</td><td>18.12.2008 15:49:58.663</td><td>18.12.2008 16:17:05.688</td><td>UNTERTEMPERATUR</td><td>MEMOGR_MIPA/MELD</td></tr>
<tr><td>AS Leittechnik-Meldunge</td><td></td><td></td><td></td><td></td></tr>
<tr><td>kommt</td><td>geht</td><td>quittiert</td><td>Text</td><td>Variable</td></tr>
<tr><td>18.12.2008 13:58:35.632</td><td>18.12.2008 13:58:35.732</td><td>18.12.2008 14:03:49.727</td><td>Überwachungsfehler</td><td>WEG_PROD/FERT_WE</td></tr>
<tr><td>18.12.2008 14:07:47.632</td><td></td><td></td><td>Überwachungsfehler</td><td>WEG_PROD/FERT_WE</td></tr>
<tr><td></td><td></td><td>18.12.2008 14:29:50.838</td><td>Überwachungsfehler</td><td>WEG_PROD/FERT_WE</td></tr>
<tr><td>18.12.2008 15:49:09.660</td><td>18.12.2008 15:50:51.660</td><td>18.12.2008 16:17:04.784</td><td>Umlauf</td><td>MEMOGR_MIPA/MELD</td></tr>
<tr><td>Betriebsmeldung</td><td></td><td></td><td></td><td></td></tr>
<tr><td>kommt</td><td>geht</td><td>quittiert</td><td>Text</td><td>Variable</td></tr>
<tr><td>18.12.2008 15:48:18.663</td><td></td><td></td><td>UNTERTEMP:PRÜFUNG</td><td>MEMOGR_MIPA/MELD</td></tr>
<tr><td></td><td>18.12.2008 15:49:57.660</td><td></td><td>UNTERTEMP:PRÜFUNG</td><td>MEMOGR_MIPA/MELD</td></tr>
<tr><td>Status-Meldung</td><td></td><td></td><td></td><td></td></tr>
<tr><td>kommt</td><td>geht</td><td>quittiert</td><td>Text</td><td>Variable</td></tr>
<tr><td>18.12.2008 13:22:51.851</td><td></td><td></td><td>Läuft</td><td>MILCHPAST_PUMP/FE</td></tr>
<tr><td>18.12.2008 15:37:53.530</td><td></td><td></td><td>Beendet</td><td>MILCHPAST_PUMP/FE</td></tr>
</table>
The following shows an example of message output.</td></tr>
</table>

<table>
<tr><td>Batch info</td><td>Inputs:
1..n equipment objects or equipment variables
Start parameters:
Batch selection; optional
Result:
Returns information on the selected batches. The batches can be selected explicitly in a dialog at the start of evaluation. If this specification is missing, the batches will be selected based on the evaluation query period. The selection may also be restricted based on connected equipment or equipment variables.

<table>
<tr><td>19</td><td></td><td></td><td></td></tr>
<tr><td>20</td><td>Batchinformationen:</td><td></td><td></td></tr>
<tr><td>21</td><td>Chargennummer</td><td></td><td>50336991</td></tr>
<tr><td>22</td><td>Chargenname</td><td>MP_Milchl_</td><td></td></tr>
<tr><td>23</td><td>Startzeit</td><td></td><td>24.06.2008 07:03</td></tr>
<tr><td>24</td><td>Endzeit</td><td></td><td>24.06.2008 10:32</td></tr>
<tr><td>25</td><td>Quelle</td><td>MP</td><td></td></tr>
<tr><td>26</td><td>Ziel</td><td>Milchl</td><td></td></tr>
<tr><td>30</td><td>Status Batch</td><td>Fertig</td><td></td></tr>
</table>
Example of batchinfo output</td></tr>
<tr><td>Batchinfo transposed</td><td>Similar to the Batchinfo module, with the exception that the result data is not output from left to right in ascending order, but from top to bottom.</td></tr>
<tr><td>Balance batch</td><td>Inputs:
1..n measuring variables


Start parameters:
Batch selection; optional
Result:
Outputs information pertaining to selected batches and to results of the connected measuring variables. The measuring variables are calculated over a time period that is defined by the start and end time of the respective batch. The batches can be selected explicitly in a dialog at the start of evaluation. If this specification is missing, the batches will be selected based on the evaluation query period. Important: All batches are assigned an equipment object by means of target definition. The measuring variable tree is only calculated if all connected data points represent the same equipment. The data points connected in the mevas must be assigned an equipment object using an equipment variable.

<table>
<tr><td>Batch Bilanz</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Anlage</td><td>Chargennu</td><td>Chargenzeitraum</td><td></td><td>Dauer</td><td>m_add</td><td>m_avg</td><td>m_avg_03</td></tr>
<tr><td></td><td></td><td>von</td><td>bis</td><td>hh:mm:ss</td><td></td><td></td><td></td></tr>
<tr><td>T1202</td><td>2853377</td><td>16.03.2007 16:04</td><td>16.03.2007 16:24</td><td>00:20:09</td><td>128</td><td>64</td><td>Anlage/Datenpunkt nicht zugeordnet</td></tr>
<tr><td>T1202</td><td>2855681</td><td>16.03.2007 17:22</td><td>16.03.2007 17:32</td><td>00:09:52</td><td>138</td><td>69</td><td>Anlage/Datenpunkt nicht zugeordnet</td></tr>
</table></td></tr>
</table>

Protocol batch

Inputs:

1..n measuring variables

Start parameters:

Interval

Batch selection; optional

Result:

Outputs information pertaining to selected batches and to results of the connected measuring variables. Results are output in the form of reports. The query time frame is split into intervals and the result is output for each interval. The measuring variables are calculated over a time period that is defined by the start and end time of the respective batch. The batches can be selected explicitly in a dialog at the start of evaluation. If this specification is missing, the batches will be selected based on the evaluation query period. Important: All batches are assigned an equipment object by means of target definition. The measuring variable tree is only calculated if all connected data points represent the same equipment. The data points connected to the meva nodes must be assigned to an equipment object using an equipment variable.

Protokoll Batch			
Chargennummer	2853377	Chargennummer	2855681
Start	16.03.2007 16:04	Start	16.03.2007 17:22
Ende	16.03.2007 16:24	Ende	16.03.2007 17:32
Anlage	T1202	Anlage	T1202
Meva	m_diary_avg_02	Meva	m_diary_avg_02
Zeitstempel	Wert	Zeitstempel	Wert
16.03.2007 16:09:48	0	16.03.2007 17:27	0
16.03.2007 16:14:48	0	16.03.2007 17:32	69
16.03.2007 16:19:48	64		
16.03.2007 16:24:48	0		
16.03.2007 16:24:57	0		

Purple values indicate that gaps exist in the time sets of the data points in the measuring variable tree. Green time stamps indicate the following: Usually, the start and end times of the batches are not a multiple of the interval, which is why the last interval is shorter than the others.

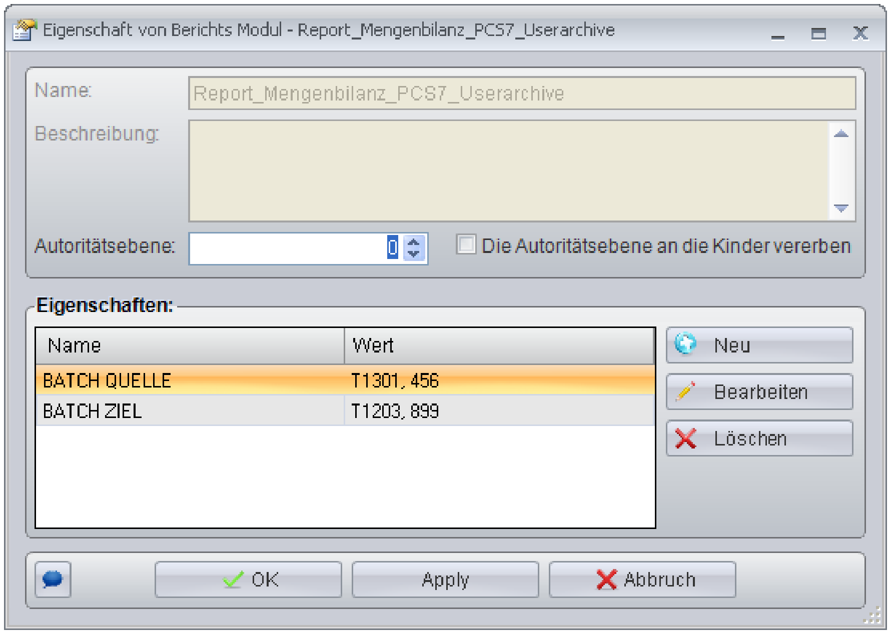
Quantity balance, PCS7 user archive

Inputs:

Restrictions may be applied by corresponding property settings.

BATCH SOURCE: Restricts the batches with regard to the source.

BATCH DESTINATION: Restricts the batches with regard to the target.

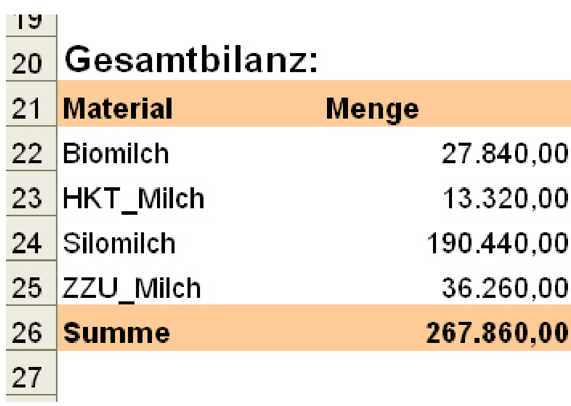


Start parameters:

none

Result:

Outputs a batch data quantity balance that is grouped based on the material. The batches are selected across the query period of the evaluation and the total quantities are calculated in the last step.



19		
20	**Gesamtbilanz:**	
21	**Material**	**Menge**
22	Biomilch	27.840,00
23	HKT_Milch	13.320,00
24	Silomilch	190.440,00
25	ZZU_Milch	36.260,00
26	**Summe**	**267.860,00**
27		

Quantity balance details, PCS7 user archive

Inputs:

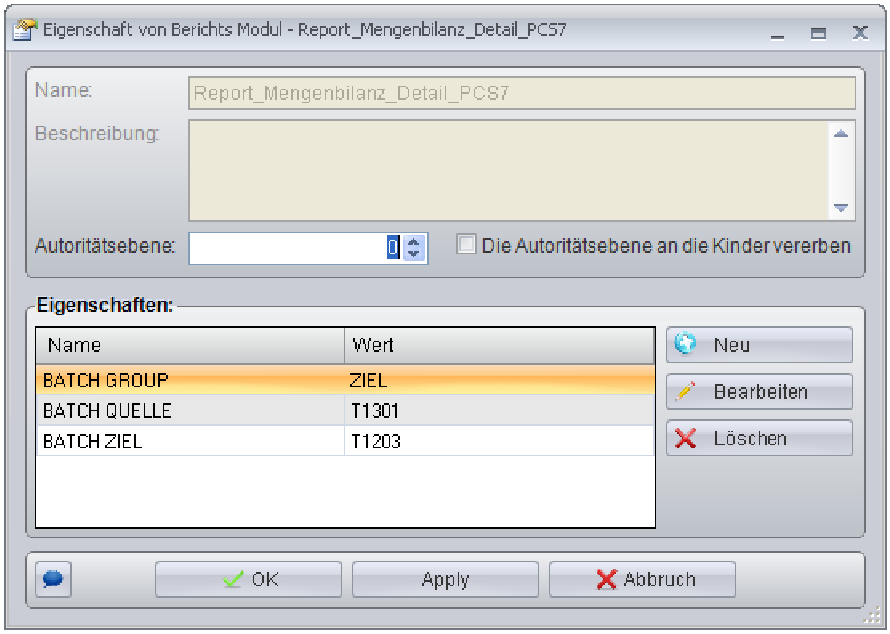
Restrictions may be applied by corresponding property settings.

BATCH SOURCE: Restricts the batches with regard to the source.

BATCH DESTINATION: Restricts the batches with regard to the target.

BATCH GROUP: Specifies whether to sort by target or source.

For this reason, only the TARGET and SOURCE properties are valid. The default order is based on the target.

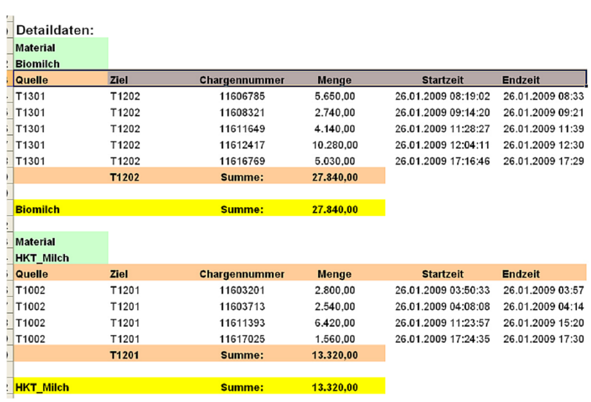


Start parameters:

none

Result:

Outputs a detailed batch data quantity balance that is grouped based on the material and equipment. The batches are selected across the query period of the evaluation and total quantities are calculated in the last step.



Detaildaten:

Material					
Biomilch					
Quelle	**Ziel**	**Chargennummer**	**Menge**	**Startzeit**	**Endzeit**
T1301	T1202	11606785	5.650,00	26.01.2009 08:19:02	26.01.2009 08:33
T1301	T1202	11608321	2.740,00	26.01.2009 09:14:20	26.01.2009 09:21
T1301	T1202	11611649	4.140,00	26.01.2009 11:28:27	26.01.2009 11:39
T1301	T1202	11612417	10.280,00	26.01.2009 12:04:11	26.01.2009 12:30
T1301	T1202	11616769	5.030,00	26.01.2009 17:16:46	26.01.2009 17:29
	T1202	**Summe:**	**27.840,00**		
Biomilch		**Summe:**	**27.840,00**		
Material					
HKT_Milch					
Quelle	**Ziel**	**Chargennummer**	**Menge**	**Startzeit**	**Endzeit**
T1002	T1201	11603201	2.800,00	26.01.2009 03:50:33	26.01.2009 03:57
T1002	T1201	11603713	2.540,00	26.01.2009 04:08:08	26.01.2009 04:14
T1002	T1201	11611393	6.420,00	26.01.2009 11:23:57	26.01.2009 15:20
T1002	T1201	11617025	1.560,00	26.01.2009 17:24:35	26.01.2009 17:30
	T1201	**Summe:**	**13.320,00**		
HKT_Milch		**Summe:**	**13.320,00**		

<table>
<tr><td>B/L KISS-A Infracor</td><td>

Inputs:

1..n measuring variables (m_)

Start parameters:

none

Result:

Was developed as special module for Infracor. As only one report may exist for each day, the module cancels all operations and enters a corresponding error message in the error journal if a user attempts to create a second report for the same day. You can always recalculate the report of a specific day. A report version is generated in the first row. This version is incremented by the count of one whenever data has changed or if the report was recalculated. You do not need to specify an interval, as the module calculates the data based on a permanently set interval of 15 minutes. You can connect any number of measuring variables. It is assumed that the measuring variables are load profiles. The supply and delivery figures are calculated for each one, with negative return value from the measuring variable being rated as supply figure and a positive value as delivery figure. Along with these figures, the electrical work is calculated for all measuring variables. You can enter remarks in the comment area. Caution! These remarks will be lost if you reload the report. The report is output to two Excel spreadsheets. The first spreadsheet outputs the entire report as mentioned above, while the second spreadsheet only contains the generated file name. This file name consists of the following elements: the report date, a text that can be saved in the description field of the module, as well as the current version.

<table>
<tr><td></td><td>Version</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>Kommentarbereich</td><td></td><td>Bezug</td><td>Lieferung</td><td>Bezug</td><td>Lieferung</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Arbeit</td><td>[MWh]</td><td>10678,75</td><td>0</td><td>10525,5</td><td>0</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>von</td><td>bis</td><td>MWh</td><td>MWh</td><td>MWh</td><td>MWh</td></tr>
<tr><td>00:00:00</td><td>00:15:00</td><td>170</td><td>0</td><td>159</td><td>0</td></tr>
<tr><td>00:15:00</td><td>00:30:00</td><td>167</td><td>0</td><td>158</td><td>0</td></tr>
<tr><td>00:30:00</td><td>00:45:00</td><td>168</td><td>0</td><td>158</td><td>0</td></tr>
<tr><td>00:45:00</td><td>01:00:00</td><td>167</td><td>0</td><td>158</td><td>0</td></tr>
<tr><td>01:00:00</td><td>01:15:00</td><td>167</td><td>0</td><td>158</td><td>0</td></tr>
</table>

</td></tr>
<tr><td>User rights changes</td><td>

Inputs:

none

Start parameters:

none

Result:

The report outputs all changes to user rights made in the query period.

Changed user rights

Changed passwords

User rights added

User rights removed

User inserted into group

User removed from group

The information is always output with time stamp, including a description and the user name.

</td></tr>
</table>

<table>
<tr><td>Balance</td><td>Inputs:
1-n measuring variables (m_)
Start parameters:
none
Result:
The measuring variable is calculated across the entire observation period of the report.
<table>
<tr><td>m_Supply_1_sumR</td><td>kWh</td><td>42715</td></tr>
<tr><td>m_Supply_2_sumR</td><td>kWh</td><td>42102</td></tr>
</table>
You set the BILA_HEADER parameter in B.Data Options to specify whether or not to insert a header. (1 = header is shown, 0 = header is hidden)</td></tr>
<tr><td>Balance with time stamp</td><td>Inputs:
1-n measuring variables (m_)
Note: Only the minimum or maximum function type
Start parameters:
none
Result:
The measuring variable is calculated across the entire observation period of the report. Minimum or maximum values are returned with time stamp.
<table>
<tr><td>m_Supply_1_max</td><td>18.04.2005 07:15</td><td>kWh</td><td>42.715</td></tr>
<tr><td>m_Supply_2_max</td><td>18.04.2005 06:30</td><td>kWh</td><td>42.102</td></tr>
</table>
You set the BILA_TS_HEADER parameter in B.Data Options to specify whether or not to insert a header. (1 = header is shown, 0 = header is hidden)</td></tr>
<tr><td>balance since new year</td><td>Inputs:
1-n measuring variables (m_)
Start parameters:
none
Result:
The measuring variable is calculated starting at the "new year" and ends with the end of the query period.
Example: Monthly report Apr. 2008; calculates the period from Jan. 01, 2008 to May 01, 2008.
<table>
<tr><td></td><td></td><td>since beginning of t</td></tr>
<tr><td>m_Supply_1_sumR</td><td>kWh</td><td>598.000</td></tr>
<tr><td>m_Supply_2_sumR</td><td>kWh</td><td>620.250</td></tr>
</table></td></tr>
<tr><td>Balance comparing</td><td>Inputs:
1-n measuring variables (m_)
Start parameters:
none
Result:
The measuring variable is calculated across the entire observation period of the report. Moreover, the last period or the same period of the previous year is calculated and reported.
Example: Monthly report Apr. 2008; the report covers April 2008, March 2008, and April 2007.
<table>
<tr><td>MEVA</td><td>Unit</td><td>act. Period</td><td>last period</td><td>comp. last year</td></tr>
<tr><td>m_Supply_1_sumR</td><td>kWh</td><td>42.715</td><td>13.123</td><td>25.255</td></tr>
<tr><td>m_Supply_2_sumR</td><td>kWh</td><td>42.102</td><td>12.143</td><td>23.545</td></tr>
</table>
CAUTION: Only the Month, Month+6h, Day, and Day+6h periods are supported as query type.</td></tr>
</table>

Balance comparing SNY

Inputs:

1-n measuring variables (m_)

Start parameters:

none

Result:

The measuring variable is calculated for the period starting with the "new year" and ending with the query period, as well as for the same period of the previous year.

Example: Monthly report Apr. 2008; calculates the period from Jan. 01, 2008 until May 01, 2008, as well as the period from Jan. 01, 2007 to May 01, 2007.

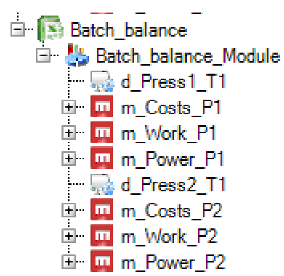
		compare since beginni	compare last yea
m_Supply_1_sumR	kWh	638,734	598,000
m_Supply_2_sumR	kWh	627,029	620,250

Batch-related balancing

Inputs:

Combination of a data point and 1-n measuring variables (m_)

This combination can be repeated as often as need be.



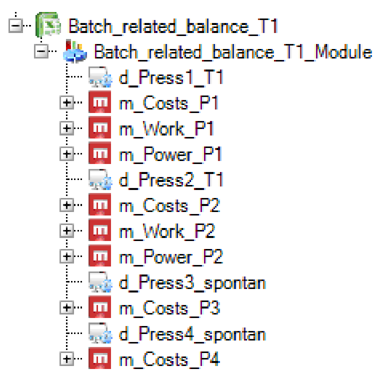
Start parameters:

None

Result:

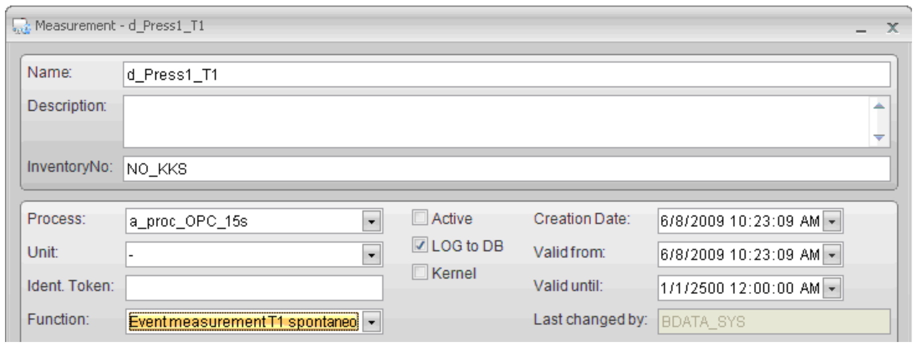
The data points contain the batch numbers as consecutive time set. A change to this number indicates that a new batch has started. The batches are sorted and output chronologically for the query period, including their start time, end time, and duration. The measuring variables connected behind the data point are calculated once for each determined batch period and once for the query period that is specified at the start of the report. Calculation starts with the first data point/measuring variable combination and continues with the next combination, inasmuch as a next one exists. It is assumed that the batch numbers are saved at cyclic intervals to the data point.

Production	Batch	Batch period		Duration	m_Costs_P1	m_Work_P1
					(Batch period	(Batch period
		from	to	hh:mm:ss	EUR	MWh
Press 1	4780	2006-05-01 00:15	2006-05-11 17:45	257:30:00	10310	20620
	4752	2006-05-11 18:00	2006-05-13 10:00	40:00:00	1610	3220
	4711	2006-05-14 10:30	2006-05-18 01:00	86:30:00	3470	6940
	4799	2006-05-18 01:15	2006-06-01 00:00	334:45:00	13400	26800
Press 2	9011	2006-05-01 00:15	2006-05-12 11:45	275:30:00	44120	55150
	9011	2006-05-12 12:15	2006-05-13 11:45	23:30:00	3800	4750
	9011	2006-05-13 13:15	2006-06-01 00:00	442:45:00	70880	88600

Batch-related balancing, spontaneous	**Inputs**: Combination of a data point and 1-n measuring variables (m_) This combination can be repeated as often as need be. **Start parameters**: None **Result**: This module works similar to the "Batch-related balancing" module mentioned above, the only difference being that the batch numbers are not saved at cyclic intervals, but rather spontaneously. Spontaneous means as immediate reaction to changes, i.e. a batch number entry marks the start of a new and the end of the previous batch.
Batch-related balancing T1	**Inputs**: Combination of a data point and 1-n measuring variables (m_) This combination can be repeated as often as need be.  **Start parameters**: None

Result:

This module works in essence similar to the "Batch-related balancing" module mentioned above. However, instead of the batch number being stored in the data point, the batch is indicated by means of a binary signal (0/1). A sequence of ones, for example, means that a press has been powered up for a specific duration. The switch-on and switch-off times and durations are calculated based on this information. The measuring variables connected behind the data point structure are calculated based on these times. You can set up any combination of data points with cyclic or spontaneous time sequences at this module. Whether a data point is to contain cyclic or spontaneous data has to be configured. In the "Function" field, specify the "Event measurement T1 cyclic" or the "Event measurement T1 spontaneous" setting.



Production line	Nr.			duration	kCosts F	kWork	kPower P
		from	to	hh:mm	EUR	MWh	MW
Press 1 T1	1	00:01	00:16	00:15	20	40	60
	2	04:16	04:31	00:15	20	40	60
	3	10:46	12:46	02:00	90	180	270
	4	15:01	20:31	05:30	230	460	690
	5	23:31	01:16	01:45	80	160	240
Press 1 T1	6	02:46	03:01	00:15	80	100	120
	7	06:46	08:31	01:45	320	400	480
	8	14:01	15:46	01:45	320	400	480
d_Press3_spor	9	04:31	04:32	00:01	10		
	10	11:01	12:46	01:45	80		
	11	15:16	20:31	05:15	220		
	12	23:46	01:16	01:30	70		
kPress4_spont	13	03:31	04:01	00:30	30		
	14	07:01	08:31	01:30	70		
	15	14:16	15:46	01:30	70		

<table>
<tr>
<td>Duration curve</td>
<td>
Inputs:
1-n measuring variables (m_)
Start parameters:
Interval, e.g. 3
Unit: e.g. h
Result:
At a query period of one day and three hour interval, the duration curve module returns eight values (in a 3 h pattern) (sorted protocol). The meva is calculated during the interval and sorted accordingly.
<table>
<tr><th>duration</th><th>m_Supply_1_sumR</th><th>m_Supply_2_sumR</th></tr>
<tr><td>3 h</td><td>6,867</td><td>6,681</td></tr>
<tr><td>6 h</td><td>6,761</td><td>6,519</td></tr>
<tr><td>9 h</td><td>6,442</td><td>6,256</td></tr>
<tr><td>12 h</td><td>6,244</td><td>6,253</td></tr>
<tr><td>15 h</td><td>6,084</td><td>6,199</td></tr>
<tr><td>18 h</td><td>4,623</td><td>4,704</td></tr>
<tr><td>21 h</td><td>3,671</td><td>3,586</td></tr>
<tr><td>24 h</td><td>2,023</td><td>1,904</td></tr>
</table>
You set the MODULE_EINHEIT parameter in B.Data Options to specify whether to enable or disable output of the unit. (0 = unit output disabled, 1 = unit output enabled)
</td>
</tr>
</table>

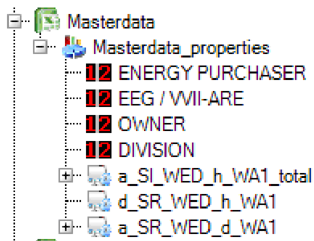
<table>
<tr><td>Duration curve sorted</td><td>Inputs:
2-n measuring variables (m_)
Start parameters:
Interval, e.g. 3
Unit: e.g. h
Result:
At a query period of one day and three hour interval, the duration curve module returns eight values (in a 3 h pattern). The values of the first MEVA are output sorted in descending order and the remaining MEVAs are sorted following the first MEVA.
<table>
<tr><th>duration</th><th>m_Supply_1_sumR</th><th>m_Supply_2_sumR</th></tr>
<tr><td>3 h</td><td>6,867</td><td>4,704</td></tr>
<tr><td>6 h</td><td>6,761</td><td>6,199</td></tr>
<tr><td>9 h</td><td>6,442</td><td>6,253</td></tr>
<tr><td>12 h</td><td>6,244</td><td>3,586</td></tr>
<tr><td>15 h</td><td>6,084</td><td>1,904</td></tr>
<tr><td>18 h</td><td>4,623</td><td>6,519</td></tr>
<tr><td>21 h</td><td>3,671</td><td>6,681</td></tr>
<tr><td>24 h</td><td>2,023</td><td>6,256</td></tr>
</table></td></tr>
<tr><td>DB statistics</td><td>Inputs:
none
Start parameters:
none
Result:
The following table provides an overview of database storage allocation.</td></tr>
<tr><td>Documentation of all operating data points</td><td>Inputs:
none
Start parameters:
none
Result:
All operating data points created in the system are listed, including their attributes.</td></tr>
</table>

<table>
<tr>
<td>Properties</td>
<td>

Inputs:

1..n property type

1..n objects to be evaluated



Start parameters:

none

Result:

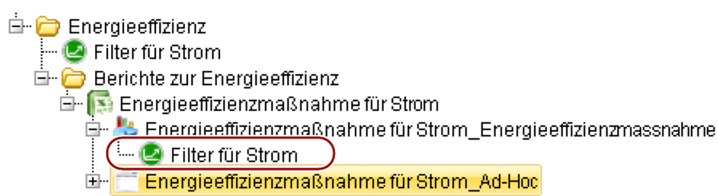
A matrix consisting of the property types and objects is set up. The objects are listed vertically from top to bottom, while the property types are listed horizontally from left to right.

<table>
<tr><th></th><th>ENERGY PURCHASER</th><th>EEG / VWII-ARE</th><th>OWNER</th></tr>
<tr><td>a_SI_WED_h_WA1_total</td><td>EST</td><td>Edersee 7</td><td>EWK</td></tr>
<tr><td>d_SR_WED_h_WA1</td><td>E.ON</td><td>Landshut</td><td>RWE</td></tr>
<tr><td>a_SR_WED_d_WA1</td><td>EST</td><td>Edersee 7</td><td>EWK</td></tr>
</table>

</td>
</tr>
<tr>
<td>Energy efficiency measure</td>
<td>

Inputs:

1 ..n filtered overview objects



Start parameters:

none

Result:

The module outputs all data of the energy efficiency measures that is filtered in an overview object.

</td>
</tr>
</table>

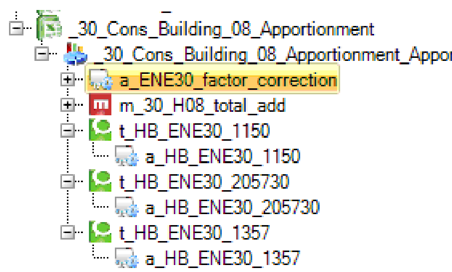
Energy apportionment V2

Inputs:

Data point that represents the loss factor

Meva that represents total power input to the buildings

Parameters with sublevel data point that represent the cost centers.



Start parameters:

none

Result:

The consumption calculated based on the meva is multiplied by the data point value (loss factor). The product of this calculation is allocated in accordance with cost center factors (parameters). The result is written directly to the data point that is connected to the parameter node.

correction factor	1.2		
Counter sum	2,497,128.0		
Counter sum corrected	2,996,553.6		
30	898,966.1	t_H8_ENE30_1150	Costcenter 03
60	1,797,932.2	t_H8_ENE30_205730	Costcenter 11
10	299,655.4	t_H8_ENE30_1357	CostCenter 14

It is verified that the parameter values total 100 % before the allocation is initiated. If this is not the total, the parameter values will be adjusted accordingly to a total of 100 %.

If the substitute parameter <>0, this cost center is only allocated the percentage that is defined in the replacement value parameter. It is therefore not necessary to adjust this parameter.

Acquisition control

Inputs:

Acquisition computer

Start parameters:

none

Result:

The list contains all active measurements of the connected acquisition computer.

The list includes the name, the number of measured values acquired in the observation period, as well as the parameterized cycle time. If no cycle time was parameterized, it is determined based on the data contained in the measurement journal (last time stamp of the monitoring period). If this is not possible, the value -1 is output as cycle time.

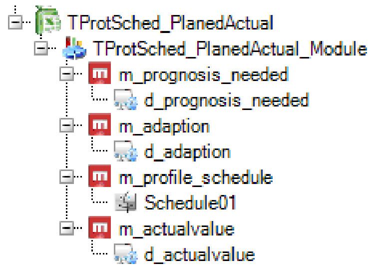
Name der Messung	Anzahl Messwerte	Zykluszeit
d_Testdatenpunkt1	96	900
d_Testdatenpunkt2	80	900
d_Testdatenpunkt3	96	900
a_Datenpunkt1	1440	60

<table>
<tr>
<td>B/L KISS-A Infracor monthly schedule</td>
<td>
Inputs:
1 measuring variable (m_)
Start parameters:
Interval, e.g. 15
Unit: e.g. min
Result:
The connected measuring variable is calculated based on a 15-minute pattern.
Positive value: The result is written to column 4.
Negative value: The result is written to column 5.
The date, the FROM timestamp and the TO timestamp are entered in the first three columns. The unit is fetched from the MEVA.
<table>
<tr><th></th><th>from</th><th>to</th><th>kWh</th><th>kWh</th></tr>
<tr><td>18.04.2005</td><td>00:00:00</td><td>00:15:00</td><td>170</td><td>0</td></tr>
<tr><td>18.04.2005</td><td>00:15:00</td><td>00:30:00</td><td>167</td><td>0</td></tr>
<tr><td>18.04.2005</td><td>00:30:00</td><td>00:45:00</td><td>168</td><td>0</td></tr>
<tr><td>18.04.2005</td><td>00:45:00</td><td>01:00:00</td><td>167</td><td>0</td></tr>
</table>
</td>
</tr>
<tr>
<td>Schedule protocol F</td>
<td>
Inputs:
1 measuring variable (m_)
Start parameters:
Interval, e.g. 15
Unit: e.g. min
Result:
Works similar to a protocol module, with the exception that only one measuring variable may be connected. The output is assigned a special format - Day, from, to - as shown in the Excel table.
<table>
<tr><th>Day</th><th>from</th><th>to</th><th>kWh</th></tr>
<tr><td>18.04.2005</td><td>00:00</td><td>00:15</td><td>170</td></tr>
<tr><td>18.04.2005</td><td>00:15</td><td>00:30</td><td>167</td></tr>
<tr><td>18.04.2005</td><td>00:30</td><td>00:45</td><td>168</td></tr>
<tr><td>18.04.2005</td><td>00:45</td><td>01:00</td><td>167</td></tr>
<tr><td>18.04.2005</td><td>01:00</td><td>01:15</td><td>167</td></tr>
<tr><td>18.04.2005</td><td>01:15</td><td>01:30</td><td>168</td></tr>
</table>
</td>
</tr>
</table>

Schedule Target/Actual

Inputs:

4 measuring variables (m_)



Start parameters:

none

Result:

The function must be provided the following four measuring variables: forecast, adjustment, profile value, actual value. One hour is set permanently as the interval. The results of the four measuring variables are output in separate columns next to the time stamps (from/to). The offset between the actual value and the forecast + adjustment is output as well, i.e. once as absolute value and once as percentage.

Date		Prognosis	Adaptio	Schedul	ActualVa	Diff
from	to	[MW]	[MW]	[MW]	[MW]	[MW]
21.02.2008 00:00	21.02.2008 01:00	121,5	2	0	131,5	-8
21.02.2008 01:00	21.02.2008 02:00	125,5	2	0	135,5	-8
21.02.2008 02:00	21.02.2008 03:00	129,5	2	0	139,5	-8
21.02.2008 03:00	21.02.2008 04:00	133,5	2	0	143,5	-8
21.02.2008 04:00	21.02.2008 05:00	137,5	2	0	147,5	-8
21.02.2008 05:00	21.02.2008 06:00	141,5	2	0	151,5	-8
21.02.2008 06:00	21.02.2008 07:00	145,5	2	2	155,5	-8
21.02.2008 07:00	21.02.2008 08:00	149,5	2	2	159,5	-8

Gas schedule

Inputs:

1 measuring variable (m_)

Start parameters:

Interval, e.g. 15

Unit: e.g. min

Result:

The measuring variable is calculated on a 15-minute pattern. The 15-minute values are totaled to hourly values, as Excel needs hourly values for the output. The result is entered in column 3 if the value is positive. If the value is negative, the result is entered in column 4.

from	to	kWh	kWh
0:00:00	1:00:00	672	0
1:00:00	2:00:00	673	0
2:00:00	3:00:00	678	0
3:00:00	4:00:00	643	0
4:00:00	5:00:00	1270	0

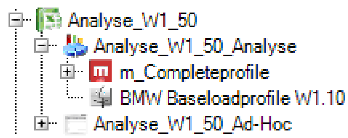
<table>
<tr>
<td>Daily temperature figures</td>
<td>
Inputs:
1 data point (d_, e_, a_) that represents the outdoor temperature.
Start parameters:
none
Result:
The connected data point is used to calculate the daily average. The daily temperature figure is calculated as follows:
Daily average of the outdoor temperature TA
DTf = (20° - TA) if TA < 15°
DTf = 0 if TA ≥ 15°
Monthly value: Total of daily values
Query period 1 month
Interval 1 day.
<table>
<tr><td>Day</td><td>d_temp</td></tr>
<tr><td>1/1/1998</td><td>13.1</td></tr>
<tr><td>1/2/1998</td><td>12</td></tr>
<tr><td>1/3/1998</td><td>11.9</td></tr>
<tr><td>1/4/1998</td><td>13.7</td></tr>
<tr><td>1/5/1998</td><td>13.1</td></tr>
<tr><td>1/6/1998</td><td>12.7</td></tr>
<tr><td>.....</td><td>...</td></tr>
</table>
Query period 1 year
Interval: 1 month
<table>
<tr><td>month</td><td>d_temp</td></tr>
<tr><td>January</td><td>503</td></tr>
<tr><td>February</td><td>390</td></tr>
<tr><td>March</td><td>401</td></tr>
<tr><td>April</td><td>298</td></tr>
<tr><td>May</td><td>115</td></tr>
<tr><td>June</td><td>36</td></tr>
<tr><td>....</td><td>...</td></tr>
</table>
</td>
</tr>
<tr>
<td>Boundary values</td>
<td>
Inputs:
1-n data points (d_, e_, a_)
Start parameters:
Upper limit: e.g. 100
Lower limit: e.g. 10
Result:
The module returns the time stamps in which the value was below the lower limit or above the upper limit. Along with the value, the duration of such states will be output. The duration is increased if the value does not change across periods.
<table>
<tr><td colspan="3">lower limit (10) of d_A_E_V_117a</td><td></td><td colspan="3">upper limit (100) of d_A_E_V_117a</td></tr>
<tr><td>4/18/2005 5:00</td><td>3</td><td>15</td><td></td><td>4/18/2005 7:45</td><td>532</td><td>15</td></tr>
<tr><td>4/18/2005 5:30</td><td>2</td><td>15</td><td></td><td>4/18/2005 11:30</td><td>574</td><td>15</td></tr>
<tr><td>4/18/2005 7:00</td><td>3</td><td>15</td><td></td><td>4/18/2005 11:45</td><td>577</td><td>15</td></tr>
</table>
</td>
</tr>
</table>

Load profile analysis module type

Inputs:

1 measuring variable (m_)

1 profile or master profile



Start parameters:

Interval, e.g. 15

Unit: e.g. min

Result:

The forecast load profile is considerably dependent on the typical days. This module is provided to enable calculation of the time set of a past period. You can use the load profile analysis module to analyze any time frame. As a result, the performance value per period (15-minute or hour) is output for all typical days in the evaluation period. If the analysis covers a yearly range (for example, for the typical day Monday), all Mondays will be used for calculations, provided these are not holidays or special days. In a year with 48 Mondays, for example, the mean value is calculated for the time window from 00:00 h to 01:00 h for all Mondays and output as result. The same rule is applied to all other intervals.

A measuring variable that prepares the data point to be analyzed must be connected directly under the module node.

You must also connect the profile that defines the typical days. You can also use a master profile for this purpose.

Corrupted values are ignored in the analysis. The parameter BDATA_LASTPRF_QS = 0 must be set in the B.Data Options if corrupted values are to be included. BDATA_LASTPRF_QS = 1 means that corrupted values are ignored.

The module provides the corresponding result in the following form:

Calculation	Profiles	From	To	
	ProfWinter	01.04.2006	01.10.2006	
	ProfSummer	01.10.2006	01.04.2007	
Reference object	MasterProfile	m_OverallProfile		
Profiles		ProfSummer	ProfWinter	ProfSummer, ProfWinter
Number of values		169	173	23
Time		TDSummer	TDWinter	TDHoliday
00:00	01:00	8.36	8.80875	9.36
01:00	02:00	8.425	8.7625	9.425
02:00	03:00	8.25875	8.72	9.25875

Load profile analysis module type (continued)

03:00	04:00	8.225	8.94125	9.225
04:00	05:00	8.1975	9.041875	9.1975
05:00	06:00	8.21625	9.34625	8.21625
06:00	07:00	8.31625	11.44188	8.31625
07:00	08:00	8.38375	13.48125	8.38375
08:00	09:00	8.4525	14.445	8.4525
09:00	10:00	8.45375	14.6775	8.45375
10:00	11:00	8.45	14.78813	8.45

<table>
<tr><td></td><td>11:00</td><td>12:00</td><td>8.49</td><td>14.87188</td><td>8.49</td></tr>
<tr><td></td><td>12:00</td><td>13:00</td><td>8.4975</td><td>14.84125</td><td>8.4975</td></tr>
<tr><td></td><td>13:00</td><td>14:00</td><td>8.5525</td><td>14.78938</td><td>8.5525</td></tr>
<tr><td rowspan="11">Load profile analysis module type (continued)</td><td>14:00</td><td>15:00</td><td>8.53625</td><td>14.59313</td><td>8.53625</td></tr>
<tr><td>15:00</td><td>16:00</td><td>8.57875</td><td>14.09438</td><td>8.57875</td></tr>
<tr><td>16:00</td><td>17:00</td><td>8.58125</td><td>13.23375</td><td>8.58125</td></tr>
<tr><td>17:00</td><td>18:00</td><td>8.51875</td><td>12.5325</td><td>8.51875</td></tr>
<tr><td>18:00</td><td>19:00</td><td>8.50125</td><td>11.57625</td><td>8.50125</td></tr>
<tr><td>19:00</td><td>20:00</td><td>8.445</td><td>10.60125</td><td>8.445</td></tr>
<tr><td>20:00</td><td>21:00</td><td>8.40125</td><td>9.760625</td><td>8.40125</td></tr>
<tr><td>21:00</td><td>22:00</td><td>8.34875</td><td>9.286875</td><td>8.34875</td></tr>
<tr><td>22:00</td><td>23:00</td><td>8.32375</td><td>8.953125</td><td>8.32375</td></tr>
<tr><td>23:00</td><td>00:00</td><td>8.31375</td><td>8.77125</td><td>8.31375</td></tr>
<tr><td colspan="5">The specific time period and the profile used to calculate this time period are displayed for master profiles (lines 1 to 3). The names of the connected master profile/profile and of the measuring variable are displayed in line 4 on the right side of the "reference object".

The typical day is output in line 7. The "Number of values" above that specifies the number of days used to calculate the typical day. The result is marked in blue color if this value is less than three.

Line 4 displays the profiles used as the basis for calculation of the typical days. This line should never contain more than one profile. If it contains several profiles, the text is output in red font.

The typical days can be written back to the database. For this purpose, the user must start the report in the second dialog that contains the "Module Start/Stop" heading, i.e. the dialog in which you also enter the interval, and enter the text "save" in the text field (heading = Text:). This text is not case-sensitive.</td></tr>
<tr><td>LTEXT for the current version</td><td colspan="5">Inputs:

1-n data points (d_, e_, a_)

Start parameters:

none

Result:

All text objects of the current version are read for the connected data points and displayed with time stamp.

<table><tr><td>time</td><td>d_StringDatapoint</td></tr><tr><td>1/16/2008 9:00</td><td>Machine 4 fallen out</td></tr><tr><td>1/16/2008 16:00</td><td>Turbinerevision</td></tr></table></td></tr>
</table>

<table>
<tr><td>LTEXT for all versions</td><td>

Inputs:

1-n data points (d_, e_, a_)

Start parameters:

none

Result:

All text objects of all versions are read for the connected data points and are displayed with time stamp. The latest version is always listed on top. The version date represents the value creation date.

<table>
<tr><td>time</td><td>d_StringDatapoint</td><td>Value</td><td>version-date</td></tr>
<tr><td>1/16/2008 9:00</td><td>Machine 4 fallen out</td><td>0</td><td>1/16/2008 9:13</td></tr>
<tr><td>1/16/2008 9:00</td><td>Machine 2 fallen out</td><td>0</td><td>1/16/2008 9:11</td></tr>
<tr><td>1/16/2008 16:00</td><td>Turbinerevision</td><td>0</td><td>1/16/2008 9:13</td></tr>
</table>

</td></tr>
<tr><td>MinMaxAvg-calculation</td><td>

Inputs:

1-n data points (d_, e_, a_)

Start parameters:

none

Result:

The module returns the minimum, maximum, and mean value in the query period for all connected data points. It also returns the time and duration of the minimum or maximum state.

<table>
<tr><td colspan="2">measurementt: d A E V 117a</td><td></td><td></td><td></td></tr>
<tr><td>minimum:</td><td>153</td><td></td><td></td><td></td></tr>
<tr><td>maximum:</td><td>588</td><td></td><td></td><td></td></tr>
<tr><td>average:</td><td>444.9479</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>minimum - timestamp</td><td>duration [min]</td><td></td><td>maximum - timestamps</td><td>duration [min]</td></tr>
<tr><td>4/18/2005 4:00</td><td>15</td><td></td><td>4/18/2005 12:30</td><td>15</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">--------------------</td><td></td><td></td><td></td></tr>
</table>

</td></tr>
<tr><td>Derived measurement module</td><td>

Inputs:

1-n derived data points (a_)

Start parameters:

none

Result:

The derived data points are calculated in the evaluation period. No data is returned to Excel.

</td></tr>
<tr><td>Schedule module B/L KISS A</td><td>

Inputs:

1 measuring variable (m_)

Start parameters:

Interval, e.g. 15

Unit: e.g. min

Result:

The module outputs a FROM and a TO time stamp. This module is designed for use in daily reports, which is why the date is not displayed. The result is entered in column 3 if the meva value is positive. If the value is negative, the result is entered in column 4.

<table>
<tr><th>from</th><th>to</th><th>MW</th><th>MW</th></tr>
<tr><td>0:00</td><td>0:15</td><td>1560.00</td><td>0.00</td></tr>
<tr><td>0:15</td><td>0:30</td><td>1565.00</td><td>0.00</td></tr>
<tr><td>0:30</td><td>0:45</td><td>1570.00</td><td>0.00</td></tr>
<tr><td>0:45</td><td>1:00</td><td>1575.00</td><td>0.00</td></tr>
</table>

</td></tr>
</table>

<table>
<tr>
<td>Schedule module KiSS A</td>
<td>
Inputs:
1..n measuring variables (m_)
Start parameters:
Interval, e.g. 15
Unit: e.g. min
Result:
The module outputs a FROM and a TO time stamp. This module is designed for use in daily reports, which is why the date is not displayed.
<table>
<tr><th>from</th><th>to</th><th>MW</th><th>MW</th></tr>
<tr><td>0:00</td><td>0:15</td><td>1560.00</td><td>0.00</td></tr>
<tr><td>0:15</td><td>0:30</td><td>1565.00</td><td>0.00</td></tr>
<tr><td>0:30</td><td>0:45</td><td>1570.00</td><td>0.00</td></tr>
<tr><td>0:45</td><td>1:00</td><td>1575.00</td><td>0.00</td></tr>
</table>
</td>
</tr>
<tr>
<td>Module info</td>
<td>
Inputs:
none
Start parameters:
none
Result:
The following information is output for the connected modules.
ModuleName|Start|Stop|MaxDate|Interval|Unit|LowerLimit|UpperLimit|Text
</td>
</tr>
</table>

<table>
<tr>
<td>nMaxima</td>
<td>
Inputs:
1 parameter (t_). This parameter is optional. Use this parameter to specify the number of maximum values of a data point to be calculated. If you do not specify this parameter, five maximum values of a data point will be calculated.
1..n data points (d_, e_, a_)
Start parameters:
none
Result:
The module calculates the required number of maximum values of a data point for the specified query period. The module also outputs the following measured values:

12 measured values that are available before a maximum measured value
11 measured values that are available after a maximum measured value

The module outputs the additional measured values if these are available for the respective query period. The module will not output any additional measured values if the last value in the query period is a maximum measured value.
<table>
<tr><td>Datenpunkt</td><td>e_NULL01</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Zeit</td><td>Wert</td><td>Zeit</td><td>Wert</td><td>Zeit</td><td>Wert</td></tr>
<tr><td>04.03.2007 20:45:00</td><td>82</td><td>04.03.2007 20:30:00</td><td>81</td><td>04.03.2007 20:15:00</td><td>80</td></tr>
<tr><td>04.03.2007 21:00:00</td><td>83</td><td>04.03.2007 20:45:00</td><td>82</td><td>04.03.2007 20:30:00</td><td>81</td></tr>
<tr><td>04.03.2007 21:15:00</td><td>84</td><td>04.03.2007 21:00:00</td><td>83</td><td>04.03.2007 20:45:00</td><td>82</td></tr>
<tr><td>04.03.2007 21:30:00</td><td>85</td><td>04.03.2007 21:15:00</td><td>84</td><td>04.03.2007 21:00:00</td><td>83</td></tr>
<tr><td>04.03.2007 21:45:00</td><td>86</td><td>04.03.2007 21:30:00</td><td>85</td><td>04.03.2007 21:15:00</td><td>84</td></tr>
<tr><td>04.03.2007 22:00:00</td><td>87</td><td>04.03.2007 21:45:00</td><td>86</td><td>04.03.2007 21:30:00</td><td>85</td></tr>
<tr><td>04.03.2007 22:15:00</td><td>88</td><td>04.03.2007 22:00:00</td><td>87</td><td>04.03.2007 21:45:00</td><td>86</td></tr>
<tr><td>04.03.2007 22:30:00</td><td>89</td><td>04.03.2007 22:15:00</td><td>88</td><td>04.03.2007 22:00:00</td><td>87</td></tr>
<tr><td>04.03.2007 22:45:00</td><td>90</td><td>04.03.2007 22:30:00</td><td>89</td><td>04.03.2007 22:15:00</td><td>88</td></tr>
<tr><td>04.03.2007 23:00:00</td><td>91</td><td>04.03.2007 22:45:00</td><td>90</td><td>04.03.2007 22:30:00</td><td>89</td></tr>
<tr><td>04.03.2007 23:15:00</td><td>92</td><td>04.03.2007 23:00:00</td><td>91</td><td>04.03.2007 22:45:00</td><td>90</td></tr>
<tr><td>04.03.2007 23:30:00</td><td>93</td><td>04.03.2007 23:15:00</td><td>92</td><td>04.03.2007 23:00:00</td><td>91</td></tr>
<tr><td>04.03.2007 23:45:00</td><td>94</td><td>04.03.2007 23:30:00</td><td>93</td><td>04.03.2007 23:15:00</td><td>92</td></tr>
<tr><td>05.03.2007</td><td>1</td><td>04.03.2007 23:45:00</td><td>94</td><td>04.03.2007 23:30:00</td><td>93</td></tr>
</table>
</td>
</tr>
<tr>
<td>Validation deviation reference dp</td>
<td>
Inputs:
1 data point (d_, e_, a_) as reference point
1..n data points (d_, e_, a_)
Start parameters:
none
Result:
<table>
<tr><th>name of data point</th><th>reference data poi</th><th>timestamp</th><th>allowed</th><th>actual-aberration</th></tr>
<tr><td>d_A_E_V_116a</td><td>d_A_E_V_117a</td><td>4/30/2005 23:30</td><td>100</td><td>-219</td></tr>
<tr><td></td><td></td><td>4/30/2005 23:45</td><td>100</td><td>Lücke</td></tr>
<tr><td></td><td></td><td>5/1/2005 0:00</td><td>100</td><td>649879</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr><td>Validation gap</td><td>
Inputs:
0-n data points (d_, e_, a_)
If data points are connected, they must be active.
If no data points are connected, all data points in the system will be checked.
Start parameters:
none
Result:
<table>
<tr><th>number of reference</th><th>number of actual</th><th></th></tr>
<tr><td>672</td><td>0</td><td></td></tr>
<tr><td>672</td><td>0</td><td></td></tr>
<tr><td>672</td><td>0</td><td></td></tr>
</table>
</td></tr>
<tr><td>Validation max. increase</td><td>
Inputs:
0-n data points (d_, e_, a_)
If data points are connected, they must be active.
If no data points are connected, all data points in the system will be checked.
Start parameters:
none
Result:
<table>
<tr><th>name of data point</th><th>timestamp</th><th>allowed</th><th>actual-rise</th></tr>
<tr><td>d_A_E_V_116a</td><td>4/30/2005 23:30</td><td>20</td><td>-210</td></tr>
<tr><td></td><td>5/1/2005 0:00</td><td>20</td><td>650100</td></tr>
<tr><td>d_A_E_V_121a</td><td>4/30/2005 7:00</td><td>50</td><td>55</td></tr>
<tr><td></td><td>4/30/2005 9:30</td><td>50</td><td>69</td></tr>
<tr><td></td><td>4/30/2005 10:00</td><td>50</td><td>-63</td></tr>
<tr><td></td><td>4/30/2005 13:00</td><td>50</td><td>73</td></tr>
<tr><td></td><td>4/30/2005 15:30</td><td>50</td><td>76</td></tr>
<tr><td></td><td>4/30/2005 16:00</td><td>50</td><td>-59</td></tr>
<tr><td></td><td>4/30/2005 18:00</td><td>50</td><td>52</td></tr>
<tr><td></td><td>4/30/2005 18:30</td><td>50</td><td>-51</td></tr>
</table>
</td></tr>
<tr><td>Validation Min Max</td><td>
Inputs:
0-n data points (d_, e_, a_)
If data points are connected, they must be active.
If no data points are connected, all data points in the system will be checked.
Start parameters:
none
Result:
<table>
<tr><th>name of data point</th><th>timestamp</th><th>min-limit</th><th>min-violation</th><th>max-limit</th><th>max-violation</th></tr>
<tr><td>d_A_E_V_116a</td><td>4/30/2005 23:30</td><td>0</td><td>-100</td><td></td><td></td></tr>
<tr><td></td><td>5/1/2005 0:00</td><td></td><td></td><td>5000</td><td>650000</td></tr>
</table>
</td></tr>
</table>

Plausibility check Status not OK

Inputs:

0-n data points (d_, e_, a_)

If data points are connected, they must be active.

If no data points are connected, all data points in the system will be checked.

Start parameters:

none

Result:

name of data point	timestamp	wi/su	status not OK
d_A_E_V_116a	4/30/2005 23:30	Wi	invalid

Protocol ext Function

Inputs:

1-n measuring variables (m_)

1-n folders (must be assigned the name of the PL/SQL function)

Start parameters:

Interval, e.g. 15

Unit: e.g. min

Result:

The connected measuring variables are calculated and displayed exactly as in a protocol module. It is also possible to calculate and output PL/SQL functions. The names of the PL/SQL functions that exist in the database must be connected as subfolder below the module node. The number of arguments in this function must be equal to the number of connected measuring variables. This means the PL/SQL function must be capable of processing two arguments if two measuring variables are connected. These arguments are always of the data type number. This means that the function can use the measuring variable results for calculations.

The following example shows a PL/SQL function that calculates the root of the measuring variable result m_actualvalue:

```
create or replace function df_root (arg1 number)
return number
is
begin
return sqrt(arg1)
end;
```

time	m_actual_value	df_root
2/21/2008 1:00	131.5	11.467
2/21/2008 2:00	135.5	11.640
2/21/2008 3:00	139.5	11.811
2/21/2008 4:00	143.5	11.979
2/21/2008 5:00	147.5	12.145
2/21/2008 6:00	151.5	12.309
2/21/2008 7:00	155.5	12.470
2/21/2008 8:00	159.5	12.629
2/21/2008 9:00	163.5	12.787

Note:

The "Protocol ext function" module is only available in one of the following scenarios:

- You have installed B.Data prior to V5.3.
- You have licensed the Oracle database yourself.

<table>
<tr>
<td>Protocol</td>
<td>
Inputs:
1-n measuring variables (m_)
Start parameters:
Interval, e.g. 1
Unit: e.g. h
Result:
At a query period of one day and three hour interval, the protocol module returns eight values (in a 3-h pattern). The connected measuring variables are calculated at the specified intervals.
<table>
<tr><th>time</th><th>m_Supply_1_sumR</th><th>m_Supply_2_sumR</th></tr>
<tr><td>4/18/2005 3:00</td><td>2,023</td><td>1,904</td></tr>
<tr><td>4/18/2005 6:00</td><td>3,671</td><td>3,586</td></tr>
<tr><td>4/18/2005 9:00</td><td>6,442</td><td>6,253</td></tr>
<tr><td>4/18/2005 12:00</td><td>6,761</td><td>6,519</td></tr>
<tr><td>4/18/2005 15:00</td><td>6,867</td><td>6,681</td></tr>
<tr><td>4/18/2005 18:00</td><td>6,244</td><td>6,256</td></tr>
<tr><td>4/18/2005 21:00</td><td>6,084</td><td>6,199</td></tr>
<tr><td>4/19/2005 0:00</td><td>4,623</td><td>4,704</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td>Protocol 10 min 10 max</td>
<td>
Inputs:
1-n measuring variables (m_)
Start parameters:
Interval, e.g. 1
Unit: e.g. h
Result:
The query period of the report is split into user-defined intervals. The connected measuring variables are then calculated based on these intervals; the 10 lowest and 10 highest results are output for each one, including the time stamp and status (color).
<table>
<tr><th>time</th><th>m_Supply_1_sumR</th><th>m_Supply_2_sumR</th></tr>
<tr><td>4/18/2005 3:00</td><td>2,023</td><td>1,904</td></tr>
<tr><td>4/18/2005 6:00</td><td>3,671</td><td>3,586</td></tr>
<tr><td>4/18/2005 9:00</td><td>6,442</td><td>6,253</td></tr>
<tr><td>4/18/2005 12:00</td><td>6,761</td><td>6,519</td></tr>
<tr><td>4/18/2005 15:00</td><td>6,867</td><td>6,681</td></tr>
<tr><td>4/18/2005 18:00</td><td>6,244</td><td>6,256</td></tr>
<tr><td>4/18/2005 21:00</td><td>6,084</td><td>6,199</td></tr>
<tr><td>4/19/2005 0:00</td><td>4,623</td><td>4,704</td></tr>
</table>
</td>
</tr>
<tr>
<td>Protocol cumulated</td>
<td>
Inputs:
1-n measuring variables (m_)
Start parameters:
Interval, e.g. 1
Unit, e.g. h
Result:
Similar to a protocol module, the difference being the results of a measuring variable will be cumulated (added to the previous).
<table>
<tr><th>time</th><th>m_avg01_281</th></tr>
<tr><td>7/19/2007 1:00</td><td>1.50</td></tr>
<tr><td>7/19/2007 2:00</td><td>7.00</td></tr>
<tr><td>7/19/2007 3:00</td><td>16.50</td></tr>
<tr><td>7/19/2007 4:00</td><td>30.00</td></tr>
<tr><td>7/19/2007 5:00</td><td>47.50</td></tr>
<tr><td>7/19/2007 6:00</td><td>69.00</td></tr>
<tr><td>7/19/2007 7:00</td><td>94.50</td></tr>
<tr><td>7/19/2007 8:00</td><td>124.00</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td>Protocol with FROM/TO</td>
<td>

Inputs:

1-n measuring variables (m_)

Start parameters:

Interval, e.g. 1

Unit: e.g. h

Result:

At a query period of one day and three hour interval, the protocol module returns eight values (in a 3-h pattern). The connected measuring variables are calculated at the specified intervals. The time stamp is displayed along with the start and end of the period.

<table>
<tr><th>from</th><th>to</th><th>m_Supply_1_sumR</th><th>m_Supply_2_sumR</th></tr>
<tr><td>4/18/2005 0:00</td><td>4/18/2005 3:00</td><td>2,023</td><td>1,904</td></tr>
<tr><td>4/18/2005 3:00</td><td>4/18/2005 6:00</td><td>3,671</td><td>3,586</td></tr>
<tr><td>4/18/2005 6:00</td><td>4/18/2005 9:00</td><td>6,442</td><td>6,253</td></tr>
<tr><td>4/18/2005 9:00</td><td>4/18/2005 12:00</td><td>6,761</td><td>6,519</td></tr>
<tr><td>4/18/2005 12:00</td><td>4/18/2005 15:00</td><td>6,867</td><td>6,681</td></tr>
<tr><td>4/18/2005 15:00</td><td>4/18/2005 18:00</td><td>6,244</td><td>6,256</td></tr>
<tr><td>4/18/2005 18:00</td><td>4/18/2005 21:00</td><td>6,084</td><td>6,199</td></tr>
<tr><td>4/18/2005 21:00</td><td>4/19/2005 0:00</td><td>4,623</td><td>4,704</td></tr>
</table>

You set the MODULE_EINHEIT parameter in B.Data Options to specify whether to enable or disable output of the unit. (0 = unit output disabled, 1 = unit output enabled)

</td>
</tr>
<tr>
<td>Protocol transposed</td>
<td>

Inputs:

1-n measuring variables (m_)

Start parameters:

Interval, e.g. 1

Unit: e.g. h

Result:

At a query period of one day and three hour interval, the protocol module returns eight values (in a 3-h pattern). The connected measuring variables are calculated at the specified intervals.

<table>
<tr><td>time</td><td>4/18/2005 3:00</td><td>4/18/2005 6:00</td><td>4/18/2005 9:00</td></tr>
<tr><td>m Supply 1 sumR</td><td>2,023</td><td>3,671</td><td>6,442</td></tr>
<tr><td>m Supply 2 sumR</td><td>1,904</td><td>3,586</td><td>6,253</td></tr>
</table>

</td>
</tr>
</table>

<table>
<tr><td>Protocol transposed 445</td><td>
Inputs:
1-n measuring variables (m_)
Start parameters:
Interval, e.g. 1
Unit: e.g. W
Result:
The functionality of this module is similar to that of the "Protocol transposed" module.
The difference consists in:
Each quarter of the year is subdivided into the following three periods: 4 weeks, 4 weeks and 5 weeks. For example:
<table>
<tr><td>January</td><td>February</td><td>March</td><td>April</td><td>May</td><td>June</td><td>etc.</td></tr>
<tr><td>4 Weeks</td><td>4 Weeks</td><td>5 Weeks</td><td>4 Weeks</td><td>4 Weeks</td><td>5 Weeks</td><td>4 Weeks</td></tr>
</table>
Only the following combinations are permitted for this module:

Query type "Year" and interval "1 W"
Query type "Year" and interval "1 M"
Query type "Month 08:30" and interval "1 W"
Query type "Month 08:30" and interval "1 d'"
Query type "Month 08:30" and interval "12 h"
Query type "Week 08:30" and interval "1 d'"
Query type "Week 08:30" and interval "12 h'"

</td></tr>
<tr><td>PVD import documentation</td><td>
Inputs:
none
Start parameters:
none
Result:
An interface was developed for B.Data that is capable if importing the data from SAT250 to the B.Data system. To enable input of this data to B.Data data points, these must be configured as data points. The name (TANAME) of the SAT250 data point must be stored in the address field (DAPU_ADR).
First the module outputs all SAT250 data points that are not referenced in B.Data. It then outputs all SAT250 data points that are already referenced in B.Data.
This module is not available in the standard setup.
<table>
<tr><td>PDW Import</td><td></td><td></td><td></td></tr>
<tr><td>SAT250</td><td></td><td>PDW</td><td></td></tr>
<tr><td>Datapoint description</td><td>Ref.Nr.</td><td>Datapoint desc</td><td>Ref.Nr.</td></tr>
<tr><td>PRK.MLD.DATW</td><td>100</td><td></td><td></td></tr>
<tr><td>SQL.FILL.LEVEL</td><td>101</td><td></td><td></td></tr>
<tr><td>PRK.MLD.TEST01</td><td>102</td><td>d_test_rko_01</td><td>PRK.MLD.TEST01</td></tr>
<tr><td>PRK.MLD.TEST02</td><td>103</td><td>d_test_rko_02</td><td>PRK.MLD.TEST02</td></tr>
</table>
</td></tr>
<tr><td>Shift book</td><td>
Inputs:
none
Start parameters:
none
Result:
This represents an empty Excel sheet that may be used, for example, as shift log.
</td></tr>
</table>

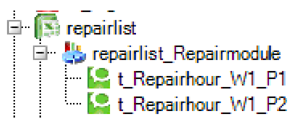
<table>
<tr><td>Reference</td><td>

Inputs:
Data point A (d_, e_, a_)
Data point B (d_, e_, a_)
Start parameters:
Interval, e.g. 15
Unit, e.g. min
Result:
The module outputs the measured values and timestamps of data point A and corresponding measured values and timestamps of data point B for the specified query period.

<table>
<tr><td>Datenpunkt A</td><td></td><td>Datenpunkt B</td><td></td></tr>
<tr><td>28.05.2009 09:15:00</td><td>77,7</td><td>28.05.2009 09:15:00</td><td>345,1</td></tr>
<tr><td>28.05.2009 09:30:00</td><td>347,1</td><td>28.05.2009 09:30:00</td><td>351,1</td></tr>
<tr><td>28.05.2009 09:45:00</td><td>349,1</td><td>28.05.2009 09:45:00</td><td>353,1</td></tr>
</table>

</td></tr>
<tr><td>Repair module</td><td>

Inputs:
1..n parameters (t_)



Start parameters:
none
Result:
The parameter entries for the query period are output in list form. The system calculates and displays the duration along with the start, end, and value data.

<table>
<tr><td>t_Repairhour_W1_P1</td><td></td><td></td><td></td></tr>
<tr><td>begin</td><td>end</td><td>value</td><td>duration</td></tr>
<tr><td>05.01.2008 12:00</td><td>06.01.2008 11:00</td><td>1</td><td>23:00</td></tr>
<tr><td>24.01.2008 09:30</td><td>24.01.2008 18:30</td><td>1</td><td>9:00</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>t_Repairhour_W1_P2</td><td></td><td></td><td></td></tr>
<tr><td>begin</td><td>end</td><td>value</td><td>duration</td></tr>
<tr><td>03.01.2008 12:20</td><td>05.01.2008 11:20</td><td>1</td><td>47:00:00</td></tr>
</table>

</td></tr>
</table>

<table>
<tr>
<td>Switching times</td>
<td>
Inputs:
1-n data points (d_)
Start parameters:
none
Result:
Outputs the switching times for the connected data points. The switching entries in the data points must be spontaneous, which means that the function only records changes of the activation status, i.e. 0 for the Off and 1 for the On status. The On duration is calculated as well. Question marks will be output if a missing entry prevents this calculation. If an entry is missing, e.g. two ones in succession, the existing time stamp is displayed in green color (gap).
<table>
<tr><th>data point</th><th>time on</th><th>time off</th><th>duration</th></tr>
<tr><td>d_motor_01</td><td>2006/10/18 08:11:00</td><td></td><td>???</td></tr>
<tr><td>d_motor_01</td><td>2006/10/18 12:00:09</td><td>2006/10/18 12:40:38</td><td>0:40:29</td></tr>
<tr><td>d_motor_01</td><td></td><td>2006/10/18 17:12:00</td><td>???</td></tr>
<tr><td>d_motor_01</td><td>2006/10/18 23:30:25</td><td>2006/10/19 00:00:00</td><td>0:29:35</td></tr>
<tr><td>d_turbine_01</td><td>2006/10/18 08:22:56</td><td>2006/10/18 17:12:00</td><td>8:49:04</td></tr>
</table>
</td>
</tr>
</table>

Security changes

Inputs:

none

Start parameters:

none

Result:

This module outputs the following information for the selected query period:

The user name and the date and time of login and logoff. The output also identifies the PC and the name of the operating system user that were used for the login. The function also calculates the duration of the user's login to the B.Data system. The corresponding login and logoff data of this user must be available to enable error-free calculation of the duration. The calculated value is displayed in green color if one of these times is missing, for example, because the user did not log off within the relevant query period. The "green" color indicates missing times in this context.

Unknown user: The date and time of the login attempt, including the name of the user that was not registered in B.Data who attempted to login. The computer name and operating system user is output as well.

Incorrect password: Date and time of incorrect password input, as well as the name of user who entered this password. The computer name and operating system user is also identified.

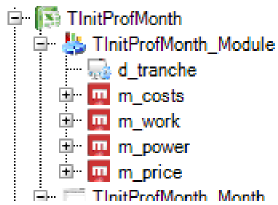
Forbidden action: Attempts made by users not having the necessary functional permissions to carry out a specific action are stored in this area.

User logon/logoff	
time	User: BDATA_SYS
2/25/2008 9:50	User BDATA_SYS logged in to DocLiber from atw118x8@ATPC0G4D
2/25/2008 9:58	User BDATA_SYS logged out from DocLiber from atw118x8@ATPC0G4D
2/25/2008 9:59	User BDATA_SYS logged in to DocLiber from atw118x8@ATPC0G4D
duration:	8.00 min
Unknown user	
time	Description
2/25/2008 10:15	Unknown user MÜLLER attempted to login to DocLiber from atw118x8@ATPC0G4D
Wrong Password	
time	Description
2/25/2008 9:33	User MAIER failed to log in to DocLiber from atw118x8@ATPC0G4D
Forbidden action	
time	Description
2/25/2008 13:11	Keine Berechtigung für diese Operation: DF_STARTREPORTJOB

<table>
<tr><td>Snapshot module</td><td>
Inputs:
1-n data points (d_, e_, a_)
Start parameters:
Interval: e.g. 5
Result:
The module returns the value of an exact time that was defined as start parameter. It also outputs the value of the same time from the previous day.
Example: Daily start with wizard from April 18, 2005
<table>
<tr><td></td><td>d A E V 117a</td><td></td></tr>
<tr><td>4/19/2005 5:00</td><td>462</td><td>383</td></tr>
<tr><td></td><td>d A E V 116a</td><td></td></tr>
<tr><td>4/19/2005 5:00</td><td>374</td><td>113</td></tr>
</table>
Value 462 has the time stamp 04/19/2005 05:00. (05:00 because 5 was selected as start parameter). Value 383 has the time stamp 04/18/2005 05:00 (05:00 because 5 was selected as start parameter).
</td></tr>
<tr><td>Statistics</td><td>
Inputs:
1..n measuring variables (m_)
Start parameters:
Interval: e.g. 15
Unit: e.g. min
Result:
Returns the maximum, minimum, and mean value of the connected measuring variables.
The time frame is defined by the "FROM" and "TO" entries. The results of the connected measuring variables are calculated for every interval in this time frame. Based on these values, the maximum, minimum, and average values are calculated and output for each measuring variable. The maximum and minimum values are output with time stamp.
<table>
<tr><td></td><td>m_addmeva_02</td><td>kW</td><td>m_addxmeva_01</td><td>kW</td></tr>
<tr><td>max</td><td>18.05.01 00:00</td><td>1485</td><td>18.05.01 00:00</td><td>1485</td></tr>
<tr><td>min</td><td>17.05.01 00:15</td><td>1200</td><td>17.05.01 00:15</td><td>1200</td></tr>
<tr><td>avg</td><td></td><td>1342,5</td><td></td><td>1342,5</td></tr>
</table>
</td></tr>
<tr><td>Statistic for operating data points</td><td>
Inputs:
1..n data points (d_, e_, a_)
Start parameters:
none
Result:
The unit, sum value, minimum time stamp, minimum value, average, maximum time stamp, and maximum value data is calculated and output across the query period, based on the connected operating data points.
<table>
<tr><td>d_data_point_1</td><td>kWh</td><td>7164.6</td><td>5/7/2001 0:15</td><td>21</td><td>75</td><td>5/7/2001 3:15</td><td>33.3</td></tr>
<tr><td>d_data_point_2</td><td>MWh</td><td>6576</td><td>5/7/2001 0:15</td><td>21</td><td>69</td><td>5/8/2001 0:00</td><td>116</td></tr>
</table>
</td></tr>
</table>

<table>
<tr>
<td>Hour distribution</td>
<td>
Inputs:
1..n data points (d_, e_, a_)
Start parameters:
Interval, e.g. 10
Lower limit, e.g. 50
Upper limit, e.g. 100
Result:
The hour distribution module returns seven values for a query period of one day, with a lower limit of 50, a upper limit of 100, and an interval of 10 between the upper and lower limit.
<table>
<tr><th>Range</th><th>d_NULL01</th></tr>
<tr><td><= 50</td><td>12</td></tr>
<tr><td>60</td><td>3</td></tr>
<tr><td>70</td><td>2</td></tr>
<tr><td>80</td><td>3</td></tr>
<tr><td>90</td><td>3</td></tr>
<tr><td>100</td><td>1</td></tr>
<tr><td>> 100</td><td>0</td></tr>
</table>
</td>
</tr>
<tr>
<td>Text query</td>
<td>
Inputs:
1..n data points (d_, e_, a_)
Start parameters:
none
Result:
Outputs the texts of the query period that are stored in the measurement journal for the connected data points. The corresponding values are included. If the text of several successive entries is identical, the first time stamp will be entered in "FROM" and the last time stamp in "TO". The "FROM" and "TO" entries are identical if the text is unique.
<table>
<tr><th>from</th><th>to</th><th>d_StringDatapoint</th><th></th></tr>
<tr><td>1/16/2008 9:00</td><td>1/16/2008 9:00</td><td>Machine 4 fallen out</td><td>12</td></tr>
<tr><td>1/16/2008 16:00</td><td>1/16/2008 16:00</td><td>Turbinerevision</td><td>0</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr><td>Text protocol</td><td>
Inputs:
1..n data points (d_, e_, a_)
Start parameters:
Interval, e.g. 1
Time unit, e.g. h
Result:
The module outputs all texts of a data point for the query period that is split into intervals.
<table>
<tr><th>Zeit</th><th></th><th>e_NULL01</th><th>d_NULL02</th></tr>
<tr><td>01.06.2011</td><td>01.06.2011 01:00:00</td><td>Null01</td><td></td></tr>
<tr><td>01.06.2011 01:00:00</td><td>01.06.2011 02:00:00</td><td></td><td></td></tr>
<tr><td>01.06.2011 02:00:00</td><td>01.06.2011 03:00:00</td><td></td><td></td></tr>
<tr><td>01.06.2011 03:00:00</td><td>01.06.2011 04:00:00</td><td></td><td></td></tr>
<tr><td>01.06.2011 04:00:00</td><td>01.06.2011 05:00:00</td><td></td><td></td></tr>
<tr><td>01.06.2011 05:00:00</td><td>01.06.2011 06:00:00</td><td></td><td></td></tr>
<tr><td>01.06.2011 06:00:00</td><td>01.06.2011 07:00:00</td><td></td><td></td></tr>
<tr><td>01.06.2011 07:00:00</td><td>01.06.2011 08:00:00</td><td></td><td></td></tr>
<tr><td>01.06.2011 08:00:00</td><td>01.06.2011 09:00:00</td><td></td><td>Energie</td></tr>
<tr><td></td><td></td><td></td><td>Raum</td></tr>
<tr><td>01.06.2011 09:00:00</td><td>01.06.2011 10:00:00</td><td></td><td>Zeit</td></tr>
</table>
</td></tr>
<tr><td>User rights</td><td>
Inputs:
none
Start parameters:
none
Result:
All users created in the system will be listed. The user groups and functional groups assigned to this user are also displayed.
<table>
<tr><th>Benutzer</th><th>Authoritätsebene</th><th>UserGruppen</th><th>Internet-Verzeichnis</th><th>Funktionelle Gruppen</th></tr>
<tr><td>BACHL</td><td>1000</td><td>Administratoren (ID=600)</td><td>Intranet</td><td>Administrator</td></tr>
<tr><td></td><td></td><td></td><td></td><td>LASTPROGNOSE</td></tr>
<tr><td></td><td></td><td></td><td></td><td>ODBC_IMPORT</td></tr>
<tr><td></td><td></td><td></td><td></td><td>TASK_MANAGEMENT</td></tr>
<tr><td></td><td></td><td></td><td></td><td>WEB-Eingabe</td></tr>
<tr><td>BDATA_SYS</td><td>1000</td><td>Administratoren (ID=600)</td><td>Intranet</td><td>Administrator</td></tr>
<tr><td></td><td></td><td></td><td></td><td>LASTPROGNOSE</td></tr>
<tr><td></td><td></td><td></td><td></td><td>ODBC_IMPORT</td></tr>
<tr><td></td><td></td><td></td><td></td><td>TASK_MANAGEMENT</td></tr>
<tr><td></td><td></td><td></td><td></td><td>WEB-Eingabe</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td>Summary Initial-Profile Month</td><td>Inputs:
Combination of a data point and four measuring variables (m_)
This combination can be repeated as often as need be.


Start parameters:
none
Result:
The data points contain the batch numbers as consecutive time set with 15-minute interval. A change to this number indicates that a new batch has started. The batch must remain the same for at least one month. Four measuring variables must be connected behind each data point. These measuring variables should calculate the following: Costs, electrical work, electrical power, and the price. Costs and work are calculated once for the query period and once for the batch period. Power and price are only calculated for the batch period. The batch period may be significantly longer than the query period. Calculation starts with the first data point/measuring variable combination and continues with the next combination, insofar as a next one exists. This module can only calculate monthly evaluations. Other query types will cancel the calculation and generate an error message in the error journal. The output units are assigned a fixed code. Costs in EUR, work in MWh, power in MW, and price in EUR/MWh. The business partner can be specified at the data point using the “Company” property type.
<table>
<tr><td>ess</td><td>Number</td><td>Entire tranche</td><td></td><td>query period</td><td></td><td>costs</td><td></td><td>costs</td><td></td><td>Arbeit</td><td></td><td>Arb</td></tr>
<tr><td></td><td></td><td>from</td><td>to</td><td>from</td><td>to</td><td>(query period)</td><td></td><td>(Total)</td><td></td><td>(Abfragezeitrau</td><td></td><td>(Ge</td></tr>
<tr><td></td><td>4780</td><td>2/1/2008</td><td>5/1/2008</td><td>2/1/2008</td><td>3/1/2008</td><td>146.5</td><td>EUR</td><td>439.6</td><td>EUR</td><td>246.5</td><td>MWh</td><td></td></tr>
</table></td></tr>
<tr><td>Summary Initial-Profile Year</td><td>Inputs:
Combination of a data point and four measuring variables (m_)
This combination can be repeated as often as need be.
Start parameters:
none
Result:
This module works similar to the "Summary Initial-Profile Month" module mentioned above. Difference: Only the year is permitted as query type.</td></tr>
<tr><td>Compression and correction</td><td>Inputs:
1..n data points (d_, e_, a_)
Start parameters:
none
Result:
The module recalculates all defined compressions, expansions and corrections (replacement value treatments) of a data point for the specified query period.
Notice If you are not using data points for the module, all compressions, expansions and corrections (replacement value treatments) defined in B.Data will be recalculated.</td></tr>
</table>

13.7 Display modes

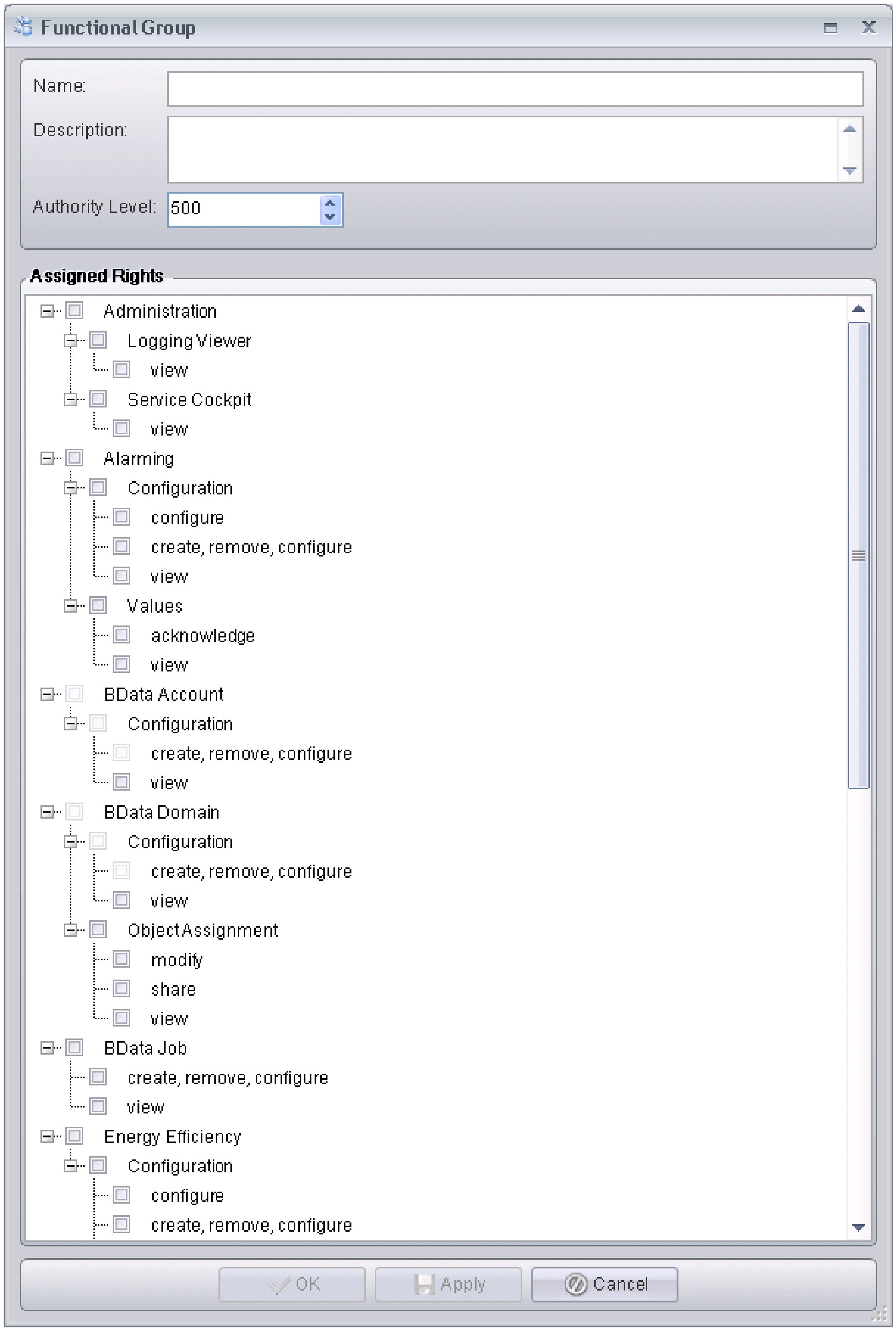
Display mode	Description
KKS text	KKS ID
Short text	Name of the data point
Short text + long text	Name and description of the data point
Long text	Description of the data point

13.8 Existing functional groups

Overview of functional groups

Functional group	Function
ADMINISTRATOR	This group includes comprehensive functional rights for B.Data. All changes to objects can be made, for example deleting, adding or editing.
CONFIGURATOR	This group has the right to configure B.Data objects.
GUEST	This group is permitted to view all objects in the tree. No changes to objects can be made (deleting, adding, editing etc.). create new reports, or calculate evaluations. This grouping is intended to apply simple, temporary restrictions on significant operator actions in the system. To set up explicit, long-term restrictions on functional rights, you should use a combination of the following functional groups.

Overview of functional rights



See also

Navigation in B.Data Web (Page 418)

13.9 Operations for generating calculation blocks (prototypes)

Overview

This section lists all functions that are available for creating prototypes.

Requirement

none

Mathematical operations

Table 13- 1 Mathematical functions

Function	Description
Addition (+)	Inputs: input1 input2 The function returns: output:= input1+input2;
Subtraction (-)	Inputs: input1 input2 The function returns: output:= input1-input2;
Multiplication (*)	Inputs: input1 input2 The function returns: output:= input1*input2;
Division (/)	Inputs: input1 input2 The function returns: output:= input1/input2;
Power (pow)	Inputs: input1 (base) input2 (power) The function returns: output:= pow (input1,input2);
Square root (sqrt)	Inputs: input The function returns: output := sqrt(input);

Function	Description
Minus	Inputs: input The function returns: output:= minus(input);
Exponential function (exp)	Inputs: input The function returns: output:= exp(input);
Natural logarithm (ln)	Inputs: input The function returns: output:= ln(input);
Base 10 logarithm (log10)	Inputs: Input The function returns: output:= log10(input);
Sine (sin)	Inputs: input The function returns: output:= sin(input);
Cosine (cos)	Inputs: input The function returns: output:= cos(input);
Tangent (tan)	Inputs: input The function returns: output:= tan(input);
Arc sine (arcsin)	Inputs: input The function returns: output:= arcsin(input);
Arc cosine (arccos)	Inputs: input The function returns: output:= arccos(input);
Arc tangent (arctan)	Inputs: input The function returns: output:= arctan(input);

Logical operations

Table 13- 2 Logical functions

Function	Description
logical AND (and)	Inputs: input1 input2 The function returns: output:= and(input1,input2);
logical OR (or)	Inputs: input1 input2 The function returns: output:= or(input1,input2);
logical Exclusive OR (xor)	Inputs: input1 input2 The function returns: output:= xor(input1,input2);
Logical inversion (not)	Inputs: input The function returns: output:= not(input);

Compare operations

Table 13- 3 Compare functions

Function	Description
Greater than comparison (gt)	Inputs: input1 input2 The function returns: output:= gt(input1,input2); output:= 1 as long as input1 > input2;
Less than comparison (gt)	Inputs: input1 input2 The function returns: output:= lt(input1,input2); output:= 1 as long as input1 < input2;

Equal comparison (gt)	Inputs: input1 input2 The function returns: output:= eq(input1,input2); output = 1 as long as input1 = input2
Greater than or equal comparison (gteq)	Inputs: input1 input2 The function returns: output:= gteq(input1,input2); output = 1 as long as input1 ≥ input2
Less than or equal comparison (lteq)	Inputs: input1 input2 The function returns: output = lteq(input1,input2); output = 1 as long as input1 ≤ input2
Not equal comparison (noteq)	Inputs: input1 input2 The function returns: output:= noteq(input1,input2); output = 1 as long as input1 <> input2;

Switch operations

Table 13- 4 Switch functions

Function	Description
Toggle (switch)	Inputs: input1 input2 switch The function returns: output:= switch(input1,input2,switch); output = input1 if switch = 0 output = input2 if switch = 1
Switch (interrupter)	Inputs: input switch The function returns: output = interrupter(input, switch); output = input if switch = 1

Switching delay (sdelay, sdelay_up, sdelay_down)	Inputs:
	input
	delay time in [s]
	The function returns:
	output:= sdelay(input,delaytime);
	output:= sdelay_up(input,delaytime);
	(rising edge)
	output:= sdelay_down(input,delaytime);
	(falling edge)
	output = input on expiration of the delay time

Value change filter (f_valchng)	Inputs: input The function returns: output:= f_valchng(input); output = input as soon as the measured input no longer matches the last input measured
Status memory (fliflo)	Inputs: input res The function returns: output:= fliflo(input,res); input == 0 and res == 0 ð no new result input == 1 and res == 0 ð if result is not 1, result is set to 1 input == 0 and res == 1 ð if result is not 0, result is set to 0 input == 1 and res == 1 ð Result is assigned the last result value ('invalid' status)

Edge memory (fliflo_chng, fliflo_up, fliflo_down)	Inputs:
	input
	res
	The function returns:
	output:= fliflo_chng(input, res);
	output:= fliflo_up(input,res);
	output:= fliflo_down(input, res);
	On change to the value at input, it is determined whether or not to trigger a set operation.
	SET and RES == 0 > if result is not 1, result is set to 1.
	RES == 1 > if result is not 0, result is reset to 0.

Table operations

Table 13- 5 Table functions

Function	Description
2 dimensions (spline2)	Inputs: table (table with definition of the full path, i.e. subfolder of the mcl folder) input (first column value in the table) The function returns: output:= spline2(c:\mcl\tables\watercontent.tab,input); The table must be available as ASCII file with the following format: 10.00 2519.98 20.00 2538.58 30.00 2557.21 40.00 2575.88 50.00 2594.57 60.00 2613.31 Note: An empty row (=CR+LF) may not exist after the last row containing numbers. Explanations: ò first column input ò second column input, associated value
3 dimensions (spline3)	Inputs: table (table with definition of the full path, i.e. subfolder of the mcl folder) input1 (first column value in the table) input2 (second column value in the table) The function returns: output:= spline3(c:\mcl\tables\energy.tab,input1,input2); The table must be available as ASCII file with the following format: 3/6 0.01 0.03 0.05 10.00 2519.98 42.00 42.00 20.00 2538.58 83.86 83.86 30.00 2557.21 2556.68 125.66 40.00 2575.88 2575.40 2574.93 50.00 2594.57 2594.15 2593.73 60.00 2613.31 2612.93 2612.55 Note: An empty row (=CR+LF) may not exist after the last row containing numbers. Explanations: ð input1 ò input2 3 ... Number of result columns 6 ... Number of result rows

Interval operations

Table 13- 6 Interval functions

Function	Description
Difference (diff)	Inputs: measured value averaging time in [s] offset The function returns: output:= diff(measured value, averaging time, offset); (difference or value at the end and start of the mean value calculation time) Note: offset 01:00:00 ... the value is generated at the start of the full hour offset 00:00:00 ... the value is generated at the start of the full minute
Mean value (avg)	Inputs: measured value averaging time in [s] offset The function returns: output:= avg(measured value, averaging time, offset); Note: offset 01:00:00 ... the value is generated at the start of the full hour offset 00:00:00 ... the value is generated at the start of the full minute
Average with status rating (avgST)	Inputs: measured value status percentage averaging time in [s] offset The function returns: output:= avgST(measuredvalue,status,percentage,averagingtime,offset); (output is only valid on the condition that at least n% {percent} of the corresponding status values {status} are also valid) Note: offset 01:00:00 ... the value is generated at the start of the full hour offset 00:00:00 ... the value is generated at the start of the full minute

Minimum (min)	Inputs: measured value averaging time in [s] offset The function returns: output:= min(measured value, averaging time, offset); Note: offset 01:00:00 ... the value is generated at the start of the full hour offset 00:00:00 ... the value is generated at the start of the full minute
Maximum (max)	Inputs: measured value averaging time in [s] offset The function returns: output:= max(measured value, averaging time, offset); Note: offset 01:00:00 ... the value is generated at the start of the full hour offset 00:00:00 ... the value is generated at the start of the full minute
Total (sum)	Inputs: measured value averaging time in [s] offset The function returns: output:= sum(measured value, averaging time, offset); Note: offset 01:00:00 ... the value is generated at the start of the full hour offset 00:00:00 ... the value is generated at the start of the full minute

Total with status rating (sumST)	Inputs: measured value status percentage averaging time in [s] offset The function returns: output:= sumST(measuredvalue,status,percentage,averagingtime,offset); (output is only valid on the condition that at least n% {percent} of the corresponding status values {status} are also valid) Note: offset 01:00:00 ... the value is generated at the start of the full hour offset 00:00:00 ... the value is generated at the start of the full minute
Difference (diff)	Inputs: measured value averaging time in [s] offset The function returns: output:= diff(measured value, averaging time, offset); Note: offset 01:00:00 ... the value is generated at the start of the full hour offset 00:00:00 ... the value is generated at the start of the full minute

Quantity operations

Table 13- 7 Quantity functions

Function	Description
Collector (collector)	Inputs: measured value averaging time in [s] offset The function returns: measured value array:= collector(measured value, averaging time, offset); Note: offset 01:00:00 ... the values are in the array at the start of the full hour offset 00:00:00 ... the values are in the array at the start of the full minute

Quantity sort (c_sort)	Inputs: measured value array The function returns values in ascending order: output array:= collector(measured value array);

Quantity percentage filter (c_perc_filt_first, c_perc_filt_last)	Inputs:
	measured value array
	x
	The function returns the first x percent of the measured value array:
	output array:= c_perc_filt_first(measured value array, x);
	The function returns the last x percent of the measured value array:
	output array:= c_perc_filt_last(measured value array, x);

Quantity average (c_avg)	Inputs: measured value array The function returns the mean value of the measured value array: output:= c_avg(measured value array);
Quantity minimum (c_min)	Inputs: measured value array The function returns the minimum value of the measured value array: output:= c_min(measured value array);
Quantity maximum (c_max)	Inputs: measured value array The function returns the maximum value of the measured value array: output:= c_max(measured value array);

13.10 Description of MCL

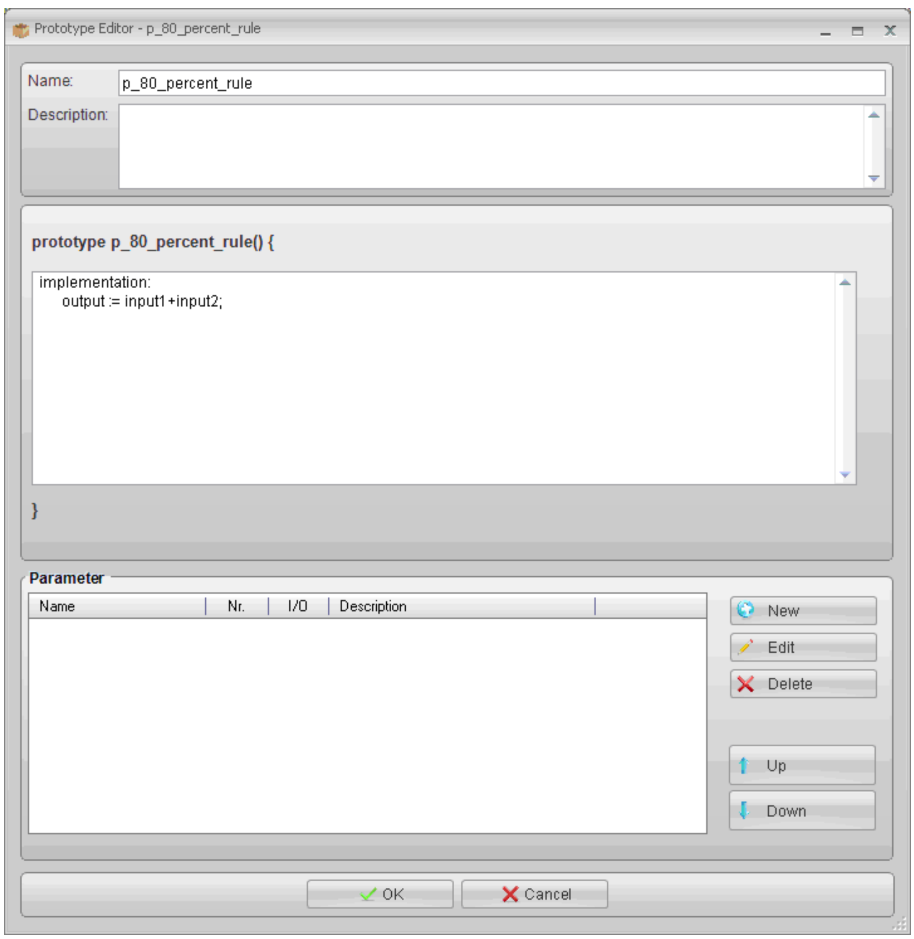
New prototypes for processing data sets are defined using the special programming language MCL (Measurement Configuration Language).

Note

As the MCL compiler is case-sensitive, it is necessary to enter all prototype data in lowercase letters.

For logical and comparison operations, the value "1" corresponds to logical "TRUE" state and the value "0" to logical "FALSE" state.

The prototype is entered and declared between parentheses "{" and "}"; a simple addition is defined as example:



Local variable may be defined in the header of the input window. This section is defined by entering the "local:" identifier.

It is necessary to define this "local:" section to declare local variables for interim results; note that it is not permitted to include calculations in the declaration line.

PERMITTED:

```
local:
a;
Implementation:
a:=b+c;
```

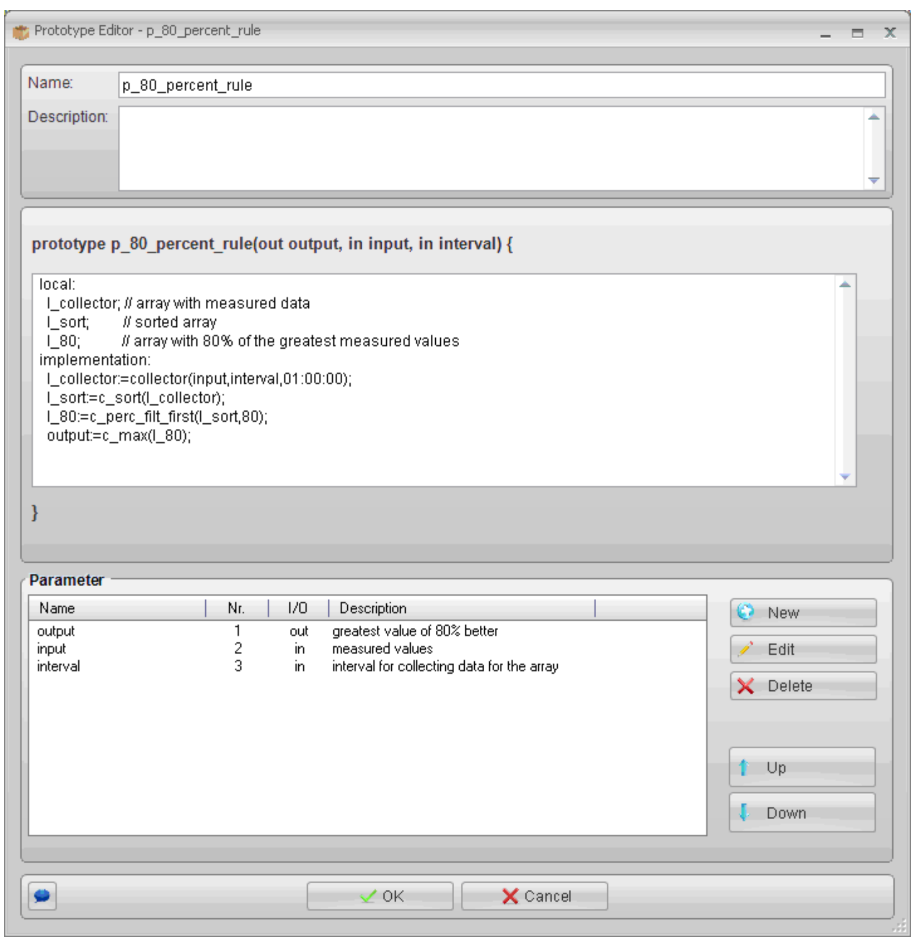
PROHIBITED:

```
local:
a:=b+c;
```

The actual mathematical rule is then entered in the "implementation" section. It is permitted to use all I/O variables, as well as local variables and implemented functions.

The "local" and "implementation" sections must be concluded with a colon ":". All other lines are concluded with a semicolon (';'). Variables are declared by means of ':='. Start all comments with '//'.

Use "Enter" to insert line breaks.



For more complex calculations, it is possible to use the "call" command in a prototype to call other prototypes.

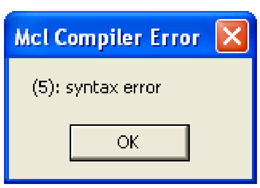
Always observe the order of arguments for calling the prototype.

Example of a `p_bsp` prototype in which the `p_add` prototype is used:

```
p_add(out output, in input1, in input2)

p_bsp(out out1, out out2, out out_bsp, in mw1, in mw2, in mw3, in mw4, in condition)

{

Implementation:

   call p_add(out1,mv1,mv2);

   call p_add(out2,mv3,mv4);

   out_bsp:=switch(out1,out2,condition);

}
```

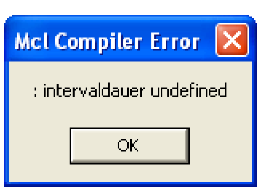
Syntax check:

After having entered the mathematical rule and defined the various I/Os (parameters) in the lower area of the dialog, you can generate the prototype by pressing the "OK" button. The syntax is checked during this generation. Syntax errors that were found are reported with specification of the relevant line.



Caution: Line 3 is the first line of the text body. Lines not concluded with semicolon are not counted.

A warning is also output if the I/O variables used in the text body were not defined in the "Parameters" area.



13.11 Database functions for measurement variables

General information

A set of standard database functions for MEVA processing has been implemented in B.Data. Siemens AG reserves the right of creating any new evaluation algorithms that may be needed, including their implementation in the system.

Note

You must strictly adhere to the specified sorting order of operating datapoints, MEVAs, or parameters for the listings in the "*Inputs:*" field or in the Plant Explorer (see the figures), as the functions expect to receive the input values based on this sorting order. The same goes for units, if not specified otherwise with [1] or [x] as the unit.

The calculation results relate to the respective monitoring period that is transferred at the start of an evaluation (From, To).

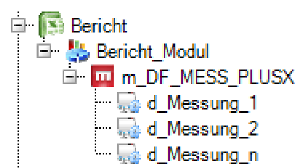
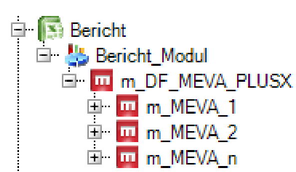
Overview

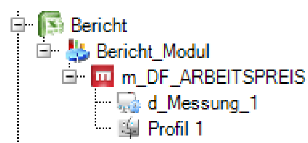
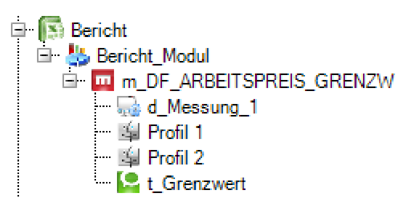
This section lists all functions that are available for use with the MEVAs.

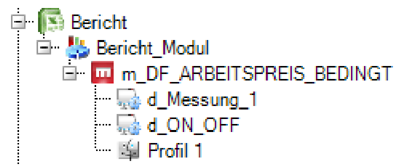
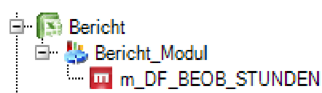
Requirement

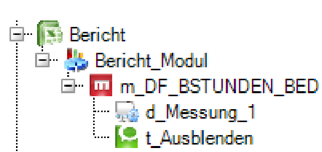
Successful installation of all software components.

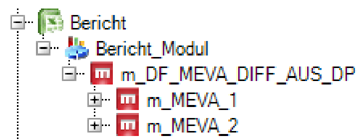
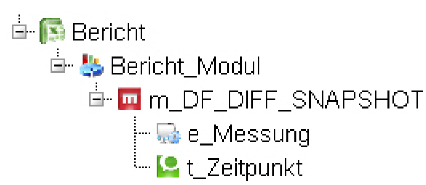
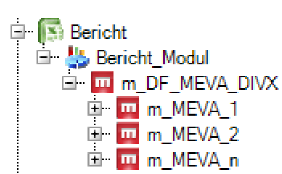
MEVA functions

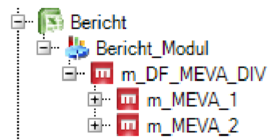
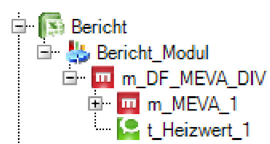
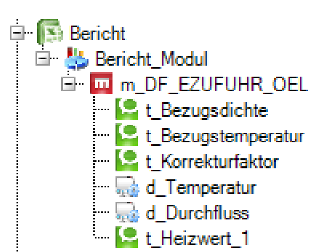
Function	Description
Addition with cross sum	Addition with cross sum (DF_MESS_PLUSX) Adds any number of datapoints with cross sum. Inputs: d_Messung_1operating datapoint d_Messung _2operating datapoint d_Messung_noperating datapoint The function returns: VALUE = sum (d_Messung_1 + d_Messung_2 + … + d_Messung_n) Additional info: If MEVA_CHECK_LUECKEN is set to 0 in B.Data Options, no checks for gaps in the time set are initiated (15 minutes). 1 means that a check is performed. Can only be active if MEVA_STER_THRESHOLD is disabled (= 0). 
Addition of MEVAs	Addition of MEVAs (DF_MEVA_PLUSX) Adds any number of MEVAs. Inputs: m_MEVA_1measuring variable m_MEVA_2measuring variable m_MEVA_nmeasuring variable The function returns: VALUE[x] =m_MEVA_1 + m_MEVA_2 + ... + m_MEVA_n 
Number of data records	Number of data records (DF_ANZ) Number of measured values in the measurement journal. Inputs: d_Messung_1operating datapoint The function returns: VALUE[s] = number of all entries (measured values) within the monitoring period. 

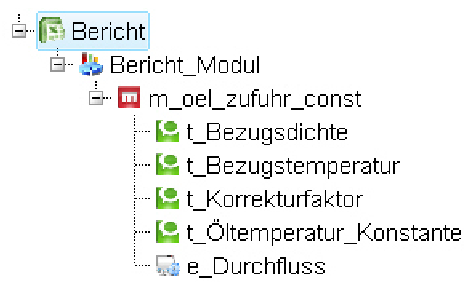
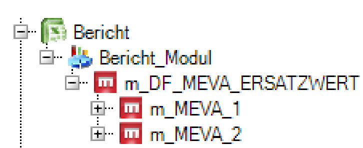
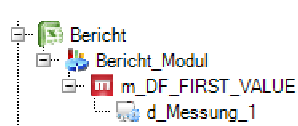
Number of starts	Number of starts (DF_ANZ_STARTS) Used to calculate the number of plant starts. Inputs: d_Messung_1binary operating datapoint (0 and 1) The function returns: VALUE[1] = number of all 1 values within the monitoring period. 
Energy rate	Energy rate (DF_ARBEITSPREIS) Energy rate calculation depends on a profile. Inputs: d_Messung_1operating datapoint Profil 1profile The function returns: VALUE[x] = SUM(value * profile) 
Energy rate with limit	Energy rate with limit (DF_ARBEITSPREIS_GRENZW) Energy rate calculation depends on a limit and two profiles. Inputs: d_Messung_1operating datapoint Profil 1profile Profil 2profile t_Grenzwertparameter The function returns: VALUE[x] ={IF value>limit SUM(value * Profil_2)} + {IF value≤limit SUM(value * Profil_1)} 

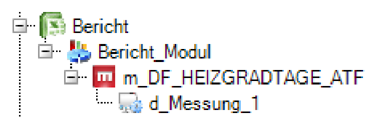
<table>
<tr><td>Energy rate with availability</td><td>Energy rate with availability (DF_ARBEITSPREIS_BEDINGT)
Energy rate calculation depending on one of the digital inputs:
d_Messung_1operating datapoint
d_ON_OFFoperating datapoint with logical 0/1 signal.
Profil 1profile
The function returns:
VALUE[x] = IF ON_OFF=1 SUM(value * profile)

</td></tr>
<tr><td>Monitoring period in hours</td><td>Monitoring period in hours (DF_BEOB_STUNDEN)
Monitoring period entered
Inputs:
not necessary.
The function returns:
VALUE[h] = duration of the monitoring period entered.

</td></tr>
<tr><td>Operating hours</td><td>Operating hours (DF_BSTUNDEN)
Operating hours
Inputs:
d_Messung_1operating datapoint
The function returns:
VALUE[s] = sum of valid periods of the specified datapoint within the monitoring period.

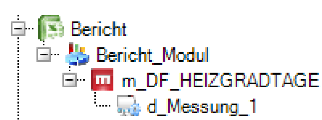
</td></tr>
<tr><td>Conditional operating hours</td><td>Conditional operating hours (DF_BSTUNDEN_BED)
conditional operating hours
Inputs:
d_Messung_1operating datapoint
t_Ausblendenparameter
The function returns:
VALUE[s] = sum of valid periods of the specified datapoint within the monitoring period minus the valid periods with datapoint value not exceeding 0 ± parameter value.

</td></tr>
</table>

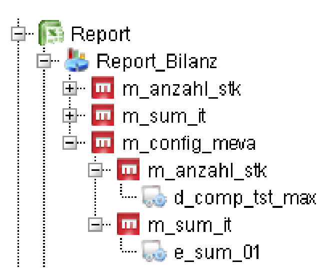
DP difference	DP difference (DF_MEVA_DIFF_AUS_DP) Datapoint difference Inputs: m_MEVA_1measuring variable m_MEVA_2measuring variable The function returns: If the value in m_MEVA_1 is not m_MEVA_2, the value in m_MEVA_1 is returned. Zero is returned if both MEVAs do not provide a value. 
Difference snapshot	Difference snapshot (DF_DIFF_SNAPSHOT) Difference from two MEVAs of the connected datapoint. The parameter specifies the first time in decimal notation (e.g.: 1.5 = 01:30 h). The second MEVA is derived from the same time of the previous day. An interval shorter than one day returns the same result as an interval duration of one day. Inputs: e_Messungdatapoint t_Zeitpunktparameter 
Division by n MEVAs	Division for n MEVAs (DF_MEVA_DIVX) To calculate the quotient from n MEVAs Inputs: m_MEVA_1measuring variable m_MEVA_2measuring variable m_MEVA_nmeasuring variable The function returns: VALUE[x] = m_MEVA_1 / m_MEVA_2 / m_MEVA_n 

Division for 2 MEVAs	Division for 2 MEVAs (DF_MEVA_DIV) To calculate the quotient from two MEVAs Inputs: m_MEVA_1measuring variable m_MEVA_2measuring variable The function returns: VALUE[x] = m_MEVA_1 / m_MEVA_2 
Energy supply	Energy supply (DF_EZUFUHR) Energy supply calculation *without* inclusion of parameter changes Inputs: m_Menge_1measuring variable, e.g., coal supplied [t] t_Heizwert_1parameter, e.g., calorific value of coal [MWh/t] The function returns: energy supply[MWh] = quantity[t] * calorific value[MWh/t] 
Energy supply oil	Energy supply oil (DF_EZUFUHR_OEL) Calculation of energy supply from oil, temperature compensated *with* inclusion of parameter changes Inputs: t_Bezugsdichteparameter [t/m³] t_Bezugstemperaturparameter [°C] t_Korrekturfaktorparameter [1/°C] d_Temperaturoperating datapoint [°C] d_Durchflussoperating datapoint [m³/h] t_Heizwert_1parameter [MWh/t] The function returns: energy supply[MWh] = SUM(d_Durchfluss * period of validity * (t_Bezugsdichte + ((t_Bezugstemperatur - d_Temperatur) * t_Korrekturfaktor)) * t_Heizwert_1) / 3600 

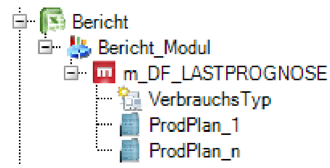
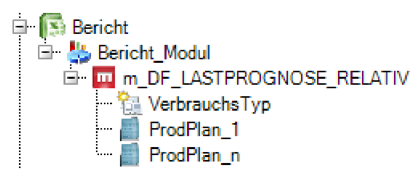
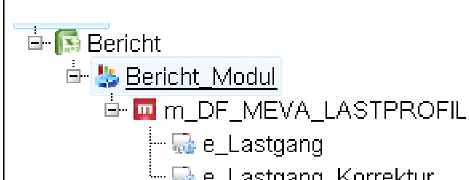
Energy supply oil (incl. correction) with constant oil temperature	Energy supply oil, including correction and constant oil temperature (DF_ZUFUHR_OEL_KONST) Calculation of energy supply from oil, temperature compensated *with* inclusion of parameter changes Inputs: t_Bezugsdichteparameter [t/m³] t_Bezugstemperaturparameter [°C] t_Korrekturfaktorparameter [1/°C] t_Öltemperatur_Konstanteparameter [°C] d_Durchflussoperating datapoint [m³/h] The function returns: energy supply[MWh] = SUM(d_Durchfluss * period of validity * (t_Bezugsdichte + ((t_Bezugstemperatur - t_Öltemperatur_Konstante) * t_Korrekturfaktor))) / 3600 
Substitution from DP	Substitution from DP (DF_MEVA_ERSATZWERT) Substitution from datapoint Inputs: m_MEVA_1measuring variable m_MEVA_2measuring variable The function returns: The value in m_MEVA_1 is returned; if no value exists, the value in m_MEVA_2 is returned. Zero is returned if both MEVAs do not provide a value. 
First value	First value (DF_FIRST_VALUE) First value in the monitoring period. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = first value of the time window 

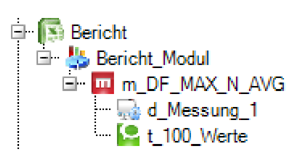
<table>
<tr><td>Daily temperature figure EnBW</td><td>
Daily temperature figure EnBW (DF_HEIZGRADTAGE_ATF)
Calculation of the daily temperature figure based on a special daily mean value.
Inputs:
d_Messung_1operating datapoint (outside temperature)
The function returns:
VALUE[x] = ∑ (difference of daily mean values to 15°C)
If daily mean value > 15°C, then difference = 0.
The daily mean value is calculated based on the equation (t9+t14+2xt21)/4.


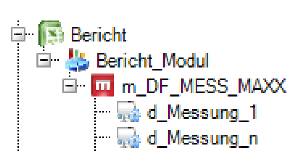
</td></tr>
<tr><td>Heating degree days</td><td>
Heating degree days (DF_HEIZGRADTAGE)
Calculation of heating degree days.
Inputs:
d_Messung_1operating datapoint (outside temperature)
The function returns:
VALUE[x] = ∑ (difference of daily mean values to 15 degrees)
If daily mean value > 15 degrees, then difference = 0.
The daily mean is calculated as standard arithmetic mean value.


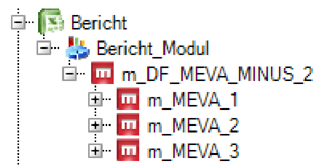
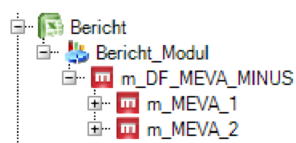
</td></tr>
<tr><td>Configurable Meva</td><td>
Configurable MEVA (CONFIG_MEVA)
Executes configurable basic mathematical operation (+ - / * ( )).
Inputs:
Any number of measuring variables: m_anzahl_stk, m_sum_it


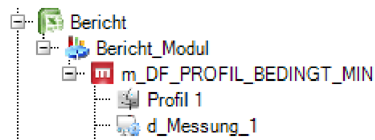
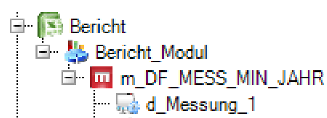
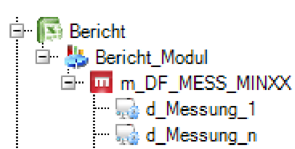
To implement a selected measuring variable into an operation, enter a colon and the number of the inserted measuring variable in the sequence, for example, in the "(4 + :1) * :2 / 2.2".
The following operation is executed in this case: (4 + m_anzahl_stk) * m_sum_it / 2,2
</td></tr>
</table>

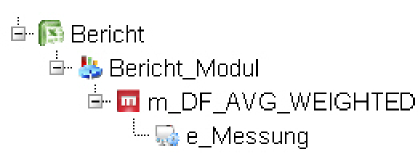
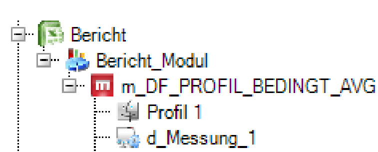
General load forecast	General load forecast (DF_LASTPROGNOSE) General calculation of the load forecast. Inputs: consumption typeconsumption type ProdPlan_1production plan ProdPlan_nproduction plan The function returns: Value = sum(y[E,t1] = k[E] * quantity[t1] + d[E]) 
General relative load forecast	General relative load forecast (DF_LASTPROGNOSE_RELATIV) General calculation of the relative load forecast. Inputs: Verbrauchstypconsumer type ProdPlan_1production plan ProdPlan_nproduction plan The function returns: Value = sum(y[E,t1] = k[E] * quantity per time[t1] + d[E]) 
Load profile	Load profile (DF_MEVA_LASTPROFIL) Corrects a load profile using a correction value. The load profile is recalculated based on a monthly correction value. Inputs: e_Lastgangoperating datapoint e_Lastgang_Korrekturoperating datapoint The function returns: The function first calculates the Real value of the sum (SumRealTotal) as a function of the load profile (e_Lastgang). It also calculates the last value for the monitoring period and applies this as correction value (LastCorrValue). The following calculation is then performed for each interval: Value = sum REAL as a function of the current query period / SumRealTotal * LastCorrValue 

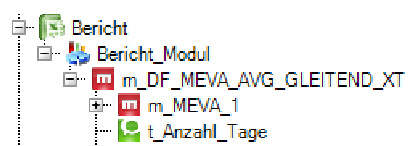
Last value	Last value (DF_LAST_VALUE) Last value measured in the monitoring period. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = last value of the time window 
Gap check	Gap check (DF_HAS_GAP) Returns 0 if one of the connected datapoints contains gaps or values <= filter value; otherwise 1 is returned. Inputs: any number of datapoints: e_Messung_1, e_Messung_2 Optional: parameter with filter value. t_Filter 
MAX N average	Max N average (DF_MAX_N_AVG) Calculates the mean value of the n highest values generated since the beginning of the year. Inputs: d_Messung_1operating datapoint t_100_Werteparameter The function returns: VALUE[x] = mean value of the n highest values generated since the beginning of the year. n is passed as parameter. 

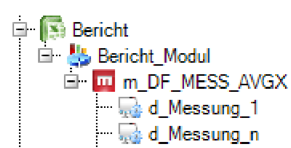
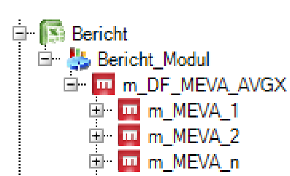
Maximum	Maximum (DF_MAX) Maximum calculation of a datapoint. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = MAX(measured values) within the monitoring period. Additional info: If MEVA_CHECK_LUECKEN is set to 0 in B.Data Options, no checks for gaps in the time set are initiated (15 minutes). 1 means that a check is performed. Can only be active if MEVA_STER_THRESHOLD is disabled (= 0). MEVA_STER_THRESHOLD can be used to set a percentage limit of corrupted values as of which the corrupted result is also rejected. It is also permitted to use decimal point values (e.g. 50.5); the function is disabled with "0" value. Can only be active if MEVA_CHECK_LUECKEN is disabled (= 0). 
Cumulative maximum	Cumulative maximum (DF_MAX_KUMUL) Returns the cumulative maximum of all measured values. Beginning with the start date of the evaluation period, the cumulative value is also formed for modules that need an interval. Inputs: e_Messung_1operating datapoint The function returns: VALUE[x] = sum(maximum of e_Messung_1) / number of maximum calculations (e.g. intervals) 
Maximum of n datapoints	Maximum of n datapoints (DF_MESS_MAXX) Maximum calculation of several datapoints. Inputs: d_Messung_1operating datapoint d_Messung_noperating datapoint The function returns: VALUE[x] = MAX(measured values) from 1 to n datapoints within the monitoring period. 

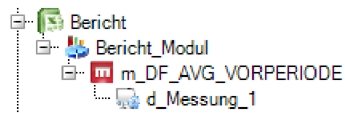
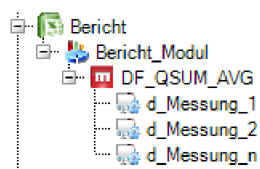
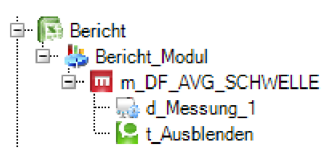
MEVA minus 2 MEVAs	MEVA minus 2 MEVAs (DF_MEVA_MINUS_2) Subtraction of two MEVAs from one MEVA. Inputs: m_MEVA_1measuring variable m_MEVA_2measuring variable m_MEVA_3measuring variable The function returns: VALUE[x] = MEVA_1 - MEVA_2 - MEVA_3 
MEVA minus MEVA	MEVA minus MEVA (DF_MEVA_MINUS) Subtraction of one MEVA from a different MEVA. Inputs: m_MEVA_1measuring variable m_MEVA_2measuring variable The function returns: VALUE[x] = MEVA_1 - MEVA_2 
Minimum	Minimum (DF_MIN) Minimum calculation of a datapoint. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = MIN(measured values) within the monitoring period. Additional info: If MEVA_CHECK_LUECKEN is set to 0 in B.Data Options, no checks for gaps in the time set are initiated (15 minutes). 1 means that a check is performed. Can only be active if MEVA_STER_THRESHOLD is disabled (= 0). MEVA_STER_THRESHOLD can be used to set a percentage limit of corrupted values as of which the corrupted result is also rejected. It is also permitted to use decimal point values (e.g. 50.5); the function is disabled with "0" value. Can only be active if MEVA_CHECK_LUECKEN is disabled (= 0). 

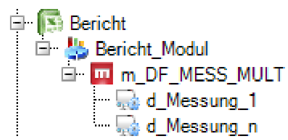
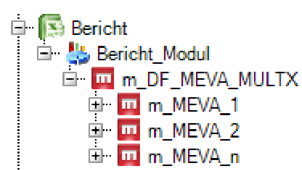
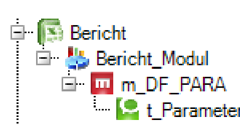
Minimum (profile)	Minimum (profile) (DF_PROFIL_BEDINGT_MIN) Minimum calculation depending on the profile value. Inputs: d_Messung_1operating datapoint Profil 1profile The function returns: Value[t] = minimum(value[t] if profile[t] <> 0) 
Minimum in the current year	Minimum in the current year (DF_MESS_MIN_JAHR) Calculation of the minimum value of a datapoint generated in the current year. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = MIN(measured values) from the current year. 
Minimum of n datapoints	Minimum of n datapoints (DF_MESS_MINX) Minimum calculation of several datapoints. Inputs: d_Messung_1operating datapoint d_Messung_noperating datapoint The function returns: VALUE[x] = MIN(measured values) from 1 to n datapoints within the monitoring period. 

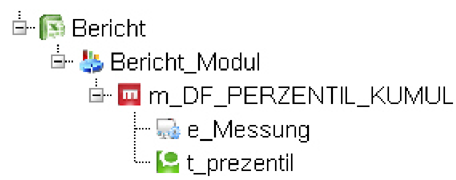
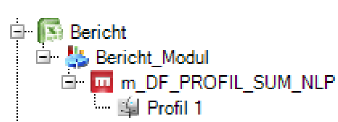
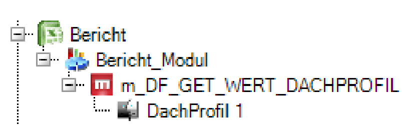
Average	Average (DF_AVG) Weighted mean value calculation. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = (measured value * period of validity) / SUM(period of validity) Additional info: 1. If MEVA_CHECK_LUECKEN is set to 0 in B.Data Options, no checks for gaps in the time set are initiated (15 minutes). 1 means that a check is performed. Can only be active if MEVA_STER_THRESHOLD is disabled (= 0). 2. MEVA_STER_THRESHOLD can be used to set a percentage limit of corrupted values as of which the corrupted result is also rejected. It is also permitted to use decimal point values (e.g. 50.5); the function is disabled with "0" value. Can only be active if MEVA_CHECK_LUECKEN is disabled (= 0). 
Weighted average	Weighted average (DF_AVG_WEIGHTED) The function returns the weighted mean value of all measured values within the monitoring period. Inputs: e_Messungoperating datapoint The function returns: VALUE[x] = (measured value * period of validity) / SUM(period of validity) 
Average (profile)	Average (profile) (DF_PROFIL_BEDINGT_AVG) Mean value calculation depending on the profile value. Inputs: d_Messung_1operating datapoint Profil 1profile The function returns: Value[t] = average(value[t] if profile[t] <> 0) 

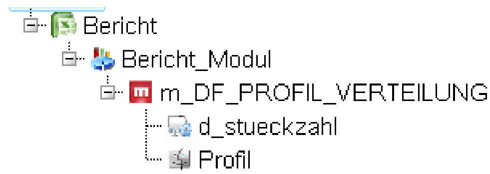
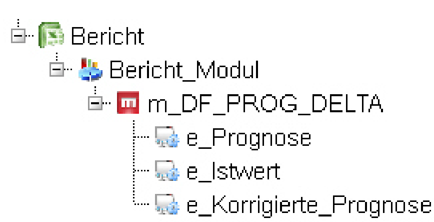
Floating average 14T	Floating average 14T (df_avg_gleitend_14t) Calculation of the weighted mean value of the last 14 days. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = (measured value * period of validity) / SUM(period of validity) However, the time range From: is corrected by 13 days in the past. 
Floating average x days for Meva	Floating average x days for MEVA (DF_MEVA_AVG_GLEITEND_XT) Calculating the floating average of a MEVA. Inputs: m_MEVA_1measuring variable t_Anzahl_Tageparameter The function returns: VALUE[x] = mean value of the MEVA of the last x days. The parameter specifies the number of days for which the mean value is calculated. 
Cumulative average	Cumulative average (DF_AVG_KUMUL) Returns the cumulative average of all measured values. Beginning with the start date of the evaluation period, the cumulative value is also formed for modules that need an interval. Inputs: e_Messung_1operating datapoint The function returns: VALUE[x] = sum(average of e_Messung_1) / number of average calculations (e.g. intervals) 

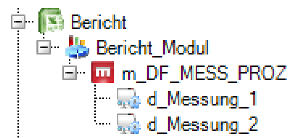
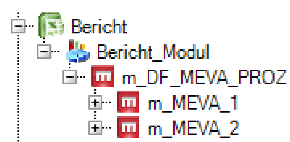
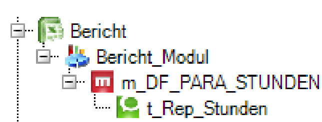
Average with filter	Average with filter (DF_AVG_FILTER) Returns the mean value of all measured values greater than the filter value. Inputs: d_Messung_1.....operating datapoint t_filter..............Optional: parameter with filter value. Default filter value = 0 The function returns: VALUE[x] = AVG(measured values) if measured value > filter value. 
Average of n datapoints	Average of n datapoints (DF_MESS_AVGX) Calculation of the mean value of n datapoints. Inputs: d_Messung_1operating datapoint d_Messung_noperating datapoint The function returns: VALUE[x] = AVG(measured values) from 1 to n datapoints within the monitoring period. 
Average of n MEVAs	Average of n MEVAs (DF_MEVA_AVGX) Calculation of the mean value of n MEVAs. Inputs: m_MEVA_1measuring variable m_MEVA_2measuring variable m_MEVA_nmeasuring variable The function returns: VALUE[x] = AVG(m_MEVA_1, m_MEVA_2, … m_MEVA_n) 

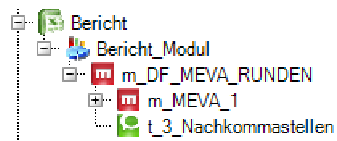
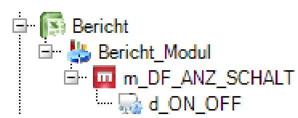
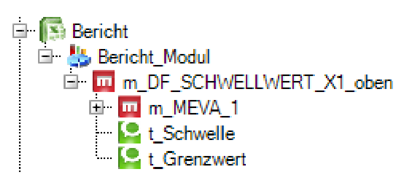
Previous period average	Previous period average (DF_AVG_VORPERIODE) Calculation of the mean value of the previous period. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = AVG(measured values), whereby the query period is set back by one period (from/to). 
Mean value addition with cross sum	Mean value addition with cross sum (DF_QSUM_AVG) Adds any number of datapoints with cross sum and calculates the mean value from this data. Inputs: d_Messung_1operating datapoint d_Messung_2operating datapoint d_Messung_noperating datapoint The function returns: VALUE = AVG(∑(d_Messung_1 + d_Messung_2 + … + d_Messung_n)) 
Mean value with threshold	Mean value with threshold (DF_AVG_SCHWELLE) Conditional mean value calculation. Inputs: d_Messung_1operating datapoint t_Ausblendenparameter The function returns: VALUE[s] = average of all values in the monitoring period minus the datapoint values not exceeding 0 ± parameter value. 

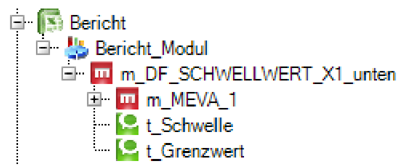
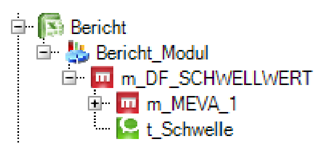
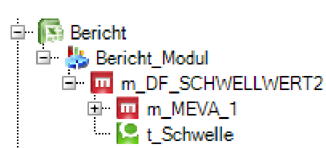
<table>
<tr><td>Multiplication of two DPs with cross sum</td><td>Multiplication of 2 DPs with cross sum (DF_MESS_MULT)
Multiplication of two datapoints with subsequent cross sum calculation.
Inputs:
d_Messung_1operating datapoint
d_Messung_2operating datapoint
The function returns:
VALUE[x] = ∑(d_Messung_1 * d_Messung_2)

</td></tr>
<tr><td>Multiplication of n MEVAs</td><td>Multiplication of n MEVAs (DF_MEVA_MULTX)
Multiplication of n MEVAs.
Inputs:
m_MEVA_1measuring variable
m_MEVA_2measuring variable
m_MEVA_nmeasuring variable
The function returns:
VALUE[x] = MEVA_1 * MEVA_2 * … * MEVA_n)

</td></tr>
<tr><td>Parameters</td><td>Parameter (DF_PARA)
Calculation of the parameter value.
Inputs:
t_Parameterparameter
The function returns:
VALUE[x] = value of the DB parameter that was valid as of the FROM time (calculation start time).

</td></tr>
</table>

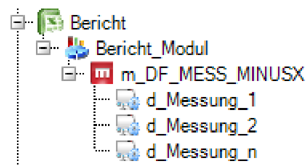
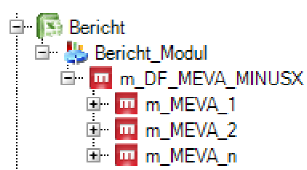
Percentile	Percentile (DF_PERZENTIL) Returns the percentile specified in the parameter for a measured value set. Inputs: e_Messungoperating datapoint t_perzentilparameter 
Cumulative percentile	Cumulative percentile (DF_PERZENTIL_KUMUL) Returns the cumulative percentile specified in the parameter for a measured value set. Inputs: e_Messungoperating datapoint t_perzentilparameter 
Profile sum NLP	Profile sum NLP (DF_PROFIL_SUM_NLP) Calculation of the sum of profile values in the period. Inputs: Profil 1profile The function returns: Value[t1] = SUM(profile[t1]) 
Profile value	Profile value (DF_GET_WERT_DACHPROFIL) Return of the current profile value. Inputs: DachProfil 1MasterProfile The function returns: Value[t1] = profile value[t1] of the currently active profile 

Profile distribution	Profile distribution (DF_PROFIL_VERTEILUNG) A monthly batch is distributed to production hours based on profile data. Inputs: d_stueckzahl ……operating datapoint containing the batch quantity Profil …………….profile or master profile 
Drain optimization forecast (dummy) ()	Drain optimization forecast (dummy) (DF_PROG_ABFLUSS) Dummy MEVA for internal applications. Inputs: none The function returns: no values returned - cannot be used
Delta forecast	Delta forecast (DF_PROG_DELTA) Calculates the delta (actual value - forecast value) for the present time and uses the result to adjust a time set for the e_Korrigierte_Prognose datapoint. The calculated delta value is added accordingly to the values. The function returns the delta as return value. Inputs: e_Prognoseoperating datapoint with forecast values e_Istwertoperating datapoint with actual values e_Korrigierte_Prognoseoperating datapoint for the corrected fore-cast. The function returns: Delta = actual value - forecast value (at the present time) Starting at the present time and for the next 24 hours: e_Korrigierte_Prognose = e_Korrigierte_Prognose + Delta Note: All time sets of these three datapoints must be available in a 15 minute cycle. 

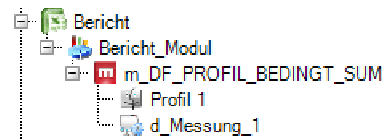
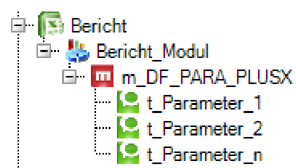
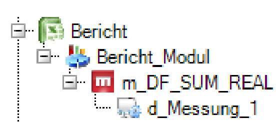
Percentage	Percentage (DF_MESS_PROZ) Quotient of two datapoints, multiplied by 100. Inputs: d_Messung_1operating datapoint d_Messung_2operating datapoint The function returns: VALUE[x] = d_Messung_1 / d_Messung_2 * 100 
Percentage ratio between two MEVAs	Percentage ratio between 2 MEVAs (DF_MEVA_PROZ) Quotient of two datapoints, multiplied by 100. Inputs: m_MEVA_1measuring variable m_MEVA_2measuring variable The function returns: VALUE[x] = m_MEVA_1 / m_MEVA_2 * 100 
Repair hours	Repair hours (DF_PARA_STUNDEN) Total of all validity data of a parameter entered. Inputs: t_Rep_Stundenparameter The function returns: VALUE[x] = sum of all time ranges valid from - to in the monitoring period 

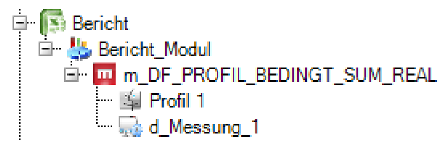
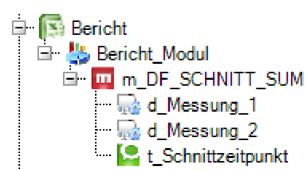
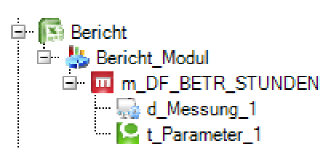
Round to n decimal places	Round to n decimal places (DF_MEVA_RUNDEN) Rounding of the MEVA result. Inputs: m_MEVA_1measuring variable t_3_Kommastellenparameter The function returns: VALUE[x] = Meva result rounded to the specified number of decimal places (parameter value) 
Switching cycles	Switching cycles (DF_ANZ_SCHALT) Calculation of all switching cycles in the monitoring period Inputs: d_ON_OFF operating datapoint with logical 0/1 signal. The function returns: VALUE[x] = number of all real 0-1 or 1-0 transitions 
Upper threshold element (x1)	Upper threshold element (x1) (DF_SCHWELLWERT_X1_oben) The function returns all MEVA values that are below the threshold; otherwise, the limit value is returned. Inputs: (observe the order) m_MEVA_1measuring variable t_Schwelleparameter t_Grenzwertparameter The function returns: VALUE[x] = IF(m_MEVA_1 < t_Schwelle, m_MEVA_1, t_Grenzwert) 

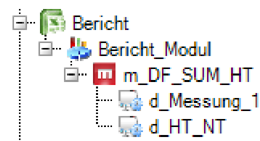
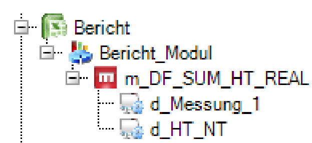
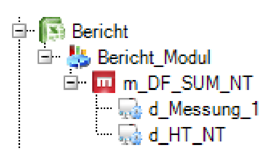
Lower threshold element (x1)	Lower threshold element (x1) (DF_SCHWELLWERT_X1_unten) The function returns all MEVA values higher than this threshold; otherwise, the limit value is returned. Inputs: (observe the order) m_MEVA_1measuring variable t_Schwelleparameter t_Grenzwertparameter The function returns: VALUE[x] = IF(m_MEVA_1 > t_Schwelle, m_MEVA_1, t_Grenzwert) 
Upper threshold element	Upper threshold element (DF_SCHWELLWERT) The function returns all MEVA values that are below the threshold; otherwise, the threshold value is returned. Inputs: m_MEVA_1measuring variable t_Schwelleparameter The function returns: VALUE[x] = IF(m_MEVA_1 < t_Schwelle, m_MEVA_1, t_Schwelle) 
Lower threshold element	Lower threshold element (DF_SCHWELLWERT2) The function returns all MEVA values higher than this threshold; otherwise, the threshold value is returned. Inputs: m_MEVA_1measuring variable t_Schwelleparameter The function returns: VALUE[x] = IF(m_MEVA_1 > t_Schwelle, m_MEVA_1, t_Schwelle) 

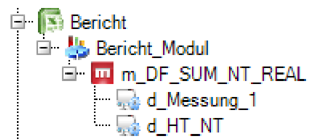
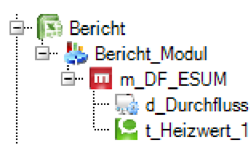
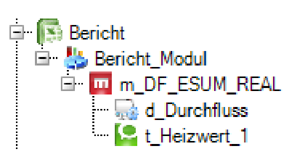
<table>
<tr><td>Subtraction with cross sum</td><td>Subtraction with cross sum (DF_MESS_MINUSX)
Subtracts any number of datapoints with cross sum.
Inputs:
d_Messung_1operating datapoint
d_Messung_2operating datapoint
d_Messung_noperating datapoint
The function returns:
VALUE = Sum(d_Messung_1 - d_Messung_2 - … - d_Messung_n)

</td></tr>
<tr><td>Subtraction of n MEVAs</td><td>Subtraction of n MEVAs (DF_MEVA_MINUSX)
Subtracts any number of MEVA inputs:
m_MEVA_1measuring variable
m_MEVA_2measuring variable
m_MEVA_nmeasuring variable
The function returns:
VALUE[x] =m_MEVA_1 - m_MEVA_2 - ... - m_MEVA_n

</td></tr>
<tr><td>Sum</td><td>Total (DF_SUM)
Sum of all measured values scaled to the hour.
Inputs:
d_Messung_1operating datapoint
The function returns:
VALUE[x] = SUM(measured value * period of validity) / 3600
Additional info:
MEVA_STER_THRESHOLD can be used to set a percentage limit of corrupted values as of which the corrupted result is also rejected. It is also permitted to use decimal point values (e.g. 50.5); the function is disabled with "0" value. Can only be active if MEVA_CHECK_LUECKEN is disabled (= 0).

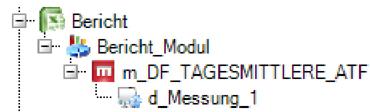
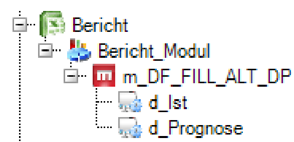
</td></tr>
</table>

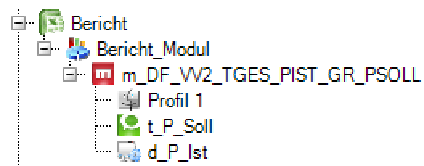
Sum (profile)	Sum (profile) (DF_PROFIL_BEDINGT_SUM) Scaled sum calculation depending on the profile value. Inputs: d_Messung_1operating datapoint Profil 1profile The function returns: Value[t] = sum((value[t] * validity[t] / 3600) if profile[t] <> 0) 
Sum of multiple parameter values	Sum of multiple parameter values (DF_PARA_PLUSX) Sum of parameter values within the monitoring period. Inputs: t_Parameter_1parameter t_Parameter_2parameter t_Parameter_nparameter The function returns: VALUE[x] = SUM(t_Parameter_1, t_Parameter_2, …, t_Parameter_n) 
Sum Real	Sum Real (DF_SUM_REAL) Sum of all measured values. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = SUM(measured value) Additional info: MEVA_STER_THRESHOLD can be used to set a percentage limit of corrupted values as of which the corrupted result is also rejected. It is also permitted to use decimal point values (e.g. 50.5); the function is disabled with "0" value. Can only be active if MEVA_CHECK_LUECKEN is disabled (= 0). 

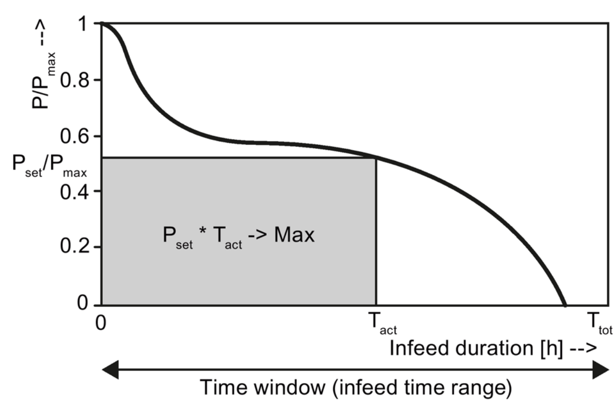
<table>
<tr><td>Sum Real (profile)</td><td>Sum (profile) (DF_PROFIL_BEDINGT_SUM_REAL)
Sum calculation depending on the profile value.
Inputs:
d_Messung_1operating datapoint
Profil 1profile
The function returns:
Value[t] = sum(value[t] if profile[t] <> 0)

</td></tr>
<tr><td>Sum at the intersection time</td><td>Sum at the intersection time (DF_SCHNITT_SUM)
Summation within a range.
Inputs:
d_Messung_1operating datapoint
d_Messung_2operating datapoint
t_Schnittzeitpunktparameter
The function returns:
VALUE[x] = sum of all values in a monitoring period with summation up to the "valid until" date (intersection time) of d_Messung_1, followed by d_Messung_2.

</td></tr>
<tr><td>Sum since parameter end time</td><td>Sum since parameter end time (DF_BETR_STUNDEN)
Sum of all measured values generated after the FROM time stamp has been adjusted.
Inputs:
d_Messung_1operating datapoint
The function returns:
VALUE[x] = summation of the operating hours of a datapoint, with adjustment of the FROM time stamp in the measuring variable.

</td></tr>
</table>

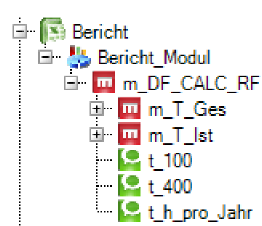
<table>
<tr>
<td>Sum_HT</td>
<td>Sum_HT (DF_SUM_HT)
Sum of all measured values scaled to the hour as long as rate = 1.
Inputs:
d_Messung_1operating datapoint
d_HT_LT tariff datapoint (defined as 0/1 time sets)
The function returns:
VALUE[x] = SUM(measured value * period of validity) / 3600 IF d_HT_NT=1

</td>
</tr>
<tr>
<td>Sum_HT_Real</td>
<td>Sum_HT_Real (DF_SUM_HT_REAL)
Sum of all measured values as long as rate = 1.
Inputs:
d_Messung_1operating datapoint
d_HT_LT tariff datapoint (defined as 0/1 time sets)
The function returns:
VALUE[x] = SUM(measured value) IF d_HT_NT=1

</td>
</tr>
<tr>
<td>Sum_NT</td>
<td>Sum_NT (DF_SUM_NT)
Sum of all measured values scaled to the hour as long as rate = 0.
Inputs:
d_Messung_1operating datapoint
d_HT_LT tariff datapoint (defined as 0/1 time sets)
The function returns:
VALUE[x] = SUM(measured value * period of validity) / 3600 IF d_HT_NT=0

</td>
</tr>
</table>

Sum_NT_Real	Sum_NT_Real (DF_SUM_NT_REAL) Sum of all measured values as long as rate = 0. Inputs: d_Messung_1operating datapoint d_HT_LT tariff datapoint (defined as 0/1 time sets) The function returns: VALUE[x] = SUM(measured value) IF d_HT_NT=0 
Energy supply totals	Energy supply totals (DF_ESUM) Energy supply scaled to the hour and *without* inclusion of parameter changes. Inputs: d_Durchflussoperating datapoint in [m³/h], [Nm³/h] t_Heizwert_1parameter, calorific value in [MWh/t] ,[MWh/Nm³] The function returns: Energy supply[MWh] = SUM(d_Durchfluss*period validity*calorific value) / 3600 
Energy supply Real totals	Energy supply Real totals (DF_ESUM_REAL) Energy supply calculation *with* inclusion of parameter changes. Inputs: d_Durchflussoperating datapoint in [m³/h], [Nm³/h] t_Heizwert_1parameter, calorific value in [MWh/t] ,[MWh/Nm³] The function returns: energy supply [MWh] = SUM(d_flow * calorific value) 

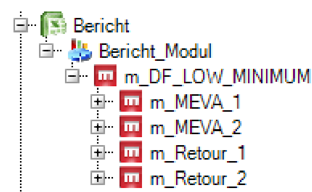
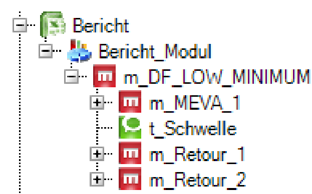
Daily average AT (t9+t14+2x t21)/4	Daily average AT (t9+t14+2x t21)/4 (DF_TAGESMITTLERE_ATF) Calculation of the daily average outdoor temperature. Inputs: d_Messung_1operating datapoint The function returns: VALUE[x] = (t 09:00 + t 14:00 + 2 x t 21:00) / 4 
Partial calculation actu-al/forecast values	Partial calculation actual/forecast values (DF_FILL_ALT_DP) Summation within a range. Inputs: d_Istoperating datapoint d_Prognoseoperating datapoint The function returns: VALUE[x] = sum of all d_Ist values in the monitoring period. The alternative d_Prognose datapoint is used if no values are available. 
Operating hours at full load	Operating hours at full load (DF_VOLLLAST_BSTUNDEN) Operating hours of conditional measurements (taking into account the binary signal across the validity period of performance), weighted by the ratio to full load. Inputs: e_Durchflussoperating datapoint t_Volllastparameter The function returns: Value[t] = Sum (e_Durchfluss.Value * e_Durchfluss.period of validi-ty / t_Volllast)
VVII Ttotal	VVII Ttotal (DF_VV2_TGES) Calculation of the hours for which the profile is <> 0 in the evalua-tion period. Inputs: Profil 1profile The function returns: Value[t] = sum of the hours for which the profile is <> 0 in the eval-uation period. 

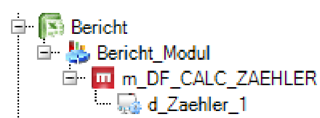
VVII Ttotal Pactual > Ptarget	VVII Ttotal Pactual > Ptarget (DF_VV2_TGES_PIST_GR_PSOLL) Calculation of the hours for which the profile is <> 0 and Pactual > Ptarget in the evaluation period. Inputs: Profil 1profile t_P_Sollparameter d_P_Istoperating datapoint The function returns: Value[t] = sum of the hours for which Profil 1 <> 0 and d_P_Ist > t_P_Soll in the evaluation period. 

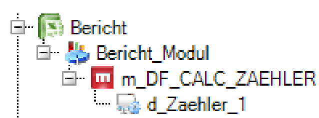
VVII reduction factor	VVII reduction factor (DF_CALC_RF) Calculation of charges for unused network resources. Inputs: m_T_Gesmeasuring variable m_T_Istmeasuring variable t_200Parameter t_400Parameter t_h_pro_Jahrparameter Calculations are based on the output load profile of a power plant. Only selected time windows are analyzed based on this load profile and depending on the tag type (e.g. weekdays 9:00 AM to 4:00 PM, weekends 11:00 AM to 2:00 PM). The total of all time windows is referred to as T_{total}. The next check is performed for a specified performance Ptarget to determine the period in which T_{actual} power exceeded the target power in a selected section of the load profile. On completion of the check that determines whether or not Tactual is at least 30 % of T_{total}, an evaluation factor r is determined based on the T_{actual} and T_{total} values.  Calculation of the T_{actual} variable (extract from Plant 6 of VVII plus)

<table>
<tr><td>VVII reduction factor (continued)</td><td>
Once T_{total}, T_{actual} and r have been calculated and the constant variables P_{target}, P_{total}, LP and $B_{Üb\text{-}Ne}$ have been entered, the charges are calculated based on the following equation:
LP portion: LP P_{target} (T_{actual} / T_{total}) - $B_{Üb\text{-}Ne}$ (P_{target} - P_{total}) r(T_{total} - T_{actual})
T_{total}: hours during which the profile = 1
P_{target}: Definition
P_{actual}: power measured
T_{actual}: duration of the Pactual > Ptarget status in the profile
Factor1: T_{actual} / T_{total} must be greater than 0.3, for otherwise there is no claim for remuneration
r: reduction factor based on the following calculation
P_{total}: Assured performance (taken into account in addition to the method represented in VVII plus)
P_{target}: Specification by power producers
T_{total}: Total power input time for P_{target} as defined and demanded in the time window
T_{actual}: determined based on a continuous line in the time window; at least 30 % of T_{total} remuneration of an LP portion.
$LP_{üb.\text{-}NE}$: Power price for grid utilization in the power layer that is superimposed on the power grid layer (without transformation services contract)
$B_{üb.\text{-}NE}$: Utility service contract based on cost allocation for the power layer that is superimposed on the power grid layer (without transformation services contract)
r: Reduction factor as for network reserve orders for internal power generation plants; depending on T_{total} and T_{actual}.
r (0 h < T_{total} - T_{actual} ≤((T_{total} / 8760) x 200 h)) = 0.25
r (((T_{total} / 8760) x 200 h)) < T_{total} - T_{actual} ≤((T_{total} / 8760) x 400 h)) = 0.30
r (((T_{total} / 8760) x 400 h)) < T_{total} - T_{actual} ≤T_{total} = 0.35


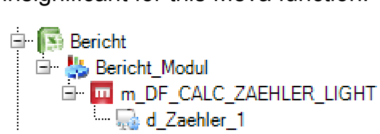
</td></tr>
</table>

If-Then for MEVAs	If-Then for MEVAs (DF_LOW_MINIMUM) The function returns all MEVA values higher than this threshold; otherwise, the threshold value is returned. Inputs: m_Meva_1measuring variable m_Meva_2measuring variable ort_Schwelleparameter m_MEVA_3measuring variable m_MEVA_4measuring variable The function returns: VALUE[x]=IF(m_Meva_1 > m_Meva_2; m_Meva_1; 0) VALUE[x]=IF(m_Meva_1 > m_Meva_2; m_return_1, 0) VALUE[x]=IF(m_Meva_1 > m_Meva_2; m_return_1, m_return_2) Argument 2 may be a MEVA or Parameter, otherwise MEVAs. Arguments 3 and 4 are optional.  
Counter diff.(overfl,change) without range	Counter diff.(overfl, change) without range (DF_CALC_ZAEHLER) Calculation of the count value difference with counter overflow and counter change, but without count range. Inputs: d_Zaehler_1operating datapoint with definition of the counter The function returns: VALUE[x] = (count value CE - count value CS) * pulse valence CE = calculation end time CS = calculation start time Also accounts for counter overflows and counter changes. A count range (CAS, CAE) is not included in overflow calculations. In detail, the function works as follows: This is a Meva function that calculates differences in a query period. This function is similar to the Meva function "Count value diff. with overflow, counter change". Only exception: in the case of overflow, the difference between the last value before the overflow in the measurement journal and the count range end is not added.

Counter diff.(overfl,change) without range (continued)	Example of counters without count range: 1.5.2005 01:00:002000 1.5.2005 01:15:004 1.5.2005 01:30:0010 1.5.2005 01:45:0015 1.5.2005 02:00:0020 Difference = 20 Overflow between 2000 and 4; calculation starts at 0. Example of counters with count range: Count range end = 3000 1.5.2005 01:00:002000 1.5.2005 01:15:004 1.5.2005 01:30:0010 1.5.2005 01:45:0015 1.5.2005 02:00:0020 Difference: Count range end - 2000 + 20 = 3000 - 2000 + 20 = 1020 Overflow between 2000 and 4 and calculation starts at 0. In addition, the difference between the last value before the overflow (2000) and the count range end is added. 
Counter fill level difference with counter change	Counter fill level difference with counter change (DF_CALC_ZAEHLER) Calculation of the count value difference of fill level values, including counter change. Inputs: d_Zaehler_1operating datapoint with definition of the counter The function returns: VALUE[x] = (count value CE - count value CS) * pulse valence CE = calculation end time CS = calculation start time Accounts for counter change. Fill level values may rise or decline.

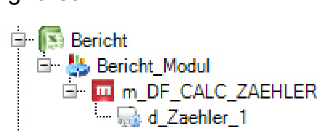
Counter fill level difference with counter change (continued)	In detail, the function works as follows: This is a Meva function that calculates and sums differences within a query period. The difference is calculated for all valid measurement values in the measurement journal. The difference is always calculated relative to the previously valid value. The differences may be positive or negative and are added up. In this case, and overflow ID is not available and is also not useful. A counter change is handled correctly. *Parameterization:* Name of the Meva function: "Counter fill level difference with counter change". The parameterization is specified essentially as in "Counter value difference with overflow, counter change". At least one counter must be defined for the connected datapoint. The following counter attributes must be set: name, installation date, counter constant. As this function is also able to detect counter changes, the "Counter value at removal" (counter 1) and "Count value at installation" (counter 2) must be entered correctly. The query period, invalid source values, counter change, insufficient values in the interval, diagnosis and filtering are as described in "Count value diff. with overflow, counter change". Overflow detection is not implemented. 

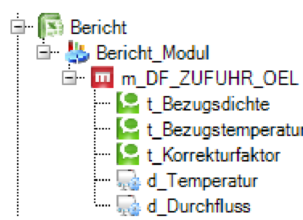
Counter light difference (overflow) without range	Counter light difference (overflow) without range (DF_CALC_ZAEHLER_LIGHT) Calculation of the count difference without counter change and count range. Inputs: d_Zaehler_1operating datapoint with definition of the counter The function returns: VALUE[x] = (count value CE - count value CS) * pulse valence CE = calculation end time CS = calculation start time A count range is not included in overflow calculations. Calculation interval equals data acquisition interval. Counter changes are ignored. In detail, the function works as follows: This is a Meva function that calculates differences in a query period. In comparison to the other functions described above, the Meva function was simplified in order to enhance performance. For example, counter change detection was dispensed with. Only the first and last values in the query period are used to calculate the difference. Any interim value is ignored. For this reason, the duration of the query period should not exceed the interval for measured values in this function. Overflow detection is not possible if this function is used in combination with a balancing module. It certainly makes sense to use a report module with a query interval that corresponds with the data acquisition interval. *Parameterization:* Name of the Meva function: "Counter light difference (overflow) without range" A datapoint must be connected to the Meva function node. It is not necessary to define a counter for this datapoint, as the permanent counter constant 1 is always used for the calculation.

Counter Light Diff.(overfl) without range (continued)	*Query period* The B.Data measurement journal is queried for the connected datapoint within the query period. The query uses the actual query period, e.g. one month: from = '1.4.2005 00:00:00' to = '1.5.2005 00:00:00' and NOT from = '1.4.2005 00:15:00' to = '1.5.2005 00:00:00'. In contrast to other functions, only the FROM and TO values are read from the measurement journal. All interim values will be ignored as specified in the short description. If the TO value is invalid or missing, the Meva function returns difference 0 and the STER_LUECKE status. If the TO value is valid and available, an attempt is made to calculate the difference based on the FROM value. However, a corresponding valid FROM value must be available. If this condition is not met, the function uses the last valid value that precedes the FROM value. The function performs a backward scan over a maximum period of one day. If no valid value that precedes the FROM value is found in the past 24 hours, the Meva function returns difference 0 and the STER_LUECKE status. *Invalid source values* All values having acquisition status 1 (invalid) or 9 (8 + 1 = last + invalid) will be ignored. *Daylight saving time* This function is capable of handling the daylight saving time without error for the 15-minute and 1 hour acquisition intervals. This problem is of no avail anyway for larger units (days, months).
Counter Light Diff.(overfl) without range (continued)	*Counter change:* Counter change is not supported. *Overflow detection:* Counter overflow detection without count range is implemented as well. The difference is calculated starting at 0 after counter overflow has been detected. Example: 1.5.2005 01:00:002000 1.5.2005 01:15:0010 Difference = 10 *Insufficient number of values in the interval:* See the description of the query interval above of a TO or FROM value is invalid or missing. *Diagnostics:* You can set a value greater than 0 for "DB_ZAEHLER_DEBUG" in B.Data Options to enter additional diagnostics messages in the error journal. *Filtering:* No filtering is performed. The "DB_ZAEHLER_CHECK" option is insignificant for this Meva function. 

Count value difference with overflow, counter change	Count value difference with overflow, counter change (DF_CALC_ZAEHLER) Calculation of the count value difference with counter overflow, including count range and counter change. Inputs: d_Zaehler_1operating datapoint with definition of the counter The function returns: VALUE[x] = (count value CE - count value CS) * pulse valence CE = calculation end time CS = calculation start time Also accounts for counter overflows and counter changes. The count range (CAS, CAE) is included in overflow calculations. In detail, the function works as follows: *Query period* The B.Data measurement journal is queried for the connected datapoint within the query period. The query uses the actual query period, e.g. one month: from = '1.4.2005 00:00:00' to = '1.5.2005 00:00:00' and NOT from = '1.4.2005 00:15:00' to = '1.5.2005 00:00:00'. Explanation: in the example above, the first value in the query period has the time stamp '1.4.2005 00:15:00' in accordance with the B.Data definition. The last value has the time stamp '1.5.2005 00:00:00'. It is not appropriate to calculate the difference between the first and last value in the month for monthly evaluations. You need to calculate the difference between the last value of the current month and the last value of the preceding month. Therefore, from = '1.4.2005 00:00:00'. *Invalid source values* All values having acquisition status 1 (invalid) or 9 (8 + 1 = last + invalid) will be ignored. The same rule applies to all values having the "acquisition values" compression level. Counter change: Counter changes in the query period are also handled correctly. At least two counters must be defined for the datapoint. Consistency of the attributes of both counters is conditional, of course. The installation date is decisive for the entry, while the "planned change" is being ignored. The "Count value at removal" (counter 1) and "Count value at installation" (counter 2) fields are of importance, too.

Count value difference with overflow, counter change (continued)	*Overflow detection*: Counter overflow detection is implemented as well. Prerequisite for error-free calculations are correct entries in the "Count range start" and "Count range end" fields. The "Count range warning" is not used by this Meva function. An overflow check is also carried out before and after count changes. The "Count value at removal" (counter 1) and "Count value at installation" (counter 2) fields are, of course, relevant for this check. The difference is calculated starting at 0 after counter overflow has been detected. In addition to this difference, the difference between the last value and the count range end value will be added. Example: Count range end = 2200 1.5.2005 01:00:002000 1.5.2005 01:15:000 1.5.2005 01:30:0010 Difference = count range end - 2000 + 10 = 2200 - 2000 + 10 = 210 *Insufficient number of values in the interval*: Given the situation, for example, that only one value is entered in the measurement journal in each month. However, you nonetheless want to evaluate the data on a monthly basis. An additional functionality has been created as a workaround to the fact that you need at least two values to calculate a difference. 1. The query period (FROM - TO) contains exactly one value that corresponds with the FROM value with regard to its time stamp. As the TO value is missing, the Meva function is canceled and the STER_LUECKE status is returned. 2. The FROM value is missing. The query is now repeated with a new value, while the old TO value is retained. This situation is indicated in diagnostics mode by the following message in the error journal: "Delta = 0 > second attempt from: 31.04.2005 23:45:00 to: 1.6.2005 00:00:00". The new FROM value is calculated based on the following rule: starting at the FROM value, the function scans the previous 24 hours to find the last valid value. If the second attempt also returns only one value, the Meva function is canceled, the STER_LUECKE status is set, and the following message is written to the error journal: "2. attempt, delta again 0 > cancel". *Diagnostics*: You can set a value greater than 0 for "DB_ZAEHLER_DEBUG" in B.Data Options to enter additional diagnostics messages in the error journal. The function name is frequently displayed with a three-digit suffix in parenthesis, e.g.: pr_check_counter(001). This number is used as additive for sorting the messages. Under the aspect that the smallest resolution of the incoming time stamp in the error journal is based on full seconds, it frequently happens that several messages are assigned the same incoming time stamp. Caution: These messages are very extensive so that it is advisable to disable this option as soon as the analysis has been completed.

Count value difference with overflow, counter change (continued)	*Filtering*: Filtering serves primarily to ignore outliers. You can enable or disable this function by setting the "DB_ZAEHLER_CHECK" option in B.Data Options (1/0). The counter values are usually incremented continuously, which means that the current count value is higher than the previous. If the current counter value is now suddenly less than the previous value, the function rates this status as counter overflow or reset. However, it is possible in this scenario that corrupted source values generate outliers. This means that the current value is less than the previous, while the next value is, once again, greater than the previous. Example: 1.5.2005 01:00:002000 1.5.2005 01:15:000 1.5.2005 01:30:002010 The value for the time stamp of '1.5.2005 01:15:00' is apparently an outlier. With activated filter option, such outliers will be ignored. 1.5.2005 01:00:002000 1.5.2005 01:15:000 1.5.2005 01:30:0010 This situation is not rated as outlier, but rather as overflow.
Count value difference with overflow, counter change (continued)	The filter function provides a second option, namely "DB_ZAEHLER_FILTER". This option only has an effect if "DB_ZAEHLER_CHECK" is enabled (= 1). With active "DB_ZAEHLER_CHECK" option, identical values that were generated in immediate succession are ignored under certain circumstances, whereby the number of values selected for the query may not be less than two. In Debug mode, such entries are consequently generated in the error journal: 'Skip date: 1.5.2005 1:15:00 value: 2000' Example: 1.5.2005 01:00:002000 1.5.2005 01:15:002000 1.5.2005 01:30:002010 If "DB_ZAEHLER_CHECK" is enabled and the "DB_ZAEHLER_FILTER" entry exists, all values less than the value in "DB_ZAEHLER_FILTER" are ignored. Example: DB_ZAEHLER_CHECK = 1 and DB_ZAEHLER_FILTER = 9 01.05.2005 01:00:008 01.05.2005 01:15:009 01.05.2005 01:30:0010 The entry with time stamp '01.05.2005 01:00:00' and value 8 will be ignored. 

Correcting the time window	Moves the specified calculation time period by the number of periods specified into the future or past. Inputs: 1 datapoint (d_, e_, a_) or measuring variable (m_) t_Direction parameter with direction ("-": future; "+": past) and number of periods, for example, "-1" to shift the data by one period into the future
Oil supply (incl. corr.)	Oil supply (incl. corr.) (DF_ZUFUHR_OEL) Temperature compensated calculation of the oil supply. Inputs: t_Bezugsdichteparameter [t/m³] t_Bezugstemperaturparameter [°C] t_Korrekturfaktorparameter [1/°C] d_Temperaturoperating datapoint [°C] d_Durchflussoperating datapoint [m³/h] The function returns: Supply[t] = SUM(d_Durchfluss * period of validity * (t_Bezugsdichte + ((t_Bezugstemperatur - d_Temperatur) * t_Korrekturfaktor))) / 3600 

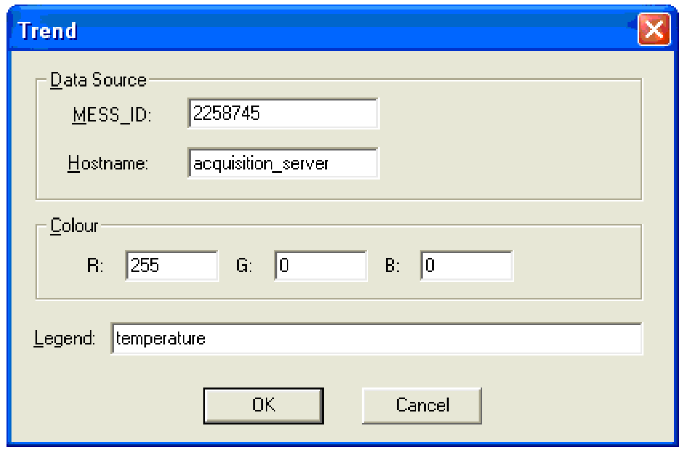
13.12 "Trends" editor

13.12.1 Trender menu bar

The Trender is operated using the mouse buttons and the menu bar or toolbar. The basic functions of Plant Explorer are briefly explained based on the example of the menu bar:

Table 13- 8 Overview of the Trender functions

Menu	Menu commands
File This menu provides you with options for opening trends (*.plo files) and to close the graphic evaluation. The various functions of this menu trigger the actions you already know from Windows applications.	"Print" Prints the trend. The "Print Preview" function allows you to preview and make changes to the pages before printing. "Save" / "Save As" If you select a target directory during calculation, the trend is saved to the file management system and archived. Select "Save" to save the trend to the file system on the local workstation. The graphic evaluation is then saved under the specified name with extension *.PLO.
Edit	Using the "Cut", or "Copy" and "Paste" commands, you can transfer trend lines from B.Data to Microsoft Office. This functionality applies particularly to individually selected trend lines of the graphic view. Data transfer to the Microsoft Office environment. This functionality allows you to visualize process and measurement data in real-time mode. The data can then be processed and recorded as usual in the Microsoft Office environment in a flexible manner. "Move" Moves a trend line in the graphic view both along the x and y coordinates, relative to other trend lines. You can enter the value by which the trend line is to be moved in an input dialog. It is also possible to pick up the line at a handle and then drag it to a different position. The "Reset" button can be used to undo your changes and also allows you to simulate profiles by means of targeted time shift operations in a graphic evaluation. "Select all" Selects all trend lines. "Select nothing" Resets the selection of trend lines.

Menu	Menu commands
B.Data	"Insert trend" Adds a data point to the active Trender.  1. Enter the "MESS_ID" and the "Hostname". – "MESS_ID": Internal ID of the data point. The ID is unique for this data point. – "Host name": Name of the acquisition computer from which the value is fetched. 2. You may define the graph coloring in RGB format (range of values: 0 to 255) 3. You may also enter a name that is used to indicate the data point in the legend. Time Zone Server If the online data source (acquisition computer) and Trender visualization are available in different time zones, specify a time zone server to set up the correct time for visualization of the online data. The time zone server application usually runs on the acquisition computer.
View Only the functions that are currently available will be active.	"Zoom in X" and "Zoom Out X" Changes the scaling of the X axis. "Zoom in Y" and "Zoom Out Y" Changes the scaling of the Y axis. "Zoom Mode" In this mode, you can use the mouse to mark an area that you want to zoom with a square frame. "Reset" Resets the view to 100 %. "Snapshot" Displays the x and y value of the point selected with mouse click in the status bar. As an alternative, double-click the selected point.

Menu	Menu commands
Options The "Options" menu provides several visualization tools. Active formats are check marked.	"Properties" Opens the trend configuration dialog. "Grid" Hides and shows the grid in the plot window. "Legend" Hides and shows the legend in the plot window. "Legend Space" Provides space below the X axis for the legend. "Points only" Displays the data only by points. "Trender frozen" Stops trend scrolling. "Allow Horizontal Shift" Allows you to shift the trend to the left or right on the horizontal axis while keeping the left mouse button pressed. "Allow Vertical Shift" Allows you to shift the trend along the vertical axis while keeping the left mouse button pressed. You can also combine these shift functions. "Toolbar" Shows or hides the toolbar. "Status bar" Shows or hides the status bar. "Redraw" Redraws all trends in the Trender. Alternative: Press the space bar.
Window	Displays a list of all active plot windows. You can use the "Cascade", "Tile", and "Arrange icons" commands to arrange the plot windows automatically.
Help	The Help menu provides a reference to the manufacturer of the software package and the current version number.

13.12.2 Trender toolbar

The Trender toolbar enables fast access to essential menu commands. A tooltip is provided for each toolbar icon.

13.12.3 Trender status bar

The figure below shows the Trender status bar. The information provided in the left area of the status bar includes the tooltip and details with regard to the menu bar or toolbar items.

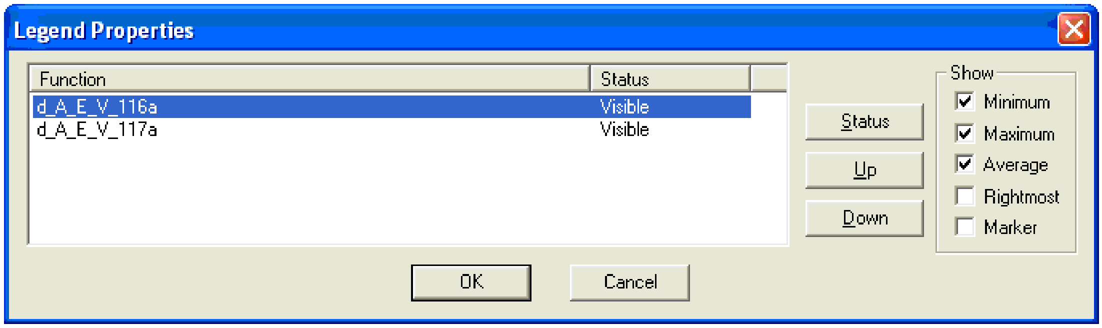
The right area of the status bar provides closer details of the values selected in the graph. This includes the display of the date (dd.mm hh:mm:ss), acquisition status (Acq). and correction status (Cor) of the respective measured value.

The display of values in the legend is color coded, depending on the acquisition or correction status.

Color	Acquisition status	Correction status
Red	<> valid	Not relevant
Orange	valid	<> valid

13.12.4 Trender legend

Right-click on the legend entry opens the legend configuration dialog directly.



Select "Status" to change the display of the data point status: "Visible", "Hidden", or "Disable". The graph is displayed if "Visible" is set.

Visible	The graph of the data point is visible.
Hidden	The data point is grayed out in the legend. The graph is hidden.
Off	The data point is not available in the legend or visible as graph.

The respective value can be shown in the display area.

Minimum	Calculated and displayed across the time range shown in the Trender.
Maximum	Calculated and displayed across the time range shown in the Trender.
Average	Calculated and displayed across the time range shown in the Trender.
Current	Displays the actual value (last value in Trender).
Marker	Displays the value marked with the cursor.

The status is taken into account for the values displayed in the legend.

The order of data points becomes relevant if you select an object (e.g. a histogram) in the Trender that fills the area below the trend. You can select the order of data points using the "Up" and "Down" buttons in the legend properties dialog. Click "OK" to save your settings.

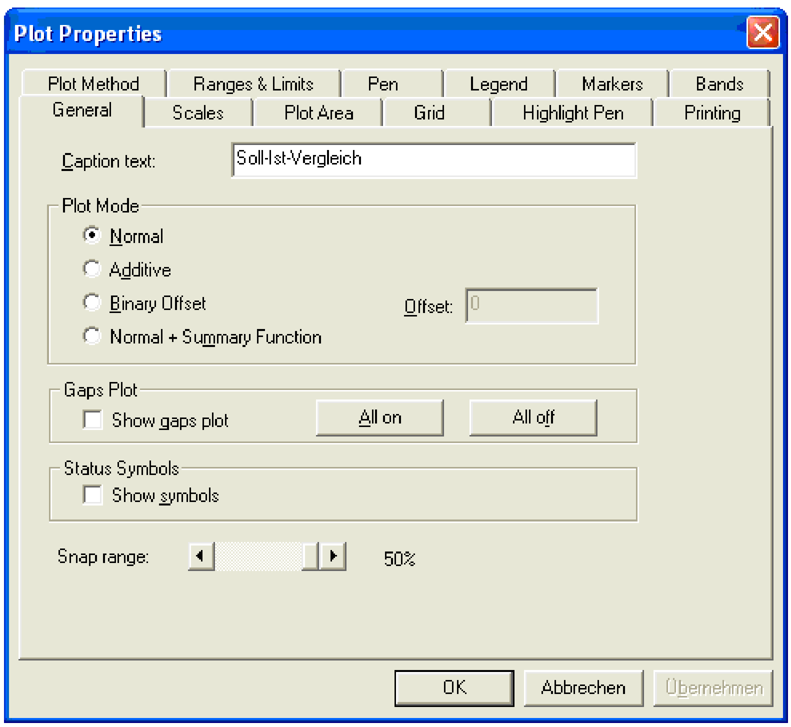
13.12.5 The configuration dialog

The shortcut menu of the Trender object contains the "Configure" command. The Trender object is opened and the configuration dialog is displayed. If the Trender is already active, select the "Tools > Properties" menu command or use the toolbar to open the configuration dialog.

The tabs of the configuration dialog are arranged in two horizontal levels. The following sections specify the configuration options that are available in the various tabs.

"General" tab

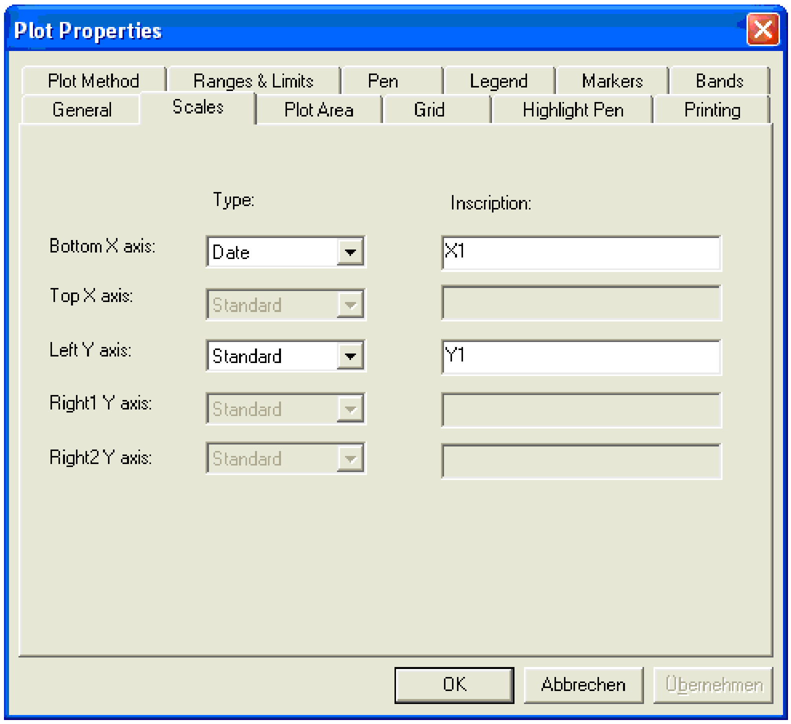
Use the "General" tab to configure the settings for all data points.



Caption text	Specifies the name of the Trender object.
Plot mode	Specifies the position of the trends in the grid with relative relation. • Normal Sets the standard view of plots in the X - Y coordinate system. • Additive Sets the additive superimposed arrangement of plots . Specify the order in the "Function" area of the Plot Method" tab. • Binary offset Shifts the trend vertically by a constant portion. The offset always affects the distance between the trends and the X axis, with the exception of the first trend. This means that trend 4 is shifted up by a distance equivalent to four times the value. • Normal + Sum function Displays a separate summation trend for all configured trends.
Show gaps plot	Displays a horizontal plot of gaps. This function can be used to quickly determine missing values in a set of measurements. Set "All on" in the Plot Method tab to obtain gap-sensitive measurement results with an interval setting of 900 milliseconds. This setting has the effect that the trend is interrupted in periods without existing values. The "All off" setting outputs a continuous trend.
Status symbols	Sets an icon that marks measured values with status unequal to "valid". The status bar displays details of the status.
Snap range	Specifies the value as of which the cursor is snapped to the next value. This is a value between 0 % and 50 %, with reference to the distance between two points.

"Scales" tab

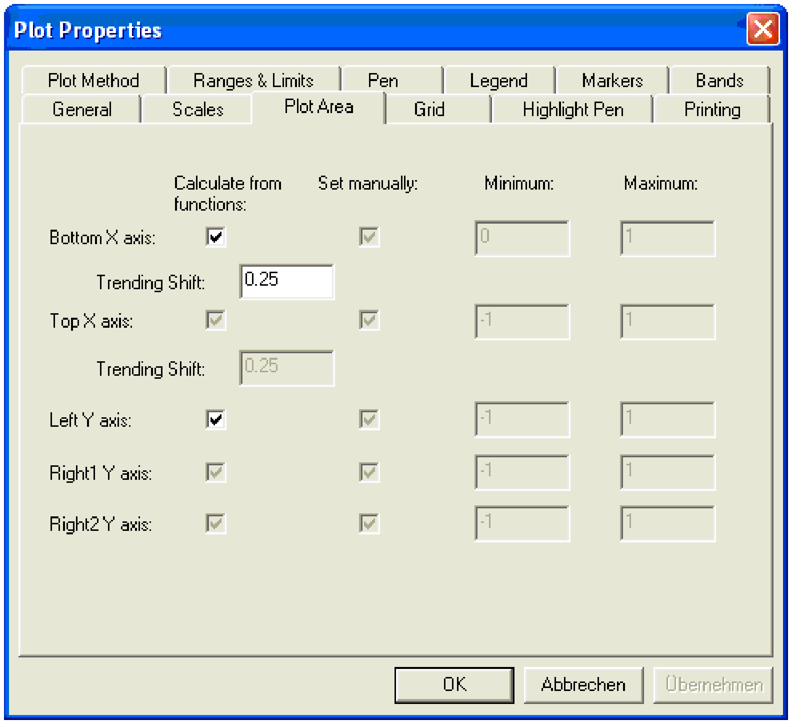
The "Scales" tab is used to select the scaling and labeling of the coordinate axes.



Type	Specifies the scaling type. The following types are available in this area: • Standard • Integer • Logarithmic • Date • Time
Labeling:	Specifies the labeling of the axes.

"Plot Area" tab

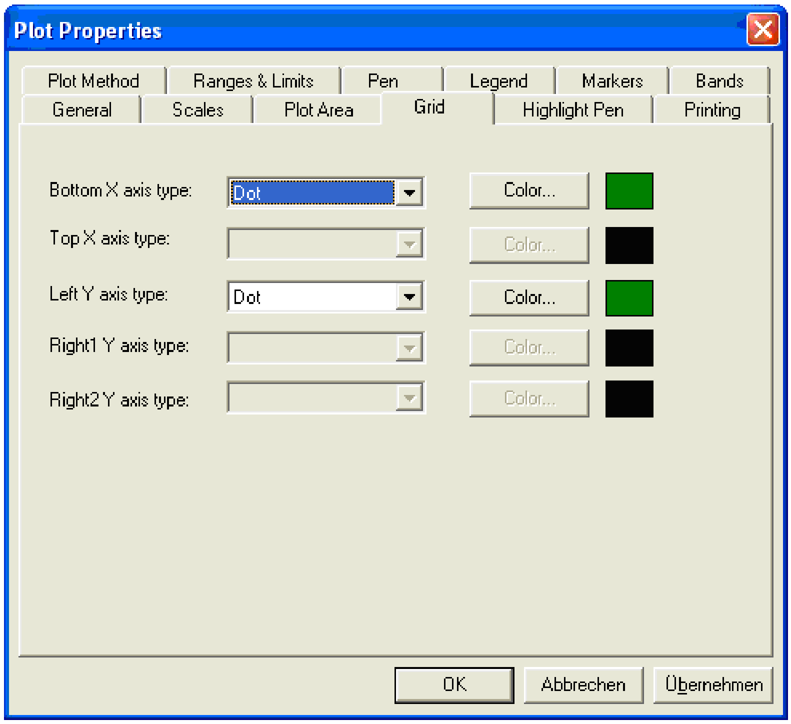
Use this tab to define two independent areas above the X axis. You can use these areas, for example, for the direct comparison of the amplitude of two trends.

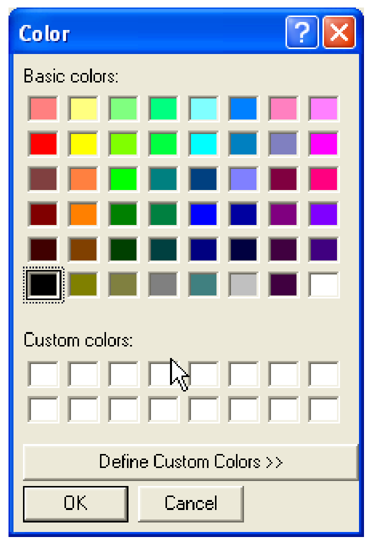


Calculate from functions:	Specifies that the Trender automatically calculates the range of values of the axes according to the trend to display. Calculation in the Trender is oriented on the maximum values generated.
Trending shift	Specifies the percentage of the X axis to update in online mode. The range of values is therefore from 0 to 1 (1 = 100 %)
Set manually	Specifies the Min and Max range of values for the axes.

"Grid" tab

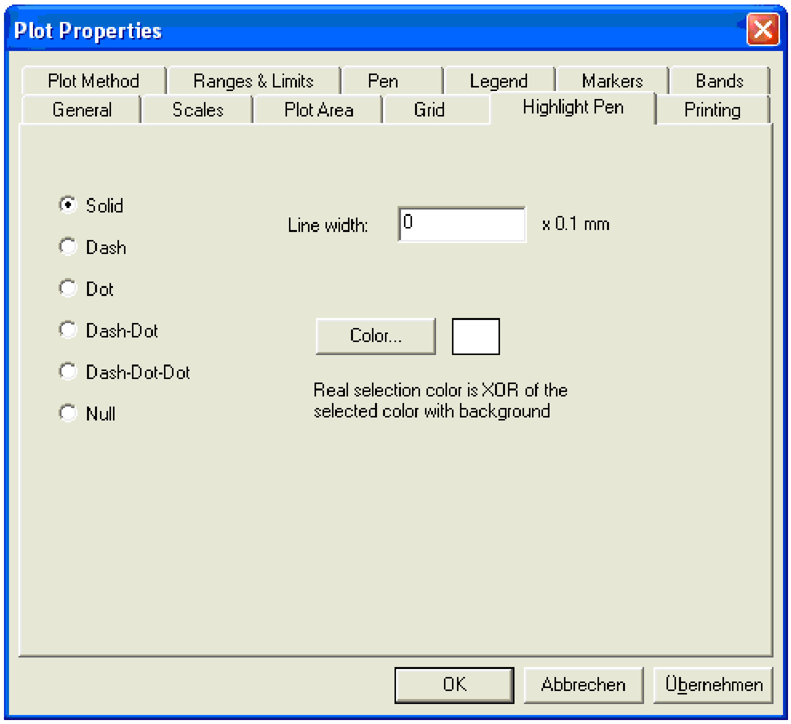
Use the "Grid" tab to configure the color and style of the grid lines.

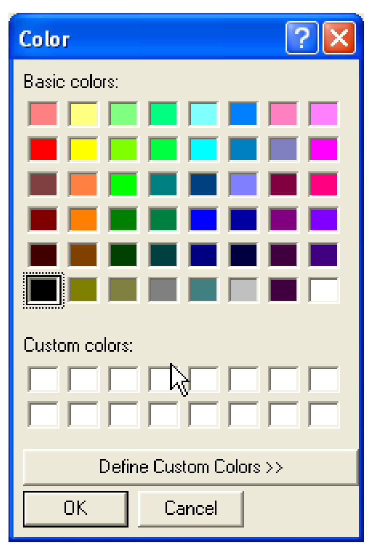


Axis identification	Specifies the grid line style for the respective axis. • Continuous • Dashed • Dotted • Dash dot • Dash-dot-dot • Null
Color	Specifies the color of an axis by means of color selection dialog. 

"Selected Plot" tab

Use the "Selected Plot" tab to configure the method to visualize trend markers.

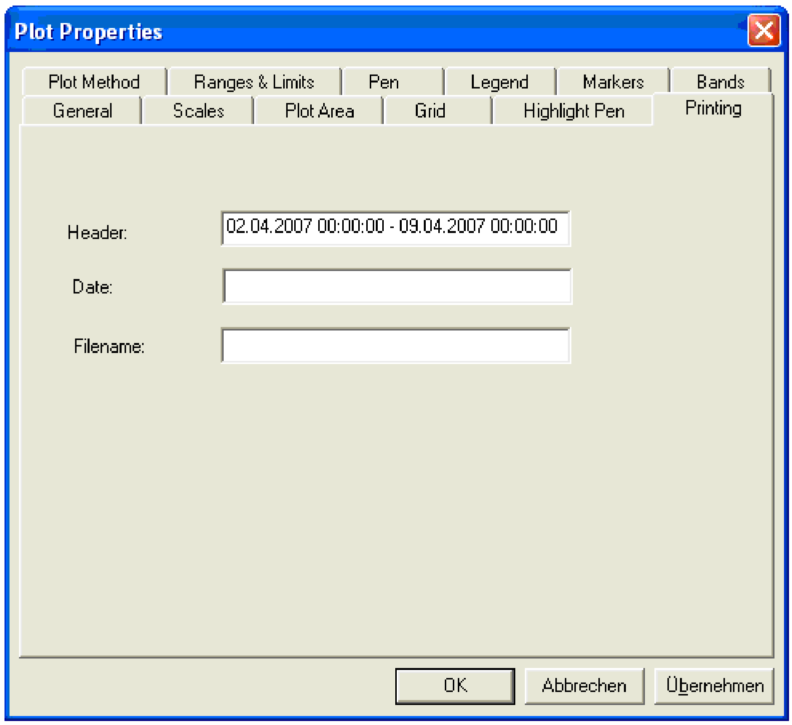


<table>
<tr><td>Line style</td><td>Specifies the line style.</td></tr>
<tr><td>Line width</td><td>Specifies the with of the selected plot line.</td></tr>
<tr><td>Color</td><td>Specifies the color of the selected plot by means of color selection dialog.

</td></tr>
</table>

"Print" tab

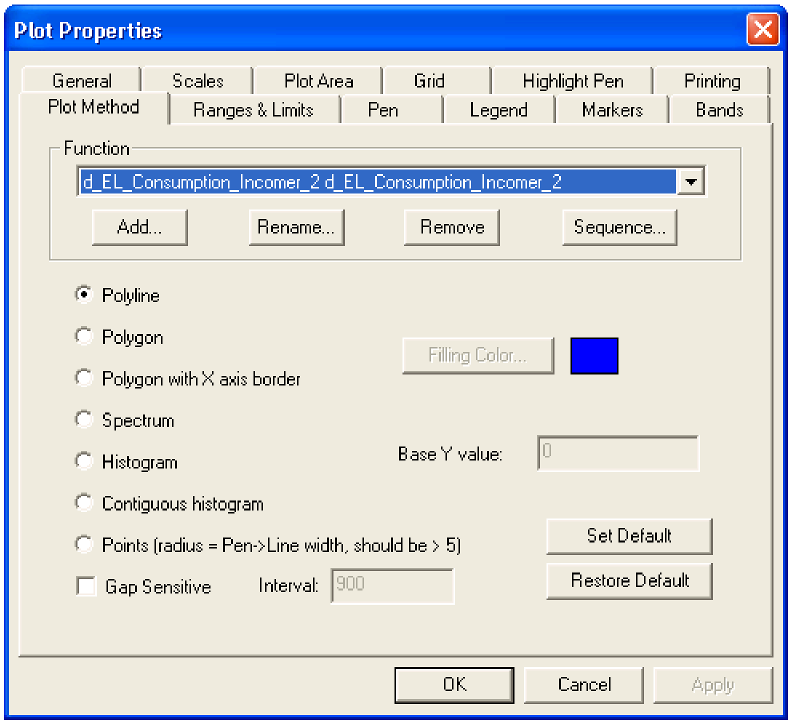
Use the "Print" tab to specify the header content of the plot to print.

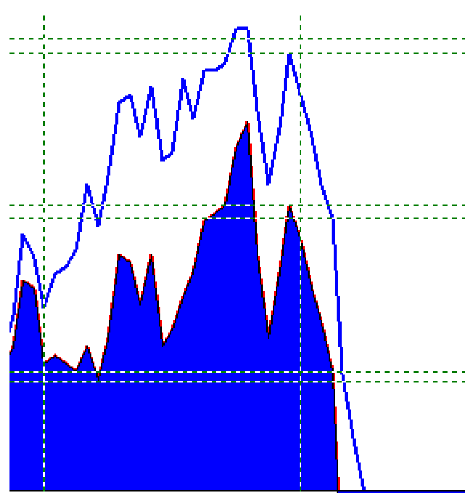
The "Header" is aligned to center. The "Date" is displayed on the right side, while the "File name" is displayed on the left.

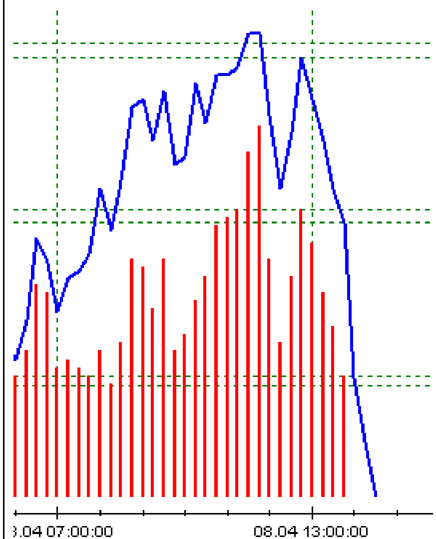
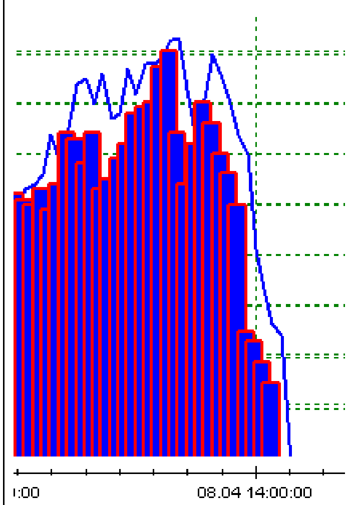


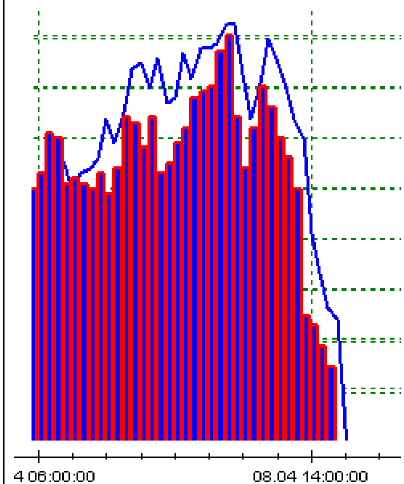
"Plot Method" tab

The "Plot Method" reflects the fundamental method of plot visualization.



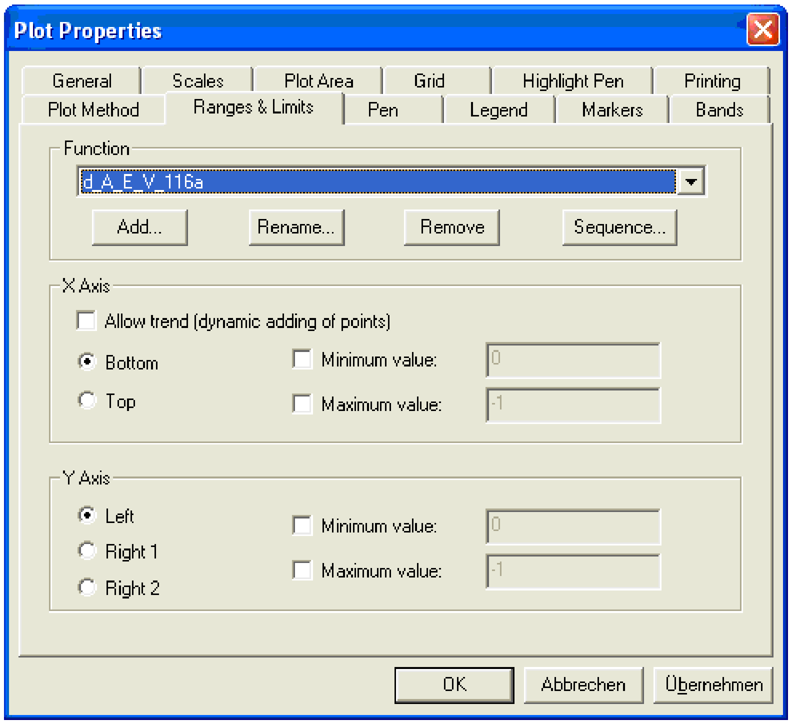
Function	Specifies the data point to configure. • Add... Adds a graph. • Rename... Renames operating data points in the Trender. • Remove... Deletes selected operating data points from the Trender. • Sequence... Opens the "Legend" dialog for changing the order of graphs. The order of data points becomes relevant if you select an object (e.g. a histogram) in the Trender that fills the area below the trend.
Plot Method	Specifies the trend visualization mode. "Polyline" The measuring points will be interconnected. "Polygon" The area above or below the limit will be filled. The limit used is always the actual (last) value. Define the "Fill color" individually. Polygon with X axis border The area above or below the limit will be filled. The X axis represents the border. 

Plot Method (continued)	Spectrum Instead of being filled, the area below the trend is displayed as line graph.  Histogram The values are displayed as bar graph. Define the "Fill color" individually. 

Plot Method (continued)	Contiguous histogram The values are displayed as bar graph. The bar width is adjusted automatically. Define the "Fill color" individually.  Dots The values are only visualized as dot graph.
Set Default	Saves the current settings made in this tab to the active PC. These setting are used as default values for new trends.
Restore Default	Reset to factory settings for new trends: dot graph, gap sensitive, Interval 900.
Gap sensitive	Specifies interruption of the polyline graph if gaps are detected. In addition, specify the "Interval".
Interval	Specifies a value in "milliseconds" as of which a missing value is recognized as gap.

"Ranges & Limits" tab

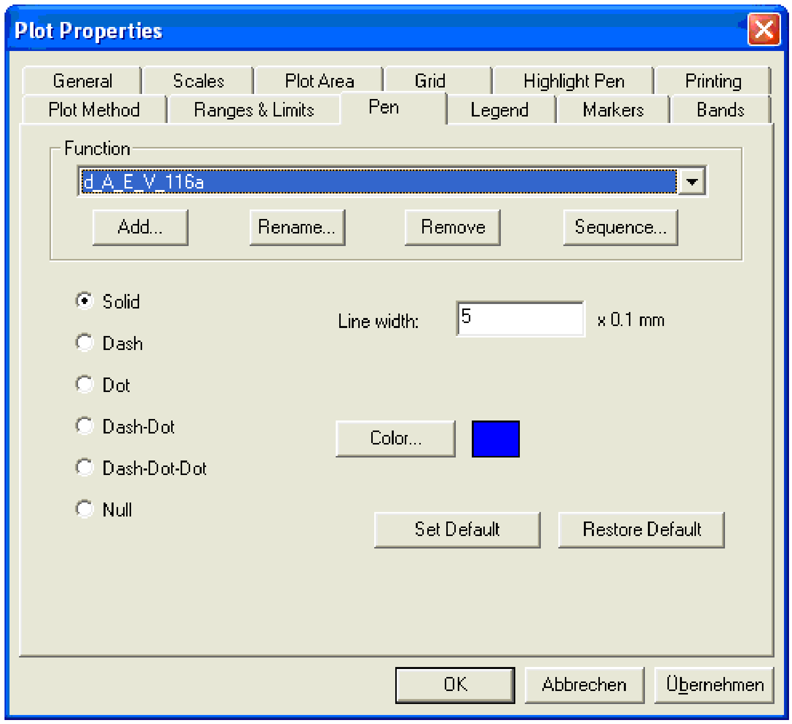
Use the "Ranges & Limits" tab to define the necessary axes.



Function	Specifies the data point to configure. See the "Plot Method" tab.
X axis	Specifies the axis view. You may also specify the axis scaling. The axis is scaled automatically if no entry is made.
Y axis	Assigns one of three possible Y axes to the data point. You may also specify the axis scaling. The axis is scaled automatically if no entry is made.

"Pen" tab

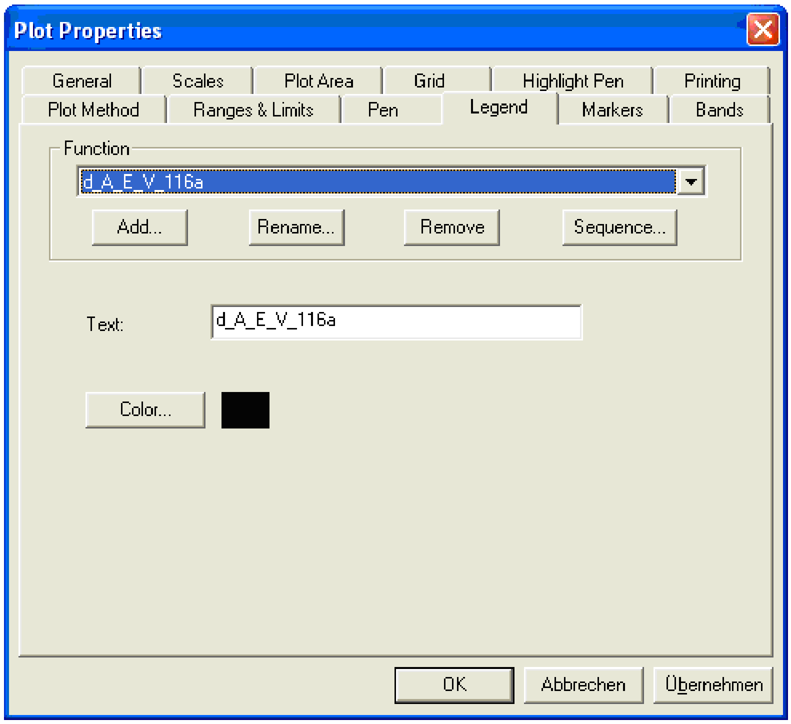
Configure the pen function of the respective trend in the "Pen" dialog.



Function	Specifies the data point to configure. See the "Plot Method" tab.
Line style	Specifies the line style.
Line width	Specifies the line width.
Set Default	Saves the current settings made in this tab to the active PC. These setting are used as default values for new trends.
Restore Default	Reset to factory settings for new trends: continuous, line width 5.

"Legend" tab

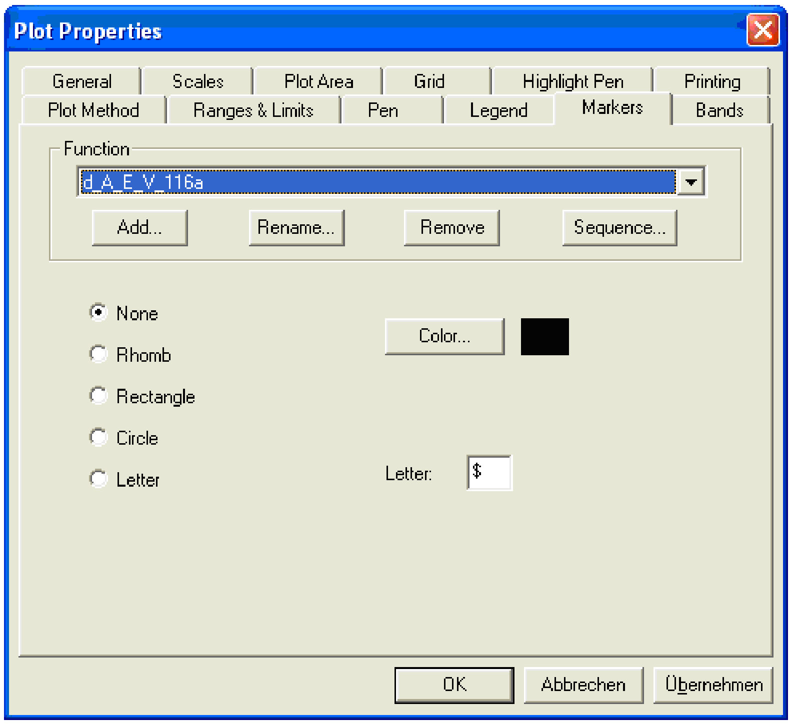
Specify the legend color and text in the "Legend" tab.



Function	Specifies the data point to configure. See the "Plot Method" tab.
Text	Specifies the text that is displayed in the data point legend. **Note:** The online functionality is only available if the data is acquired via the kernel.

"Marker" tab

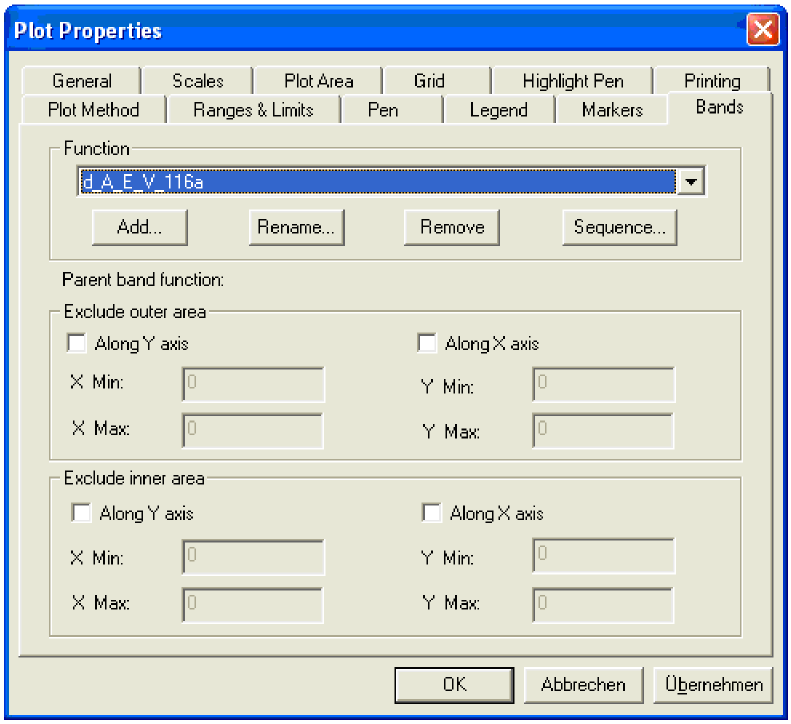
Use the "Marker" tab to specify an additional icon that you can use to improve the view of a data set. The icon is set periodically and is also displayed in the legend. The icon improves legibility, for example, for monochrome printing.



Function	Specifies the data point to configure. See the "Plot Method" tab.
Identifier	Defines the identifier for the plot.
Color	Specifies the color by means of color selection dialog.
Letter	Specifies the letter to display in the icon.

"Bands" tab

Use the "Bands" to define the the bands to highlight.



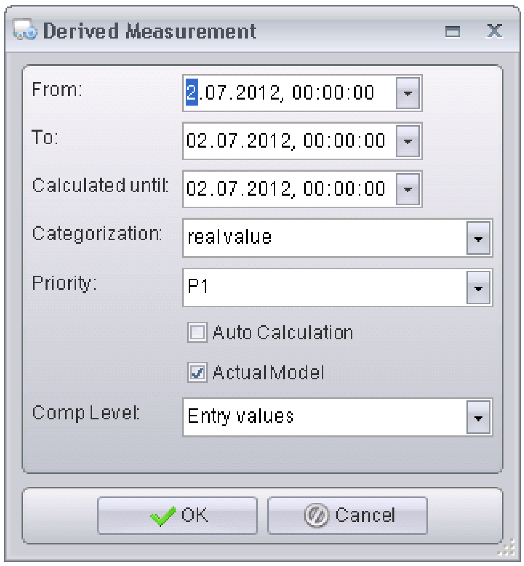
Function	Specifies the data point to configure. See the "Plot Method" tab.
Exclude outer area	Specifies the definition of bands along the Y or X axis. Enter the relevant value.
Exclude inner area	

13.13 Database jobs

The following section specifies the database jobs that are available.

<table>
<tr><th>Database job</th><th colspan="2">Description</th></tr>
<tr><td rowspan="8">Filing folder deletion period defaults</td><td colspan="2">For each report storage folder, you can specify a time period that has to expire before the "Job for deleting analyses" is permitted to delete all evaluations from this folder. The "storage folder deletion defaults" job resets these deletion periods to definable values.
You may only reset storage folders to defaults that have been assigned the following query types: "Year", "Month", "Day", "Month variable", "AdHoc". The corresponding defaults are saved to B.Data Options.</td></tr>
<tr><td>Query types</td><td>Entry in B.Data Options</td></tr>
<tr><td>Year</td><td>REPA_LOES_JAHR_DEF</td></tr>
<tr><td>Month</td><td>REPA_LOES_MONAT_DEF</td></tr>
<tr><td>Day</td><td>REPA_LOES_TAG_DEF</td></tr>
<tr><td>Month variable</td><td>REPA_LOES_MONATVAR_DEF</td></tr>
<tr><td>AdHoc</td><td>REPA_LOES_ADHOC_DEF</td></tr>
<tr><td colspan="2">If one of these rows is missing in the B.Data Options, the deletion period for this query type is not modified. Enter the deletion period in the BDTS_NUMBER column of the B.Data Options and specify the "Day" unit for all entries.</td></tr>
<tr><td rowspan="5">Archiving MV errors</td><td colspan="2">This job deletes only the entries from the error journal that originate from the measurements editor and that have exceeded a defined age.
The following entries are necessary in B.Data Options:</td></tr>
<tr><td>FEJO_EXPORT_MESS_UNTIL</td><td>Specifies the number of days until entries can be deleted</td></tr>
<tr><td>FEJO_EXPORT_MESS_FLAG</td><td>If set to 1, the entries will be exported to a file before they are deleted.</td></tr>
<tr><td>FEJO_EXPORT_MESS_PATH</td><td>Specifies the export directory to be used. The file name "FEJO_MESSWERTE_EXPORT_" plus the date (DD-MM-YYYY) are set permanently.</td></tr>
<tr><td colspan="2">The job is canceled without error message if one of these entries is missing.
Note: The user running the Oracle application needs write permissions for the specified directory.</td></tr>
<tr><td>auto.Report f.curr. day</td><td colspan="2">Starts only automatic reports of the "Day curr." query type.
Whether or not the "keep flag" is set for the evaluation generated in this way depends on the "DEFAULT_CAHE_BEHALTEN" entry in B.Data Options. The flag is set if the value 1 is set or if the entry is messing. The flag is not set if the value is 0.</td></tr>
<tr><td>auto.evaluation f.next day/week/month</td><td colspan="2">Starts only automatic reports of the query types "Next day", "Next week" or "Next month".
Whether or not the "keep flag" is set for the evaluation generated in this way depends on the "DEFAULT_CAHE_BEHALTEN" entry in B.Data Options. The flag is set if the value 1 is set or if the entry is messing. The flag is not set if the value is 0.</td></tr>
<tr><td rowspan="3">Delete old IT security Data</td><td colspan="2">This job deletes only the security entries from the error journal that have exceeded a defined age. The term security denotes information such as the login/logoff times of a specific user, incorrect password input, etc.
The following entries are necessary in B.Data Options:</td></tr>
<tr><td>ITSEC_EXPORT_UNTIL</td><td>Specifies the number of days until entries can be deleted.</td></tr>
<tr><td>ITSEC_EXPORT_FLAG</td><td>If set to 1, the entries will be exported to a file before they are deleted.</td></tr>
</table>

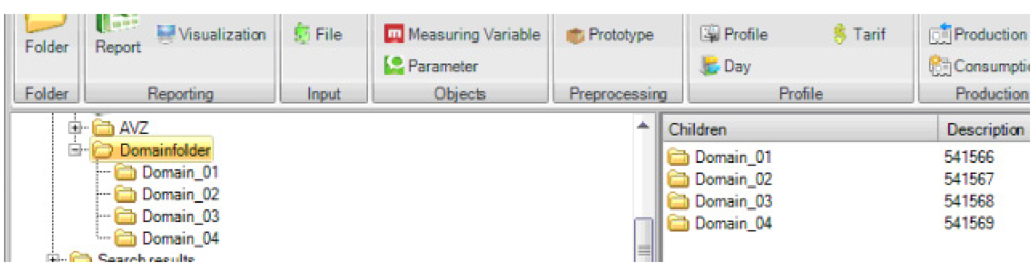
<table>
<tr><th>Database job</th><th>Description</th></tr>
<tr><td></td><td><table><tr><td>FEJO_EXPORT_PATH</td><td>Specifies the export directory to be used. The file name "FEJO_ITSEC_EXPORT_" plus the date (DD-MM-YYYY) are set permanently.</td></tr></table>
The job is canceled without error message if one of these entries is missing.
Note: The user running the Oracle application needs write permissions for the specified directory. </td></tr>
<tr><td>Export job SAP R/3 PM historical PD 6h</td><td> Exports the counter value history of the PREVIOUS DAY to a file at intervals of 6 hours and in "SAP R/3 PM" format. The data points concerned must be assigned to the "SAP PM VT historical 6h" export function. Assign these to the export function in the data point configuration of the Export dialog. The file name is also specified in this dialog. A time stamp with "yyyymmddhh24mi" format is added to the file name.
<table><tr><th>Format</th><th>Meaning</th></tr>
<tr><td>yyyy</td><td>Year</td></tr>
<tr><td>mm</td><td>Month</td></tr>
<tr><td>dd</td><td>Day</td></tr>
<tr><td>hh24</td><td>24 hours mode</td></tr>
<tr><td>mi</td><td>Minutes</td></tr></table>
Specify the export directory at the "BDATA_EXPORT_PATH" entry in B.Data Options. An error message is output and "C:\Data\Import" is returned as default directory if this entry is missing.
Note: The user running the Oracle application needs write permissions for the specified directory. </td></tr>
<tr><td>Export job SAP R/3 PM historical PPD 6h</td><td> Exports the counter value history of the DAY BEFORE YESTERDAY to a file at intervals of 6 hours and in "SAP R/3 PM" format. The data points concerned must be assigned to the "SAP PM VT historical 6h" export function. Assign these to the export function in the data point configuration of the Export dialog. The file name is also specified in this dialog. A time stamp with "yyyymmddhh24mi" format is added to the file name.
<table><tr><th>Format</th><th>Meaning</th></tr>
<tr><td>yyyy</td><td>Year</td></tr>
<tr><td>mm</td><td>Month</td></tr>
<tr><td>dd</td><td>Day</td></tr>
<tr><td>hh24</td><td>24 hours mode</td></tr>
<tr><td>mi</td><td>Minutes</td></tr></table>
Specify the export directory at the "BDATA_EXPORT_PATH" entry in B.Data Options. An error message is output and "C:\Data\Import" is returned as default directory if this entry is missing.
Note: The user running the Oracle application needs write permissions for the specified directory. </td></tr>
</table>

<table>
<tr><th>Database job</th><th>Description</th></tr>
<tr><td>Recalculate derived measurements job</td><td>
Derived measurements are calculated as a function of a measuring variable. A large calculation tree and many data points may be connected to this measuring variable. and whenever a data point has changed, the derived measurement has to recalculated for this time period. This is exactly what this job is doing. Whenever a data point has changed, the system determines whether or not this DP is relevant to the calculation of a derived measurement. If yes, the information for the necessary recalculation is saved to an interim table. Our job reads this table and calculates the corresponding derived measurements.
Configuration:


The "Auto Calculation" check box must be set to enable recalculation of a derived measurement. For the purpose of classification, it is necessary to distinguish between the "actual value" and "forecast" value. In contrast to the forecast value, the actual value is not recalculated if a time stamp with future date is set for a value change at an assigned data point. The "Priority" field is currently not evaluated. "Actual model" means the following: The derived measurement is always calculated based on the current calculation tree, but not on a calculation tree that existed at a specific time in the past.
Entries in B.Data Options
<table>
<tr><td>ABGL_CHANGE</td><td>must be set to 1.</td></tr>
<tr><td>ABGL_CHANGE_WAIT</td><td>This and the next entry belong to each other. Recalculation may only be interrupted if this value = 1.</td></tr>
<tr><td>ABGL_CHANGE_IMPORT</td><td>Import functions may set this value to indicate the number of values most recently imported. Recalculation is stopped if the value overshoots a limit of 50000 and resumes after the value has dropped below this limit again. Wait with your recalculation when handling large import volumes.</td></tr>
<tr><td>ABGL_CHANGE_KLASSIFIZIERUNG</td><td>You may always disable the distinction between actual and forecast values when using this classification function.</td></tr>
<tr><td>ABGL_DEBUG</td><td>All recalculations are logged to the error journal if the value is >= 2.</td></tr>
</table>
</td></tr>
</table>

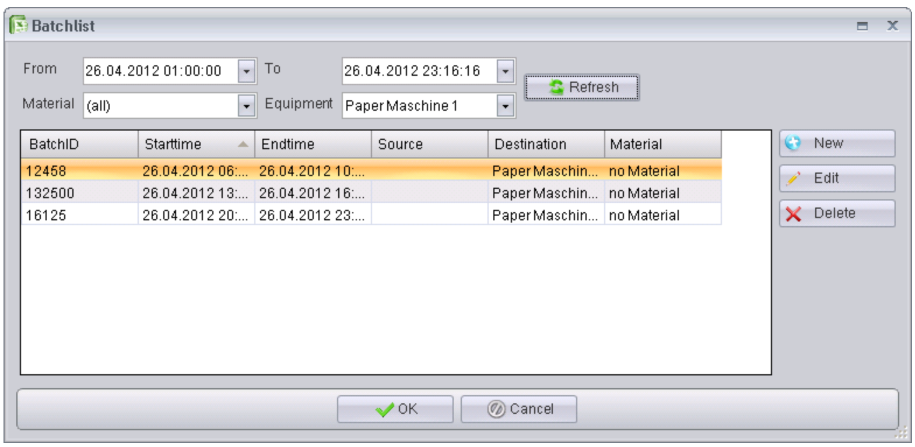
<table>
<tr><th>Database job</th><th>Description</th></tr>
<tr><td>DP rollout job</td><td>This job can be used for the cyclic allocation (rollout) of values to defined measurements. This action is only permitted for data points or derived measurements. These measurements are saved to a specific folder. The node ID (top right) of this folder is stored in B.Data Options. As a matter of principle, existing values will not be overwritten. The roll-out is based on the cycle time and replacement value for the respective measurement. Switch the measurement type to "Constant" if you want to calculate a replacement value and then define a value for this constant in the Detail tab. On completion, restore the original measurement type setting, i.e. data point or derived. The default value 0 is set for the constant (replacement value).
Entries in B.Data Options
<table>
<tr><td>AUSROLL_ROOT_ORDNER</td><td>Specifies the node ID of the folder node that contains the derived measurements or data points to roll out. The job is canceled and a corresponding error message is generated if this entry is missing.</td></tr>
<tr><td>AUSROLL_ANZAHL_MONATE</td><td>Defines the number of months to be rolled out, beginning with the job start. The default value is 36, i.e. three years.</td></tr>
<tr><td>AUSROLL_INIT_FLAG</td><td>If = 1: The entire time frame that has been defined for the rollout will be processed. Existing gaps will be padded in this way.
If 0 = Rollout only up to the first available value.
The default is 0.</td></tr>
<tr><td>AUSROLL_STATISTIK</td><td>Information about the number of data points already rolled out by the active job.</td></tr>
</table></td></tr>
<tr><td>Job for ASCII export to B.Data standard</td><td>Exports all data point values measured on the PREVIOUS DAY in CSV format to an ASCII file. The data points concerned must be assigned to the "B.Data Standard" export function. Assign these to the export function in the data point configuration of the Export dialog. The file name is also specified in this dialog. A optional time stamp with "yyyymmddhh24mi" format can be added to the file name. The file name has the extension ".TXT". The data is saved to the file successively for each data point.
<table>
<tr><th>Format</th><th>Meaning</th></tr>
<tr><td>yyyy</td><td>Year</td></tr>
<tr><td>mm</td><td>Month</td></tr>
<tr><td>dd</td><td>Day</td></tr>
<tr><td>hh24</td><td>24 hours mode</td></tr>
<tr><td>mi</td><td>Minutes</td></tr>
</table>
Entries in B.Data Options
<table>
<tr><td>BDATA_EXPORT_PATH</td><td>Export directory. An error message is output and "C:\Data\Import" is returned as default directory if this entry is missing.</td></tr>
<tr><td>BDATA_EXPORT_FILENAME_MODUS</td><td>If = 0: File name with date and time.
If = 1: File name without date and time</td></tr>
</table>
The following example shows an extract from an exported file:
"COMP_LEVEL";"MSJO_DATE";"TIME_ID";"MEAS_ID";"MSJO_VALUE";"MSJO_INTERVAL";"MSJO_DVALID";"STER_FLAG";"STKO_FLAG"
"2100";"07.04.2008 00:15:00";"1002";"127795";"100";"900";"900";"0";"0"
"2100";"07.04.2008 00:30:00";"1002";"127795";"99";"900";"900";"0";"0"
"2100";"07.04.2008 00:45:00";"1002";"127795";"98";"900";"900";"0";"0"
"2100";"07.04.2008 01:00:00";"1002";"127795";"97";"900";"900";"0";"0"
"2100";"07.04.2008 01:15:00";"1002";"127795";"96";"900";"900";"0";"0"
Note: The user running the Oracle application needs write permissions for the specified directory.</td></tr>
</table>

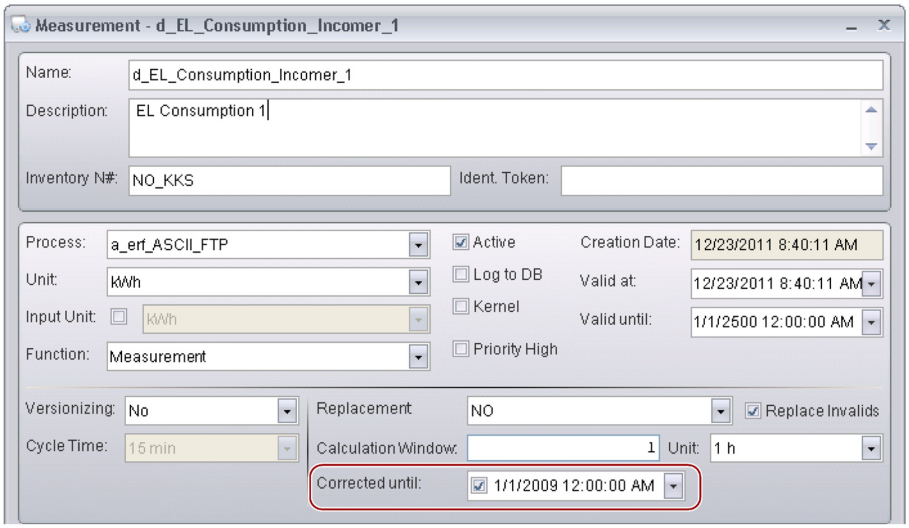
<table>
<tr><th>Database job</th><th>Description</th></tr>
<tr><td>Job for ASCII export prognosis EDM</td><td>
Exports all measured values of a data point in CSV format to an ASCII file, starting on the current day (00:15:00 h), including available forecast values. The data points concerned must be assigned to the "EDM prognosis" export function. Assign these to the export function in the data point configuration of the Export dialog. The file name is also specified in this dialog. A optional time stamp with "yyyymmddhh24mi" format can be added to the file name. The file name has the extension ".TXT". The data is saved to the file successively for each data point.
<table>
<tr><th>Format</th><th>Meaning</th></tr>
<tr><td>yyyy</td><td>Year</td></tr>
<tr><td>mm</td><td>Month</td></tr>
<tr><td>dd</td><td>Day</td></tr>
<tr><td>hh24</td><td>24 hours mode</td></tr>
<tr><td>mi</td><td>Minutes</td></tr>
</table>
Entries in B.Data Options
<table>
<tr><td>BDATA_EXPORT_PATH</td><td>Export directory. An error message is output and "C:\Data\Import" is returned as default directory if this entry is missing.</td></tr>
<tr><td>BDATA_EXPORT_FILENAME_MODUS</td><td>If = 0: File name with date and time.
If = 1: File name without date and time</td></tr>
</table>
The following example shows an extract from an exported file that contains the following data: Date, time, measured value, and status. Local date and time without daylight saving time.
08.04.2008;23:15:00;100;0
08.04.2008;23:30:00;99;0
08.04.2008;23:45:00;98;0
09.04.2008;00:00:00;97;0
09.04.2008;00:15:00;96;0
Note: The user running the Oracle application needs write permissions for the specified directory.
</td></tr>
<tr><td>Job for auto. Domain assignment</td><td>
The job processes all configured folders and inherits the domains contained in the node level folder to all nested objects.



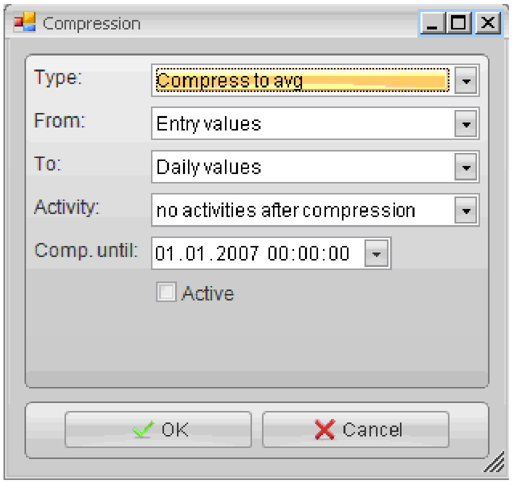
This means that if "domain_01" is assigned to the gas domain node, the job assigns this gas domain to all nested objects. The job only adds domains without deleting additional ones that may exist.
Seeing that the job does not have a GUI interface, you will have to modify the source roots to be inherited in the B.Data tree directly in the body of the BDATA_JOBS package. This means that "list_of_nodes" must be initialized with the list of node IDs of the source roots of the domain.
nodes list_of_nodes := list_of_nodes(541556,541557,541558);
You can handle this task using tools such as PL/SQL Developer, Oracle Enterprise Manager Console, or similar.
</td></tr>
</table>

<table>
<tr><th>Database job</th><th colspan="2">Description</th></tr>
<tr><td>Job for automatic evaluations</td><td colspan="2">Starts the calculation of automatic reports. Query types for which separate jobs are available will be excluded, e.g.: "Day curr.".(job: "auto. evaluation f.curr. day"), "next day", "next week", "next month" (job: "auto.evaluation f.next day, week, month". You cannot generate automatic evaluations for the "Ad-Hoc" query type.

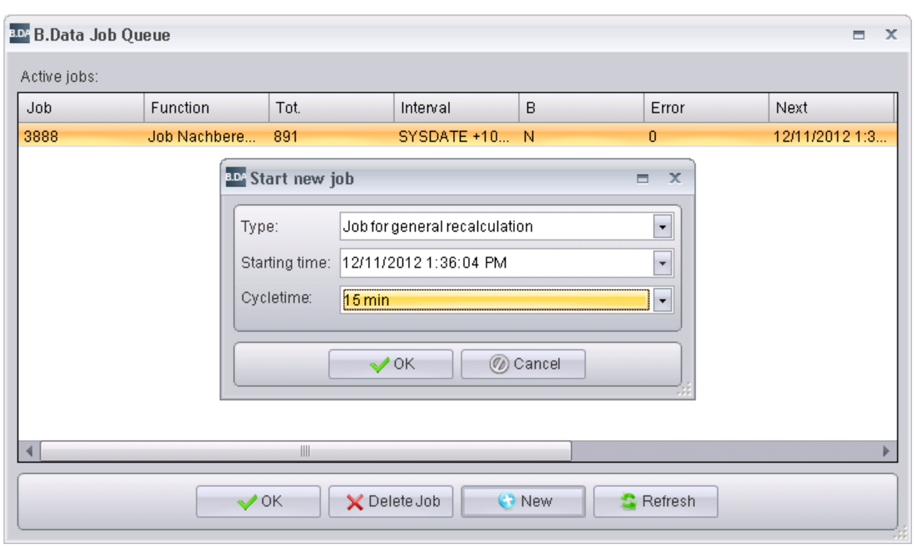
Whether or not the "keep flag" is set for the evaluation generated in this way depends on the "DEFAULT_CAHE_BEHALTEN" entry in B.Data Options. The flag is set if the value 1 is set or if the entry is messing. The flag is not set if the value is 0.</td></tr>
<tr><td>Generate job for batch data</td><td colspan="2">Generates batch data in the following form:

</td></tr>
<tr><td rowspan="5">Job for correction of the measurement journal</td><td colspan="2">The corrective replacement value function is used to defragment measured value sets or to write a permanent replacement value to an operating data point. The following four replacement value strategies are available:</td></tr>
<tr><td>None</td><td>No data point correction.</td></tr>
<tr><td>LRU
(Least Recently Used)</td><td>The data set is corrected using the last value found before the gap.</td></tr>
<tr><td>FIS</td><td>The data set is corrected using the values of a different data point. This data point must be connected to the data point node to be corrected.</td></tr>
<tr><td>Substitute value</td><td>A replacement value is used for correction. Input of the value as constant type.</td></tr>
</table>

<table>
<tr><th>Database job</th><th colspan="2">Description</th></tr>
<tr><td></td><td colspan="2">Set a "corr. until" date in the corresponding data point configuration before you launch the job.


The correction always covers the period between the "corr. until" date and the start time of the job. On completion of the correction, the "corr. until" date will be updated accordingly.</td></tr>
<tr><td rowspan="5">Job for deleting the error journal</td><td colspan="2">This job deletes all error entries from the error journal that have exceeded a defined age and do not originate from the measurements editor.
The following entries are necessary in B.Data Options:</td></tr>
<tr><td>FEJO_EXPORT_UNTIL</td><td>Specifies the number of days until entries can be deleted</td></tr>
<tr><td>FEJO_EXPORT_FLAG</td><td>If set to 1, the entries will be exported to a file before they are deleted.</td></tr>
<tr><td>FEJO_EXPORT_PATH</td><td>Specifies the export directory to be used. The file name "ERRJO_EXPORT" plus the date (DD-MM-YYYY) is set permanently.</td></tr>
<tr><td colspan="2">The job is canceled without error message if one of these entries is missing.
Note: The user running the Oracle application needs write permissions for the specified directory.</td></tr>
<tr><td>Job for deleting the search folder</td><td colspan="2">Deletes all entries from the "Search results" folder</td></tr>
<tr><td>Job for route synchronization</td><td colspan="2">Authorized users may define or extend the reading routes for the various data acquisition devices in the "Route Planning" directory of the B.Data user system.
After having created the route, this user must enter the route synchronization job in the job queue. This job prepares the route for use in the synchronization process.
It is not necessary to repeat the job if no changes were made to the route.
The current route is synchronized with the mobile data acquisition device in each sync cycle. Initialization is triggered automatically when the device is inserted into the charging station.</td></tr>
</table>

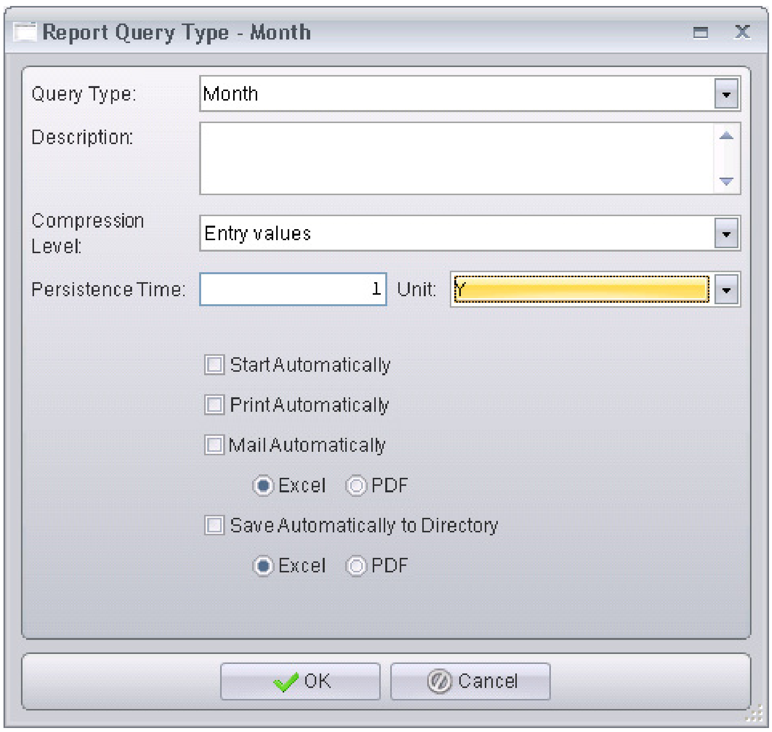
<table>
<tr><th>Database job</th><th>Description</th></tr>
<tr><td>Job for compressing the measurement journal</td><td>Job for compressing or deleting measurement values. It is not necessary to parameterize the relevant data points, as this is done in the compression dialog of the data point configuration.


Set the "Active" check box to activate the compression.
The following options are available for handling the measured value sets:
• Compress to maximum
• Compress to minimum
• Compress to mean value
• Expand
• Expand divide amount of values
• Interpolation
• Delete measured values
• Sum
• Sum Real
• Counter diff.(overfl,change) without range
• Counter Difference incl. overflow and change handling
• 15-minute values
• 2-hour values
• 1/2-day values
• Hourly values
• Daily values
• Weekly values
• Monthly values
• Annual values</td></tr>
</table>

Database job	Description
Job for compress-ing the measure-ment journal (continued)	It is only possible to compress shorter intervals into a longer interval and to expand a longer interval to shorter intervals. Note that expansion to weekly intervals is not permitted. The term "entry values" denotes the measured values that were originally imported into the B.Data system. The input data can be deleted after compression. Based on the "compressed until" date and provided corresponding data is available, the intervals are always compressed, expanded, or deleted until the time of job start. The "compressed until" date is compressed accordingly on completion and may be edited manually by users. If "no action after compression" was activated, the entry and compressed values will be available in the same data point. The values to be displayed or processed depend on the compression status. Expansion encompasses the source values that are available as "entry values" and saved in accordance with the corresponding acquisition level. Example: A cycle time of "1 hour" is defined for a data point. Assuming that daily values are input for this data point (acquisition level = entry values) and expanded to these hourly values, the daily values are copied to acquisition level "daily values", which means that the expanded values are now stored as "entry values". This solution lets you work with expanded values in the "Entry values" dialog and access the output data in the "Daily values" dialog. The "Interpolation" type is only available for the compression of entry values and also serves to pad missing time stamps based on the acquisition pattern of the data point (non-cyclic counter readings). Whether or not to display a done message in the "Logging Editor" can be specified by means of an entry in the PRINT_VOLLZUGS_MELDUNG row of the B.Data Options. A message is only output if this setting equals 1.
MSQL import job	The job imports data from a table in a Microsoft SQL Server database into the B.Data system. This table must be named "tblEmsExport". A data point to be imported must be active and assigned to the process with ID 572 (usually the "a_acq_DB" process). The data point address must correspond to the "tta_id" in the SQL Server table. It is assumed that the time stamps in the SQL Server table are available in local time format **without** daylight saving time. If a value greater than 0 is set in the IMPORT_DEBUG row in B.Data Options, a corresponding entry is written to the "Logging Editor" at the start and end of the job. At the end as statistics. This function is not included in the standard software package.
Job for general recalculation	Reads the data from the B.Data Job Queue and completes the compressions, expansions and corrections pending, as well as the recalculation of derived measurements. During import, it is not always possible to generate all parameterized compressions. This applies particularly to individual measured values that were imported in an unexpected order (subsequent input). These values are queued in a data structure and processed by the "Job for general recalculation". 

<table>
<tr><th>Database job</th><th colspan="3">Description</th></tr>
<tr><td rowspan="14">PDR import job</td><td colspan="3">Import from the data network (PDR). The data network represents a public domain resource that can be used by different systems to import and export data. The following specification is restricted to B.Data. The time stamps of the measurement values are available on the data network in UTC format. The values are converted to local time format during the import. The data are imported directly into the measurement journal without being routed via TB_MESZJOURNAL4. Each import may include up to 100,000 data records. A data point to be imported must be active and assigned to the process with ID 572 (usually the "a_acq_DB" process). The assignment to the PDR data records is based on the data point address.
Entries in B.Data Options:</td></tr>
<tr><td>IMPORT_DEBUG</td><td colspan="2">If the value = 1, statistics information with regard to the data imported is written to the "Logging Editor".
If the value = 3, the exclusion of non-cyclic time stamps by filtering is included in the log entry.</td></tr>
<tr><td>AZYKLISCH_BLASTER</td><td colspan="2">Data records containing a acyclic time stamp that does not match the parameterized cycle time are excluded by filtering and logged to a file. This file is named "ACYCL_" plus the date in "YYYY_MM_DD" format and ".TXT" extension.</td></tr>
<tr><td>BDATA_LOG_PATH</td><td colspan="2">Path for the file with non-cyclic time stamps.</td></tr>
<tr><td>ABGL_CHANGE</td><td colspan="2">If = 1: Imported data records are checked for the presence of recalculated derived measurements. Refer to "Recalculate derived measurements job".</td></tr>
<tr><td>ABGL_CHANGE_IMPORT</td><td colspan="2">Logs the number of data records that were successfully imported. This information is needed during recalculation of derived measurements.</td></tr>
<tr><td colspan="3">The status is converted during import.</td></tr>
<tr><td>B.Data</td><td colspan="2">PDR</td></tr>
<tr><td>STER_INVALID</td><td colspan="2">NULL</td></tr>
<tr><td>STER_OK</td><td colspan="2">0, 16, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384</td></tr>
<tr><td>STER_INVALID</td><td colspan="2">1, 2, 4, 32768</td></tr>
<tr><td>STER_ERSATZWERT</td><td colspan="2">8, 32</td></tr>
<tr><td>STER_CONFUSE</td><td colspan="2">Remainder</td></tr>
<tr><td colspan="3">Note: The user running the Oracle application needs write permissions for the specified directory.</td></tr>
<tr><td rowspan="9">PDR export job</td><td colspan="3">Exports B.Data to the data network (PDR). The data points concerned must be assigned to the "PDR" export function. Assign these to the export function in the data point configuration of the Export dialog. The data point ID for PDR is stored in the Identification Token field. The times are converted from local time format (B.Data) to UTC format (PDR).
Entries in B.Data Options:</td></tr>
<tr><td>IMPORT_DEBUG</td><td colspan="2">If the value = 1, statistics information with regard to the data exported is written to the "Logging Editor".</td></tr>
<tr><td colspan="3">The status is converted during the export, too.</td></tr>
<tr><td colspan="2">B.Data</td><td>PDR</td></tr>
<tr><td>Acquisition status</td><td>Correction status</td><td></td></tr>
<tr><td>STER_OK</td><td>0, 64</td><td>0</td></tr>
<tr><td>STER_OK</td><td>1, 65</td><td>1</td></tr>
<tr><td>STER_OK</td><td>2, 4, 8, 32, 34, 36, 40, 66, 68, 72, 96, 98, 100, 104, 999</td><td>8</td></tr>
<tr><td>STER_OK</td><td>Remainder</td><td>0</td></tr>
</table>

<table>
<tr><th>Database job</th><th>Description</th></tr>
<tr><td></td><td><table>
<tr><td>STER_INVALID</td><td>Not relevant</td><td>1</td></tr>
<tr><td>STER_ERSATZWERT</td><td>Not relevant</td><td>8</td></tr>
<tr><td>Remainder</td><td>Not relevant</td><td>1</td></tr>
</table></td></tr>
<tr><td>Job PDR config matching</td><td>Synchronizes the configuration in B.Data for PDR data points. This job is launched for data points that import data from the PDR and for DPs to export data to the PDR. The PDR and B.Data are linked by means of the technological address (PDR) and data point name (B.Data). No new data points are created in the B.Data system, i.e. only their address (import) or the identification token (export) will be adapted. A data point to be imported must be active and assigned to the process with ID 572 (usually the "a_acq_DB" process). The data point to be exported must be assigned to the "SAT250 EDM" export function.
All addresses of the data points to be imported from the PDR are set to "???" by default. The same applies to the identification token field for data points to be exported. Synchronization also encompasses specific properties that were assigned to the data point by means of import from the PDR to B.Data and vice versa (by export).</td></tr>
<tr><td>Job PDR config matching with signal PDR</td><td>Configurations are only synchronized if a specific flag was set in the PDR.</td></tr>
<tr><td>RSI import job</td><td>Import from the SCALA SAT250 control system. The time stamps of the measurement values in SCALA are available in UTC. The values are converted to local time format during the import. The import is executed by means of TB_MEASJOURNAL4. Each import may include up to 100,000 data records. A data point to be imported must be active and assigned to the process with ID 572 (usually the "a_acq_DB" process). SCALA data records are assigned based on the data point address. It is also possible to transfer the imported data to the B.Data kernel. The "Kernel" check box must be set accordingly for the selected data points. The distinction is made between counters and data points as different values will be imported. The distinction is made in the SCALA system and evaluated in B.Data.
Entries in B.Data Options:<table>
<tr><td>IMPORT_DEBUG</td><td>If the value = 1, statistics information with regard to the data imported is written to the "Logging Editor".</td></tr>
<tr><td colspan="2">The status is converted during import.
If this concerns a counter</td></tr>
<tr><td>B.Data</td><td>PDR</td></tr>
<tr><td>STER_INVALID</td><td>NULL</td></tr>
<tr><td>STER_OK</td><td>65536, 65568</td></tr>
<tr><td>STER_INVALID</td><td>Remainder</td></tr>
<tr><td colspan="2">Standard data point</td></tr>
<tr><td>B.Data</td><td>PDR</td></tr>
<tr><td>STER_INVALID</td><td>NULL</td></tr>
<tr><td>STER_OK</td><td>0, 16, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384</td></tr>
<tr><td>STER_INVALID</td><td>1, 2, 4, 32768, 131072</td></tr>
<tr><td>STER_ERSATZWERT</td><td>8, 32</td></tr>
<tr><td>STER_CONFUSE</td><td>Remainder</td></tr>
</table></td></tr>
<tr><td>Delete job (internal)</td><td>Internal job that is called automatically by the system. It is neither possible nor necessary to parameterize this job.</td></tr>
</table>

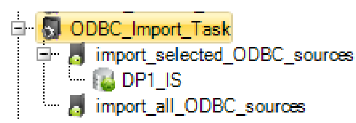
<table>
<tr><th>Database job</th><th colspan="2">Description</th></tr>
<tr><td rowspan="5">Job for deleting analyses</td><td colspan="2">Serves to delete evaluations that have exceeded a specific age. The end of the period as of which the data may be deleted can be defined separately for each storage folder in the deletion period and unit field. One year is set as the default deletion period. It is only possible to delete evaluations for which the Keep check mark is not set. Whether or not this check mark is set automatically depends on an entry in B.Data Options. You may set this check mark manually for any evaluation.
Entries in B.Data Options:</td></tr>
<tr><td>DEFAULT_CAHE_BEHALTEN</td><td>If the entry = 1 or missing, the keep check box is set for new evaluations.
If the entry = 0, the check mark is not set.</td></tr>
<tr><td>DELETE_CALCS_UNTIL</td><td>Obsolete and no longer used.</td></tr>
<tr><td colspan="2">
</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="9">Job for purging acquisition data</td><td colspan="2">Deletes measurement values that have been assigned data points and exceeded a definable age. You can define the expiry period for deletion separately for different cycle times in the B.Data Options.</td></tr>
<tr><td>DELETE_MSJO_MIN</td><td>Cycle time of 1 minute</td></tr>
<tr><td>DELETE_MSJO_5MIN</td><td>Cycle time of 5 minutes</td></tr>
<tr><td>DELETE_MSJO_15MIN</td><td>Cycle time of 15 minutes</td></tr>
<tr><td>DELETE_MSJO_HOUR</td><td>Cycle time of 1 hour</td></tr>
<tr><td>DELETE_MSJO_DAY</td><td>Cycle time of 1 day</td></tr>
<tr><td>DELETE_MSJO_MON</td><td>Cycle time of 1 month</td></tr>
<tr><td>DELETE_MSJO_COMMIT</td><td>Specifies the number of data records to be deleted before COMMIT is set. Default: 1000</td></tr>
<tr><td colspan="2">All entries in days, with the exception of DELETE_MSJO_COMMIT . The job is canceled without error message if an entry is missing in B.Data Options, with the exception of DELETE_MSJO_COMMIT . The job only deletes measurement values for data points that were assigned one of the listed cycle times.</td></tr>
</table>

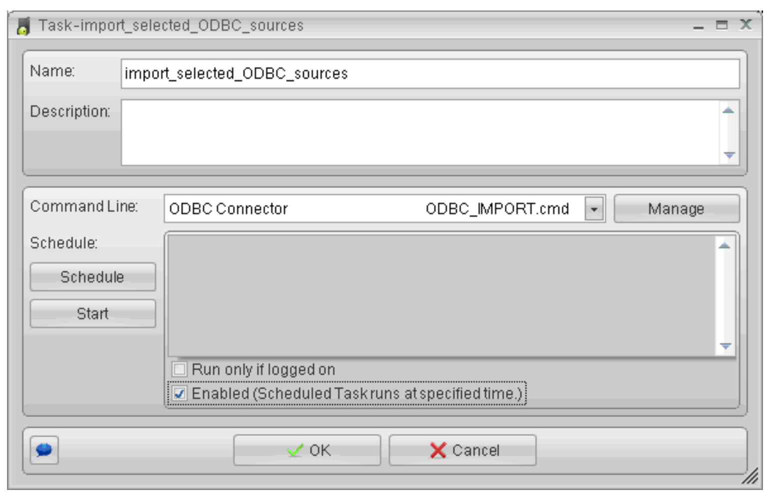
Database job	Description	
Delete measurement journal job	Serves to delete measurement values that have exceeded a definable age. Entries in B.Data Options:	
	DELETE_MSJO_UNTIL	Age in days as of which deletion is permitted. The job is canceled and a corresponding error message is generated if this entry is missing.
	DELETE_MSJO_COMMIT	Specifies the number of data records to be deleted before COMMIT is set. Default: **1000**
Report (internal)	Internal job that is called automatically by the system. It is neither possible nor necessary to parameterize this job.	
Sort job (internal)	Internal job that is called automatically by the system. It is neither possible nor necessary to parameterize this job.	

13.14 Functions for Task Management

Overview

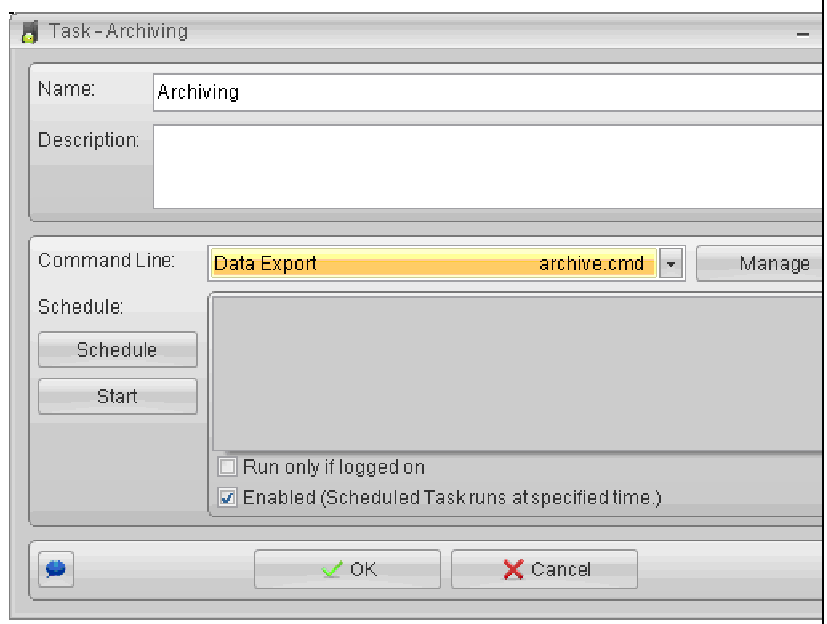
The following section specifies the tasks that are available.

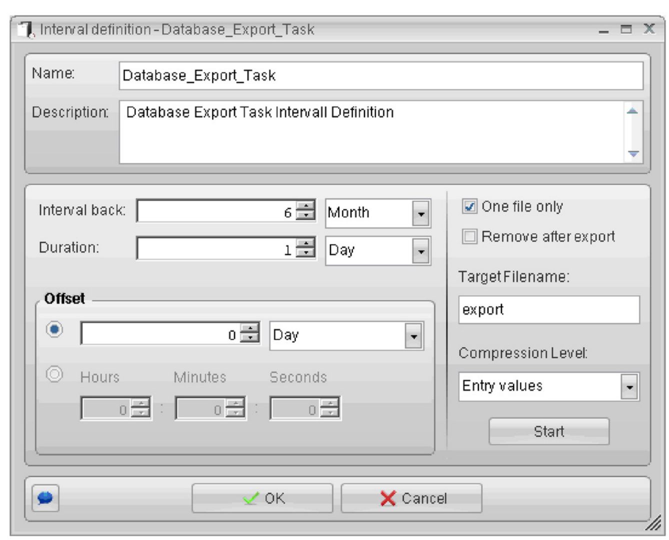
<table>
<tr><th>Task</th><th>Function</th></tr>
<tr><td>ODBC_Import_Task
ODBC_IMPORT.cmd
ODBC_IMPORT_ALLE.cmd</td><td>The Task Manager "ODBC_Import_Task" provides two tasks for data transfer via ODBC Connector.


ODBC_IMPORT.cmd: Imports all active data channels that are assigned to the task.
ODBC_IMPORT_ALLE.cmd: Imports all active data channels.


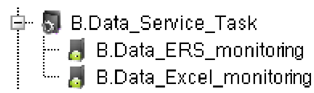
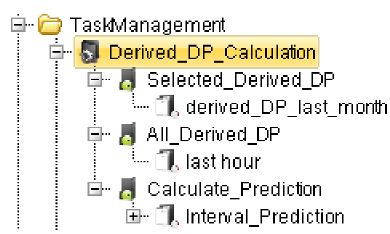
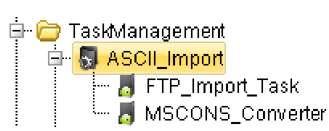
Select the file to be executed in the command line.
Define a "Schedule", if applicable.
Click "Start" to launch a single run of the task.</td></tr>
</table>

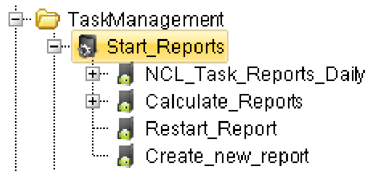
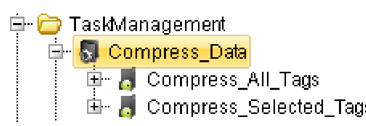
<table>
<tr><th>Task</th><th>Function</th></tr>
<tr><td>Archiving_Data
archive.cmd</td><td>Configuration

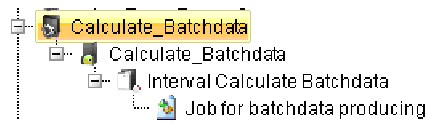
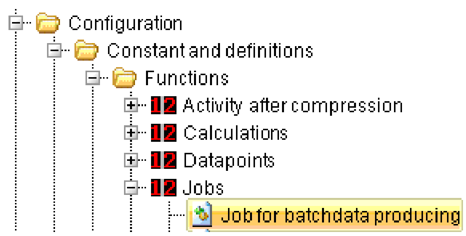

Select the "archive.cmd" entry from the command line list box when you define the task.


Create an interval definition to configure the time window to export.</td></tr>
<tr><td>Archiving_Data (continued)</td><td>The following example shows the export of data that is older than three years. "Remove after export" deletes the data from the database within the specified time range. The exported data is written to a file.


You may also export all data points manually or export only selected data points.</td></tr>
</table>

Task	Function
B.Data Service Task Restart_ERS.cmd KillExcel.cmd sink.cmd test.cmd	Configuration  This task serves to support system administrators. The "B.Data ERS monitoring" task stops and starts the service that is responsible for loading the reports. The task also stops and restarts the Autoprint service. Try this task as initial solution if the following actions will not work: • Loading reports • Automatic printing and mailing The "B.Data Excel monitoring" task starts an application that deletes the Excel application running in the background.
Task for derived measurements TaskDerivedMeas.cmd TaskDerivedMeas_all.cmd TaskDerivedMeas_vis.cmd	The "Derived measurements" Task Manager provides various tasks for calculation of derived measurements.  "TaskDerivedMeas.cmd": Calculates all data points that are connected to the interval definition node. "TaskDerivedMeas_all.cmd": Calculates all active derived data points in the system. "TaskDerivedMeas_vis.cmd": Calculates all active derived data points that are assigned to a visualization. Rule for all tasks is that only the time window that is specified in the interval definition is calculated. The calculation cycle is defined in the derived data point.
Task for ASCII import TskFtpTransfer.cmd	Configuration  The task serves to initiate "FTPTransfer.exe" that transfers the files to the application server via FTP. These files are then parsed (e.g. B.Data format, Dalog format, CSV format) and the corresponding measurement sets will be entered in the measurement journal.

Task	Function
Task for starting reports TskCalcReport.cmd RestartReport.cmd TskRestCalcRep.cmd	This task starts selected reports that are connected to the tasks node.  The "TskCalcReport.cmd" command file works similar to automatic reporting. A result is only calculated if not yet available for the relevant period. The task that contains the "RestartReport.cmd" command file restarts the report. This task is used primarily in combination with query types such as the current month. This means that an evaluation is generated on the first day of the month and recalculated on a daily basis. The task that contains the "TskRestCalcRep.cmd" command file generates a new report at each start.
Compression TskVerd.cmd TskVerdAlle.cmd	This task can be used to compress data point values such as acquisition values to daily values.  The task that contains the "TskVerd.cmd" command file compresses the connected data points within the period that is specified in the interval definition. The task that contains the "TskVerdAlle.cmd" command file compresses all data points in the system within the period that is specified in the interval definition. An appropriate data point configuration is prerequisite for both tasks.

Task	Function
Task For starting data-base jobs TskJob.cmd	This task can be used to initiate the database jobs that are available in B.Data and which are also used in the job queue. Configuration  Connect the object of the database job that is to be executed to the task node. The jobs available in the system are listed in the plant tree at "Con-figuration > Constants and definitions" / Functions / Jobs. 
Task for importing production plans prdplanimp.cmd	This task initiates xlprdplanimpLauncher.exe. The function imports produc-tion plans (available in Excel file format) into the B.Data system. Enter the directory from which the production plans are imported in the "prdplanimp.cmd" file. For the log files, enter the B.Data directory that is used by default for storage of B.Data log files. 

Homepa

13.15 ASCII FTP formats

13.15.1 ASCII FTP import interface

Using the ASCII FTP import interface, you can import the content of ASCII files of diverse formats to B.Data.

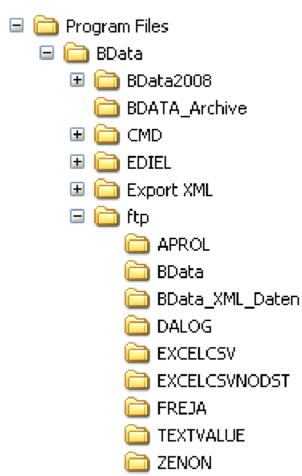
File import can be initiated by the kernel, or via FTP transfer from an FTP directory. FTP brings you the advantage that missing data or updated values can always be transferred at a later time. The kernel rejects non-incremental data, as proper processing is not ensured due to the loop concept.

Note

In B.Data, always use FTP transfer for the import via the ASCII FTP interface. Activating the kernel selection box may lead to faulty data acquisition.

You should therefore preferably use FTP transfer for data import.

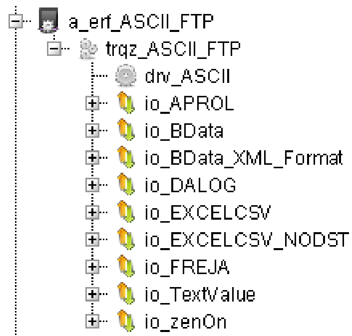
Setup installs a sample file for each supported format in the %Installations-DIR%\ftp folder on the acquisition computer.



Parser DLL	Sample file
fp_Aprol.dll	ChronoLogDataExport_pfil_H_15_03_2010.txt
fp_bdata.dll	20100627_000000_FribaDP01.txt
XMLParser.dll	d_EL_E_7D_outside_temperature_20100101000000_20100102000000.xml
fp_dalog.dll	Dalog_File.txt
fp_excelcsv.dll	Excel_CSV.csv
fp_excelcsvNODST.dll	Excel_CSV_NODST.csv
fp_freja.dll	AVV_000112200_20100328000000_20100329000000.txt
TextValueParser.dll	TextValues.txt
fp_Zenon.dll	zenOn.txt

An IO buffer with data point is generated for each format by means of database setup. Enable the data point if you want to apply data from the example files.

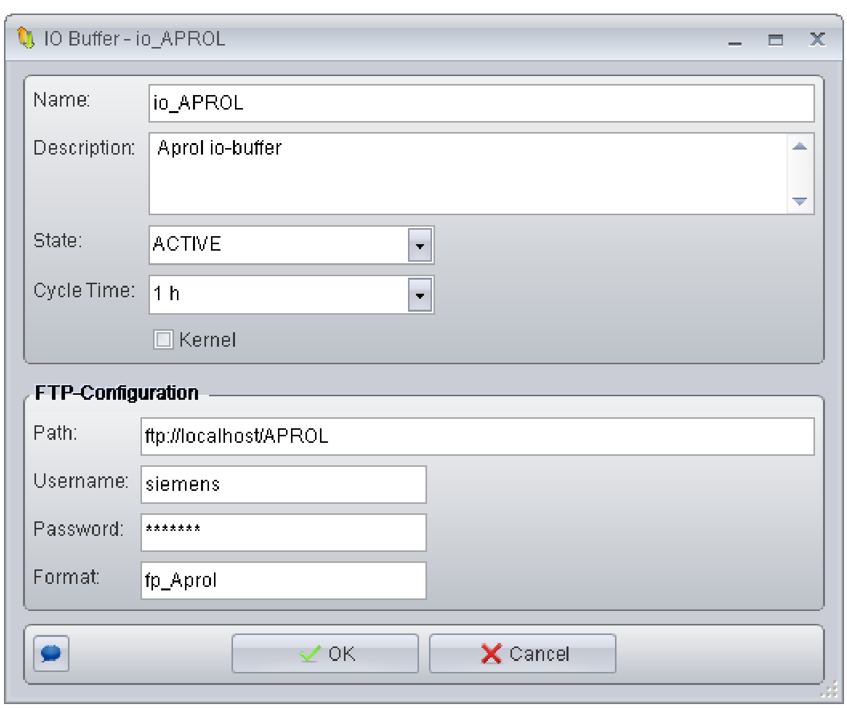
Enter the address parameter of the file at the "Address" data point so that the parser is able to assign the data to the correct data point.



The following chapters contain more information on the various parsers and supplied sample files.

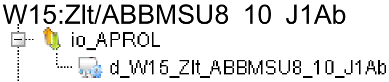
13.15.2 APROL

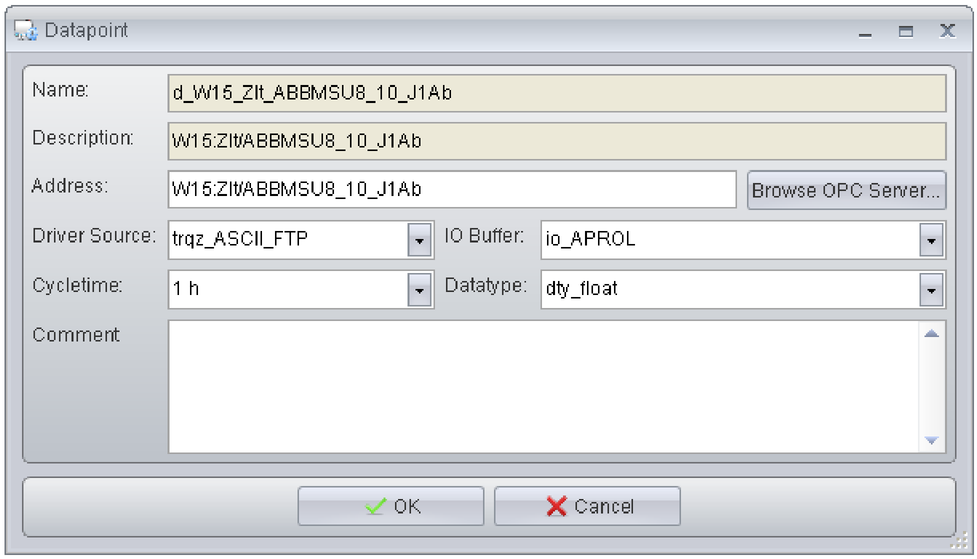
Name of the DLL	fp_Aprol.dll
Format identifier	fp_Aprol
Time base	Local time



Data point address

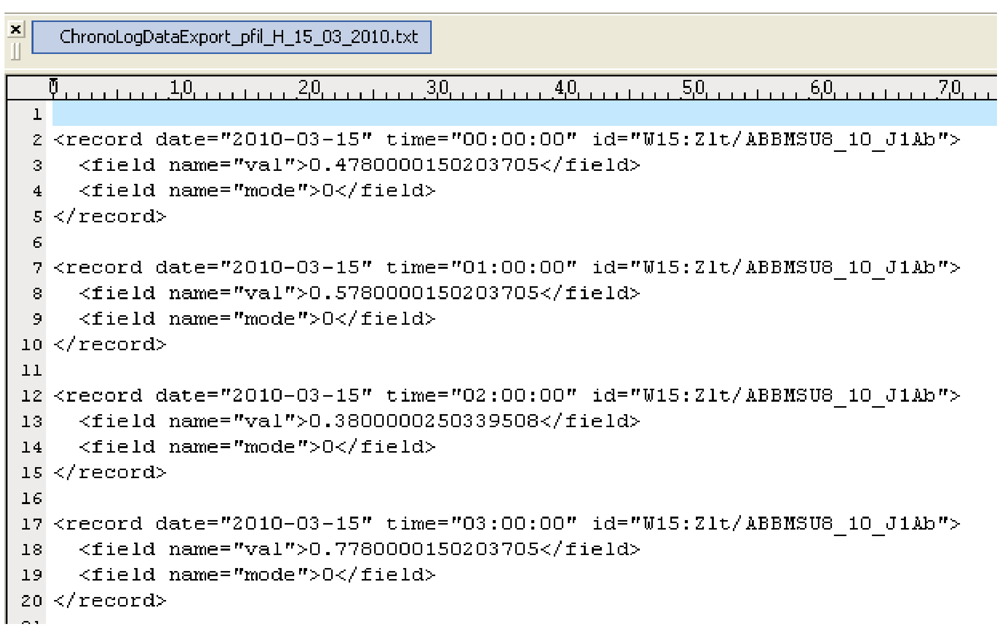
W15:Zlt/ABBMSU8 10 J1Ab





Sample file

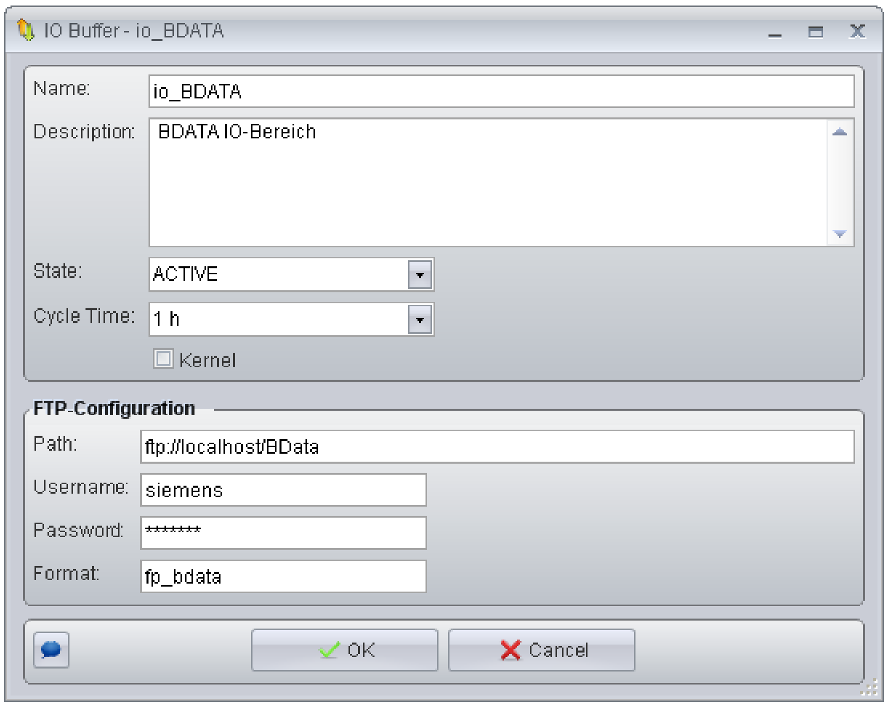
ChronoLogDataExport_pfil_H_15_03_2010.txt




```
<record date="2010-03-15" time="00:00:00" id="W15:Zlt/ABBMSU8_10_J1Ab">
  <field name="val">0.4780000150203705</field>
  <field name="mode">0</field>
</record>

<record date="2010-03-15" time="01:00:00" id="W15:Zlt/ABBMSU8_10_J1Ab">
  <field name="val">0.5780000150203705</field>
  <field name="mode">0</field>
</record>

<record date="2010-03-15" time="02:00:00" id="W15:Zlt/ABBMSU8_10_J1Ab">
  <field name="val">0.3800000250339508</field>
  <field name="mode">0</field>
</record>

<record date="2010-03-15" time="03:00:00" id="W15:Zlt/ABBMSU8_10_J1Ab">
  <field name="val">0.7780000150203705</field>
  <field name="mode">0</field>
</record>
```

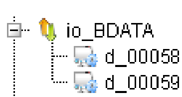
13.15.3 BDATA

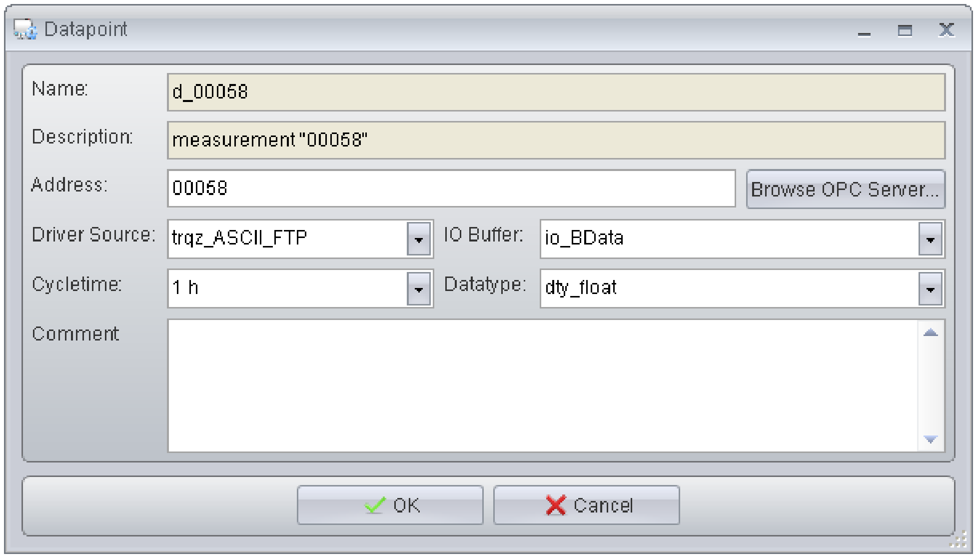
Name of the DLL	fp_bdata.dll
Format identifier:	fp_bdata
Time base:	Local time



Data point addresses

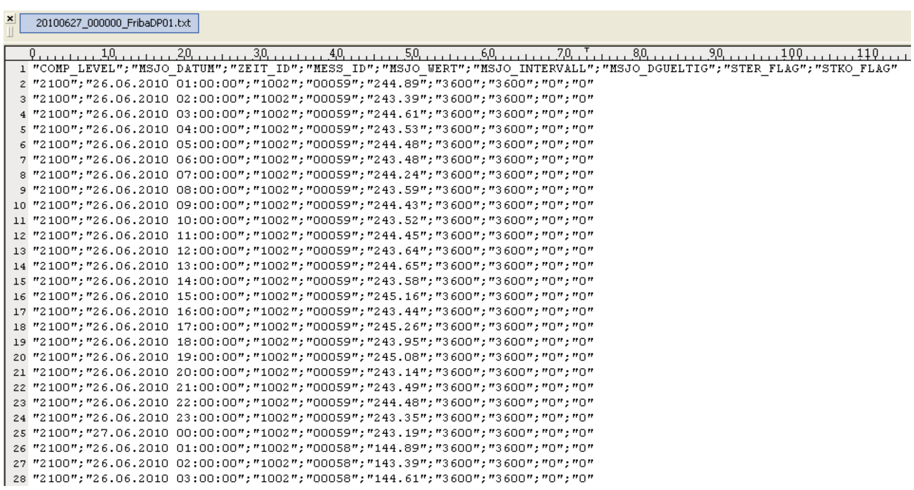
00058





Sample file

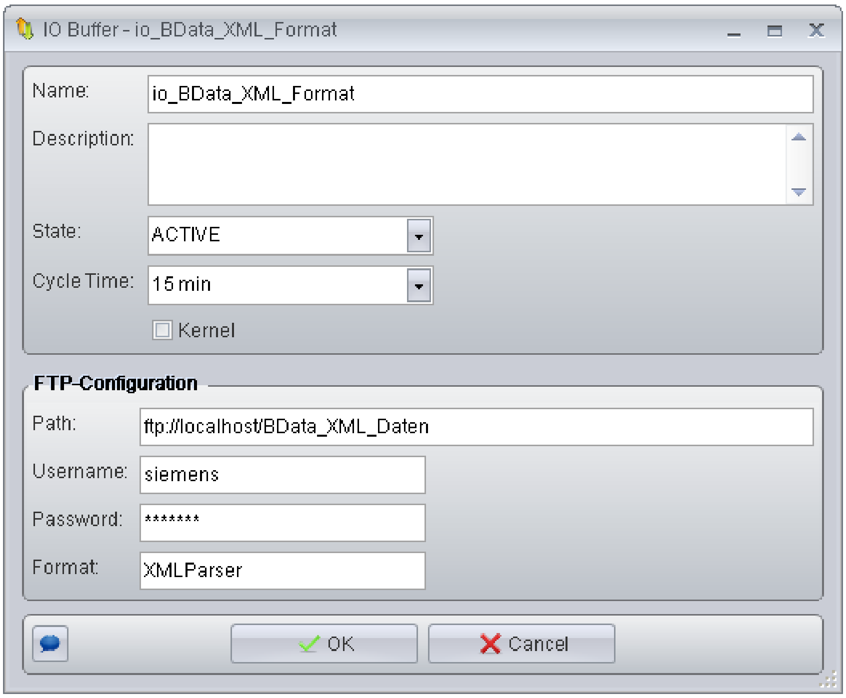
20100627_000000_FribaDP01.txt



```
"COMP_LEVEL";"MSJO_DATUM";"ZEIT_ID";"MESS_ID";"MSJO_WERT";"MSJO_INTERVALL";"MSJO_DGUELTIG";"STER_FLAG";"STKO_FLAG"
"2100";"26.06.2010 01:00:00";"1002";"00059";"244.89";"3600";"3600";"0";"0"
"2100";"26.06.2010 02:00:00";"1002";"00059";"243.39";"3600";"3600";"0";"0"
"2100";"26.06.2010 03:00:00";"1002";"00059";"244.61";"3600";"3600";"0";"0"
"2100";"26.06.2010 04:00:00";"1002";"00059";"243.53";"3600";"3600";"0";"0"
"2100";"26.06.2010 05:00:00";"1002";"00059";"244.48";"3600";"3600";"0";"0"
"2100";"26.06.2010 06:00:00";"1002";"00059";"243.48";"3600";"3600";"0";"0"
"2100";"26.06.2010 07:00:00";"1002";"00059";"244.24";"3600";"3600";"0";"0"
"2100";"26.06.2010 08:00:00";"1002";"00059";"243.59";"3600";"3600";"0";"0"
"2100";"26.06.2010 09:00:00";"1002";"00059";"244.43";"3600";"3600";"0";"0"
"2100";"26.06.2010 10:00:00";"1002";"00059";"243.52";"3600";"3600";"0";"0"
"2100";"26.06.2010 11:00:00";"1002";"00059";"244.45";"3600";"3600";"0";"0"
"2100";"26.06.2010 12:00:00";"1002";"00059";"243.64";"3600";"3600";"0";"0"
"2100";"26.06.2010 13:00:00";"1002";"00059";"244.65";"3600";"3600";"0";"0"
"2100";"26.06.2010 14:00:00";"1002";"00059";"243.58";"3600";"3600";"0";"0"
"2100";"26.06.2010 15:00:00";"1002";"00059";"245.16";"3600";"3600";"0";"0"
"2100";"26.06.2010 16:00:00";"1002";"00059";"243.44";"3600";"3600";"0";"0"
"2100";"26.06.2010 17:00:00";"1002";"00059";"245.26";"3600";"3600";"0";"0"
"2100";"26.06.2010 18:00:00";"1002";"00059";"243.95";"3600";"3600";"0";"0"
"2100";"26.06.2010 19:00:00";"1002";"00059";"245.08";"3600";"3600";"0";"0"
"2100";"26.06.2010 20:00:00";"1002";"00059";"243.14";"3600";"3600";"0";"0"
"2100";"26.06.2010 21:00:00";"1002";"00059";"243.49";"3600";"3600";"0";"0"
"2100";"26.06.2010 22:00:00";"1002";"00059";"244.48";"3600";"3600";"0";"0"
"2100";"26.06.2010 23:00:00";"1002";"00059";"243.35";"3600";"3600";"0";"0"
"2100";"27.06.2010 00:00:00";"1002";"00059";"243.19";"3600";"3600";"0";"0"
"2100";"26.06.2010 01:00:00";"1002";"00058";"144.89";"3600";"3600";"0";"0"
"2100";"26.06.2010 02:00:00";"1002";"00058";"143.39";"3600";"3600";"0";"0"
"2100";"26.06.2010 03:00:00";"1002";"00058";"144.61";"3600";"3600";"0";"0"
```

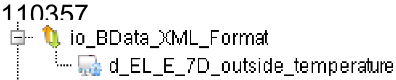
13.15.4 BDATA_XML_Format

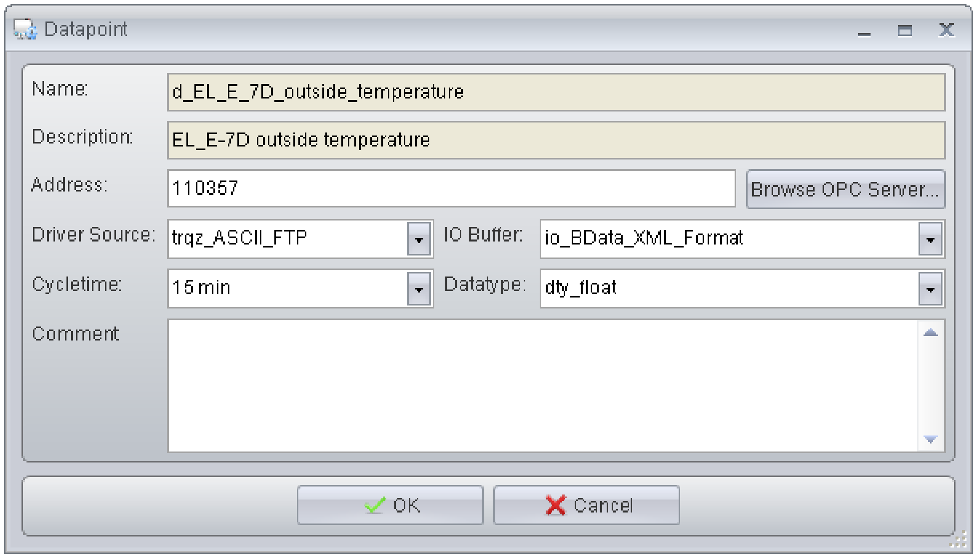
Name of the DLL XMLParser.dll
Format identifier: XMLParser
Time base: Local time



Data point address

110357





Sample file

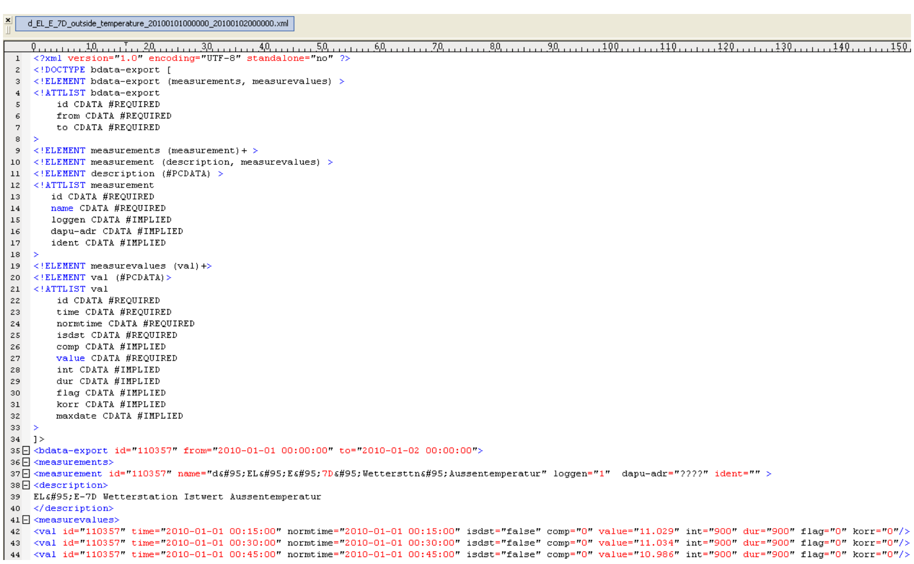
Note

Importing XML files with or without line breaks

If you wish to import an XML file with more than 65533 bytes, the XML file must be formatted with line breaks.

If the XML file does not contain any line breaks, a maximum of 65533 bytes of data is imported.

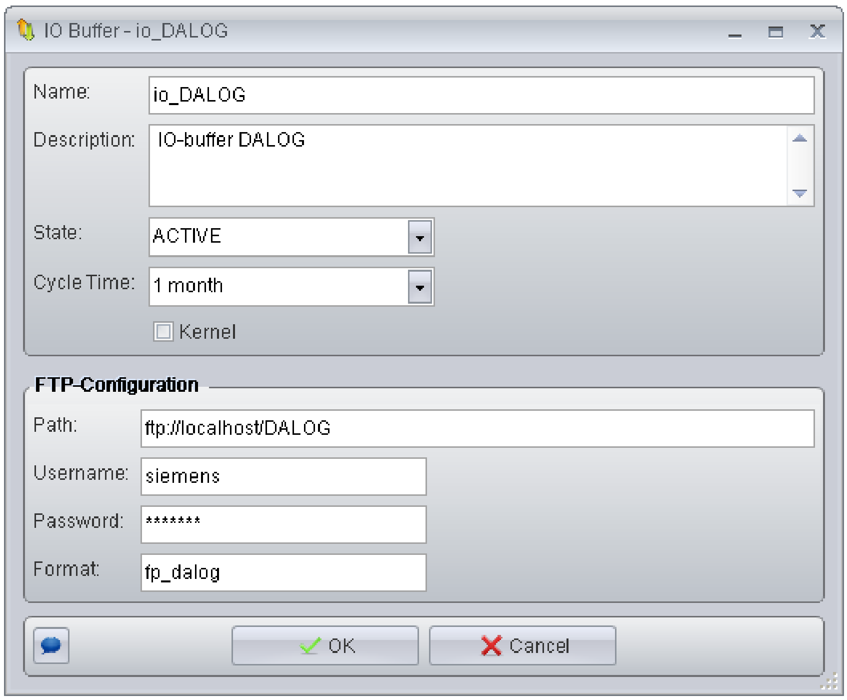
d_EL_E_7D_outside_temperature_20100101000000_20100102000000.xml


d_EL_E_7D_outside_temperature_20100101000000_20100102000000.xml


```xml
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!DOCTYPE bdata-export [
<!ELEMENT bdata-export (measurements, measurevalues) >
<!ATTLIST bdata-export
    id CDATA #REQUIRED
    from CDATA #REQUIRED
    to CDATA #REQUIRED
>
<!ELEMENT measurements (measurement)+ >
<!ELEMENT measurement (description, measurevalues) >
<!ELEMENT description (#PCDATA) >
<!ATTLIST measurement
   id CDATA #REQUIRED
   name CDATA #REQUIRED
   loggen CDATA #IMPLIED
   dapu-adr CDATA #IMPLIED
   ident CDATA #IMPLIED
>
<!ELEMENT measurevalues (val)+>
<!ELEMENT val (#PCDATA)>
<!ATTLIST val
    id CDATA #REQUIRED
    time CDATA #REQUIRED
    normtime CDATA #REQUIRED
    isdst CDATA #REQUIRED
    comp CDATA #IMPLIED
    value CDATA #REQUIRED
    int CDATA #IMPLIED
    dur CDATA #IMPLIED
    flag CDATA #IMPLIED
    korr CDATA #IMPLIED
    maxdate CDATA #IMPLIED
>
]>
<bdata-export id="110357" from="2010-01-01 00:00:00" to="2010-01-02 00:00:00">
<measurements>
<measurement id="110357" name="d&#95;EL&#95;E&#95;7D&#95;Wettersttn&#95;Aussentemperatur" loggen="1"  dapu-adr="????" ident="" >
<description>
EL&#95;E-7D Wetterstation Istwert Aussentemperatur
</description>
<measurevalues>
<val id="110357" time="2010-01-01 00:15:00" normtime="2010-01-01 00:15:00" isdst="false" comp="0" value="11.029" int="900" dur="900" flag="0" korr="0"/>
<val id="110357" time="2010-01-01 00:30:00" normtime="2010-01-01 00:30:00" isdst="false" comp="0" value="11.034" int="900" dur="900" flag="0" korr="0"/>
<val id="110357" time="2010-01-01 00:45:00" normtime="2010-01-01 00:45:00" isdst="false" comp="0" value="10.986" int="900" dur="900" flag="0" korr="0"/>
```

13.15.5 DALOG

Name of the DLL	fp_dalog.dll
Format identifier:	fp_dalog
Time base:	Local time

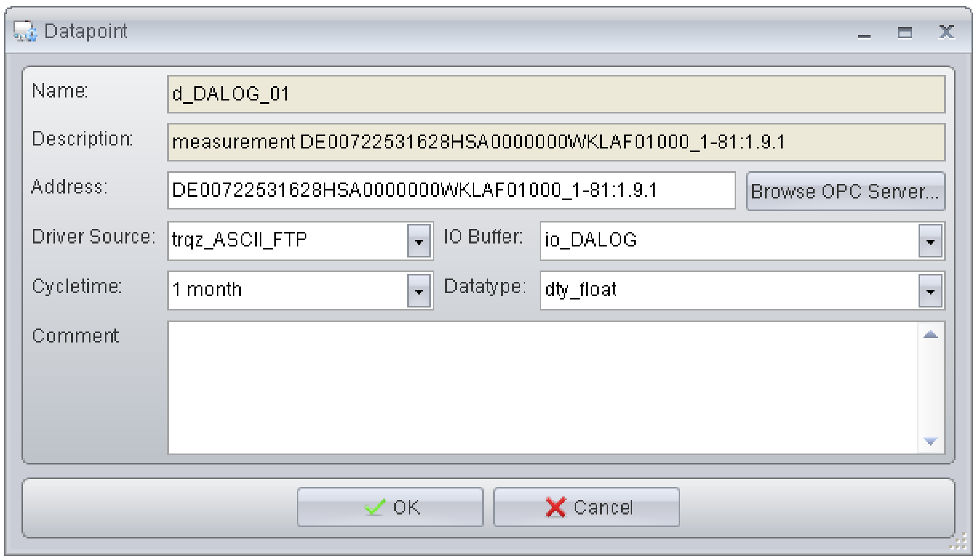


Data point addresses

DE00722531628HSA0000000WKLAF01000_1-81:1.9.1

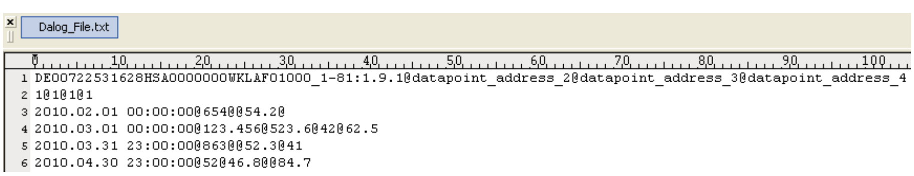
datapoint_address_2

datapoint_address_3



Sample file

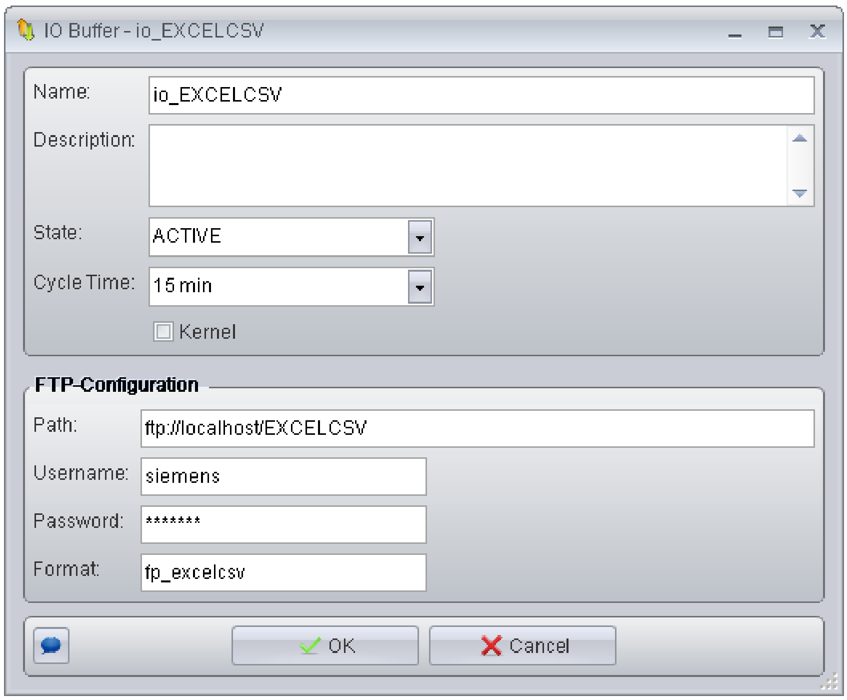
Dalog_File.txt



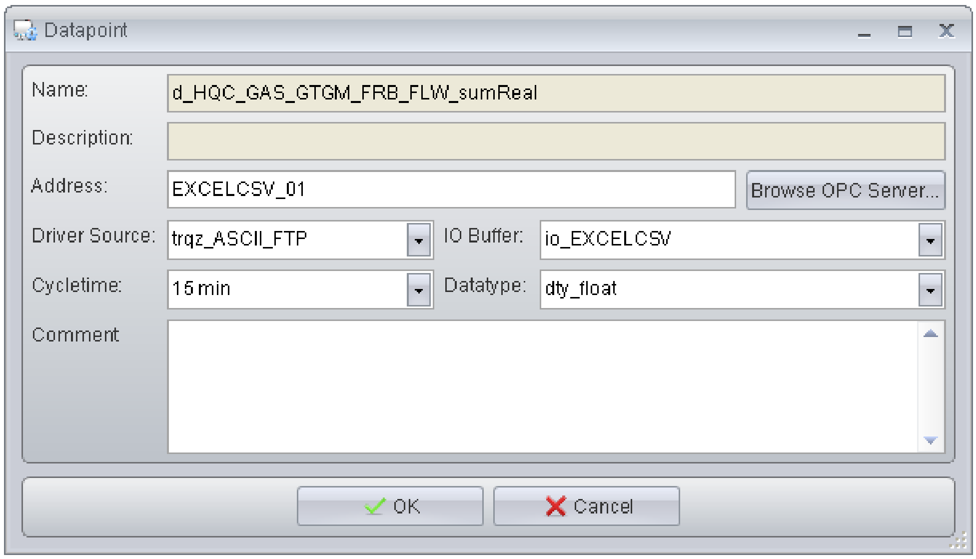
```
DE00722531628HSA0000000WKLAF01000_1-81:1.9.1@datapoint_address_2@datapoint_address_3@datapoint_address_4
1@1@1@1
2010.02.01 00:00:00@654@@54.2@
2010.03.01 00:00:00@123.456@523.6@42@62.5
2010.03.31 23:00:00@863@@52.3@41
2010.04.30 23:00:00@52@46.8@@84.7
```

13.15.6 EXCELCSV

Name of the DLL	fp_excelcsv.dll
Format identifier:	fp_excelcsv
Time base:	Local time

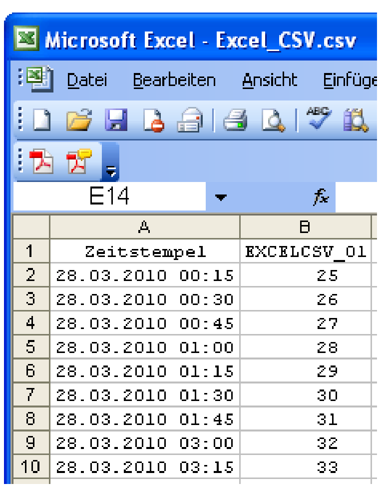


Data point address



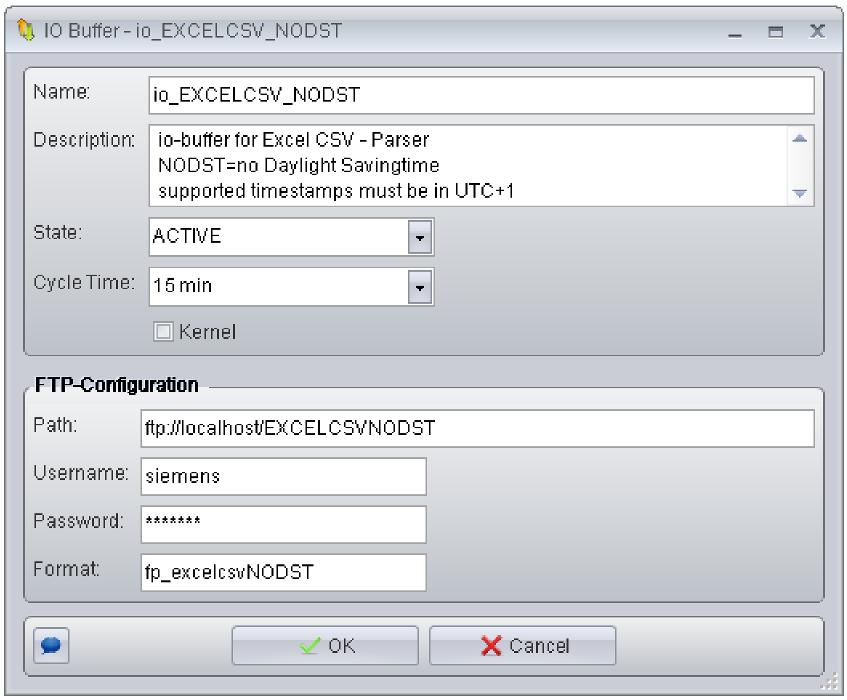
Sample file

Excel_CSV.csv



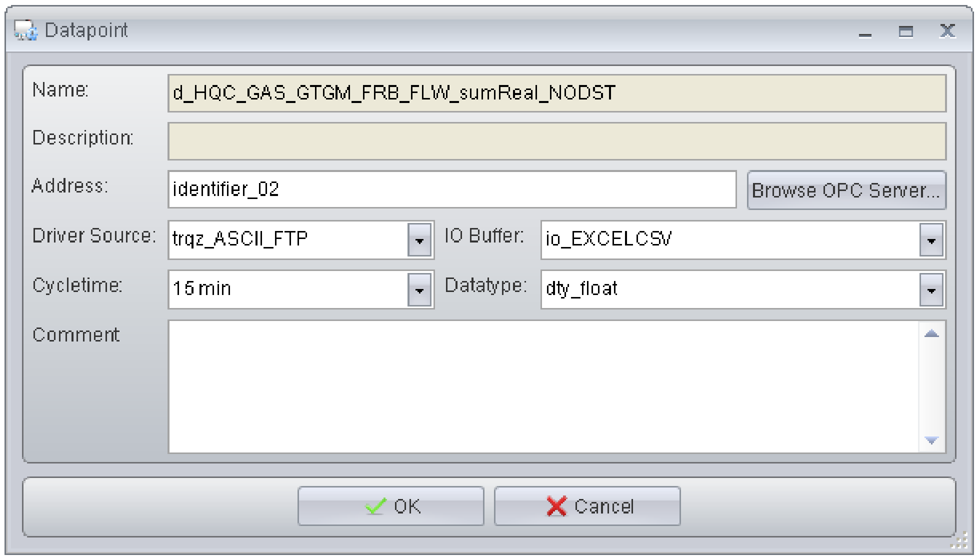
13.15.7 EXCELCSVNODST

Name of the DLL	fp_excelcsvNODST.dll
Format identifier:	fp_excelcsvNODST
Time base:	UTC+1



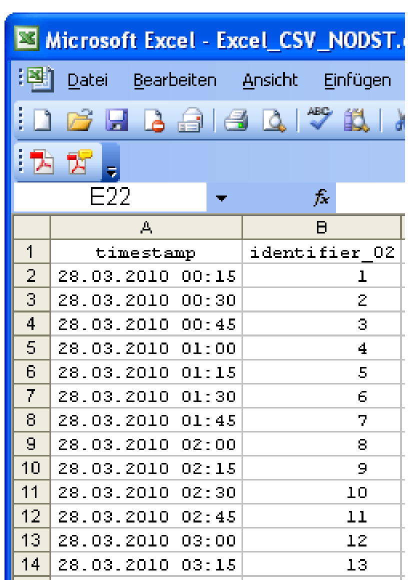
Data point address

identifier_02



Sample file

Excel_CSV_NODST.csv

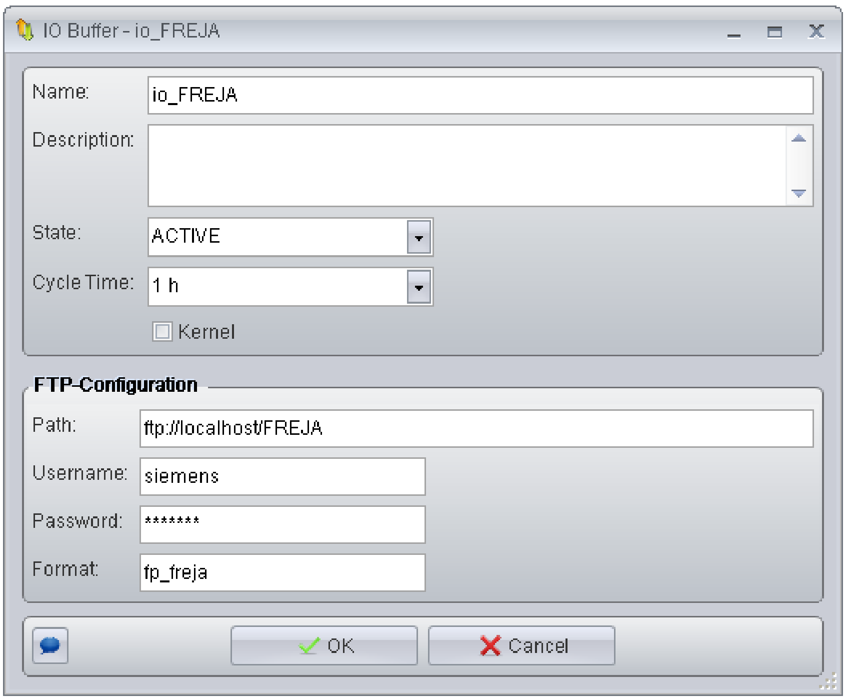


	A	B
1	timestamp	identifier_02
2	28.03.2010 00:15	1
3	28.03.2010 00:30	2
4	28.03.2010 00:45	3
5	28.03.2010 01:00	4
6	28.03.2010 01:15	5
7	28.03.2010 01:30	6
8	28.03.2010 01:45	7
9	28.03.2010 02:00	8
10	28.03.2010 02:15	9
11	28.03.2010 02:30	10
12	28.03.2010 02:45	11
13	28.03.2010 03:00	12
14	28.03.2010 03:15	13

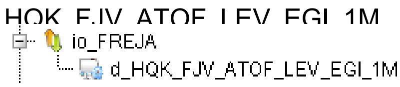
In contrast to files with local time base (summer or winter time), the times stamps must always be available in this case in UTC+1 format (winter time). The parser automatically calculates the time stamps for daylight saving time, sets the daylight savings flag correctly, and adds one hour to the time stamps that represent the daylight saving time.

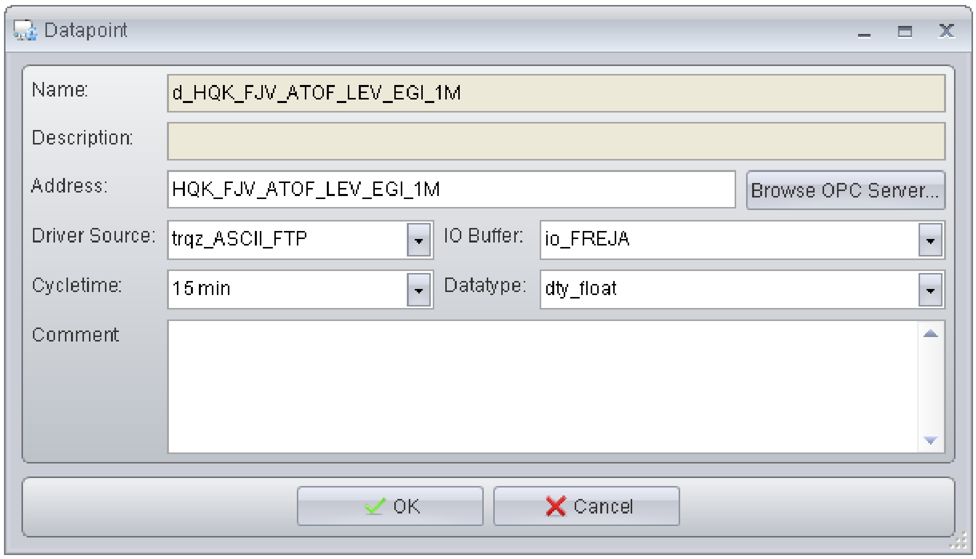
13.15.8 FREJA

Name of the DLL	fp_freja.dll
Format identifier:	fp_freja
Time base:	Local time



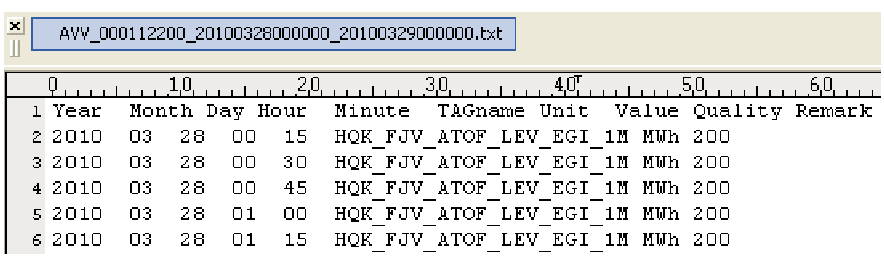
Data point address





Sample file

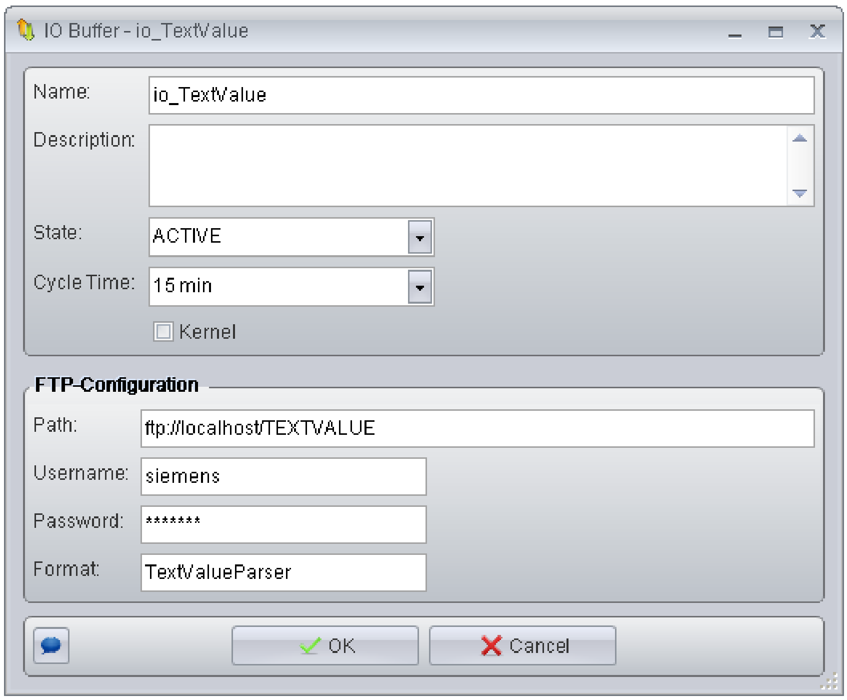
AVV_000112200_20100328000000_20100329000000.txt



```
Year   Month Day  Hour   Minute   TAGname Unit   Value Quality Remark
2010   03    28   00     15       HQK_FJV_ATOF_LEV_EGI_1M MWh 200
2010   03    28   00     30       HQK_FJV_ATOF_LEV_EGI_1M MWh 200
2010   03    28   00     45       HQK_FJV_ATOF_LEV_EGI_1M MWh 200
2010   03    28   01     00       HQK_FJV_ATOF_LEV_EGI_1M MWh 200
2010   03    28   01     15       HQK_FJV_ATOF_LEV_EGI_1M MWh 200
```

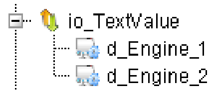
13.15.9 TextValue

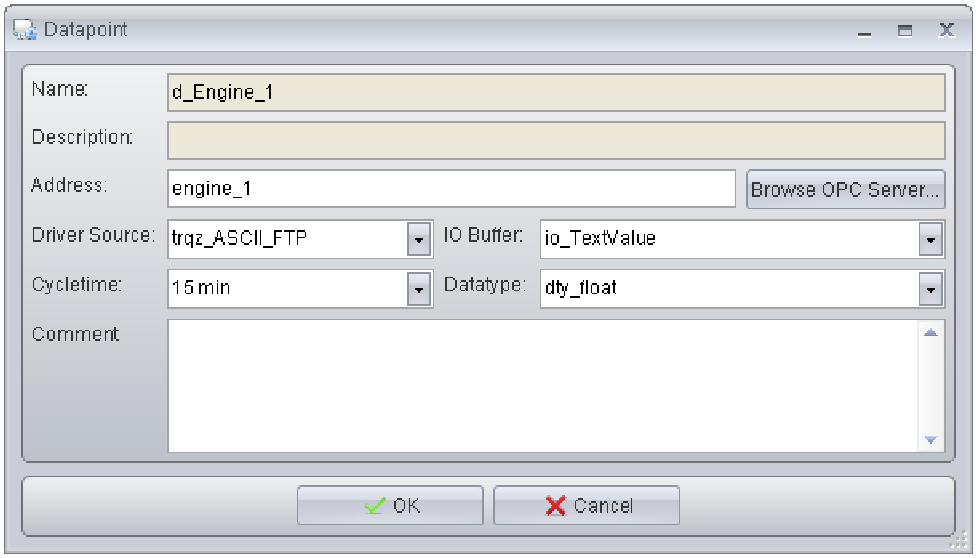
Name of the DLL	TextValueParser.dll
Format identifier:	TextValueParser
Time base:	Local time



Data point addresses

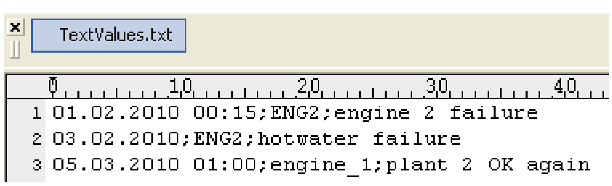
- d_Engine_1



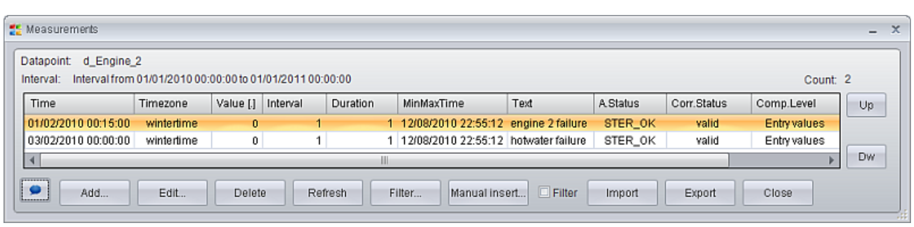


Sample file

TextValues.txt



Result in the measurement journal

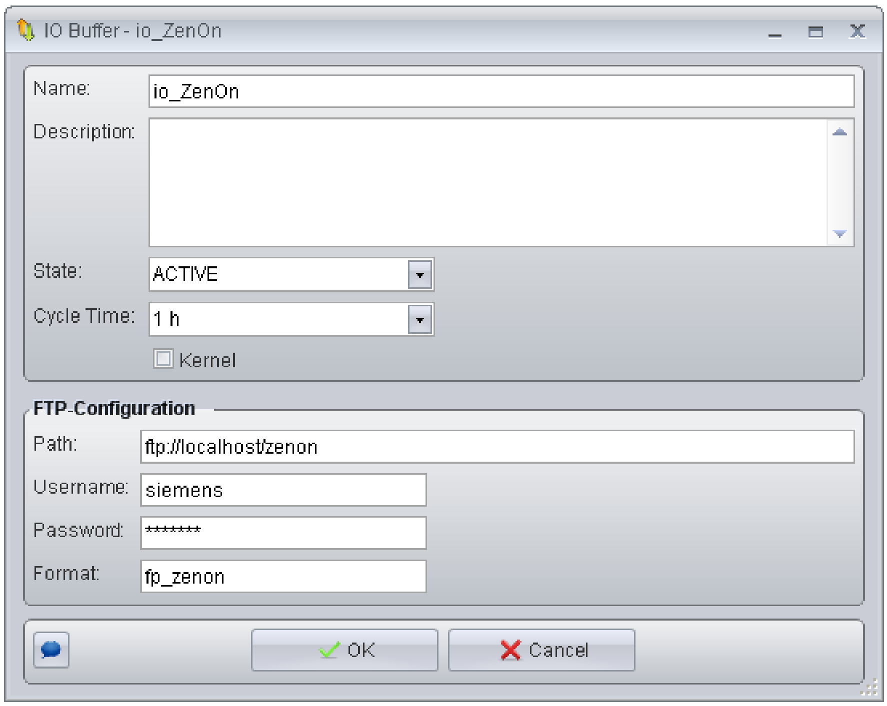


Note

"Text" values can only be entered in the measurement journal by means of FTPTransfer and parameter /d setting (FTPTransfer /d 123).

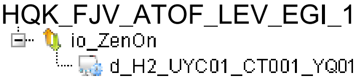
13.15.10 ZenOn

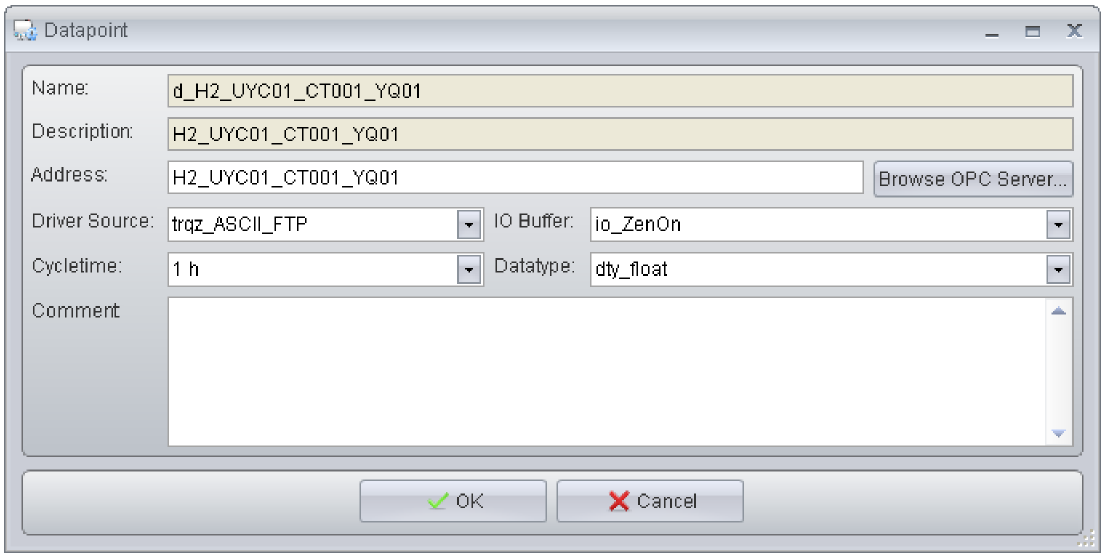
Name of the DLL	fp_Zenon.dll
Format identifier:	fp_Zenon
Time base:	Local time



Data point address

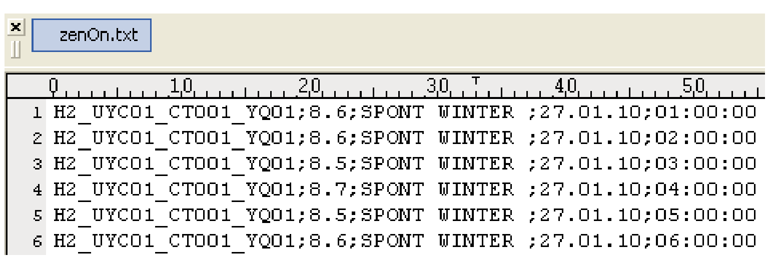
HQK_FJV_ATOF_LEV_EGI_1M





Sample file

zenOn.txt

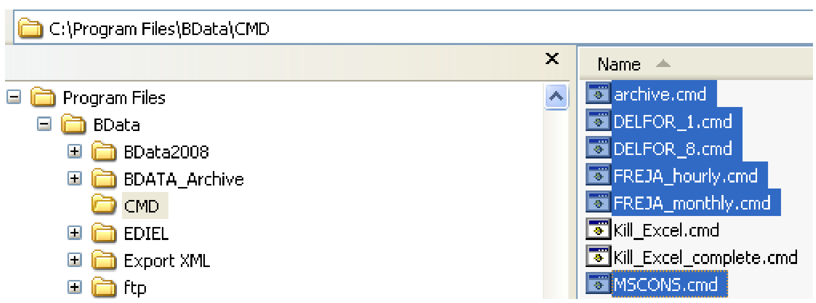


13.16 XML stylesheets

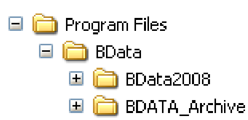
13.16.1 XML export interface

The XML export interface (DataExport.exe) is used for the export of data point information and measured values from B.Data to XML format files. The XML data is converted into the selected ASCII format by means of a style sheet.

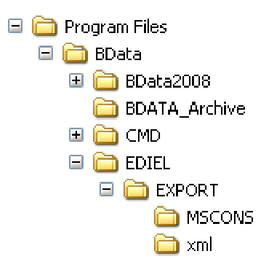
The entire process is controlled by means of Task Management. Setup installs six corresponding CMD files in the "%Installations-DIR%\CMD" folder on the acquisition computer.



"Archive.cmd" uses the "%Installations-DIR%\BData_Archives" output folder.



The remaining CMDs employ the "%Installations-DIR%\EDIEL" output folder. The other output folders such as MSCONS are automatically generated by the respective CMD.



It is possible to adapt the CMD files or style sheets to enable generation of all necessary ASCII formats.

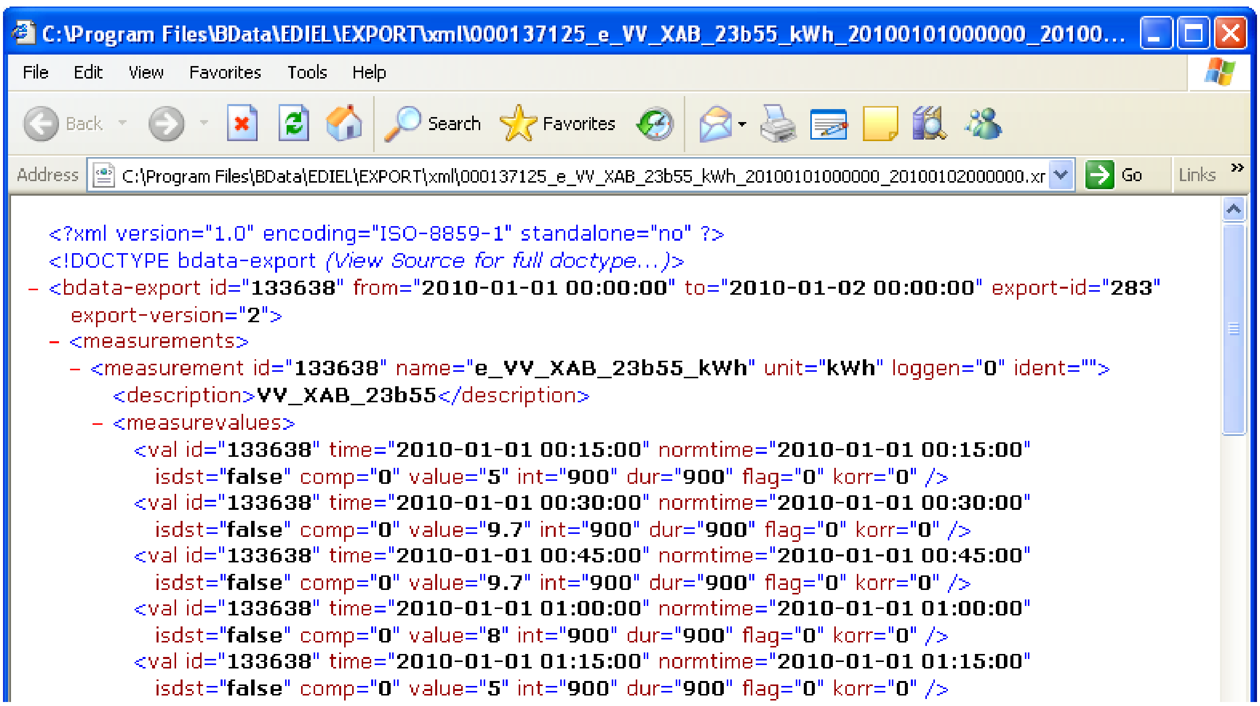
Setup installs six style sheets in the "%Installations-DIR%\ftp" folder on the acquisition computer. The "Xalan.exe" version that is necessary for transformation is included in the "Transform" subfolder.

The next chapters provide a short overview of the various style sheets.

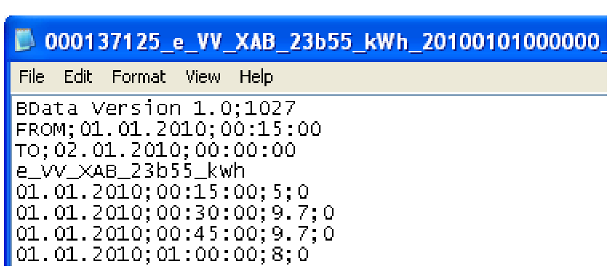
13.16.2 bdatadanmk_1.xsl

Execution file:	"Delfor_1.cmd" or "MSCONS.cmd"
Output folder:	C:\BData\GUI\EDIEL\EXPORT

XML file



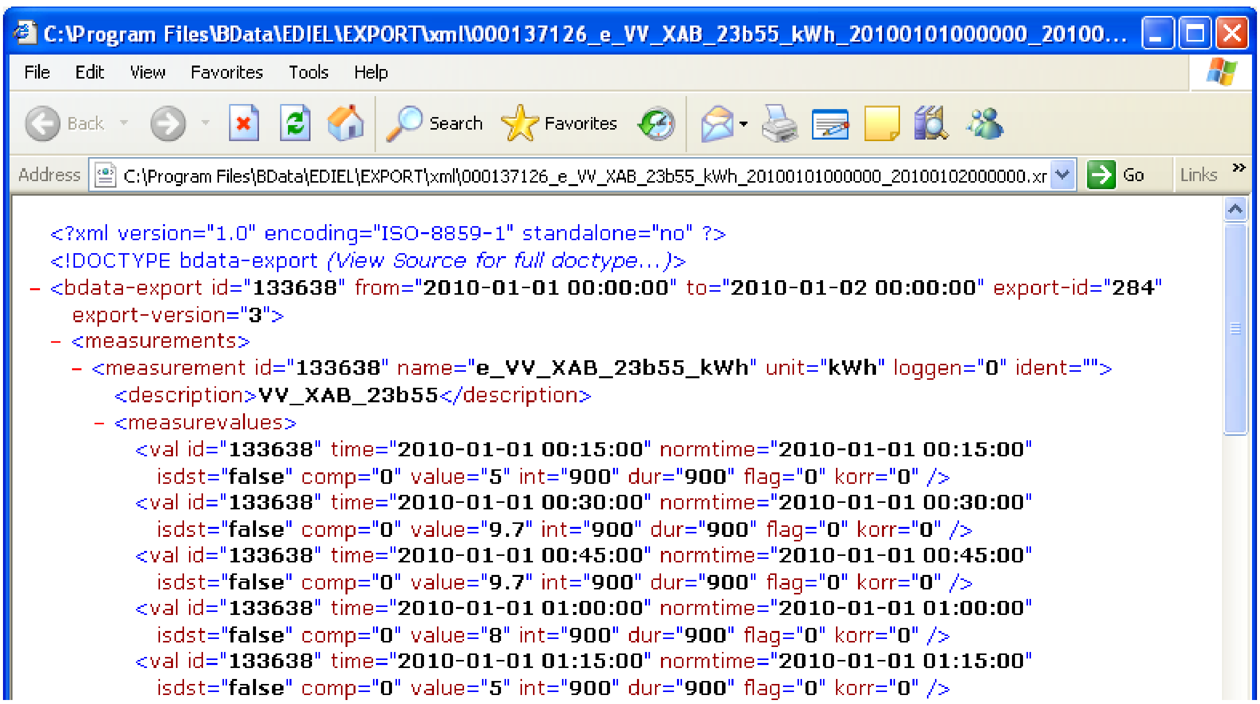
ASCII file



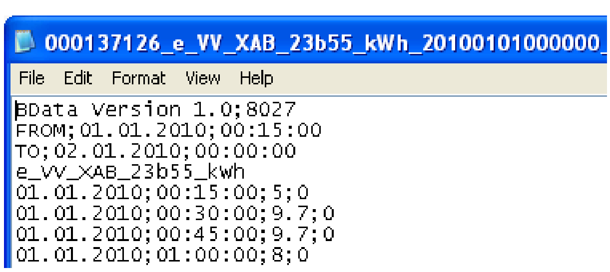
13.16.3 bdatadanmk_8.xsl

Execution file:	Delfor_8.cmd
Output folder:	C:\BData\GUI\EDIEL\EXPORT

XML file



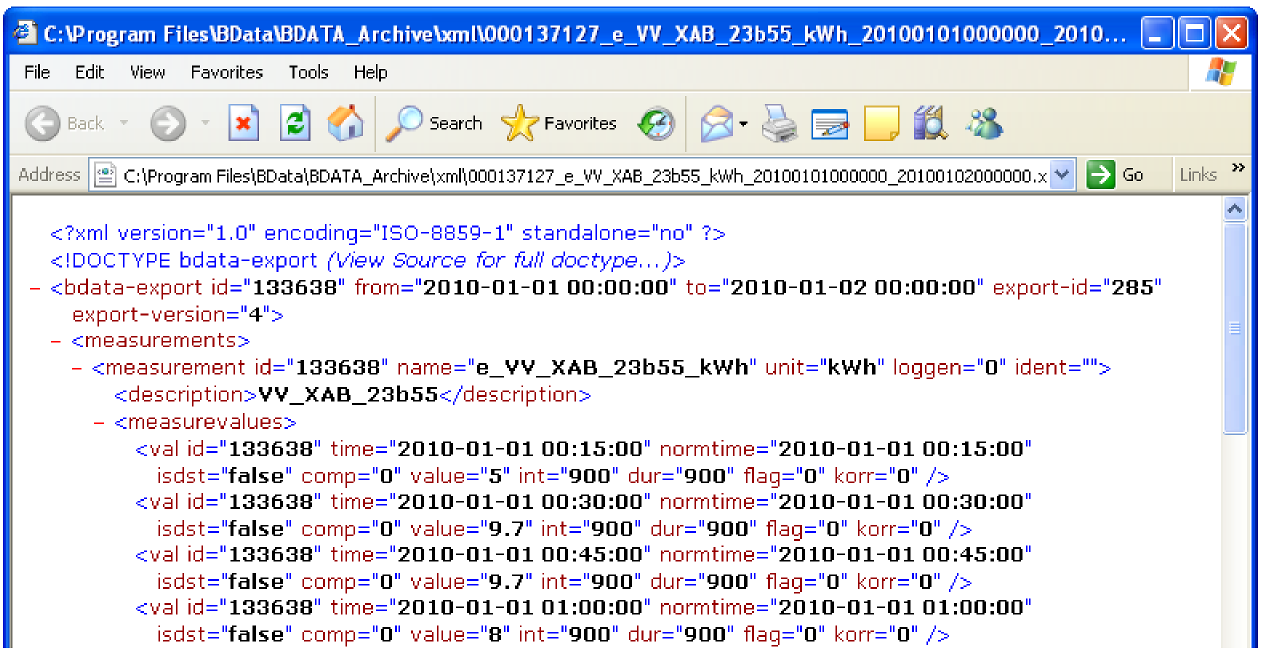
ASCII file



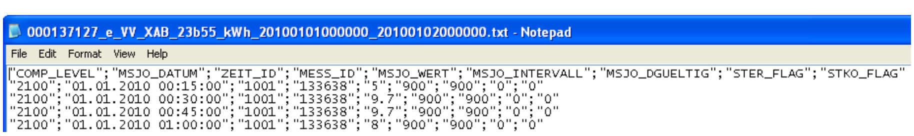
13.16.4 bdatastd.xsl

Execution file:	archive.cmd
Output folder:	C:\BData\GUI\BDATA_Archive

XML file



ASCII file



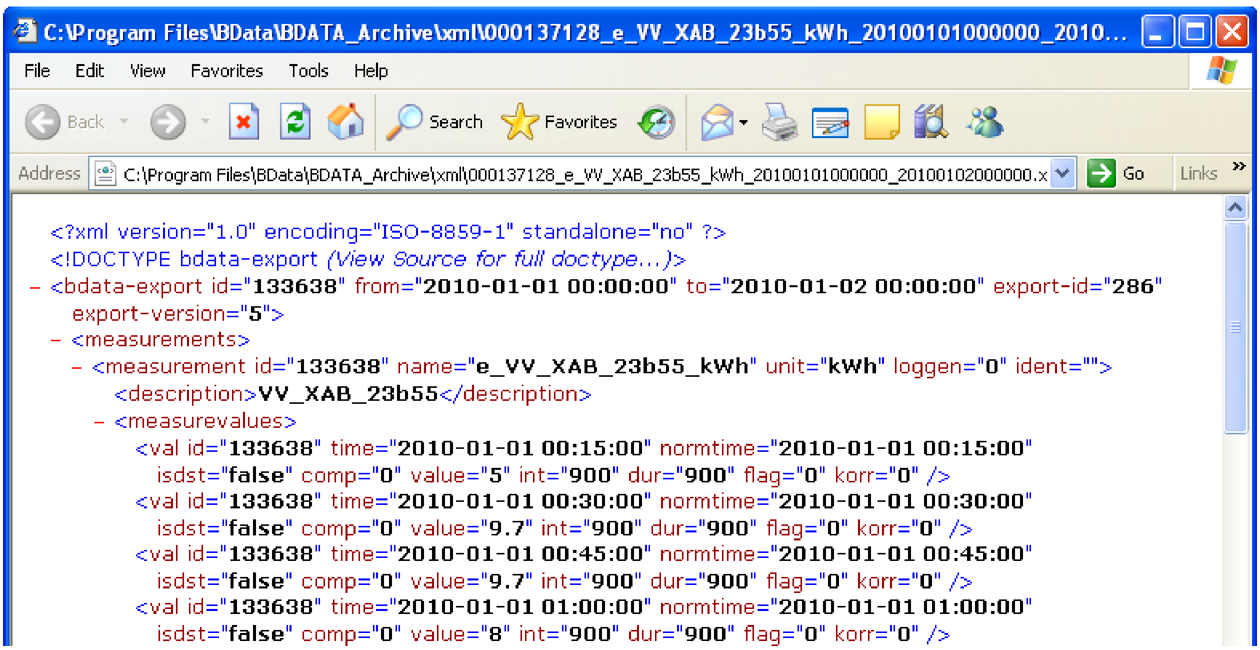
13.16.5 bdatastdu.xsl

Execution file: Not assigned

Output folder: C:\BData\GUI\BDATA_Archive

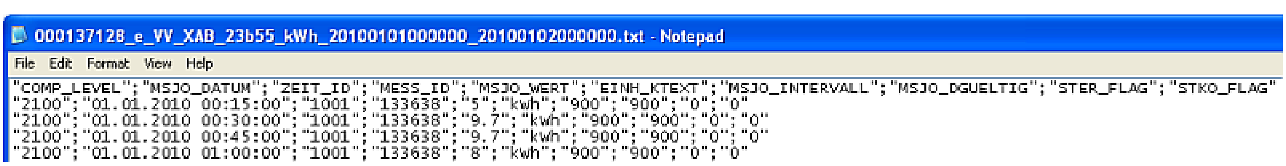
B.Data format is the output format that has been extended with the unit.

XML file



```
C:\Program Files\BData\BDATA_Archive\xml\000137128_e_VV_XAB_23b55_kWh_20100101000000_2010...
Address C:\Program Files\BData\BDATA_Archive\xml\000137128_e_VV_XAB_23b55_kWh_20100101000000_20100102000000.x

<?xml version="1.0" encoding="ISO-8859-1" standalone="no" ?>
<!DOCTYPE bdata-export (View Source for full doctype...)>
- <bdata-export id="133638" from="2010-01-01 00:00:00" to="2010-01-02 00:00:00" export-id="286"
    export-version="5">
  - <measurements>
    - <measurement id="133638" name="e_VV_XAB_23b55_kWh" unit="kWh" loggen="0" ident="">
        <description>VV_XAB_23b55</description>
      - <measurevalues>
          <val id="133638" time="2010-01-01 00:15:00" normtime="2010-01-01 00:15:00"
            isdst="false" comp="0" value="5" int="900" dur="900" flag="0" korr="0" />
          <val id="133638" time="2010-01-01 00:30:00" normtime="2010-01-01 00:30:00"
            isdst="false" comp="0" value="9.7" int="900" dur="900" flag="0" korr="0" />
          <val id="133638" time="2010-01-01 00:45:00" normtime="2010-01-01 00:45:00"
            isdst="false" comp="0" value="9.7" int="900" dur="900" flag="0" korr="0" />
          <val id="133638" time="2010-01-01 01:00:00" normtime="2010-01-01 01:00:00"
            isdst="false" comp="0" value="8" int="900" dur="900" flag="0" korr="0" />
```

ASCII file



```
000137128_e_VV_XAB_23b55_kWh_20100101000000_20100102000000.txt - Notepad

"COMP_LEVEL";"MSJO_DATUM";"ZEIT_ID";"MESS_ID";"MSJO_WERT";"EINH_KTEXT";"MSJO_INTERVALL";"MSJO_DGUELTIG";"STER_FLAG";"STKO_FLAG"
"2100";"01.01.2010 00:15:00";"1001";"133638";"5";"kwh";"900";"900";"0";"0"
"2100";"01.01.2010 00:30:00";"1001";"133638";"9.7";"kwh";"900";"900";"0";"0"
"2100";"01.01.2010 00:45:00";"1001";"133638";"9.7";"kwh";"900";"900";"0";"0"
"2100";"01.01.2010 01:00:00";"1001";"133638";"8";"kwh";"900";"900";"0";"0"
```

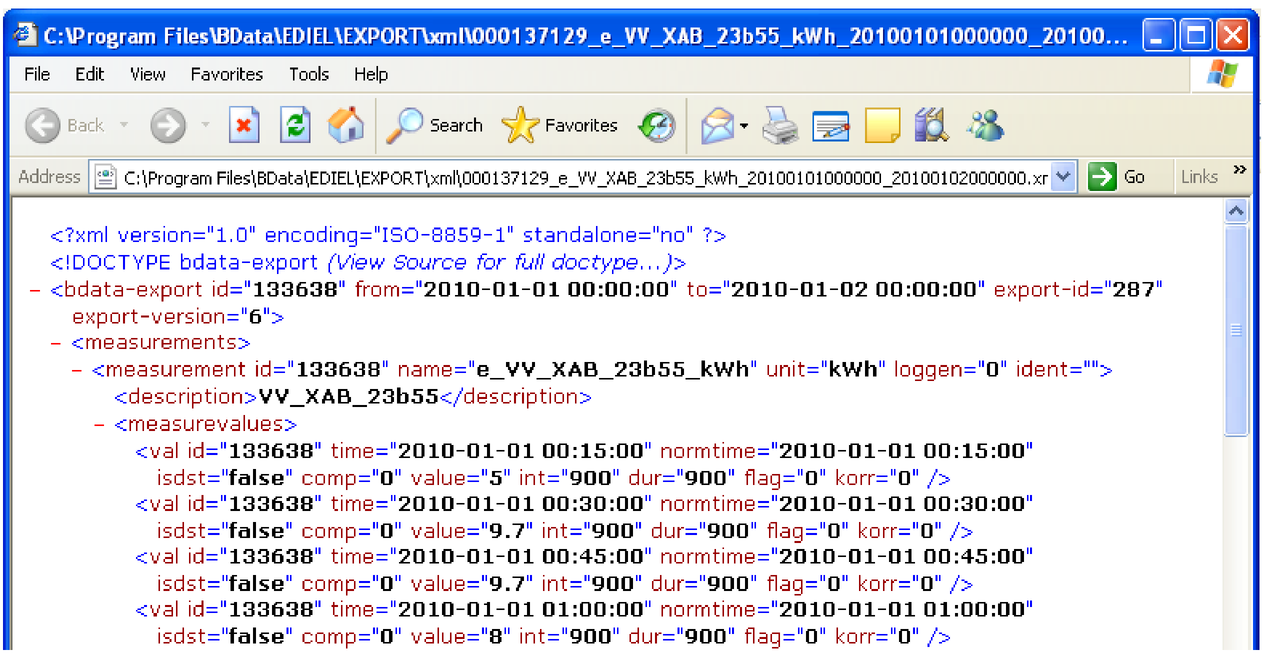
13.16.6 Freja.xsl

Execution file: "Freja_hourly.cmd" or "FREJA_monthly.cmd"
Output folder: C:\BData\GUI\EDIEL\EXPORT

Difference between "hourly" and "monthly":

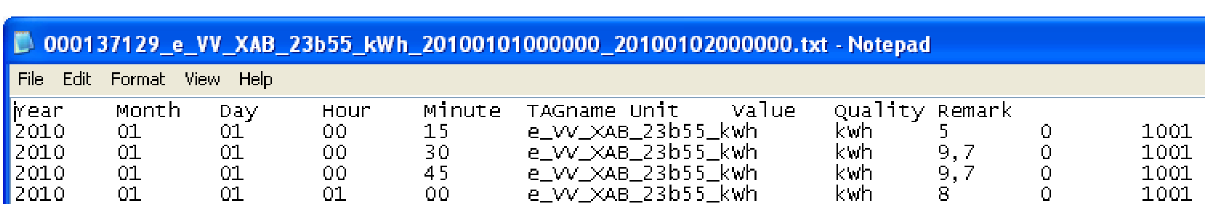
- Different subfolder for output
- Moving the generated ASCII file to a different subfolder

XML file




```
<?xml version="1.0" encoding="ISO-8859-1" standalone="no" ?>
<!DOCTYPE bdata-export (View Source for full doctype...)>
- <bdata-export id="133638" from="2010-01-01 00:00:00" to="2010-01-02 00:00:00" export-id="287"
    export-version="6">
  - <measurements>
    - <measurement id="133638" name="e_VV_XAB_23b55_kWh" unit="kWh" loggen="0" ident="">
        <description>VV_XAB_23b55</description>
      - <measurevalues>
          <val id="133638" time="2010-01-01 00:15:00" normtime="2010-01-01 00:15:00"
            isdst="false" comp="0" value="5" int="900" dur="900" flag="0" korr="0" />
          <val id="133638" time="2010-01-01 00:30:00" normtime="2010-01-01 00:30:00"
            isdst="false" comp="0" value="9.7" int="900" dur="900" flag="0" korr="0" />
          <val id="133638" time="2010-01-01 00:45:00" normtime="2010-01-01 00:45:00"
            isdst="false" comp="0" value="9.7" int="900" dur="900" flag="0" korr="0" />
          <val id="133638" time="2010-01-01 01:00:00" normtime="2010-01-01 01:00:00"
            isdst="false" comp="0" value="8" int="900" dur="900" flag="0" korr="0" />
```


ASCII file

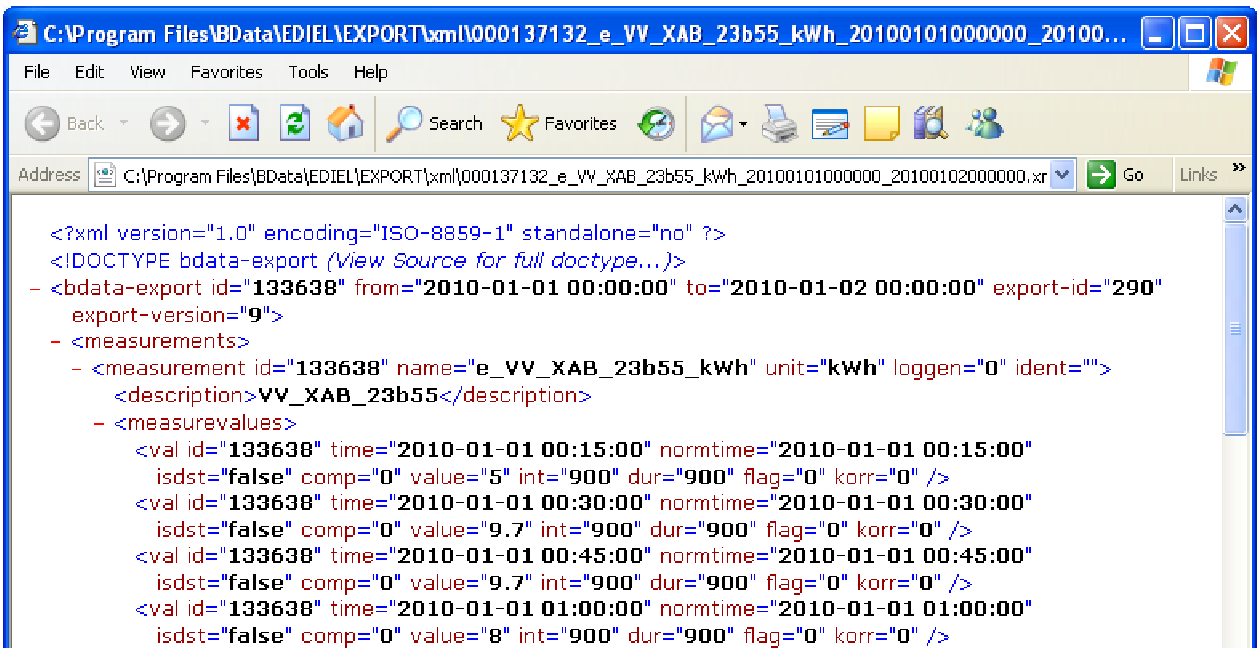



```
Year    Month   Day     Hour    Minute  TAGname Unit    Value   Quality Remark
2010    01      01      00      15      e_VV_XAB_23b55_kWh      kWh     5       0       1001
2010    01      01      00      30      e_VV_XAB_23b55_kWh      kWh     9,7     0       1001
2010    01      01      00      45      e_VV_XAB_23b55_kWh      kWh     9,7     0       1001
2010    01      01      01      00      e_VV_XAB_23b55_kWh      kWh     8       0       1001
```

13.16.7 LOKE_IDAP.xsl

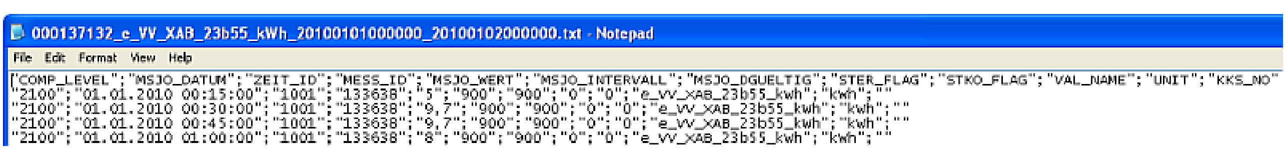
Execution file:	Not assigned
Output folder:	C:\BData\GUI\EDIEL\EXPORT

XML file




```xml
<?xml version="1.0" encoding="ISO-8859-1" standalone="no" ?>
<!DOCTYPE bdata-export (View Source for full doctype...)>
- <bdata-export id="133638" from="2010-01-01 00:00:00" to="2010-01-02 00:00:00" export-id="290"
   export-version="9">
 - <measurements>
  - <measurement id="133638" name="e_VV_XAB_23b55_kWh" unit="kWh" loggen="0" ident="">
      <description>VV_XAB_23b55</description>
   - <measurevalues>
       <val id="133638" time="2010-01-01 00:15:00" normtime="2010-01-01 00:15:00"
         isdst="false" comp="0" value="5" int="900" dur="900" flag="0" korr="0" />
       <val id="133638" time="2010-01-01 00:30:00" normtime="2010-01-01 00:30:00"
         isdst="false" comp="0" value="9.7" int="900" dur="900" flag="0" korr="0" />
       <val id="133638" time="2010-01-01 00:45:00" normtime="2010-01-01 00:45:00"
         isdst="false" comp="0" value="9.7" int="900" dur="900" flag="0" korr="0" />
       <val id="133638" time="2010-01-01 01:00:00" normtime="2010-01-01 01:00:00"
         isdst="false" comp="0" value="8" int="900" dur="900" flag="0" korr="0" />
```

ASCII file




```
"COMP_LEVEL";"MSJO_DATUM";"ZEIT_ID";"MESS_ID";"MSJO_WERT";"MSJO_INTERVALL";"MSJO_DGUELTIG";"STER_FLAG";"STKO_FLAG";"VAL_NAME";"UNIT";"KKS_NO"
"2100";"01.01.2010 00:15:00";"1001";"133638";"5";"900";"900";"0";"0";"e_VV_XAB_23b55_kWh";"kWh";""
"2100";"01.01.2010 00:30:00";"1001";"133638";"9,7";"900";"900";"0";"0";"e_VV_XAB_23b55_kWh";"kWh";""
"2100";"01.01.2010 00:45:00";"1001";"133638";"9,7";"900";"900";"0";"0";"e_VV_XAB_23b55_kWh";"kWh";""
"2100";"01.01.2010 01:00:00";"1001";"133638";"8";"900";"900";"0";"0";"e_VV_XAB_23b55_kWh";"kWh";""
```

13.17 SAP interface

13.17.1 DTD for the ERP interface

DTD structure

The following table shows the DTD structure from which the XML file is created. Using this DTD you can map the attributes in the ERP system.

DTD	Comment
<?xml version="1.0" encoding="ISO-8859-1" standalone="no" ?> <!DOCTYPE bdata-export [<!ELEMENT bdata-export (measurements, measurevalues) > <!ATTLIST bdata-export	 Definition of time range to be exported.
id CDATA #REQUIRED from CDATA #REQUIRED to CDATA #REQUIRED export-id CDATA #REQUIRED export-version CDATA #REQUIRED >	ID of interval definition Interval start (local time) Interval end (local time) Unique export ID Export version of time range
> <!ELEMENT costcentre-relations (costcentre-relation)+ > <!ELEMENT costcentre-relation (description,properties) > <!ELEMENT description (#PCDATA) > <!ATTLIST costcentre-relation	 Definition of cost center relation
id CDATA #REQUIRED name CDATA #REQUIRED source-costcentre CDATA #REQUIRED dest-costcentre CDATA #REQUIRED business-unit CDATA #REQUIRED costcentre-relation-extern-label CDATA #REQUIRED source-costcentre-extern-label CDATA #REQUIRED dest-costcentre-extern-label CDATA #REQUIRED business-unit-extern-label CDATA #REQUIRED cost-element-extern-label CDATA #REQUIRED personnel-number CDATA #REQUIRED accounting-day CDATA #IMPLIED >	ID of B.Data cost center relation Name of B.Data cost center relation Name of B.Data source cost center Name of B.Data destination cost center Name of business unit in ERP system Name of cost center relation in ERP system Name of source cost center in ERP system Name of destination cost center in ERP system Name of business unit in ERP system Name of service type in ERP system Personnel number Entry date, e.g. "14" (optional)
<!ELEMENT properties (property)+> <!ELEMENT property (#PCDATA)> <!ATTLIST property	 Properties of the data point

DTD	Comment
id CDATA #REQUIRED name CDATA #REQUIRED value-type CDATA #REQUIRED value CDATA #REQUIRED >	ID of B.Data property Name of B.Data property Data type of B.Data property Value range from 1 to 5: • 1: String; • 2: Float; • 3: Date/Time; • 4: Integer; • 5: String Value of B.Data property
<!ELEMENT measurements (measurement)+ > <!ELEMENT measurement (description, measurevalues) > <!ELEMENT description (#PCDATA) > <!ATTLIST measurement	 Definition of data point
id CDATA #REQUIRED name CDATA #REQUIRED unit CDATA #REQUIRED loggen CDATA #IMPLIED dapu-adr CDATA #IMPLIED ident CDATA #IMPLIED >	ID of data point Name of the data point Unit of data point Logging in database (optional) Name of data point in the B.Data database (optional) Additional ID of data point (optional)
<!ELEMENT measurevalues (val)+> <!ELEMENT val (#PCDATA)> <!ATTLIST val	 Definition of data point measured values
id CDATA #REQUIRED time CDATA #REQUIRED normtime CDATA #REQUIRED isdst CDATA #REQUIRED comp CDATA #IMPLIED value CDATA #REQUIRED int CDATA #IMPLIED dur CDATA #IMPLIED flag CDATA #IMPLIED korr CDATA #IMPLIED maxdate CDATA #IMPLIED	ID of data point Timestamp in local time Timestamp in normal time Summer/Winter time (TRUE = summer time) Compression level Value Interval between the values in seconds (optional) Validity between the intervals (optional) Recording quality in B.Data (optional) Correction quality in B.Data (optional) Date/Time of value generation; only partially available (optional)
>]>	

Example of an exported XML file

The following figure shows an XML file exported from B.Data via the SAP interface. The file name is made up of the following components as standard:

<Definition in the interval definition>_<ID of interval definition>_<FROM>_<TO>.xml


```
<?xml version="1.0" encoding="ISO-8859-1" standalone="no" ?>
<!DOCTYPE bdata-export (View Source for full doctype...)>
- <bdata-export id="154" from="2011-01-01 00:00:00" to="2011-08-01 00:00:00" export-id="761" export-version="1">
    <measurements />
  - <costcentre-relations>
    - <costcentre-relation id="130990" name="CC 1239099 - CC 1239100" costcentre-relation-extern-label="CC 1239099 - CC 1239100"
        source-costcentre-extern-label="CC 1239099" dest-costcentre-extern-label="CC 1239100" business-unit-extern-label="Siemens
        001" cost-element-extern-label="PH1" source-costcentre="CC 1239099" dest-costcentre="CC 1239100" business-unit="Siemens
        001" cost-element="PH1" personnel-number="666" accounting-day="30">
        <description />
      - <properties>
          <property id="131122" name="Order_Nr" value-type="1" value="B1234A23" />
          <property id="131123" name="Order_Pos" value-type="4" value="10" />
          <property id="131121" name="Order" value-type="1" value="A2343DE" />
          <property id="131124" name="Accounting_Type" value-type="4" value="1" />
        </properties>
      - <measurements>
        - <measurement id="146711" name="a_KST0190_Auftrag123_GAS_add" unit="kWh" loggen="0" ident="">
            <description />
          - <measurevalues>
              <val id="146711" time="2011-02-01 00:00:00" normtime="2011-02-01 00:00:00" isdst="false" comp="0"
                value="214" int="2678400" dur="2678400" flag="0" korr="0" />
              <val id="146711" time="2011-03-01 00:00:00" normtime="2011-03-01 00:00:00" isdst="false" comp="0"
                value="123" int="2419200" dur="2419200" flag="0" korr="0" />
              <val id="146711" time="2011-04-01 00:00:00" normtime="2011-03-31 23:00:00" isdst="true" comp="0"
                value="1744" int="2678400" dur="2678400" flag="0" korr="0" />
              <val id="146711" time="2011-05-01 00:00:00" normtime="2011-04-30 23:00:00" isdst="true" comp="0"
                value="200" int="2592000" dur="2592000" flag="0" korr="0" />
              <val id="146711" time="2011-06-01 00:00:00" normtime="2011-05-31 23:00:00" isdst="true" comp="0"
                value="588" int="2678400" dur="2678400" flag="0" korr="0" />
              <val id="146711" time="2011-07-01 00:00:00" normtime="2011-06-30 23:00:00" isdst="true" comp="0"
                value="123" int="2592000" dur="2592000" flag="0" korr="0" />
              <val id="146711" time="2011-08-01 00:00:00" normtime="2011-07-31 23:00:00" isdst="true" comp="0"
                value="600" int="2678400" dur="2678400" flag="0" korr="0" />
            </measurevalues>
          </measurement>
        </measurements>
      </costcentre-relation>
    </costcentre-relations>
</bdata-export>
```

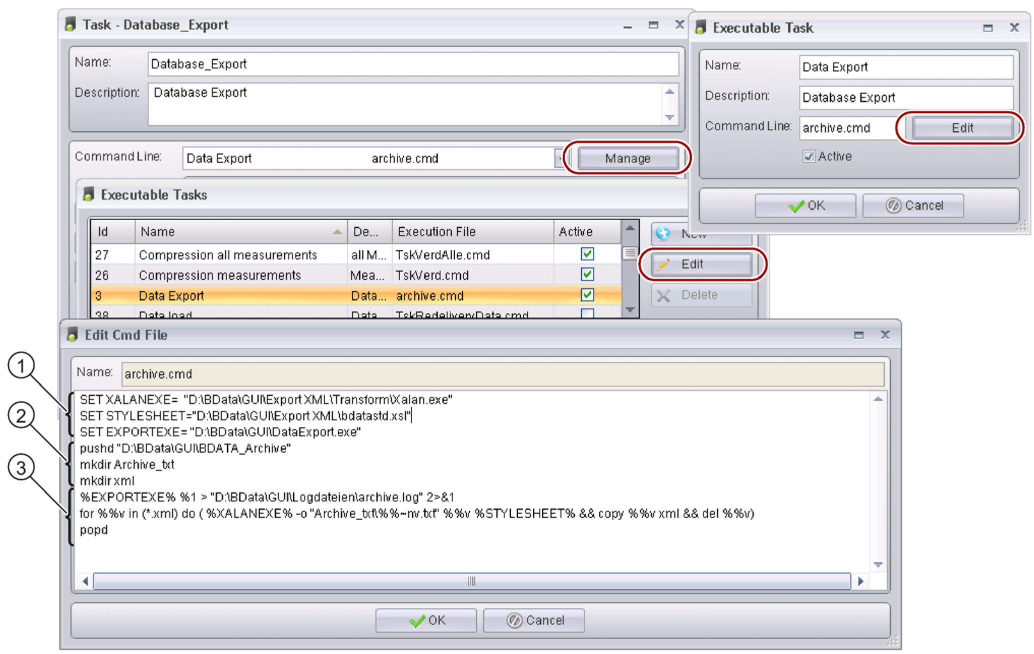
13.17.2 Structure of the "Archive.CMD" file

Function

The XML file and an archive file are generated with the "Archive.CMD" file.

Structure and call function

The following figure shows the call function and the structure of the "Archive.CMD" file:



① The program and XML stylesheet used to generate the XML file. ("SET <Program> = <Path>")

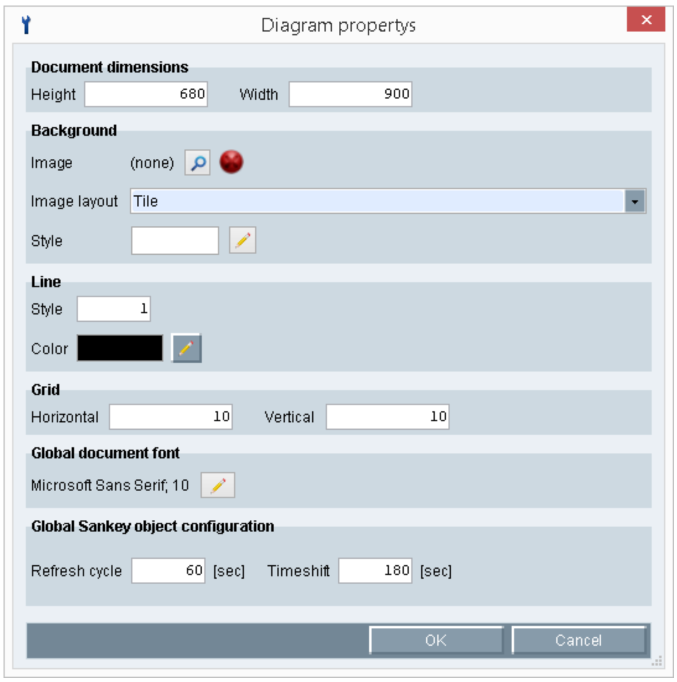
② Generates the folders to which the XML file and the archive file are saved ("mkdir <folder name>")

③ Command to generate the XML file and the archive file ("%EXPORTEXE% […]")

13.18 Dashboard objects

13.18.1 Configuring the dashboard

You can configure the Dashboard as follows:



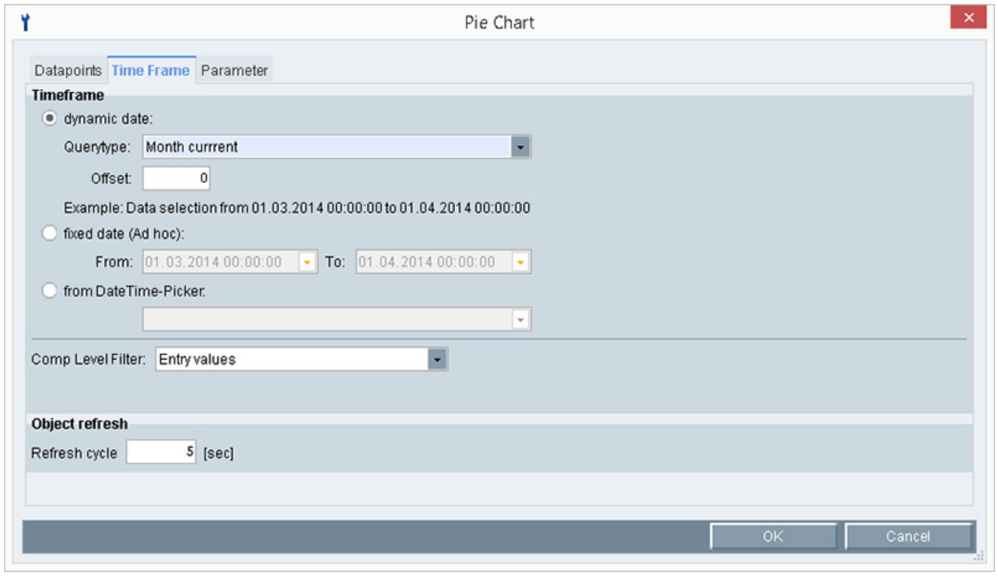
Settings	Description
Document size	Sets the Dashboard size in pixels.
Background	Sets the Dashboard background. You may use a background image of the "*.bmp", "*.jpg", "*.gif", or "*.png" format from your file system for the Dashboard.
Line	Sets the border style for the Dashboard.
Grid	Sets the Dashboard grid that is used to align the dashboard objects.
Global document font	Sets the font and font size for the Dashboard.
Global Sankey object configuration	Sets the update cycle for Sankey objects.

See also

Creating the dashboard layout (Page 245)

13.18.2 Configuring the time range

You can configure the time range for dashboard objects as follows:



Settings	Description
Dynamic time range	Sets a default query type, for example, "Curr. month". In this case, the dashboard object evaluates the values of the current month.
Fixed time range (ad hoc)	Sets a customizable time range. In this case, the dashboard object evaluates the values of the defined period.
From time selection object	Uses the period from the "Time selection" object with the specified number.
Display value for last cycle (only for "Gauge" dashboard object)	Displays the value of the last cycle.
Compression level filter	Sets the type of values to display in the dashboard object, for example, "Daily values". In this case, the dashboard object displays the daily values of a measured value series. Requirement: The daily values must be available in the system.
Object update	Defines the update interval for the dashboard object.

See also

Configuring dashboard objects (Page 248)

13.18.3 Rounded rectangle

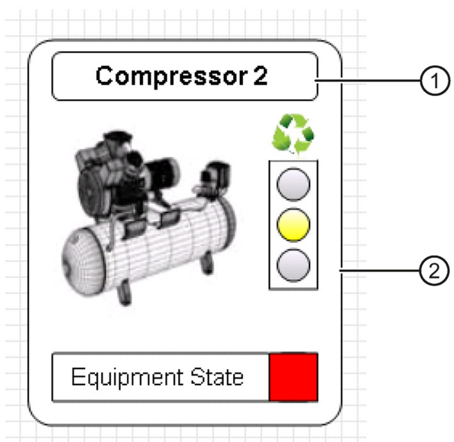
Function

Inserts a rounded rectangle into the Dashboard.

Usage

Use the "Rounded rectangle" dashboard object for your Dashboard style.

Example

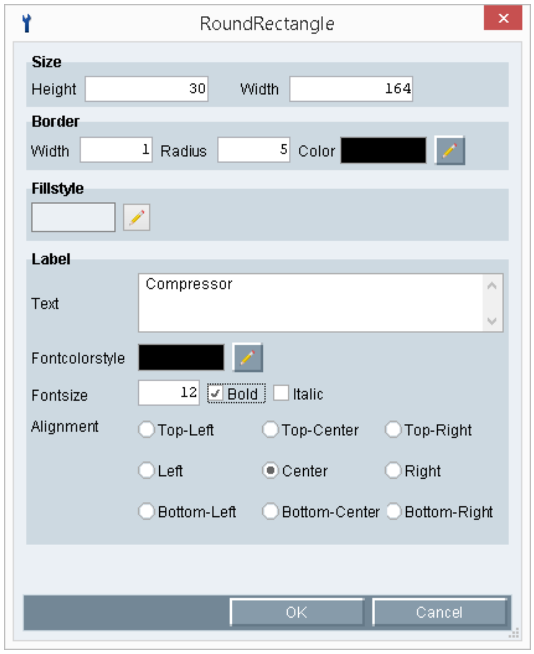


① Rounded rectangle with text caption for a group of dashboard objects
② Rounded rectangle as group of dashboard objects to form a picture

Necessary settings

None

Optional settings



- Set the size of the dashboard object.
- Set the border style.
- Set the fill color.
- Set the caption, the text style and the text alignment for the dashboard object.

13.18.4 Ellipsis

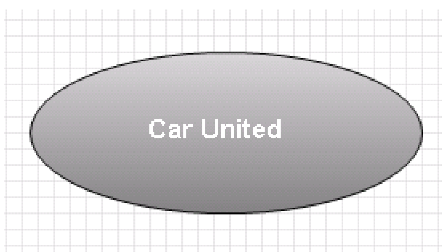
Function

Inserts an ellipsis into the Dashboard.

Usage

Use the "Ellipsis" dashboard object for your Dashboard style.

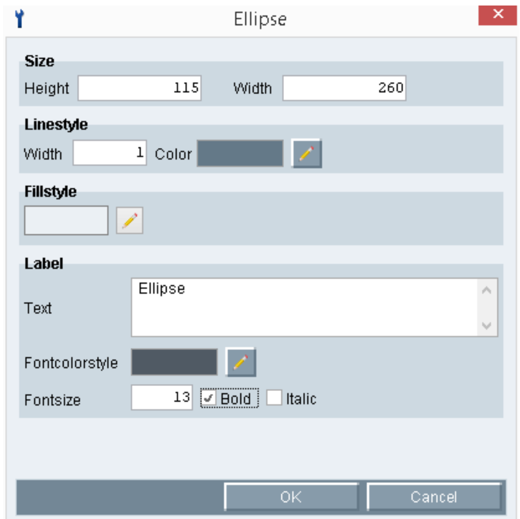
Example



Necessary settings

None

Optional settings



- Set the size of the dashboard object.
- Set the border style.
- Set the fill color.
- Set the caption and text style for the dashboard object.

13.18.5 Line

Function

Inserts a line into the Dashboard.

Usage

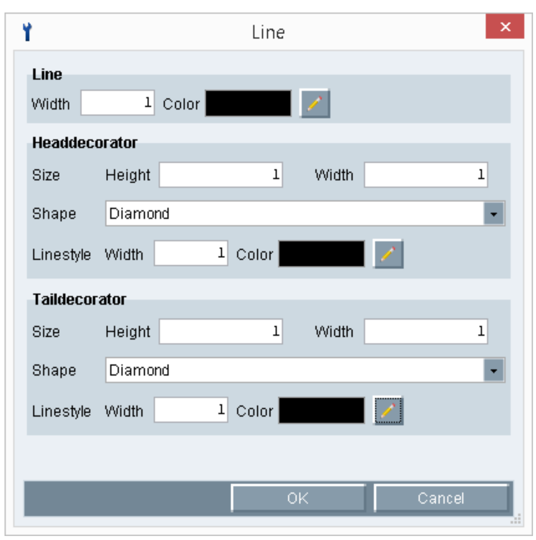
Use the "Line" dashboard object for your Dashboard style.

Example

Necessary settings

None

Optional settings



- Set the line style.
- Set a separate arrow style for the start and end of the line.

13.18.6 Polyline

Function

Inserts a polyline into the Dashboard.

Usage

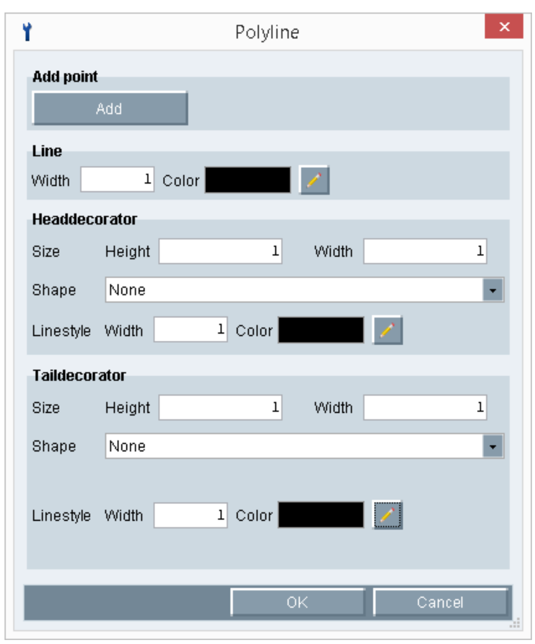
Use the "Polyline" dashboard object for your Dashboard style.

Example

Necessary settings

none

Optional settings



- Add a new point if you want to add an extra line to the polyline.
- Set the line style.
- Set a separate arrow style for the start and end of the polyline.

13.18.7 Image

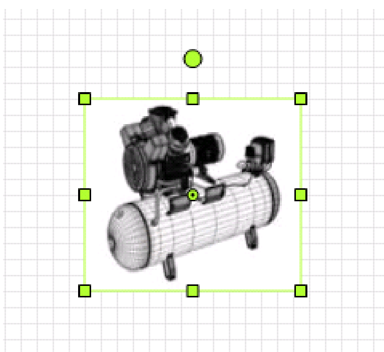
Function

Inserts a graphic image into the Dashboard.

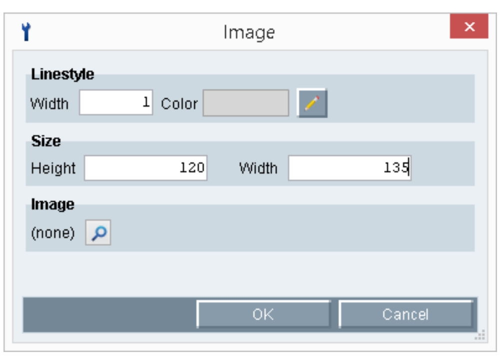
Application

Use the "Image" dashboard object to insert a graphic image from your file system into the Dashboard.

Example



Necessary settings



- Go to "Image" to select a graphic object in "*.bmp", "*.jpg", "*.gif", or "*.png" format from your file system.

  The selected graphic image is saved to the B.Data database.

Optional settings

- Set the border style.
- Set the size of the graphic image.

13.18.8 Traffic light

Function

Inserts a traffic light object into the Dashboard to visualize the status of data point values.

This dashboard object evaluates the limit configured in the data point and displays the status of the values with color code. The following states are possible:

- Green: The data point values do not exceed the range of the configured limit.
- Red: The configured data point limit is exceeded.

In the dashboard object configuration, you may define an additional warning limit that is indicated by the following state:

- Yellow: The data point values are still in the valid range but are approaching the configured limit.

Note

Configuring data points

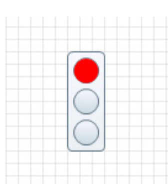
Configure the plausibility settings of the data point to use this dashboard object in the Dashboard.

These plausibility settings are activated in the dashboard object configuration.

Usage

Use the "Traffic light" dashboard object, for example, to visualize the status of the values of a measured value series in the form of a traffic light.

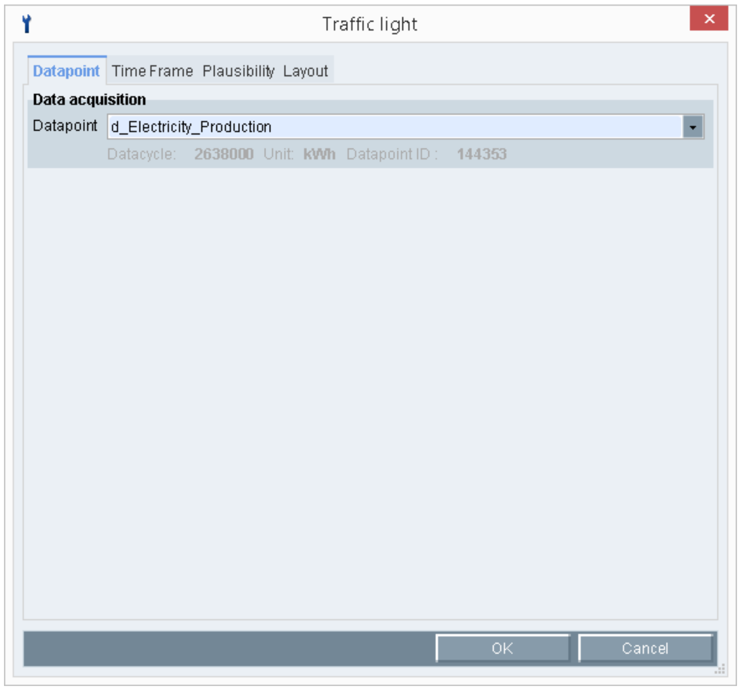
Example



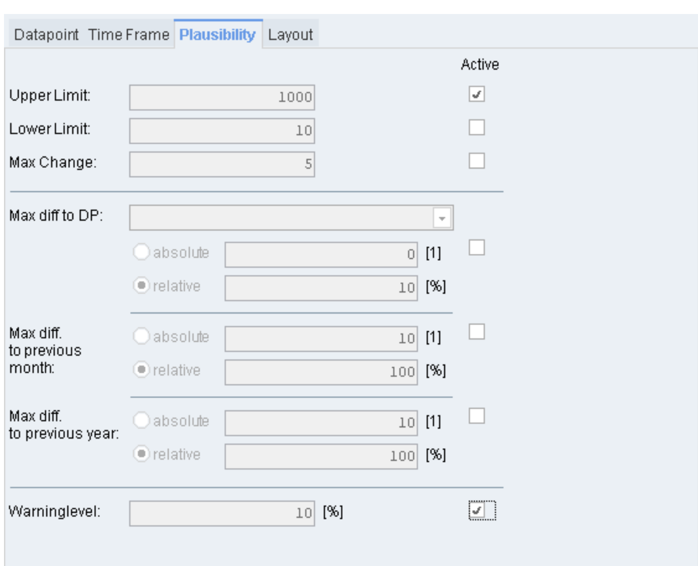
① The traffic light is red: The specified limit of a measured value series was exceeded.

Necessary settings

- Go to the "Data acquisition" field to select the data point that contains the values to be evaluated using the traffic light.



- Go to "Plausibility" to activate the limit to which the dashboard object has to respond.
- Define a warning limit by entering the deviation in percent in the "Warning level" field and then activate the option.



Note

The dashboard object returns the "Red" status if only one of the limits you activated in the "Plausibility" setting is exceeded. The evaluation is not particularly helpful in this situation.

For this reason, evaluate only one limit per dashboard object. Create additional dashboard objects for further evaluations.

Optional settings

Select the "Alignment" tab to set the size, border and background color for the dashboard object.

See also

Configuring the time range (Page 649)

13.18.9 Value

Function

Displays the current data point value in the Dashboard.

This dashboard object is also capable of evaluating the limit configured in the data point and of visualizing the values with color code. The following states are possible:

- Configured background color: The data point values do not exceed the range of the configured limit.
- Red: The configured data point limit is exceeded.

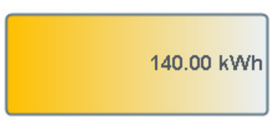
In the dashboard object configuration, you may define an additional warning limit that is indicated by the following state:

- Yellow: The data point values are still in the valid range but are approaching the configured limit.

Usage

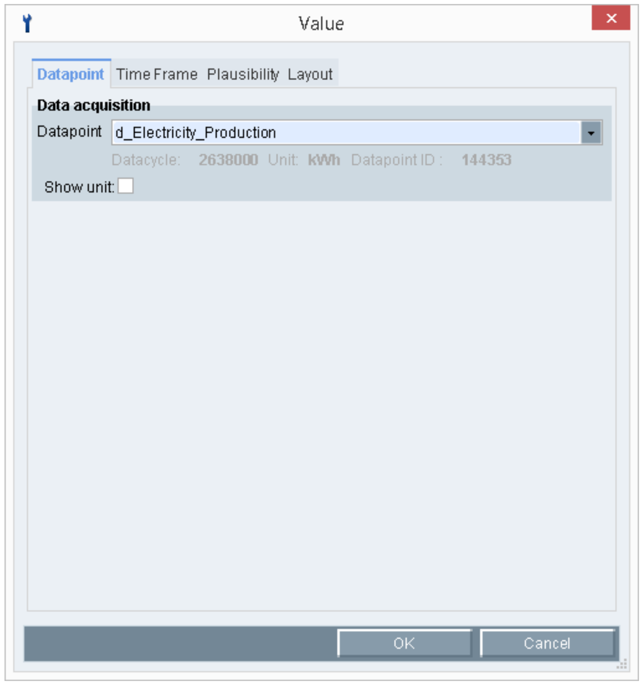
Use the "Value" dashboard object to display the actual value of the most recent period of a measured value series.

Example



Necessary settings

- Go to the "Data acquisition" field to select the data point that contains the value to be displayed.



Optional settings

- Set the update cycle for the dashboard object.

  The update cycle is set to five seconds by default.

Note

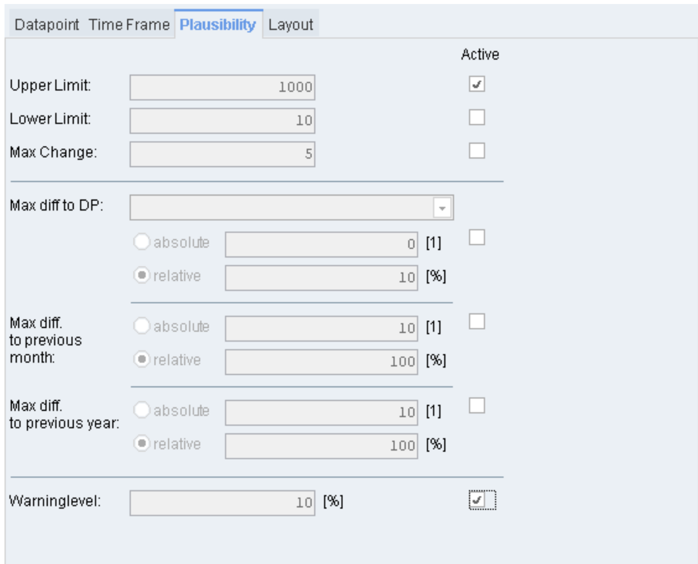
Specifying the update cycle

You cannot set an update cycle that is shorter than five seconds.

These plausibility settings are activated in the dashboard object configuration.

- Display the unit of the data point by activating the "Show unit" check box.
- Go to "Plausibility" to activate the limit to which the dashboard object has to respond and to visualize the values with color code.

- Define a warning limit by entering the deviation in percent in the "Warning level" field and then activate the option.



Note

The dashboard object returns the "Red" status if only one of the limits you activated in the "Plausibility" setting is exceeded. The evaluation is not particularly helpful in this situation.

For this reason, evaluate only one limit per dashboard object. Create additional dashboard objects for further evaluations.

- Select the "Layout" tab to set the size, fill color, border style and text style for the dashboard object.

13.18.10 Value difference

Function

Compares the actual values of two data points and displays the value states in the Dashboard.

This dashboard object evaluates the plausibility setting "Max. Diff. to DP" configured in the data point and displays the status of the values with color code. The following states are possible:

- Configured background color: The data point values do not exceed the range of the configured limit.
- Red: The configured data point limit is exceeded.

In the dashboard object configuration, you may define an additional warning limit that is indicated by the following state:

- Yellow: The data point values are still in the valid range but are approaching the configured limit.

Note

Configuring data points

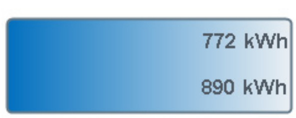
Configure the plausibility settings of the data point to use this dashboard object in the Dashboard.

These plausibility settings are activated in the dashboard object configuration.

Usage

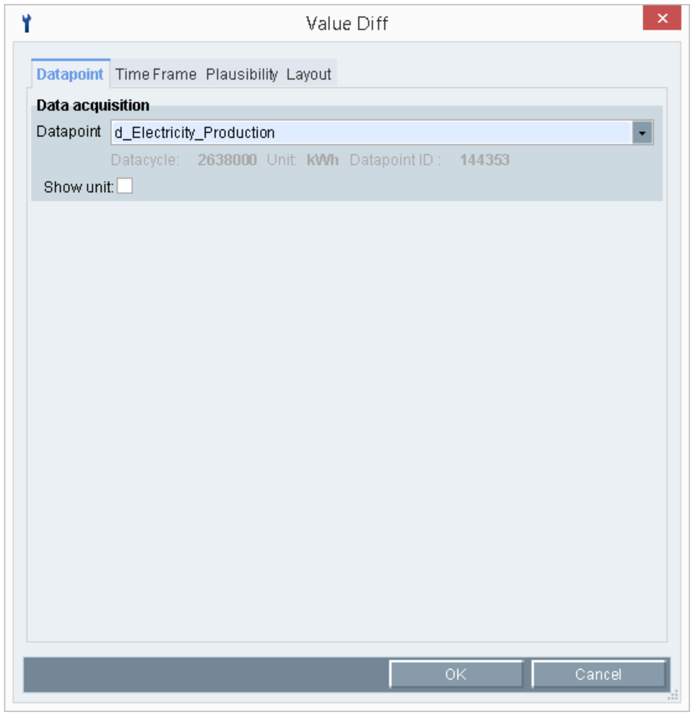
Use the "Value difference" dashboard object to display the comparison of the actual values of two measured value series.

Example

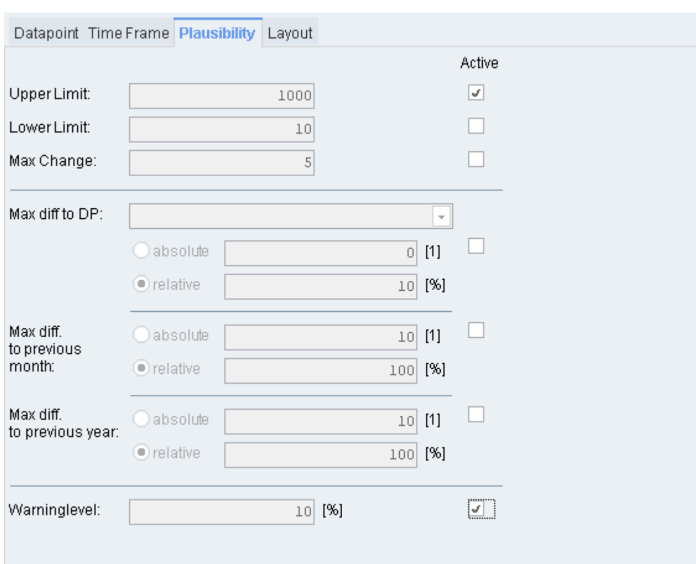


Necessary settings

- Go to the "Data acquisition" field to select the data point that contains the values to be visualized.



- In the "Plausibility" settings, activate the "Max. Diff. to DP".
- Define a warning limit by entering the deviation in percent in the "Warning level" field and then activate the option.



Optional settings

- Display the unit of the data point by activating the "Show unit" check box.
- Select the "Alignment" tab to set the size, fill color, border style and text style for the dashboard object.

See also

Configuring the time range (Page 649)

13.18.11 Time selection

Function

Changes the time range for dashboard object assigned to the "Time selection" object.

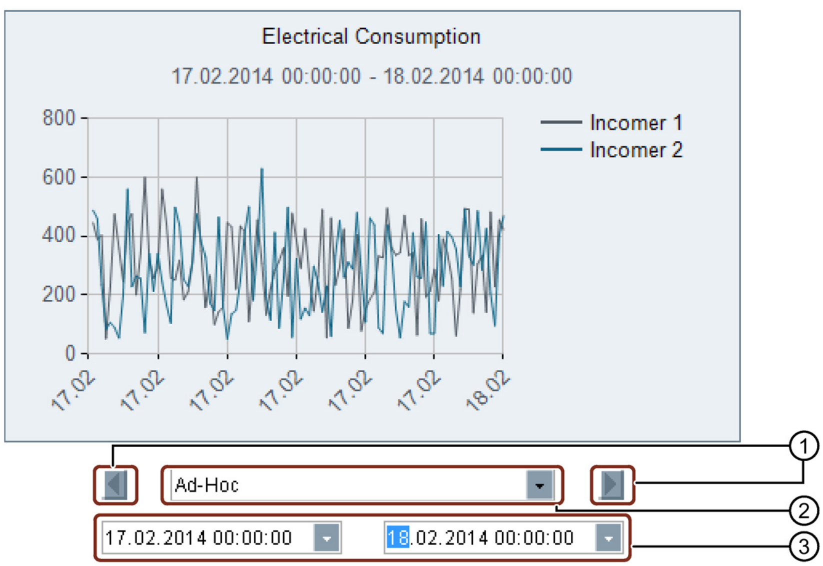
You can assign the "Time selection" dashboard object to several dashboard objects. But you can only assign a dashboard object to exactly one "Time selection" dashboard object.

Usage

Use the "Time selection" dashboard object if you want to adapt the time range for one or more dashboard objects during runtime of the dashboard.

Example

The figure below shows the "Line chart" dashboard object with the "Time selection" dashboard object positioned underneath.



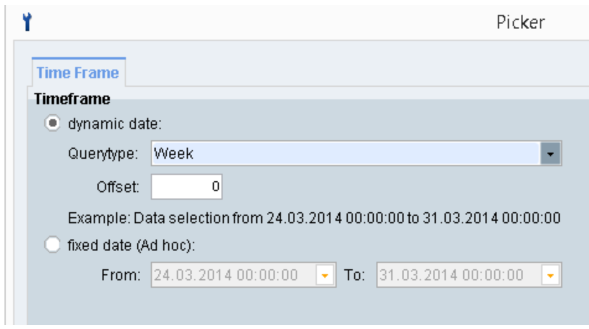
① Scrolls back or forth one period.

② Specifies the query type, e.g., "Ad hoc"

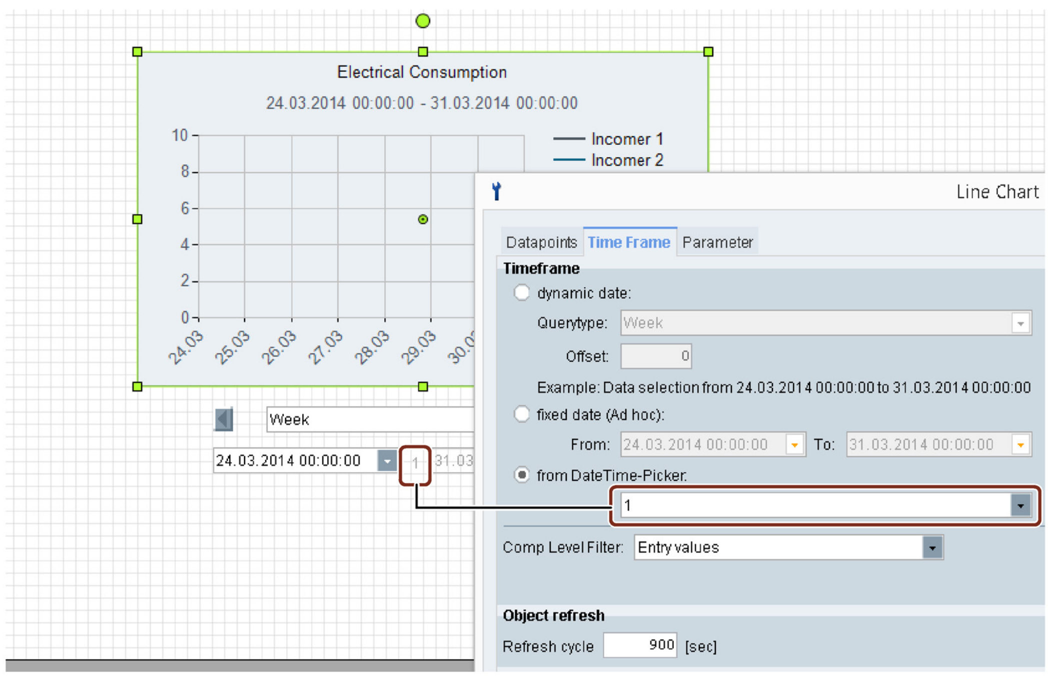
③ Defines the time range depending on the selected query type.

Necessary settings

Define the query type and time range in the "Time selection" dashboard object that are displayed in the assigned dashboard object when the dashboard is started:



Assign the "Time selection" dashboard object to the dashboard object using its ID:



13.18.12 Status

Function

Displays the state of values of a data point in the Dashboard.

This dashboard object evaluates the limit configured in the data point and displays the status of the values with color code. The following states are possible:

- Green: The data point values do not exceed the range of the configured limit.
- Red: The configured data point limit is exceeded.

In the dashboard object configuration, you may define an additional warning limit that is indicated by the following state:

- Yellow: The data point values are still in the valid range but are approaching the configured limit.

Note

Configuring data points

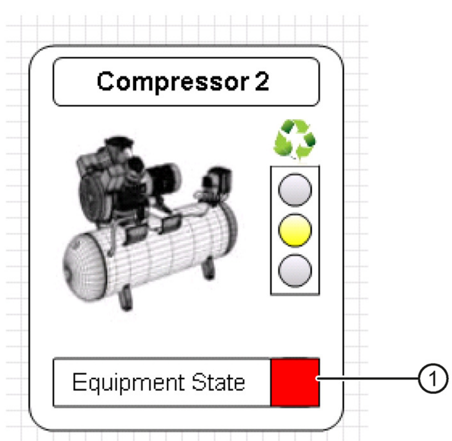
Configure the plausibility settings of the data point to use this dashboard object in the Dashboard.

These plausibility settings are activated in the dashboard object configuration.

Usage

You can use the "Status" dashboard object to visualize the value states of a measured value series in the Dashboard.

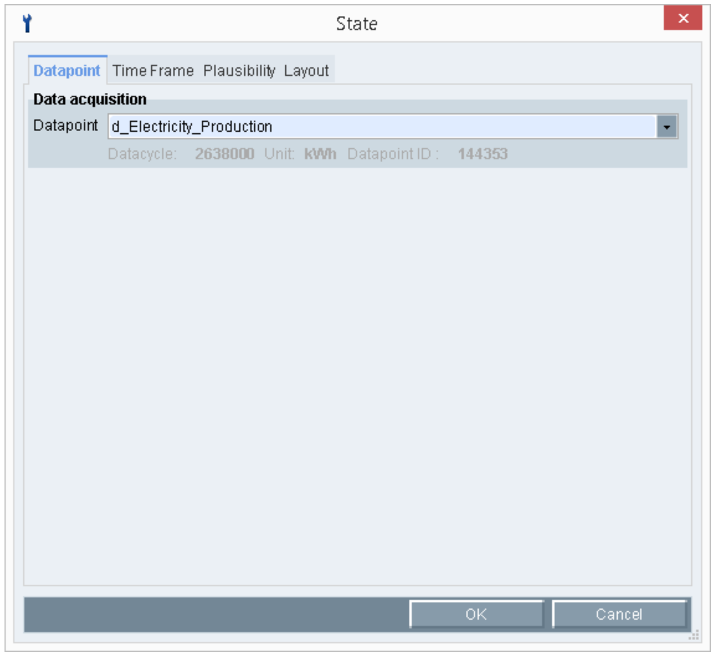
Example



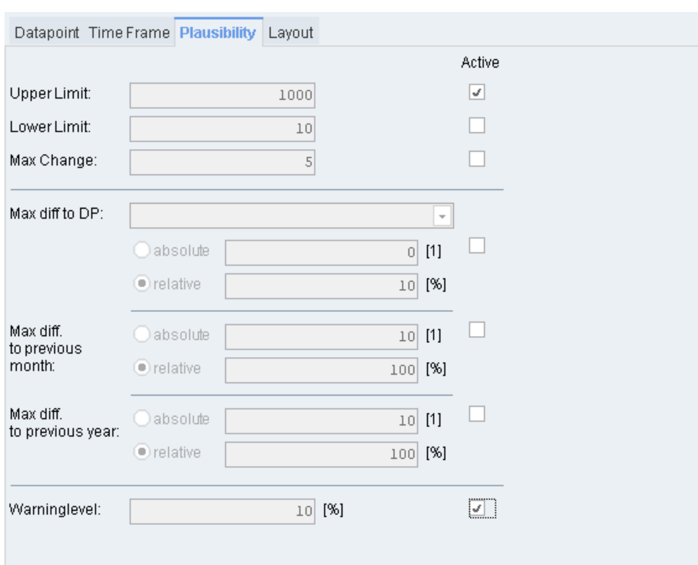
① Status of a plant

Necessary settings

- Go to the "Data acquisition" field to select the data point with the status to be visualized.



- Go to "Plausibility" to activate the limit to which the dashboard object has to respond.
- Define a warning limit by entering the deviation in percent in the "Warning level" field and then activate the option.



Note

The dashboard object returns the "Red" status if only one of the limits you activated in the "Plausibility" setting is exceeded. The evaluation is not particularly helpful in this situation.

For this reason, evaluate only one limit per dashboard object. Create additional dashboard objects for further evaluations.

Optional settings

Select the "Alignment" tab to set the size and border style for the dashboard object.

See also

Configuring the time range (Page 649)

13.18.13 Bar chart

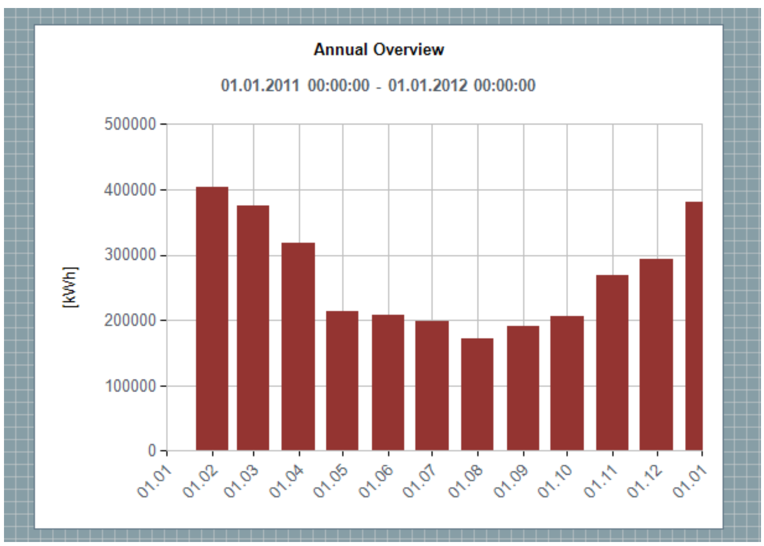
Function

Inserts a bar chart into the Dashboard.

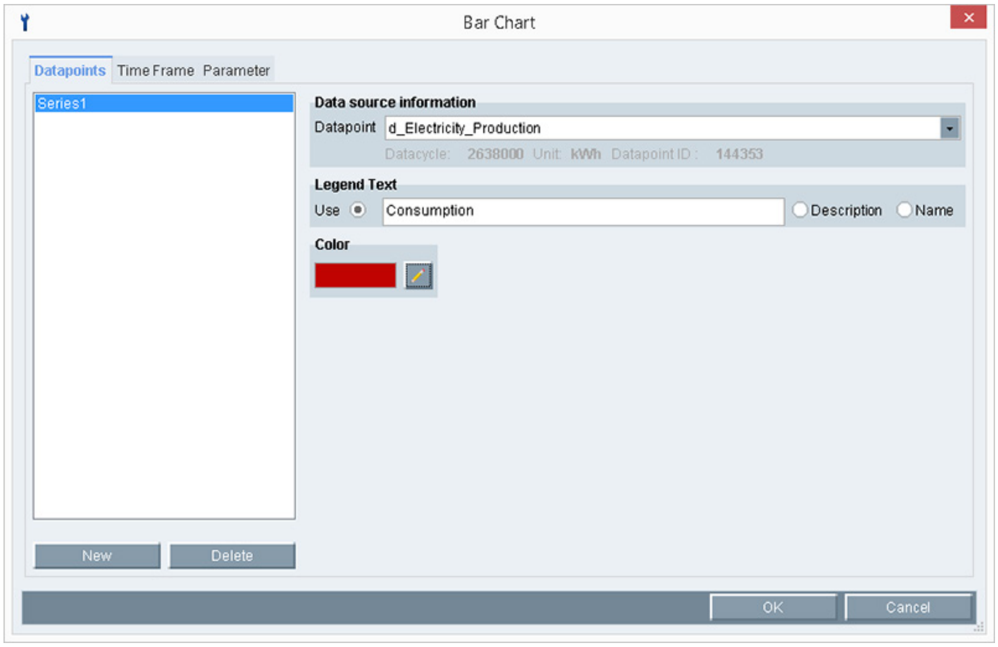
Usage

Use the "Bar chart" dashboard object to visualize the values of one or several measured value series in the form of a bar chart.

Example



Necessary settings



- Select "New" to set the number of measured value series to display in the bar chart.
- Assign a data point to each measured value series in the "Data source information" field.
- Set the time range to display in the bar chart.

Optional settings

- Activate the bar chart caption in the "Parameters" tab.
- Set the caption text for the bar chart in the "Datapoints" tab.
  - Activate "Use" and enter your caption text.
  - Activate "Description" if you want to use the description of the data point for the caption text.
  - Activate "Name" if you want to use the name of the data point for the caption text.
- Set the bar colors in the "Datapoints" tab.
- Set the diagram and text styles in the "Parameters" tab.

See also

Configuring the time range (Page 649)

13.18.14 Pie chart

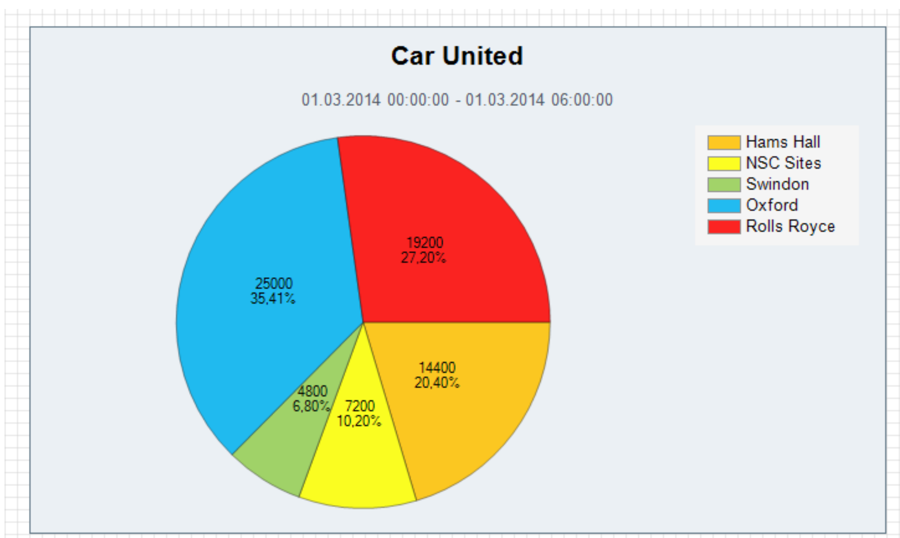
Function

Inserts a pie chart into the Dashboard.

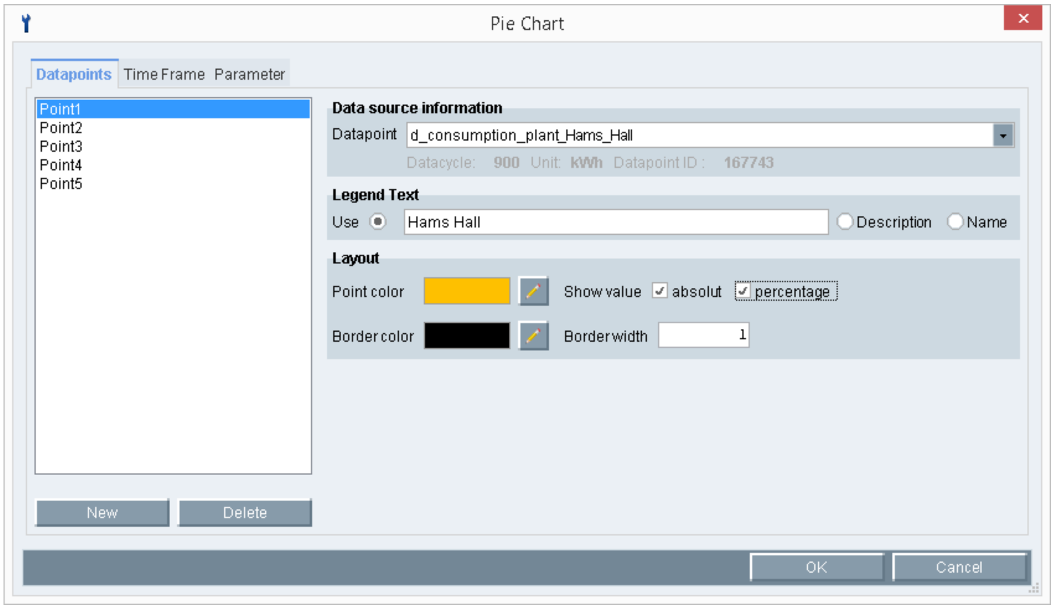
Usage

Use the "Pie Chart" dashboard object to visualize the values of one or several measured value series in the form of a pie chart.

Example



Necessary settings



- Select "New" to set the number of measured value series to display in the pie chart.
- Assign a data point to each measured value series in the "Data source information" field.
- Set the unit for displaying data point values in the pie chart, for example, "percent".
- Specify the period that you want to evaluate in the pie chart.

Optional settings

- Activate the pie chart caption in the "Parameters" tab.
- Set the caption text for the pie chart in the "Datapoints" tab.
  - Activate "Use" and enter your caption text.
  - Activate "Description" if you want to use the description of the data point for the caption text.
  - Activate "Name" if you want to use the name of the data point for the caption text.
- Set the bar colors in the "Datapoints" tab.
- Set the diagram and text styles in the "Parameters" tab.

See also

Configuring the time range (Page 649)

13.18.15 Line chart

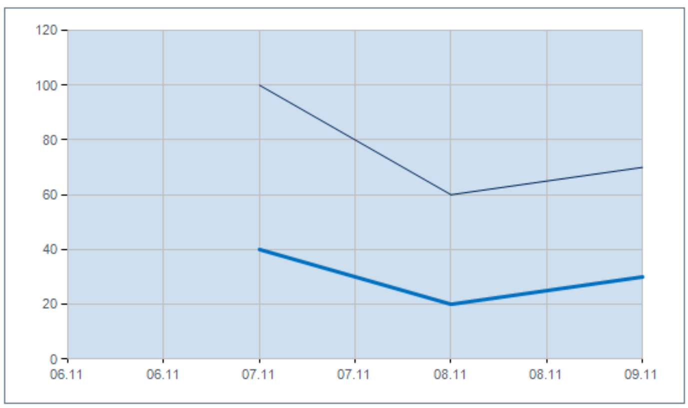
Function

Inserts a line chart into the Dashboard.

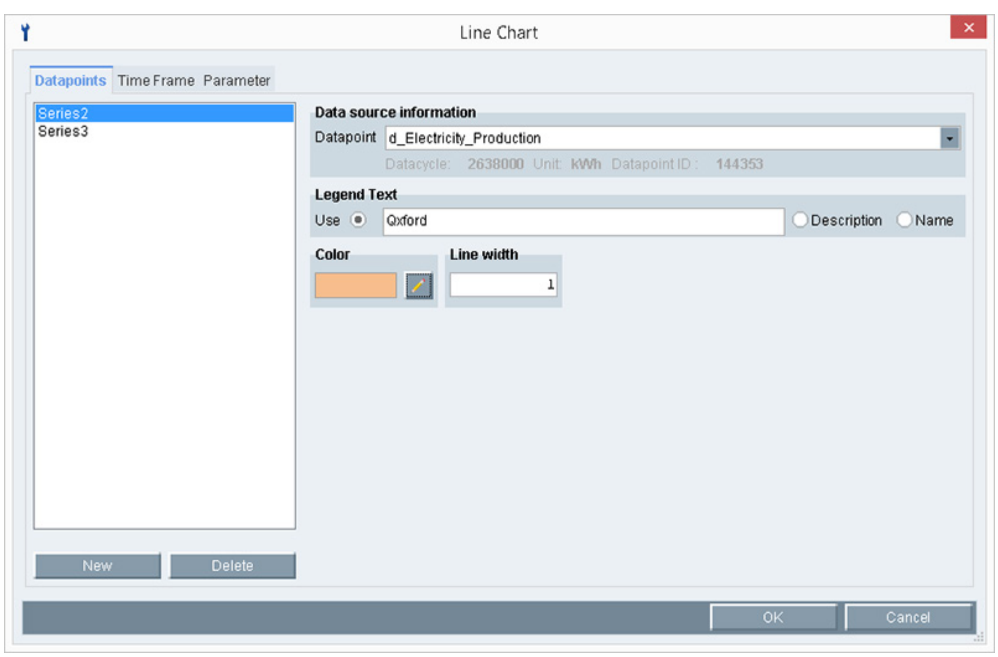
Usage

Use the "Line Chart" dashboard object to visualize the values of one or several measured value series in the form of a line chart.

Example



Necessary settings



- Select "New" to set the number of measured value series to display in the line chart.
- Assign a data point to each measured value series in the "Data source information" field.
- Set the time range to display in the bar chart.

Optional settings

- Activate the line chart caption in the "Parameters" tab.
- Set the caption text for the line chart in the "Datapoints" tab.
  - Activate "Use" and enter your caption text.
  - Activate "Description" if you want to use the description of the data point for the caption text.
  - Activate "Name" if you want to use the name of the data point for the caption text.
- Set the line colors and display width in the "Datapoints" tab.
- Set the diagram and text styles in the "Parameters" tab.

See also

Configuring the time range (Page 649)

13.18.16 Gauge

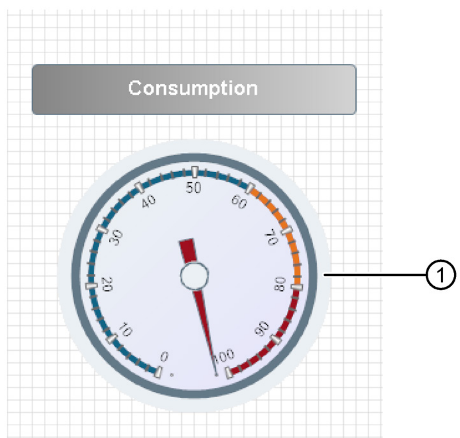
Function

Inserts a display instrument into the Dashboard to visualize the status of data point values.

Usage

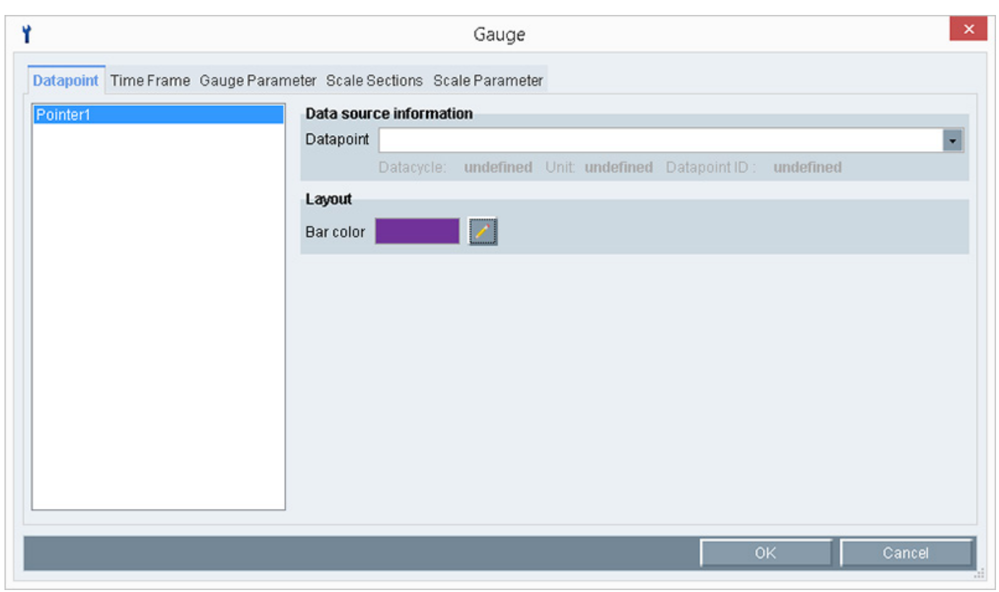
Use the "Gauge" dashboard object to visualize the sum of the measured value series for the defined time period. Alternatively, you can also visualize the value of the last cycle.

Example



① Consumption status

Necessary settings



- Go to the "Data source information" field to select the data point that contains the values to be evaluated.
- Specify the period that you want to evaluate.

Optional settings

- Set the pointer color.
- Set the fill color and border style in the "Parameters" tab.
- Set the scale for the display instrument in the "Scale Parameter" section.
- Set the scale range in the "Scale Sections" section.

See also

Configuring the time range (Page 649)

13.18.17 Panel switch

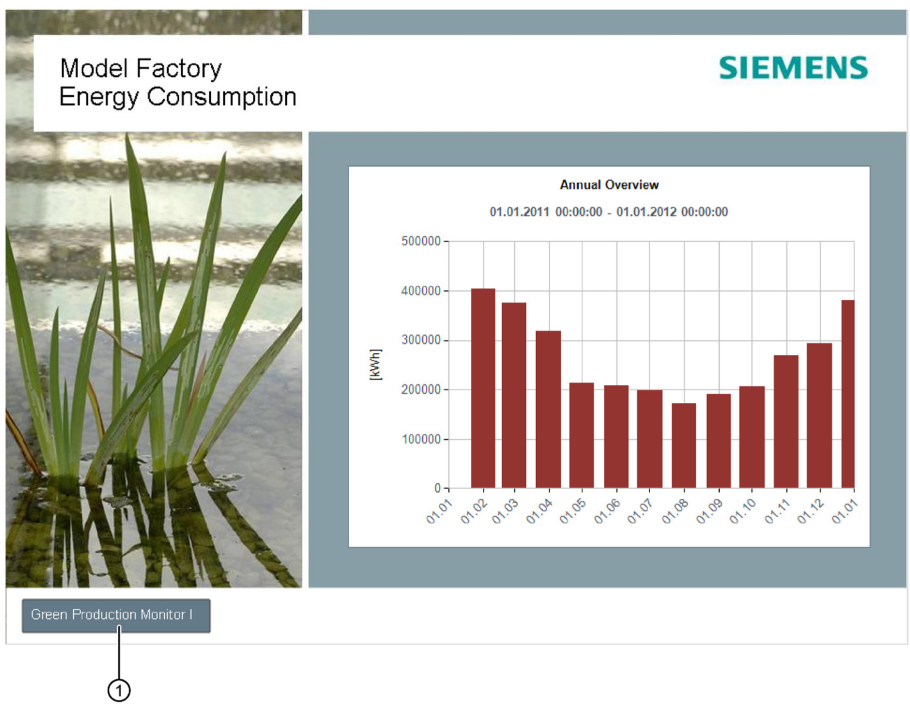
Function

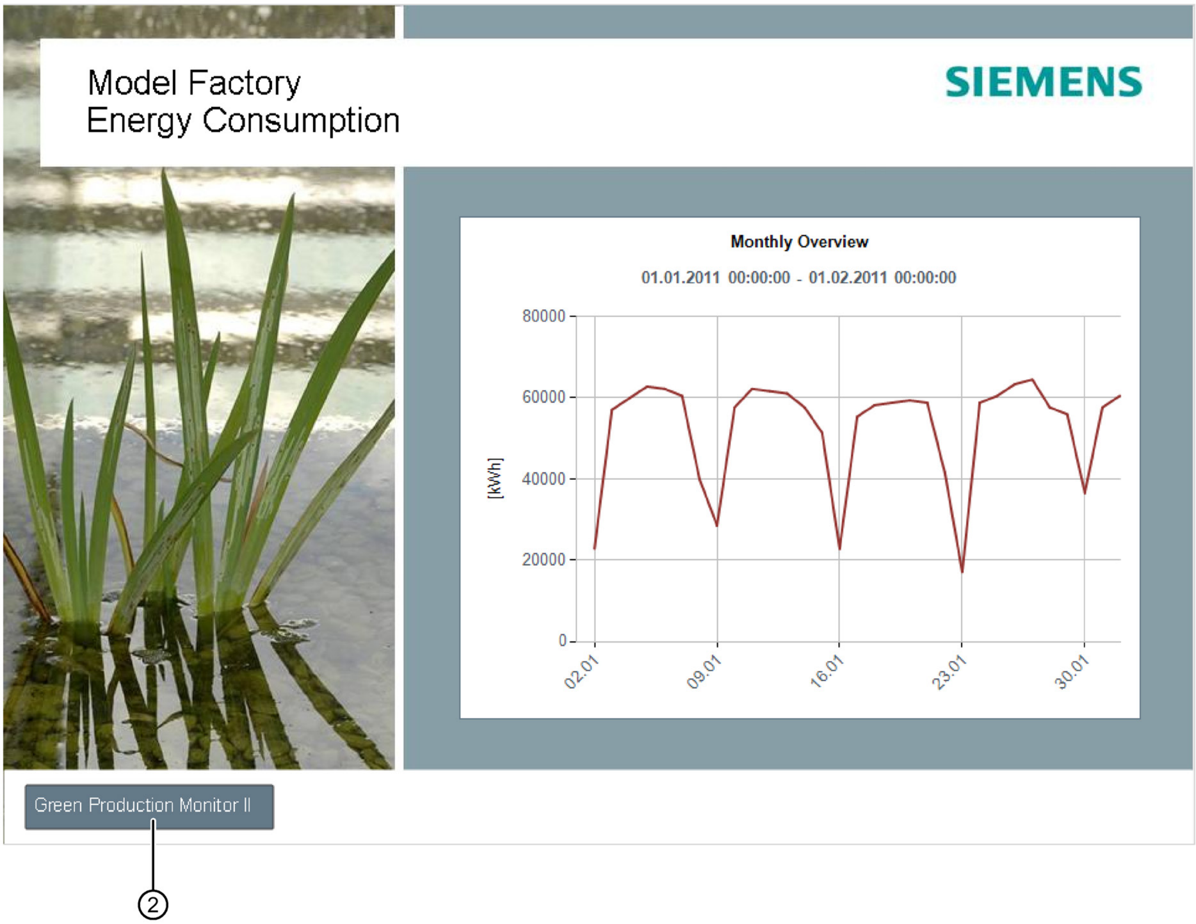
Inserts a button into the Dashboard that you can use to switch to another Dashboard .

Usage

Use the "Panel switch" dashboard object to distribute selected data to several dashboards. Use the new button to switch between these dashboards.

Example

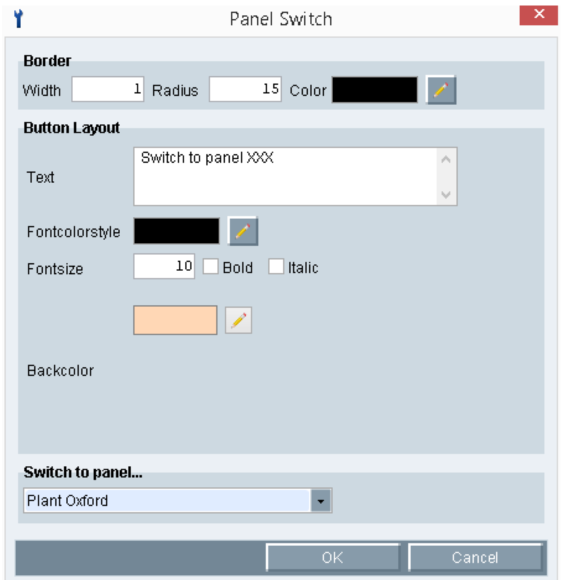




① Dashboard 1: Represents the annual consumption of a company in kWh. The "Green Production Monitor" button returns you to dashboard 2 to show the monthly consumption.

② Dashboard 2: The "Green Production Monitor II" button returns you to dashboard 1.

Necessary settings



- At "Switch to...", select the Dashboard to which you want to switch using this button.
- Enter a caption text for the button in the "Alignment" field.

Optional settings

- Set the border and text styles.

13.18.18 Data table

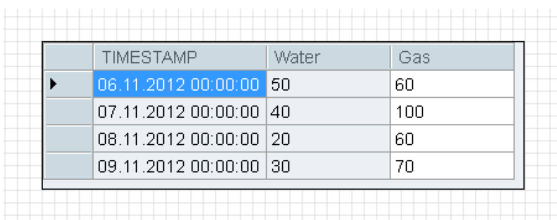
Function

Inserts a table object into the Dashboard to visualize the values of one or several data points.

Usage

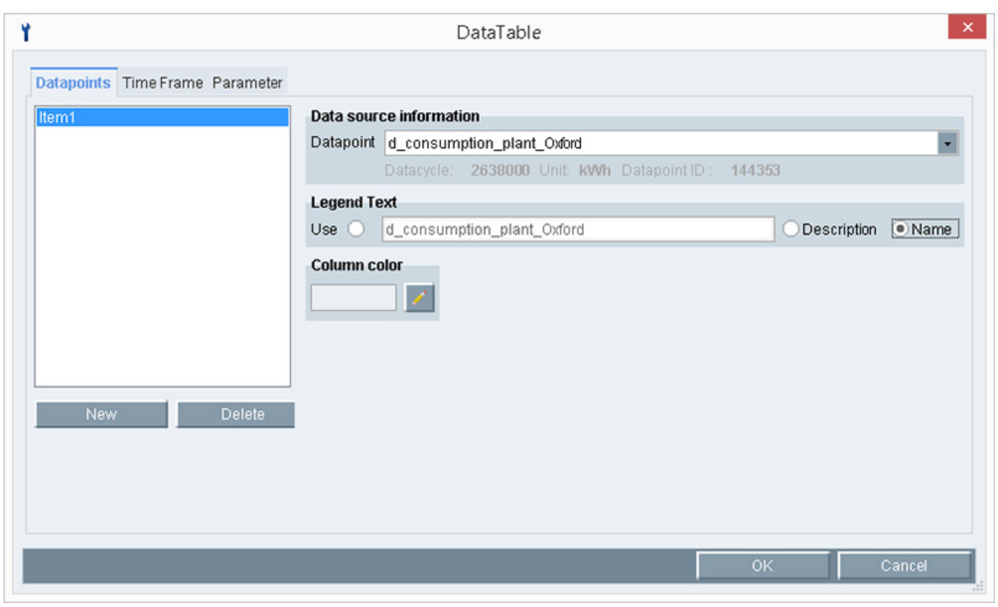
Use the "Data Table" dashboard object to display the values and time stamp of a measured value series of a specific time period in the form of a table.

Example



TIMESTAMP	Water	Gas
06.11.2012 00:00:00	50	60
07.11.2012 00:00:00	40	100
08.11.2012 00:00:00	20	60
09.11.2012 00:00:00	30	70

Necessary settings



- Select "New" to set the number of data points to display in the table.
- Assign a data point to each entry in the "Data source information" field.
- Specify the period that you want to evaluate.

Optional settings

- Create the "Legend name".
  - Enter a text for the table header if you activate "Description".
  - The data point name is used for the table header if you activate "Name".
- Set the column color.
- Set the table style in the "Parameters" tab.

See also

Configuring the time range (Page 649)

13.18.19 Line for Sankey chart

Function

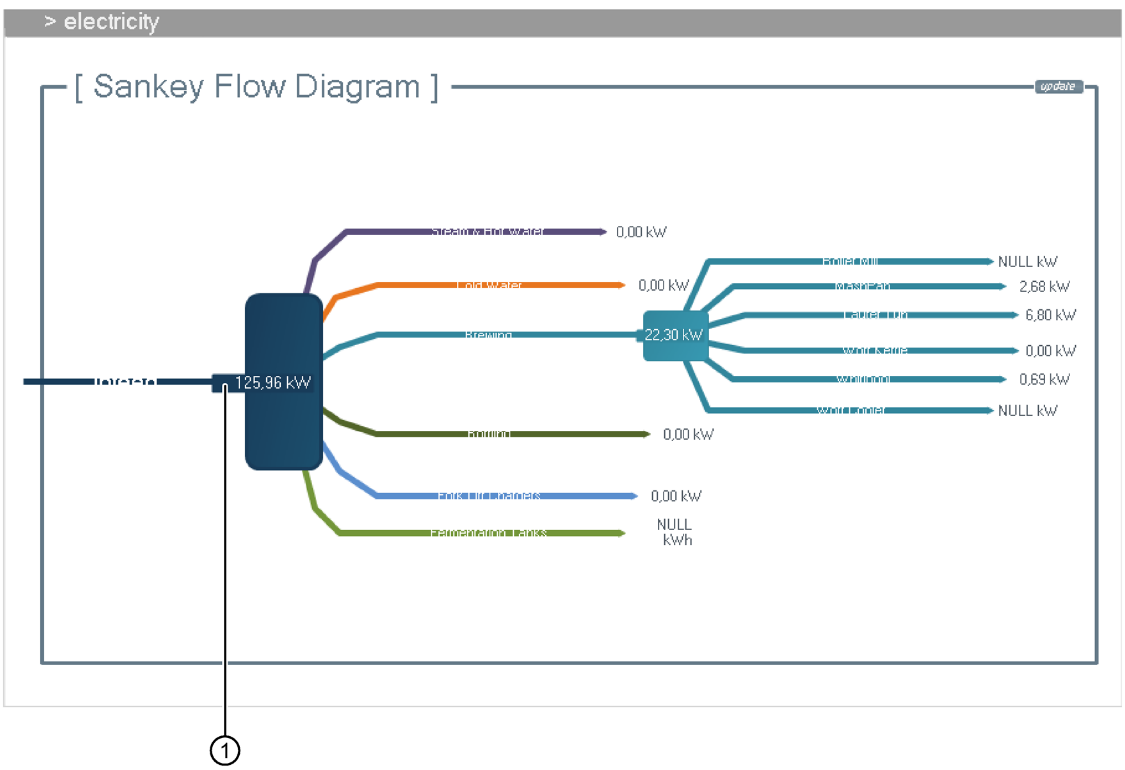
Inserts a line into the Sankey chart.

Usage

Use the "Line" dashboard object to visualize a quantity flow in the Sankey chart.

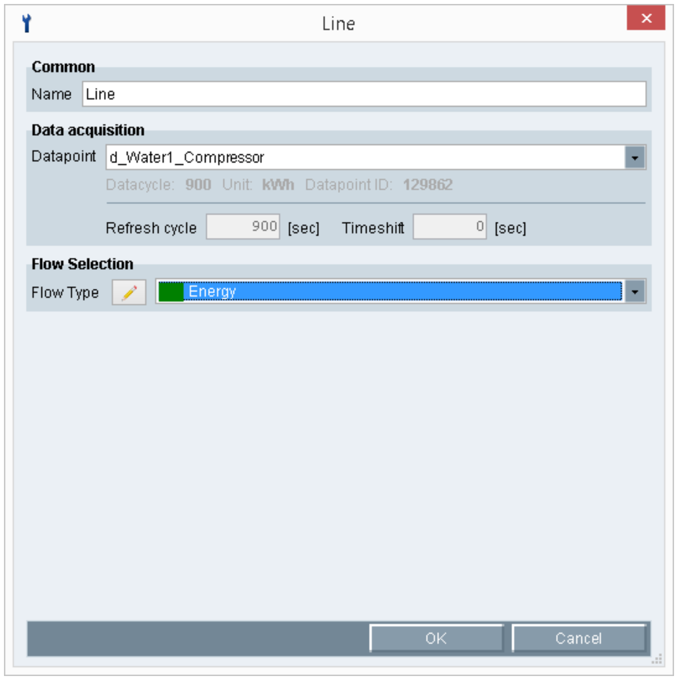
The line width is proportional to the quantity.

Example



① Power flow of a company

Necessary settings



- Name the dashboard object.
- Go to the "Data acquisition" field to select the data point that contains the values to be visualized by the line.
- Select the flow type for the line in the "Flow selection" field, for example, "Electricity".

Optional settings

- You can create a new flow type in the "Flow selection" field and set the scaling.
- Specify the update cycle for the Sankey objects by entering the selected value in the Dashboard configuration. This value is activated for all Sankey objects.

  The update cycle is set to five seconds by default.

  Note

  Specifying the update cycle

  You cannot set an update cycle that is shorter than five seconds.

See also

Configuring the dashboard (Page 648)

13.18.20 Polyline for Sankey chart

Function

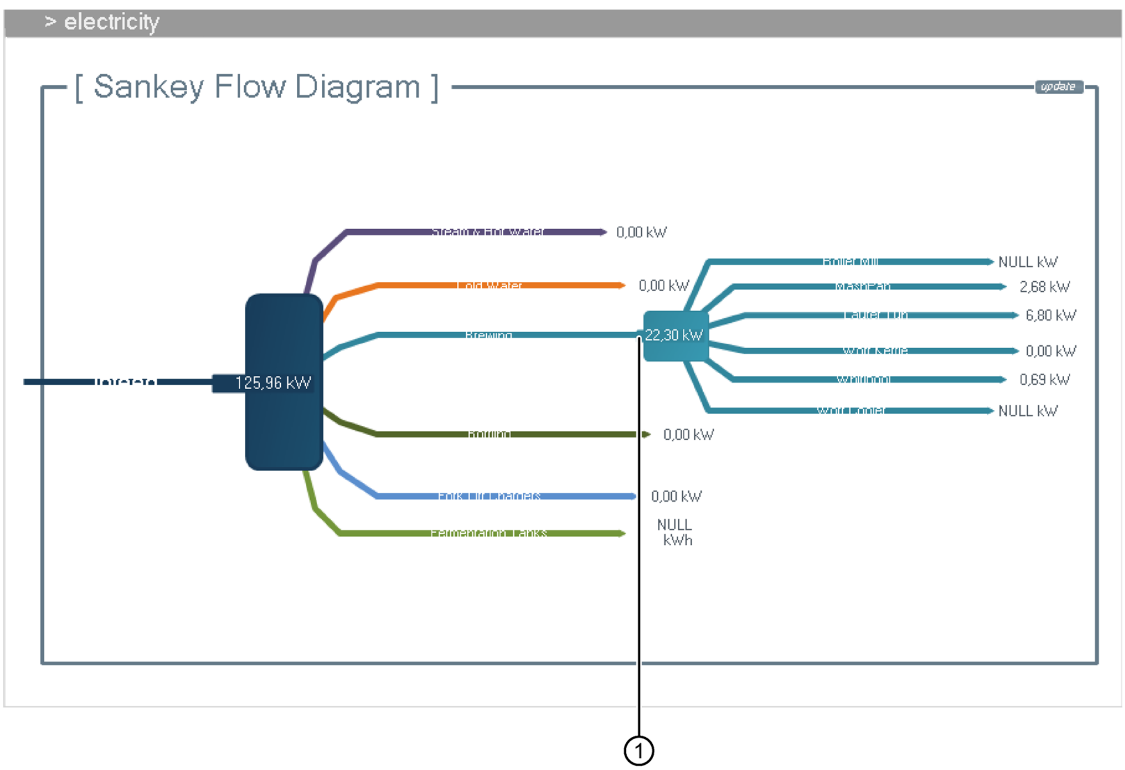
Inserts a polyline into the Sankey chart.

Usage

Use the "Polyline" dashboard object to visualize a quantity flow in the Sankey chart.

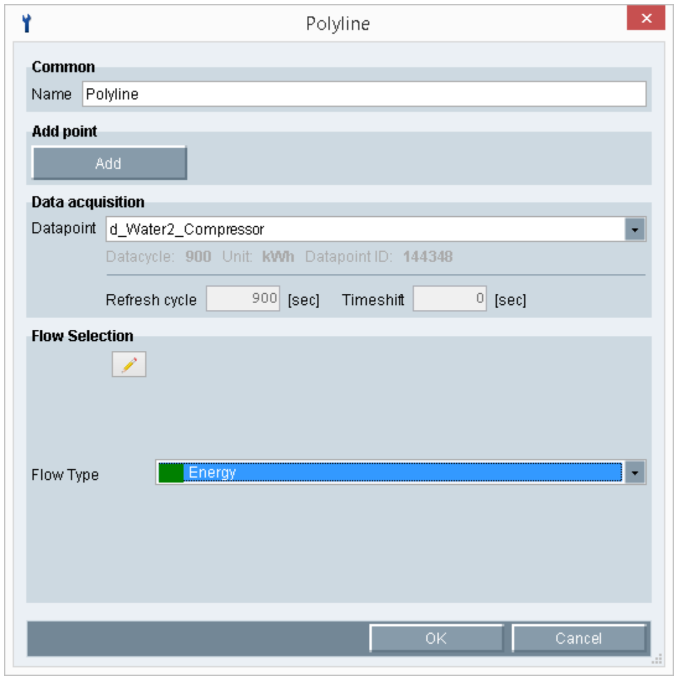
The line width is proportional to the quantity.

Example



① Power flow of a company

Necessary settings



- Name the dashboard object.
- Go to the "Data acquisition" field to select the data point that contains the values to be visualized by the line.
- Select the flow type for the line in the "Flow selection" field.

Optional settings

- You can create a new flow type in the "Flow selection" field and set the scaling.
- Add a new point if you want to add an extra line to the polyline.
- Specify the update cycle for the Sankey objects by entering the selected value in the Dashboard configuration. This value is activated for all Sankey objects.

  The update cycle is set to five seconds by default.

Note

Specifying the update cycle

You cannot set an update cycle that is shorter than five seconds.

See also

Configuring the dashboard (Page 648)

13.18.21 Flow info

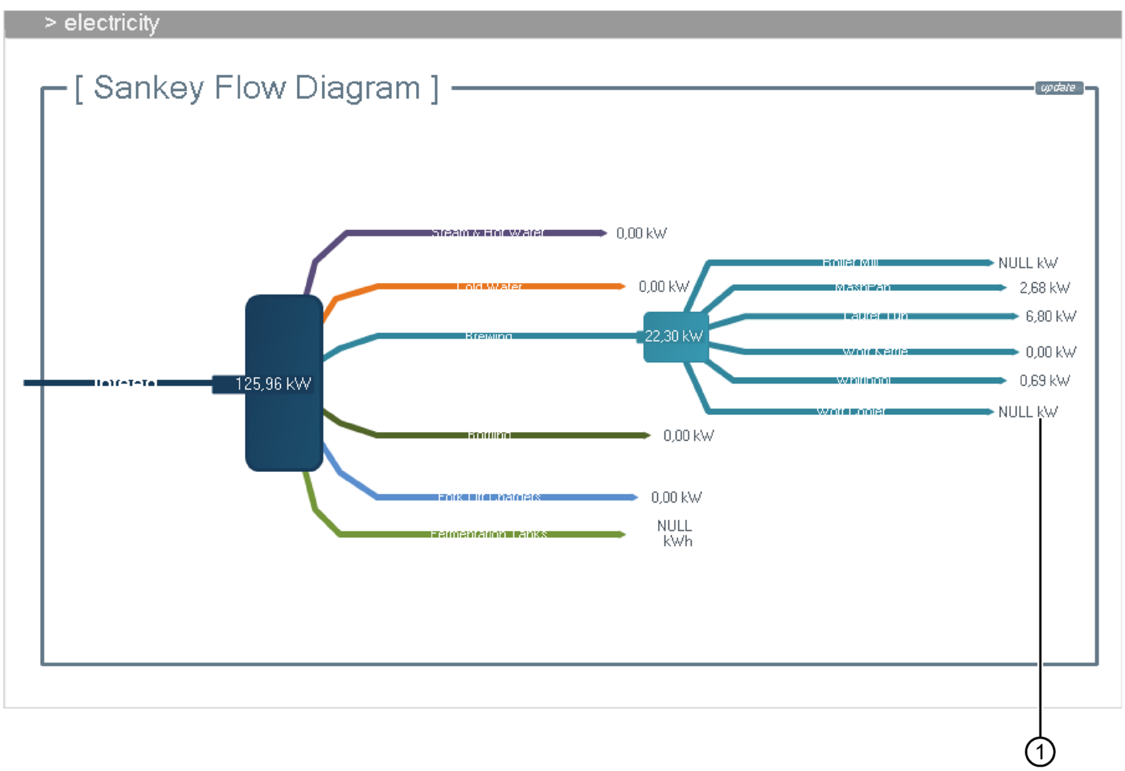
Function

Inserts a line or polyline into the Sankey chart.

Usage

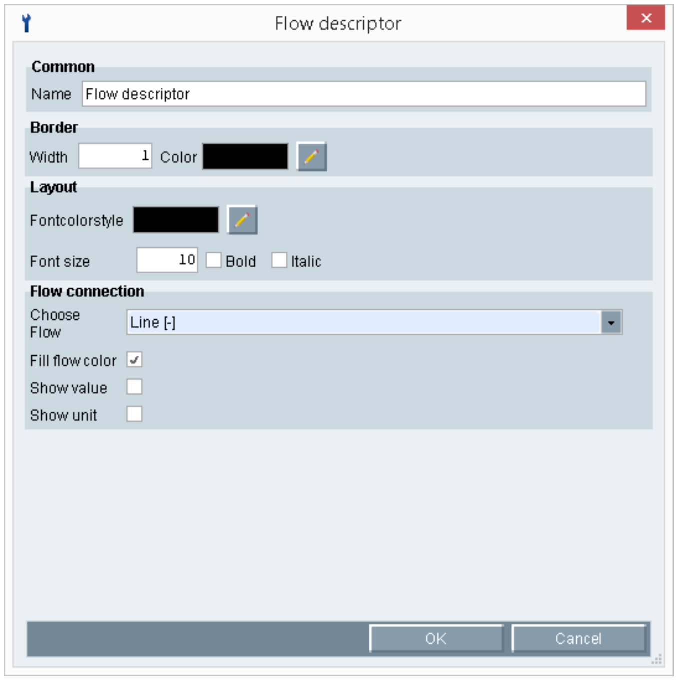
You can use the "Flow info" dashboard object to display the name and value of a line or polyline in the Sankey chart.

Example



① Flow quantity name

Necessary settings



- Name the dashboard object.
- Go to "Flow connections" and select the line you want to describe using the "Flow info" dashboard object.

Optional settings

- Set the border and text styles for the dashboard object.
- Activate the corresponding check box to display the value or unit in addition to the line name.

See also

Configuring the dashboard (Page 648)

13.18.22 Process

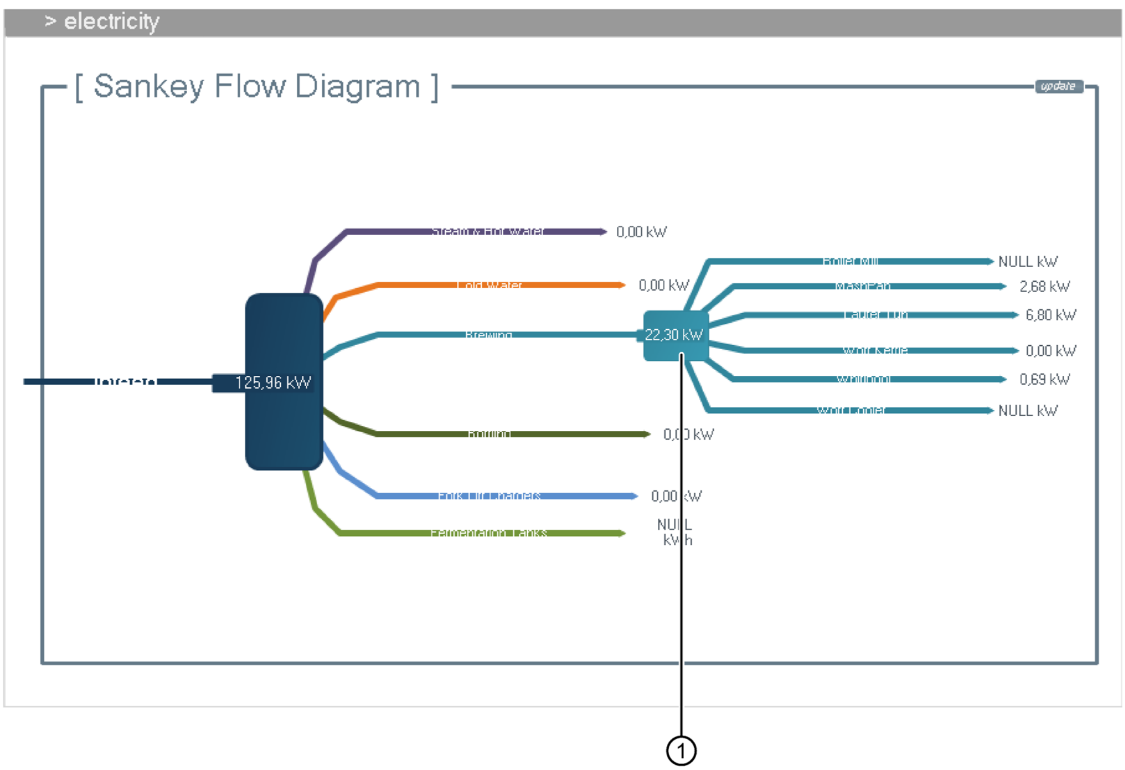
Function

Inserts a process step into the Sankey chart.

Usage

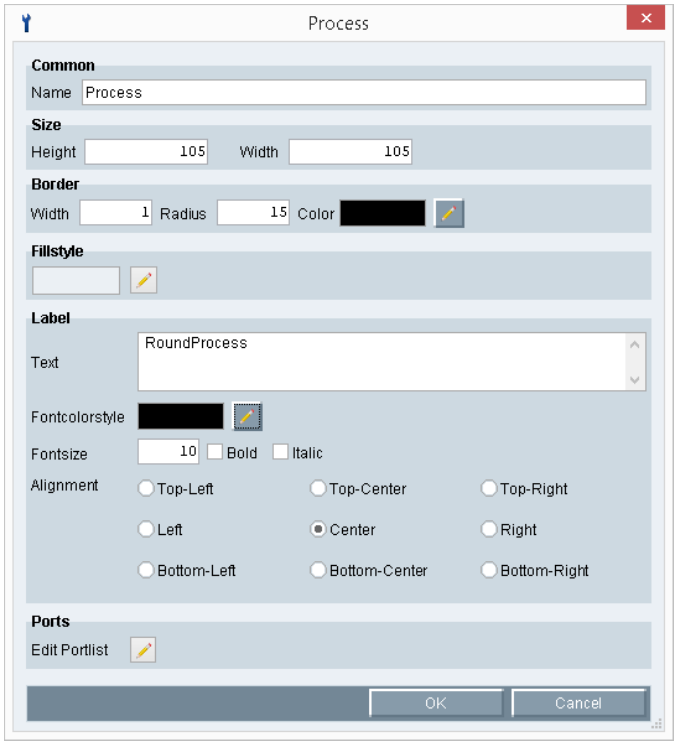
Use the "Process" dashboard object to visualize a process step for a quantity flow in the Sankey chart.

Example



① Process step "Transformer 10 kV" for the power and gas supply

Necessary settings



- Name the dashboard object.
- Enter a caption text for the dashboard object in the "Label" field.

Optional settings

- Set the size of the dashboard object.
- Set the border and text styles for the dashboard object.
- Set the fill color for the dashboard object.
- Adapt the ports list to define additional points for the line.

13.18.23 Process overview

Function

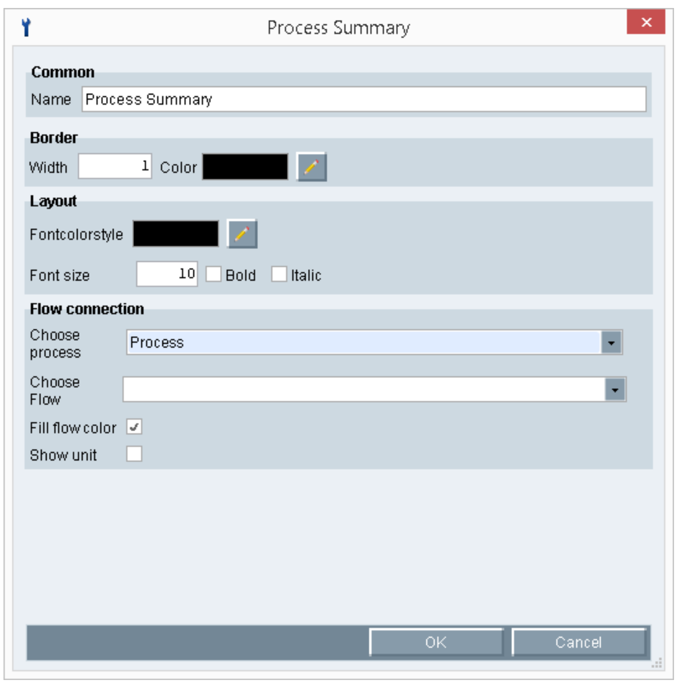
Calculates the difference between the inputs and outputs of a process step (delta calculation). The value "0" is the ideal result of this calculation. Other results indicate irregularities.

Example of two inputs and one output: Input 1 + Input 2 - Output = 0

Usage

Use the "Process overview" dashboard object to verify the result in the Sankey chart.

Necessary settings



- Name the dashboard object.
- Select the process step and the associated line at "Flow connection".

Optional settings

- Set the border and text styles for the dashboard object.
- Activate the corresponding check box to include the display of the unit or line color along with the process name.

Index

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

X