

APL Operator Guide V8.0

SIMATIC PCS 7

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SIMATIC PCS 7

APL Operator Guide V8.0

Operating Manual

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NOTICE
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Preface

Introduction

The "Advanced Process Library" (APL) is the standard PCS 7 library for implementing automation and process control solutions. The numerous functions of APL are represented on the user interface by block icons and the corresponding faceplates. These feature display, control and navigation elements that enable a clear presentation of data from a process tag.

By using vivid descriptions and instructions, the "APL Operator Guide" supports you in operating the APL block icons and faceplates. It offers information about the numerous displays, operator control functions and graphs, which you can use in your daily work.

Target group

The "APL Operator Guide" is aimed at people who operate and monitor APL block icons and faceplates.

Content

The "APL Operator Guide" contains information only for the operator control and monitoring of APL block icons and faceplates. You can find information on configuration with APL in the PCS 7 online help and the APL style guide.

The "APL Operator Guide" describes the main functions of the APL block icons and faceplates. The illustrations it contains should be regarded as examples. You need to continue to take project-specific characteristics into consideration.

What's new?

Overview of the new features

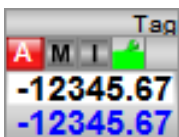
The following is an overview of the most important changes and amendments in the APL V8.0 Operator Guide compared to the APL V7.1 Operator Guide.

Block icons

APL V8.0 offers completely revised block icons for designing the process pictures. The APL V8.0 Operator Guide includes information on the following functional expansions:

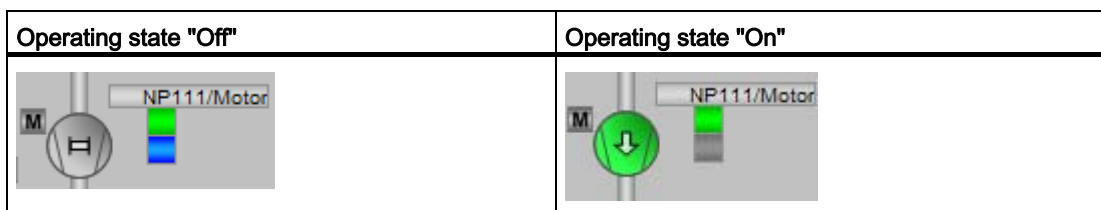
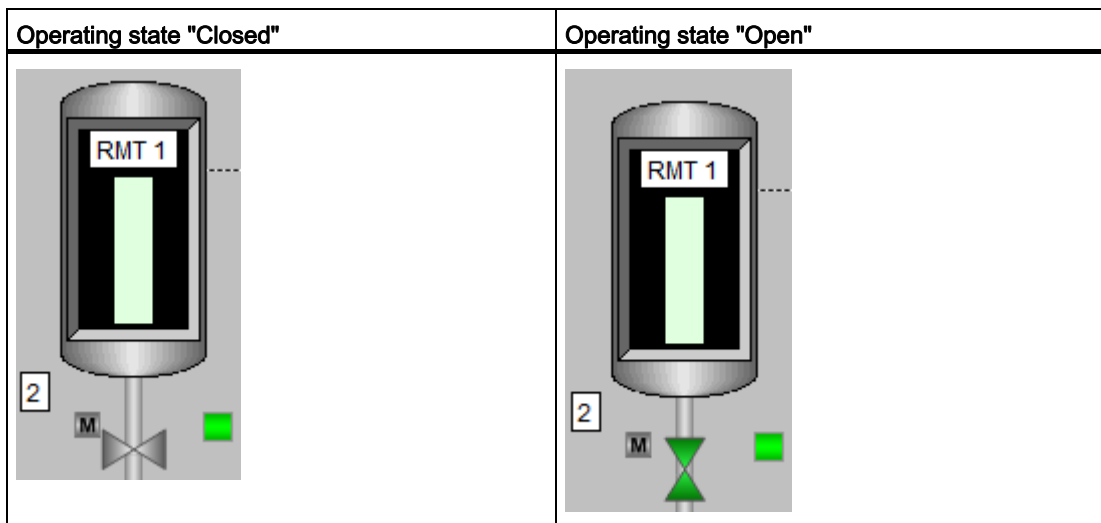
- Compact display of the block icons
 - Motors and valves: APL V8.0 offers block icons for motors and valves that do not include placeholders for status displays. The status displays are shown dynamically if they are active.
 - Controllers: As of APL V8.0, smaller block icons that do not display the manipulated variable are available for controllers.

The compact representation of the block icons provides better clarity in the process pictures and enables fast acquisition of relevant process information.

APL V7.1	APL V8.0
	
	

- Dynamic display of the operating states
 - Valves: As of APL V8.0, opening and closing of valves can be displayed in color as well as by a rotation of 90 degrees.
 - Motors: In operating mode "On", the exact flow direction can be indicated by an appropriate arrow in the status symbol of a motor icon as of APL V8.0.

The following figures show examples for the dynamic display of the operating states of valves and motors:



- Color change in the case of an active message

The respective number value is highlighted with the corresponding color as of APL V8.0 when alarms, warnings or tolerances are triggered. In this way, messages are better highlighted and can be identified more quickly in the process picture.



- Display of comments as tooltips

Comments on a process tag that were specified during configuration are displayed as tooltips in the process picture as of APL V8.0. For additional information refer to "Display of tooltips (Page 17)".

You can find more detailed information on block icons under:

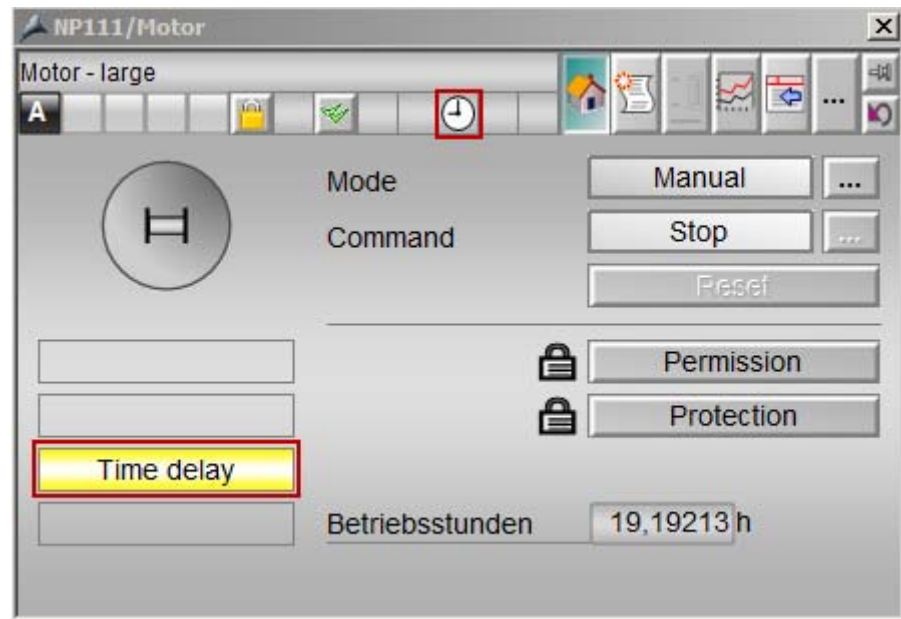
- Layout of the block icons (Page 15)
- Motors (Page 85)
- Valves (Page 87)
- Controller (PID) (Page 111)
- Interlocks (Page 137)
- Dosers (Page 151)
- Monitoring analog process tag (Page 183)
- Monitoring digital process tag (Page 192)
- Counter (Page 199)

Faceplates

New display and operator control functions are available in the faceplates as of APL V8.0. The APL V8.0 Operator Guide includes information on the following functions, among others:

- Display of effective delay times (for drives only)

If a delay time is in effect for a process tag, an icon and an information text are displayed in the standard view of the faceplate as of APL V8.0.



For additional information refer to "Display effective delay times (Page 82)".

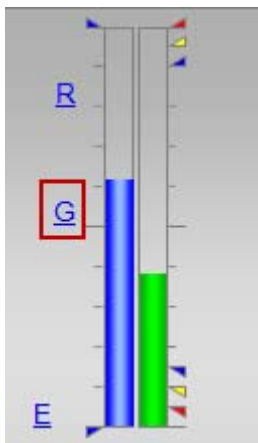
- New display of limits in the bar graph

The set limits are displayed by tilted arrows in the bar graph as of APL V8.0. This makes for easier and more accurate reading of limits. The following figures show examples for the display of limits:

APL V7.1	APL V8.0

- Display of the active gradient limit

The activated gradient limit for the ramp function "Gradient" in controllers is displayed by a "G" in the bar graph of the standard view.



- Display of the process value in the preview (monitoring analog process tags)

The current value can be read out at any time in the preview of a faceplate for monitoring analog process tags. The current process value is displayed even if simulation is activated in the faceplate.

For additional information refer to "Preview (Page 191)".

Counter for runtime determination

The APL V8.0 Operator Guide includes information on the block icons and faceplates of the counters for runtime determination ("Counter (Page 199)").

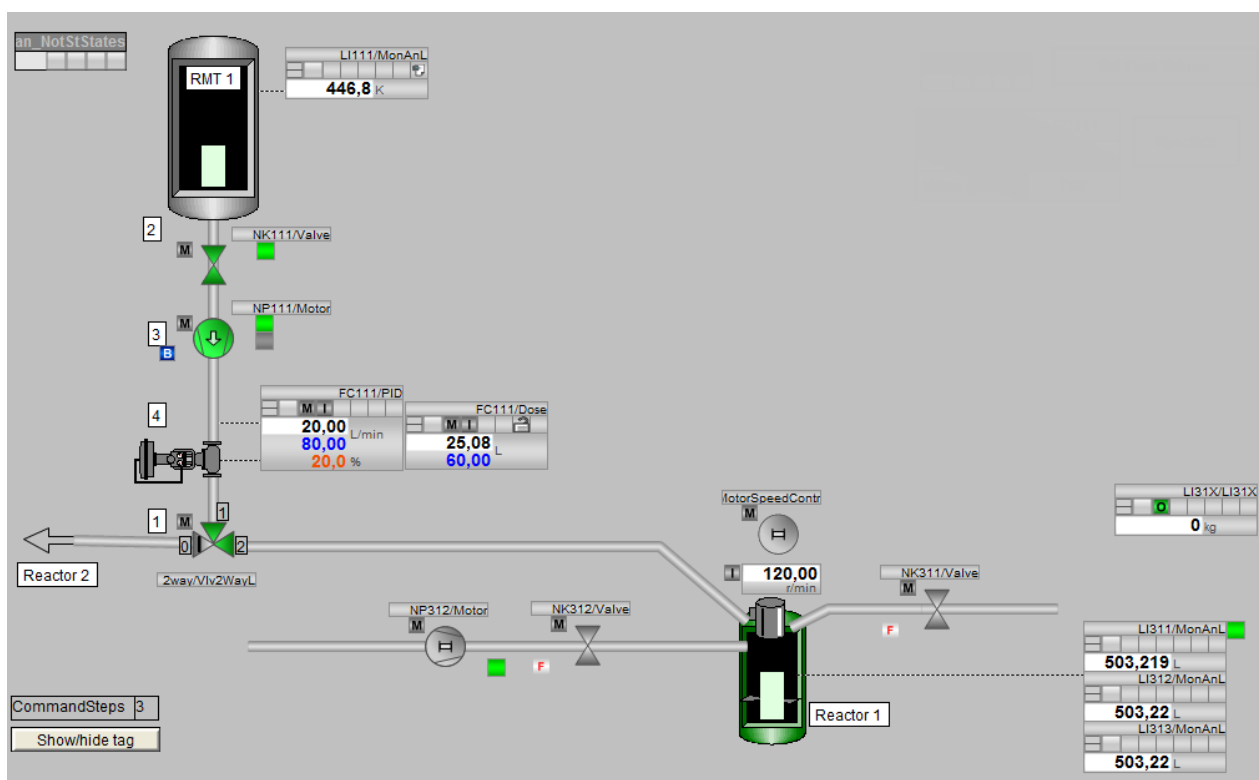
Block icons

3.1 Layout of the block icons

APL block icons

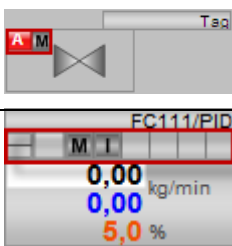
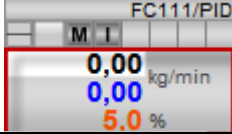
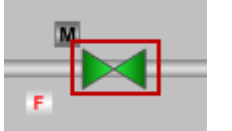
The most important information about the configured process tags are summarized in the block icons and graphically represented by dynamic displays. The APL block icons are operable and can contain a variety of information depending on the type of process tag. The associated faceplates are opened via the block icons.

The following figure shows examples of APL block icons in a process picture:



Display area

The APL block icons can include the following display areas:

Icons	
	Instance name (Page 17)
	
	Status displays (Page 18) - Alarms, warnings, tolerances, and messages (Page 18) - Operating modes (Page 20) - Setpoint specification (Page 21) - Signal status (Page 22) - Tracking and forcing of values and bypasses (Page 24) - Interlocks (Page 25)
	Analog value display (Page 26)
	Status display (Page 30)

Operation via the block icon

You can use the block icon to operate the following components if the corresponding operator permission is available:

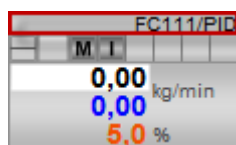
- Operating state (Page 30)
- Operating mode (Page 20)
- Analog values (Page 26)

The operation is performed in an operating window. For additional information refer to "Operating window (Page 59)".

3.2 Displays and operator controls

3.2.1 Display the instance name

Instance name



This area of the block icon shows the name of the associated instance in the program. Whether or not the instance name appears in the block icon, depends on the type of configured block icon. The following options are available to display the instance name:

- The instance name always appears in the block icon.
- The instance name can be displayed or hidden dynamically in the block icon.

Displaying and hiding an instance name for a block icon

To display the instance name in a block icon, follow these steps:

1. Hold down the Shift key.
2. Left click the block icon.

The instance name is displayed and remains visible as long as the current process picture is visible.

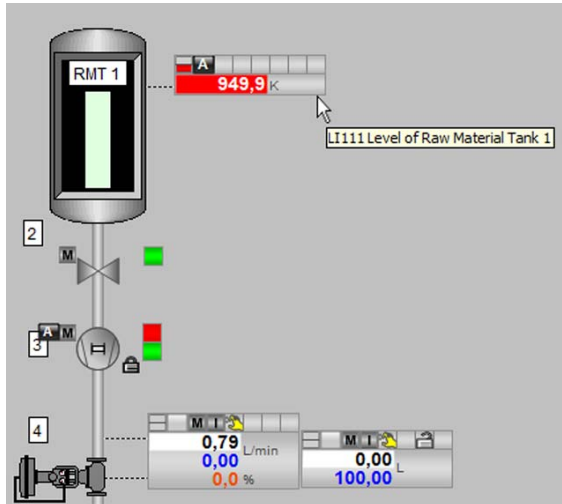
3. To hide the instance name again, repeat steps 1 and 2.

3.2.2 Display of tooltips

Display of comments in the process picture

Comments on the respective process tag are displayed as tooltips when you hover the cursor briefly over a block icon. These comments are defined during configuration and cannot be edited in the operator station (OS).

The following figure shows an example of how comments are displayed as tooltips in the process picture:



3.2.3 Status displays

3.2.3.1 Alarms, warnings, tolerances, and messages

Meaning of the icons



This display informs you of the following events:

- Alarms
- Warnings
- Tolerances
- Faults
- Operator prompts

The following table shows the icons of the events and their meaning:

Icon	Meaning
	The messages are not output because they are suppressed.
	A fault has occurred.
	An alarm was triggered.
	An alarm for the high alarm limit was triggered.
	An alarm for the low alarm limit was triggered.
	A warning was triggered.
	A warning for the high alarm limit was triggered.
	A warning for the low alarm limit was triggered.
	A tolerance violation has occurred.
	A tolerance violation for the high tolerance limit was triggered.
	A tolerance violation for the low tolerance limit was triggered.
	Operator prompt
	Process state notification

You can find detailed information on the individual messages in the alarm view of the faceplate.

3.2.3.2 Operating modes

Meaning of the icons



This display informs you about the current operating mode. The following table shows the icons of the operating modes and their meaning:

Icon	Meaning
	Automatic mode In automatic mode, control is performed automatically by the program.
	Manual mode In manual mode, you can control the device manually and change the manipulated variable (output signal). The manipulated variable can be analog or binary.
	Program (controller) In the program mode, the controller can be controlled by applications running on a PC as an OPC client. This allows you to specify the manipulated variables and setpoints externally.
	Local mode This operating mode is used for motors, valves and dosing units. The control is performed directly or via a control station that is located "locally".
	Out of service The "Out of service" operating mode is available to all devices that have an operating mode switchover and a direct connection to the process (with a connection to a process tag, for example). This operating mode is intended for purposes of maintenance and servicing (replacing the device, for example). All functions of the device are disabled in the "Out of service" operating mode. Incoming and outgoing messages are not generated in this case. Only one operating mode switchover is possible in this operating mode. In the "Out of service" operating mode, no other icons are displayed and no values are shown in the analog value display. An exception is the display of the active messages in the memo view and the display for the maintenance release. These continue to be displayed.

Switching operating modes

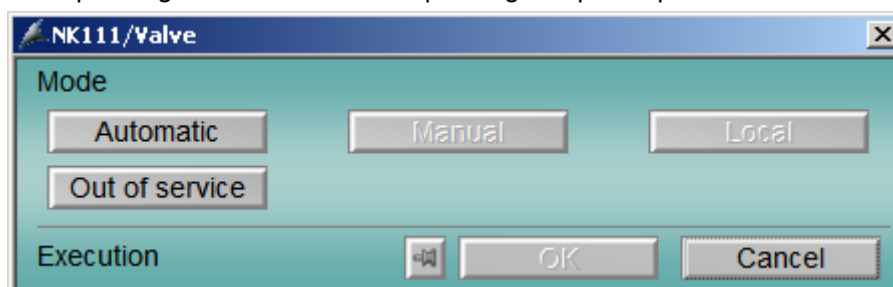
You can use the block icon to switch the operating mode if the appropriate operator permission is available.

Switch the operating mode as follows:

1. Right-click on the icon of the operating mode.



The operating window of the corresponding faceplate opens.



2. Click on the button for the desired operating mode.
3. If acknowledgement is required, click "OK".

For additional information refer to "Auto-Hotspot".

See also

Operating window (Page 59)

3.2.3.3 Setpoint specification

Meaning of the icons



This display informs you about the current type of setpoint specification. The following table shows the icons and their meaning:

Icon	Meaning
	Setting the setpoint internally The setpoint is specified in the faceplate.
	External setpoint specification The setpoint is specified in the higher-level controller.

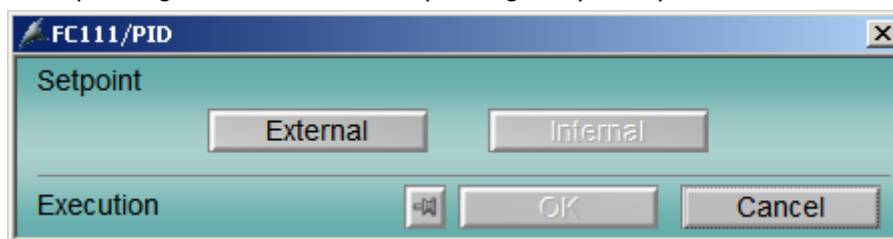
Switch setpoint specification

You can use the block icon to switch the setpoint specification if the appropriate operator permission is available.

1. Right-click on the icon of the setpoint specification.



The operating window of the corresponding faceplate opens.



2. Click the active button to switch the setpoint specification.
3. If acknowledgement is required, click "OK".

For additional information refer to "Operating window (Page 59)".

3.2.3.4 Display of the signal status

Signal status



This display informs you about the status and quality of the signals. It shows you the signal status with the highest priority, which depends on the type of process tag. The following table shows the icons of the signal status and their meaning:

Icon	Meaning
	Local function check / simulation This icon indicates that the process value is manipulated, regardless of the actual signal source or the logic that generates this signal. The simulation can be activated as follows: • Activation via the parameter view of the faceplate. In this case, an additional "Simulation" display appears in the standard view of the faceplate. • Activation via the block parameters in the engineering system • Activation via a channel block • Activation on the device
	Signal status is "Bad, device related" This icon indicates that the device is defective or has a fault and therefore supplies invalid values. The "Bad, device related" signal status is displayed for a wire break in the sensor, for example.
	Signal status is "Bad, process related" This icon indicates that the device supplies invalid values due to a process fault. A process fault occurs, for example, when the flow meter is working properly, but no fluid flows through the pipelines.
	Signal status is "Uncertain, device related" This icon indicates that the configured setpoints of the device have been violated and maintenance is required. This can occur, for example, when the device temperature is too high.
	Signal status is "Uncertain, process related" This icon shows deviations in the process. This can occur, for example, when the ambient temperature is too high.
	Maintenance required This icon indicates that maintenance of the device is due. This can occur, for example, when the maximum number of cycles of operation for a valve is reached.
No display	Signal status "Good" If none of the above icons are displayed, the device is working properly from a technical point of view and from the view of the process.

3.2.3.5 Tracking and forcing of values and bypasses

Meaning of the icons



This display informs you about the forcing of operating states, as well as about tracking and bypassing of values. The following table shows the icons and their meaning:

Icon	Meaning
	At least one value has been forced. This display appears when operating states are forced regardless of the currently pending control. Examples are: • Forced tracking for closed-loop controllers and control values • Starting and shutting down motors • Opening and closing of valves
	Tracking of manipulated variable or setpoints. This display appears when values are tracked. Tracking values allows the bumpless switchover of closed-loop controllers in automatic mode.
	A bypass is in effect. This display can appear under the following conditions: • At least one value is bypassed with interlocks. In this case, a process signal is excluded from the processing of the logic operation and is no longer taken into consideration. • The interlock was revoked by simulation of the connected signal. This reaction is handled as bypassing the interlock.

3.2.3.6 Interlocks

Meaning of the icons



This display informs you about pending interlocks of the drive. The following table shows the interlock icons and their meaning:

Icon	Meaning
	The drive has no interlock.
	The drive is interlocked.
	The interlock has been passivated.

You can find more detailed information on interlocks under:

- Display of the interlock status (Page 76)
- Interlocks (Page 137)

3.2.3.7 Memo display

Display of a stored message



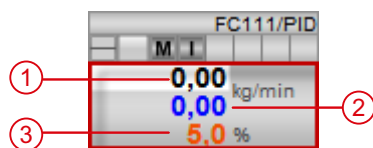
This display informs you of messages that are stored in the memo view of the faceplate and enabled. For additional information refer to "Opening views of a faceplate (Page 39)".

3.2.4 Analog value display (PID controller)

3.2.4.1 Layout and functions

Analog value display

This area of the block icons shows the following additional information:

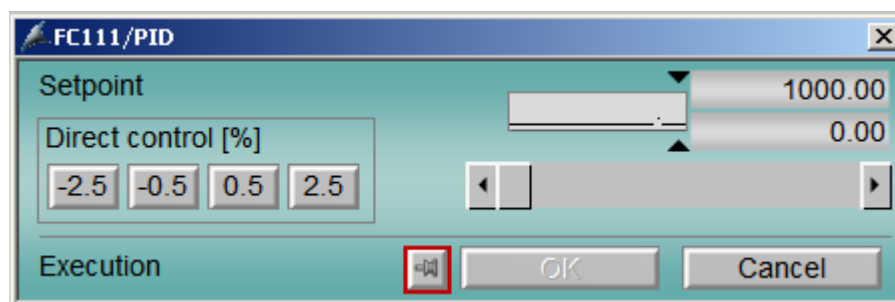


1. Process value
2. Setpoint
3. Manipulated variable

You can use the analog display of the block icon to open the operating window of the associated faceplate and manipulate the values as follows:

- Simulate process value (Page 27)
- Change setpoint (Page 28)
- Change manipulated variable (Page 29)

The operating window is closed each time a value is applied. If you want to perform several successive actions in the operating window, you can keep the operating window open by pressing the "Do not close operating range" button:



3.2.4.2 Simulate process value

Introduction

You can use the block icon to open the associated operating window of the faceplate and enter values in it for process simulation.

Requirement

- Simulation is enabled. This is indicated by the display of signal status in the status bar of the block icon:



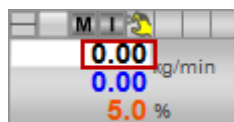
- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

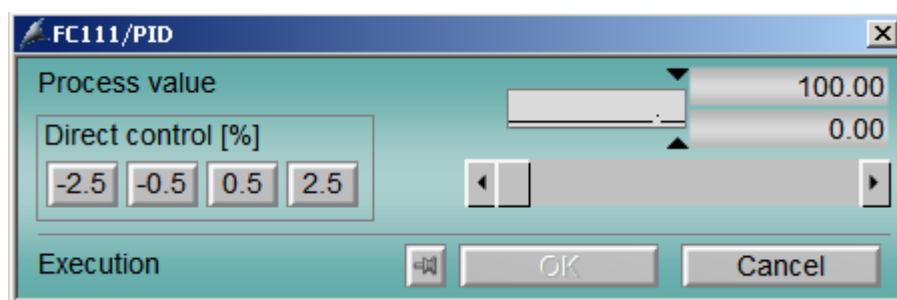
To enter a simulation value, follow these steps:

1. Right-click on the display of the process value.



The operating window of the corresponding faceplate opens.

2. Enter a value for the process simulation.



You can find additional information on changing values in the operating window under "Change values (Page 58)".

3. If acknowledgement is required, click "OK".

For additional information refer to "Operating window (Page 59)".

3.2.4.3 Change setpoint

Introduction

You can use the block icon to open the operating window of the associated faceplate and enter a new setpoint.

Requirements

- The setpoint is specified internally. This is indicated by the display in the status bar of the block icon:



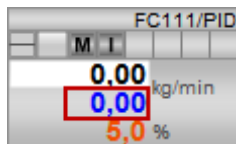
- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

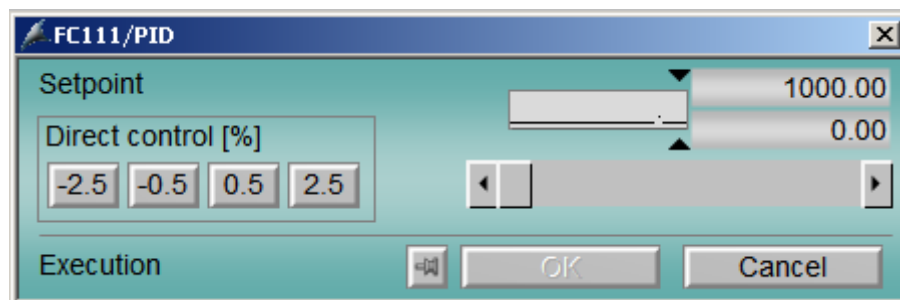
To change the setpoint, follow these steps:

- Right-click on the display of the setpoint.



The operating window of the corresponding faceplate opens.

- Change the setpoint.



You can find additional information on changing values in the operating window under "Change values (Page 58)".

- If acknowledgement is required, click "OK".

For additional information refer to "Operating window (Page 59)".

3.2.4.4 Change manipulated variable

Introduction

You can use the block icon to open the operating window of the associated faceplate and enter a manipulated variable.

Requirement

- The unit is in manual mode. This is indicated by the display in the status bar of the block icon:



- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

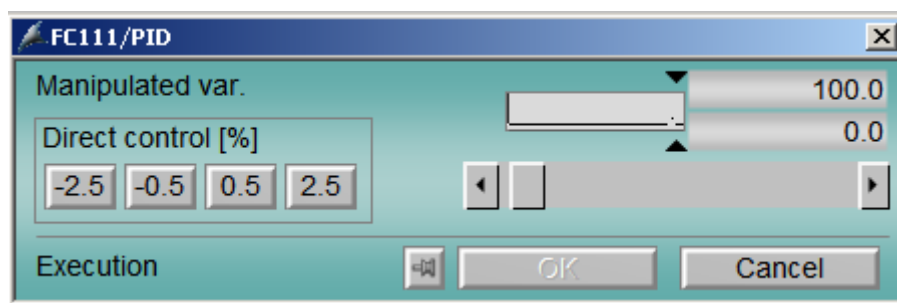
To change the manipulated variable, follow these steps:

- Right-click on the display of the manipulated variable.



The operating window of the corresponding faceplate opens.

- Change the manipulated variable.



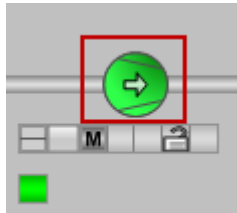
You can find additional information on changing values in the operating window under "Change values (Page 58)".

- If acknowledgement is required, click "OK".

For additional information refer to "Operating window (Page 59)".

3.2.5 Status display

Status display

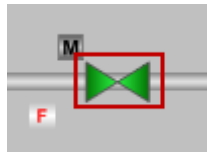


The operating status of a device can be indicated by an operable icon. You can use this icon to open the operating window of the associated faceplate and set the device to a new operating state. You can start a motor or open a valve, for example. This requires that you have the appropriate operator permissions.

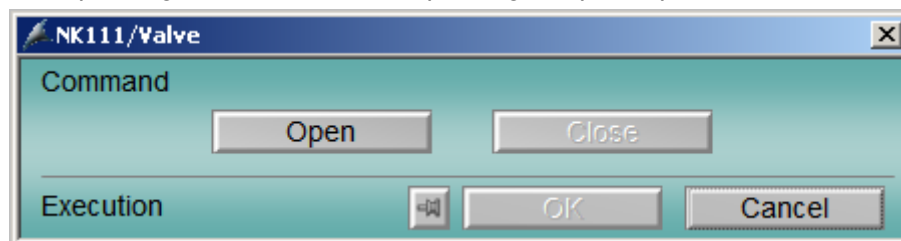
Switching the operating mode

To set a device to a new operating state, follow these steps:

1. Right-click on the icon of the status display.



The operating window of the corresponding faceplate opens.



2. Click on the button for the desired operating state.
3. If acknowledgement is required, click "OK".

Faceplates

4.1 Open faceplate

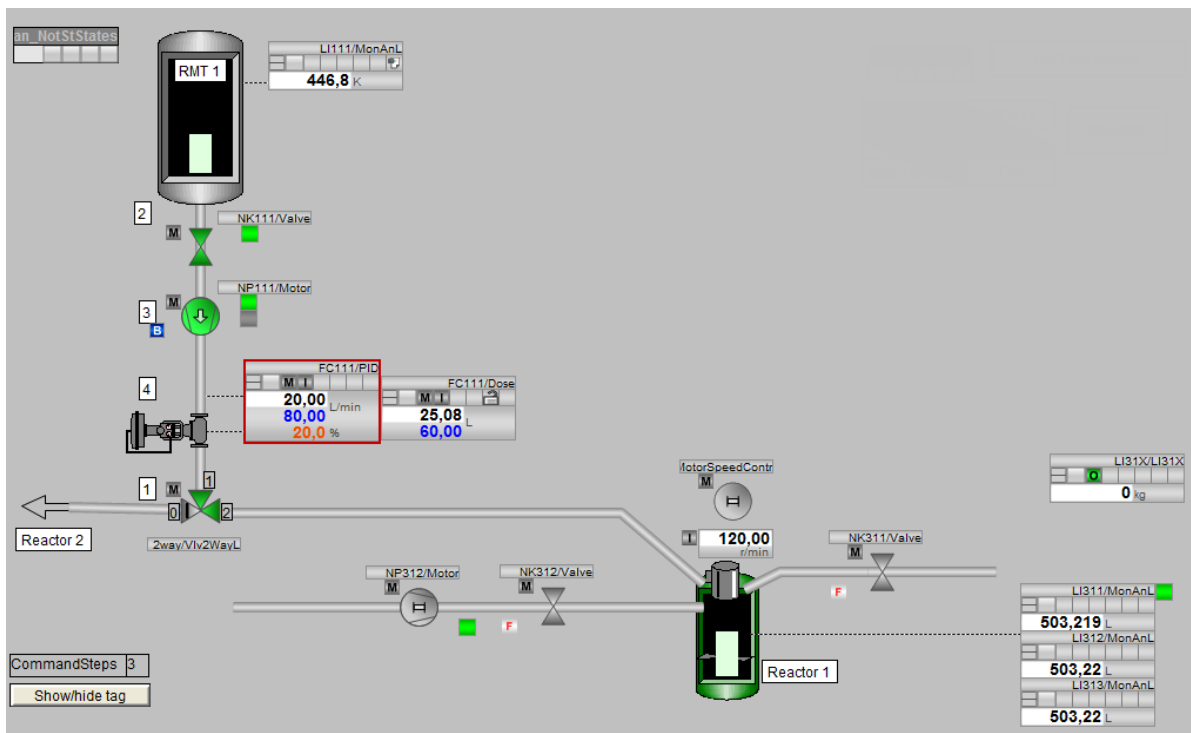
Introduction

APL faceplates are displayed in a separate window in process mode and are used to control and monitor process values, trends, messages and parameters.

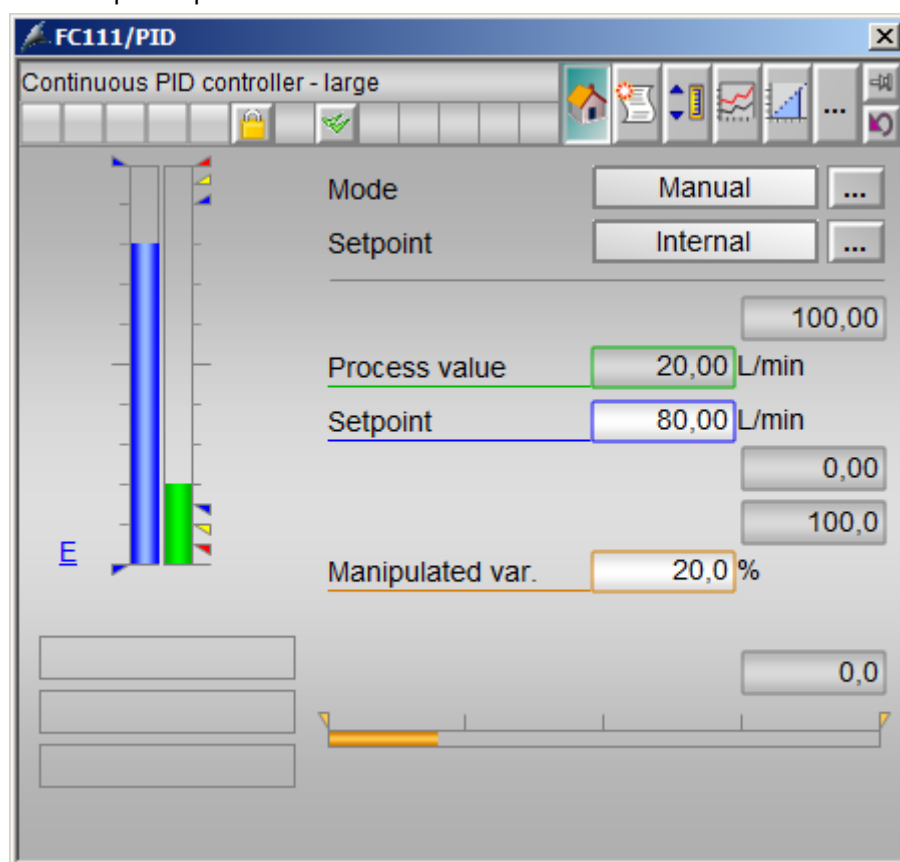
Procedure

To open an APL faceplate, follow these steps:

1. Open the desired process picture.
2. Left-click on the desired block icon.



The faceplate opens.



See also

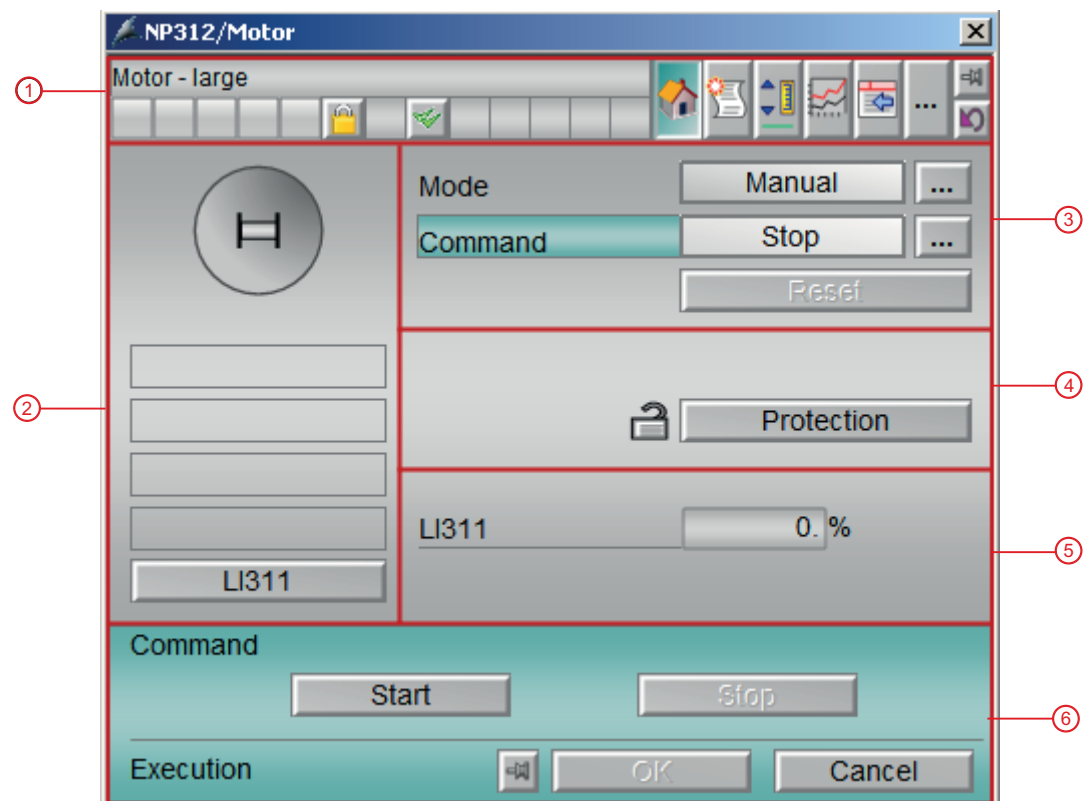
Operator permission and enable (Page 35)

4.2 Layout of faceplates

Layout and functions

In comparison to faceplates of the standard libraries, the APL faceplates offer advanced operator controls and displays that reflect the many APL functions. The areas and views in an faceplate vary depending on the type of process tag and the configuration.

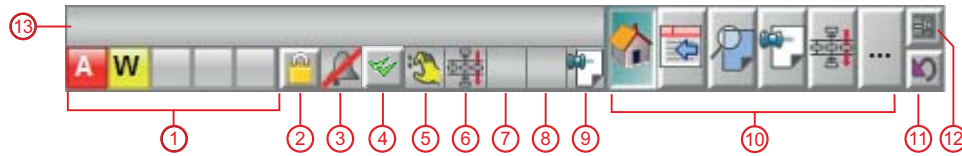
An APL faceplate can contain the following operator controls and displays:



1. Displays and operator controls
2. Status displays, additional information (Page 79), jump functions (Page 71)
3. Operating mode (Page 55) , operating state (Page 57) and setpoint specification (Page 63)
4. Interlocking functions (Page 76)
5. Auxiliary values (Page 81)
6. Operator input window (Page 59)

Displays and operator controls

An APL faceplate can contain the following displays and operator controls:



1. Group display (Page 74)
2. Locking or unlocking messages (Page 64)
3. Suppressing messages (Page 66)
4. Acknowledge messages (Page 67)
5. Signal status (Page 75)
6. Batch display (Page 81)
7. Display effective delay times (Page 82)
8. Release for maintenance (Page 69)
9. Memo display (Page 83)
10. Opening views of a faceplate (Page 39)
11. Switching to the block icon (Page 71)
12. Pinning the faceplate (Page 70)
13. Instance name of the block

Note

You can learn about additional operator controls in the descriptions of the individual devices.

4.3 Operating functions of APL faceplates

4.3.1 Operator permission and enable

4.3.1.1 Operator permission

Introduction

Various operator permissions can be assigned to one or more operators specific to the project. The operator permission also depends also on the operating mode and can be specifically assigned to individual process pictures.

The changes you are allowed to make depend on your operator permission and the enabled operation, for example, based on the process involved.

Operator permission level

The following operator permission levels are provided and can be assigned to the operator:

- 0: No process control, monitoring only

This operator permission allows the process to be monitored but not controlled.

- 1: Process control (for example, manual and automatic mode switchover, changing setpoints and manipulated variables)

This operator permission allows operation in the standard view of all blocks as well as input in the ramp and memos view. The "Out of service" mode cannot be controlled.

- 2: Higher process controlling (for example, changing limits, controller parameters, and monitoring times)

This operator control permission enables all operations in all views of all blocks, including operation in the "Out of service" operating mode.

Exception: The permissions of operator permission level 3.

- 3: Highest process controlling (simulate process values and maintenance release for process tag)

With this operator control permission, simulation can be switched on and off in the parameter view and the process tag for maintenance work can be released.

- 4: Extended operation 1 (user-specific operator permission)

This operator permission can be configured for specific projects for a user group. You specify the rights of the selected users during configuration.

- 5: Extended operation 2 (user-specific operator permission)

This operator permission can be configured for specific projects for another user group. You specify the rights of the selected users during configuration.

4.3.1.2 Local operator permission

Introduction

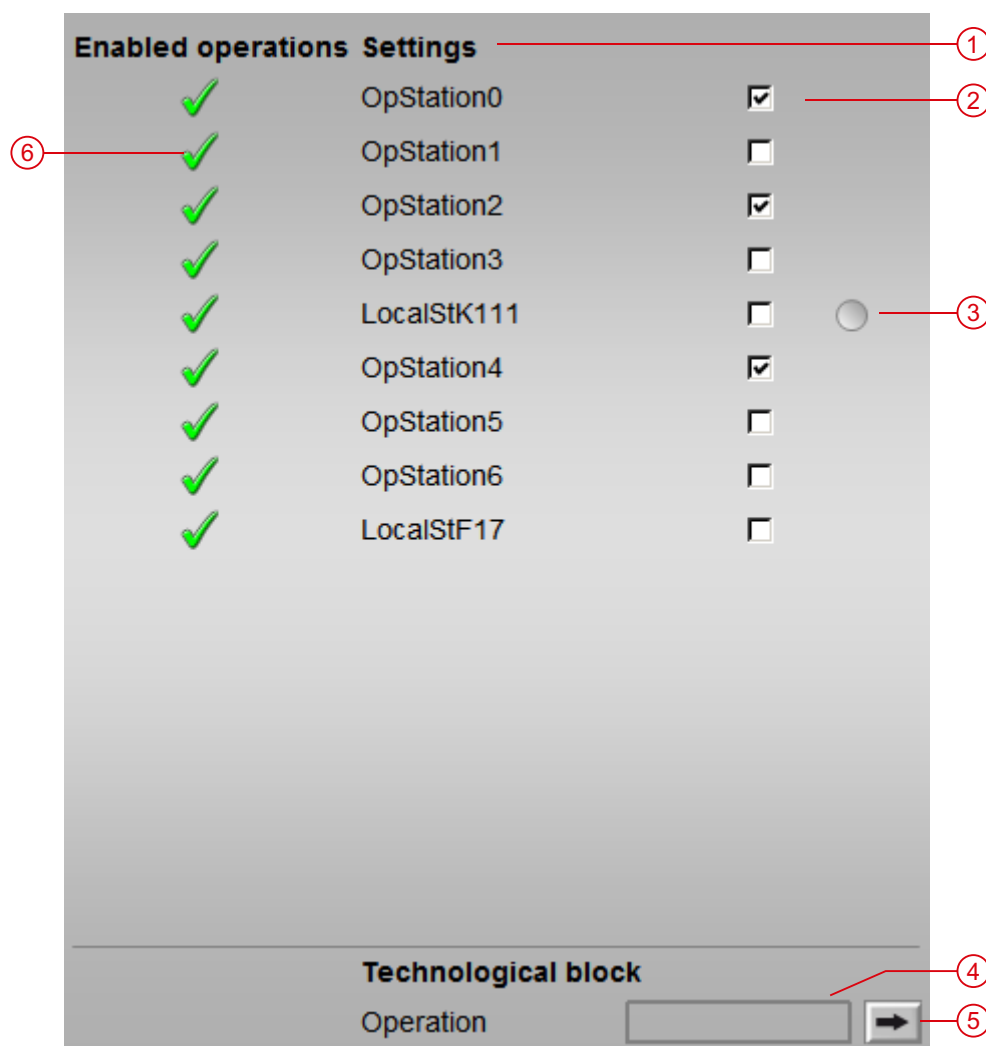
Local operator permission can be set for each specific instance; in other words, process tags can be enabled or disabled for use on an operator station independent of one another.

If local operator permission is lacking, operation of a faceplate on an operator station is usually disabled. When local operator permission is given, operator permission is determined from the operator permission levels and enabled operations.

Faceplate for assigning local operator permission

You can use the faceplate for assigning local operator permission to disable or enable process tags for one or more operator stations.

The following figure shows the standard view of the faceplate for assigning local operator permission:



1. Display text for the operator stations

The text displayed in this area is determined during configuration.

2. Disabling or enabling operation for operator stations

You can use the check boxes in this area to enable (checked) or disable (cleared) the respective operator stations.

3. Display for the current operator station

4. Display of the operability of a process tag on the current operator station

5. Opening the faceplate of the process tag

6. Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

The information displayed in the faceplate and control options depend on the configuration.

The faceplate also offers a memo view in addition to the standard view. For additional information refer to "Memo view (Page 52)".

4.3.1.3 Enabled operations

Introduction

Operation can be enabled for specific actions or values of the process tag. The enabled operation is graphically displayed in the faceplate.



Meaning of the icons

The following table shows the meaning of the icons in the "Enabled operations" area:

Icon	Meaning
	The operation is enabled, if the appropriate operator permissions are given.
	The operation is disabled due to the process.
	The operation is disabled due to the configured operator permissions.

When process messages for a limit are suppressed, the following icon is shown in the limit view of the respective faceplate:



4.3.2 Opening views of a faceplate

4.3.2.1 Overview of the views

Views of a faceplate



You can switch between various views in the faceplate. Depending on the configuration, the following views are available:

Icon	View
	Standard view This view shows the most important process information and allows changes to be made to process values, for example, switching the operating mode, forcing an operating state or the specification of a setpoint.
	Alarm view In this view, you can monitor and manage the messages that have been triggered by the associated device.
	Limit view In this view, you can monitor limits and change them based on the process. Several limit views are possible within a faceplate.
	Trend view This view enables you to display process values as in the form of curves, and collect, store and recall them.
	Ramp view In this view, you can affect the gradient limits of the setpoint and the ramp modes.
	Parameter view The parameter view allows you to monitor and change parameters values, as well as enable or disable simulation. Several parameter views are possible within a faceplate.
	Preview This view shows you which parameters you are allowed to operate in the entire faceplate.
	Memo view You can leave temporary messages for other OS operators in this view.
	Batch view This view shows you whether the device can be controlled using SIMATIC BATCH.

Icon	View
	Setpoint view In this view, you can monitor and change setpoints.
	Display additional views This button allows you to switch between the views of a faceplate.

More information about views

The functions available to the faceplates and their views differ depending on the type of device. You can find additional information on this in the following sections:

- General
 - Opening a block view (Page 40)
 - Alarm view (Page 44)
 - Trend view (Page 48)
 - Memo view (Page 52)
 - Batch view (Page 54)
- Device-specific
 - Motors and valves (Page 85)
 - Controller (PID) (Page 111)
 - Interlocks (Page 137)
 - Dosers (Page 151)
 - Monitoring a process tag (Page 183)

4.3.2.2 Opening views

Introduction

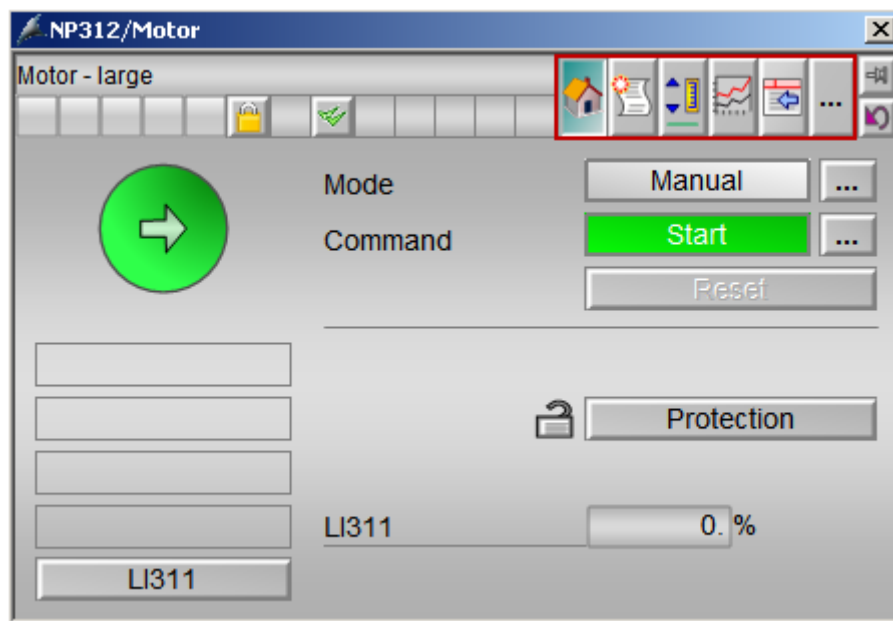
There are the two ways to open a new view:

- In the current window of the faceplate
- In a new window

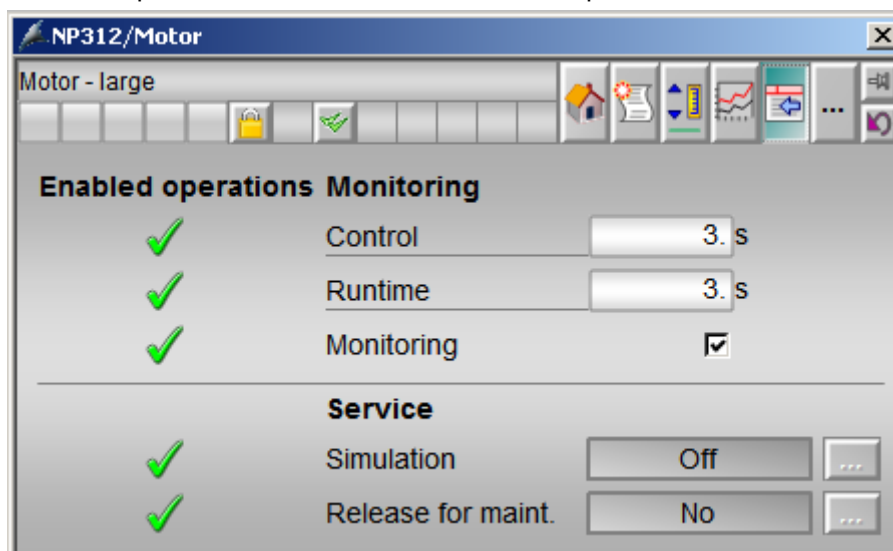
Opening views in the current window of the faceplate

To change the view in the current window of the faceplate, follow these steps:

1. Open the faceplate.
2. Left-click on the icon of the view you want to open.



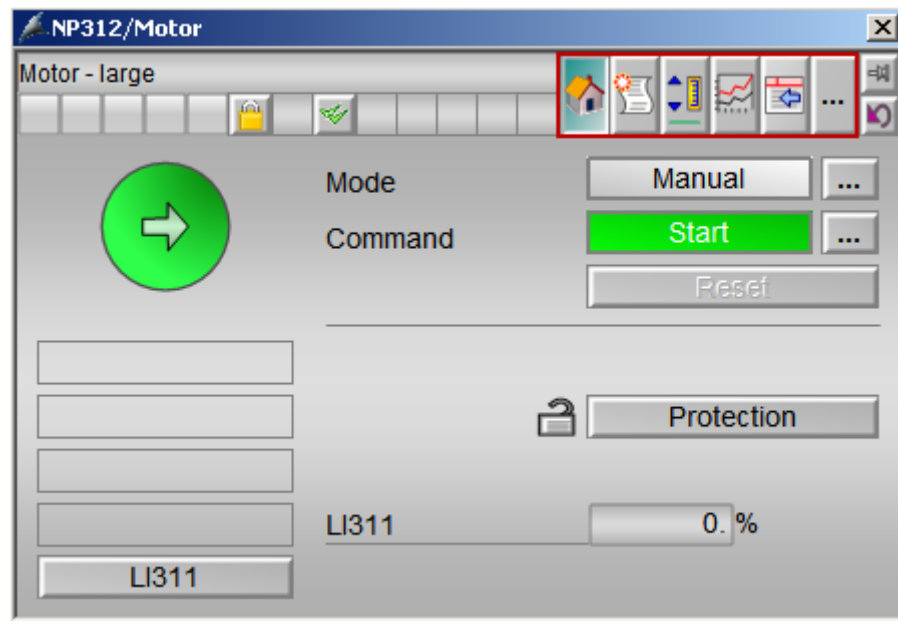
The view opens in the current window of the faceplate.



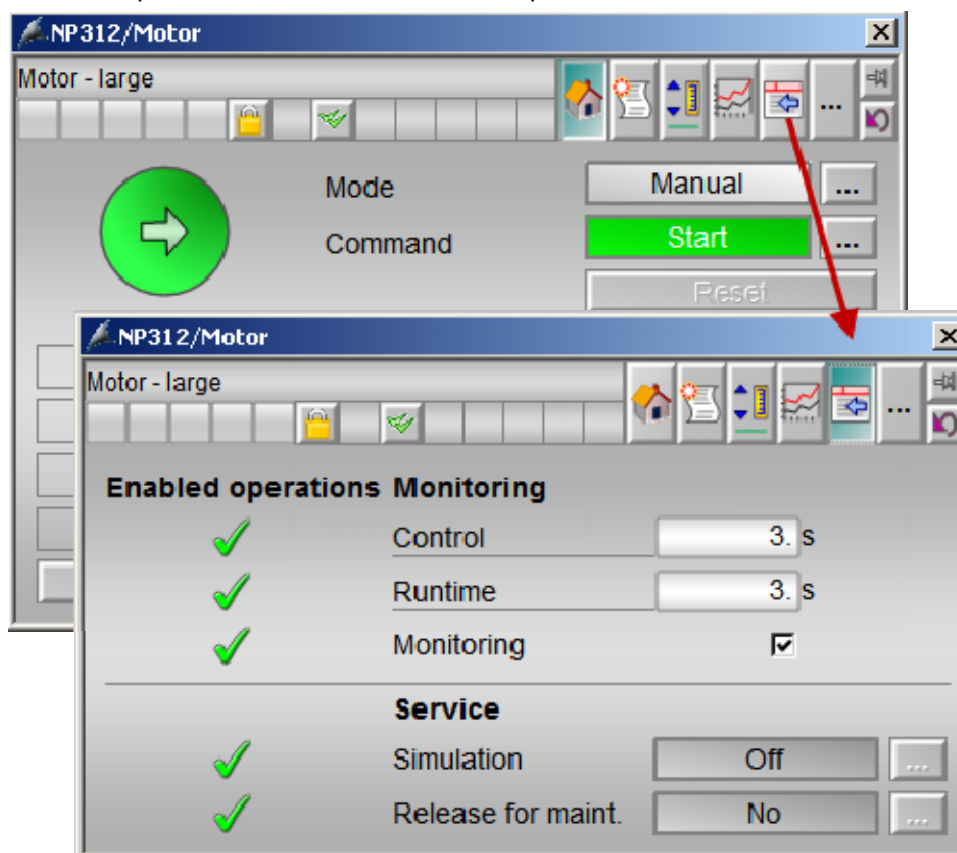
Opening views in a new window

To open a view of the faceplate in a separate window, follow these steps:

1. Open the faceplate.
2. Right-click on the icon of the view you want to open.



The view opens in a new window of the faceplate.



See also

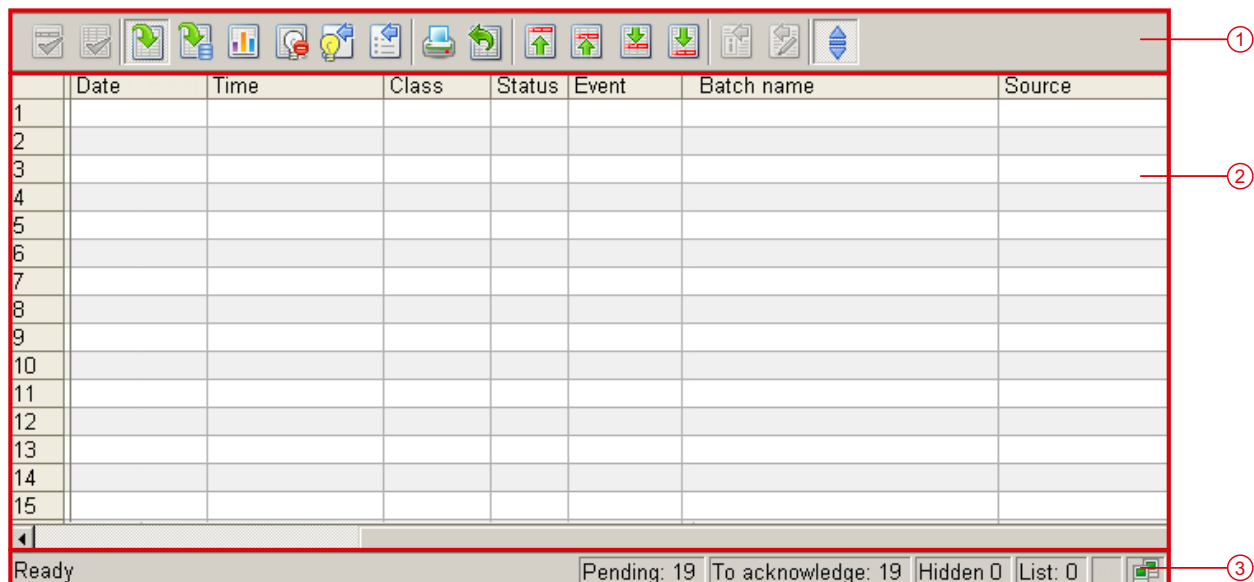
Overview of the views (Page 39)

4.3.2.3 Alarm view

Introduction

In the alarm view of a faceplate, you can manage messages that have been triggered by the corresponding process tag. The alarm view consists of the following three areas:

1. Toolbar
2. Message window
3. Status bar



Toolbar

The following table shows the meaning of the operator controls and their icons:

Icon	Meaning
	Single acknowledgment You can acknowledge all messages requiring acknowledgment using this button. If using the multiple selection, the selected messages which require single acknowledgment are not acknowledged.
	Confirm All Acknowledges all active, visible messages which require acknowledgment in the message window, unless these require single acknowledgment. If you use the multiple selection, all marked messages are acknowledged, even if the messages are hidden.

Icon	Meaning
	Hit list This button enables you display additional message information, the type and scope of which is determined during configuration. This might be the class, type or origin of the message, for example.
	Message list You can open the currently pending messages using this button.
	Short-term archive list You can open archived messages from the short-term archive list using this button.
	History This button is only shown if the short-term archive list is opened. You can use the "History" button to switch between two other views, namely the "History" view and the "Operating messages" view.
	Long-term archive list You can open archived messages from the long-term archive list using this button.
	List of messages to hide You can use this button to display the messages that are no longer visible due to automatic and manual hiding.
	Display options dialog This button enables you to open a dialog where you can specify which messages are to be displayed in the message window. You have the following options in the dialog: All messages: Both hidden and displayed messages are shown in the message window. Displayed messages only: Only displayed messages (not hidden ones) are shown in the message window. Hidden messages only: Only hidden messages are shown in the message window.
	Selection dialog You can use this button to open a dialog in which you define criteria for the display in the message window and use these criteria as filters. Messages that do not meet the configured criteria are not displayed, but they are nevertheless archived.
	Printing You can use this button to print messages that are displayed in the message window.
	Export data You can use this button to export all or selected data to a CSV file. You must be assigned the "Higher process controlling" operator permission in order to export messages.
	First message You can open the currently pending messages using this button. The visible range of the message window is moved if necessary. The button is only available if "Autoscroll" is enabled.

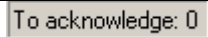
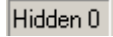
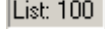
Icon	Meaning
	Previous message This button allows you to select the message above the currently selected message in the message window. The visible range of the message window is moved if necessary. The button is only available if the "Autoscroll" function is enabled.
	Next message This button allows you to select the message below the currently selected message in the message window. The visible range of the message window is moved if necessary. The button is only available if the "Autoscroll" function is enabled.
	Last message This button allows you to select the last of the currently pending messages. The visible range of the message window is moved if necessary. The button is only available if the "Autoscroll" function is enabled.
	Infotext dialog You can use this button to open a dialog that provides additional information about the currently selected message.
	Comments dialog You can use this button to open a dialog and enter information about the currently selected message in its input box.
	Autoscroll function You can use this button to enable or disable the "Autoscroll" function. If the "Autoscroll" function is enabled, the latest message is selected in the message window. The visible range of the message window is moved if necessary. If the "Autoscroll" function is disabled, a newly arrived message is not selected. The visible range of the message window is not modified. Messages can only be selected explicitly if "Autoscroll" is enabled.
	Hide message You can use this button to hide messages that are selected in the message window. You must be assigned the "Higher process controlling" operator permission in order to hide messages. Hidden messages can be displayed in the message window using the "List of messages to be hidden" button.
	Unhide messages This button allows you to show the message you have selected in the "List of messages to be hidden". The messages are removed from the "List of messages to be hidden".

Message window

The message window is used to display the messages that a device has triggered. The messages and information displayed in the message window depend on the configuration, the device and the functions enabled in the toolbar.

Status bar

The status bar displays information about the overall status of the messages and general information such as the date and time. The following table shows the meaning of status icons:

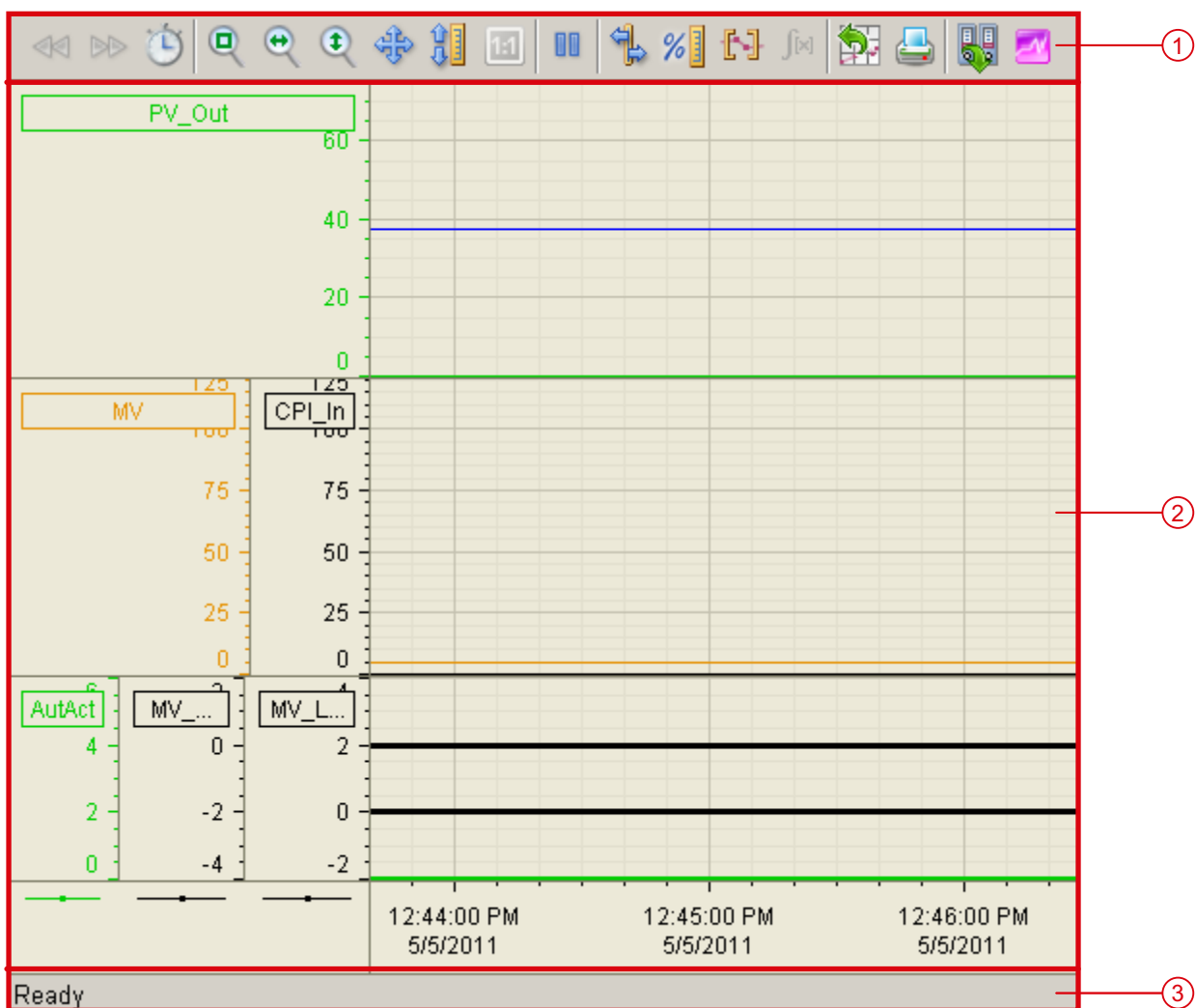
Icon	Description
	Pending messages This display informs you about the number of current messages in the message list. The hidden messages that are not shown in the message list are counted as well.
	Pending acknowledgeable messages This display informs you about the number of pending messages requiring acknowledgment.
	Pending hidden messages This display informs you about the number of pending messages that are hidden.
	Messages in the list This display informs you about the number of messages in the current message window.
	Selection An message selection exists.
	Display option The filter criteria are in effect.
	Locked The lock is set on messages.
	There are hidden messages pending.
	Status of the server connections All server connections have been established successfully. The requested server data is valid.
	Status of the server connections There are faulty server connections. The data of the affected servers is not displayed or is invalid.
	Status of the server connections There are no server connections. The server data cannot be requested or is invalid.

4.3.2.4 Trend view

Introduction

The process data are presented as curves in the trend view. This view enables you to watch currently occurring and archived values. The trend view consists of the following three areas:

1. Toolbar
2. Trend window
3. Status bar



Toolbar

The following table shows the meaning of the operator controls and their icons:

Icon	Meaning
	Previous data record You can use this button to displays in the trend window the course of a tag from the time interval prior to the currently displayed time interval.
	Next data record You can use this button to displays in the trend window the course of a tag from the time interval that follows the currently displayed time interval. The button is only available if the values originate from a process value archive.
	Select time range You can use this button to open a dialog in which you can specify the time range to be displayed in a trend window.
	Zoom section You can define a section to be enlarged by dragging with the mouse in the trend window. You can use the "Original view" button to reset the display in the trend window to the original size.
	Zoom time axis +/- You can use this button to increase or decrease the time axes in the trend window. The left mouse button increases the size of the time axes. By holding the "Shift" button down, the left mouse button zooms out of the time axes. You can use the "Original view" button to reset the display in the trend window to the original size.
	Zoom value axis +/- You can use this button to increase or decrease the value axes in the trend window. The left mouse button increases the size of the value axes. By holding the "Shift" button down, the left mouse button zooms out of the value axes. You can use the "Original view" button to reset the display in the trend window to the original size.
	Move trend area You can use this button to move the trends along the time and value axes in the trend window.
	Move axes area You can use this button to move the trends along the value axis in the trend window.
	Original view You can use this button to return from the zoomed view of the trend back to the original view.
	Start/Stop You can use this button to refresh the display in the trend window (Start) or stop the refreshing (Stop). If you stop the display refreshing, the data is cached and shown in the trend window the next time a refresh is performed.
	Ruler This button queries the coordinate points of a trend. The trend data is displayed in the ruler window.

Icon	Meaning
	Relative axis You can use this button to switch from displaying the absolute values to the percentage representation of the value axis. The high and low limits for the trend correspond with a range of 0 to 100%.
	Define statistical range You can use this button to define the time range for calculating the statistics in the trend window.
	Calculate statistics You can use this button to display the statistics. The displayed values refer to a selected trend with the configured calculation time range.
	Export data You can use this button to export all or selected data to a "CSV" file. With the respective authorization, you are also allowed to select the file and the directory for the export.
	Printing Click this button to print the trend shown in the trend window.
	Archive tag / online tag This button allows you to toggle between archive tags and online tags. The status bar shows whether the trend view is working with online data or archive data. You can preset the display of the archive tags. This presetting takes place during configuration and cannot be manipulated in the faceplate.
	Scatter plot (for closed-loop controllers) You can use this button to open the "Scatter plot" window. It shows a coordinate system with the process value on the value axis and the manipulated variable or position feedback on the X axis. A new value pair is entered into the coordinate system with each cycle.

You can find additional information the operator controls of the trend view in the "WinCC Information System" online help.

Trend window

The trend window is used for display process values in the form of curves. The values displayed in the trend window depend on the configuration, the device and the functions enabled in the toolbar.

2 or 3 coordinate systems are shown for closed-loop controllers in the trend window, depending on the configuration. They can include the following information:

- Setpoint trend, process value trend
- Manipulated variable trend, control performance index trend
- Binary trend via automatic/manual operating mode, manipulated variable at high or low limit

Status bar

The status bar displays information about the overall status and general information such as the date and time. The following table shows the meaning of status icons:

Icon	Meaning
	Status of the server connections All server connections have been established successfully. The requested server data is valid.
	Status of the server connections There are faulty server connections. The data of the affected servers is not displayed or is invalid.
	Status of the server connections There are no server connections. The server data cannot be requested or is invalid.
	Time Base Shows the time base used in the display of times.
14.01.2008	Shows the system date.
10:25:43	Shows the system time.

Note

You can double-click on the icon for the connection status to open the "Status of the data connections" window, in which the name, status and tag name of the data connection are listed.

4.3.2.5 Memo view

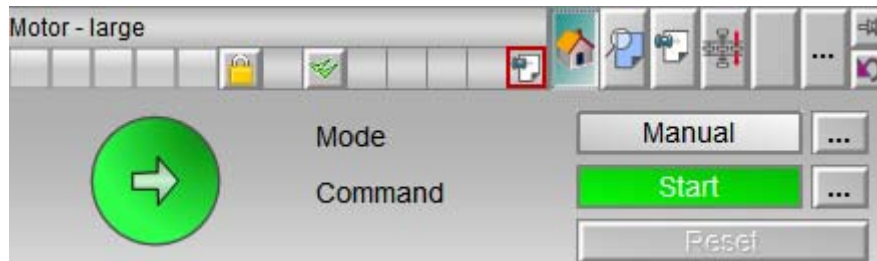
Introduction

In memo view, you can leave temporary messages for other operators, for example, when a shift changes. To do this, you write a text and open the memo display. The memo display signals that a new message is present and shows it as follows:

- In the block icon



- In the faceplate

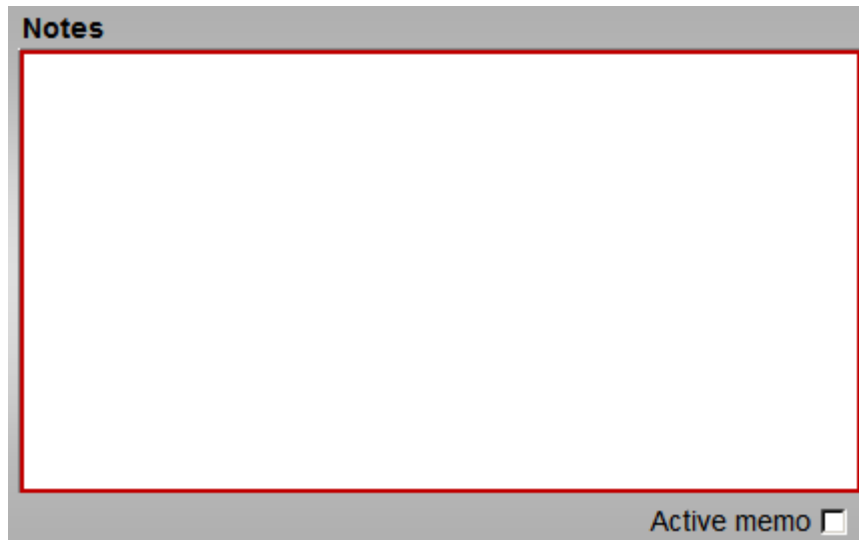


Leaving a message

To write a memo and then open the memo display, follow these steps:

1. Open the desired faceplate.
2. Open the memo view.

3. Write a memo in the text box.



4. To open the memo display for the written message, click the check box "Active memo".



The operating window is opened as an extension of the faceplate.

5. Click "On".



6. If acknowledgement is required, click "OK".

The memo is activated. The memo display appears in the block icon and in the faceplate.

Delete memo

To write a memo and then open the memo display, follow these steps:

1. Open the desired faceplate.
2. Open the memo view.
3. To delete the memo, select the text in the text box and press the "Delete" key on the keyboard.

The memo text is deleted.

4. To deactivate the memo display, click the check box "Active memo".



The operating window is opened as an extension of the faceplate.

5. Click "Off".



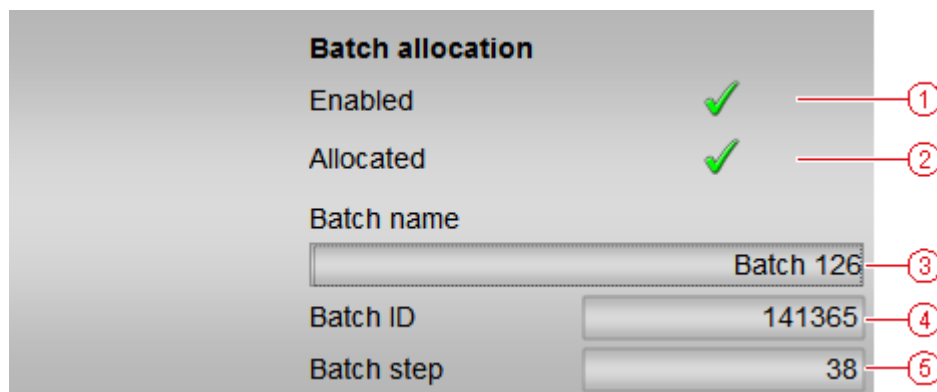
6. If acknowledgement is required, click "OK".

The memo is deactivated. The memo display disappears in the block icon and in the faceplate.

4.3.2.6 Batch view

Batch allocation

Batch view contains detailed information on the batch allocation. This view does not allow you to make any changes.



The batch view consists of the following areas:

1. Enabled:
This area shows you if the device is enabled for operation via SIMATIC BATCH.
2. Allocated:
This area shows if the device is currently in use by SIMATIC BATCH.
3. Batch name:
This area shows you the name of the batch that is currently running.

4. Batch ID:
This area shows the identification number of the batch that is currently running.
5. Batch step:
This area shows you the step number for the batch that is currently running.

4.3.3 Switching operating modes

Overview of the operator modes

Depending on the type of device you are operating, the following operating modes may be available:

- Automatic mode
In automatic mode, control of the device is performed automatically by the program.
- Manual mode
In manual mode, you can control the device manually and change the manipulated variable (output signal). The manipulated variable can be analog or binary.
- Local mode
This operating mode is used for motors, valves and dosing units. The control settings are made directly or via a control station that is located "locally".
- Program mode for closed-loop controllers

In the program mode, the controller can be controlled by applications running on a PC as an OPC client. This allows you to specify the manipulated variables and setpoints externally.

- On
The "On" operating mode tells you that the device is running. This operating mode is only for devices without manual mode, automatic mode and local mode. You can activate the "On" operating mode in the faceplate when the device is in "Out of service" mode.
- Out of service

The "Out of service" operating mode is available to all devices that have an operating mode switchover and a direct connection to the process (with a connection to a process tag, for example). This operating mode is intended for purposes of maintenance and servicing (replacing the device, for example). All functions of the device are disabled in the "Out of service" operating mode. Incoming and outgoing messages are not generated in this case. Only one operating mode switchover is possible in this operating mode.

Requirement

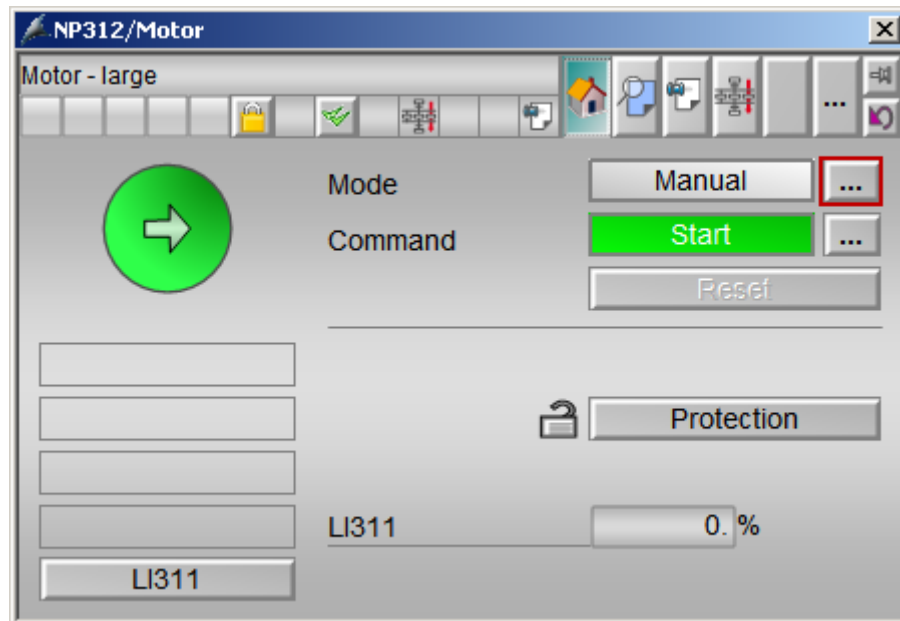
You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

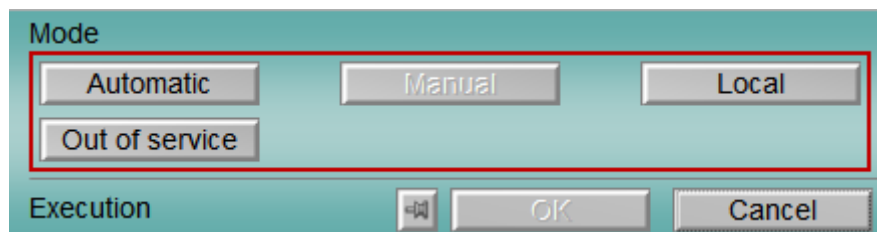
To switch the operating mode, follow these steps:

1. Open the faceplate.
2. Click on the button to open the operating window.



The operating window is opened as an extension of the faceplate.

3. Click on the button for the desired operating mode.



4. If acknowledgement is required, click "OK".

4.3.4 Switching the operating mode

Operating states

A faceplate enables you to set the corresponding drive to a new operating state. Examples are:

- Starting and shutting down motors
- Opening and closing of valves

Operating states can be changed in manual mode.

Requirement

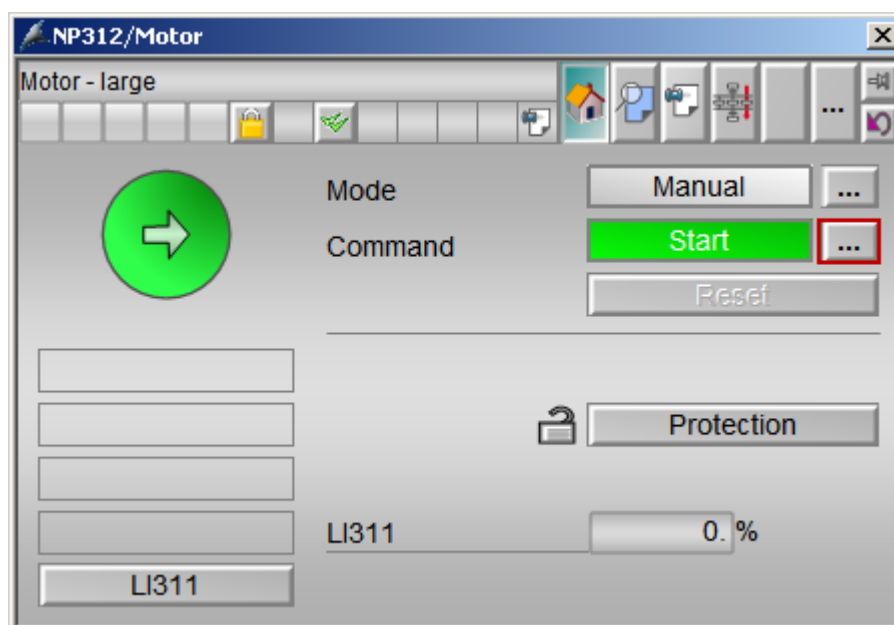
You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

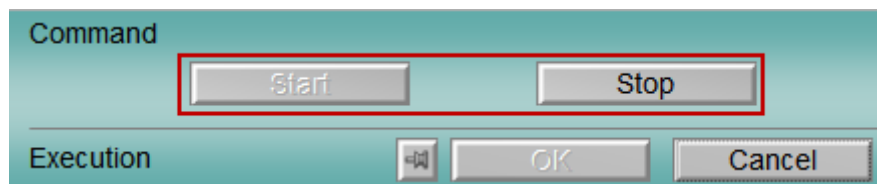
To set the device to a new operating state, follow these steps:

1. Open the faceplate.
2. Click on the button to open the operating window.



The operating window is opened as an extension of the faceplate.

3. Click on the button for the desired operating state.



4. If acknowledgement is required, click "OK".

For additional information refer to "Operator permission and enable (Page 35)".

4.3.5 Change values

4.3.5.1 Value representations

Value representation in a faceplate

The capability to edit values in the faceplate depends on the process, and on the configured enabled operation and operator permission. The operator permission can also be specified for individual parameters as of PCS 7 V8.0. The faceplate provides a graphic indication as to whether or not you can change a value. The icons for the signal status enable you also to detect whether a value is incorrect or simulated.

The following table shows the value representation in the faceplate:

Display	Meaning
	Value can be edited You can change the value. The value can be entered in a separate operating window. For additional information refer to "Operating window (Page 59)" and "Change values (Page 60)".
	Value cannot be edited You cannot change the value, because you do not have the appropriate operator permissions.
	Passivated value The value has been passivated during configuration.
	Internal simulation The value is simulated. The simulation was activated via the current faceplate and displayed as additional information in the standard view. With internal simulation, you can specify a simulation value.

Display	Meaning
	External simulation The value is simulated. The simulation was activated in the configuration via a channel block or on the field device. You cannot specify the simulation value.
	Bad value The value is incorrect and cannot be edited.

4.3.5.2 Operating window

Operating window

You can open the operating window using the block icon or as an extension of a faceplate. You can change analog values or execute commands (for example, start motors or open valves) in the operating window. Depending on the configuration, there are the following options for applying value changes:

- Without confirmation



The changes are applied directly without any confirmation.

- With confirmation



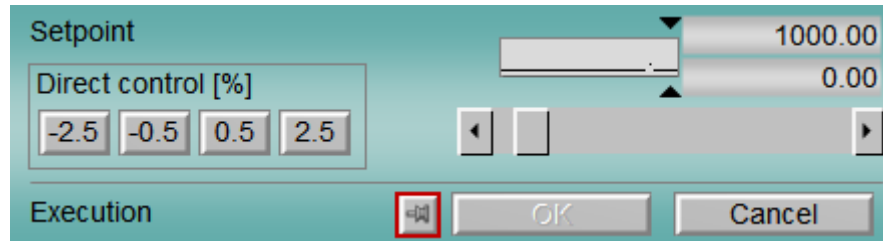
The changes are applied only when you confirm this by clicking the "OK" button.

Multiple operation

In the default setting, the operating window is closed each time a value is applied. If you want to perform several successive actions in the operating window, you can keep the operating window open.

To keep the operating window open after applying a value, follow these steps:

1. Open the operating window by clicking a values to be edited in the block icon or faceplate.
2. Click "Do not close operating range".



The operating window is not closed when a value is applied.

4.3.5.3 Change values

Introduction

In the faceplate, you can change analog values and execute commands, thereby influencing the process.

The operating window offers the following options for changing analog values:

- Input box
- Slider
- Buttons

You can find information about executing commands in the section "Switching operating modes (Page 55)"

Requirements

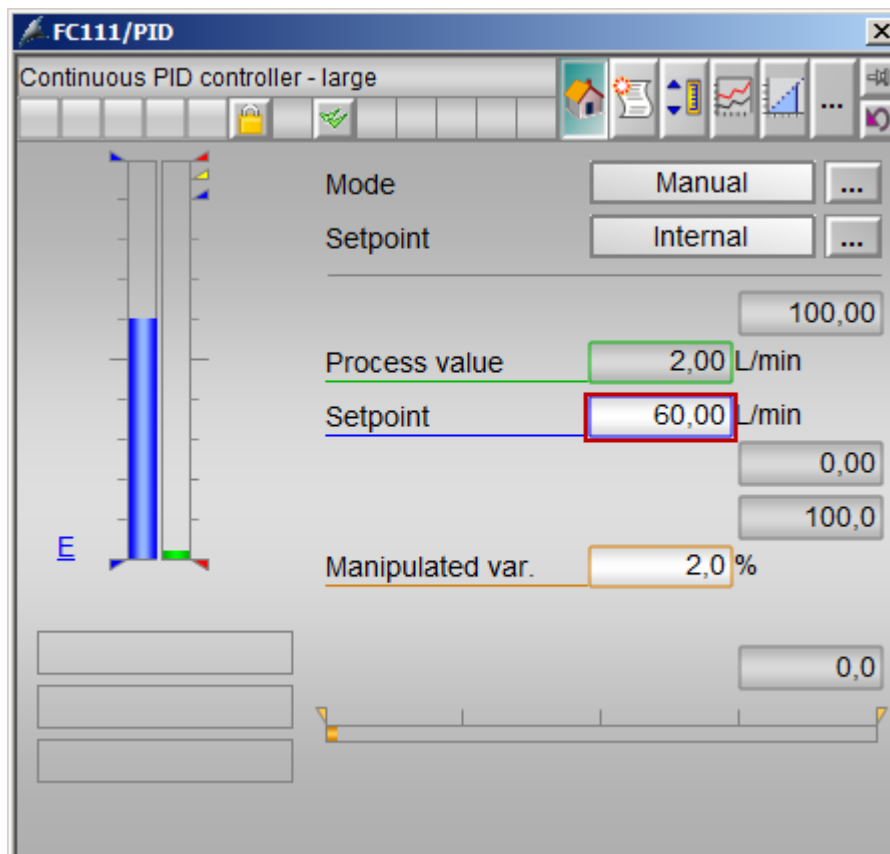
You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Changing an analog value via an input box

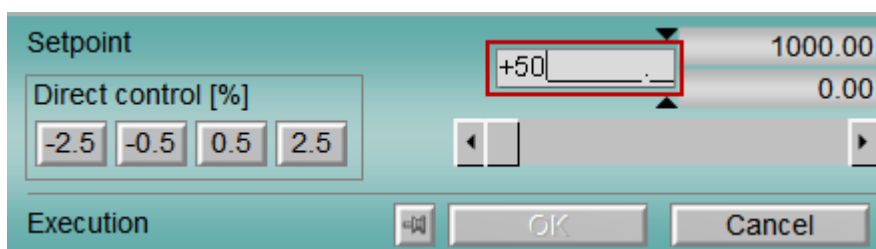
To change an analog value via the input box in the operating window, follow these steps:

1. Open the faceplate.
2. Click the input box of the value to be changed.



The operating window is opened as an extension of the faceplate.

3. Click the input box and enter the required value using the keyboard.



4. Confirm your selection with the Return key.
5. If additional confirmation is required, click "OK".

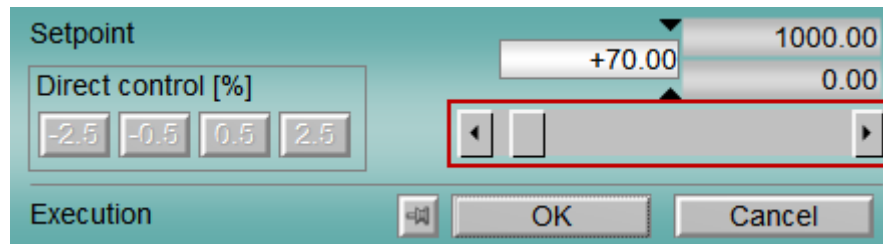
Changing an analog value via a slider

To change an analog value via the slider in the operating window, follow these steps:

1. Click the input box of the value to be changed.

The operating window is opened as an extension of the faceplate.

2. Move the slider until the desired value is shown in the input box.



3. If acknowledgement is required for the value entered, click "OK".

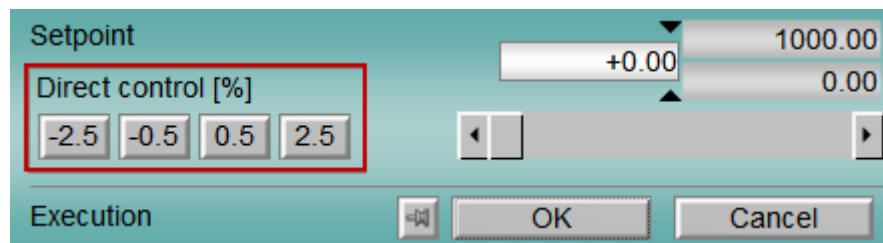
Changing an analog value via buttons

To change an analog value via the buttons in the operating window, follow these steps:

1. Click the input box of the value to be changed.

The operating window is opened as an extension of the faceplate.

2. Click the desired button.



The value is immediately changed and applied. It is no longer necessary to confirm this value.

4.3.6 Switch setpoint specification

Introduction

The following options are available for specifying the setpoint:

- Internal

The setpoint is specified in the faceplate.

- External

The setpoint is specified in the higher-level controller. In this case, the input boxes of the setpoint are grayed out in the faceplate and cannot be operated.

Requirement

You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

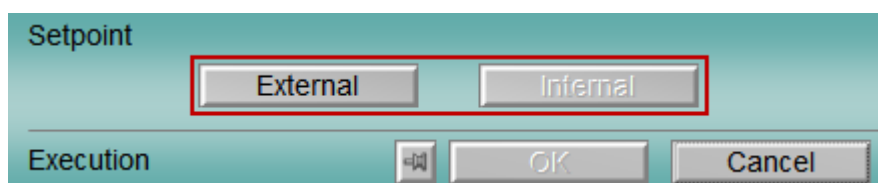
Procedure

To change the setpoint specification, follow these steps:

1. Open the faceplate.
2. Click on the button to open the operating window.



3. Click the active button to switch the setpoint specification.



4. If acknowledgement is required, click "OK".

For additional information refer to "Operator permission and enable (Page 35)".

4.3.7 Edit messages

4.3.7.1 Locking or unlocking messages

Introduction

In the faceplate, you can lock or unlock the messages triggered by the corresponding device if the required operator permission is present. The locking of the messages is depicted graphically in the group display.

No more new messages are generated during the locked phase. Messages that have previously occurred are no longer displayed as well in the alarm view of the faceplate.

When you unlock the messages, the messages in the group display reappear and new messages are generated. Alarms generated in the locked phase are displayed when you enable the alarm function.

Requirement

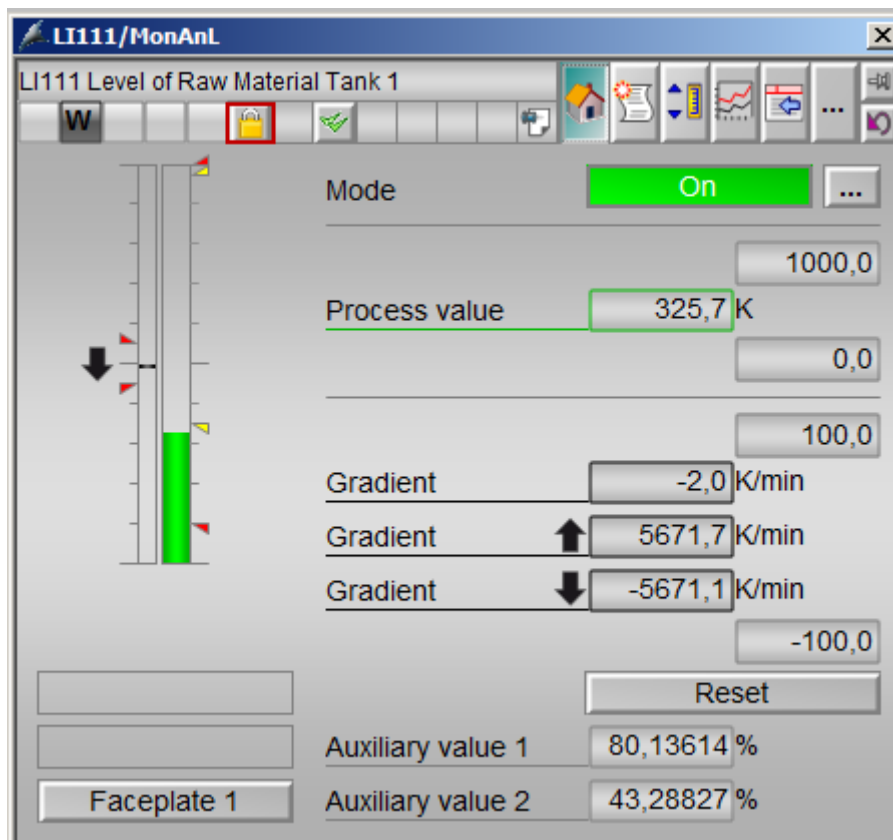
You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Lock messages

To lock messages of a device using the faceplate, follow these steps:

1. Open the faceplate.
2. Click "Lock/unlock messages".

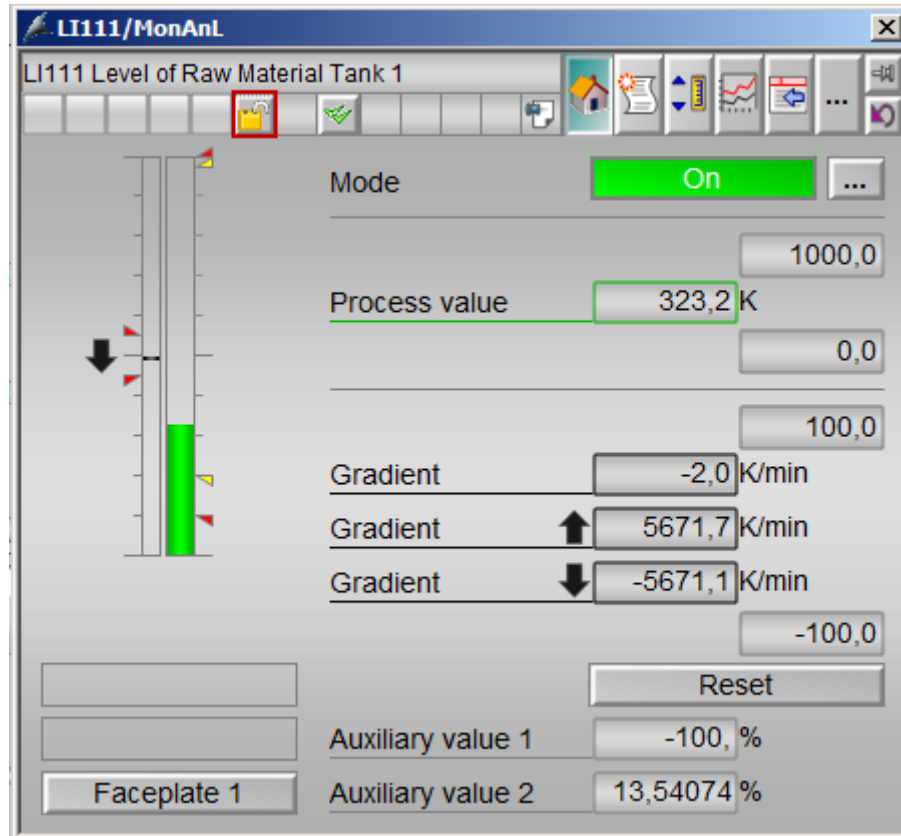


The messages are locked and hidden in the group display.

Unlock messages

To unlock the messages of a device, follow these steps:

1. Open the faceplate.
2. Click "Lock/unlock messages".

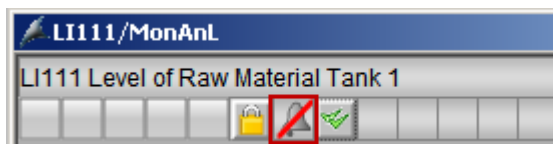


The messages are unlocked and appear in the group display.

4.3.7.2 Suppressing messages

Suppressing messages

You can see if the "Suppress process messages" function is checked in the display in the faceplate.



If the function is enabled and depending on the configuration, the following messages may be suppressed:

- All existing messages
- All messages except process control messages

When process messages for a limit are suppressed, the following icon is shown in the limit view of the respective faceplate:



4.3.7.3 Acknowledge messages

Introduction

In the faceplate, you can acknowledge all messages triggered by the corresponding device.

Requirement

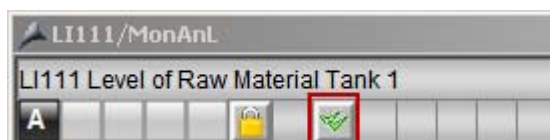
You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

To acknowledge all messages for a device, follow these steps:

1. Open the faceplate.
2. Click "Acknowledge error".



The messages are acknowledged.

4.3.8 Activate or deactivate simulation

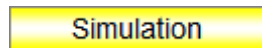
Introduction

Simulation is primarily used as a tool for commissioning and servicing in the plant. For example, values can be tracked without activating monitoring functions. Simulation does not influence the technological functions of the device. During simulation, all process-relevant output signals are given the "Simulation" status and the following messages are displayed in the block icon and faceplate:

- In the faceplate and the block icon



- In the standard view of the faceplate



Requirement

You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

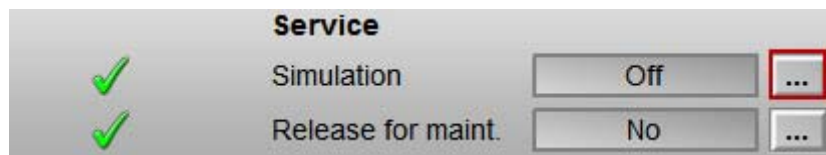
Procedure

To activate or deactivate the simulation, follow these steps:

1. Open the faceplate.
2. Switch to the parameter view.



3. Click on the button to open the operating window.



The operating window is opened as an extension of the faceplate.

- Click 'On' to activate simulation or "Off" to deactivate it.



- If acknowledgement is required, click "OK".

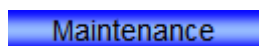
For additional information refer to "Operating window (Page 59)".

4.3.9 Activate or deactivate release for maintenance

Introduction

The release for maintenance serves as information about a process tag at which maintenance, service or calibration should be carried out. Issuing a release for maintenance does not have any influence on the function of the device. An operator message is generated.

When release for maintenance is activated a corresponding display appears in the standard view of the faceplates:



Requirement

You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

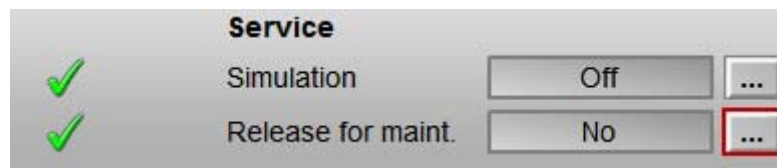
Procedure

To activate or deactivate a release for maintenance, follow these steps:

1. Open the faceplate.
2. Switch to the parameter view.



3. Click on the button to open the operating window.



The operating window is opened as an extension of the faceplate.

4. Click "Yes" to activate simulation or "No" to deactivate it.



5. If acknowledgement is required, click "OK".

For additional information refer to "Operating window (Page 59)".

4.3.10 Pinning the faceplate

Introduction

You can pin a faceplate to the user interface and then switch to another picture or area without closing the faceplate.

Procedure

To pin a faceplate to the user interface, follow these steps:

1. Open the faceplate.
2. Click "Keep open at picture change".



The faceplate is pinned to the user interface.

4.3.11 Switching to the block icon

Introduction

This button returns you to the block icon in the process picture of the corresponding faceplate.

You can use this function, for example, when you have pinned a faceplate and the process picture has changed in the meantime. In this case, you can quickly go to the block icon and the corresponding picture opens automatically.

Procedure

To switch to the block icon, follow these steps:

1. Open the faceplate.
2. Click the "Back to process picture" button.



The block icon is displayed in the process picture.

4.3.12 Opening additional faceplates

Introduction

Depending on the configuration, the faceplates have one or two buttons that enable other faceplates to be opened.

Requirement

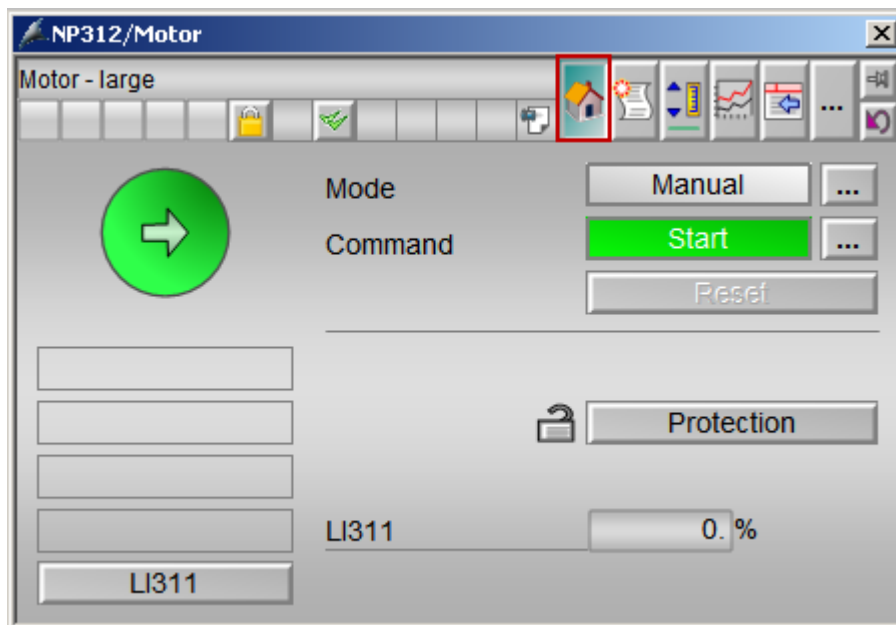
- At least one button for opening other faceplates is configured.
- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

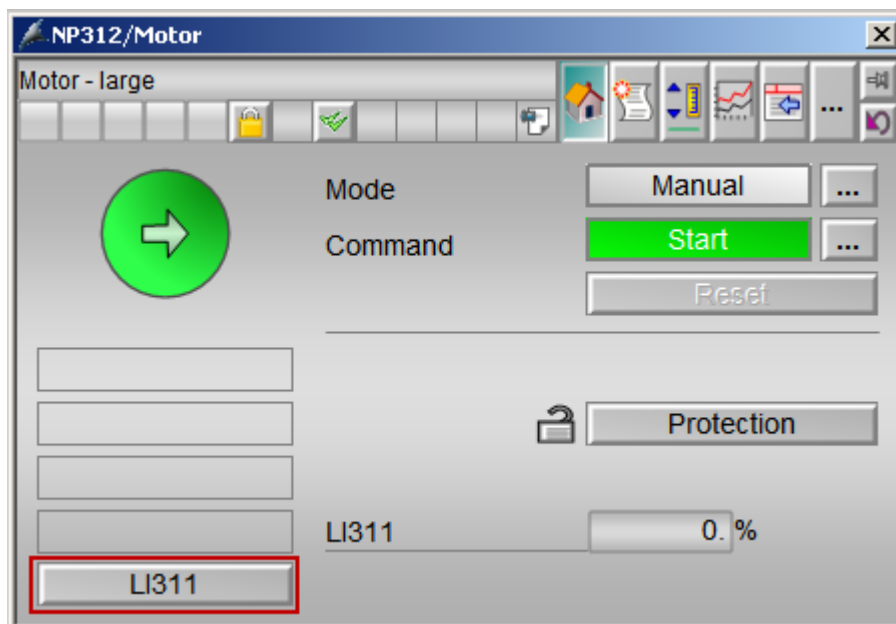
Procedure

To open another faceplate, follow these steps:

1. Open the faceplate.
2. Open the standard view.



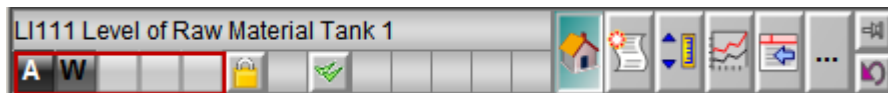
3. Click the corresponding button to open the desired faceplate.



4.4 Operating functions of APL faceplates

4.4.1 Group display

Icons and their meaning



The group display informs you of the following events:

- Alarms
- Warnings
- Tolerances
- Faults
- Operator prompts

The following table shows the icons shown in the group display and their meaning:

Icon	Meaning
	No messages are output.
	A fault has occurred.
	An alarm was triggered.
	An alarm for the high alarm limit was triggered.
	An alarm for the low alarm limit was triggered.
	A warning was triggered.
	A warning for the high alarm limit was triggered.
	A warning for the low alarm limit was triggered.
	A tolerance violation has occurred.

Icon	Meaning
	A tolerance violation for the high tolerance limit was triggered.
	A tolerance violation for the low tolerance limit was triggered.
	Operator prompt
	Process state notification

4.4.2 Display of the signal status

Signal status



This display informs you about the status and quality of the signals. It shows you the signal status with the highest priority, which depends on the type of device. The following table shows the icons of the signal status and their meaning:

Icon	Meaning
	Local function check / simulation This icon indicates that the process value is manipulated, regardless of the actual signal source or the logic that generates this signal. The simulation can be activated as follows: • Activation via the parameter view of the faceplate. In this case, an additional "Simulation" display appears in the standard view of the faceplate. • Activation via the configuration • Activation via a channel block • Activation on the device
	Signal status is "Bad, device related" This icon indicates that the device is defective or has a fault and therefore supplies invalid values. The "Bad, device related" signal status is displayed for a wire break in the sensor, for example.
	Signal status is "Bad, process related" This icon indicates that the device supplies invalid values due to a process fault. A process fault occurs, for example, when the flow meter is working properly, but no fluid flows through the pipelines.

Icon	Meaning
	Signal status is "Uncertain, device related" This icon indicates that the configured setpoints of the device have been violated and maintenance is required. This can occur, for example, when the device temperature is too high.
	Signal status is "Uncertain, process related" This icon shows deviations in the process. This can occur, for example, when the ambient temperature is too high.
	Maintenance required This icon indicates that maintenance of the device is due. This can occur, for example, when the maximum number of cycles of operation for a valve is reached.
No display	Signal status "Good" If none of the above icons are displayed, the device is working properly from a technical point of view and from the view of the process.

4.4.3 Display of the interlock status

Interlock functions and interlock status

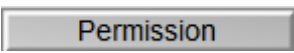
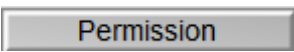
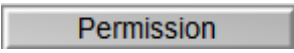
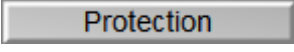
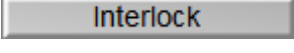
The interlock functions that are interconnected with the process tag are shown in the standard view of the faceplate.



The following interlock functions may be available for a process tag:

- Permission
- Protection (interlock with reset)
- Interlock (interlock without reset)

The faceplate displays the state of each interlock function separately. The following table shows the interlock icons and their meaning:

Icon for the interlock status	Interlock function	Meaning
		The drive can leave the safety position. The permission signal has no effect if the drive is not in the safety position.
		The drive cannot leave the safety position.
		The drive has no interlock.
		The interlock conditions are met and the drive is moved to the safety position. If the interlock conditions are no longer met, a reset must be performed in automatic mode and, depending on the configuration, also in manual so that the control can be activated again.
		The drive has no interlock.
		The interlock conditions are met and the drive is moved to the safety position. If the interlock conditions are no longer met, the drive can restart.
	  	The interlock has been passivated. Depending on the configuration, the interlock function can be passivated in local mode or for simulation. The interlock function has no effect on the drive in this case.

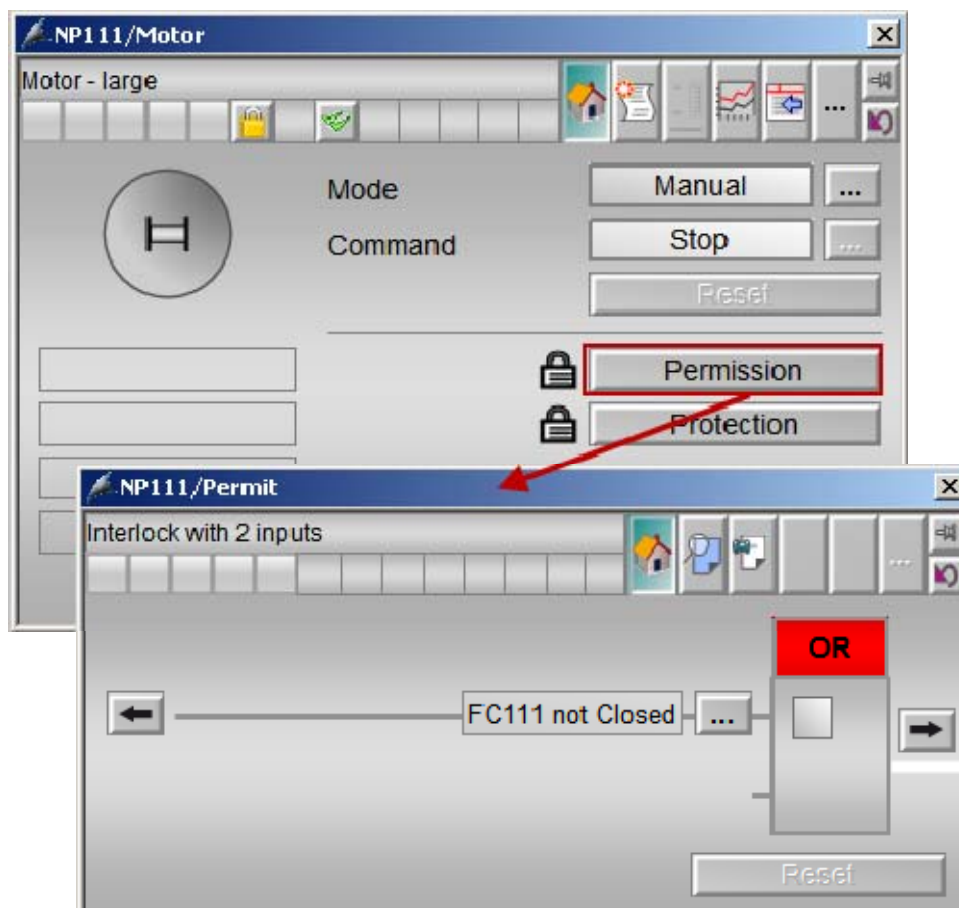
The interlock state can be affected by the signal status. This information is displayed by additional icons. The following table shows the icons and their meaning:

Icons	Meaning
 	The "Simulation" signal status has caused the interlock to be revoked. This reaction is handled as bypassing the interlock.
 	The "Simulation" signal status has not caused the interlock to be revoked. This reaction is handled as simulation.

Icons	Meaning
	The "Bad, device related" signal status has caused an interlock.
	The "Bad, process related" signal status has caused an interlock.

Interlock conditions

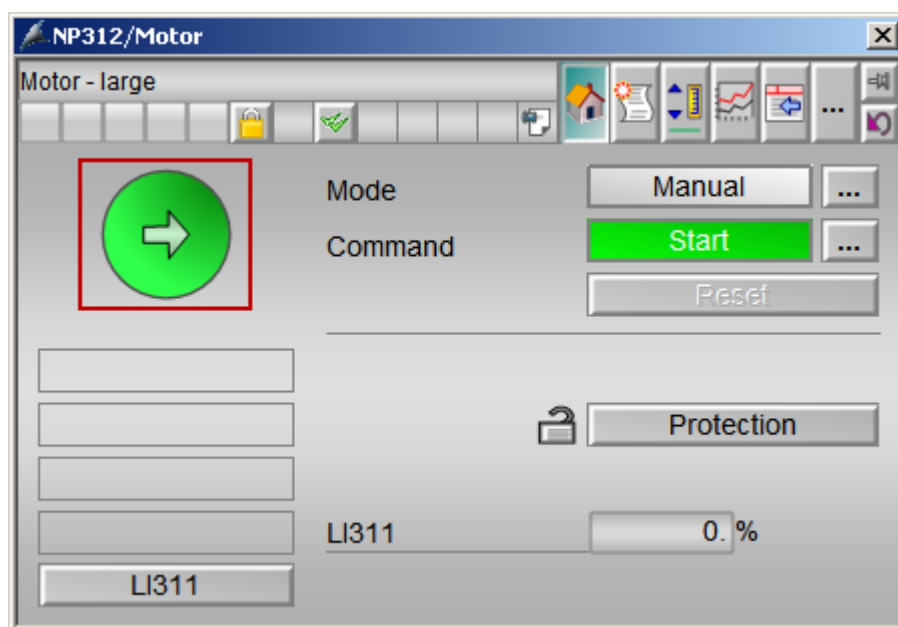
You can call up the interlock conditions associated with a process tag by pressing the buttons of the interlock functions.



You can find more information on interlock conditions and the faceplate in which the interlocks are displayed and operated, in the section "Interlocks (Page 137)".

4.4.4 Status display and additional information

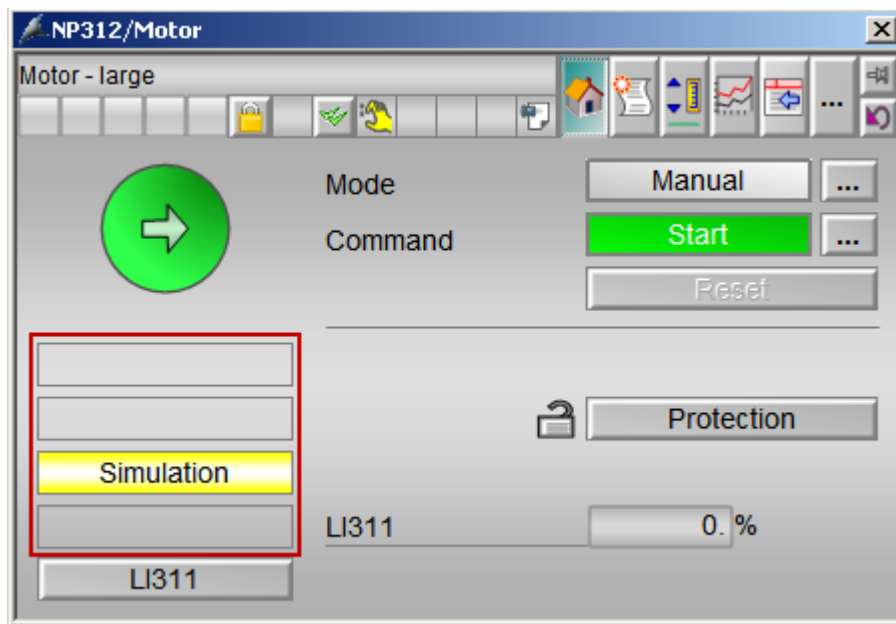
Status display



This display shows the status of the blocks in symbolic form. A variety of icons are used to represent the various types of equipment (motors, valves). You can find additional information on this in the following sections:

- Motors and valves (Page 85)
- Controller (PID) (Page 111)
- Dosers (Page 151)

Additional information



The additional information serves as a guide and indicates the state of the process tag. This area shows the following information:

- Internal simulation

You can find additional information about simulation under "Activate or deactivate simulation (Page 68)".

- Maintenance

You can find additional information about release for maintenance under "Activate or deactivate release for maintenance (Page 69)".

- Device-specific Information

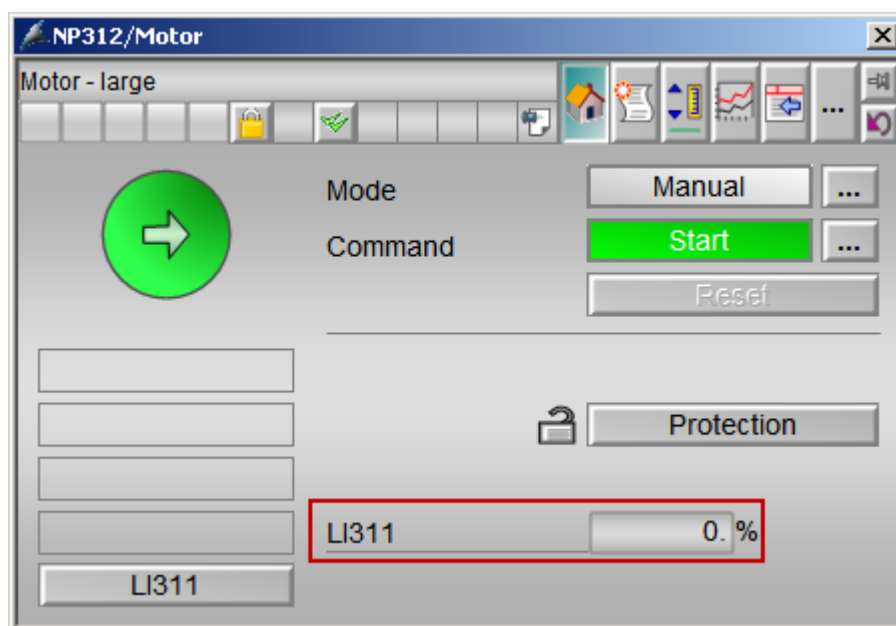
Additional information related to device status are displayed in the faceplate depending on the type of equipment. You can find additional information under:

- Motors and valves (Page 85)
- Controller (PID) (Page 111)
- Dosers (Page 151)

4.4.5 Display of auxiliary values

Display of auxiliary values

Up to two auxiliary values can be displayed in the standard view of some faceplates. These values serve as additional information and cannot be changed.



4.4.6 Batch display

Batch display



The batch display informs you whether the device has an interface to SIMATIC BATCH. Information on the batch allocation also appears in the batch view of the faceplate.

For further information on SIMATIC BATCH, refer to the SIMATIC BATCH documentation.

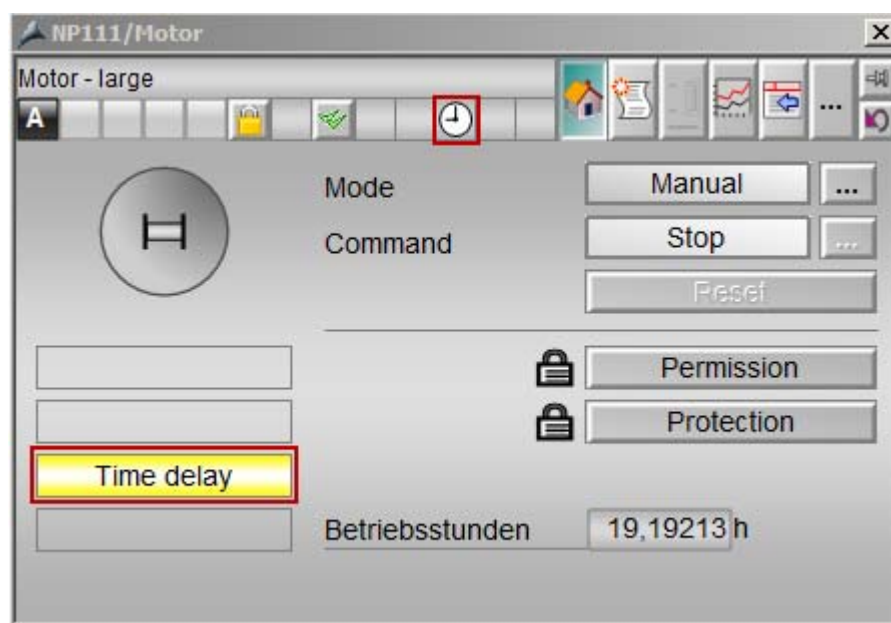
4.4.7 Display effective delay times

Delay times

This display informs you about effective delay times. It includes the following types of delay times:

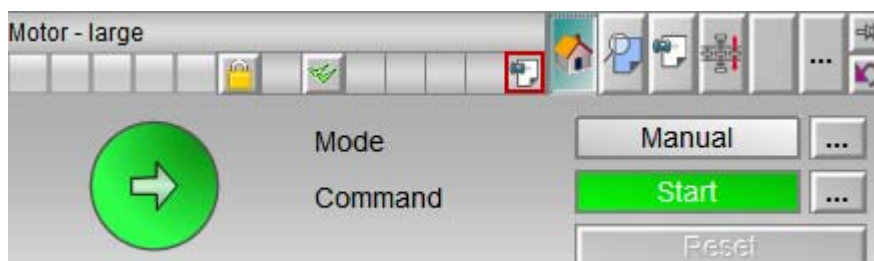
- Pre-warning time
- Restart inhibit

If a delay time is active, an information text is displayed in the standard view of the faceplate next to the icon in the status bar. The following figure shows an example for the display of effective delay times:



4.4.8 Memo display

Display of a stored message



The memo view informs you whether a memo has been stored and activated in the memo view. For additional information refer to "Opening views of a faceplate (Page 39)".

Motors and valves

5.1 Block icons

5.1.1 Block icons for motors

Block icons

Different block icons with the following display and operator control functions are available for motors in the process picture:

- Display the instance name (Page 17)
- Display of block comments via the tooltip (Page 17)
- Display of alarms, warnings, tolerances and messages (Page 18)
- Displaying and changing the operating modes (Page 20)
- Changing the operating state (Page 30)
- Display of interlocks (Page 25)
- Display of signal status and maintenance release (Page 22)
- Display for bypassing interlocks and forcing values (Page 24)
- Motor state display (Page 98)
- Memo display (Page 25)

The following table shows examples of block icons for motors:

As of APL V7.0	As of APL V8.0
	
	

As of APL V7.0	As of APL V8.0
	
	
	
	
	
	
	
	
	

You can find information on the layout of the block icons in the chapter "Layout of the block icons (Page 15)".

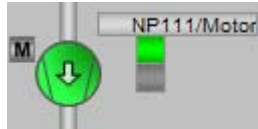
Note

You can find detailed information on block icons in the PCS 7 online help.

Motor state display

The flow direction can be displayed by an arrow in the status icon as of APL V8.0 for the operating state "Start" of the motors. The display depends on the configuration.

The following figures show an example for the motor status display in the case of a status change:

Operating state "Stop"	Operating state "Start"
	

You can find additional information on operating states in the chapter "Starting and stopping a motor (Page 91)".

You can find additional information on icons for the status display under "Status display (Page 98)".

5.1.2 Block icons for valves

Block icons

Different block icons with the following display and operator control functions are available for valves in the process picture:

- Display of the instance name (Page 17)
- Display of block comments via the tooltip (Page 17)
- Display of alarms, warnings, tolerances and messages (Page 18)
- Displaying and changing the operating modes (Page 20)
- Changing the operating state (Page 30)
- Display of interlocks (Page 25)
- Display of signal status and maintenance release (Page 22)
- Display for bypassing interlocks and forcing values (Page 24)
- Valve status display (Page 98)
- Memo display (Page 25)

The following table shows examples of block icons for valves:

As of APL V7.0	As of APL V8.0
	
	
	
	
	
	
	
	
	
	
	

You can find information on the layout of block icons under "Layout of the block icons (Page 15)".

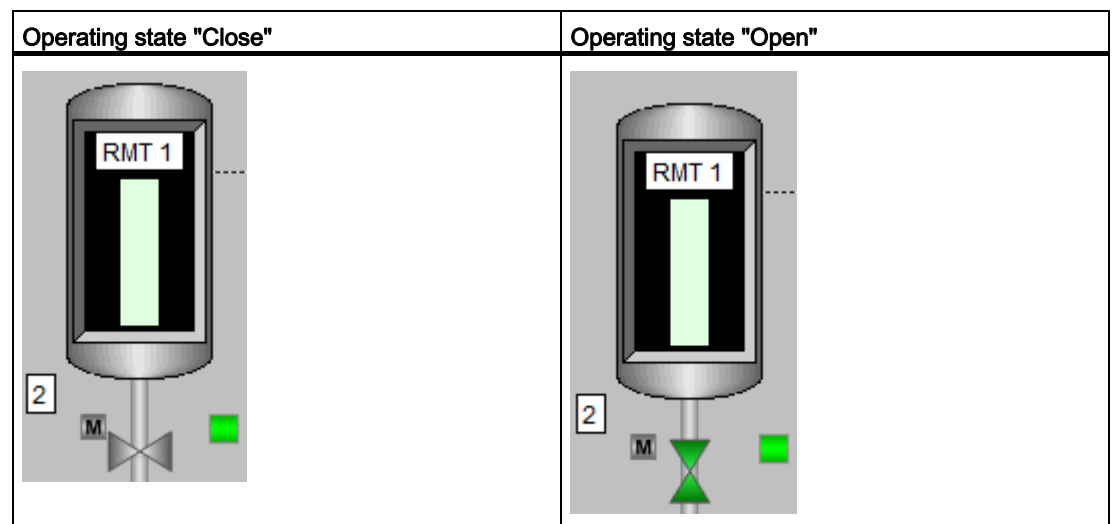
Note

You can find detailed information on block icons in the PCS 7 online help.

Status display as of APL V8.0

The opening and closing of valves is displayed in color as well as by a rotation of 90 degrees as of APL V8.0. The display depends on the configuration.

The following figures show an example for the display in the case of a status change:



You can find additional information on operating states in the chapter "Opening and closing of valves (Page 93)".

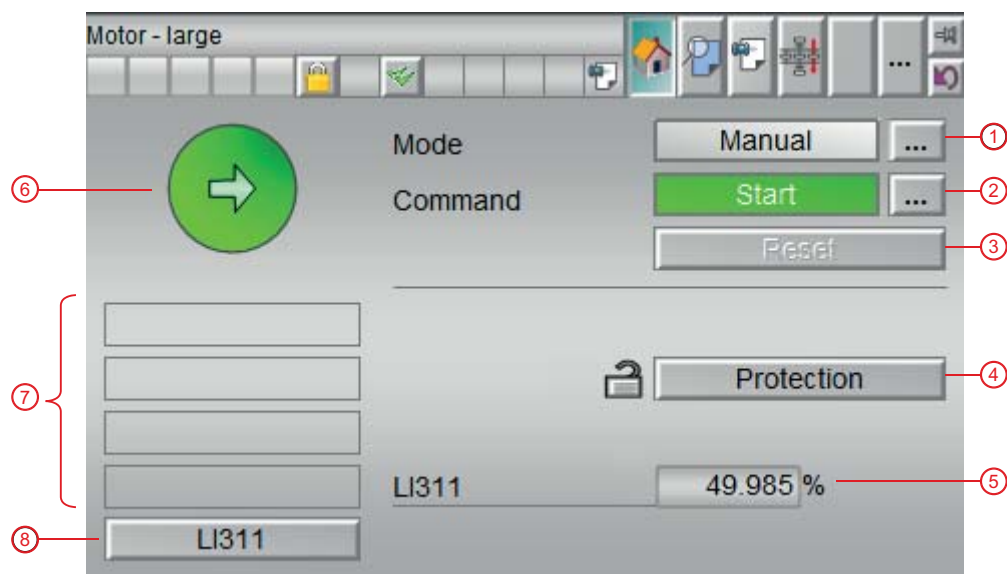
You can find additional information on icons for the status display in the chapter "Status display (Page 98)".

5.2 Standard view

5.2.1 Layout and functions

Standard view

The standard view contains the basic functions for operating a device. The following figure shows the display and operator controls in the standard view for motors and valves:



1. Switching operating modes

You can switch between the following operating modes for motors and valves:

- Manual mode
- Automatic mode
- Local mode
- Out of service

For additional information on the operating modes, refer to "Switching operating modes (Page 55)".

2. Switching the operating mode

- Starting and stopping a motor (Page 91)
- Opening and closing of valves (Page 93)

3. Reset for interlocks and errors

For information on resets, refer to "Resetting after interlocks and errors (Page 94)".

4. Interlock functions and states

For additional information on interlocks, refer to "Display of the interlock status (Page 76)".

5. Display of auxiliary values

For additional information refer to "Display of auxiliary values (Page 81)".

6. Status display

You can find information about displays in this area under "Status display (Page 98)".

7. Additional information

You can find information about displays in this area under "Additional information about the operating state (Page 95)".

8. Opening additional faceplates

For additional information refer to "Opening additional faceplates (Page 71)".

5.2.2 Starting and stopping a motor

Introduction

The standard view provides several operating states from which to choose. The availability of the operating states depends on the type of motor, the current operating mode and the operator permission available.

The following table shows the operating states, which you can select for the various motors:

Operating state	Explanation	Type of motor
Start	The drive starts.	Motors (large/small)
Start → / Start →	The drive starts in forward.	Reversing motors
Start ← / Start ←	The drive starts in reverse.	
Start >	The drive starts with speed 1. The speed depends on the configuration.	Two-speed motors
Start >>	The drive starts with speed 2. The speed depends on the configuration.	

Operating state	Explanation	Type of motor
Stop	The drive stops.	Motors (large/small), reversing motors, two-speed motors
Rapid stop	A rapid stop stops the drive immediately. Rapid stop has the highest priority of all operating modes and operating states.	Motors (large), reversing motors

Requirement

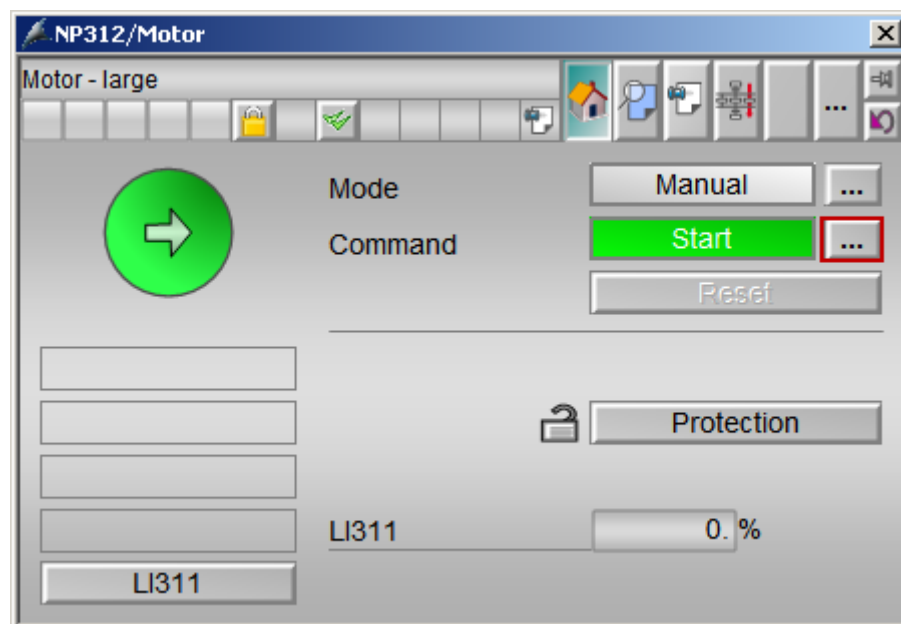
You have the required operator permission.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

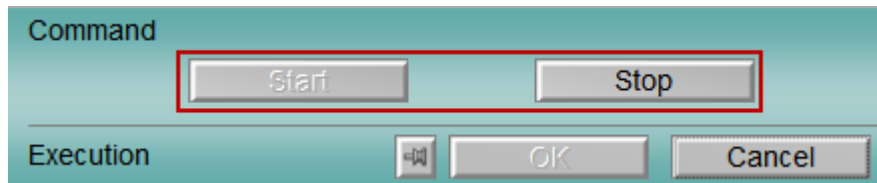
To set the device to a new operating state, follow these steps:

1. Open the faceplate.
2. Click on the button to open the operating window.



The operating window is opened as an extension of the faceplate.

3. Click on the button for the desired operating state.



4. If acknowledgement is required, click "OK".

5.2.3 Opening and closing of valves

Introduction

The standard view provides several operating states from which to choose. The availability of the operating states depends on the type of valve, the current operating mode and the operator permission available.

The following table shows the operating states, which you can select for the various valves:

Operating state	Explanation	Type of valve
Open	The valve opens.	Valves (large/small), servo-valves
Close	The valve closes.	Valves (large/small), servo-valve
Position 1/2/3 (Designation of the individual positions is set during configuration.)	The valve is moved to a switch position or idle position. The switch position that the valve assumes when a position is selected depends on the configuration.	Two-way valve
Stop	The drive stops.	Motor valve
Rapid stop	A rapid stop stops the drive immediately. Rapid stop has the highest priority of all operating modes and operating states.	Motor valve

Requirement

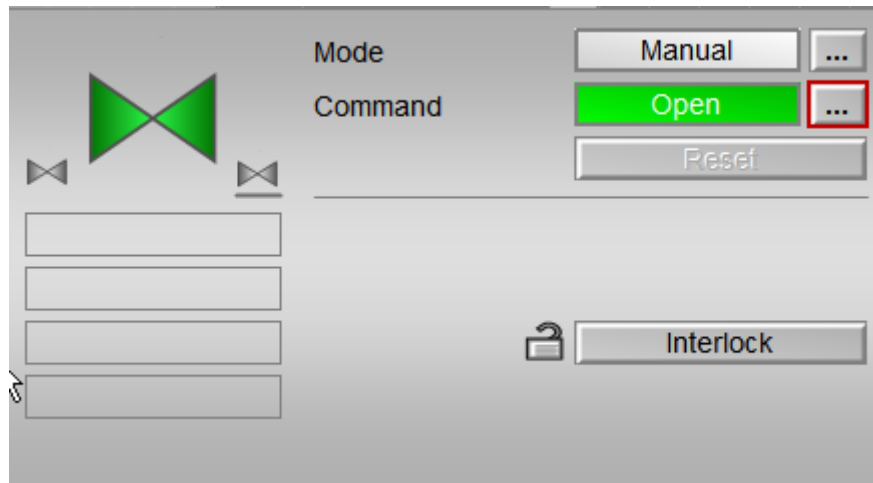
You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

To set a valve to a new operating state, follow these steps:

1. Open the faceplate.
2. Click on the button to open the operating window.



The operating window is opened as an extension of the faceplate.

3. Click on the button for the desired operating state.



4. If acknowledgement is required, click "OK".

5.2.4 Resetting after interlocks and errors

Introduction

A reset is necessary when an interlock or a monitoring error ("runtime" or "control" for example) has occurred, in order for the control to become activated again. You can perform the reset in automatic mode and, depending on the configuration, in manual mode as well.

Requirement

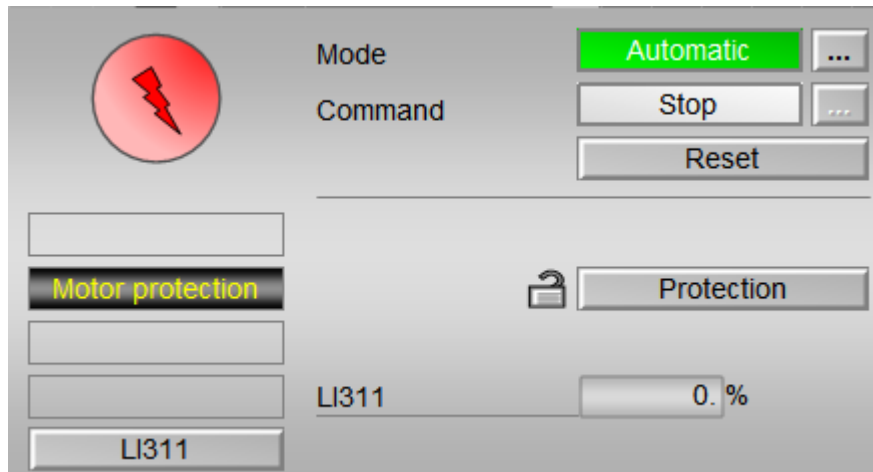
You have the required operator permission.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

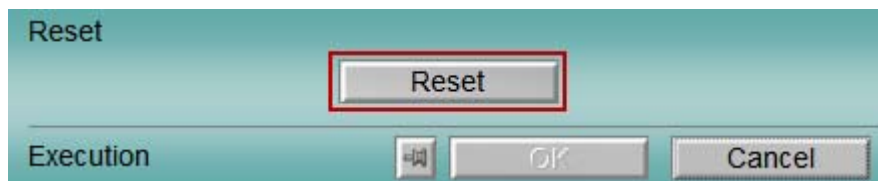
To reset monitoring errors or interlocks, follow these steps:

1. Open the faceplate.
2. Click "Reset" in the faceplate.



The operating window is opened as an extension of the faceplate.

3. Click "Reset".



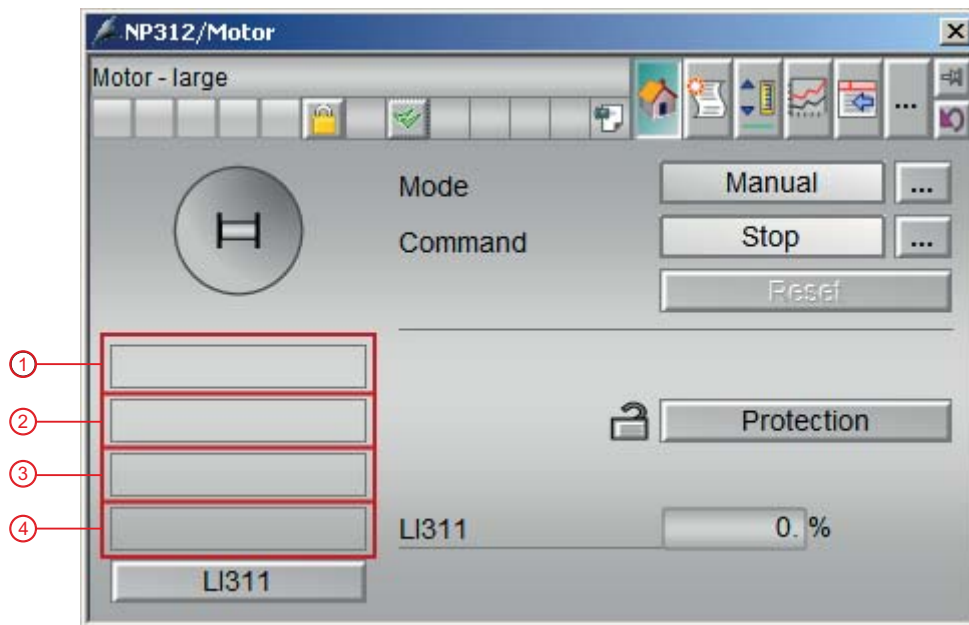
4. If acknowledgement is required, click "OK".

5.2.5 Additional information about the operating state

Additional information

The additional information serves as a guide and indicates the state of the drive.

The following figure shows the individual areas in which additional information is displayed:



1. Forcing operating states
2. Protection functions and errors
3. Maintenance/delay times
4. Simulation

Forcing operating states

When you force operating states, the drive is set to a new state regardless of the currently pending control. The forcing of operating states cannot be influenced via the faceplate.

The following table shows the displays that can be shown in this area of the standard view:

Display	Meaning	Type of device
Force start	The start of the drive was forced.	Motors (large)
Forced start →	The start was forced in the forward direction.	Reversing motors
Forced start ←	The start was forced in the reverse direction.	
Forced start >	The start was forced with speed 1. The speed depends on the configuration.	Two-speed motors
Forced start >>	The start was forced with speed 2. The speed depends on the configuration.	

Display	Meaning	Type of device
Forced stop	The stop of the drive was forced.	Motors (large), reversing motors, two-speed motors, motor valves
Forced open	The opening of the valve was forced.	Standard valves (large)
Forced close	The closing of the valve was forced.	
Forced Pos0/Pos1/Pos2	The valve is forced to a switch position or neutral position.	Two-way valve
Forced tracking	Forced tracking of the manipulated variable was forced. Forced tracking allows the controller output of a higher-level controller to be set to a value that can be specified.	Servo-valve
Tracking	Tracking of a manipulated variable was forced. Tracking enables bumpless changeover for controllers.	
Request 0/1	A reset of the device is expected.	Motors and valves (APL)

Protection functions and errors

The following information can be displayed depending on the state of the process tag.

- Motor protection

"Motor protection" is displayed when the motor is shut down by the motor protection function. The motor protection function is activated by thermal overload.

- Runtime error

"Runtime error" is displayed when the monitoring time is exceeded for the operating of motors or for maintaining a position for valves. The monitoring time specifies the period in which the feedback value can briefly change its value without triggering an error message. If the value change last more than the specified monitoring time, an error message is generated and the device moves to its neutral position.

- Control error

"Control error" is displayed when no feedback value is received for the control signal within a configured time period (monitoring time). In this case, the drive moves to its neutral position, depending on the configuration, and an error message is generated.

- Invalid signal

"Invalid signal" is displayed when invalid combinations of related input signals occur. A valve cannot receive the close and open commands simultaneously, for example.

- Changeover error

"Changeover error" appears when an unintentional drive state occurs with a changeover from manual to automatic mode or from local to automatic mode. Bumpless changeover can be enabled or disabled for the configuration.

Maintenance

For additional information on release for maintenance refer to "Activate or deactivate release for maintenance (Page 69)".

Delay times

For information on delay times, refer to "Display effective delay times (Page 82)".

Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

5.2.6 Status display

Introduction

The status display shows the status of a motor or valve in graphical form. Depending on the type of device, various icons are used to represent the specific features of the devices.

Status displays for motors

The table below shows the icons that represent the motor states:

Icon	State	Motor type
	Motor started (icon changes)	Motors (large/small)
	The motor is running	Motors (large/small)
		Reversing motors
		Variable-speed reversing motors
		Two-speed motors
	Motor stopped (icon changes)	Motors (large/small), (variable-speed) reversing motors, two-speed motors
	Motor idle	
	Error at motor (monitoring error, motor protection)	
	Motor out of service	Motors (large), (variable-speed) reversing motors, two-speed motors

Status displays for valves

The table below shows the icons that represent the valve states:

Icon	State	Valve type
	Valve is opening	Valves (large/small), servo-valves
		Motor valve
	Valve open	Valves (large/small)
		Two-way valve
		Motor valve
	Valve is closing	Valves (large/small), servo-valves
		Two-way valve
		Motor valve
	Valve closed	Valves (large/small)
		Motor valve
	Valve stop	

Icon	State	Valve type
	Error at valve	Valves (large/small)
		Two-way valve
		Motor valve
	Valve out of service	Valves (large)

5.3 Limit view

Layout and functions

The limit view is only available in the faceplate of motors when the limit monitoring is assigned an extra analog value (additional value).

In the limit view, you can monitor limits and, depending on your operator permission, change them based on the process. The limits enable you to specify the conditions that should generate messages of the "Alarm", "Warning" or "Tolerance" class. A high and a low limit can be set for each of these message classes. A corresponding message is generated when the configured limits are reached.

The limit view consists of the following areas:

- Value
- Limits for the additional value
- Bar graph
- Enabled operations

Value

Value	100.0000
LI311 Level	50.0000
	0.0000

This area shows the current value with the corresponding signal status and scale range for the bar graph. The scale range of the bar graph is predetermined and cannot be edited in the faceplate.

Limits for the additional value

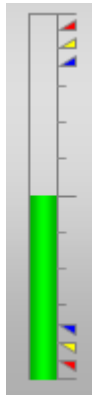
Additional value limits	
H alarm	95.0000
H warning	90.0000
H tolerance	85.0000
Hysteresis	1.0000
L tolerance	15.0000
L warning	10.0000
L alarm	5.0000

The limits of the additional value are displayed in this area. The following table shows the limits that you can change based on the process with the proper operator permission:

Limit	Explanation
H alarm	High limit for triggering a message of "Alarm" class
H warning	High limit for triggering a message of "Warning" class
H tolerance	High limit for triggering a message of "Tolerance" class
Hysteresis	You can configure a hysteresis for the limits, for example, to suppress signal flutter.
L tolerance	Low limit for triggering a message of "Alarm" class
L warning	Low limit for triggering a message of "Warning" class
L alarm	Low limit for triggering a message of "Tolerance" class

You can find additional information on changing values in the faceplate under "Change values (Page 60)".

Bar graph



The bar graph presents the current value in graphical form. The scale range of the bar graph is predetermined and cannot be edited in the faceplate.

The colored triangles show the specified limits. The various colors have the following meaning:

- Red: Alarm
- Yellow: Warning
- Blue: Tolerance

Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

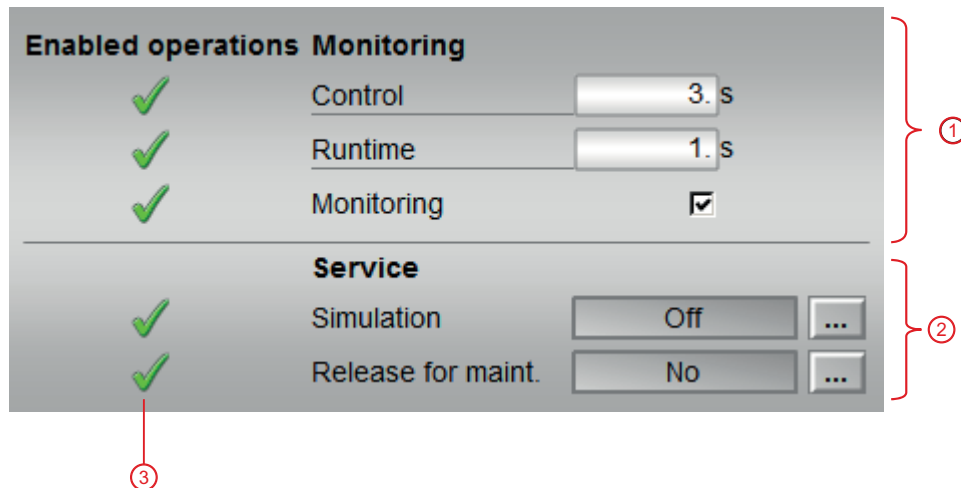
See also

Change values (Page 58)

5.4 Parameter view

Layout and functions

In the parameter view, you can monitor and change parameters values, as well as enable or disable simulation and the release for maintenance. The following figure shows the display and operator controls in the parameter view for motors and valves:



1. Monitoring the feedbacks
2. Activate simulation and release for maintenance
3. Enabled operations

Monitoring the feedbacks

In this area, you can change the values of the monitoring time and thereby affect the device. They can affect the following parameters:

- Control

In this field, enter the values of the monitoring time for the start and stop characteristics of motors and for the runtime of valves. The monitoring time specifies the period within which a corresponding feedback value is received in response to a control signal. If the monitoring time is exceeded, the following actions are triggered:

- "Control error" is displayed in the standard view.
- An error message is generated.
- The device moves to the neutral position.

You can find information on changing values in the section "Change values (Page 58)".

- Runtime

In this field, enter the values of the monitoring time for the operating characteristics of motors and for maintaining the position of valves. The monitoring time specifies the period in which the feedback value can briefly change its value without triggering an error message. If the monitoring time is exceeded, the following actions are triggered:

- "Runtime error" is displayed in the standard view.
- An error message is generated.
- The device moves to the neutral position.

You can find information on changing values in the section "Change values (Page 58)".

- Monitoring

You can use the check box to enable monitoring of feedback (checked) or disable it (cleared). Static and dynamic errors are reset by disabling the monitoring. If you re-enable monitoring during ongoing operation of the plant, only dynamic monitoring will be performed.

Simulation and release for maintenance

The status of the following functions is displayed in this area:

- Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

- Release for maintenance

For additional information on simulation refer to "Activate or deactivate release for maintenance (Page 69)".

If you have the appropriate operator permissions, you can edit the settings in this area.

Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

5.5 Preview

Layout and functions

The preview displays information about the operability of the parameters in the entire faceplate. You cannot edit the values displayed in the preview.

The preview consists of the following areas:

- Automatic preview
- Enabled operations
- Inputs and outputs

Automatic preview

Automatic preview shows the state in which the drive is set after a change from manual to automatic mode.

If the motor is already in automatic mode, the current operating state is displayed in this area.

Enabled operations

Information about the feasibility of the following actions is displayed in this area:

Action	Explanation
Start / Open	Start motor / Open valve
Stop / Close	Stop motor / Close valve
Reset	Reset for interlocks and errors
Automatic	Switch to automatic mode
Manual	Switch to manual mode
Local	Switch to local mode

Action	Explanation
Out of service	Switch to "Out of service" operating mode
Local operator permission	Whether or not the device is released for operation generally depends on this permission. The local operator permission can be set individually for each device. Devices at a work place can be released or locked independent of each other.

You can find additional information about enabled operations under "Operator permission and enable (Page 35)".

Displaying current control signals

This area shows the most important parameters of the device with the current control.

The following table shows the parameters that can be shown in this area:

Parameter	Control
Permission	0: No activation enable
	1: Enable for start/stop for motors or open/close for valves from the neutral position
Protection	0: Safety interlock enabled A reset must be performed once the interlock conditions are gone.
	1: Safety interlock disabled
Interlock	0: Interlock enabled A reset is not necessary once the interlock conditions are gone.
	1: Interlock disabled
Motor protection (only for motors)	0: Motor protection in effect
	1: Motor protection not in effect
Interlock disabled	0: Bypass disabled
	1: Bypassing of interlock in local mode or during process value simulation
Local	0: No operation in local mode
	1: Operation in local mode
Start / open local	1: Start / open in local mode
Stop / close local	1: Stop / close in local mode
Control (only for valves)	0: Valve is closing
	1: Valve is opening
Feedback open (only for valves)	1: Valve is open
Feedback close (only for valves)	1: Valve is closed
Feedback (only for motors)	1: Motor has started and is running

Parameter	Control
Start (only for motors)	1: Motor is starting
Stop (only for motors)	1: Motor is stopping

5.6 Additional views

Additional views of the faceplates for motors and valves

The faceplates of motors and valves also provide the following views:

- Alarm view (Page 44)
- Trend view (Page 48)
- Memo view (Page 52)
- Batch view (Page 54)

Controller (PID)

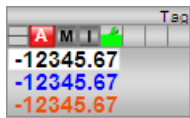
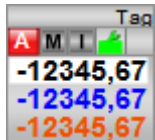
6.1 Block icons for PID controllers

Block icons

Different block icons with the following display and operator control functions are available for PID controllers in the process picture:

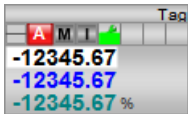
- Display the instance name (Page 17)
- Display of block comments via the tooltip (Page 17)
- Display of alarms, warnings, tolerances and messages (Page 18)
- Display of signal status and maintenance release (Page 22)
- Displaying and changing the operating modes (Page 20)
- Displaying and changing the setpoint specification (Page 21)
- Simulation of process values (Page 27)
- Displaying and changing setpoints (Page 28)
- Displaying and changing manipulated variables (Page 29)
- Display for tracking and forcing of values (Page 24)
- Memo display (Page 25)

The following table shows examples of block icons for PID controllers:

Block icons



Block icons





You can find information on the layout of the block icons in the chapter "Layout of the block icons (Page 15)".

Note

You can find detailed information on block icons in the PCS 7 online help.

Analog value monitoring

If the specified limits for alarms, warnings or tolerances are violated, the corresponding icons are displayed and the numeric value is highlighted in color. The following figure shows an example of how a triggered warning is displayed in the faceplate:

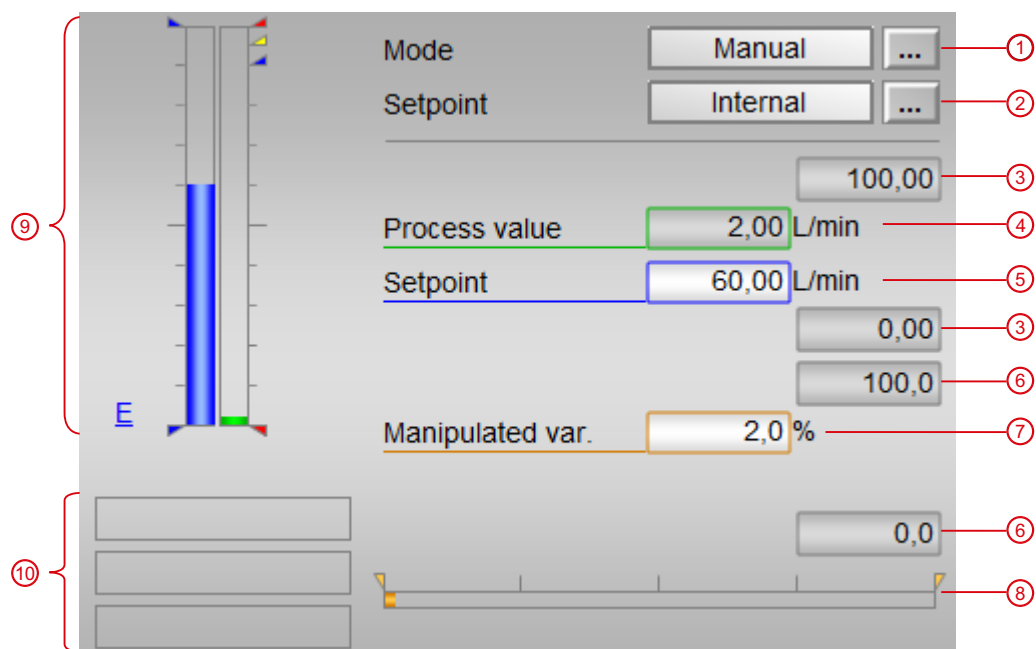


6.2 Standard view

6.2.1 Layout and functions

Standard view of PID controllers

You can use the basic functions in the standard view of the faceplates to operate the associated controllers. The following figure shows the display and operator controls in the standard view of the PID controller:



1. Operating mode

For PID controllers, you can switch between the following operating modes:

- Manual mode
- Automatic mode
- Program mode
- Out of service

For additional information on the operating modes, refer to "Switching operating modes (Page 55)".

2. Setpoint specification

You can find information on changing the setpoint under "Switch setpoint specification (Page 63)".

3. High and low scale value of the process value

The scale range provides information about the display area of the bar graph (9). The values of the scale range cannot be edited in the faceplate.

4. Current process value

You can find information on simulation of the process value under "Simulate process value (Page 115)".

5. Current setpoint

You can find information on changing the setpoint under "Change setpoint (Page 116)".

6. High and low scale value of the setpoint

The scale range provides information about the display area of the bar graph (9). The values of the scale range cannot be edited in the faceplate.

7. Current manipulated variable

You can find information on changing the setpoint under "Change manipulated variable (Page 118)".

8. Bar graph for the manipulated variable

The current manipulated variable is shown as a bar display in this area. The visible area of the bar graph depends on the configuration.

9. Bar graph

You can find information on the bar graph under "Bar graph (Page 122)".

10. Additional information

You can find information about displays in this area under "Additional information about the operating state (Page 120)".

The standard view of the faceplate may also contain the following display and operator controls:

- Current feedback of the manipulated variable and the corresponding signal status
- Bar graph for position feedback
- Button for the standard view of the faceplate for the monitoring a control performance
- Button for the standard view of another faceplate

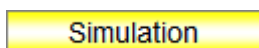
6.2.2 Simulate process value

Introduction

In the faceplate, you can simulate the process value of the controller, for example, for testing or maintenance purposes.

Requirement

- Simulation is activated. You can recognize this by the following displays:
 - In the block icon and faceplate
- In the standard view of the faceplate



You can find additional information on activating simulation via the faceplate under "Activate or deactivate simulation (Page 68)".

- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

To simulate a process value, follow these steps:

1. Open the faceplate.
2. Click on the input box of the process value.

The operating window is opened as an extension of the faceplate.

3. Enter a value.



You can find additional information on changing values in the operating window under "Change values (Page 60)".

4. If acknowledgement is required, click "OK".

6.2.3 Change setpoint

Introduction

You can affect the manipulated variable of the controller by changing the setpoint. You can change the setpoint in manual or automatic mode. The changeover from manual to automatic mode can be bumpless, depending on the configuration. With bumpless changeover, the setpoint is tracked to the process value in manual mode. After switching to automatic mode, the manipulated variable remains constant until the setpoint value is changed or the process value changes. If the setpoint is not tracked, the manipulated variable is recalculated immediately after switching to automatic mode.

The enable or disable bumpless changeover in the parameter in view of the faceplate.

Requirement

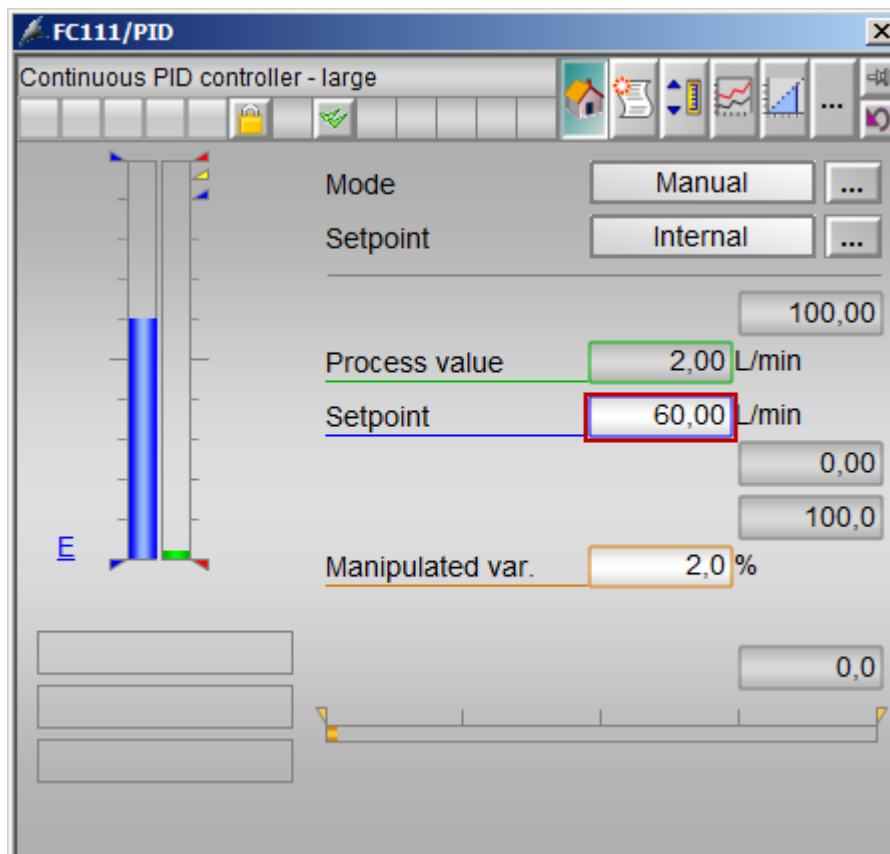
- The controller is in manual or automatic mode.
- The setpoint is specified internally.
- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

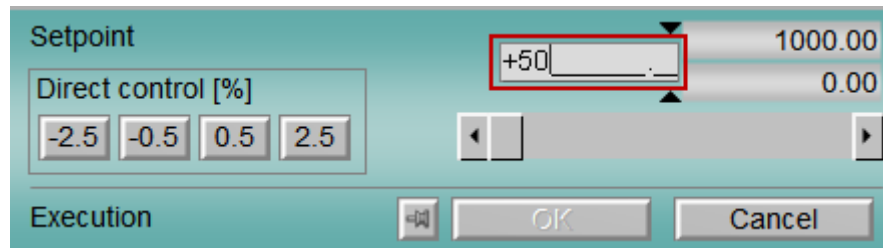
To change the setpoint, follow these steps:

1. Open the faceplate.
2. Click on the input box of the setpoint.



The operating window is opened as an extension of the faceplate.

3. Enter the desired value.



You can find additional information on changing values in the operating window under "Change values (Page 58)".

4. If acknowledgement is required, click "OK".

Note

If you need to repeatedly adjust the setpoint, you can pin the operating window to the user interface of process picture, and thereby not have it close each time a value is applied. For additional information refer to "Operating window (Page 59)".

6.2.4 Change manipulated variable

Introduction

You can change the manipulated variable (output signal) of a controller manually in manual mode. The manipulated variable can be analog or binary here.

In automatic mode, the manipulated variable is calculated automatically and can be simulated.

Requirement

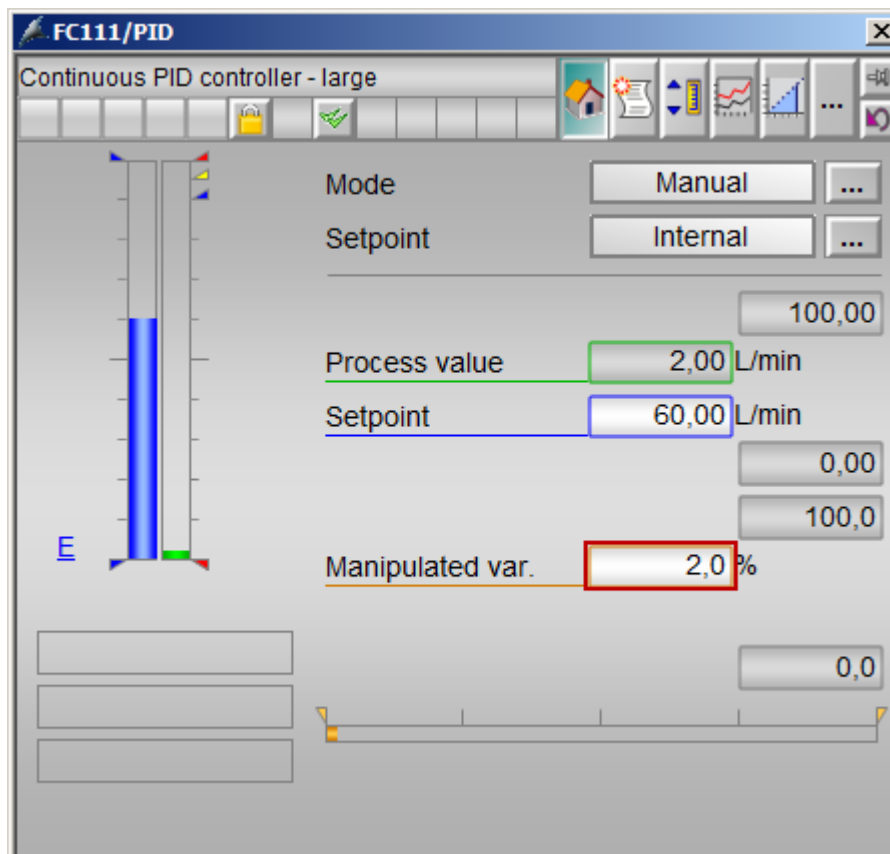
- The controller is in manual mode.
- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

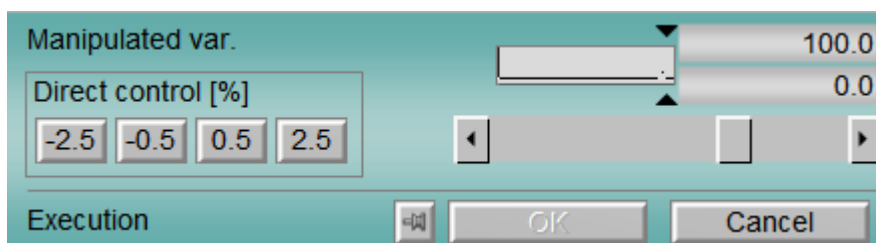
Procedure

To change the manipulated variable, follow these steps:

1. Open the faceplate.
2. Click on the input box of the manipulated variable.



3. The operating window is opened as an extension of the faceplate.
4. Enter the desired value.



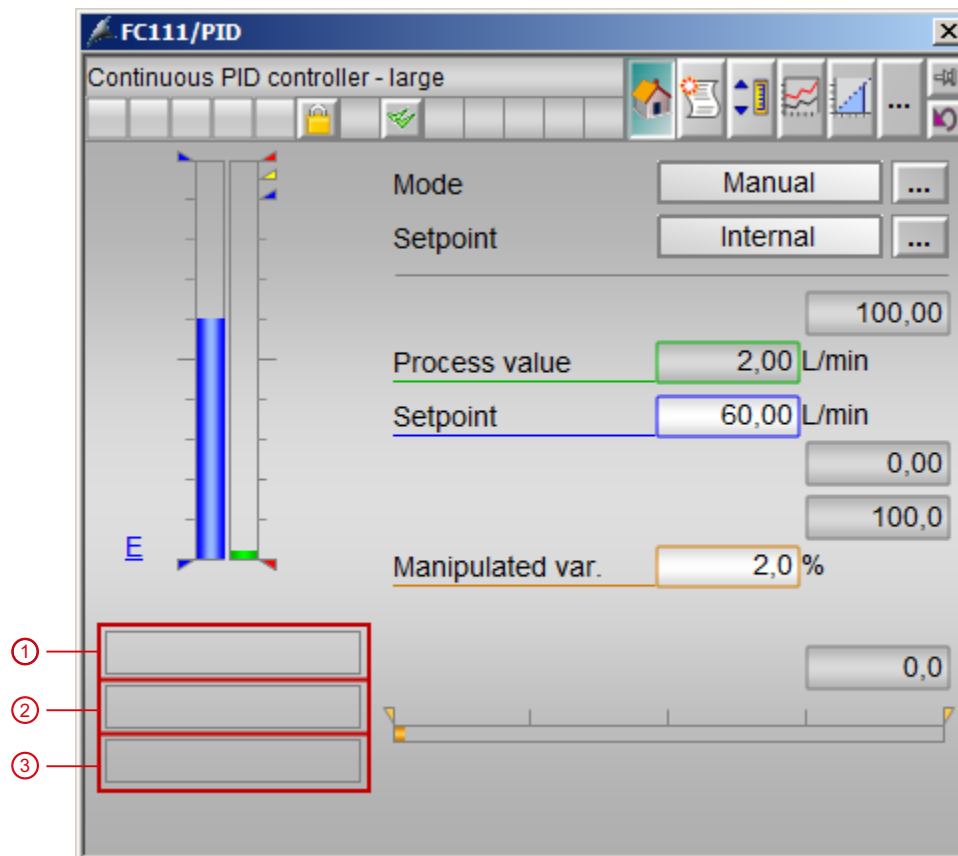
5. You can find additional information on changing values in the operating window under "Change values (Page 58)".
6. If acknowledgement is required, click "OK".

6.2.5 Additional information about the operating state

Additional information

The additional information serves as a guide and indicates the state of the PID controller.

The following figure shows the individual areas in which additional information is displayed:



1. Optimizing and tracking
2. Simulation
3. Maintenance

Optimizing and tracking

The following displays appear in this area:

- Optimizing

"Optimizing" is displayed when the controller tuning is enabled via the parameter view of the faceplate.

- Tracking

The manipulated variable is tracked to enable bumpless changeover of controllers. Tracking is set during configuration and displayed in the standard view of the faceplate as "Tracking" additional information.

Manual mode takes priority over tracking to enable the controller to be set to manual mode continue normal operation after tracking the manipulated variable .

- Forced tracking

Forced tracking is used to set the controller output to a value specified by a higher-level controller. This function is set during configuration and displayed in the standard view of the faceplate as "Forced tracking" additional information.

You cannot switch to manual mode from the faceplate with forced tracking. The manipulated variable cannot be limited.

Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

Maintenance

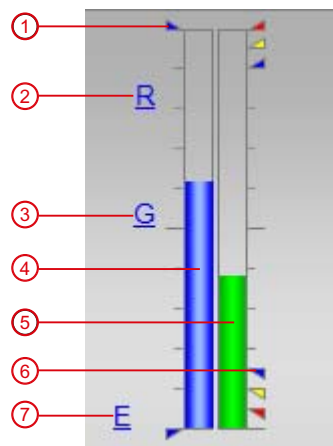
For additional information on release for maintenance refer to "Activate or deactivate release for maintenance (Page 69)".

6.2.6 Bar graph

Elements of the bar graph

The bar graph presents the value of a controller in graphical form. The scale range of the bar graph is predetermined and cannot be edited in the faceplate. For additional information refer to "Layout and functions (Page 113)".

The bar graph consists of the following display elements:



1. Limit display for the setpoint

This display shows the configured limits for the setpoint.

2. Display for the target value of the setpoint ramp

[R] is displayed when ramp generation is enabled via the ramp view of the faceplate.

3. Display of the active gradient limit

This display [G] is shown when the gradient limit is activated.

4. Display of external setpoint

This display is shown when you have selected "Internal" setpoint specification. The [E] display shows the external setpoint that would apply if you were to change the setpoint specification to "external".

5. Bar graph for the setpoint

This display shows the current setpoint in the form of a bar graph.

6. Bar graph for the process value

This display shows the current process value in the form of a bar graph.

7. Limit display

The colored triangles represent the configured limits for the process value. The various colors have the following meaning:

- Red: Alarm
- Yellow: Warning
- Blue: Tolerance

6.3 Limit view

Layout and functions

In the limit view, you can monitor limits and change them based on the process, if you have the proper operator permission. If the limits are reached or exceeded, an "Alarm", "Warning" or "Tolerance" class message is triggered.

The limit view consists of the following areas:

- Process value limits (PV)
- Control deviation limits (ER)
- Readback value limits (RBK)
- Setpoint operation range
- Manipulated variable operating range

Process value limits (PV)

Enabled operations Process value limits (PV)

✓	H alarm	100.00 kg/min
✓	H warning	100.00 kg/min
✓	Hysteresis	1.00 kg/min

The limits for monitoring the process value are displayed in this area. The following table shows the limits that you can change based on the process with the proper operator permission:

Limit	Explanation
H alarm	High limit for triggering a message of "Alarm" class
H warning	High limit for triggering a message of "Warning" class
H tolerance	High limit for triggering a message of "Tolerance" class
Hysteresis	You can configure a hysteresis for the limits, for example, to suppress signal flutter.
L tolerance	Low limit for triggering a message of "Tolerance" class
L warning	Low limit for triggering a message of "Warning" class
L alarm	Low limit for triggering a message of "Alarm" class

You can find additional information on changing values in the faceplate under "Change values (Page 58)".

Control deviation limits (ER)

Control deviation limits (ER)		
✓	H alarm	100.00 kg/min
✓	Hysteresis	1.00 kg/min
✓	L alarm	-100.00 kg/min

The limits for monitoring the control deviation are displayed in this area. The following table shows the limits that you can change based on the process with the proper operator permission:

Limit	Explanation
H alarm	High limit for triggering a message of "Alarm" class
Hysteresis	You can configure a hysteresis for the limits, for example, to suppress signal flutter.
L alarm	Low limit for triggering a message of "Alarm" class

You can find additional information on changing values in the faceplate under "Change values (Page 58)".

Readback value limits (RBK)

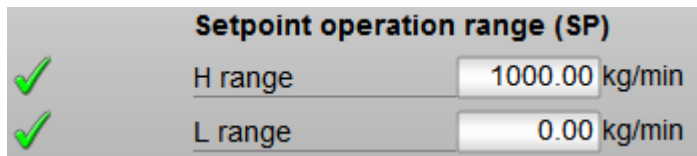
Readback value limits		
✓	H warning	100.0 %
✓	Hysteresis	1.0 %
✓	L warning	0.0 %

The limits for monitoring the readback value are displayed in this area. The following table shows the limits that you can change based on the process with the proper operator permission:

Limit	Explanation
H warning	High limit for triggering a message of "Warning" class
Hysteresis	You can configure a hysteresis for the limits, for example, to suppress signal flutter.
L warning	Low limit for triggering a message of "Warning" class

You can find additional information on changing values in the faceplate under "Change values (Page 58)".

Setpoint operation range



Setpoint operation range (SP)

✓ H range 1000.00 kg/min

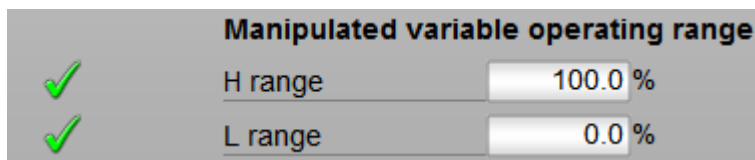
✓ L range 0.00 kg/min

The operating range of the setpoint is displayed in this area. The following table shows the limits that you can change based on the process with the proper operator permission:

Limit	Explanation
H range	High range limit
L range	Low range limit

You can find additional information on changing values in the faceplate under "Change values (Page 58)".

Manipulated variable operating range



Manipulated variable operating range

✓ H range 100.0 %

✓ L range 0.0 %

The operating range of the manipulated variable is displayed in this area. The following table shows the limits that you can change based on the process with the proper operator permission:

Limit	Explanation
H range	High range limit
L range	Low range limit

You can find additional information on changing values in the faceplate under "Change values (Page 58)".

Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

6.4 Parameter view

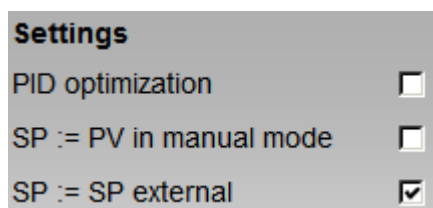
Layout and functions

In the parameter view, you can monitor and change parameters values, as well as enable or disable simulation and the release for maintenance.

The parameter view consists of the following areas:

- Settings for controller tuning and bumpless changeover
- Parameter
- Service
- Enabled operations

Settings for bumpless changeover



The screenshot shows a settings panel with a title bar labeled 'Settings'. Below the title bar, there are three settings, each with a checkbox on the right:

Setting	Checkbox
PID optimization	☐
SP := PV in manual mode	☐
SP := SP external	☒

You can make the following settings in this area:

- PID optimization

You can use this check box to allow a measurement or control engineer to optimize the control parameters of the controller (checked) or reset the enable (cleared). The confirmation of each change of state is made in the operating window.



- SP := PV in manual mode

You can use the check box to enable bumpless changeover from manual to automatic mode (checked) or disable it (cleared). The confirmation of each change of state is made in the operating window.

With bumpless changeover, the setpoint is tracked to the process value in manual mode. After switching to automatic mode, the manipulated variable remains constant until the setpoint value is changed or the process value changes. If the setpoint is not tracked, the manipulated variable is recalculated immediately after switching to automatic mode.

- SP := SP external

You can use the check box to enable bumpless changeover of the setpoint specification from "internal" to "external" (checked) or disable it (cleared). The confirmation of each change of state is made in the operating window.

With bumpless changeover of the setpoint specification, the internal setpoint is tracked to the external setpoint.

Parameter values

Parameter	
Gain	0,304
Integral time	2,26 s
Derivative time TD	0, s
Derivative gain	5,
Dead band	0,00 L/min
Control zone	0,0 L/min
ER AH delay factor	0
ER AL delay factor	0

In this area you can monitor the values of the following parameters and edit them, if you have the proper operator permission:

Parameter	Explanation
Gain	Proportional gain
Integral time	Integral time in seconds [s]
Derivative time TD	Derivative time in seconds [s]
Derivative gain	Gain of the derivative action
Dead band	Width of dead band
Control zone	Width of control zone
ER AH delay factor	Delay factor at positive setpoint step changes for incoming alarms at the control deviation monitoring
ER AL delay factor	Delay factor at negative setpoint step changes for incoming alarms at the control deviation monitoring
Motor actuating time	Motor pitch in seconds [s]
Minimum pulse duration	Minimum pulse duration in seconds [s]
Minimum pause	Minimum break duration in seconds [s]

The availability of the parameters depends on the configuration.

Service

The status of the following functions is displayed in this area:

- Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

- Release for maintenance

For additional information on release for maintenance refer to "Activate or deactivate release for maintenance (Page 69)".

If you have the appropriate operator permissions, you can edit the settings in this area.

Enabled operations

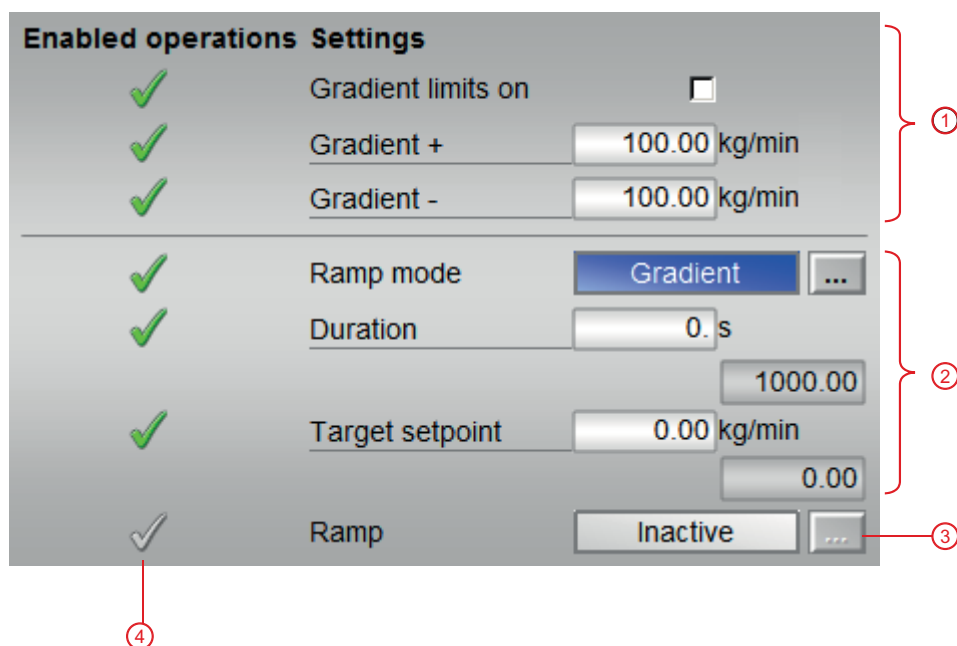
The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

6.5 Ramp view

Layout and functions

Starting at the current internal setpoint, the setpoint can approach a target setpoint in the form of a ramp. You control this ramp mode in the ramp view.

The following figure shows the areas of the ramp view:



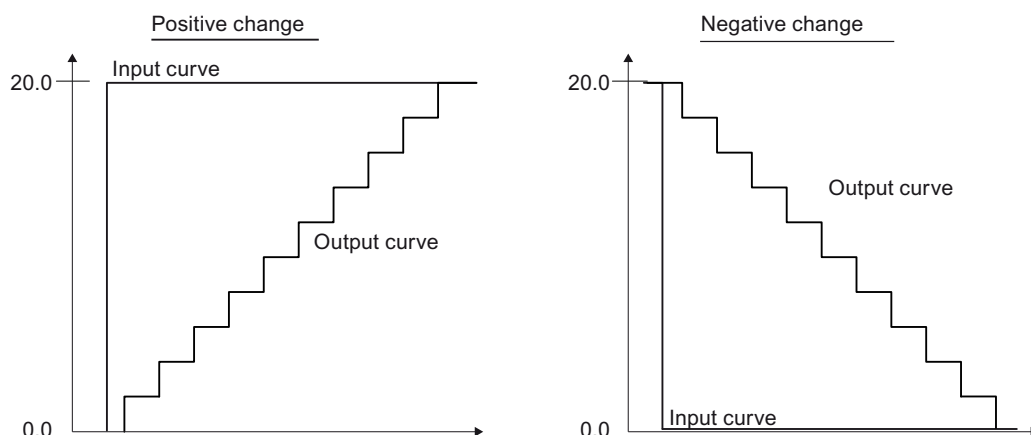
1. Gradient limit activated
2. Settings for the ramp mode
3. Activating the ramp mode
4. Enabled operations

Activating the gradient limit

You can use the "Gradient limits on" check box to activate the gradient limit of the setpoint (checked) or disable it (cleared). When you click the check box, the operating window opens and you can make the desired settings in it.

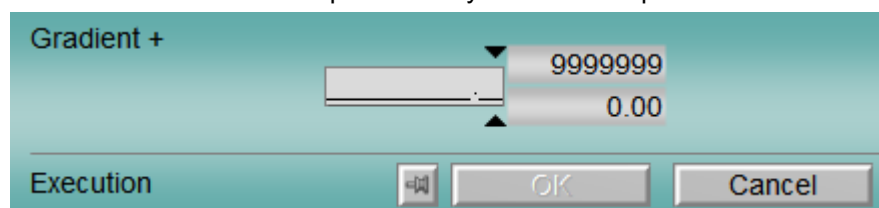


"Gradient limit" can be set separately for positive and negative setpoint changes:



- Gradient +

With this value you specify the limit for positive changes of the setpoint. You can change the value of the input box. The new value is entered in the operating window that opens as an extension of the faceplate when you click the input box.



You can find information on changing values under "Change values (Page 58)".

- Gradient -

With this value you specify the limit for negative changes of the setpoint. You can change the value of the input box. The new value is entered in the operating window that opens as an extension of the faceplate when you click the input box.

Settings for the ramp mode

In this area, you can choose whether the setpoint ramp is specified via the duration or via the gradient.

- Specification via duration

The gradient of the setpoint is calculated automatically so that the setpoint will reach the target value after the configured duration. The duration starts with the start of the ramp mode. Once the target setpoint is reached, the ramp mode is automatically terminated.

- Specification via gradients

The ramp slope corresponds to the positive or negative rate of change set during configuration. Once the target setpoint is reached, the ramp mode is automatically terminated.

You select the type of specification for setpoint ramp and confirm it in the operating window:

Enabled operations		Settings	
✓	Gradient limits on	☐	
✓	Gradient +	100.00	kg/min
✓	Gradient -	100.00	kg/min
✓	Ramp mode	Duration	...
✓	Duration	20. s	
			1000.00
✓	Target setpoint	80.00	kg/min
			0.00
✓	Ramp	Inactive	...
Ramp mode			
	Duration	Gradient	
Execution		OK	Cancel

Activating the ramp mode

The current status of the ramp mode is displayed in this area. You can change this status by opening the operating window of the faceplate and activating or deactivating the ramp mode.

Enabled operations Settings

✓	Gradient limits on	☐
✓	Gradient +	100.00 kg/min
✓	Gradient -	100.00 kg/min
✓	Ramp mode	Duration ...
✓	Duration	20. s
		1000.00
✓	Target setpoint	80.00 kg/min
		0.00
✓	Ramp	Inactive ...

Ramp

Active Inactive

Execution [OK] [Cancel]

Activation is only possible if the setpoint specification is performed internally and the gradient limitation is inactive. The activation of the ramp mode is valid for one setpoint change and is terminated again after the target setpoint is reached.

Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

6.6 Preview

Layout and functions

The preview displays information about the operability of the parameters in the entire faceplate. You cannot edit the values displayed in the preview.

The preview consists of the following areas:

- Values preview
- Enabled operations

Values preview

This area provides you a preview of certain parameter values.

The following table shows the parameters that can be shown in this area:

Parameter	Explanation
SP external	Currently applicable external setpoint
SP internal	Currently applicable internal setpoint
Control deviation	Current control deviation
Program value	Specified value for program mode
Disturbance	Additive value for feedforward control
Track MV	1: Tracking of manipulated variable active 0: Tracking of manipulated variable not active
Tracking value	Effective manipulated variable with tracking (Track MV = 1).

Enabled operations

Information about the feasibility of the following actions is displayed in this area:

Action	Explanation
SP external	Feedforward external setpoint
SP internal	Feedforward internal setpoint
SP Change	Change setpoint
Change MV	Change manipulated variable
Program mode	Switch to program mode
Automatic	Switch to automatic mode
Manual	Switch to manual mode
Out of service	Switch to "Out of service" operating mode
Local operator permission	Whether or not the device is released for operation generally depends on this permission. The local operator permission can be set individually for each device. Devices at a work place can be released or locked independent of each other.

You can find additional information about enabled operations under "Operator permission and enable (Page 35)".

6.7 Additional views

Additional views of the faceplates for PID controllers

The faceplates of PID controller also provide the following views:

- Alarm view (Page 44)
- Trend view (Page 48)
- Memo view (Page 52)
- Batch view (Page 54)

Interlocks

7.1 Block icons for interlocks

Block icons

Different block icons with the following display and operator control functions are available in the process picture:

- Display of the signal status
- Memo display
- Display of the output signal

The following table shows examples of block icons for interlocks:

Block icons




Display of the output signal



This area of the block icon indicates the status of the output signal and thus also whether or not the interlock is in effect.

The following table shows the meaning of the display colors:

Color	Meaning
Green	The interlock is disabled (good state).
Red	The interlock is active.
Blue	A bypass of the input signal is in effect.

Color	Meaning
Yellow	A simulated signal is actively involved in the output signal.
Gray	The interlock is not interconnected.

Note

You can find detailed information on block icons in the PCS 7 online help.

7.2 Open faceplate of an interlock

Introduction

You have the following two ways to open the faceplate of an interlock:

- Using the block icon
- Using the faceplate of the device connected to the interlock

Requirement

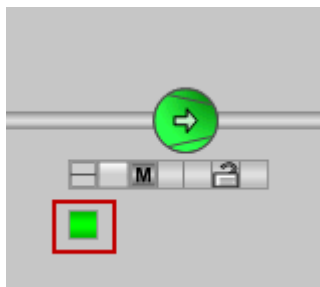
You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

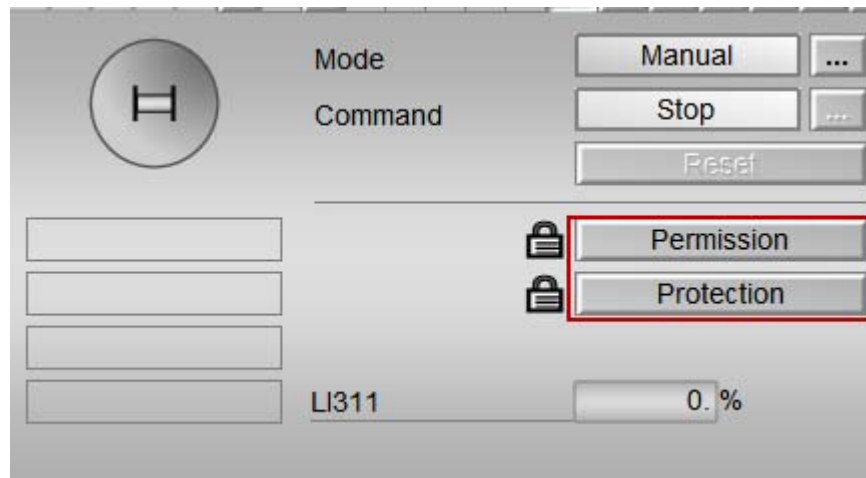
To open the faceplate, follow these steps:

Click on the block icon.



The appearance of the block icon depends on the configuration.

Or click on the button of a configured interlock.



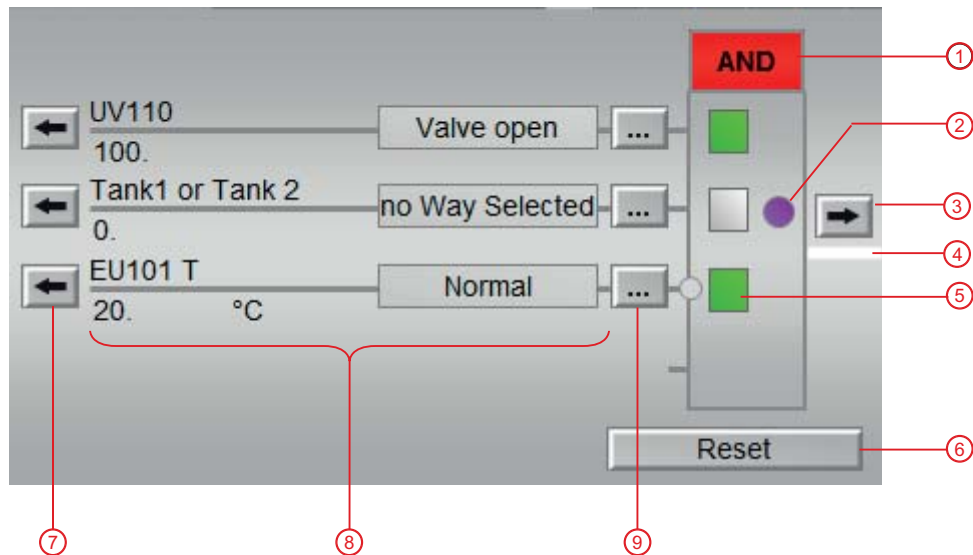
7.3 Standard view

Layout and functions

The interlocks evaluate input signals based on a binary logic (AND, OR), and forward the result as an output signal to the connected device. With an output signal of "1", the interlock condition is not fulfilled and the connected device is not interlocked. With an output signal of "0", the interlock condition is fulfilled and the connected device is moved to the safety position. A restart of the device in this case is only possible when the interlock conditions are no longer fulfilled and the output signal switches from "0" to "1". It may also be necessary to reset the device, depending on the interlock function.

You can find information on the interlock functions and states under "Display of the interlock status (Page 76)".

The standard view of the faceplates provides you with information about the status of input and output signals and gives you the opportunity to influence them and to navigate to the faceplates of the interconnected devices. The following figure shows the operating and display elements in the standard view for interlocks:

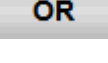


1. Display of the interlock status
2. Status for initial signal acquisition
3. Opening the faceplate of the output signal
4. For additional information refer to "Opening the faceplate of a connected value (Page 144)".
5. Status display of the output signal
6. Status display of signal processing
7. Resetting the settings of the signal processing
8. You can find information on resetting the settings under "Resetting settings (Page 148)".
9. Opening the faceplate of the input signal
10. You can find information on opening additional faceplates under "Opening the faceplate of a connected value (Page 144)".
11. Display of input values
12. Bypassing the input signal or resetting the bypass

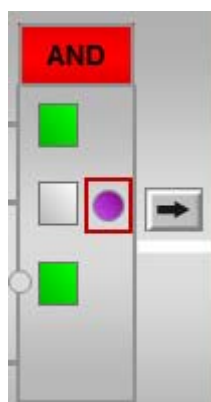
For additional information refer to "Bypassing input signals (Page 147)".

Display of the interlock status

This status display provides information on the binary logic by which the input signals are evaluated and the status of the interlock. This icons are used for this:

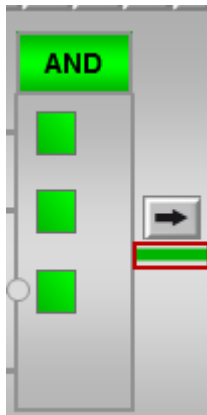
Icon		Status
		The interlock is disabled. (Good state)
		The interlock is active.
		A bypass of the input signal is in effect.
		A simulated signal is actively involved in the output signal.
		The interlock is not connected or is not used.

Display for initial signal acquisition



This display is shown next to an input value if a signal change of this input value caused the last interlock.

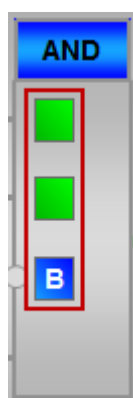
If multiple input signals are simultaneously responsible for an interlock, all the involved inputs are shown in the faceplate.

Status display of the output signal

This icon indicates the status of the output signal and thus also whether or not the interlock is in effect. The following table shows the meaning of the icon colors:

Color	Meaning
Green	The signal state of the output signal is "1". The interlock is not in effect.
White	The signal state of the output signal is "0". The interlock is in effect.

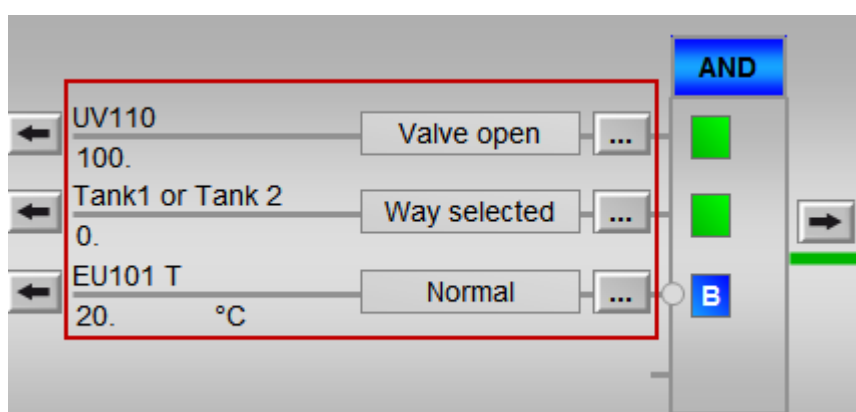
Status of signal processing



These displays represent the signal status, which is included in the evaluation of the input signals based on the binary logic (AND, OR) set during configuring. The following table shows the meaning of icons:

Icon	Status
	Signal state "1"
	The input signal is bypassed and not included in the evaluation.
	Signal state "0"

Display of input values



The connected analog input values and their signal states are displayed in this area. The texts that appear in this area are determined during configuration and can differ for each project. For information on signal status, refer to "Display of the signal status (Page 75)".

7.4 Opening the faceplate of a connected value

Introduction

In the faceplate of a configured interlock condition, you can open the faceplates of the devices that supply the input values or are connected to the output signal of the interlock.

Requirement

You have the required operator permissions.

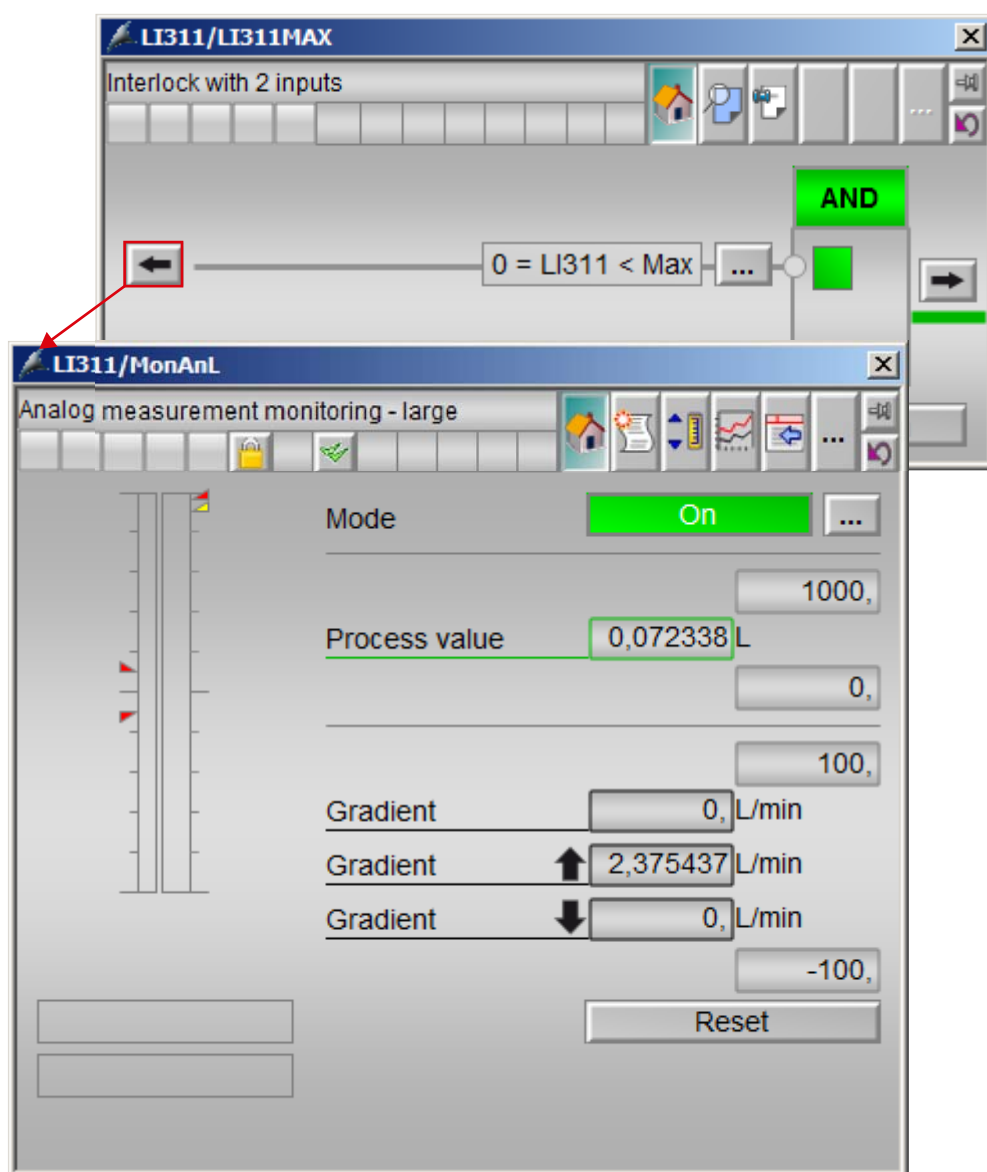
For additional information refer to "Operator permission and enable (Page 35)".

Opening the faceplate of an input value

To open the faceplate of a device that supplies the input values, follow these steps:

1. Open the faceplate of the interlock.

2. Click the button to open the faceplate of the desired input value.

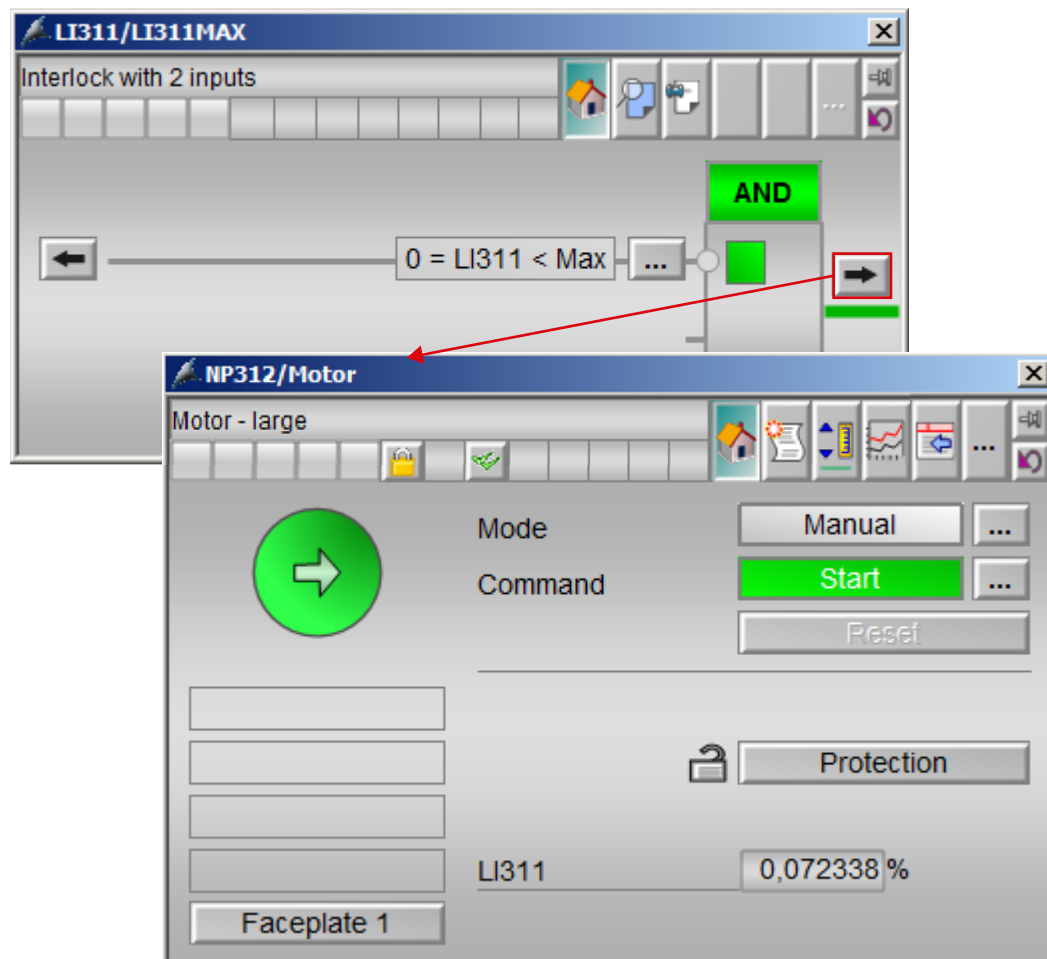


The faceplate of the input values opens.

Opening the faceplate of the output value

To open the faceplate of a device connected to the interlock, follow these steps:

1. Open the faceplate of the interlock.
2. Click the button to open the faceplate of the output value.



The faceplate of the connected device opens.

7.5 Bypassing input signals

Introduction

You can bypass input signals in the faceplate of a configured interlock condition. Bypassed input signals are not included in the evaluation of the interlock conditions. If a bypass exists, the following icon appears:



Requirement

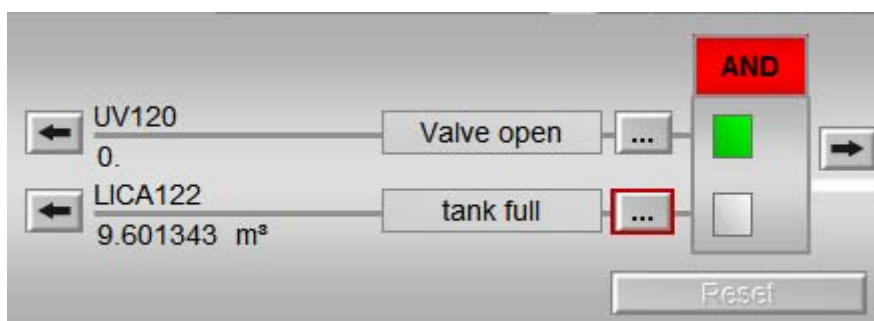
You have the required operator permission.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

To bypass an input signal, follow these steps:

1. Open the faceplate of the interlock.
2. Click on the button to open the operating window.



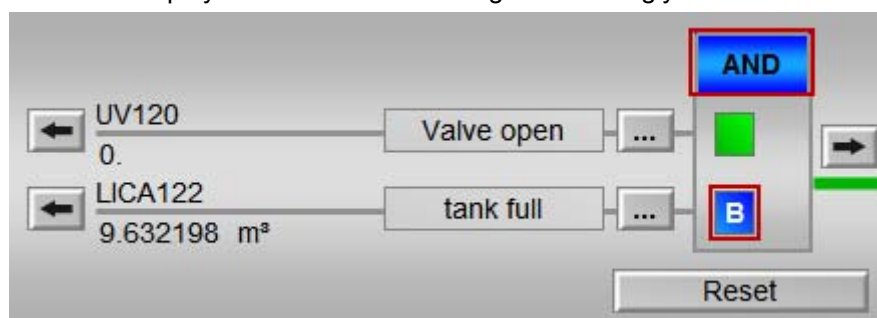
The operating window is opened as an extension of the faceplate.

- Click "Set" in the operating window.



- If acknowledgement is required, click "OK".

The input signal is bypassed. The icon for the bypass is displayed in the faceplate and the status display of the interlock is changed accordingly.



7.6 Resetting settings

Introduction

You can reset the following settings in the faceplate of the interlock:

- Bypass of an input signal
- Display of the initial signal acquisition

Requirement

- You have the required operator permission.

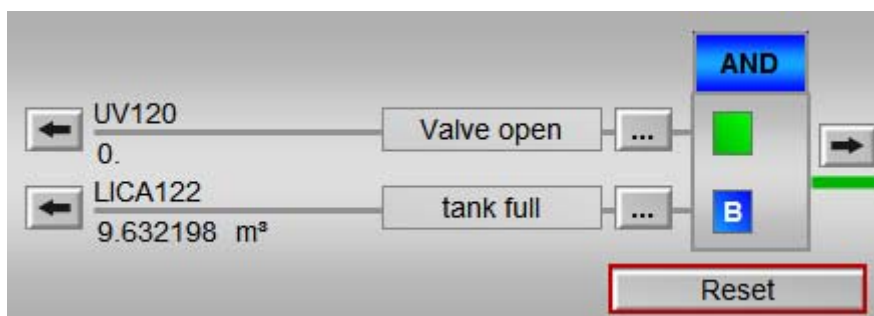
For additional information refer to "Operator permission and enable (Page 35)".

- A bypass of the initial signal acquisition is in effect.

Procedure

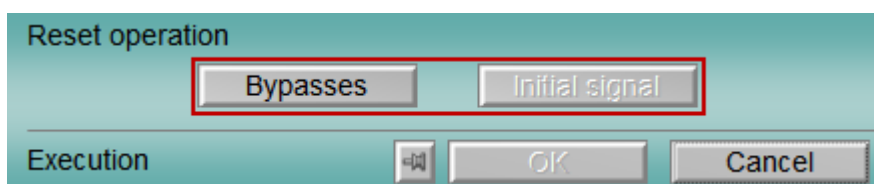
To reset the settings for the interlock in the faceplate, follow these steps:

1. Open the faceplate of the interlock.
2. Click "Reset" in the faceplate.



The operating window is opened as an extension of the faceplate.

3. Click the button for the setting you want to reset.



4. If acknowledgement is required, click "OK".

When you reset a bypass, the **B** icon is shown and the status display of the interlock is changed accordingly.

When the display for the initial signal acquisition is reset, the  icon is displayed.

Dosers

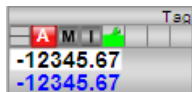
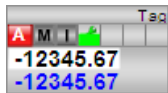
8.1 Block icons for dosers

Block icons

Different block icons with the following display and operator control functions are available for dosers in the process picture:

- Display the instance name (Page 17)
- Display of block comments via the tooltip (Page 17)
- Displaying and changing the operating modes (Page 20)
- Displaying and changing the setpoint specification (Page 21)
- Simulation of process values (Page 27)
- Displaying and changing setpoints (Page 28)
- Display of alarms, warnings, tolerances and messages (Page 18)
- Display of signal status and maintenance release (Page 22)
- Display for tracking and forcing of values (Page 24)
- Memo display (Page 25)

The following table shows examples of block icons for dosers:

Block icons



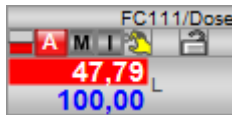
You can find information on the layout of the block icons in the chapter "Layout of the block icons (Page 15)".

Note

You can find detailed information on block icons in the PCS 7 online help.

Analog value monitoring

If the specified limits for alarms, warnings or tolerances are violated, the corresponding icons are displayed and the numeric value is highlighted in color. The following figure shows an example of how a triggered alarm is displayed in the block icon:



8.2 Standard view

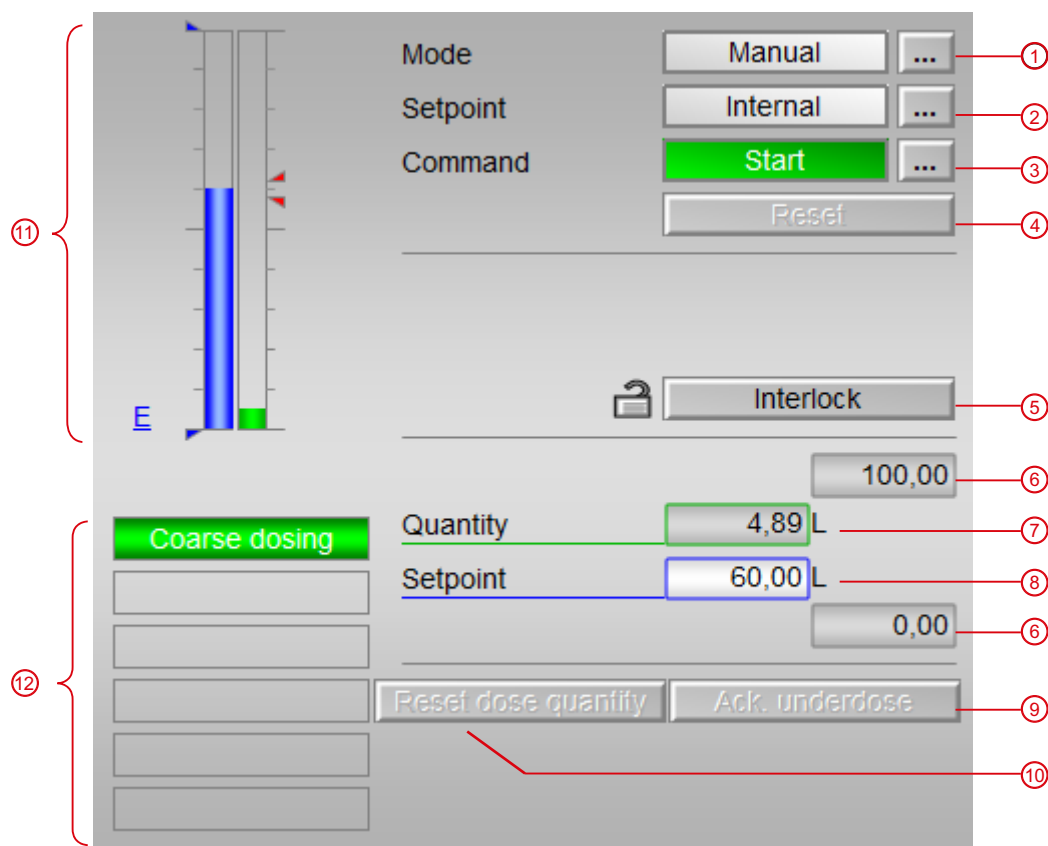
8.2.1 Layout and functions

Standard view

You can use the basic functions in the standard view of the faceplates to operate the associated doser. Dosers are used for the following applications:

- Single-component dosing using flow measurement
- Weighing of fill/removal volume using dosing scales

The following figure shows the display and operator controls in the standard view of the doser:



1. Operating mode

For dosers, you can switch between the following operating modes:

- Manual mode
- Automatic mode
- Local mode
- Out of service

For additional information on the operating modes, refer to "Switching operating modes (Page 55)".

2. Setpoint specification

You can find additional information on changing the setpoint under "Switch setpoint specification (Page 63)".

3. Operating state

For information on the operating state, refer to "Switching the operating mode (Page 155)".

4. Resetting after interlocks and errors

For additional information on resets, refer to "Resetting after interlocks and errors (Page 165)".

5. Interlock functions and states

For additional information on interlocks, refer to "Display of the interlock status (Page 76)".

6. Scale range of setpoint

The scale range provides information about the display area of the bar graph (11). The values of the scale range cannot be edited in the faceplate.

7. Dose quantity (current process value)

You can find information on simulation of the process value under "Simulate dose quantity (Page 157)".

8. Setpoint

You can find additional information on changing the setpoint under "Change the quantity setpoint (Page 162)".

9. Acknowledge underdosing

You can find information on acknowledging underdosing under "Acknowledge underdosing (Page 163)".

10. Reset dose quantity

You can find information on resetting the dose quantity under "Reset dose quantity (Page 160)".

11. Bar graph

You can find information on elements of the bar graph under "Bar graph (Page 168)".

12. Additional information

You can find information about displays in this area under "Additional information about the operating state (Page 166)".

Depending on the configuration, the following display and control elements are also displayed in the standard view of the faceplate:

- Display of auxiliary values

For additional information refer to "Display of auxiliary values (Page 81)".

- Navigation button to the standard view of another faceplate

For additional information refer to "Opening additional faceplates (Page 71)".

8.2.2 Switching the operating mode

Introduction

You can change the operating mode of dosers using the following commands:

- Start

The dosing procedure starts.

- Cancel

The dosing procedure is aborted. This command is also displayed when the dose quantity has been reached.

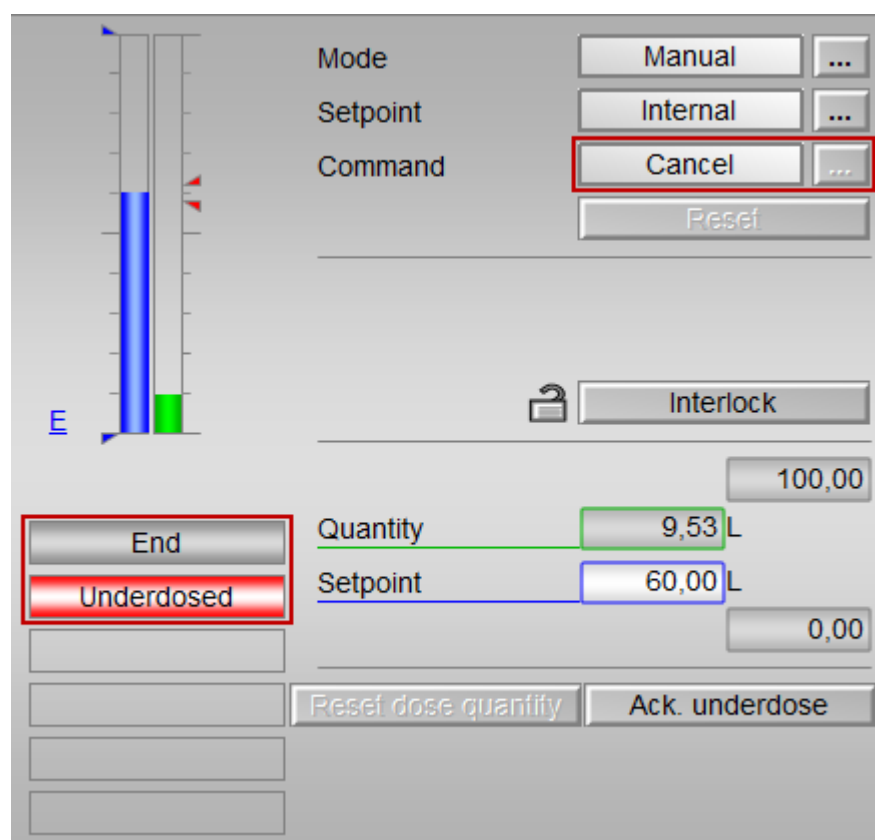
- Pause

The dosing procedure is stopped and can be continued with the "Continue" command.

- Continue

The dosing procedure is continued.

The display of the current operating state is displayed in the faceplate.



The doser can be set to the following operating states:

- Coarse/fine dosing (on)

The dosing procedure is performed discontinuously via a coarse/fine flow control with flow monitoring and setpoint specification. The settings for "Coarse dosing" and "Fine dosing" control procedures are defined in the configuration.

- Dribble

The "Dribbling" state is active when the condition "Dose quantity $\geq$ Dose setpoint - Dribbling quantity" is satisfied. Once the "Dribble" status has expired, the dose quantity is checked for overdosing or underdosing. If underdosing is identified after dribbling, the doser automatically switches to the "Off" operating state. In this case, you have the following options:

- Acknowledge underdosing
- Terminate the dosing procedure with the "Cancel" command
- Trigger postdosing with the "Continue" command

In automatic mode and depending on the configuration, the postdosing starts automatically when underdosing is determined.

- Pausing

The dosing procedure is paused.

- Off

The doser is placed in this state if any of the following events occur:

- An flow alarm is triggered.
- An interlock is activated.
- Underdosing is identified after the dribble time.

- End

The doser is placed in this state if any of the following events occur:

- The dose quantity is reached.
- The "Cancel" command is executed.
- The underdosing is acknowledged.
- The dose quantity is below the low tolerance limit after the expiration of the dribble time.

- Taring

The doser is placed in this state if there is an instable measured value at the start of a scale dosing.

You can find additional information about displays in this area under "Additional information about the operating state (Page 166)".

Requirement

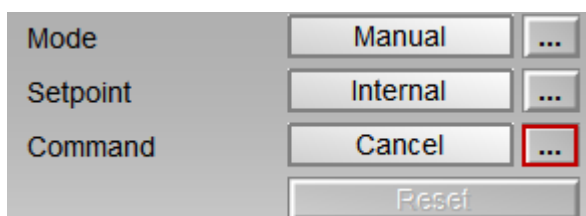
You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

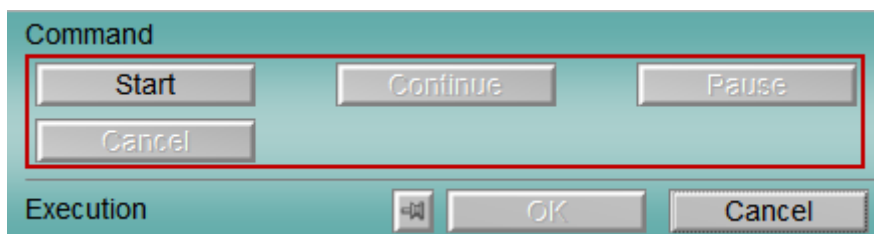
To change the operating state of a doser, follow these steps:

1. Open the faceplate.
2. Click on the button to open the operating window.



The operating window is opened as an extension of the faceplate.

3. Click the button for the command you want to execute.



4. If acknowledgement is required, click "OK".

8.2.3 Simulate dose quantity

Introduction

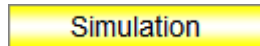
In the faceplate, you can simulate the dose quantity, for example, for testing or maintenance purposes.

Requirement

- Simulation is activated. You can recognize this by the following displays:
 - In the block icon and faceplate



- In the standard view of the faceplate



You can find information on activating simulation via the faceplate under "Activate or deactivate simulation (Page 68)".

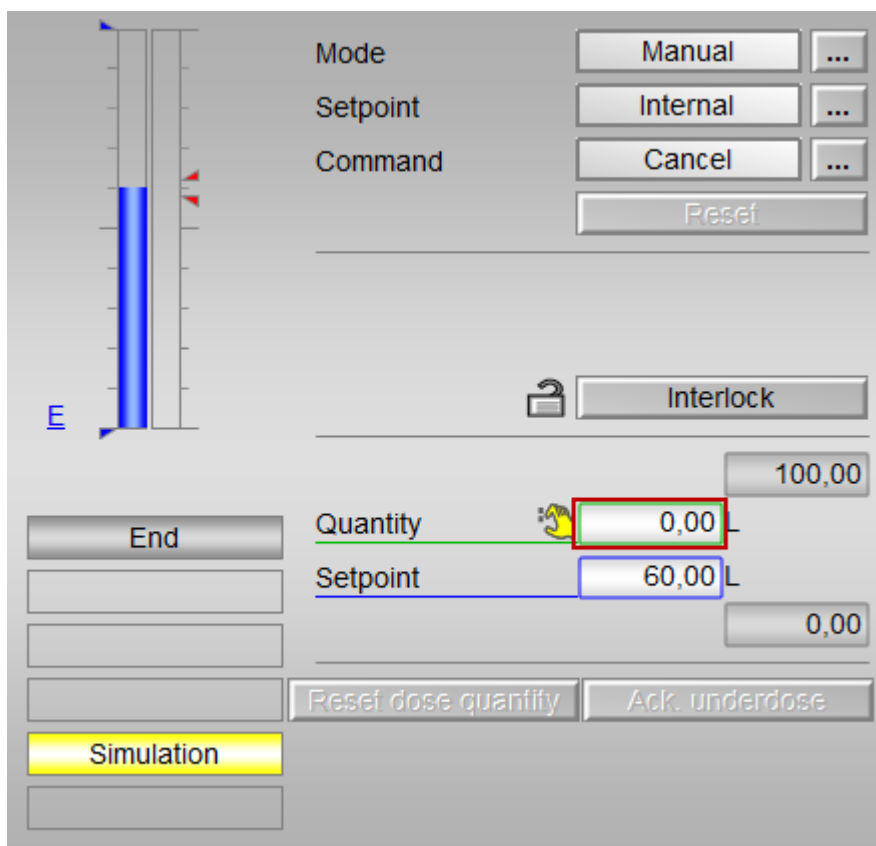
- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

To simulate a process value, follow these steps:

1. Open the faceplate.
2. Click on the input box of the dose quantity.



The operating window is opened as an extension of the faceplate.

3. Enter a value.



You can find additional information on changing values in the operating window under "Change values (Page 58)".

4. If acknowledgement is required, click "OK".

8.2.4 Reset dose quantity

Introduction

You can reset the value of the current dose quantity in the faceplate. Reset is only possible in the "End" operating state of the doser.

For additional information on the operating states, refer to "Switching the operating mode (Page 155)".

Requirement

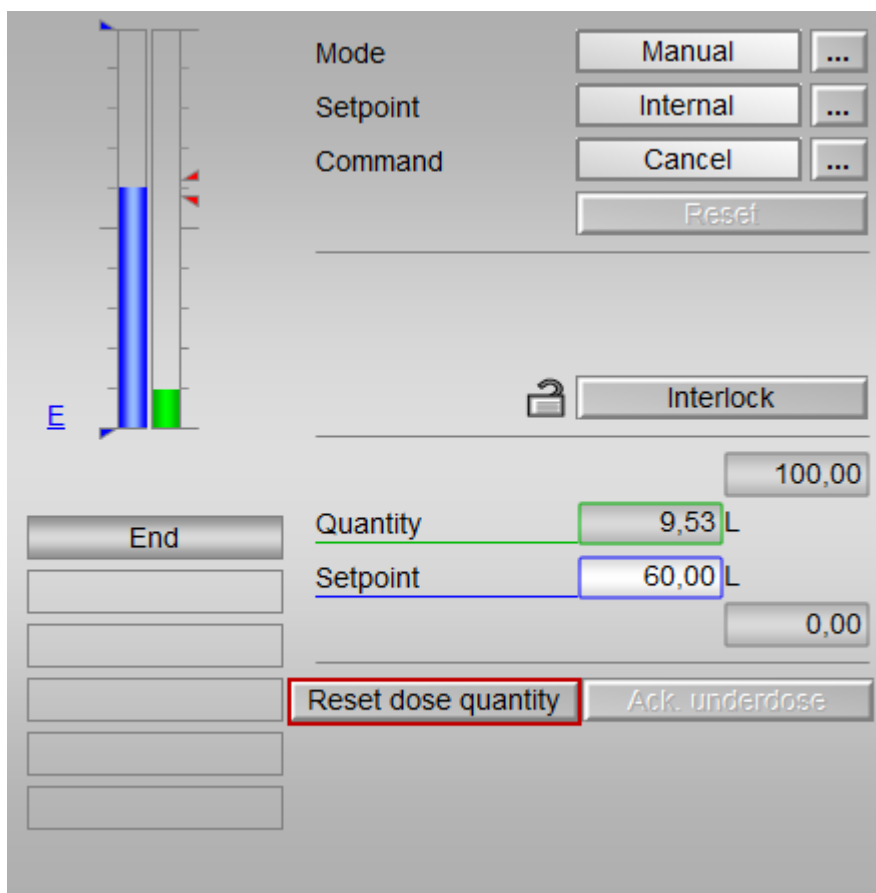
- The doser is in the "End" state.
- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

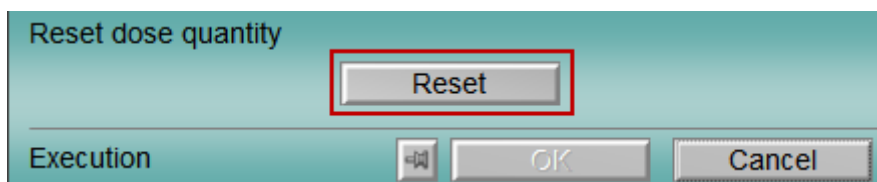
To reset the dose quantity, follow these steps:

1. Open the faceplate.
2. Click "Reset dose quantity".



The operating window is opened as an extension of the faceplate.

3. Click "Reset".



4. If acknowledgement is required, click "OK".

8.2.5 Change the quantity setpoint

Introduction

The dosing procedure always requires a setpoint for the dose quantity. The setpoints for the coarse and fine flow control can be calculated from the quantity setpoint. You can change the quantity setpoint in the standard view of the faceplate.

Requirement

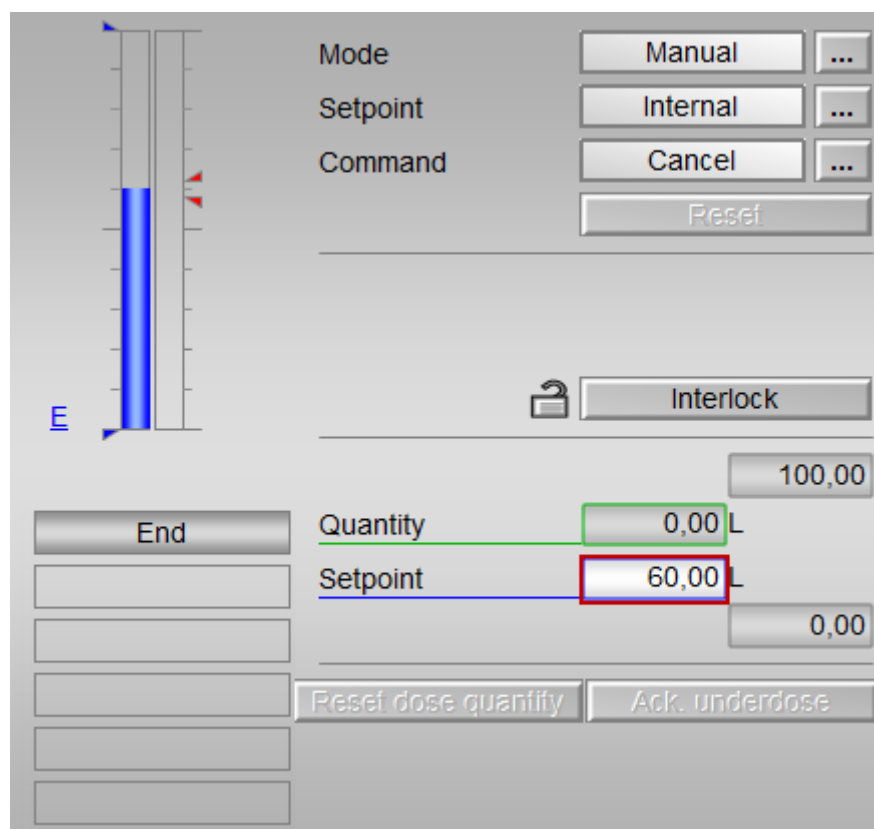
You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

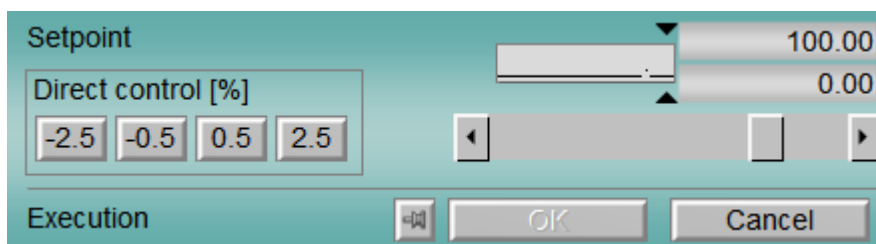
To change the setpoint for the dose quantity, follow these steps:

1. Open the faceplate.
2. Click on the input box of the setpoint.



The operating window is opened as an extension of the faceplate.

3. Enter the desired value.



You can find additional information on changing values in the operating window under "Change values (Page 58)".

4. If acknowledgement is required, click "OK".

8.2.6 Acknowledge underdosing

Introduction

Underdosing has occurred when the current dose quantity has not reached the specified low limit. For additional information on the limits of a doser, refer to "Limit view (Page 174)".

Requirement

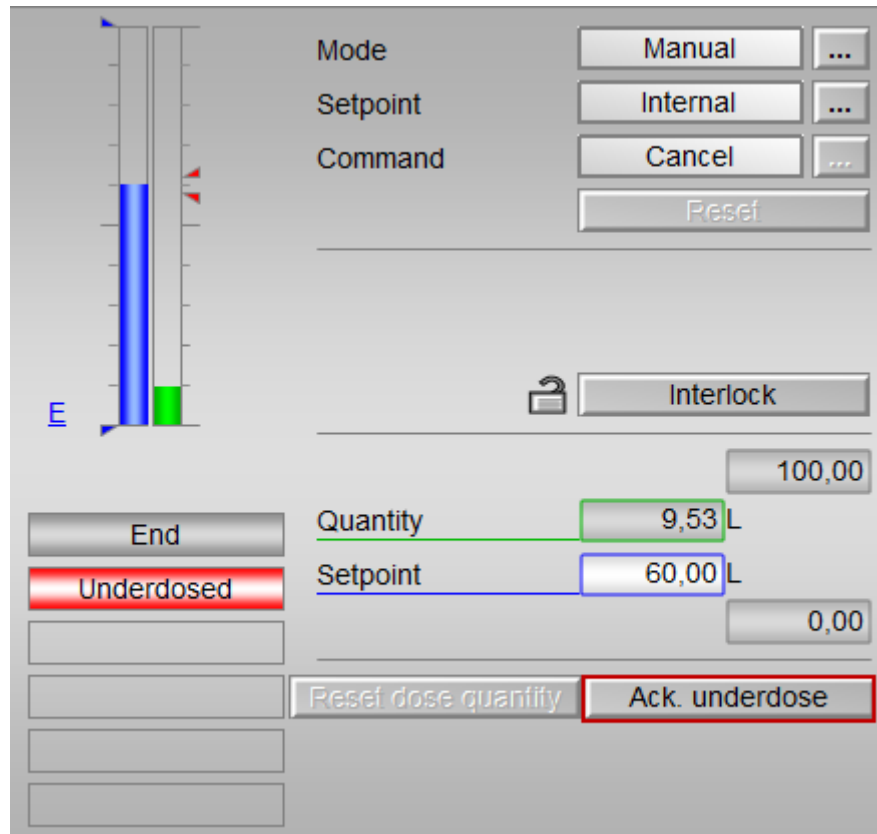
- Underdosing has occurred.
- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

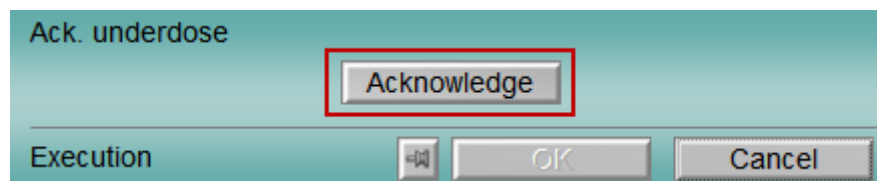
To acknowledge underdosing, follow these steps.

1. Open the faceplate.
2. Click "Ack. underdose".



The operating window is opened as an extension of the faceplate.

3. Click "Acknowledge".



4. If acknowledgement is required, click "OK".

8.2.7 Resetting after interlocks and errors

Introduction

A reset is necessary when an interlock or a monitoring error ("runtime" or "control" for example) has occurred, in order for the control to become activated again. You can perform the reset in automatic mode and, depending on the configuration, in manual mode as well.

Requirement

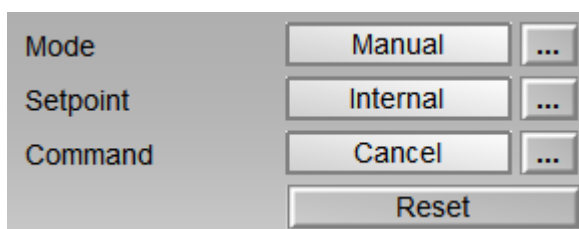
- An interlock or an error has occurred.
- You have the required operator permissions.

For additional information refer to "Operator permission and enable (Page 35)".

Procedure

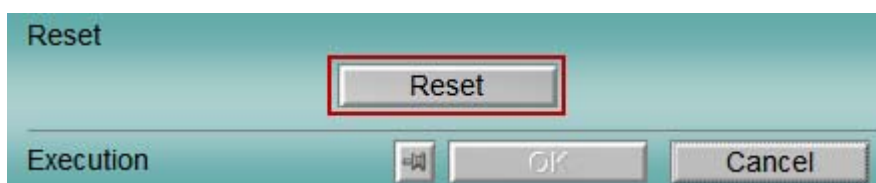
To reset monitoring errors or interlocks, follow these steps:

1. Open the faceplate.
2. Click "Reset" in the faceplate.



The operating window is opened as an extension of the faceplate.

3. Click "Reset".



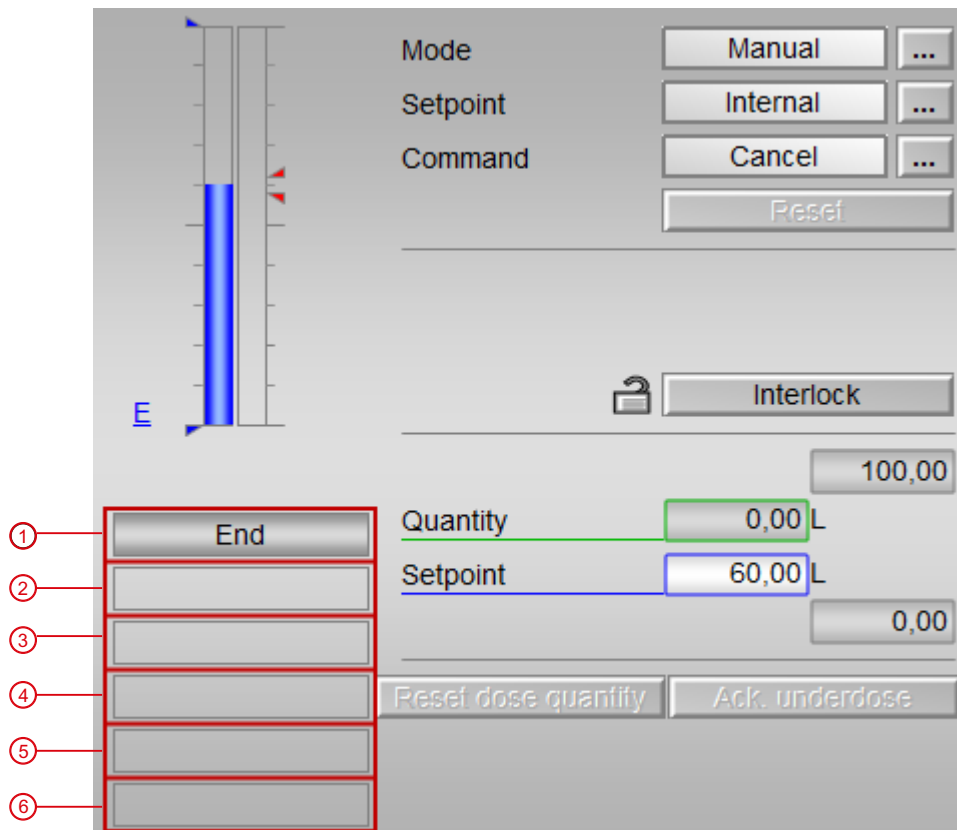
4. If acknowledgement is required, click "OK".

8.2.8 Additional information about the operating state

Additional information

The additional information serves as a guide and indicates the state of the doser.

The following figure shows the individual areas in which additional information is displayed:



1. Current operating state
2. Display at underdosing and overdosing
3. Forcing operating states
4. Signal state
5. Simulation
6. Release for maintenance

Current operating state

The displays in this area inform you about the current operating state of the doser. For additional information on the operating states, refer to "Switching the operating mode (Page 155)".

Display at underdosing and overdosing

The displays in this area indicate whether underdosing or overdosing has occurred.

Underdosing has occurred if, after the expiration of dribbling time or post dose time, the setpoint has not been reached and the current dose quantity is below the dosing limit.

Overdosing has occurred if, after the expiration of dribbling time or post dose time, the setpoint has been exceeded and the current dose quantity is above the dosing limit.

The dosing limits for underdosing and overdosing are shown in the limit view and can be edited there.

Forcing operating states

When you force operating states, the doser is set to a new state regardless of the currently pending control. The forcing of operating states cannot be influenced via the faceplate.

The following table shows the displays that can be shown in this area of the standard view:

Display	Meaning
Forced start	The start of the dosing procedure was forced.
Forced pause	The stop of the dosing procedure was forced.
Forced resume	The continuation of the dosing procedure was forced.
Forced stop	The stop of the dosing procedure was forced.
Request 0/1	A reset of the process tag is expected.

Signal state

The following displays appear in this area:

- Flow

The "Flow" display appears when a flow limit is violated.

- Invalid signal

"Invalid signal" is displayed when invalid combinations of related input signals occur in automatic mode. For example, the "Pause" and "Continue" commands cannot be executed simultaneously.

Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

Maintenance

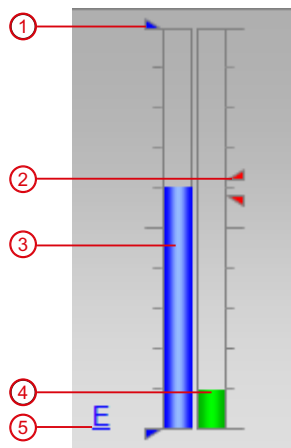
For additional information on release for maintenance refer to "Activate or deactivate release for maintenance (Page 69)".

8.2.9 Bar graph

Elements of the bar graph

The bar graph presents the value of a doser in graphical form. The scale range of the bar graph is predetermined and cannot be edited in the faceplate. You can find additional information about the scaling range under "Layout and functions (Page 152)".

The bar graph consists of the following display elements:



1. Limit display of the quantity setpoint

This display shows the limits for the setpoint.

2. Limit display of current dose quantity

The colored triangles represent the limits for the dose quantity. The various colors have the following meaning:

- Red: Alarm
- Yellow: Warning
- Blue: Tolerance

3. Bar graph of the quantity setpoint

4. Bar graph of current dose quantity

5. Display of external setpoint

This display is shown when you have selected "Internal" setpoint specification. The [E] display shows the external setpoint that would apply if you were to change the setpoint specification to "external".

8.3 Setpoint view

8.3.1 Quantity

Layout and functions

In this setpoint view, you can monitor the current quantity setpoints and set the range limits for the setpoint specification as well as the factor for the fine dosing.

The following figure shows the display and operator controls that the setpoint view can have for the dose quantity:

The screenshot displays the 'Quantity setpoint (SP)' interface. It is divided into two main sections: 'Enabled operations' and 'Quantity setpoint limits'. The 'Enabled operations' section includes four rows: 'DQ SP total' (70.00 kg), 'DQ SP coarse' (70.00 kg), 'DQ SP fine' (0.00 kg), and 'DQ SP fine factor' (0.00 %). A green checkmark is visible to the left of these rows. The 'Quantity setpoint limits' section includes four rows: 'H total' (100.00 kg), 'L total' (0.00 kg), 'H fine' (100.00 %), and 'L fine' (0.00 %). Each row in this section has a green checkmark to its left. Red callouts are present: (1) points to the 'DQ SP total' value; (2) is a bracket grouping the 'DQ SP coarse', 'DQ SP fine', and 'DQ SP fine factor' rows; (3) is a bracket grouping the 'H total', 'L total', 'H fine', and 'L fine' rows; and (4) points to the green checkmarks in the 'Quantity setpoint limits' section.

Enabled operations		Quantity setpoint (SP)	
	DQ SP total	70.00	kg
	DQ SP coarse	70.00	kg
	DQ SP fine	0.00	kg
✓	DQ SP fine factor	0.00	%
Quantity setpoint limits			
✓	H total	100.00	kg
✓	L total	0.00	kg
✓	H fine	100.00	%
✓	L fine	0.00	%

1. Setpoint for entire dose quantity

2. Setpoints for the coarse and fine dosing

3. Range limits of the setpoints
4. Enabled operations

Setpoint for entire dose quantity

This area shows the current setpoint for the entire dose quantity. You can edit the setpoint in the standard view of the faceplate, if you have the proper operator permission.

You can find additional information on changing the setpoint under "Change the quantity setpoint (Page 162)".

Setpoints for the coarse and fine dosing

In this area, you can edit the setpoint factor (DQ SP fine factor) for fine dosing, if you have the proper operator permission. You specify the setpoint factor as a percentage, and the given value is used to automatically calculate and display the quantity setpoint for the coarse and fine dosing (DQ SP coarse and DQ SP fine).

Depending on the configuration, the quantity setpoint for the fine dosing can be entered as an absolute value. The following figure shows how the parameters in this case are presented in the faceplate:

DQ SP total	70.00 kg
DQ SP coarse	58.00 kg
DQ SP fine	12.00 kg

You can use the "DQ SP fine" parameter to specify the exact quantity for fine dosing. You can find additional information on changing values under "Change values (Page 58)".

Range limits of the setpoints

This area shows you the range limits for the quantity setpoint:

Range limits	Explanation
H total	Using the input box of this parameter, you can change the high limit for the setpoint of the total dose quantity. If you enter a limit that is less than the current setpoint ("DQ SP total" parameter), the current setpoint is set to the value of the high limit.
L total	Using the input box of this parameter, you can change the low limit for the setpoint of the total dose quantity. If you enter a limit that is greater than the current setpoint ("DQ SP total" parameter), the current setpoint is set to the value of the low limit.

Range limits	Explanation
H fine	Using the input box of this parameter, you can change the high limit for the quantity setpoint of the fine dosing. The high limit applies when you enter the setpoint factor (DQ SP fine factor) or quantity setpoint (SP DQ fine) for fine dosing.
L fine	Using the input box of this parameter, you can change the low limit for the quantity setpoint of the fine dosing. The high limit applies when you enter the setpoint factor (DQ SP fine factor) or quantity setpoint (SP DQ fine) for fine dosing.

You can find additional information on changing values under "Change values (Page 58)".

Enabled operations

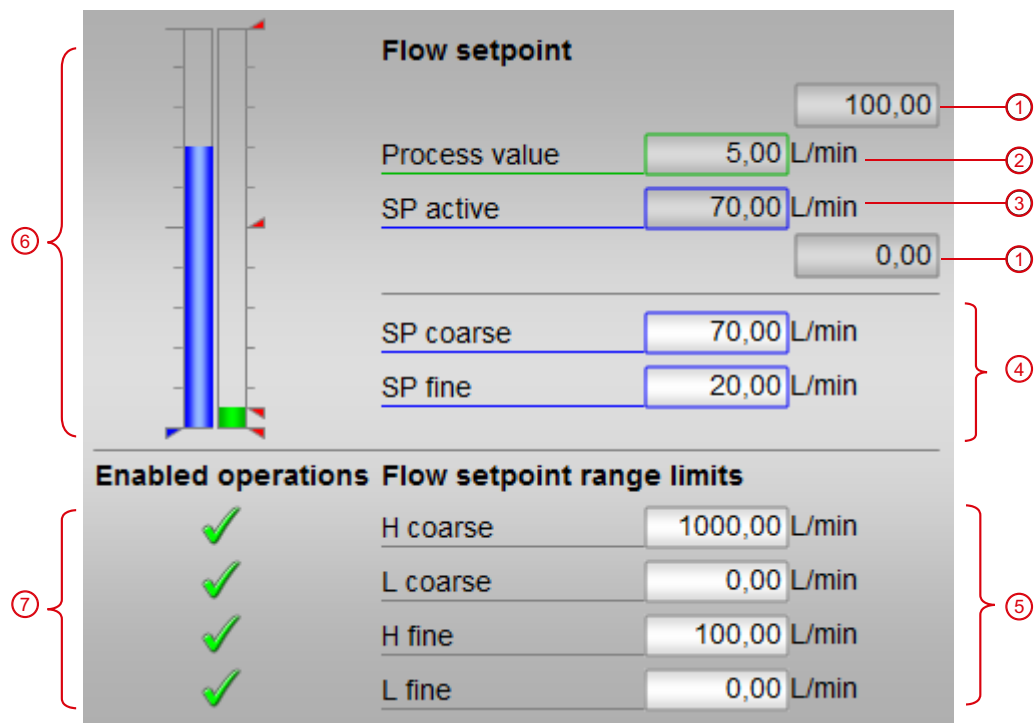
The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

8.3.2 Flow

Layout and functions

In this setpoint view, you can monitor the current values for the flow control and, if you have the proper operator permission, edit setpoints and their range limits.

The following figure shows the display and operator controls that the setpoint view can have for the flow control:



1. Scale range of the bar graph (6)
2. Current process value
3. Active setpoint for the flow
4. Setpoints for coarse and fine dosing
5. Range limits of the setpoints
6. Bar graph
7. Enabled operations

Scale range of the bar graph

The scale range of the bar graph is predetermined and cannot be edited in the faceplate.

Current process value

The current process value of the flow control is displayed in this area. You can simulate this value, for example, for servicing purposes.

Active setpoint (SP active)

This area shows the effective setpoint (coarse or fine flow) for flow control.

Setpoints for coarse and fine dosing

In this area, you can edit the setpoints for coarse and fine flow control ("SP coarse" and "SP fine" parameters), if you have the proper operator permission. You must take the defined range limits (5) into consideration when entering the values.

In some faceplates the setpoints are specified in percent. The following figure shows how the values in this case are presented in the faceplate:

The screenshot shows a 'Flow setpoint' faceplate. At the top right, there is a value '100.00'. Below it, 'Process value' is shown as '0.00 kg/h'. Further down, there are three setpoint parameters: 'SP active' at '60.00 %', 'SP coarse' at '60.00 %', and 'SP fine' at '40.00 %'. Each parameter has a corresponding input box.

You can find additional information on changing values under "Change values (Page 58)".

Range limits for the setpoints

This area shows you the range limits for the flow setpoints:

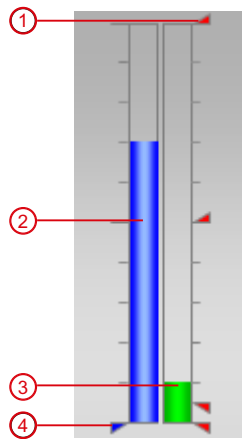
Range limits	Explanation
H coarse	Using the input box of this parameter, you can change the high limit for the setpoint of the coarse flow control. If you enter a limit that is less than the specified setpoint for coarse flow control ("SP coarse" parameter), the setpoint is set to the value of the high limit.
L coarse	Using the input box of this parameter, you can change the low limit for the setpoint of the coarse flow control. If you enter a limit that is greater than the specified setpoint for coarse flow control ("SP coarse" parameter), the setpoint is set to the value of the high limit.
H fine	Using the input box of this parameter, you can change the high limit for the setpoint of the fine flow control. If you enter a limit that is less than the specified setpoint for fine flow control ("SP fine" parameter), the setpoint is set to the value of the high limit.
L fine	Using the input box of this parameter, you can change the low limit for the setpoint of the fine flow control. If you enter a limit that is greater than the specified setpoint for fine flow control ("SP fine" parameter), the setpoint is set to the value of the high limit.

You can find additional information on changing values under "Change values (Page 58)".

Bar graph

The bar graph represents the current process value (2) and the active setpoint (3) in graphical form. The scale range of the bar graph (1) is predetermined and cannot be edited in the faceplate.

The following figure shows the elements of the bar graph:



1. Limit for the process value

These triangles show limits for the flow limits. The flow limits are set in the limit view.

2. Bar graph of the active setpoint for the flow
3. Bar graph of the process value
4. Limit display of the active setpoint for the flow

If the setpoints have been entered as percentages, the bar graph of the active setpoint and the corresponding limit displays are not available.

Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

8.4 Limit view

Layout and functions

In the limit view, you can monitor limits and change them based on the process, if you have the proper operator permission. If the limits are reached or exceeded, a corresponding "Alarm" class message is triggered.

The limit view consists of the following areas:

- Dosing limits
- Flow limits (coarse)
- Flow limits (fine)
- Limit creep rate
- Enabled operations

Dosing limits

Dosing limits	
Overdosing	3.00 kg
Underdosing	2.00 kg

The limits for monitoring the dose quantity are displayed in this area. The following table shows the limits that you can change with the proper operator permission:

Limit	Explanation
Overdosing	Limit for the overdosing The "overdosed" state occurs when the difference between the current dose quantity and the quantity setpoint is greater than the limit for overdosing. If an overdose occurs, a corresponding display appears in the standard view.
Underdosing	Limit for the underdosing The "underdosed" state occurs when the difference between the quantity setpoint and the current dose quantity is greater than the limit for underdosing. If an underdose occurs, a corresponding display appears in the standard view.

You can find additional information on changing values under "Change values (Page 58)".

Flow limits (coarse)

Flow limits (coarse)	
H alarm	100.00 kg/h
L alarm	10.00 kg/h
Hysteresis	1.00 kg/h

The limits for monitoring the coarse flow are displayed in this area. The following table shows the limits that you can change with the proper operator permission:

Limit	Explanation
H alarm	High limit for triggering a message of "Alarm" class
L alarm	Low limit for triggering a message of "Alarm" class
Hysteresis	You can configure a hysteresis for the limits, for example, to suppress signal flutter.

You can find additional information on changing values under "Change values (Page 58)".

Flow limits (fine)

Flow limits (fine)

H alarm	80.00 kg/h
L alarm	5.00 kg/h
Hysteresis	1.00 kg/h

The limits for monitoring the fine flow are displayed in this area. The following table shows the limits that you can change with the proper operator permission:

Limit	Explanation
H alarm	High limit for triggering a message of "Alarm" class
L alarm	Low limit for triggering a message of "Alarm" class
Hysteresis	You can configure a hysteresis for the limits, for example, to suppress signal flutter.

You can find additional information on changing values under "Change values (Page 58)".

Limit creep rate

Limit creep rate

H alarm	8.00 kg/h
Hysteresis	0.00 kg/h

The limits for monitoring the creep rate are displayed in this area. The limits apply if an increase in the current dose quantity is determined although dosing has stopped. The dose quantity should not exceed the limits for the creep rate in this case. The following table shows the limits that you can change with the proper operator permission:

Limit	Explanation
H alarm	High limit for triggering a message of "Alarm" class
Hysteresis	You can configure a hysteresis for the limits, for example, to suppress signal flutter.

You can find additional information on changing values under "Change values (Page 58)".

Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

8.5 Parameter view

Layout and functions

In the parameter view, you can monitor and change parameters values, as well as enable or disable simulation and the release for maintenance. The following figure shows the display and operator controls in the parameter view for dosers:

The screenshot displays the 'Parameter view' interface for dosers. It is organized into several sections, each with a status indicator (green checkmark) on the left. The sections are:

- Enabled operations Settings:** Contains a checkbox for 'SP := SP external' which is checked. This section is labeled with a red circle 1.
- Parameter:** Contains three rows of settings: 'Postdose time' (25. s), 'Dribbling time' (20. s), and 'Dribbling quantity' (5.00 kg). This section is labeled with a red circle 2.
- Automatic dribbling quantity:** Contains four rows of settings: 'On' (checkbox, unchecked), 'Weighting factor' (25. %), 'Maximum' (100.00 kg), and 'Calc. value' (5.00 kg). This section is labeled with a red circle 3.
- Service:** Contains two rows of settings: 'Simulation' (Off button, with a menu icon) and 'Release for maint.' (No button, with a menu icon). This section is labeled with a red circle 4.
- Enabled operations:** A column of green checkmarks on the far left, indicating that all operations are enabled. This column is labeled with a red circle 5.

1. Activate bumpless changeover
2. Settings for dribbling and postdosing
3. Settings for automatically calculating the dribbling quantity
4. Simulation and release for maintenance
5. Enabled operations

Activate bumpless changeover

You can use the "SP := SP external" check box to enable bumpless changeover from the external to the internal setpoint (checked) or disable it (cleared). The confirmation of each change of state is made in the operating window.

With bumpless changeover, the internal setpoint is tracked to the external setpoint. This avoids unwanted jumps in the output signal when switching the setpoint specification.

Settings for dribbling and postdosing

You can make the following settings in this area:

Parameter	Explanation
Post dose time	Time for postdosing Postdosing is necessary if an underdose is determined following expiration of the dribble time.
Dribble time	Time for the dribble After expiration of the specified dribble time, the quantity is checked for underdosing or overdosing.
Dribble quantity	Dribble quantity If the dose quantity reaches the difference between the setpoint and the dribble quantity, the doser is set to the "Dribble" state and the dribble time is triggered.

You can find additional information on changing values under "Change values (Page 58)".

Settings for automatically calculating the dribbling quantity

You can make the following settings in this area:

Parameter	Explanation
On	You can use the "On" check box to enable automatic calculation of the dribble quantity (checked) or disable it (cleared). The values of the last dosing are used to calculate the dribble quantity. The calculation is performed in the "End" operating state.
Weighting factor	The weighting factor is the effect of the underdose quantity on the corrected calculation of the dribbling quantity as a percentage.
Maximum	This parameter specifies the limit for the calculation of the dribbling quantity. The calculated dribbling quantity cannot exceed the value of the "Maximum" parameter.
Calc. value	Display of the dribbling quantity

You can find additional information on changing values under "Change values (Page 58)".

Simulation and release for maintenance

The status of the following functions is displayed in this area:

- Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

- Release for maintenance

For additional information on release for maintenance refer to "Activate or deactivate release for maintenance (Page 69)".

If you have the appropriate operator permissions, you can edit the settings in this area.

Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

8.6 Preview

Layout and functions

The preview displays information about the operability of the parameters in the entire faceplate. You cannot edit the values displayed in the preview.

The preview consists of the following areas:

- Automatic preview
- Enabled operations
- Inputs and outputs

Automatic preview



Automatic preview shows the state in which the doser is set after a change from manual to automatic mode.

If the doser is already in automatic mode, the current operating state is displayed in this area.

Enabled operations

Information about the feasibility of the following actions is displayed in this area:

Action	Explanation
Start	Start dosing procedure
Pause	Pause the dosing procedure
Continue	Continue the dosing procedure
Cancel	Cancel the dosing procedure
Automatic	Switch to automatic mode
Manual	Switch to manual mode
Local	Switch to local mode
Out of service	Switch to "Out of service" operating mode
SP external	Feedforward external setpoint
SP internal	Feedforward internal setpoint
Change SP	Change setpoint
Reset dose quantity	Reset the dose quantity
Reset	Reset for interlocks and errors
Acknowledge underdosing	Reset at underdosing
Local operator permission	Whether or not the device is released for operation generally depends on this permission. The local operator permission can be set individually for each device. Devices at an operator station can be released or locked independent of one other.

You can find additional information about enabled operations under "Operator permission and enable (Page 35)".

Inputs and outputs

This area shows the parameters of the doser with the current control.

The following table shows the parameters that can be shown in this area:

Parameter	Control
Permission	0: No permission
	1: Enable for starting from the neutral position
Protection	0: Safety interlock enabled A reset must be performed once the interlock conditions are gone.
	1: Safety interlock disabled
Interlock	0: Interlock enabled A reset is not necessary once the interlock conditions are gone.
	1: Interlock disabled
Local	0: No operation in local mode

Parameter	Control
	1: Operation in local mode
Local start	1: Start dosing procedure in local mode
Local pause	1: Pause dosing procedure in local mode
Local continue	1: Continue dosing procedure in local mode
Local cancel	1: Cancel dosing procedure in local mode
Coarse dosing	1: Coarse dose active
Fine dosing	1: Fine dosing active
Dribbling dosing	1: Dribbling active
Dose off	1: Switch to "Off" operating state
Dose end	1: End dosing

For additional information on the operating states, refer to "Switching the operating mode (Page 155)".

8.7 Additional views

Additional views of the faceplates for dosers

The faceplates of dosers also provide the following views:

- Alarm view (Page 44)
- Trend view (Page 48)
- Memo view (Page 52)
- Batch view (Page 54)

Monitoring a process tag

9.1 Monitoring an analog process tag

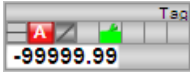
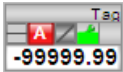
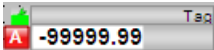
9.1.1 Block icons

Block icons

Different block icons with the following display and operator control functions are available for monitoring analog process values in the process picture:

- Display the instance name (Page 17)
- Display of block comments via the tooltip (Page 17)
- Simulation of process values (Page 27)
- Displaying and changing the operating modes (Page 20)
- Display of alarms, warnings, tolerances and messages (Page 18)
- Display of signal status and maintenance release (Page 22)
- Display when forcing values (Page 24)
- Memo display (Page 25)

The following table shows examples of block icons for monitoring analog process tags:

Block icons





You can find information on the layout of the block icons in the chapter "Layout of the block icons (Page 15)".

Note

You can find detailed information on block icons in the PCS 7 online help.

Analog value monitoring

If the specified limits for alarms, warnings or tolerances are violated, the corresponding icons are displayed and the numeric value is highlighted in color. The following figure shows an example of how a triggered alarm is displayed in the block icon:

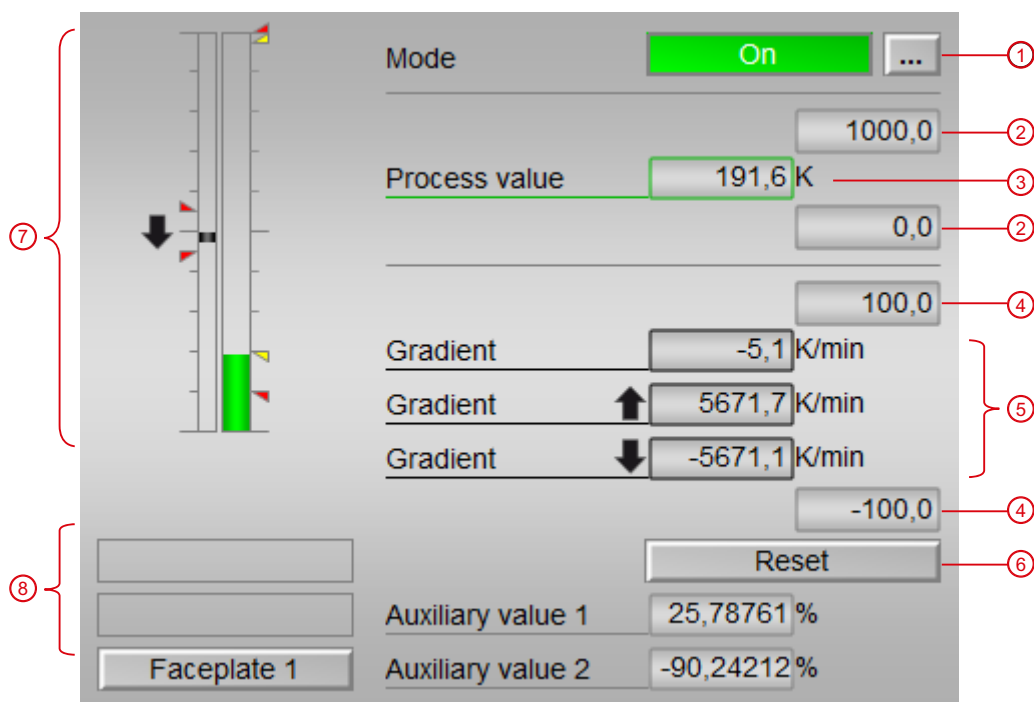


9.1.2 Standard view

Layout and functions

The standard view provides you with the basic functions for monitoring an analog value and its increase.

The following figure shows an example of the display and operator controls in the standard view:



1. Operating mode
2. Scale range of the process value
3. Current process value
4. Scale range of the gradient value
5. Gradient values
6. Resetting the gradient peak values
7. Additional information
8. Bar graph

Note

The display of the gradient and the associated values and functions (4, 5, 6, 8) depends on the configuration. These are only displayed if a monitoring of the gradient values was configured for the process tag.

The standard view of the faceplate may also contain the following display and operator controls:

- Display of auxiliary values

For additional information refer to "Display of auxiliary values (Page 81)".

- Opening additional faceplates

For additional information refer to "Opening additional faceplates (Page 71)".

Operating mode

With analog process tag monitoring, you can switch between the following operating modes:

- On
- Out of service

For additional information on the operating modes, refer to "Switching operating modes (Page 55)".

Scale range of the process value

The scale range provides information about the display area of the bar graph. The values of the scale range cannot be edited in the faceplate.

Current process value

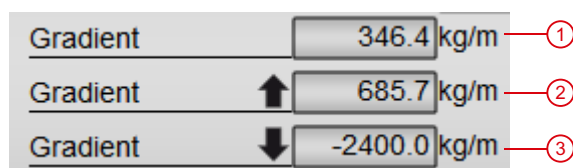
The current process value of the process tag is displayed in this area. This cannot be edited in the faceplate. You can simulate the process value for servicing or testing purposes.

You can find additional information about activating simulation under "Activate or deactivate simulation (Page 68)".

Gradient values

The gradient value is calculated automatically and cannot be edited in the faceplate. The gradient display shows the rate of change of the actual measured value.

The following figure shows the gradient values in the faceplate:

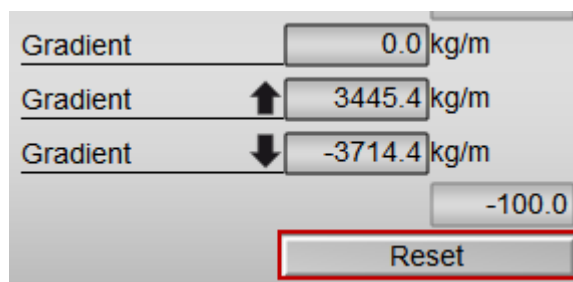


1. Current gradient value
2. Fastest positive change in the gradient value
3. Fastest negative change in the gradient value

Scale range of the gradient value

The scale range provides information about the display area of the bar graph. The values of the scale range cannot be edited in the faceplate.

Resetting the gradient peak values



You can use the "Reset" button to reset the fastest positive and negative change of of the measured value. The confirmation of the action is made in the operating window.



Additional information

This area shows the following additional information:

- Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

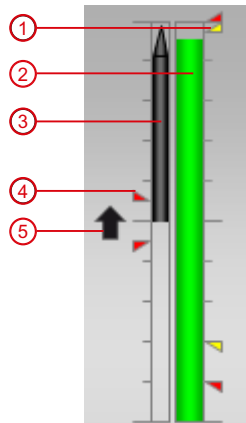
- Release for maintenance

For additional information on release for maintenance refer to "Activate or deactivate release for maintenance (Page 69)".

Bar graph

The bar graph presents the values of process tag to be monitored. The scale range of the bar graph is predetermined and cannot be edited in the faceplate.

The following figure shows the elements of the bar chart:



1. Limit display for the current process value

The colored triangles represent the limits for the dose quantity. The various colors have the following meaning:

- Red: Alarm
- Yellow: Warning
- Blue: Tolerance

For additional information on the limits, refer to "Limit view (Page 188)".

2. Bar graph of the process value
3. Bar graph of the gradients
4. Limit display for the gradients

For information on the limits, refer to "Limit view (Page 188)".

5. Display of slope

This display indicates whether the slope of the gradient is positive ($\uparrow$) or negative ($\downarrow$).

9.1.3 Limit view

Layout and functions

In the limit view, you can monitor limits and change them based on the process, if you have the proper operator permission. If the limits are reached or exceeded, an "Alarm", "Warning" or "Tolerance" class message is triggered.

The limit view consists of the following areas:

- Process value limits (PV)
- Gradient limits

Process value limits (PV)

Enabled operations Process value limits (PV)

		H alarm	1000.0 kg
		H warning	970.0 kg
		Hysteresis	0.0 kg
		L warning	200.0 kg
		L alarm	100.0 kg

The limits for monitoring the process value are displayed in this area. The following table shows the limits that you can change based on the process with the proper operator permission:

Limit	Explanation
H alarm	High limit for triggering a message of "Alarm" class
H warning	High limit for triggering a message of "Warning" class
H tolerance	High limit for triggering a message of "Tolerance" class
Hysteresis	You can configure a hysteresis for the limits, for example, to suppress signal flutter.
L tolerance	Low limit for triggering a message of "Tolerance" class
L warning	Low limit for triggering a message of "Warning" class
L alarm	Low limit for triggering a message of "Alarm" class

You can find additional information on changing values in the faceplate under "Change values (Page 58)".

Gradient limits

The limits of the gradient are displayed in this area. The following table shows the limits that you can change based on the process with the proper operator permission:

Limit	Explanation
H alarm (↑)	High limit for the positive slope of the gradient
H alarm (↓)	High limit for the negative slope of the gradient
L alarm (↑↓)	Low limit for the absolute gradients

You can find additional information on changing values in the faceplate under "Change values (Page 58)".

Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

9.1.4 Parameter view

Layout and functions

In the parameter view, you can monitor and change parameters values, as well as enable or disable simulation and the release for maintenance. The parameter view consists of the following areas:

- Parameter
- Service
- Enabled operations

Parameter



This area displays the limit (dead band) for suppression of values fluctuating around the zero point. You can edit this value if you have the appropriate operator permission.

You can find additional information on changing values under "Change values (Page 58)".

Service

The status of the following functions is displayed in this area:

- Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

- Release for maintenance

For additional information on release for maintenance refer to "Activate or deactivate release for maintenance (Page 69)".

If you have the appropriate operator permissions, you can edit the settings in this area.

Enabled operations

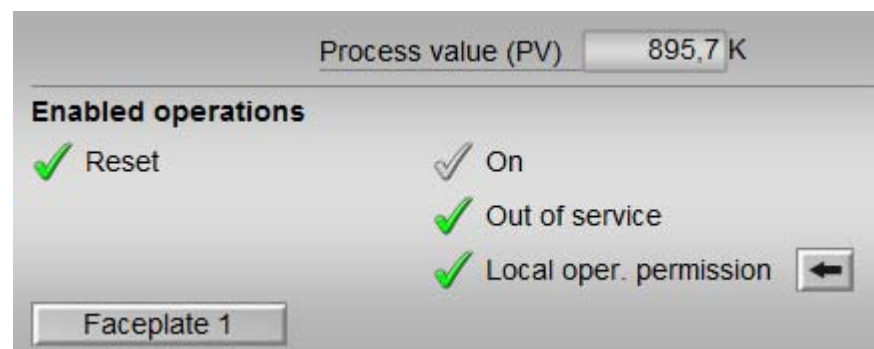
The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

9.1.5 Preview

Layout and functions

The preview displays the current process value and information about the operability of the parameters in the entire faceplate. You cannot edit the values displayed in the preview.

The following figure shows the contents of preview as an example:



The process value displayed in the preview is always up-to-date even if the simulation of the process tag values is activated.

The ability to execute the following actions is shown in the "Enabled operations" area:

Action	Explanation
Reset	Reset gradient peak values
On	Switch to the "On" operating state

Action	Explanation
Out of service	Switch to the "Out of service operating state
Local operator permission	Whether or not the device is released for operation generally depends on this permission. The local operator permission can be set individually for each device. Devices at an operator station can be released or locked independent of one other.

You can find additional information about enabled operations under "Operator permission and enable (Page 35)".

9.1.6 Additional views

Additional views of the faceplates

The faceplates for monitoring an analog process tag have the following additional views:

- Alarm view (Page 44)
- Trend view (Page 48)
- Memo view (Page 52)
- Batch view (Page 54)

9.2 Monitoring a digital process tag

9.2.1 Block icons

Block icons

Different block icons with the following display and operator control functions are available for monitoring digital process values in the process picture:

- Display the instance name (Page 17)
- Display of block comments via the tooltip (Page 17)
- Displaying and changing the operating modes (Page 20)
- Display of alarms, warnings, tolerances and messages (Page 18)

- Display of signal status and maintenance release (Page 22)
- Memo display (Page 25)
- Display of the output signal

The following table shows examples of block icons for monitoring digital process tags:

Block icons





You can find information on the layout of the block icons in the chapter "Layout of the block icons (Page 15)".

Note

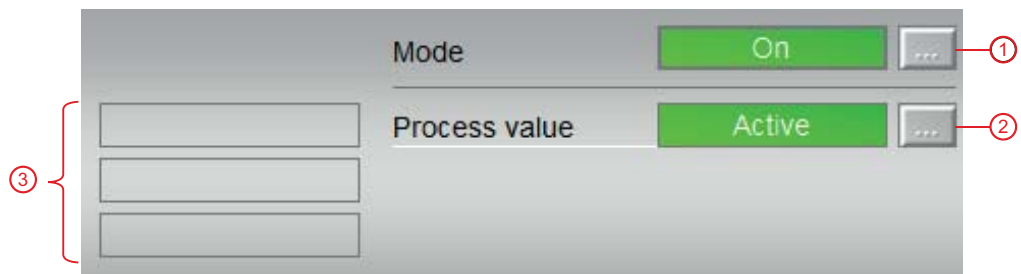
You can find detailed information on block icons in the PCS 7 online help.

9.2.2 Standard view

Layout and functions

The standard view provides you with the basic functions for monitoring a digital value.

The following figure shows the display and operator controls in the standard view:



1. Operating mode
2. Current process value
3. Additional information

The standard view of the faceplate may also contain the following display and operator controls:

- Display of auxiliary values

For additional information refer to "Display of auxiliary values (Page 81)".

- Opening additional faceplates

For additional information refer to "Opening additional faceplates (Page 71)".

Operating mode

With digital monitoring stations, you can switch between the following operating modes:

- On
- Out of service

For additional information on the operating modes, refer to "Switching operating modes (Page 55)".

Current process value

This area shows the state of the monitored digital value. The texts for the status display are individually set for each project.

You can switch between states when simulation is activated and you have the appropriate operator permission.

Additional information

This area shows the following additional information:

- Flutter

The "Flutter" display appears when signal flutter is detected after the expiration of the time to suppress the flutter.

- Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

- Release for maintenance

For additional information on release for maintenance refer to "Activate or deactivate release for maintenance (Page 69)".

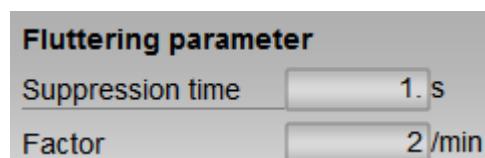
9.2.3 Parameter view

Layout and functions

In the parameter view, you can monitor and change parameters values, as well as enable or disable simulation and the release for maintenance. The parameter view consists of the following areas:

- Flutter parameter
- Delay time
- Service
- Enabled operations

Flutter parameter



The screenshot shows a window titled "Fluttering parameter". It contains two rows of controls. The first row is labeled "Suppression time" and has a text input field containing "1. s". The second row is labeled "Factor" and has a text input field containing "2 /min".

This area shows the following parameter values:

- Suppression time

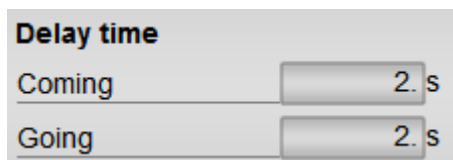
The suppression time determines the length of time in which the signal flutter is to be suppressed.

- Factor

This parameter specifies the number of signal changes per minute that are to be tolerated and which do not generate a "Flutter" message.

You can edit this value if you have the appropriate operator permission. You can find additional information on changing values under "Change values (Page 58)".

Delay time



This area shows the following parameter values:

- Coming

Delay time for setting the output signal at a rising edge

- Going

Delay time for setting the output signal at a falling edge

You can edit this value if you have the appropriate operator permission. You can find additional information on changing values under "Change values (Page 58)".

Service

The status of the following functions is displayed in this area:

- Simulation

For additional information on simulation refer to "Activate or deactivate simulation (Page 68)".

- Release for maintenance

For additional information on release for maintenance refer to "Activate or deactivate release for maintenance (Page 69)".

If you have the appropriate operator permissions, you can edit the settings in this area.

Enabled operations

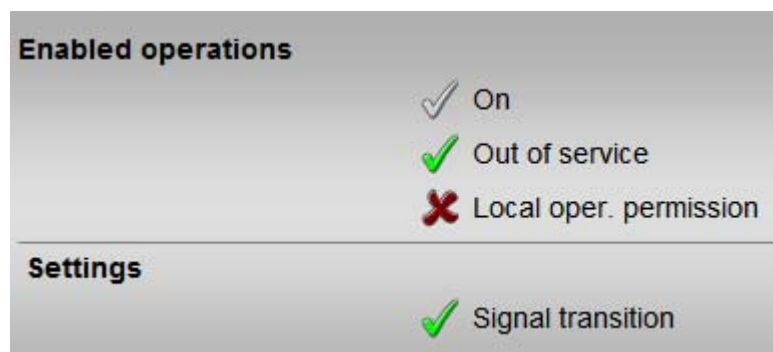
The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

9.2.4 Preview

Layout and functions

The preview displays information about the operability of the parameters in the entire faceplate. You cannot edit the values displayed in the preview.

The following figure shows the contents of preview:



Enabled operations

The ability to execute the following actions is shown in this area:

Action	Explanation
On	Switch to the "On" operating state
Out of service	Switch to the "Out of service operating state
Local operator permission	Whether or not the device is released for operation generally depends on this permission. The local operator permission can be set individually for each device. Devices at a work place can be released or locked independent of each other.

You can find additional information about enabled operations under "Operator permission and enable (Page 35)".

Settings

The status of the "Signal transition" function is displayed in this area. If this is enabled, a signal transition from 0 to 1 of the monitored value generates a message.

9.2.5 Additional views

Additional views of the faceplates

The faceplates for monitoring a digital process tag have the following additional views:

- Alarm view (Page 44)
- Trend view (Page 48)
- Memo view (Page 52)
- Batch view (Page 54)

Counter

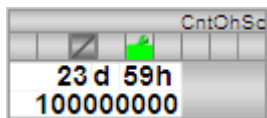
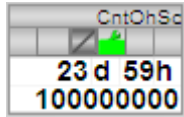
10.1 Block icons for counters

Block icons

Different block icons with the following display and operator functions are available for counters to determine the runtime in the process picture:

- Display the instance name (Page 17)
- Display of block comments via the tooltip (Page 17)
- Displaying and changing the operating modes (Page 20)
- Display of alarms, warnings, tolerances and messages (Page 18)
- Display of signal status and maintenance release (Page 22)
- Memo display (Page 25)
- Display of the counter status

The following table shows examples of block icons for counters to determine the runtime with an "Up" count direction:

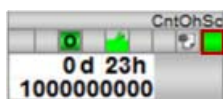
Block icons



You can find information on the layout of the block icons in the chapter "Layout of the block icons (Page 15)".

Note

You can find detailed information on block icons in the PCS 7 online help.

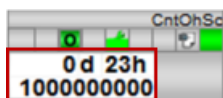
Display of the counter status



This area holds information on the counter state. The following table shows the meaning of the colors:

Color	Meaning
Green	The counter is active.
Gray	The counter is disabled.

Display of the counter values



This area holds information about the counter state and displays the following values:

- Operating time days and hours
- Current counter value

See also

Switching operating modes (Page 55)

Switching the operating mode (Page 57)

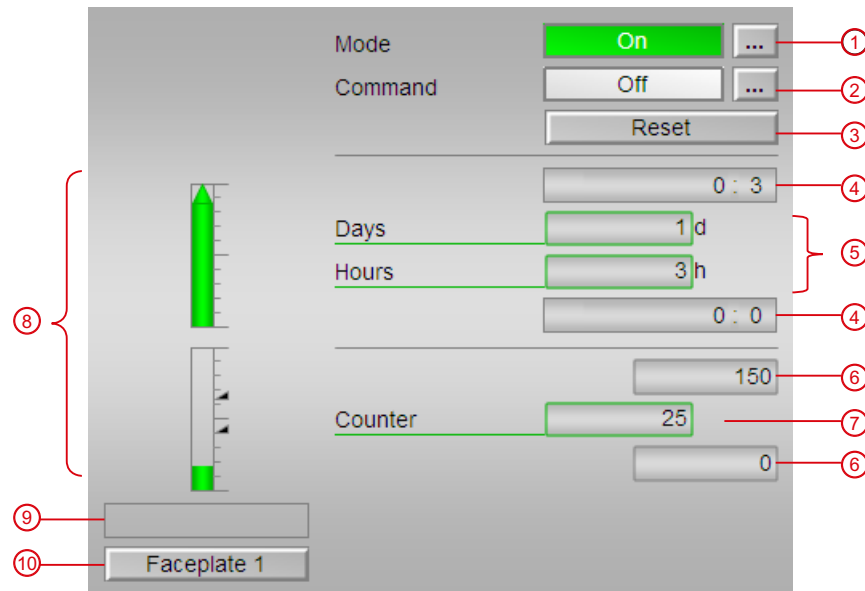
10.2 Standard view

Layout and functions

You can use the basic functions in the standard view of the faceplates to operate the counters. Counters are used for the following applications:

- Incrementing operating hours
- Incrementing a defined input value

The following figure shows the display and operator controls in the standard view of the counter:



1. Operating mode

For counters, you can switch between the following operating modes:

- On
- Out of service

For additional information on the operating modes, refer to "Switching operating modes (Page 55)".

2. Operating state

Use the following commands to change the counter state:

- On: The counter is activated.
- Off: The counter is deactivated.

You can find information on changing the operating state under "Switching the operating mode (Page 57)".

3. Reset

You can reset the counter values with the "Reset" button. The confirmation of the action is made in the operating window.

4. Scale range of the operating time

The scale range provides information about the display area of the bar graph (8). The values of the scale range cannot be edited in the faceplate.

5. Display of the operating time in days and seconds

6. Scale range of the count value

The scale range provides information about the display area of the bar graph. The values of the scale range cannot be edited in the faceplate.

7. Display of current count values

8. Bar graph

The bar graph visualizes the count values in graphic format. The scale range of the bar graph is predetermined and cannot be edited in the faceplate.

9. Additional information

The message "Invalid signal" is displayed in this area when invalid combinations of related input signals occur in automatic mode.

10. Opening additional faceplates

For additional information refer to "Opening additional faceplates (Page 71)".

10.3 Limit view

Layout and functions

In the limit view, you can monitor limits and change them based on the process, if you have the proper operator permission. If the defined limits are reached or exceeded, a message of the "Alarm" or "Warning" class is triggered.

The limit view consists of the following areas:

- Counter operating limits
- Counter limits
- Enabled operations

Enabled operations		Counter operation limits	
✓	High 1		0 : 03
✓	High 2		0 : 02
		Counter limits	
✓	High 1		95
✓	High 2		60

Counter operating limits

The limits for the operating time are displayed in this area. The following table shows the limits that you can change with the proper operator permission:

Limit value	Explanation
High 1	High limit for triggering a message of "Alarm" class
High 2	High limit for triggering a message of "Warning" class

You can find additional information on changing values under "Change values (Page 58)".

Counter limits

The limits for the counter value are displayed in this area. The following table shows the limits that you can change with the proper operator permission:

Limit value	Explanation
High 1	High limit for triggering a message of "Alarm" class
High 2	High limit for triggering a message of "Warning" class

You can find additional information on changing values under "Change values (Page 58)".

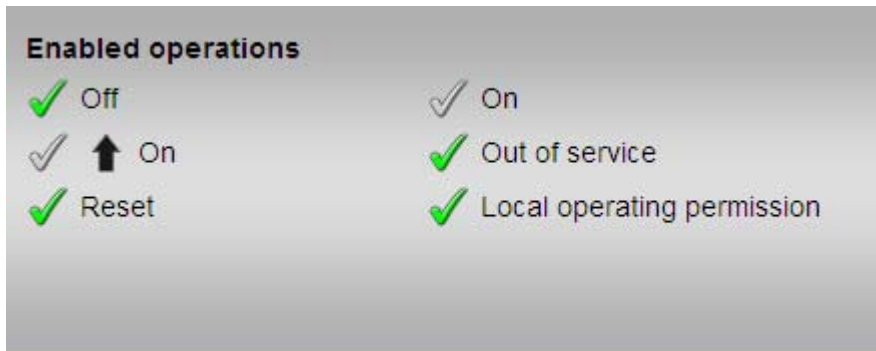
Enabled operations

The status of the enabled operation is displayed in this area. For additional information refer to "Enabled operations (Page 38)".

10.4 Preview

Preview

The preview displays information about the operability of the parameters in the entire faceplate. You cannot edit the values displayed in the preview.



Information about the feasibility of the following actions is displayed in this view:

Action	Explanation
Off	Turn off counter
↑ On	Turn on counter
Reset	Reset counter values
On	Switch to the "On" operating mode
Out of service	Switch to "Out of service" operating mode
Local operator permission	Whether or not the device is released for operation generally depends on this permission. The local operator permission can be set individually for each device. Devices at an operator station can be released or locked independent of one other.

10.5 Additional views

Additional views of the faceplates

The faceplates of the counters to determine the runtime with count direction "Up" offer these additional views:

- Trend view (Page 48)
- Memo view (Page 52)

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