

## SIDRIVE IQ Fleet

### Operating Manual

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SIDRIVE IQ Fleet V2.10  
SIMOTICS CONNECT 400 V1.0.2.0  
SIDRIVE IQ Config (Android) V2.4.0  
SIDRIVE IQ Config (iOS) V2.4.0

## Legal information

### Warning notice system

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

 <b>DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.

 <b>WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.

 <b>CAUTION</b>
indicates that minor personal injury can result if proper precautions are not taken.

<b>NOTICE</b>
indicates that property damage can result if proper precautions are not taken.

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

### Qualified Personnel

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

### Proper use of Siemens products

Note the following:

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

### Trademarks

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

### Disclaimer of Liability

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

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# Introduction

## 1.1 About SIMOTICS

### Description

SIMOTICS is the Siemens family of electric motors addressing the complete motor spectrum in Digital Industry.

## 1.2 About SIMOTICS (detailed)

With a SIMOTICS electric motor, you can always depend on quality, innovation and the highest efficiency. With SIMOTICS electric motors we cover the complete motor spectrum:

Synchronous as well as induction motors, from standard electric motors through servomotors for motion control applications up to high voltage and DC motors.

Siemens motors can look back on more than 150 years of experience.

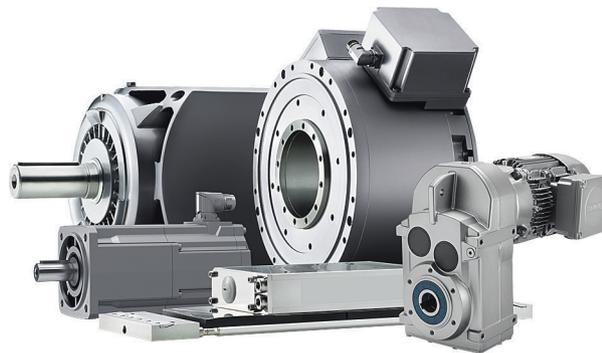
Whether high efficiency for an optimum energy balance, explosion protected for the highest safety standards, sector or customer specific: Every motor is equipped as standard with the widest range of features for the highest cost effectiveness.

In a nutshell:

- Extremely compact
- Energy efficient and environmentally friendly
- Can be flexibly deployed and a wide range of selection options
- Highest degree of cost effectiveness

In the meantime, our electric motors are an integral part of the digital enterprise.

### Motors for motion control



## 1.3 About this manual

Whether synchronous or induction, whether with or without gearbox: Siemens is the right partner when it involves the optimum motor for your motion control application.

Our portfolio is the widest worldwide – and also includes built-in motors and motor spindles. Every motion control motor in our portfolio is perfectly harmonized for operation with our SINAMICS converter family.

## 1.3 About this manual

### 1.3.1 Content

These instructions describe the MindSphere SIDRIVE IQ Fleet application in conjunction with the SIMOTICS CONNECT 400 connectivity module, and explain how you handle the product.

Keep these instructions in a safe place for subsequent use. Read these instructions before you use the MindSphere application SIDRIVE IQ Fleet, and follow the instructions and notes carefully.

### 1.3.2 Target group

This document addresses planners, configuring engineers, technologists, installation technicians, programmers, commissioning engineers along with service and maintenance personnel

### 1.3.3 What's new?

#### Description

### 1.3.4 Standard scope

#### Description

This documentation describes the functionality of the standard scope. This scope may differ from the scope of the functionality of the system that is actually supplied. Please refer to the ordering documentation only for the functionality of the supplied drive system.

Further functions may be executable in the system, which are not explained in this documentation. However, there is no entitlement to these functions in the case of a new delivery or service.

This documentation does not contain all detailed information on all types of the product. Furthermore, this documentation cannot take into consideration every conceivable type of installation, operation and service/maintenance.

The machine manufacturer must document any additions or modifications they make to the product themselves.

### 1.3.5 Websites of third-party companies

#### Description

This document may contain hyperlinks to third-party websites. Siemens is not responsible for and shall not be liable for these websites and their content. Siemens has no control over the information which appears on these websites and is not responsible for the content and information provided there. The user bears the risk for their use.

### 1.3.6 Definitions

#### 1.3.6.1 Definition "Tenant"

A tenant is the digital representation of a real organization in MindSphere. A tenant encompasses users, data, assets and other properties.

A tenant groups users and offers them access to MindSphere and applications such as SIDRIVE IQ Fleet. By default, users only see the data of the assigned tenant and not the other tenant's data.

#### 1.3.6.2 Definition "Subtenant"

You can create and manage additional subtenants within a tenant. The subtenants can represent additional organizations or departments within a tenant.

You can assign multiple users to a subtenant. Users of a subtenant only see the associated assets and data of the subtenant in the respective MindSphere application.

#### 1.3.6.3 Definition "Package (Offering)"

A package is a set of MindSphere applications and resources bundled together to address specific customer requirements. A package can include all of the resources necessary to use an application (e.g. SIDRIVE IQ Fleet Package Starter and Asset Upgrade Package) or only a few resource upgrades for optional functions (e.g. additional events). The packages can be purchased through the MindSphere Store.

#### 1.3.6.4 Definition "Offboarding"

To terminate the communication between SIMOTICS CONNECT 400 and SIDRIVE IQ Fleet, the device has to be switched off. Switching off SIMOTICS CONNECT 400 is done via SIDRIVE Config App.

SIDRIVE IQ Fleet also provides a shortcut offboarding function to delete the MindSphere asset and free up the allocation.

#### 1.3.6.5 Definition of "Onboarding"

The process applied from connecting and registering the connectivity module through to the MindSphere application SIDRIVE IQ Fleet, including all settings, is designated as onboarding.

#### 1.3.6.6 Definition of an "Asset"

An asset is a digital representation of a machine or an automation system with one or multiple automation units connected to MindSphere. In a SIDRIVE IQ Fleet application, an asset represents a motor.

MindSphere data collection and data provisioning is based on (virtual) assets. This can be for example a motor, a pump, a fan, a compressor, a drive, an entire tool machine, a production line, a robot, a crane, a car, a windmill and so on. The data of an asset is collected and sent to MindSphere to make this data available for further processing and analysis.

#### 1.3.6.7 Definition "Asset type"

An Asset type is a pre-configured template for an asset. Assets assume the properties of the Asset type on which they are based. Within the Asset type you can define which aspects are integrated into the template. The Asset types required by SIDRIVE IQ Fleet application are created automatically.

#### 1.3.6.8 Definition "Aspect"

Aspects represent a data modeling mechanism for assets. Aspects group related data points based on their logical association.

For example: The motor has an aspect e.g. "High frequency", which contains the data points Electrical Stator Frequency, Temperature and Vibration. The asset types required by the SIDRIVE IQ Fleet application are created automatically.

## 1.4 SIMOTICS documentation

### Description

Comprehensive documentation on SIMOTICS, SIMOGEAR and on the SINAMICS converter family are provided in Internet.

You can display documents or download them in PDF and HTML5 format.

The documentation is divided into the following categories:

Table 1-1 SIMOTICS / SIMOGEAR / SINAMICS documentation

Information	Documentation class <sup>1)</sup>	Content	Target group
General information	Configuration Manual	Rules, guidelines, and tools for configuring products, systems, and plants. Also contains information on the operating and ambient conditions for hardware and software, the use of functions, as well as on circuit diagrams and terminal diagrams and the installation of software insofar as this is necessary for commissioning.	Planners, configuration engineers
Device information	Installation Instructions	All relevant information on setting up, installing and cabling, as well as the required dimensional drawings and circuit diagrams	Installation personnel, commissioning engineers, service and maintenance personnel
Basic information	Operating instructions	Comprehensive collection of all information necessary for the safe operation of products, plant/system parts and complete plants (IEC 82079)	Machine operators, plant operators
	Compact instructions	Essential contents of the operating instructions in a reduced and condensed form	Machine operators, plant operators
	Product Information	Information that only becomes known shortly before or even after start of delivery and is therefore not included in the associated user documentation	Planners, configuration engineers, technologists, installation personnel, constructors; commissioning engineers, machine operators, programmers, service and maintenance personnel
	Online help	Instructions for configuring, programming, and commissioning	Configuration engineers, programmers, commissioning engineers

<sup>1)</sup> Not all documentation classes are available for every SIMOTICS / SIMOGEAR / SINAMICS product.

## 1.5 Service and Support

### 1.5.1 Siemens Industry Online Support on the Web

#### Description

The following is available via Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/>), among others:

- Product support
- Global forum for information and best practice sharing between users and specialists

- Local contact persons via the contact person database (→ Contact)
- Information about field services, repairs, spare parts, and much more (→ Services)
- Search for product info
- Important topics at a glance
- FAQs (frequently asked questions)
- Application examples
- Manuals
- Downloads
- Compatibility tool
- Newsletters with information about your products
- Catalogs/brochures

## 1.5.2 Siemens Industry Online Support on the road

### Description

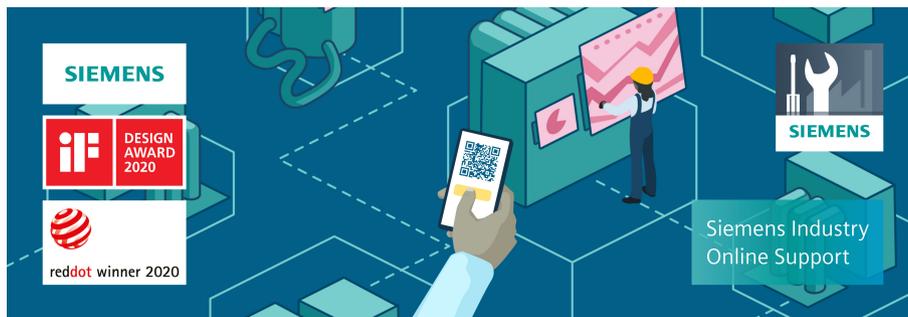


Figure 1-1 "Siemens Industry Online Support" app

The "Industry Online Support" app supports you in the following areas, for example:

- Resolving problems when executing a project
- Troubleshooting when faults develop
- Expanding a system or planning a new system

Furthermore, you have access to the Technical Forum and other articles that our experts have drawn up:

- FAQs
- Application examples
- Manuals
- Certificates
- Product announcements and much more



There is a data matrix code or QR code on the nameplate of your product. Scan the code using the "Industry Online Support" app to obtain technical information about the device.

The app is available for Apple iOS and Android.

### 1.5.3 Feedback on the technical documentation

#### Description

We welcome your questions, suggestions, and corrections for this technical documentation. Please use the "Provide feedback" link at the end of the entries in Siemens Industry Online Support.

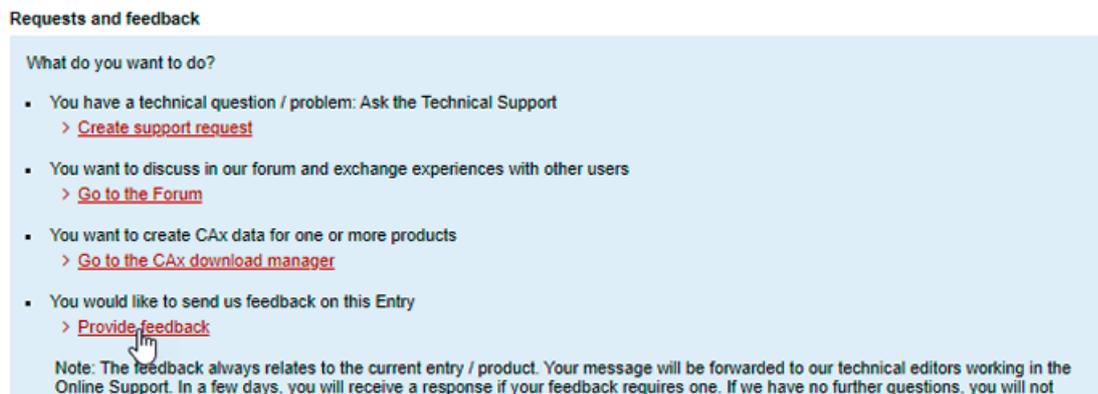


Figure 1-2 Requests and feedback

### 1.5.4 mySupport documentation

#### Description

With the "mySupport documentation" web-based system, you can compile your own individual documentation based on Siemens content and adapt this for your own machine documentation.

To start the application, click the "My Documentation" tile on the mySupport homepage (<https://support.industry.siemens.com/cs/ww/en/my>):

**mySupport Links and Tools**

Figure 1-3 mySupport

The configured manual can be exported in the PDF or XML format.

Siemens content that supports the mySupport documentation can be identified by the "Configure" link.

## 1.5.5 Technical support

### Description

Your routes to technical support (<https://support.industry.siemens.com/cs/ww/en/sc/4868>):

- Support Request (<https://www.siemens.com/SupportRequest>)
- Contact person database ([https://www.automation.siemens.com/aspa\\_app](https://www.automation.siemens.com/aspa_app))
- "Industry Online Support" mobile app

The Support Request is the most important input channel for questions relating to products from Siemens Industry. This will assign your request a unique ticket number for tracking purposes. The Support Request offers you:

- Direct access to technical experts
- Recommended solutions for various questions (e.g. FAQs)
- Status tracking of your requests

Technical support also assists you in some cases via remote support (<https://support.industry.siemens.com/cs/de/en/view/106665159>) to resolve your requests. A Support representative will assist you in diagnosing or resolving the problem through screen transfer.

More information on the Support service packages is available on the Internet via the following address (<https://support.industry.siemens.com/cs/ww/en/sc/4869>).

## 1.5.6 Training

### Description

SITRAIN – Digital Industry Academy offers a comprehensive range of training courses on Siemens industrial products – directly from the manufacturer, for all industries and use cases, for all knowledge levels from beginner to expert.

More information can be found on the Internet via the following address (<https://www.siemens.com/sitrain>).

## 1.5.7 Spare parts services

### Description

By using the online spare parts service "Spares on Web", you ensure the smooth operation of your product. The spare parts service is aimed at the following:

- Improved spare parts inventories by balancing stock and spare parts on call
- Minimized downtimes during a plant standstill
- Reduced costs

More information can be found on the Internet via the following address (<https://www.sow.siemens.com>).

## 1.6 Important product information

### 1.6.1 Correct use

#### Description

The products described in this manual, together with software, accessories, and options, form an electrical power drive system intended to feed low-voltage AC motors. The products are professional equipment for use in industrial applications. The products must be installed and maintained by professionals with sufficient knowledge to implement the safety and EMC measures according to the specifications described in this manual and the recognized state of the art.

You may only use the products in compliance with the following requirements:

- All regulations and directives that are applicable at the site of the end use, especially with regard to electrical safety, functional safety and electromagnetic compatibility.
- All instructions, notes, technical data and safety information contained in this manual and other supporting documentation.

## 1.6 Important product information

Before using the products, you must perform a risk assessment of the entire application and implement appropriate system design measures to ensure safety of persons, property and electromagnetic compatibility.

Open type products (IP00/IP20) are intended for incorporation within cubicles or enclosures which will provide necessary protection.

Any use other than the use explicitly permitted is prohibited and can result in unanticipated hazards.

### 1.6.2 OpenSSL

#### Description

This product can contain the following software:

- Software developed by the OpenSSL project for use in the OpenSSL toolkit
- Cryptographic software created by Eric Young.
- Software developed by Eric Young

You can find more information on the internet:

- OpenSSL (<https://www.openssl.org>)
- Cryptsoft (<https://www.cryptsoft.com>)

### 1.6.3 Compliance with the General Data Protection Regulation

#### Description

Siemens complies with the principles of the **General Data Protection Regulation (EU)**, in particular the principle of data minimization (privacy by design). For this SINAMICS product, this means:

- **User management and access control (UMAC)**

The product processes or stores the following personal data:

- Login data for user management and access control:  
User name, group, password, role, rights.

The data for user management and access control are stored in the converter and optionally on a memory card.

- **Support data (optional)**

For optimal support in service cases, the end user or machine manufacturer (OEM) can optionally store contact data (header, email address, telephone number, homepage) in the converter.

If these data are created, the author must give thought to data protection consent for these optional data. Siemens takes no responsibility for these data.

These support contact data can be read and are freely accessible in, for example, the user interface as well as in the diagnostics report. These data are not encrypted.

These data are used for user management and access control (UMAC) and for the support function. The storage of these data is appropriate and limited to what is necessary, as it is essential to identify the authorized operators and service contact.

The personal data are also available as part of the backup system to ensure fast recovery of use cases.

The above-mentioned personal data cannot be stored anonymously or pseudonymized, as they serve the purpose of identifying the operating personnel. The anonymization or pseudonymization, e.g. of the login data, must be performed using suitable login names and contact data by the plant/machine operator.

Our product does not provide any functions for automatically deleting personal data. Individual UMAC data can be deleted manually by authorized personnel as soon as this is deemed recommended/required.

## 1.6.4 Compliance with the General Data Protection Regulation

### Description

Siemens complies with the principles of the **General Data Protection Regulation (EU)**, in particular the principle of data minimization ("privacy by design").

For SINAMICS DCB Studio, this means:

- **User administration**

The product processes or stores the following personal data:

- Login data for user administration: user name.

The data for user administration is stored in the generated library. The data is not encrypted.

This data is required for user administration. The storage of this data is appropriate and limited to what is necessary, as it is essential to identify the creator of the library. This is particularly important during servicing.

The above-mentioned personal data cannot be stored anonymously or pseudonymized, as it serves to identify the creator of the library. The creator of the library must anonymize or pseudonymize the login data by selecting suitable user names.

Our product does not provide any functions for automatically deleting personal data.



# Safety instructions

## 2.1 Security notes

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines, and networks.

In order to protect plants, systems, machines, and networks against cyber attacks, it is necessary to implement and continuously maintain, a holistic, state-of-the-art industrial security concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines, and networks. Such systems, machines, and components should only be connected to an enterprise network or the internet if, and to the extent that such a connection is necessary, and only when appropriate security measures, such as firewalls and network segmentation, are in place.

For more information on industrial security measures, visit Link (<https://www.siemens.com/industrialsecurity>):

At Siemens, our products and solutions undergo continuous development to make them even more secure. Siemens strongly recommends that you install available product updates and always use the latest product versions. Use of older product versions, or version that are no longer supported, may increase exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed at Link (<https://new.siemens.com/global/en/products/services/cert.html#Subscriptions>).

You can find more information on the internet:

Industrial Security Configuration Manual (<https://support.industry.siemens.com/cs/ww/en/view/108862708>)

### WARNING

#### Unsafe operating states resulting from software manipulation

Malware, such as viruses, Trojans, malware, or worms, can cause unsafe operating states in your system, which can lead to death, and serious personal injury and damage to property.

- Always keep software up to date.
- Incorporate automation and drive components into a holistic, state-of-the-art industrial security concept for your plant or machine.
- Make sure that you include all installed products in this holistic industrial security concept.
- Protect files stored on exchangeable data storage media from malicious software with appropriate measures, such as virus scanners.
- After commissioning has been completed, check all security-related settings.

## 2.2 Warranty and liability for application examples

The application examples are not binding and do not claim to be complete regarding configuration, equipment or any eventuality which may arise. The application examples do not represent customer-specific solutions. They are only intended to provide support for typical applications.

As user, you are responsible for ensuring that the products described are operated correctly.

These application examples do not relieve you of your responsibility for safe handling when using, installing, operating and maintaining the equipment.

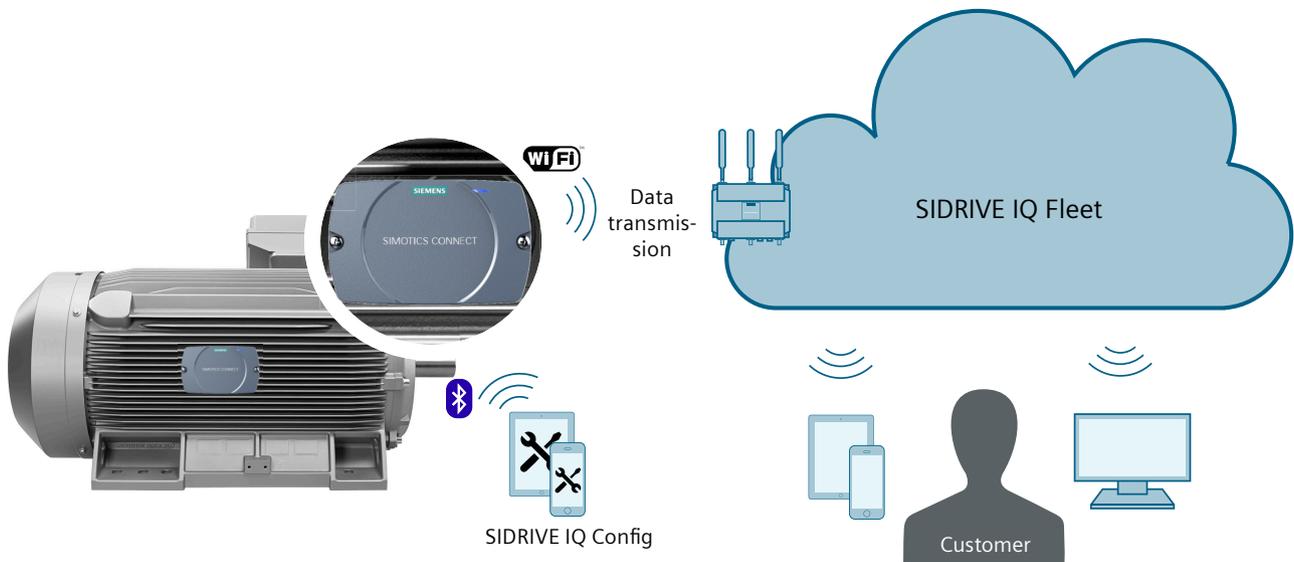
## Description

Drive systems play a key role in countless manufacturing processes. Malfunctions or failures of motors, converters, etc. therefore result in costly downtimes. With the cloud-based SIDRIVE IQ Fleet solution, you can digitally monitor, analyze and optimize drive systems. The operating and status data of your drive train components thus become transparent. You can also determine the need for maintenance and the potential for optimization.

The MindSphere applications SIDRIVE IQ Fleet for low-voltage motors and Analyze MyDrives for converters enable you to continuously visualize, analyze and monitor your drive data.

### SIDRIVE IQ Fleet

SIMOTICS CONNECT 400 connects drive train components with the cloud-based analytics of the SIDRIVE IQ Fleet MindSphere application. This enables you to improve the productivity, reliability, and service options of the drive train component. The following figure gives you a system overview of the MindSphere application SIDRIVE IQ Fleet with the connectivity module SIMOTICS CONNECT 400:



You can transmit, save and analyze operating data to SIDRIVE IQ Fleet via the SIMOTICS CONNECT 400 connectivity module. SIDRIVE IQ Fleet shows the user the operating data of the drive train component and the results of the operation and status analysis and provides, for example, recommendations for preventive maintenance activities.

## Fleet application area - Motor Monitoring

In the Fleet application area, you can monitor low-voltage motors that are connected to SIDRIVE IQ Fleet via the SIMOTICS CONNECT 400 connectivity module. The data that you read out via the Fleet application area permits you to view several assets in an overview. Among other things, you can monitor and read out the following information in the Fleet application area:

- Status information
- Asset information
- Various signals, for example:
  - Speed
  - Electrical power
- Information related to preventive maintenance
- Alarms and warnings

The Fleet application area offers you various functions for identifying and evaluating an asset:

- Localization of the asset using a map
- Asset filter function
- Visualization of signals over a period of time.
- Logbook function (to document maintenance measures)
- Profile of the motor profile
- Central access to product-specific support pages (SIOS, Spares on Web, ...)
- Setting the e-mail notification and display of the SIMOTICS CONNECT device data
- Thresholds for the output of warnings and errors
- Exporting of asset data
- Supporting maintenance planning with operating hour-based time schedules

## Fleet application area - Generic vibration monitoring

In addition to low-voltage motors, you can mount SIMOTICS CONNECT 400 on other components of the drive train. These include the following components:

- Gearbox
- Coupling
- Pillow block bearing
- Pump
- Fan
- Compressor
- Other rotating and non-rotating equipment

For these components, in SIDRIVE IQ Fleet you can configure the assets for "Generic vibration monitoring". The monitoring is based on temperature and vibration signals.

---

**Note**

The function is limited to temperature and vibration monitoring. Currently, only restricted analysis functions are available for "Generic vibration monitoring".

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The Fleet application area is adapted to the functional scope of "Generic vibration monitoring".

**More information**

More information on the SIMOTICS CONNECT 400 connectivity module can be found in the SIMOTICS CONNECT 400 operating instructions (<https://support.industry.siemens.com/cs/ww/en/view/109766915>).



# Preparation

## 4.1 System requirements

### Display resolution

SIDRIVE IQ Fleet is optimized for displays with a minimum size of 10 inches and a minimum resolution of 1920 x 1200 pixels.

### Web browser for SIDRIVE IQ Fleet

To use SIDRIVE IQ Fleet, install the latest version of your web browser. We recommend Google Chrome, Firefox and others.

An overview of the browsers supported is provided here (<https://design.mindsphere.io/patterns/browser-support.html>).

### MindSphere user account

A valid MindSphere user account is required to register the connectivity module in SIDRIVE IQ Fleet (see Chapter Activating the MindSphere user account).

### Configuring the SIMOTICS CONNECT 400 connectivity module

Carefully ensure that the connectivity module has been completely configured corresponding to the SIMOTICS CONNECT 400 Operating Instructions (<https://support.industry.siemens.com/cs/products?dtp=Manual&mfn=ps&pnid=25522&lc=en-WW>), and that onboarding to MindSphere has been completed.

## 4.2 Activating the MindSphere user account

After you have purchased SIDRIVE IQ Fleet, a user account is automatically set up through MindSphere for the e-mail address that you specified. If you need additional accesses, please purchase a user upgrade package. Roles are assigned via "Settings" application of MindSphere.

See (<https://documentation.mindsphere.io/resources/html/settings/en-US/index.html>)

If the user account has been assigned to a Tenant, then the user receives an email to activate the user account.

### Assigning a password for the MindSphere user account

The password for your user account must comprise at least 8 characters and satisfy the following criteria:

- At least one upper case letter
- At least one lower case letter
- At least one number
- At least one special character

### Precondition

- You have received the email to activate your MindSphere user account.
- You are assigned the iqfleet (mdsp:ipops) application roles "user" and "admin" by the tenant admin. Roles are assigned via Settings application of MindSphere. See (<https://documentation.mindsphere.io/resources/html/settings/en-US/index.html>)

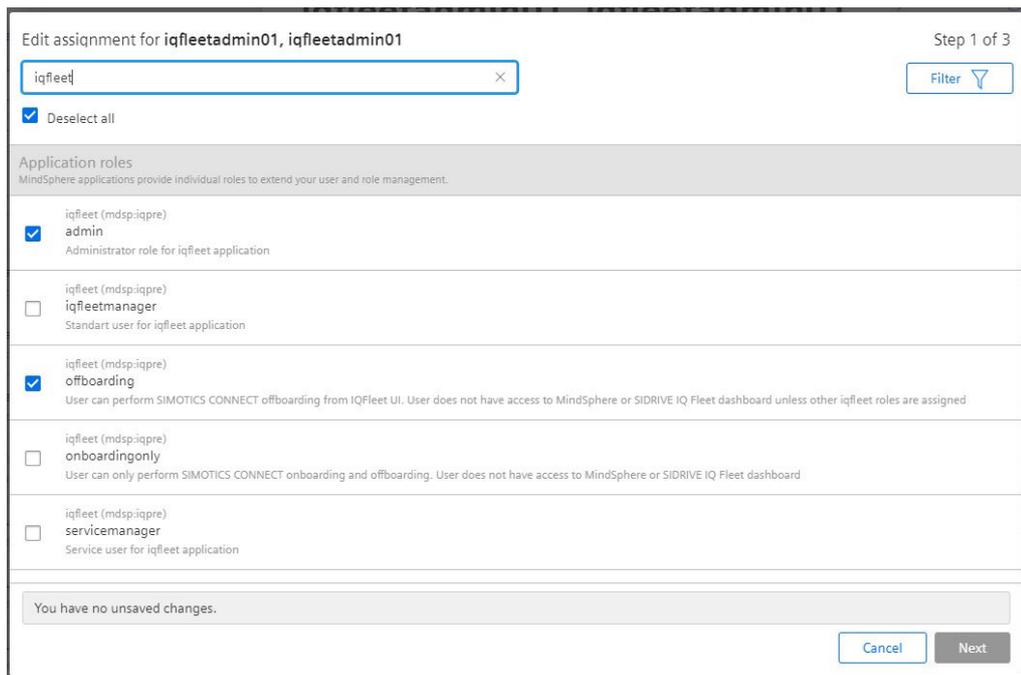
### Application roles

Every MindSphere application can have specific roles that grant access to the application. Using these roles, users can be authorized for specific application functions.

The roles are available for the SIDRIVE IQ Fleet application when the basic package is purchased.

### SIDRIVE IQ Fleet roles

SIDRIVE IQ Fleet roles are subsequently explained:



- **admin**  
Administrator for SIDRIVE IQ Fleet. The role authorizes access to all functions, with the exception of "Offboarding".
- **iqfleetmanager**  
Standard SIDRIVE IQ Fleet users. The role authorizes access to the basic functions and advanced functions relevant for operation.
- **servicemanager**  
SIDRIVE IQ Fleet service users. The role authorizes access to the basic functions and specific advanced functions for service.
- **onboardingonly**  
The user is only authorized for SIMOTICS CONNECT onboarding.
- **offboarding**  
The user is only authorized for SIMOTICS CONNECT offboarding of SIDRIVE IQ Fleet and the SIDRIVE IQ Config application.

**Note**

The tenant administrator can assign several roles to a user.

Function/area	admin	iqfleetmanager	servicemanager	onboardingonly	offboarding
<b>General</b>					
Onboarding (via SIDRIVE IQ Config application)	✓	-	✓	✓	-
Module replacement	✓	-	✓	✓	-
Motor replacement	✓	-	✓	✓	-
Offboarding (via SIDRIVE IQ Config application and SI-DRIVE IQ Fleet)	-	-	-	-	✓
<b>Main navigation SIDRIVE IQ Fleet</b>					
Notifications of the SI-DRIVE IQ Fleet application	✓	✓	✓	-	-
Messages, alarms and warnings	✓	✓	✓	-	-
User status	✓	✓	✓	-	-
Info menu	✓	✓	✓	-	-
API key generation	✓	-	-	-	-
Ordering history of SIDRIVE IQ Fleet packages and the number of assets (package usage transparency)	✓	✓	-	-	-
<b>SIDRIVE IQ Fleet operating area</b>					
Asset overview - map	✓	✓	✓	-	-
Asset overview - list	✓	✓	✓	-	-
Asset overview - KPI	✓	✓	✓	-	-
Create asset group	✓	✓	-	-	-

## 4.2 Activating the MindSphere user account

Function/area	admin	iqfleetmanager	servicemanager	onboardingonly	offboarding
Assign assets to an asset group	✓	✓	-	-	-
Rename asset group	✓	✓	-	-	-
Delete asset group	✓	✓	-	-	-
<b>Monitoring assets</b>					
"Overview" tab KPIs	✓	✓	✓	-	-
"Overview" tab Measured values	✓	✓	✓	-	-
"Overview" tab Display fingerprint time interval	✓	✓	✓	-	-
"Overview" tab Change fingerprint time interval	✓	✓	-	-	-
"Logbook" tab Filter notifications	✓	✓	✓	-	-
"Logbook" tab Create notifications	✓	✓	✓	-	-
"Logbook" tab Service action	✓	✓	✓	-	-
"Logbook" tab Confirm "Info" notifications	✓	✓	✓	-	-
"Logbook" tab Create and edit comments	✓	✓	✓	-	-
"Profile" tab	✓	✓	✓	-	-
"Profile" tab History of motor versioning (nameplate data)	✓	✓	✓	-	-
"Support" tab	✓	✓	✓	-	-
"Settings" tab Log on for email notifications	✓	✓	✓	-	-
"Settings" tab Device data	✓	✓	✓	-	-
"Settings" tab Activate/deactivate automatic firmware update	✓	-	-	-	-
"Settings" tab Display of the actual activation status for automatic firmware update	✓	✓	✓	-	-
"Settings" tab Offboarding	-	-	-	-	✓
"Settings" tab Replacement history	✓	✓	✓	-	-

Function/area	admin	iqfleetmanager	servicemanager	onboardingonly	offboarding
"Thresholds" tab Overview	✓	✓	✓	-	-
"Thresholds" tab Threshold change history	✓	✓	✓	-	-
"Thresholds" tab Configure threshold values	✓	-	✓	-	-
"Export" tab Initiate export and download	✓	-	-	-	-
"Maintenance" tab Configuring the maintenance counter	✓	-	✓	-	-
Dashboard application Creating the Dashboard	✓	✓	✓	-	-
Dashboard application Creating/updating/deleting Dashboard templates	✓	-	-	-	-
Dashboard application Loading existing Dashboard templates	✓	✓	✓	-	-
Displaying energy parameters	✓	✓	✓	-	-
Editing energy parameters for the asset/subtenant/tenant	✓	-	-	-	-

### Procedure

1. To activate your MindSphere user account, click on button "Click here to activate your account" in the email.  
The link takes you to the activation page.
2. Create your account. To do this, enter your data into the form. All entries marked with a \* are mandatory.

## Create Account

First Name*
Last Name*
International Dial Code 
Phone Area Code
Phone Number
Email Address*
Verify Email*
Password*
Verify Password*

[Create Account](#) 

3. Click the "Create Account" button. You receive a message that your user account has been created successfully. You receive another email with the request to activate your user account.

4. Click the "Next" button.  
Your profile is displayed.
5. Check your personal data.
6. Click the "Edit" button to modify your personal data or to add data.
7. Click "Save". You have successfully activated your user account.

## 4.3 Multi-factor authentication

You can further increase security by activating multi-factor authentication (MFA). Activating MFA is therefore recommended for your tenant. MFA adds another layer of authentication to standard to authentication by adding a user name and password.

Multi-factor authentication is not a standard MindSphere setting. Contact MindSphere (<https://documentation.mindsphere.io/resources/html/settings/en-US/114970819851.html>) for activation.



# Working with SIDRIVE IQ Fleet

## Procedure

1. Open the MindSphere Launch Page.
2. Click on the "SIDRIVE IQ Fleet" icon to start the application.



## 5.1 User interface

### 5.1.1 Main navigation SIDRIVE IQ Fleet

In the main navigation of the MindSphere application SIDRIVE IQ Fleet you will find buttons for various functions.



- ① "SIDRIVE IQ Fleet launch page" button
- ② "Back to last view" button
- ③ Settings
- ④ The button is displayed if an announcement is available
- ⑤ The button is displayed if a notification has been received from the SIDRIVE IQ Fleet application
- ⑥ User status is displayed
- ⑦ Public API key, imprint, information, help
- ⑧ Change display language
- ⑨ Display of the ordering history of SIDRIVE IQ Fleet packages and the number of assets

### 5.1.2 Application area of the application

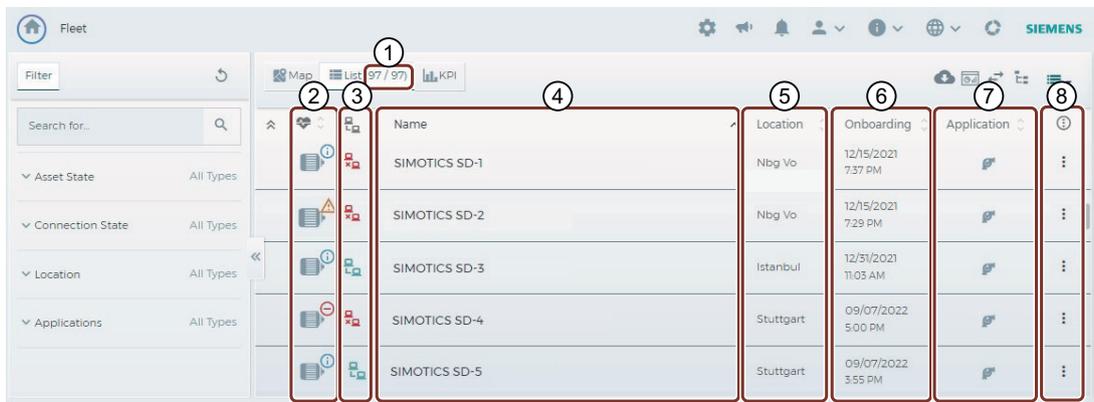
You can select between the following asset views in the SIDRIVE IQ application:

- Map (Page 39) (world map)
- List (Page 34): The list view provides an overview of the most important information about the filtered assets. The list view is displayed after the application starts (start screen).
- KPI (Page 39): You can select the KPI view in addition to the Map or List view.

All assets that match the filter criteria are displayed. If you did not set a filter (Page 40), all assets that have been onboarded under your user account will be displayed.

#### 5.1.2.1 Asset overview - list

The asset overview in the list view is shown as example in the following figure:

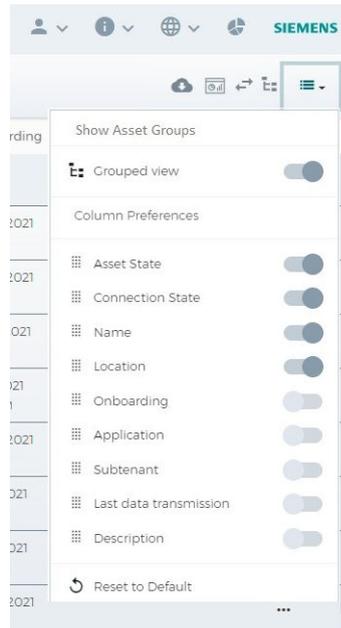


- ① Number of assets which satisfy the filter criteria / total number of assets in the Tenant/Subtenant
- ② Information about the state of the asset and the asset type.  
The displayed icons are different for assets for "Motor monitoring" and assets for "Generic vibration monitoring".
- ③ Information about the connection state of the asset
- ④ Asset name
- ⑤ Location of the asset
- ⑥ Time of the onboarding
- ⑦ Application
- ⑧ Icon to transfer the asset to the comparison list

Under "View settings", you can adapt the selection of the displayed columns of the list view.

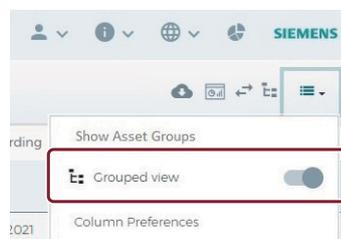
## View settings

Open the "View settings" menu using button . Here, you can activate or deactivate the grouping of assets, change the order of the displayed columns and show or hide columns. These settings are stored in the web browser memory of your local computer. If you delete the web browser memory, the columns are shown in the Default view.



### Activating/deactivating grouping of assets

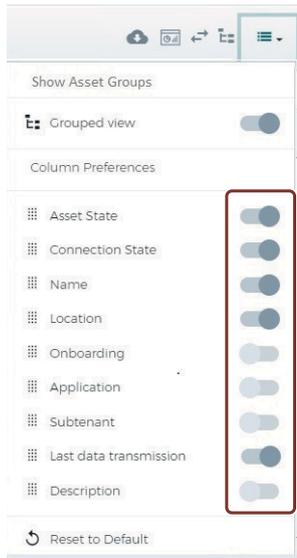
You can toggle between the grouped view and the default view using button "Grouped view". Function "Group Management" is only available if you have activated the group view.



### Show/hide columns

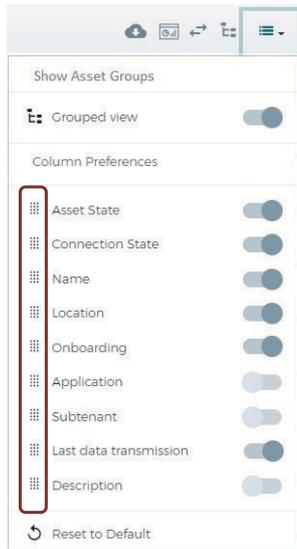
You can show and hide columns using the Switch buttons.

5.1 User interface



**Adapt order.**

You can change the order of the displayed columns by dragging and dropping them.



**Default view**

The default view is restored using "Reset to Default". If you have selected the group view, then this is also reset to the default view.

The following columns are displayed in the default view:

- Asset status
- Connection State
- Name

- Location
- Onboarding
- Application

The following columns are hidden in the default view:

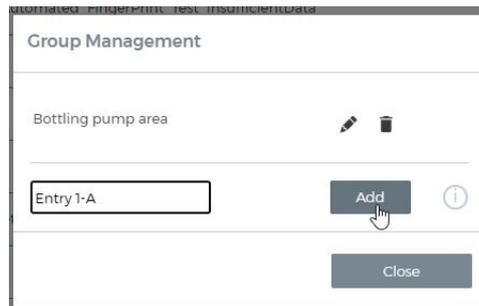
- Subtenant
- Last data transmission
- Description

## Group management

Assets can be organized and displayed in groups. The precondition is that the group view has been activated as described in Section "View settings" > "Activate/deactivate grouping of assets". When the group view is activated, icon  is displayed.



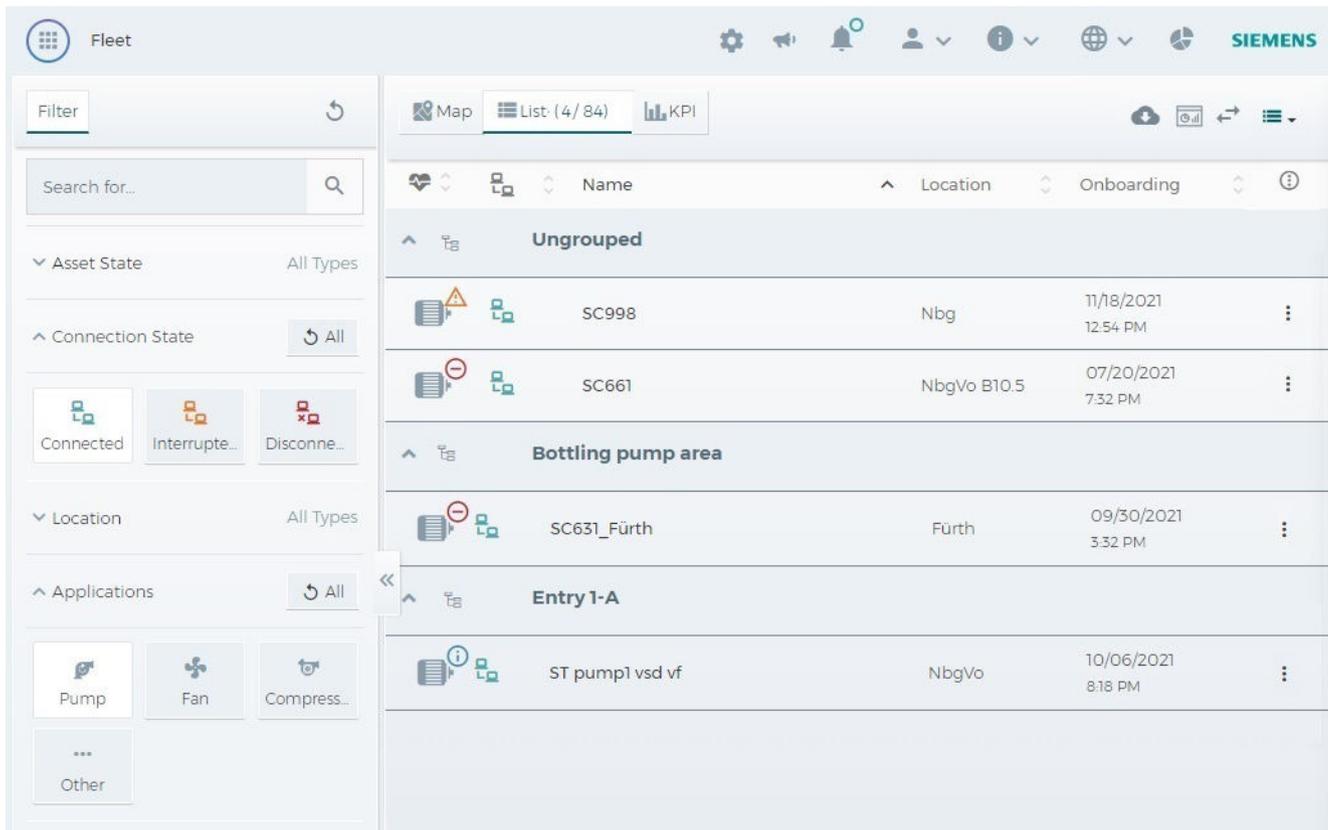
In dialog "Group Management" you can add, remove and rename asset groups. To do this, you must have either the "admin" and/or the "iqfleetmanager" role.



### Note the following:

- Up to 10 asset groups can be created for each tenant.
- In the default setting, assets are "ungrouped".
- Received assets are automatically grouped under the Share tenant's name and cannot be moved to other groups.
- Assets, which belong to a subtenant, are automatically grouped under the subtenant name for the "Global user". Subtenant assets can only be moved to groups by the subtenant users. However, this move is not visible for "Global users".
- Assets can only be moved to asset groups if asset grouping is activated and the user has either the "admin" and/or "iqfleetmanager" role. You can move the asset of the appropriate line into an existing group using button "Move asset" .

5.1 User interface



Explanation of the group icons:

-  Group created by a user
-  Automatically created subtenant group
-  Automatically created group of assets of a specific tenant for sharing

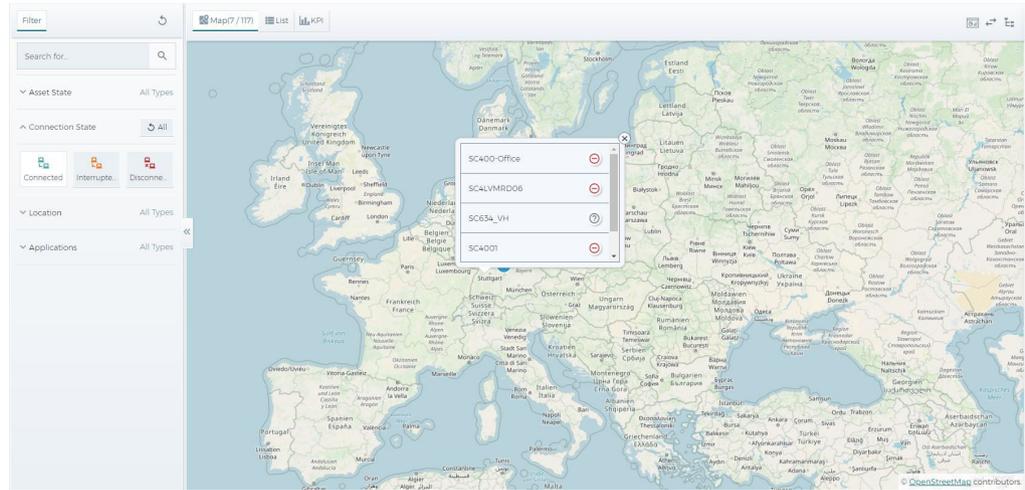
Exporting the asset list

You can export the complete list of assets of your tenant and/or subtenant with the available asset properties and download using button . The data are provided in a "csv" file (comma separated values). You can import these into a spreadsheet program or database.

The assets and their properties are exported; however, the time series data are not exported. For the export of the time series data, see Section Tab "Export" (Page 76).

### 5.1.2.2 Asset overview - map

The following figure shows an example of the asset overview in the map view. If you did not set any filter, the status of all available assets that were onboarded under your user account will be displayed when viewing.

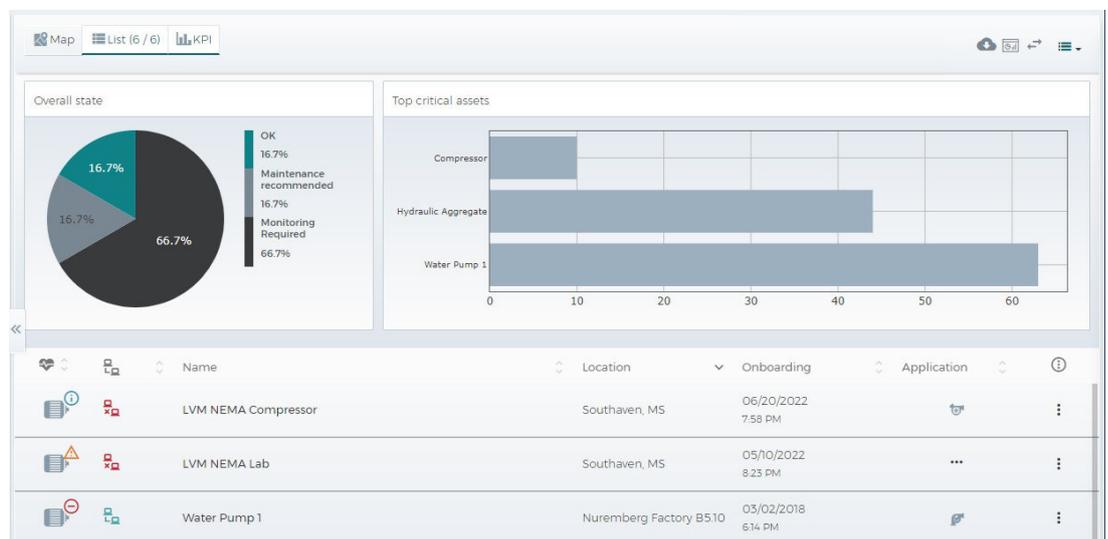


#### Note

The "geolocation related functions" are not supported in individual regions as a result of local regulations. Please refer to the Release Notes (<https://support.industry.siemens.com/cs/document/109811904>) for more information.

### 5.1.2.3 Asset overview - KPI

An overview of important key performance indicators for assets is shown in the KPI view.



5.1 User interface

The following information is displayed in the KPI view:

- **Overall state:** Overview of the general state of all available assets at the time of the view.

State	Meaning
OK	The current state does not require any additional actions to be taken.
Maintenance is recommended	The current state requires appropriate action to be taken.
Checking is required	The current state requires that the asset is investigated in more detail.

- **Top critical assets:** Overview of the currently most critical assets. The evaluation of the bar chart refers to the number of errors ("Error" asset state) of an asset within the last 30 days.

5.1.2.4 Asset filter

The MindSphere application SIDRIVE IQ Fleet lists all assets that have been onboarded under your user account. Various filters are available (Page 42) to narrow your search for the required asset:

- Asset State
- Connection State
- Location
- Applications
- Type

5.1.2.5 Settings

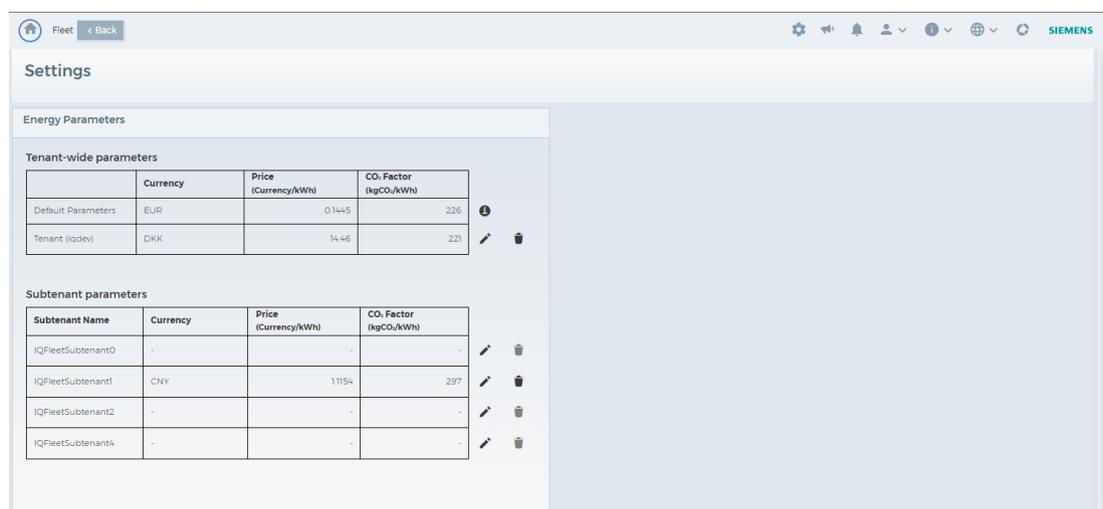
You can display the settings for "Energy parameters" on the "Settings" page.

The energy parameters are used to calculate energy KPIs (CO<sub>2</sub> emissions and energy price) (see tab "Overview" (Page 47)). "Default" parameters are applied as long as no tenant, subtenant or asset-specific parameters are set.

- **Default parameters:**  
The "Default" parameters originate from energy institutes active worldwide. They are used when calculating the energy parameters as long as no tenant, subtenant or asset-specific parameters are defined. You cannot change these parameters. They are updated if new information about standard energy prices and CO<sub>2</sub> factors are published.
- **Tenant parameters:**  
Set the tenant parameters under the following conditions:
  - The triplet comprising price per unit, currency and CO<sub>2</sub> factor deviate from the default parameters for most assets in your tenant.
  - The same energy price and CO<sub>2</sub> factor apply for most assets of the corresponding tenant.
- **Subtenant parameters:**  
Are only displayed for subtenant users. Set the subtenant parameters under the following conditions:
  - The triplet comprising price per unit, currency and CO<sub>2</sub> factor deviate from the default parameters for most assets in your tenant.
  - The triplet comprising price per unit, currency and CO<sub>2</sub> factor deviate from the tenant parameters for most assets in the corresponding subtenant (if at all possible, use the tenant parameter).
  - The same energy price and CO<sub>2</sub> factor apply for most assets of the corresponding subtenant.

## Note

You need the iqfleet.admin role to edit the parameters.



The screenshot shows the 'Settings' page in the SIDRIVE IQ Fleet application. The 'Energy Parameters' section is active, displaying two tables: 'Tenant-wide parameters' and 'Subtenant parameters'.

**Tenant-wide parameters**

	Currency	Price (Currency/kWh)	CO <sub>2</sub> Factor (kgCO <sub>2</sub> /kWh)	
Default Parameters	EUR	-	0.1445	226 ⓘ
Tenant (iqdev)	DKK	-	14.46	✎ 🗑️

**Subtenant parameters**

Subtenant Name	Currency	Price (Currency/kWh)	CO <sub>2</sub> Factor (kgCO <sub>2</sub> /kWh)	
IQFleetSubtenant0	-	-	-	✎ 🗑️
IQFleetSubtenant1	CNY	-	1.1154	297 🗑️
IQFleetSubtenant2	-	-	-	✎ 🗑️
IQFleetSubtenant4	-	-	-	✎ 🗑️

## 5.2 Selecting assets

For each asset, the parameters to be used for the energy KPI calculations are selected corresponding to the available specific parameters. The specific settings are made corresponding to the following parameter hierarchy:

Asset-specific parameters (Page 47): The asset-specific parameters are set if the individual asset has a different energy unit price and/or different CO<sub>2</sub> factor than the other assets of the tenant.

Subtenant parameters (only if the asset is located in the corresponding subtenant)

Tenant parameters

Default parameters

## 5.2 Selecting assets

### 5.2.1 Filter settings

All assets that have been onboarded under your user account are displayed in the asset overview in the list view. Various filters are available so that you can limit your search to just the asset you require.

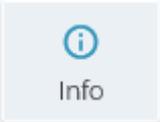
The last filter criteria used are stored in the web browser memory of your local computer. These stored filter criteria are only changed if you set new filter criteria, reset the filter criteria or delete the web browser memory.

#### "Asset State" filter

The "Asset State" filter provides you with information about the state of an asset.

The following table provides you with an overview of the properties that you can filter for in the "Asset State" area:

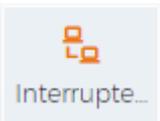
"Asset State" filter	Meaning
 OK	The asset state is OK. The asset does not issue any error or warning.
 Warning	The asset is in the alarm state. Additional details on the alarm state are available in the logbook (Page 62).
 Error	The asset has output an error message. Additional details on the error message are available in the logbook (Page 62).

"Asset State" filter	Meaning
 Info	Information is available about the asset that can be viewed in the logbook (Page 62).
 N/A	Currently, there is no information about the asset state.

### "Connection State" filter

The "Connection State" filter provides information about the connection state of an asset.

The following table provides you with an overview of the properties that you can filter for in the "Connection State" area:

"Connection State" filter	Meaning
 Connected	The asset transmitted data within the expected data transmission interval.
 Interrupte...	The transmission of data is temporarily interrupted No data was transmitted after the expected first repeat interval.
 Disconne...	<ul style="list-style-type: none"> <li>Initial state: The asset has not transmitted any data since it was commissioned.</li> <li>No data was transmitted also after the expected second repeat interval.</li> </ul>

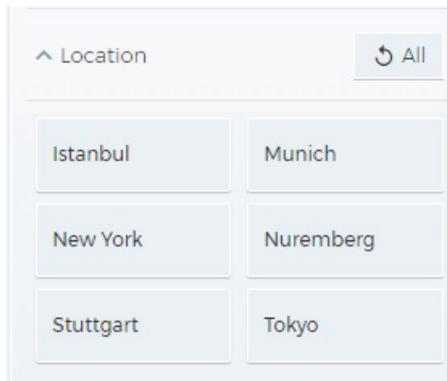
### "Location" filter

The "Location" filter offers you the option of filtering the asset based on the registered location. The number is limited to 10 locations.

The location was defined during the onboarding process of the connectivity module, and can no longer be changed in SIDRIVE IQ Fleet.

The following figure shows you a list of location examples that you can use as basis to filter your asset.

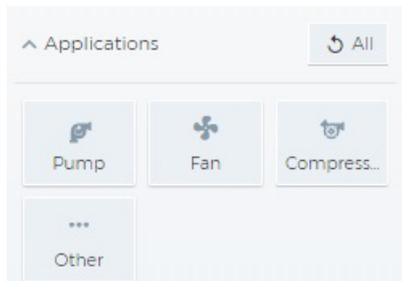
5.2 Selecting assets



**"Applications" filter**

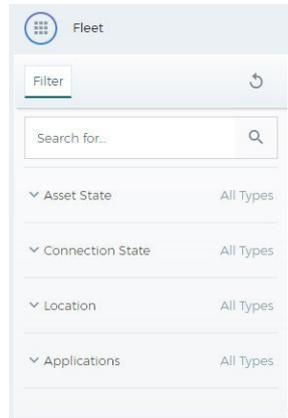
The "Applications" filter provides you with an overview of all the assets and their higher-level product families that were onboarded under your user account. You can filter your assets according to previously set application assignments. This data was defined during the onboarding process of the connectivity module, and can no longer be changed in SIDRIVE IQ Fleet.

The following figure shows you a list of examples of application assignments that you can use as basis to filter your asset.



## 5.2.2 Filtering assets

All assets that have been onboarded under your user account are displayed in the list view. Various filters are available so that you can limit your search to just the asset you require. The following figure lists the available asset filter:



### Procedure - search

This involves searching the content of the "Asset Name" "Location" and "Description" fields.

1. Use Search, for example to search for a specific asset.
2. Enter the asset name in the search field.
3. Click on the magnifying glass icon. The list view is refreshed.

### Procedure - filter

1. To make a general search, select a filter.
2. Click on at least one property within the filter.  
If you click on all attributes, this has the same effect on the asset filtering as if you had selected no attribute.
3. If required, select an additional filter.  
You can use the filters either individually or cumulatively. As soon as a filter has been set, the list of assets in the asset overview is updated.
4. Click on at least one property within the filter.

### Reset the filters

You can cancel the filter selection in 2 ways:

Icon	Meaning
	Click on this button to cancel the selection in the respective filter range
	Click on this button to cancel all filters

### 5.2.3 Selecting an asset in the asset overview

All assets that have been onboarded under your user account are displayed in the list view. As soon as you set a filter in the asset filtering, the list of assets in the asset overview is updated.

#### Procedure

1. Open the list view, for example.
2. Select an asset by clicking on the corresponding row.  
The view changes to the asset view.

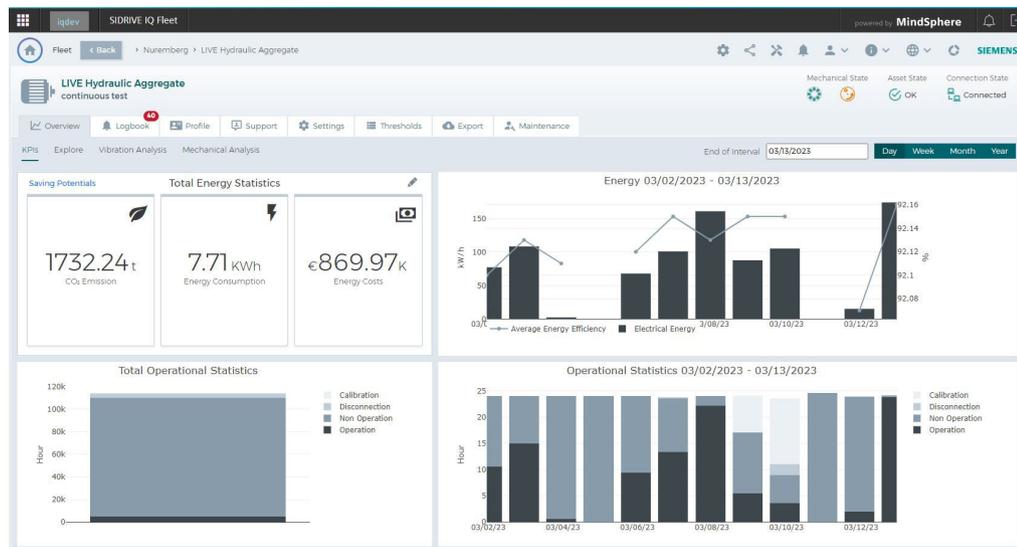
## 5.3 Monitoring assets

### 5.3.1 Asset view

The following tabs to monitor assets can be selected in the Asset view:

- Overview (Page 47)
- Logbook (Page 62)
- Profile (Page 69)
- Support (Page 71)
- Settings (Page 72)
- Thresholds (Page 75)
- Export (Page 76)
- Maintenance (Page 80)

The following figure provides you with an overview of the asset view:



## 5.3.2 "Overview" tab

Under the "Overview" tab, you can select between the "KPIs" and "Measured values" views.

### See also

"Overview" tab - KPIs (Page 47)

### 5.3.2.1 "Overview" tab - KPIs

You can see all of the important data associated with the selected asset in the "KPIs" view:

- Overall energy statistics  
Section "Overall energy statistics" shows the overall CO<sub>2</sub> emissions of the motor, the overall energy consumption and the overall energy costs since commissioning. Initially, the values are calculated based on the default parameters CO<sub>2</sub> factor and the energy price. You can open the "Saving potentials" dialog using button "Saving potentials". Also see Section "Saving potentials" in this chapter. You can display and/or edit specific parameters for this asset using button . The cross-tenant/subtenant parameterization is realized via menu "Settings" (Page 40).

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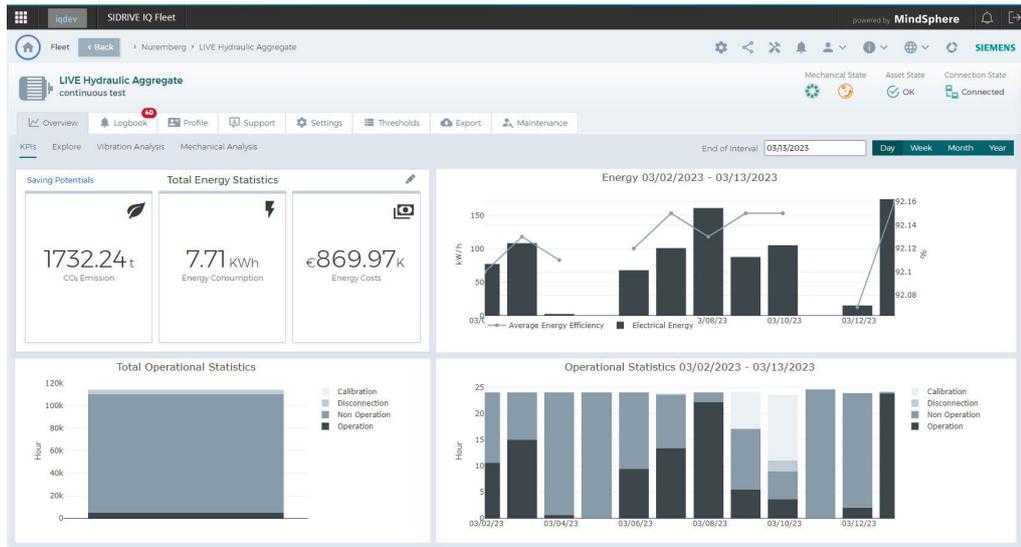
#### Note

You need the iqfleet.admin role to edit the parameters.

---

- Time-related energy consumption  
12 bars are displayed up to the selected end date. Depending on the option selected, a bar represents either one day, one week or one month.
- Total Operational Statistics  
The Total Operational Statistics displays the total operating time (since onboarding), distributed according to "Operation", "Non Operation", "Calibration" and "Disconnection". "Disconnection" is the time where SIMOTICS CONNECT 400 was disconnected, and no information was available about the operating status of the motor.
- Time-related operational statistics  
12 bars are displayed up to the selected end date. Depending on the option selected, a bar represents either one day, one week or one month. For each bar, the operating time (since onboarding) is displayed according to "Operation", "Non Operation", "Calibration" and "Disconnection". "Disconnection" is the time where SIMOTICS CONNECT 400 was disconnected, and no information was available about the operating status of the motor.

5.3 Monitoring assets



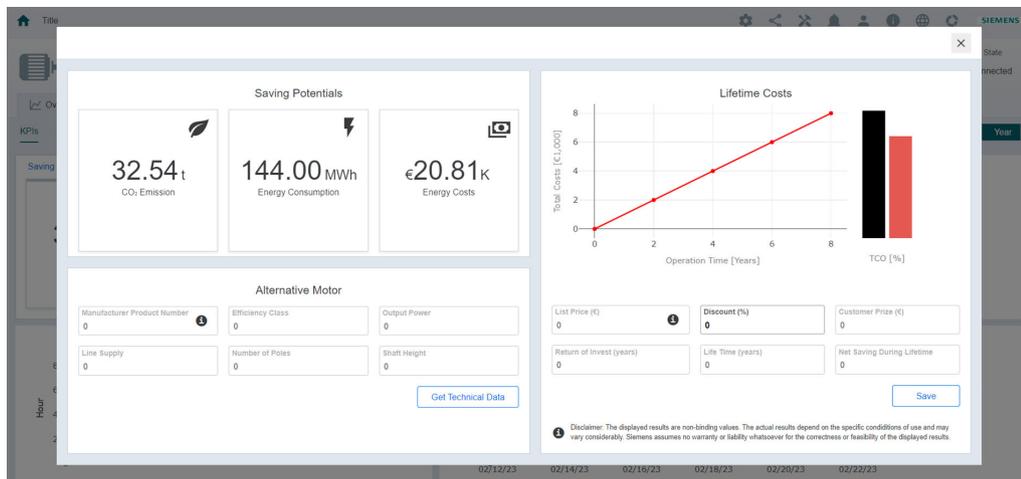
**Note**

At the present time, for converter-driven motors (VSD), where onboarding was performed with an SIDRIVE IQ Fleet Version < V2.4, calculation of the energy consumption is not supported. Energy consumption values are available for motors where the onboarding was performed with SIDRIVE IQ Fleet version >= V2.4.

**Saving potentials**

SIDRIVE IQ Fleet analyzes the operational energy consumption of your motor and compares the energy KPIs with an alternative motor with a higher efficiency.

In tab "Overview" - KPIs, by clicking on button "Saving potentials", you can display the comparison for your corresponding motor.



The saving potentials with reference to energy consumption, CO2 emission and energy price are specified as annual average. The alternative motor and the saving potentials are recalculated every week.

The return on investment is based on the price of the alternative motor and the annual energy cost savings. You can adapt the discount (%) or the customer price so that the return on investment can be more precisely determined.

---

## Note

### Return on investment and saving potentials

A minimum amount of data is required to calculate the return on investment and saving potentials. The calculations become more meaningful as the amount of data increases. The calculations are updated every Sunday.

---

## Note

- The system automatically supplies the list prices for Europe. The prices can differ for other regions.
  - The return on investment is based on the average annual saving potentials. The amount of data increases the accuracy.
  - The comparison dialog is not displayed if the system cannot identify a more efficient motor.
- 

### 5.3.2.2 "Overview" tab - Explore

You have the option of graphically displaying various signals in the "Explore" view. You can select up to 3 different signals using the "Signal Selection" menu.

The following figure shows 3 selected signals and their representation as example:



### 5.3 Monitoring assets

The graphs differ as standard by the following color codings:

- First selection: Black
- Second selection: Gray
- Third selection: Blue

You can change the color coding, line width of the graphs and the display type (Page 51) allocated by the system.

Using the right and left arrow keys of the coordinate system, you can display or hide the signal selection as well as the logbook display (Page 56).

#### Available signals

In the "Measured values" view you can read out the following signals via the "Signal selection" menu:

- Motor State  
After onboarding, the connectivity module automatically starts a calibration procedure at the motor. It requires 10 measuring cycles with the motor in the RUN state and 10 in the OFF state. Precise data is only available for signal "Motor State" after the calibration procedure has been completed:
  - Value "0": Motor off (OFF)
  - Value "1": Sensor not calibrated
  - Value "3": Motor on (RUN)

For the display in the diagram, we recommend that the "step-after" line style is used.

- Electrical stator frequency (Hz)
- Slip frequency (Hz)
- Torque (Nm or lbf-ft)
- Electrical power drawn (kW)
- Energy efficiency (%)  
Energy efficiency of the motor under the current operating conditions
- Temperature (°C or °F)  
Motor surface temperature
- Axial vibration (x) (mm/s or in/s)  
Vibration velocity [mm/s] in the X direction
- Tangential vibration (y) (mm/s or in/s)  
Vibration velocity [mm/s] in the Y direction
- Radial vibration (z) (mm/s or in/s)  
Vibration velocity [mm/s] in the Z direction
- Number of starts
- Speed (rpm)  
Rotation speed of the motor during the set period

**Note****IEC/NEMA**

For torque, temperature and vibration signals, you can change the unit from IEC (metric) to NEMA. The default setting is IEC.

---

**Note**

The following restrictions apply to converter-driven motors (VSD):

- At the present time, for converter-driven motors (VSD), where onboarding was performed with an SIDRIVE IQ Fleet Version < V2.4, calculation of the torque and electric power consumption is not supported.
  - The slip frequency displayed may differ from the actual slip frequency due to the system.
- 

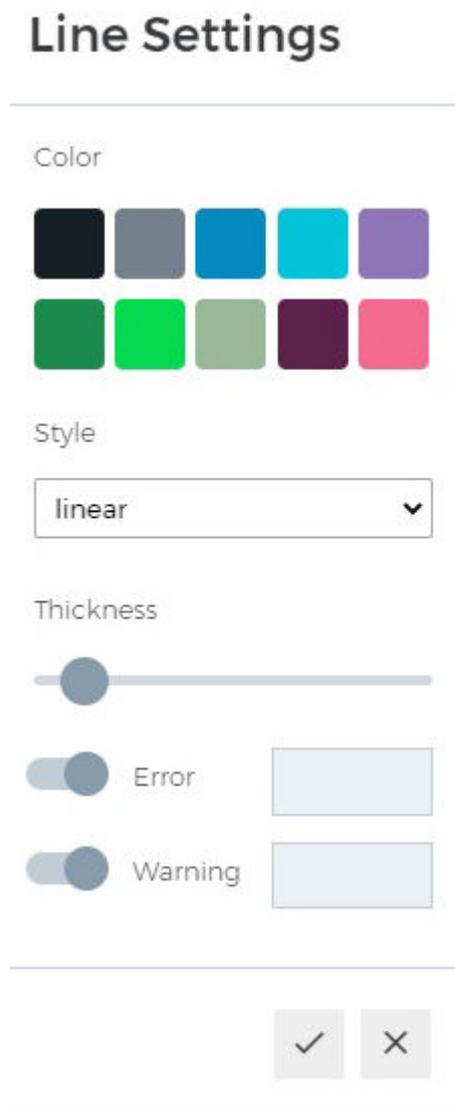
**Editing a graph**

You can change the color coding, line width of the graphs and the display mode.

The settings for the relevant signal are stored in the web browser memory of your local computer. The stored settings are retained for future logins.

## Procedure

1. Select a signal.
2. Click the "Pencil"  button.  
The edit dialog is opened.



3. Select a color.
4. Select a display mode.
5. Select a line width.
6. Activate/deactivate the display of lines for faults and warnings (if limiting values are configured for the measured values of the asset).

## Select the display period

You can select how the required measured values are displayed using the following settings:



- Timezone user (user, asset, coordinated universal time)
- Predefined time periods (last year, last month, last week, last 24 h, today)
- Freely selectable time period (Others): For a freely selectable time period, select a start and end time

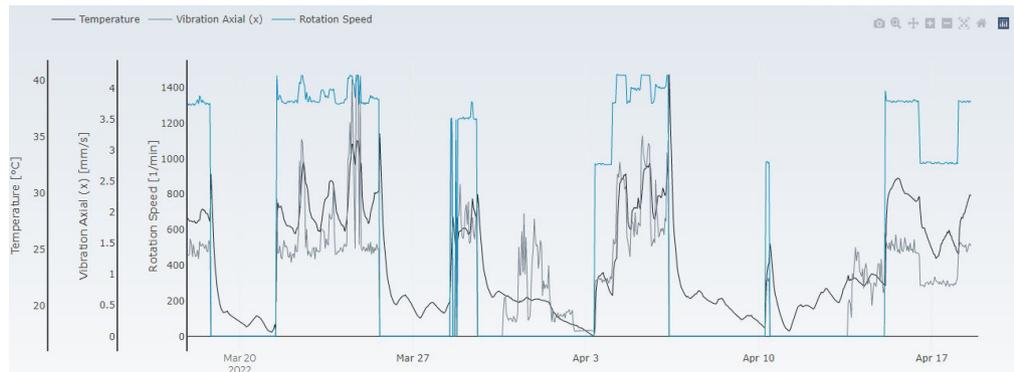
The last time period selected is stored in the web browser memory of your local computer. The stored time period is retained for future logins.

## Refining the display period

The display area of the selected measure values is split up into 2 different segments:

- Graph with time axis and value axis/axes
- Separate window for the zoom function

The following figure shows the display area of the signals with graph and separate window for the zoom function:



### Using the "Zoom" function in separate window

As default setting, the separate window and the graph show the time period that you have defined. You can use the "Zoom" function in separate window to display the graphs in more detail.

1. Select a specific display time period.
2. In the separate window, limit the time period by shifting the start and end of the separate time range using the mouse.

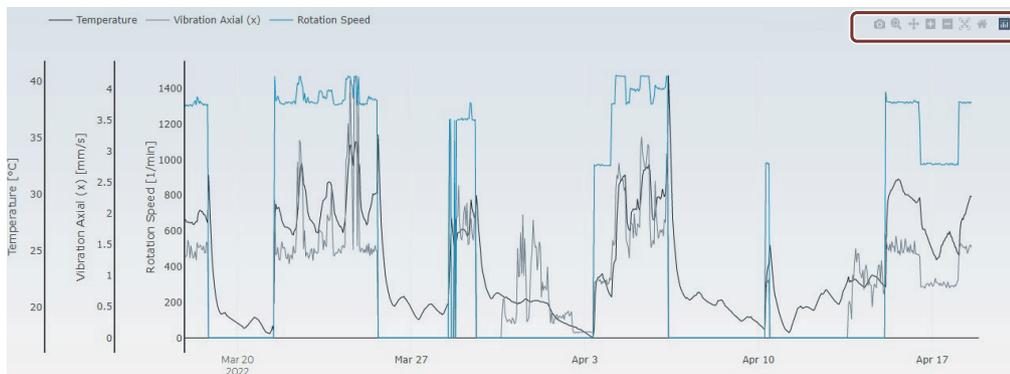


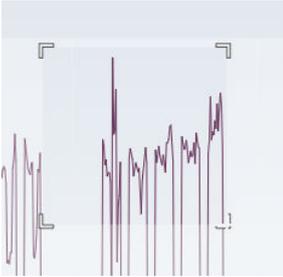
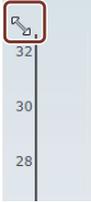
The display time period in the graph only shows the selected zoom range. You see the zoomed-in time period that you are presently viewing in the separate window.

3. To view the complete display range again, define a new time period (Page 53).

### Chart-menu bar

You can adapt the Chart display using the display options. The functions are described below:



	<p>Download plot</p> <p>Saves the recording as a jpg file in the "Downloads" folder on your local PC.</p>
	<p>Zoom</p> <p>In this mode, you can mark a range in the chart using the mouse. This range is enlarged. This mode is pre-selected when opening the chart view.</p>  <p>You can increase or reduce the chart size by moving the mouse pointer up or down along the Y axis.</p>  <p>You can restore the original display by double-clicking on the diagram or by clicking on button "Reset axes".</p>
	<p>Pan</p> <p>In this mode, you can shift the chart along the X or Y axis.</p> <p>You can also shift the individual signals along the Y axis by moving the mouse pointer to the left hand side of the signal, and then pulling in the required direction.</p> 
	<p>Zoom in</p> <p>Zoom - enlarge</p>
	<p>Zoom out</p> <p>Zoom - reduce</p>
	<p>Autoscale</p> <p>Automatic scaling of the data in the record.</p>
	<p>Reset axes</p> <p>Reset of the axes (undoes zoom and pan actions)</p> <p>You can restore the original display by double-clicking on the diagram.</p>
	<p><a href="http://plotly.com">http://plotly.com</a> (<a href="https://plotly.com/">https://plotly.com/</a>)</p>

### Fingerprint-time interval

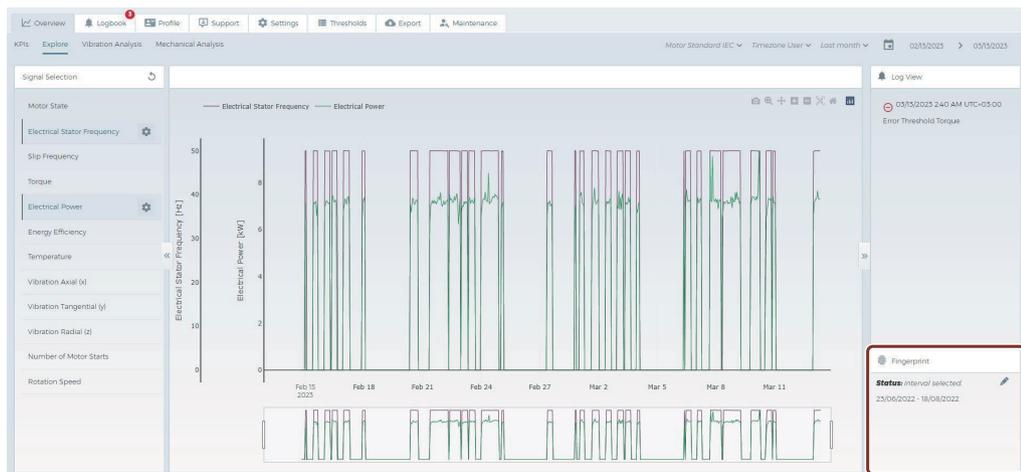
You can define a fingerprint-time interval for your plant/system data to specify the time period for normal operation of the motor. The data within the fingerprint time interval are used for the extended condition analysis and anomaly detection of the motor.

The following preconditions must be fulfilled:

- The fingerprint-time intervals must be longer than two weeks and shorter than three months.
- In the selected interval, the number of data points of vibration axial(x) must be more than 20,000.
- In the selected interval, the number of data points of the slip frequency must be more than 6,000.

### Procedure

1. Click on icon  to select the time interval of normal motor operation.
2. Confirm the selection with "Save".



### "Logbook" column

In addition to graphically displaying the measured values, in column "Logbook" messages, alarms and warnings are displayed in a chronological sequence. Using the right and left arrow keys of the coordinate system, you can display or hide the logbook display.

#### 5.3.2.3 Tab "Overview" - vibration analysis

---

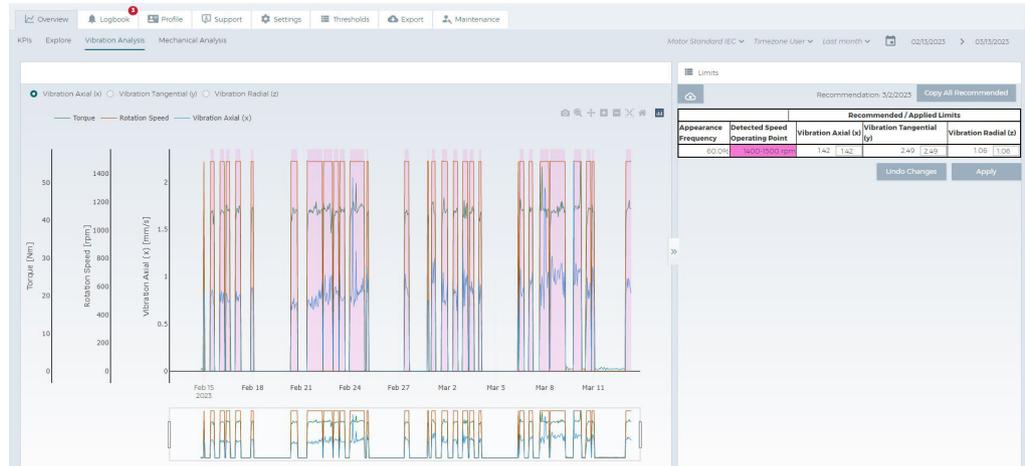
#### Note

View "Vibration analysis" is visible for VSD and DOL motors.

---

The SIDRIVE IQ Fleet Analytics System analyzes the operating data of VSD and DOL motors and recommends vibration limit values. The system identifies up to three of the most

frequent motor operating points. It is expected that DOL motors have just one operating point. Vibration limits are suggested for each operating point. As soon as these limit values are applied, the vibration data points are compared with the applied limit value for the corresponding operating point.



### Note

- Note "No operating point found" is listed in the table if the SIDRIVE IQ Fleet Analytics system was not able to identify any operating point. The reason for this could be an insufficient data volume. The results are displayed as soon as sufficient data is available to identify the operating points.
- The SIDRIVE IQ Fleet Analytics System regularly evaluates and updates the operating points and the recommended limit values. You receive notifications in the logbook about changed operating points and/or changed limit value recommendations:
  - New Operating Point Detected
  - Operating Point No Longer Valid
  - Recommended Vibration Limit Changed
  - Operating Point Changed

### Chart

Three signals are preselected in the chart:

- Torque
- Speed
- One of three vibration signals:

Vibration Axial (x)  Vibration Tangential (y)  Vibration Radial (z)

When required, you can change the display by selecting the appropriate signal.

The background color of the diagram sections is identical to the colors of the most frequent operating points in the table for this time period.

### 5.3 Monitoring assets

The height of the colored background corresponds to the applied limit of the selected vibration signal.

#### Limits

The operating point algorithm provides a recommendation for the vibration signal limit values for the corresponding operating points.

The recommended limit values only become active if you accept these.

- **Identified speed operating point:**  
The speed range of the corresponding operating point. Operating points are identified based on this range. The background color of this cell is used in the diagrams to display the associated time periods during which the motor was operated.
- **Frequency of occurrence:**  
The percentage that the operating point occurs over the complete time period of the analysis.
- **Suggested / applied limit values:**  
The operating point algorithm displays a recommended limit value for each axis of vibration. You can apply the suggested limit values or enter your own limit values. If you do not enter a value, then the limit value monitoring for these operating points is not active.

#### Entering limit values

You can define limit values if no limit values have been entered. Alternatively, you can accept the limit values suggested by the SIDRIVE IQ Fleet Analytics System (Page 58).

#### Procedure

1. Enter the limit values in the entry fields.
2. Click on "Apply".

#### Result

The system uses the entered values to monitor vibration levels at the operating points.

#### Applying suggested limit values

Proceed as described below to apply the suggested limit values.

#### Procedure

1. Click on "Copy all suggested". All suggested values are copied to the entry fields.
2. Click on "Apply".

**Result**

The system uses the recommended values to monitor vibration levels at the operating points.

---

**Note**

In the case that limit values are violated, the system generates a "Warning" notification "Vibration Anomaly Detected", see tab "Logbook" (Page 62).

---

**Changing limit values**

You can change limit values at any time if you identify that the monitoring limit is too close or too far away. Proceed as described below:

**Procedure**

1. Enter the appropriate limit values in the entry fields.
2. Click on "Apply".

**Result**

The system uses the changed values to monitor vibration levels at the operating points.

---

**Note**

In the case that limit values are violated, the system generates a "Warning" notification "Vibration Anomaly Detected", see tab "Logbook" (Page 62).

---

**Deleting limit values**

You can delete the corresponding limit values if you wish to stop vibration monitoring at the operating points. To do this, proceed as described below.

**Procedure**

1. Delete the corresponding entry field values.
2. Click on "Apply".

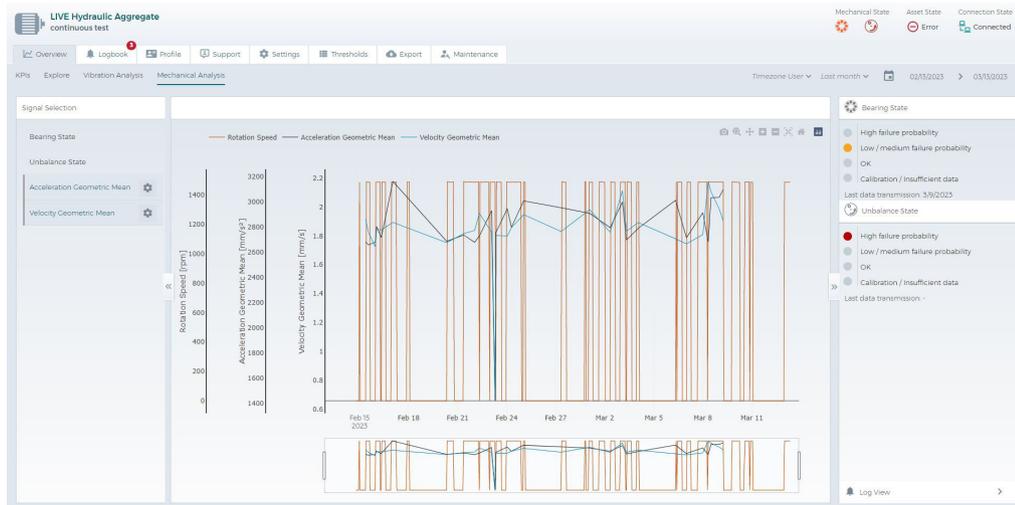
**Result**

The system stops vibration monitoring for the deleted cells.

**5.3.2.4 Tab "Overview" - Mechanical analysis**

The system analyzes and monitors the mechanical status of your motor. You receive an appropriate warning via SIDRIVE IQ Fleet if the probability of damage increases.

The details are displayed in view "Mechanical Analysis":



If the motor is a VSD motor and the most frequent operating points could be detected, the background color of the chart sections is identical to the color of the most frequent operating point for this time period. The operating points and their colors are shown in the legend.

### Available signals

- **Bearing status**  
The index value represents the bearing status. This is calculated a maximum of once per day. The characteristic over a time period of several weeks indicates how the bearing status is developing.  
The absolute quantity of the index value can vary between various motor types and their specific applications. However, a continuous increase of the characteristic value over a period of time extending from one or several months indicates that the bearing status is deteriorating.  
Apply the appropriate measures, in combination with the traffic light  and generated logs.  
The index value can depend highly on the operating point (motor speed).  
In the chart view, the index value is preselected as main result of the bearing status analysis.
- **Unbalance status**  
Signal "Unbalance Status" displays a time series. The absolute signal amplitude depends on your specific application. As a consequence, the amplitude alone is not an indicator. Unbalance can develop over time, can occur as a result of incorrect maintenance or changes to the motor or the application.
- **Speed (rpm)**  
Rotational speed of the motor during the set period.  
This signal is preselected in the chart view to assign identified operating points.

- **Acceleration, geometric mean value (mm/s<sup>2</sup>)**  
Geometric mean value of the measured vibration acceleration over the set time period. Based on this signal, general vibration trends can be identified and compared with the bearing status characteristic value.  
The signal can depend highly on the operating point (motor speed).
- **Velocity geometric mean (mm/s)**  
Geometric mean of the calculated vibration velocity over the set time period. Based on this signal, general vibration trends can be identified and compared with the bearing status characteristic value.  
The signal can depend highly on the operating point (motor speed).

### Bearing status traffic light

Traffic light colors	Status	Description
Red	Critically high probability of a fault	Bearing status is critical. High increase of the bearing status value has been detected. Probability of a sudden failure is high. Check the motor on site.
Orange	Low to medium probability of a fault	A deterioration of the bearing status has been detected, and the probability of failure has increased. The probability of sudden failure is low. Keep monitoring the asset.
Green	OK, no fault detected	A bearing status model has been trained and the bearing is monitored. No fault was found, and the bearing is in a good status.
Gray	Calibration / insufficient data	The bearing status model is being recalibrated or there is insufficient data.

### More information

- **Last data transmission**  
The date when the last bearing status and/or unbalance analysis could be performed.
- **Mechanical status (bearing and/or unbalance)**  
You receive a note if the mechanical status analysis is not up-to-date.  
The precondition for a bearing status analysis is as follows:
  - SIMOTICS CONNECT 400 firmware version 1.0.0.4 or higher
  - Set the measuring cycle  $\geq 5$  minutes
  - The motor must be switched on and operated for a minimum of 15 minutes to successfully calculate the bearing status.

If the bearing or unbalance status was not able to be calculated, although the preconditions were satisfied, export the messages from the SIMOTICS CONNECT 400 module and contact customer support.

---

#### Note

The bearing status is calculated if the motor is in the "On" operating state for at least 15 minutes, the configured measuring cycle is  $\geq 5$  minutes and a SIMOTICS CONNECT 400 Firmware version  $\geq 1.0.0.4$  is being used.

---

### Log view

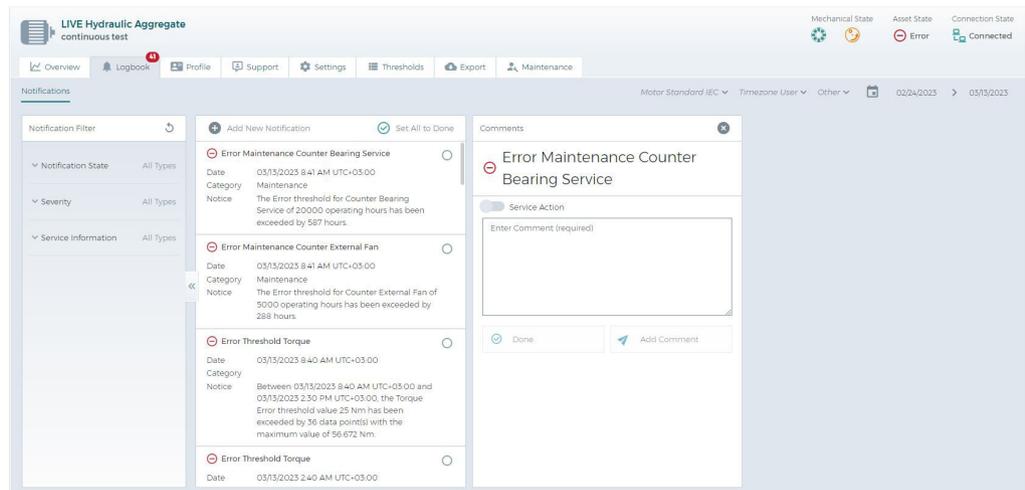
All logs that refer to the bearing status and monitoring analysis are displayed here.

#### 5.3.3 "Logbook" tab

In the "Logbook" tab, you will find an overview of the "Error", "Warning" and "Info" type notifications. There are system-generated notifications as well as notifications you create yourself (Page 66). You can add comments (Page 67) to all notifications.

The entries are sorted chronologically within the selected time range. The list shows the last 20 entries.

The following figure provides you with an overview of the "Logbook" tab in the Asset view:



## System-generated notifications

The following notifications are generated by the system:

- **Thresholds exceeded**  
If the warning or error thresholds (Page 75) you have defined for a signal are exceeded, corresponding "Warning" or "Error" notifications are generated.  
**Example:**  
For the "Temperature" signal of Asset\_X, 30 °C is defined as the warning threshold and 35 °C as the error threshold.
  - Values above the warning threshold ( $30\text{ °C} > t \geq 35\text{ °C}$ ) trigger a "Warning" notification.
  - Values above the error threshold ( $t > 35\text{ °C}$ ) will trigger an "Error" notification.

---

### Note

For vibration signals (e.g. "Axial vibration (x)"), the system only generates an "Warning" and/or an "Error" notification if two or more consecutive values lie above the threshold.

---

- **Battery replacement recommended**  
The battery status of the SIMOTICS CONNECT 400 connectivity module is monitored.
  - If a "Warning" notification is issued, you should order replacement batteries.
  - If an "Error" notification is issued, you should replace the batteries.
- **Export file completed**  
If you started exporting an asset's data (Page 76) in the "Export" tab, an info notification will be created after the export request has been successfully processed.  
When you receive this notification, you can download the exported files in the "Export" tab.
- **Vibration model trained**  
The system has completed the vibration model training for vibration monitoring. After receiving the "Info" notification, the system can detect vibration model deviations.
- **Operating points**  
For VSD motors, the system identifies the most frequent operating points and the associated vibration limits that the system suggests. Anomalies are detected.

### 5.3 Monitoring assets

- Vibration anomalies are detected  
During vibration monitoring, the data analysis system detected one or several anomalies.
- Maintenance counter exceeded  
With SIDRIVE IQ Fleet you can configure counters to monitor maintenance activities for motors, for example, relubrication, external fan maintenance, bearing replacement and/or your customer-specific maintenance activities (see Activating/deactivating the maintenance counter (Page 81)).  
The following applies to every activated counter:
  - When the number of operating hours that you defined as alarm level is reached, then an "Alarm" notification is output for the corresponding maintenance counter. This "Alarm" notification indicates that you should plan the pending maintenance activity.
  - When the number of operating hours that you defined as fault level is reached, then an "Fault" notification is output for the corresponding maintenance counter. This "Fault" notification indicates that the corresponding maintenance activity was not performed on time.
- Bearing analysis model trained / monitoring active  
The system is able to capture sufficient data and the bearing analysis model is trained. After receiving this "Information" notification, the system monitors the bearing status and informs you of any deterioration.
- Reset of the bearing monitoring  
As a result of a change made by the user, the bearing analysis model must be reset (e.g. after performing maintenance). In this case, the model must be recalibrated. Monitoring only becomes active once the training has been completed.
- Bearing deterioration  
The system identifies a change of the bearing status, which implies bearing damage with a low fault probability (alarm) or with a high fault probability.

#### 5.3.3.1 Filter notifications

You can filter notifications according to categories "Notification status", "Asset State" and "Service information".

## Procedure

You can filter the notifications as described below:

1. Limit the display period for all entries, e.g. "Last month".



2. Filter the entries by notification status.

Icon	Description
 Open	Status of the notification "Open": Displays all entries that have not yet been acknowledged.
 Done	Status of the notification "Done": Displays all entries that have been acknowledged.

3. Filter the entries by Asset State.

Icon	Description
 Error	Asset status "Error": Displays all entries that indicate an error.
 Warning	Asset state "Warning": Displays all entries that indicate a warning.
 Info	Asset state "Info": Displays all entries where a remedy was saved.

4. Filter according to service information.

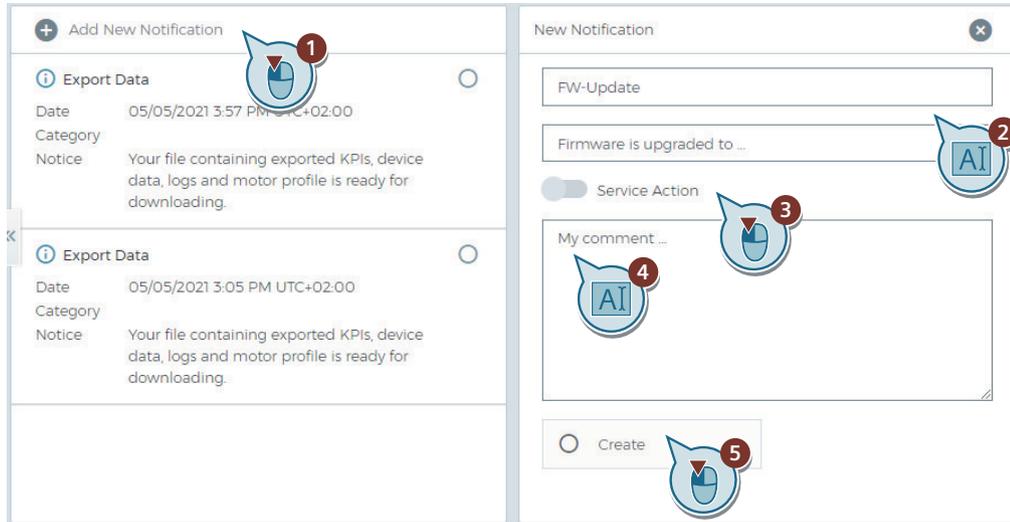
Icon	Description
 Service	"Service": Displays all entries whose comment is marked as a "Service Action" (see Creating notifications (Page 66))

5. Reset the filter criteria.

Icon	Description
 All	Reset set filters of the corresponding category.
 	Reset all filters.

### 5.3.3.2 Creating notifications

You can create "Info" notifications to document maintenance activities, e.g. motor service or firmware update of the SIMOTICS CONNECT 400 connectivity module.



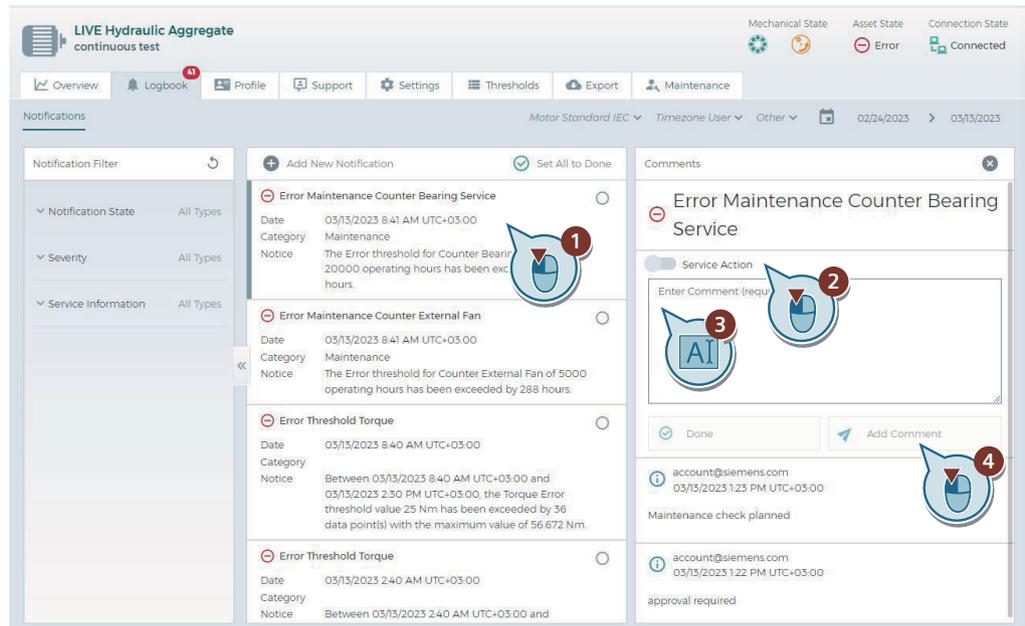
#### Procedure

Proceed as follows to create a new notification:

1. Click on the "Add new notification" button. The "New notification" dialog is displayed.
2. Enter a title and remark (mandatory fields).
3. Optionally activate "Service Action" if the notification is a service action of a motor.
4. Optionally enter a comment.
5. Click the "Create" button. The "Info" notification is displayed in the overview.

### 5.3.3.3 Creating and editing comments

You can add comments to all notifications, e.g. to comment on activities performed or specific problems, and also to inform other users. Comments are stored with the user's email address and the date of the comment entry.



### Procedure

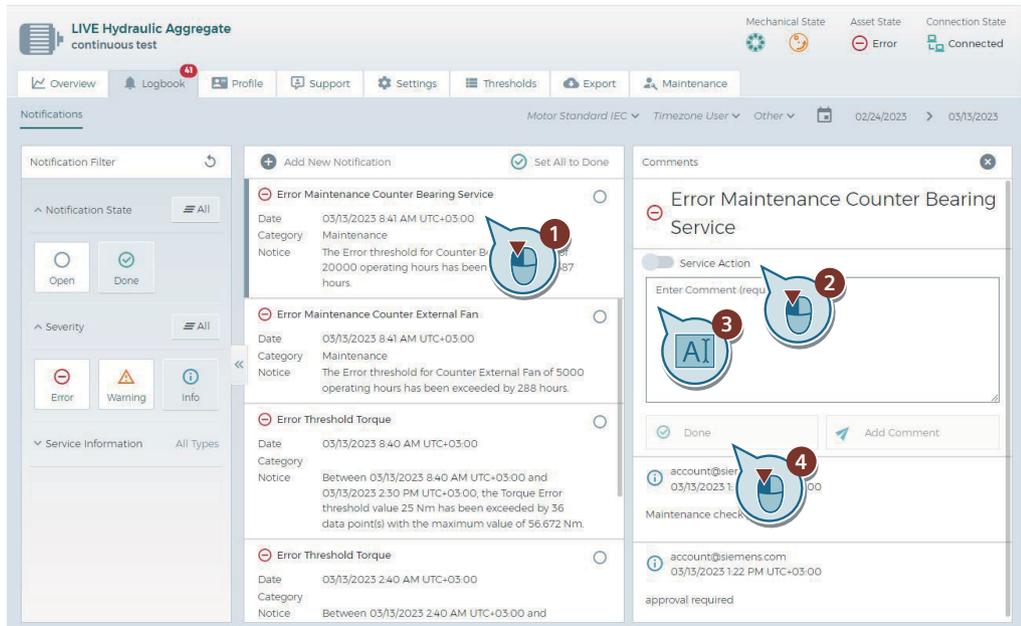
Proceed as follows to create or edit a comment:

1. In the overview, click on the notification for which you want to create a comment. The "Comment" dialog is displayed on the right side. If there are several comments, they are arranged chronologically.
2. Optionally activate "Service Action" if the comment is a service action of a motor, e.g. if you have replaced the bearings of the motor or performed a main inspection of the motor.
3. Enter the comment text (mandatory field), e.g. with general information or remedies.
4. If you only want to add the comment to the selected notification, click the "Add Comment" button.

You can change the status of a notification by clicking on the "Done" or "Reopen" button.

### 5.3.3.4 Acknowledging notifications

You can mark notifications as "Done". This acknowledges a notification.



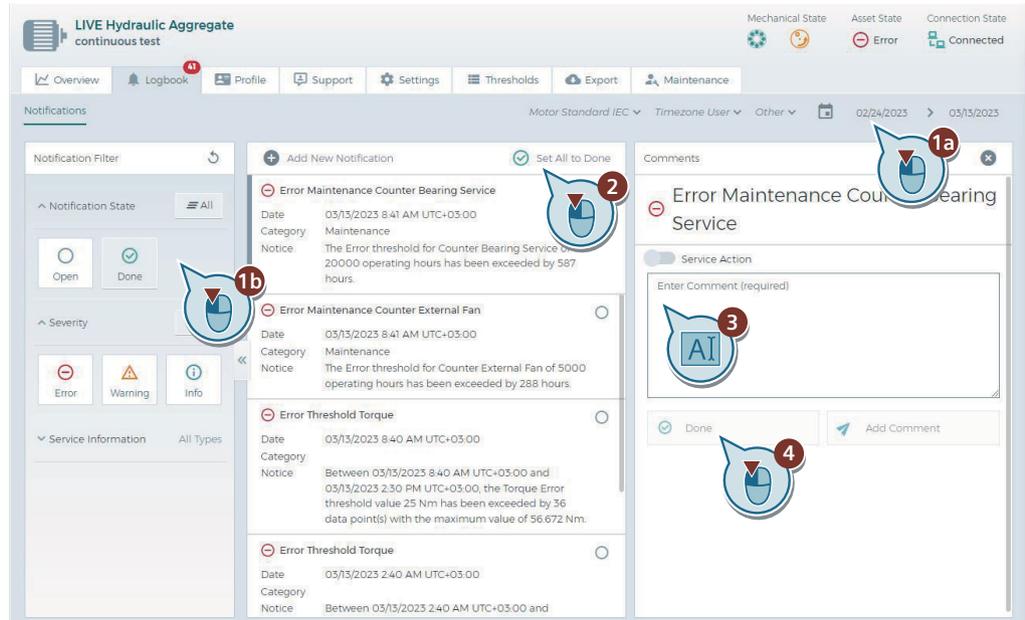
### Procedure

Proceed as follows to acknowledge a notification:

1. Click on the notification to be acknowledged in the overview. The "Comment" dialog is displayed on the right side.
2. Optionally activate "Service Action" if the comment is a service action of a motor, e.g. if you have replaced the bearings of the motor or performed a main inspection of the motor.
3. Enter the comment text (mandatory field), e.g. with general information or remedies.
4. Click the "Done" button to acknowledge the notification.

### 5.3.3.5 Acknowledging all notifications

You can mark all open notifications, which correspond to the filter criteria, as "Done". This means that these are then acknowledged.



### Procedure

Proceed as described below:

1. Adapt the time interval (1a) and the filter criteria (1b) so that the notifications to be acknowledged are listed.
2. Click on "Set all as done".
3. Enter a comment.
4. Click on "Done" to acknowledge all listed notifications that are open.

### 5.3.4 "Profile" tab

The rating plate data of the specific asset are displayed under the "Profile" tab. You can extend the "Motor versioning history". The data are displayed for the selected motor version in the "Profile" tab.

The following diagram provides you with an overview of the "Profile" tab in the Asset view with extended motor versioning history:

5.3 Monitoring assets

Overview | Logbook | Profile | Support | Settings | Thresholds | Export | Maintenance

Motor Replacement History

Serial Number	Manufacturer Product Number	Version	Application	User	Comment	Reason	Date
E0903518631601-001	1LA71664AA61-Z	1	Pump	TechnicalUser	Initial Onboarding	Other	3/3/2021, 5:55:28 PM

**General Data**

Manufacturer Name: Siemens  
 Manufacturer Product: SIMOTICS  
 Designation: SD  
 Serial Number: E0903518631601-001  
 Manufacturer Product Number: 1LA71664AA61-Z  
 Standards: IEC  
 Manufacturer Product Order Suffix:  
 Ambient Temperature Min.: -20 °C  
 Ambient Temperature Max.: 40 °C  
**Operating Mode: DOL**

**Electrical Data**

**Operating Point (Selected)**

Rated Voltage: 400 V  
 Connection: D  
 Current: 28.5 A  
 Number of Poles: 4  
 Frequency: 50 Hz  
 Output Power: 15 kW  
 Speed: 1460 rpm  
 Efficiency: 90.437  
 Power Factor: 0.84

**Mechanical Data**

Shaft Height: 160 mm  
 Type of Mounting: IM B3  
 Total Weight: 91 kg  
 Degree of Protection: IP 55  
 Thermal Class: Th.Cl. 155(F)

When onboarding the motor, the operating mode set in SIDRIVE IQ Config (VSD or DOL) can be seen in column "General Data". The operating mode is detected based on the motor stator frequency. The following message is displayed if the set operating mode differs from the detected operating mode.

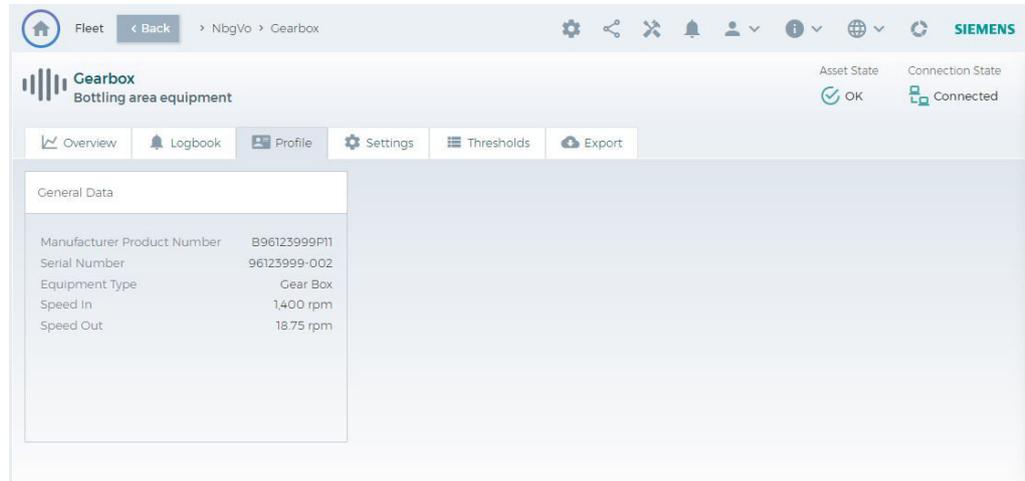
**Operating Mode** VSD

The selected operating mode is probably incorrect. Please check the operating mode of the motor and, if necessary, correct the setting locally using the "Replace Motor" function in the SIDRIVE IQ Config app.

SIDRIVE IQ Fleet checks the operating mode on a monthly basis, and automatically updates it if a motor is changed.

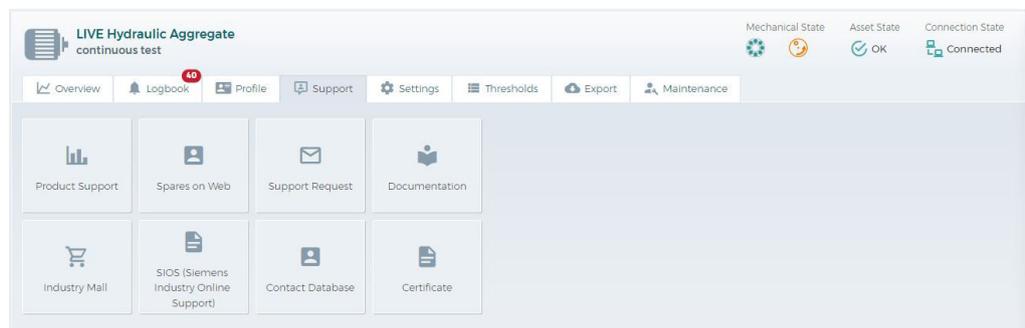
## Generic vibration monitoring

The following information is displayed in tab "Profile" if you have configured "Generic vibration monitoring" for an asset.



### 5.3.5 "Support" tab

Product documentation and different ways to establish contact are listed under the "Support" tab. The following figure provides you with an overview of the "Support" tab in the Asset view:



The following support options are available to you in the "Support" area:

- **Product Support**
- **Spares on Web**  
The serial number and the manufacturer's Article number are automatically transferred to Spares on Web to determine the spare parts.  
The display appears as soon as the motor is available in Spares on Web.
- **Support Request**  
The Siemens Internet page "Support Request" opens. Based on the product name or the order numbers and additional keywords to define your question, you reach the appropriate FAQs and forum topics or the login for the Siemens "Support Request" Internet page.
- **Documentation**  
You can search for Siemens motor manuals and download these.

### 5.3 Monitoring assets

- **Industry Mall**  
On the Siemens Internet page "Industry Mall" you can order Siemens components and software based on their product names or their order numbers.
- **SIOS (Siemens Industry Online Support)**  
On the Siemens Internet page "SIOS" you can download Siemens documents and software updates.
- **Contact Database**  
The Siemens Internet page "Your Personal Contact" opens. Authorize the Internet page to acquire your location or enter your location manually. A world map shows your local Siemens contact.
- **Certificates**  
You can search for certificates for Siemens motors and download these.

#### 5.3.6 "Settings" tab

In the "Settings" tab, you can log on for e-mail notifications ①. You will receive e-mail notification if the limit values that have been configured for the selected asset are exceeded, or if faults and/or warnings for the asset are active.

In addition, the SIMOTICS CONNECT device data is displayed in the "Settings" tab ②:

- **SC400 serial number:** Shows the serial number of the SIMOTICS CONNECT 400 device.
- **Battery Status:** Calculated battery capacity as a percentage.
- **Interval**
  - **Measurement Cycle:** indicates the interval at which the measurements are taken.
  - **Transmit Cycle:** indicates how often the data exchange between SIMOTICS CONNECT 400 and SIDRIVE IQ Fleet takes place.
- **Last data transmission:** Indicates the date and time when the data was transferred from SIMOTICS CONNECT 400.
- **Firmware version**
  - **Installed:** Displays the firmware version installed on the connectivity module.
  - **Released version:** If you do not have the latest firmware version installed on the connectivity module, the latest version with release date is displayed here.
  - **Update status:** If you do not have the latest firmware version installed on the connectivity module, the status of automatic firmware update with date and time is displayed here.

- Replacement history
  - Serial number: Serial number of the SIMOTICS CONNECT 400 device.
  - Comment: User comment
  - Reason: Reason for replacing the module
  - User name: Email address of the user who carried out the replacement
  - Date: Date of module replacement
- Automatic firmware update:
  - Status: Displays the current activation status for the automatic firmware update.
  - To activate the automatic firmware update, you required the "iqfleet.admin" role. Activation takes place for the selected asset. For activation, you must read and accept the software update terms and conditions. You can deactivate the automatic firmware update at any time.

You can delete the asset and its complete history using button "Start offboarding" ③. You cannot undo this action. By offboarding an asset from SIDRIVE IQ Fleet, the allocation becomes free if you wish to analyze another motor, for example. To complete offboarding on the SIMOTICS CONNECT 400 connectivity module side, you should perform the offboarding using the mobile "SIDRIVE IQ Config" application.

The screenshot displays the SIDRIVE IQ Fleet web interface with three panels highlighted by red boxes and numbered 1, 2, and 3.

**Panel 1: E-Mail Notification**

Overview | Logbook | Profile | **1** Support | Settings | Thresholds | **2** | Maintenance | **3**

E-Mail Notification

Status: E-mail notification is inactive for the asset.

I accept that my email address will be visible to the other users who have access to this asset.

**Panel 2: Device**

Device

SC400 Serial Number: LBK74-01695

Battery Status: 80 %

Intervals

Measurement Cycle: 60 s

Transmit Cycle: 2 h

Last data transmission: 26.4.2022 18:27:41

Firmware Version

Installed: v1.0.0.13

Latest Released: 23.2.2022 15:32:33

Replacement History

Serial Number	Comment	Reason	User Name
LBK74-01695		Electrical Defect	...
LBK244-3581	reconnect	Other	...
LBK244-3581	reconnect	Other	...

Automatic Firmware Update

Status: Automatic firmware update is active for the device.

Please note, if you deactivate the automatic firmware update function, you must regularly update the SIMOTICS CONNECT 400 firmware manually, so that you can use the latest features.

**Panel 3: Start Offboarding**

Start Offboarding

**Offboarding Asset**

Offboarding this asset will disconnect the respective SIMOTICS CONNECT from this tenant. All data in IQ Fleet will be deleted. This process can no longer be reversed. Please perform a manual Offboarding of SIMOTICS CONNECT with the mobile app SIDRIVE IQ Config in order to finish the process from the connectivity module side.

I understand that offboarding this asset will delete all related asset and time series data.

### Procedure for the activation of e-mail notifications

1. Open the asset overview.
2. Click on the required asset in the asset overview.
3. Open the "Settings" tab.
4. Select the "Subscribe" button to activate the email notification.  
After activation, you will receive notifications about the asset in the following cases:
  - Relubrication is recommended for the motor
  - Configured thresholds (see "Thresholds (Page 75)" tab) were exceeded
  - Battery replacement for the SIMOTICS Connect 400 connectivity module is recommended
  - The connection state of the asset has changed
  - Export file completed

---

#### Note

The number of e-mail notifications you can receive per month is limited by your account's notification quota. Note the notification quota when activating e-mail notification.

---

#### Note

##### Security measures

The MindSphere Notification Service, which is used to transmit messages via the Internet, is used for sending e-mail messages. The transmission of data via the Internet (untrusted channel) generally entails a residual risk regarding the confidentiality of data. MindSphere provides notification e-mails sent to the user with a digital signature. Verify the digital signature of e-mail messages you receive from MindSphere.

---

### Offboarding procedure

1. Open the asset overview.
2. Click on the required asset in the asset overview.
3. Open the "Settings" tab.
4. Carefully check that you really wish to delete the asset and the associated asset and time series data. If yes, then activate checkbox "Agreed".
5. Click on button "Start offboarding". The asset is deleted. The asset overview is then displayed.

**Note****Authorization**

You require the "iqfleet.offboarding" role for Offboarding via SIDRIVE IQ Fleet and via the application SIDRIVE IQ Config. If you do not have this role, then Offboarding is canceled with fault message "Insufficient rights". Contact your Tenant administrator if you absolutely require the offboarding role. If you are the Tenant administrator, ensure that you carefully allocate this role. An "inadvertent" offboarding means that the asset and the associated asset and time series data is deleted and cannot be subsequently recovered.

**5.3.7 "Thresholds" tab**

In the "Thresholds" tab, you can configure a threshold for the output of warning and a threshold for the output of a fault for the respective signals.

**Procedure**

1. Open the asset overview.
2. Select the required asset in the asset overview.
3. Open the "Thresholds" tab
4. Select a signal in the "Signal Selection" column.

User	Date	Warning [°C]	Error [°C]	Calculated
esjye.uluso@siemens.com	8/22/2022, 5:11:23 PM	54.8	45.9	✗
gizde.dere@siemens.com	6/8/2022, 4:26:25 PM		35	✗
mert.tunc@siemens.com	1/9/2022, 10:13:48 AM	25	35	✗
mert.tunc@siemens.com	1/9/2022, 10:13:51 AM	1	3	✗
lans.ayar@siemens.com	1/9/2022, 8:27:10 AM	25	35	✓

### 5.3 Monitoring assets

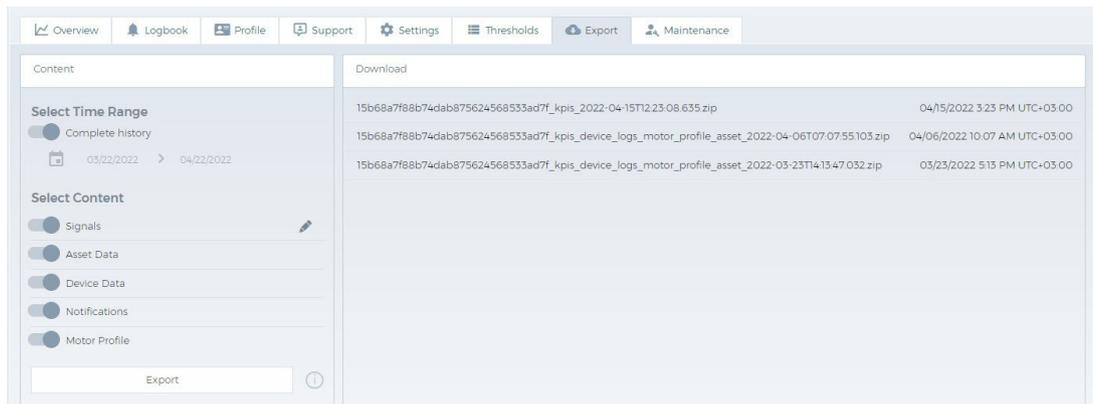
5. In the "Thresholds" column, enter a threshold for the output of a warning (Warning Threshold) and a threshold for the output of a fault (Error Threshold).
6. Confirm your configuration by clicking the "Save" button.  
If a configured asset reaches the defined thresholds, you will either be notified in the form of a warning or a fault message in the logbook of the Asset view. The warning or fault message remains active until you acknowledge the message, even if the measured value has already fallen below the threshold again.  
Furthermore, you can also configure email notifications (Page 72). You will receive an email notification if the thresholds that have been configured for the selected asset are exceeded, or if faults and/or warnings for the asset are active.

### Threshold change history

The actual thresholds are displayed in area "Threshold change history". The user that changed the threshold, the date of the change and new fault and warning thresholds are listed. The number of entries in the history that can be saved for each asset signal is limited to 5. If this number is exceeded, the oldest history item is replaced by the new history item.

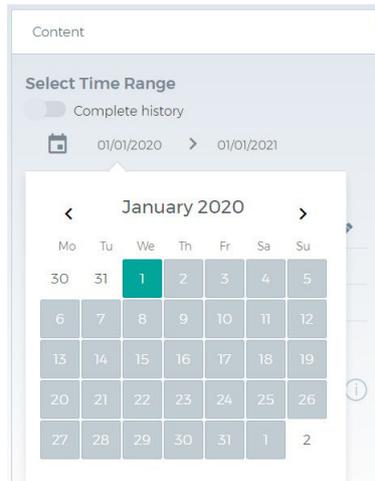
#### 5.3.8 "Export" tab

The "Export" tab allows you to export all of an asset's data to a compressed file and download it to your local computer.

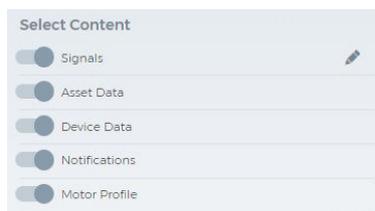


## Procedure

1. Select the time range. Within the defined time range, you can export, among other things, signals (Time Series Data) and logbook notifications.  
The default option is "Complete history". If you disable this, you can select the start and end dates in the calendar. The generation time for the export file depends on the selected time range.



2. Select the contents to be included in the export file.



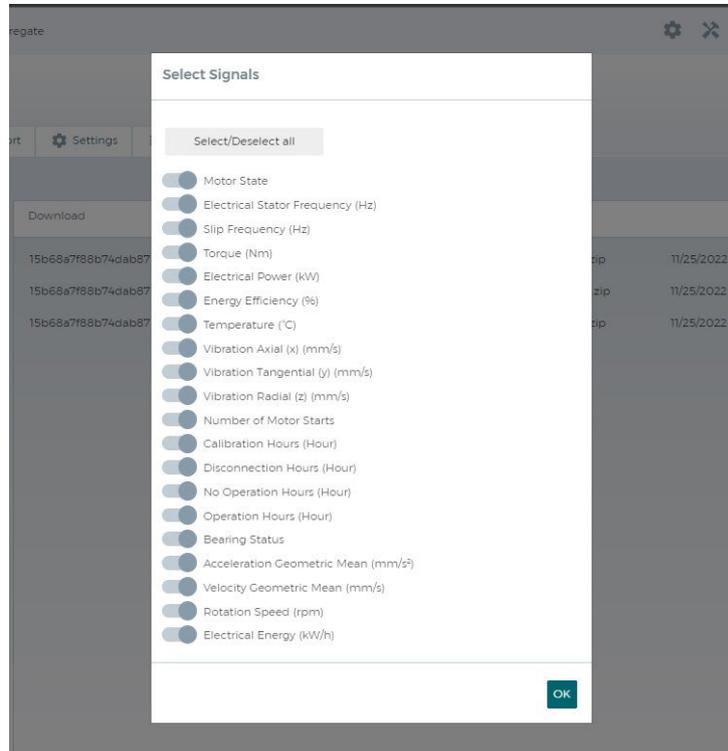
5.3 Monitoring assets

– **Signals**

By default, the Time Series Data of all signals are included.

If you want to change the selection of signals, click the button .

Activate or deactivate the corresponding signals. Click "OK" to confirm the selection.



**Note**

**IEC/NEMA**

For torque, temperature and vibration signals, you can change the unit from IEC (metric) to NEMA. The default setting is IEC.

If you selected the "Signals" option, Time Series Data for each selected signal within the selected time range are exported to a CSV file.

– **"Asset" data**

This option is used to export the asset properties (asset name, description, location, geo-coordinate, onboarding date, application, asset status, connection status and operating mode). The data is exported to a JSON file.

– **Device Data**

This option is used to export the SIMOTICS CONNECT 400 device information (measuring cycle, transmission cycle, firmware version and battery status). If you select the "Device Data" option, the data is exported to a JSON file.

– **Notifications**

This option is used to export the logbook contents. If you select the "Notifications" option, all notifications (info, fault and warning) within the selected time range will be exported to a CSV file.

– **Motor Profile**

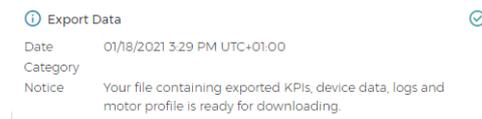
If you select the "Motor Profile" option, the profile data of the motor, including general, electrical and mechanical data, will be exported to a JSON file.

- Click the "Export" button to start the export.  
For the selected content, the files to be exported are generated and compressed into a single ZIP file for convenient download.

---

**Note**

The export request is processed in the background. It may take a few minutes for the file to be ready for download. As soon as the file is available, an info message is displayed in the "Logbook" tab.



- The exported files are displayed in the "Download" section. Click on the appropriate line to download the file to your local computer.

Herunterladen	
3ec56e7bc9974fc587d07753164f5ae6_kpis_logs_motor_profile_2021-02-05T12:04:57.203.zip	05.02.2021 15:04 UTC+03:00
3ec56e7bc9974fc587d07753164f5ae6_kpis_logs_motor_profile_2021-02-05T12:03:27.779.zip	05.02.2021 15:03 UTC+03:00
3ec56e7bc9974fc587d07753164f5ae6_kpis_device_logs_motor_profile_2021-02-05T12:03:16.882.zip	05.02.2021 15:03 UTC+03:00

---

**Note**

A maximum of three compressed files per asset can be made available for download at the same time. When this limit is reached, the oldest file is deleted during a new export.

The files are available for download in SIDRIVE IQ Fleet for seven days.

---

**Note**

**Security measures**

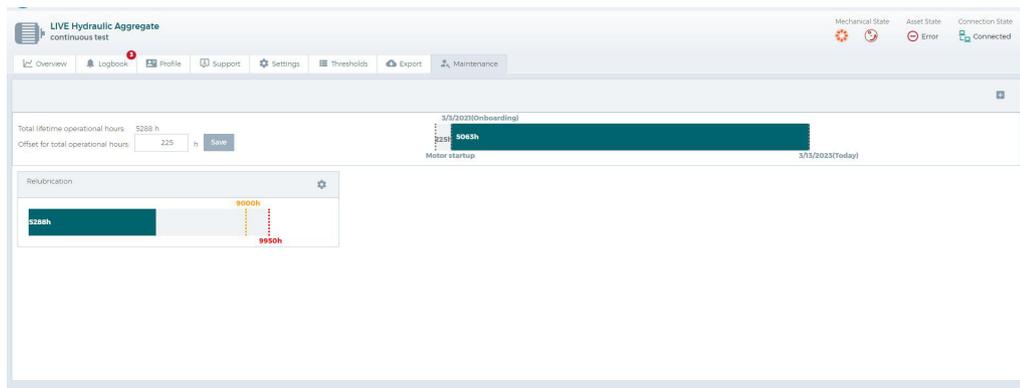
- Ensure that the transport of exported data is secured by technical measures such as encrypted/signed e-mails, encrypted/signed USB flash drives, etc., especially in public areas such as the Internet.
- Store exported data files in the OEM/end customer area in such a way that they are protected from unauthorized access (e.g. on SharePoints, databases, etc. through user management with access data).

### 5.3.9 "Maintenance" tab

You can configure maintenance counters for tracking certain maintenance activities under tab "Maintenance". Corresponding to the configured intervals for the particular counter, you are notified as soon as the calculated operating hours come close to the scheduled maintenance interval or this was already exceeded.

#### Note

To configure maintenance counters, you require role "iqfleet.admin" or "iqfleet.servicemanager".



#### 5.3.9.1 Total operating hours

To calculate the total motor operating hours, the hours in which the motor was identified to be in the ON state (since onboarding) are added in SIDRIVE IQ Fleet. This value is also displayed in tab "Overview" - KPIs (Page 47).

You can use of "Offset for total operational hours" as follows:

Using "Offset", you can specify the hours that the motor was already in operation before onboarding the asset in the SIDRIVE IQ Fleet application.

In addition – or as an alternative – using "Offset" you can specify the operating hours during which SIMOTICS CONNECT 400 was disconnected.

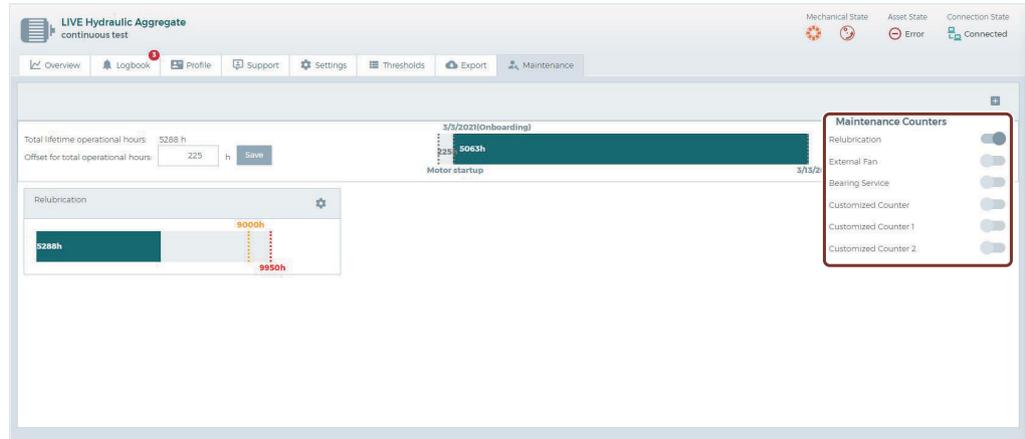
You can edit "Offset for total operational hours" at any time.

#### Procedure

1. After onboarding, in field "Offset for total operational hours", enter the estimated motor operating hours for the time before the asset was onboarded in the SIDRIVE IQ Fleet application.  
When using a new motor it is expected that initially this value is zero.  
If the SIMOTICS CONNECT 400 connectivity module was disconnected, but the motor was operational for a longer period of time, then you can increase the "Offset" by entering the estimated additional operating time. The monitoring functions take into account the value that is entered.

### 5.3.9.2 Activating/deactivating the maintenance counter

Using icon  in the top right-hand corner, you display the list of maintenance counters. Here you can activate or deactivate maintenance counters.

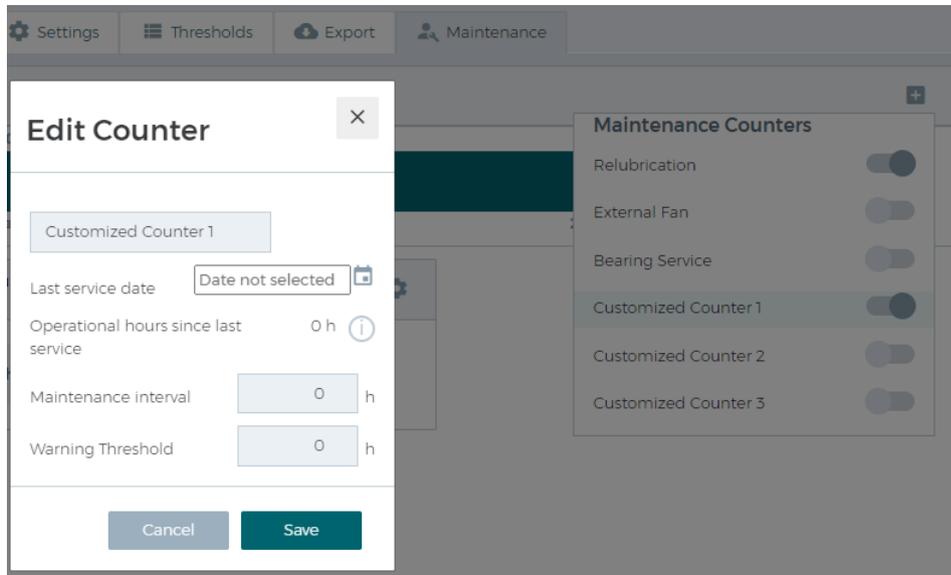


There are 6 counters that you can use to track maintenance activities:

- **Relubrication:**  
The relubrication counter is automatically activated if relubrication interval information is saved in the digital twin of the asset. You can adapt the interval when required. You cannot rename this maintenance counter.
- **External Fan:**  
This counter is not activated in the default setting. You can activate the maintenance counter by entering the recommended maintenance interval for the external fan of your motor. You cannot rename this maintenance counter.
- **Bearing Service:**  
This counter is not activated in the default setting. You can activate the maintenance counter by entering the recommended maintenance interval for the bearings of your motor. You cannot rename this maintenance counter.
- **Custom counters 1 ... 3:**  
You can define the three user-defined maintenance counters to address the specific requirements of your application. You can rename these maintenance counters.

**Procedure**

1. Activate the required maintenance counter.
2. When activating for the first time, you are requested to enter the "Maintenance interval" and the "Warning threshold" (also see Section Editing counters (Page 82)) .



3. Optionally, you can change the name of the maintenance counter (only for the user-defined maintenance counter) and enter the "Last service date". After activation, your maintenance counter is graphically shown under the "Maintenance" tab.

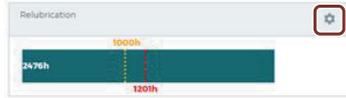


**5.3.9.3 Editing the maintenance counter**

You can edit active maintenance counters (counter name, last service date, maintenance interval and warning threshold), e.g. if the corresponding maintenance activity has been completed. In this case, you should update the "Last service date" with the maintenance date.

## Procedure

1. Click on icon  to edit an active maintenance counter.



2. Enter the required data in the following dialog.

### Edit Counter ✕

---

①

② Last service date  

③ Operational hours since last service  

④ Maintenance interval  h

⑤ Warning Threshold  h

---

- ① Enter/change the name of the customized counter. You can only change the names of the customized counters; the names of the other maintenance counters are fixed and cannot be changed.
- ② Enter the last service date if the appropriate maintenance work was completed.
- ③ The "Operational hours since last service" are calculated.  
For the calculation, the operational hours from the "Last service date" up to the actual date are added. If the last service date is empty, i.e. the corresponding maintenance work has still not been performed, then the "Total operational hours" for the counter is used.
- ④ Enter a maintenance interval greater than 0 (e.g. check the external fan after 2000 hours). This value defines the maintenance counter target. A "fault" notification is output if the operational hours since the last service have exceeded the maintenance interval. This error message informs you about a maintenance activity that is overdue.  
You receive an email notification if you have activated email notifications (see Section "Logbook" tab (Page 62)).
- ⑤ You can enter a warning threshold so that you are notified of any pending maintenance. A "warning" notification is generated if the warning threshold is exceeded.  
You receive an email notification if you have activated email notifications (see Section "Logbook" tab).

---

### Note

- Notifications are only generated when a maintenance counter is active.
  - You only receive emails if you have subscribed to the email notifications for the specific asset (see Section "Logbook" tab), and if you have a sufficient quota for email notifications.
- 

3. Press "Save" to apply the entries/changes.

### 5.3.10 Overview of analytics functions

#### Bearing analysis

The bearing status display is a traffic light, which is updated with each new value of the bearing status signal. A model is trained based on the bearing status signal and for each of the most frequent operating points. The traffic light remains "gray" until the new model has been adequately trained. As soon as sufficient data have been captured and the model has been trained, you receive an appropriate notification and the traffic light switches to "green". Based on the trained model, the values of the received bearing status signal are evaluated for each operating point. If the values manifest a low up to average trend, which indicate slight bearing damage or the start of bearing damage, then the traffic light switches to "yellow". If the trend increases above a certain level over a certain time period, which indicates more significant bearing damage, then the traffic light switches to "red". You also receive a note that the risk of bearing damage has increased significantly. As a result, you should quickly check the motor status on site before significant damage occurs. After maintenance has been completed, you must reset the maintenance counter for bearing service under the Maintenance (Page 80) tab so that a new model for the new bearing is trained, and the traffic light is switched back to gray. The traffic light switches back to "green" after training has been completed.

The "Bearing status" signal indicates a time series. The absolute signal amplitude depends on your specific application and the rotation speed of the motor. As a consequence, the amplitude alone is not an indicator. Signal "Bearing status" allows bearing damage to be identified by comparing the values over several months. An increasing general trend can indicate bearing damage. Under normal operating conditions, bearing damage occurs over a time period of several months; after a certain level of damage, the status deteriorates increasingly faster.

To be able to more easily evaluate and interpret the traffic light, in addition to the "Bearing status" signal, you can also display the geometric mean value of the acceleration or the geometric mean value of the speed. At the same time, the operating points that were active during the measurements, are highlighted in color.

To high extent, all vibration-related signals are dependents on the operating point. However, an increasing long-term trend within an operating point over several weeks in the bearing status signal and in one of the two signals for the geometric mean in the bearing analysis tab is a clear indication of increasing bearing damage.

---

#### Note

In the present form, the bearing status display does not make a distinction between DE and NDE bearings. As a consequence, one of the two or both bearings can be damaged.

To switch from gray to green (active monitoring), a model must be trained for at least one operating point. This requires a certain number of values of the bearing status signal within this operating point.

---

**Note****Preconditions for calculating the bearing status signal:**

- Firmware  $\geq$  1.0.0.4 is installed
- The measuring cycle must be set  $\geq$  5 minutes
- The "On" operating status must be active for at least 15 minutes
- The motor must be switched on and operated for at least 15 minutes to be able to successfully calculate the bearing status.
- At least 5 bearing status values are required for each operating point to successfully train the model and activate the bearing status display. This can take up to 30 days after onboarding. The traffic light displays a "gray" status during this calibration phase time.

Contact customer service if the bearing status was not able to be calculated although the specified preconditions are satisfied.

---

Calculating the bearing status is independent of the other analytical functions and is not influenced by this. The bearing status calculation is available both for motors directly connected to the line supply (DOL) as well as motors connected to a converter (VSD).

## Unbalance analysis

The unbalance status display is a traffic light, which is updated with each new value of the unbalance status signal. The model is trained based on the unbalance status signal. The traffic light remains "gray" until the new model was adequately trained.

You receive an appropriate notification and the traffic light switches to "green" as soon as a sufficient amount of data has been captured and the model trained. The values of the received unbalance status signal are evaluated based on the trained model.

The traffic light switches to "yellow" if the values exceed a certain limit value defined by the model indicating that the level of unbalance has increased. You receive an appropriate notification.

The traffic light switches to "red" if the unbalance level increases and it exceeds a certain alarm threshold defined by the model, which indicates a severe unbalance status. You receive an appropriate notification.

The traffic light switches back to "yellow" if the unbalance level decreases over time down to a threshold value defined by the model. The traffic light switches back to "green" if it decreases to another threshold value defined by the model, as an unbalance status is not necessarily permanent as is the case for bearing damage.

If the traffic light displays "red" for unbalance, you should check the motor locally before the unbalance causes serious damage.

Signal "Unbalance Status" displays a time series. The absolute signal amplitude depends on your specific application. As a consequence, the amplitude alone is not an indicator.

Unbalance can develop over time, can occur as a result of incorrect maintenance or changes to the motor or the application.

---

**Note**

**Preconditions for calculating the unbalance status signal:**

- Firmware  $\geq$  1.0.0.4 is installed
  - The measuring cycle must be set  $\geq$  5 minutes
  - The "On" operating status must be active for at least 15 minutes to successfully calculate the unbalance status.
- 

The calculation of the unbalance status is independent of the other analytic functions and is not influenced by these. The unbalance status calculation is available for motors that are directly connected to the line supply (DOL) and for motors that are connected to a converter (VSD).

### Threshold values (global)

Using this function, you can define the global limit values for various signals, e.g. temperature, vibration or speed. You can use this function to monitor the vibration of motors, which are either directly connected to the line supply (DOL operation) or are always operated at a constant speed at a certain operating point. See Section tab "Thresholds" (Page 75).

If you require that vibration values are more specifically monitored, then you should preferably use operating point-specific limit values.

Function "Thresholds" is independent of other analysis functions and is also possible for converter-operated motors. However, in this specific case, you should preferably use operating point-specific limit values.

---

**Note**

The precondition for calling threshold value recommendations is the availability of data over a minimum time period of one month.

---

Function "Threshold values" is independent of the other analytical functions, and is also possible for converter-operated motors. However, in this specific case, we recommend using operating point-specific limit values.

### Operating point-specific limit values

This function allows vibration values to be precisely monitored based on a trained model. This is independent of whether the motor is connected to a converter (VSD operation) and operates at different speeds or is operated as a DOL motor. In this case, use the recommended limit values under tab "Overview" > "Operating points" (see Section "Tab "Overview" - Operating points" (Page 56).

The operating point-specific monitoring is independent of the other analytical functions. This means that a global threshold value can be actively monitored at the same time.

---

**Note**

The precondition for determining the operating points and calculating the recommended limit values is a minimum time period of three weeks with no less than 20,000 "vibration" data points, as well as at least one operating point at a constant rotation speed above 10 rpm and not less than 100 "Vibration" data points.

---

## Fingerprint-based anomaly detection

If you know the time that the last maintenance was performed (e.g. bearing change, relubrication or motor replacement), then you can define a "fingerprint" immediately after this maintenance event.

Based on this fingerprint, you can identify any deterioration of the vibration values from when maintenance work was carried out. If any deterioration is identified based on the fingerprint, then you receive a notification with the appropriate warning note.

---

**Note**

The precondition for fingerprint-based anomaly detection is a fingerprint time interval of at least 3 weeks with no less than 20,000 "vibration" data points, as well as at least one operating point at a constant rotation speed above 10 rpm and not less than 100 "vibration" data points.

---

If the criteria for the fingerprint are not satisfied, then you receive a notification and you have the option of adapting this.

If the number of identified anomalies continues to increase during the operating time, then you should update your fingerprint to a later point in time.

The fingerprint monitoring and anomaly detection are independent of the other analytical functions, even regarding the settings. The fingerprint monitoring is available both for motors directly connected to the line supply (DOL) as well as motors connected to a converter (VSD).

## 5.4 Deleting assets

Use the offboarding procedure to delete an asset, as described in Section "Settings" tab (Page 72).

---

### Note

Do not delete a SIDRIVE IQ Fleet asset in the MindSphere Asset Manager, as not all of the components of the asset are removed when deleting. This can mean that the asset instance used is not released, which means that it may not be possible to onboard it.

Contact our technical support if you have already inadvertently deleted a SIDRIVE IQ Fleet asset in the MindSphere Asset Manager. Technical support can help you remove the remaining components so that the quota is released.

---

## 5.5 Dashboard application

### 5.5.1 Overview

The following provides an overview of the operating areas of the Dashboard application. The Dashboard application is integrated in SIDRIVE IQ Fleet, and is called in the Asset overview using the  button.

You can represent asset variables either graphically or as table in the Dashboard application. Various chart types can be selected for graphic representation:

- Line charts
- Bar charts
- Indicator charts
- Gantt charts

You can organize the tables and/or charts in Dashboards. You can define the layout of the Dashboards using Grid Options, and for the charts, you can create Dashboard templates.

Further, in the Dashboards you can also create Cards to save a URL.

In SIDRIVE IQ Fleet you can include assets in the comparison list, and transferred these to the Dashboard application. Using the assets of the comparison list, you can create charts in the Dashboard application.

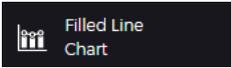
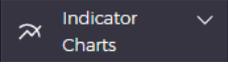
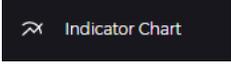
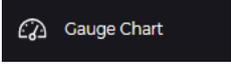
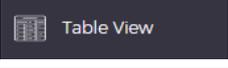
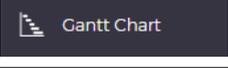
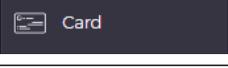
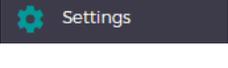
## 5.5.2 User interface



- ① Home button: Return it to the SIDRIVE IQ Fleet application
- ② Dashboard menu (see below for a description)
- ③ Dashboards: You can create several Dashboards. You can configure the layout of the Dashboards (see ④)
- ④
  -  "Manage Dashboard Templates":  
You can create and edit your specific Dashboard templates.
  -  "Pin to taskbar":  
You can attach the Dashboard menu bar
  -  "Date selection":  
Here, you can select the date ranges.
- ⑤ In the Dashboards you can create charts, tables and cards.
- ⑥
  -  Dashboard edit mode:  
In the edit mode, you can edit charts and change the dashboard name.
  -  Saving the Dashboard:  
Saving changes that have been made.

### Dashboard main/submenu

The Dashboard application navigation is structured as follows.

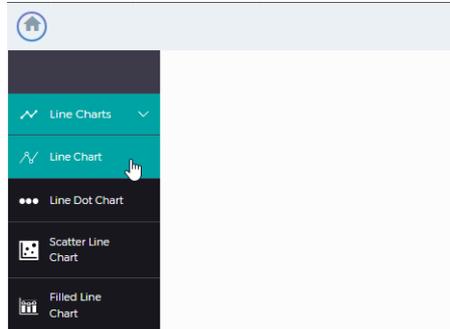
Main/submenu	Description
	Main menu "Line Charts": When clicked on, the submenu is opened with the available chart types.
	You create a line chart using menu item "Line Chart".
	You create a line dot chart using menu item "Line Dot Chart".
	You create a scatter line chart using menu item "Scatter Line Chart".
	You create a filled line chart using menu item "Filled Line Chart".
	Main menu "Bar Chart" You create a bar chart using menu item "Bar Chart".
	Main menu "Indicator Charts" When clicked on, the submenu is opened with the available chart types.
	You create an indicator chart using menu item "Indicator Chart".
	You create a gauge chart using menu item "Gauge Chart".
	Main menu "Table View" You create a table view using menu item "Table View".
	Main menu "Gantt Chart" You create a Gantt chart using menu item "Gantt Chart".
	Main menu "Card" You create a card using menu item "Card". You can save a URL here.
	Main menu "Settings" Using "Settings", you can define the display mode (light/dark), the Grid Options and the names for the Tabs.

#### 5.5.3 Creating charts

The procedure to create a chart using "Line Chart" as example is described in the following.

## Procedure

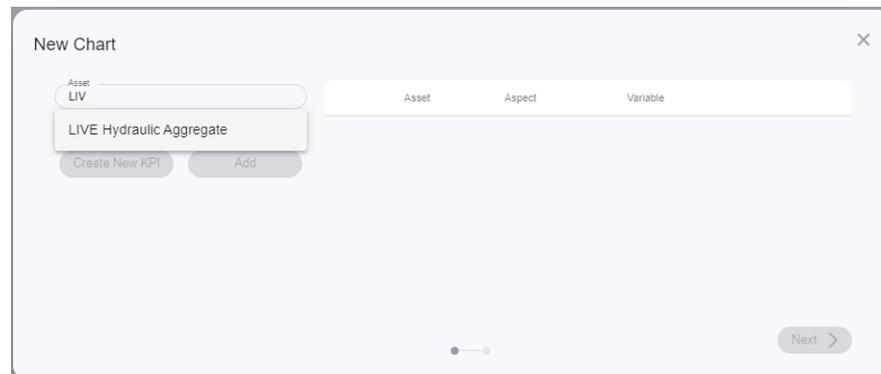
1. Click on main menu "Line Chart". The submenu is displayed.
2. Click on submenu "Line Chart". The following dialog is displayed.



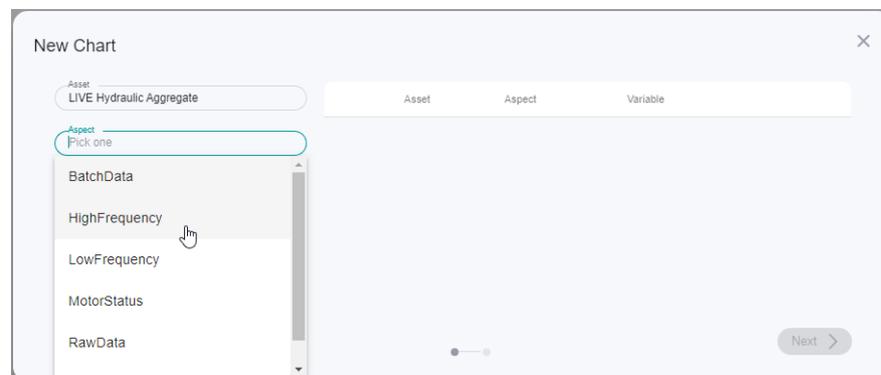
3. Enter the asset name. The corresponding asset is displayed when entering the name.

### Note

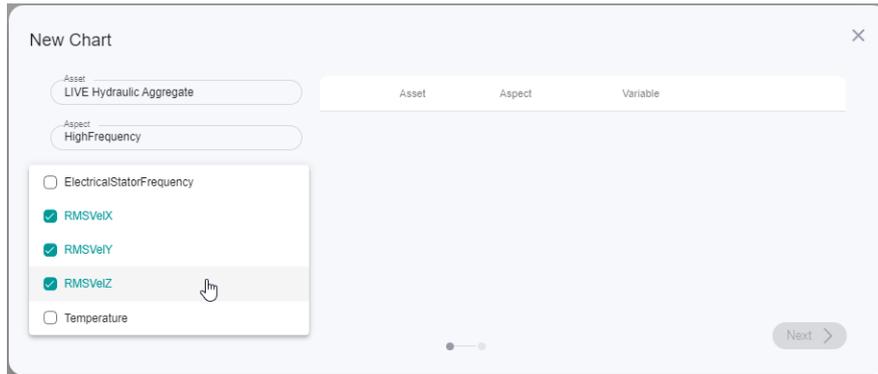
If you created a comparison list (Page 94) in SIDRIVE IQ Fleet and have transferred this to the dashboard application, then these assets are listed here.



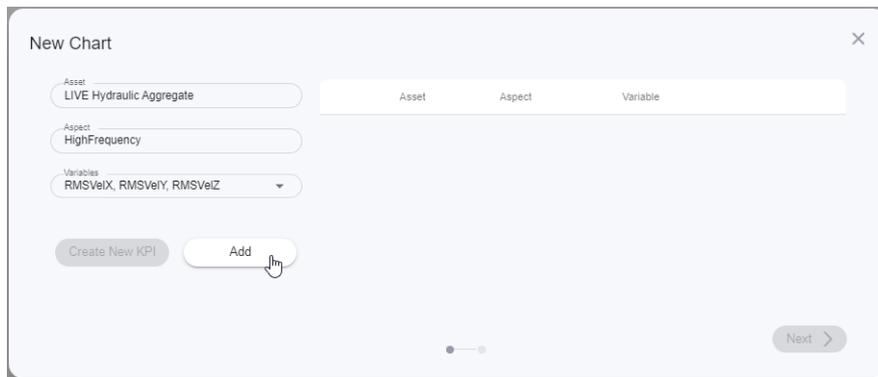
4. From the list, select an Aspect.



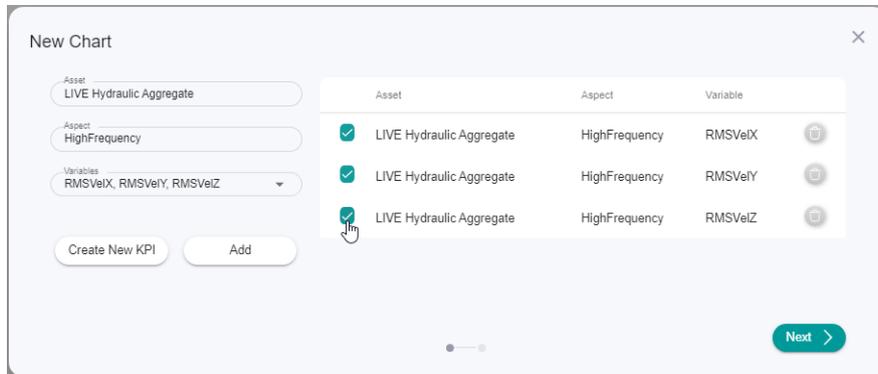
5. Select the required variables from the list.



6. Add the variables using "Add".



7. Activate the checkboxes of the variables that you wish to display in the chart.



8. Apply the data with "Next >"

9. In the following dialog, you can optionally add Labels for the chart axes. A Label comprises the input of a value and the associated name.

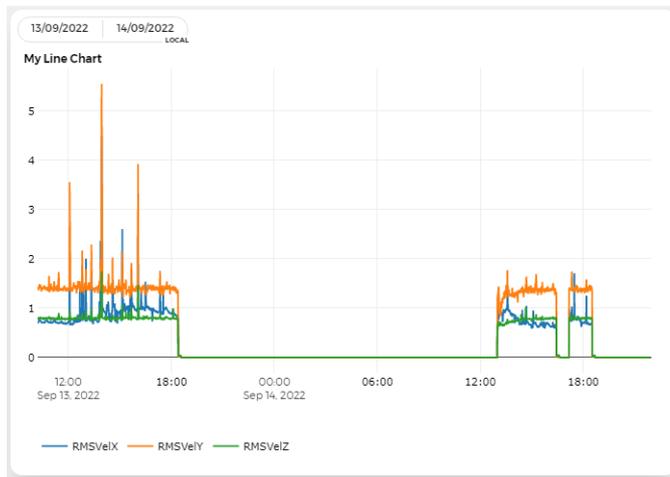
10. Apply your entry or skip this step with "Next >".

11. Select the time interval for the display, and apply your entry by pressing "✓".

12. Save your entry using "Save".

## Result

The "Line Chart" is displayed in the dashboard.

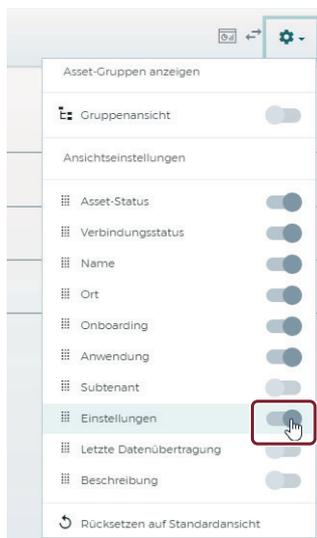


### 5.5.4 Comparing asset variables

In SIDRIVE IQ Fleet, you can add assets to a comparison list. In the Dashboard application, you can compare the assets of the comparison list in the charts.

#### Precondition

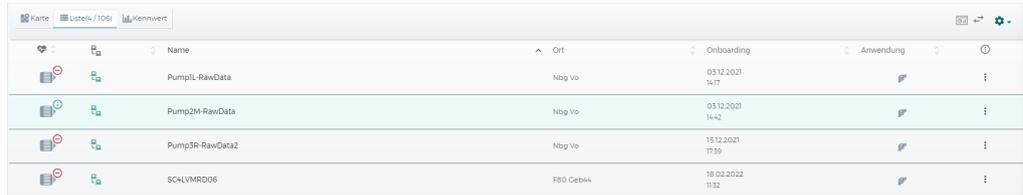
In order that you can transfer assets into the comparison list, you must activate "Settings" in the view settings. You open the view settings using .



In the list view, the display is expanded to include column .

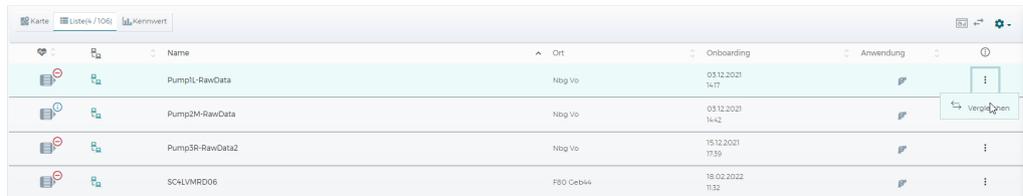
## Procedure

1. Open the asset overview in the list view.



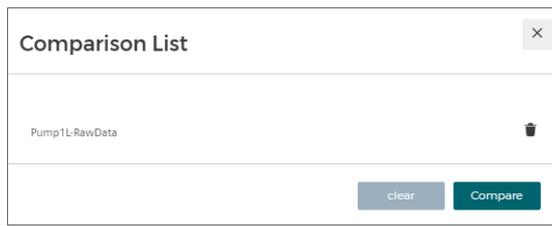
Name	Ort	Onboarding	Anwendung
Pump1L-RawData	Nbg Vo	03.12.2021 14:17	
Pump2M-RawData	Nbg Vo	03.12.2021 14:42	
Pump3R-RawData2	Nbg Vo	15.12.2021 17:39	
SCLVMRD06	F80 Geb44	18.02.2022 11:32	

2. Click on . The "Compare" button is displayed.



Name	Ort	Onboarding	Anwendung
Pump1L-RawData	Nbg Vo	03.12.2021 14:17	
Pump2M-RawData	Nbg Vo	03.12.2021 14:42	
Pump3R-RawData2	Nbg Vo	15.12.2021 17:39	
SCLVMRD06	F80 Geb44	18.02.2022 11:32	

3. Click on the button to add an asset to the comparison list.



**Comparison List** ✕

---

Pump1L-RawData 🗑️

---

clear
Compare

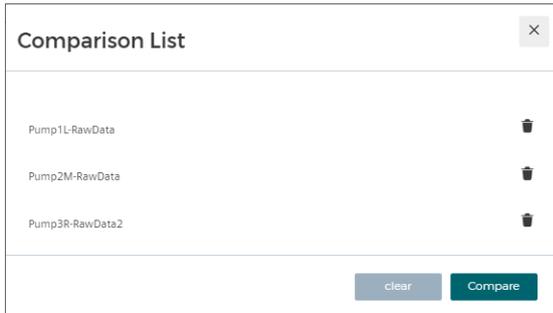
4. Close the comparison list to add additional assets.

5.5 Dashboard application

- 5. Repeat steps 2 and 3 until you have added all assets to be compared to the comparison list. The number of assets in the comparison list is displayed as follows.



You can open the comparison list using the button.

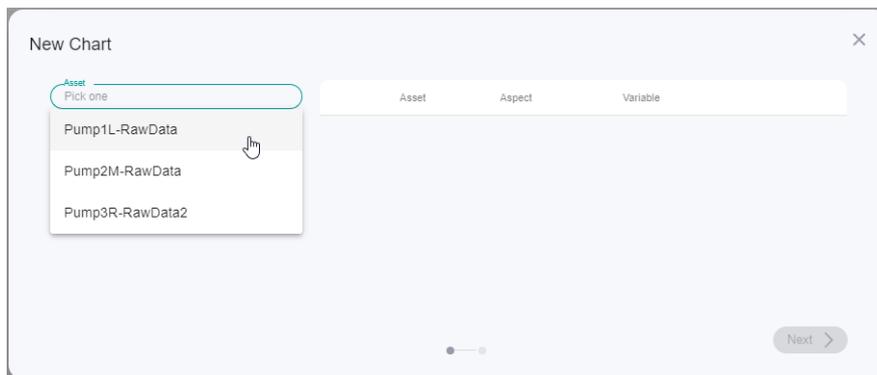


- 6. Transfer the comparison list to Dashboard using the "Compare" button. The following information is displayed.



**Result**

In the Dashboard application, you can now create charts (Page 90). The assets of the comparison list are displayed in the asset selection list.



## Extended cross-tenancy functionality

Within MindSphere, you can use the cross-tenancy functionality to exchange data between your and another MindSphere tenant. This functionality helps MindSphere customers create a data exchange collaboration as the basis for data-driven business models, such as the maintenance of a motor by the owners of the receiver tenant. For more information on cross-tenancy functionality and how to share/receive an asset, click here (<https://documentation.mindsphere.io/resources/html/asset-manager/en-US/125945951755.html>).

When sharing an asset, the MindSphere cross-tenancy function creates a copy of the static asset data. Therefore, the receiving tenant must have a quota of one free asset instance for each asset received. If you plan to accept receipt of an asset, you can purchase the "SIDRIVE IQ Fleet Package 1 Shared Asset" to increase your quota of asset instances by 1.

SIDRIVE IQ Fleet gives you the ability to fully share assets with extended cross-tenancy functionality. The following describes the scope of functions for the receiver tenant.

### Functional scope

- Users of the receiver tenant can display current asset data (e.g. asset status, connection status, SIMOTICS CONNECT device data, etc.) within the SIDRIVE IQ Fleet application.

---

#### Note

If users of the receiver tenant use the MindSphere Asset Manager application or read the assets through APIs, asset data that is copied when the asset share is accepted is displayed and may not be up-to-date.

On the other hand, Time Series (e.g. vibration, speed, torque) will be fully available via other MindSphere applications or API functionality.

- Users of the receiver tenant can display current messages and limit values within the SIDRIVE IQ Fleet application.
- Users of the receiver tenant can change the limit values of the received assets within the SIDRIVE IQ Fleet application. The users of the share (releasing) tenant can view the changed limit values and the notifications are created according to the changed limit values.
- Users of the receiver tenant can create new messages and confirm/close existing messages within the SIDRIVE IQ Fleet application. Users of the share tenant can view the new notifications created by users of the receiver tenant.
- Users of the receiver tenant can subscribe to email notifications about the received asset and receive email notifications about error and warning messages, battery status, and connection status. The email notifications sent to the users of the receiver tenant consume the receiver tenant's quota for notifications.

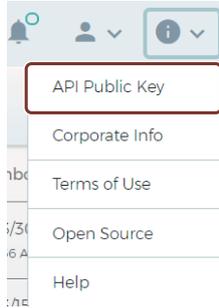


## Application Programming Interface (API)

SIDRIVE IQ Fleet allows you to programmatically read the data of your connected motor fleet via "MindSphere Services and APIs". The MindSphere developer documentation can be found at the following link (<https://developer.mindsphere.io/apis/index.html>).

## Requirements

1. You require the SIDRIVE IQ API key for your tenant. You can find this via the icon  in the main navigation.



Here, you can view your API key and the expiration date of your API key. The system sends you an email if the expiration date is to expire within 0 to 7 days or has already expired. You can generate your new API key if it is to expire within 0 to 7 days. If the expiration date is longer than 7 days, then button "Generate" is deactivated.

If an API key is not displayed in the dialog after you click on "Generate", then you are notified that you should contact user support.



---

### Note

#### Security measures

SIDRIVE IQ API key must be kept secret.

- Ensure that the transport of the key is secured by technical measures such as encrypted/signed e-mails, encrypted/signed USB flash drives, etc., especially in public areas such as the Internet.
- Store the key in the OEM/end customer area in such a way that it is protected from unauthorized access (e.g. on SharePoints, databases, etc. through user management with access data).

2. With the SIDRIVE IQ API key, request your bearer token (access token) using the following HTTP request:

**Example API:**

GET /public/iqtoken/token?key={your SIDRIVE IQ API key} HTTP/1.1

Host:

Region - Europe 1 (MindSphere on AWS): iqtoken-visualflowcreatorhttp.eu1.mindsphere.io

Region - China 1 (MindSphere on AliCloud): iqtoken-visualflowcreatorhttp.cn1.mindsphere-in.cn

Response:

{

## 7.1 Reading assets and asset properties for the EU1 region (MindSphere running on AWS)

```

    "access_token": {Bearer Token},
    "token_type": "bearer",
    "expires_in": 1799,
    "scope": "mdsp:core:Admin3rdPartyTechUser",
    "jti": "9d53d67bb046437d90c309c3a228d942",
    "timestamp": 1613126706928
  }

```

3. Use the {bearer token} to call the MindSphere APIs and access your client tenant's data.

### More information

More information on calling up the MindSphere-Endpoints is provided in the MindSphere documentation (<https://developer.mindsphere.io/howto/howto-selfhosted-api-access.html#calling-mindsphere-endpoints>).

## 7.1 Reading assets and asset properties for the EU1 region (MindSphere running on AWS)

The following provides an overview of the data that you can access as a user of your client tenant.

### SIDRIVE IQ Fleet assets

SIDRIVE IQ Fleet assets are of the type "Simotics" (core.basicdevice -> tenant\_name."Simotics").

### Asset variables

- AgentSerialNumer: serial number of the SIMOTICS CONNECT 400 device
- Application: motor application  
Possible values are: Pump, fan, compressor, other
- AssetTypeVersion: asset type version number
- BatteryRuntimeLeft: estimate of the remaining battery time in months
- BatteryStatus: battery status as a percentage (%)
- BearingCondition: Motor bearing condition  
Possible values are: {0 = calibration/missing data, 1 = OK , 2 = low/medium probability of failure, 3 = high probability of failure}
- ConditionState: asset status that is derived from the open reports in the logbook.  
Possible values are: {0 = OK, 1 = info, 2 = warning, 3 = error, 4 = unknown}
- ConnectedAt: date and time of the last data that SIMOTICS CONNECT 400 transferred to SI IQ Fleet
- ConnectionState: SIMOTICS CONNECT 400 connection status.  
Possible values: {0 = connected, 1 = temporarily interrupted, 2 = disconnected}
- CreateDate: date and time that the asset was created

### 7.1 Reading assets and asset properties for the EU1 region (MindSphere running on AWS)

- DigitalTwinVersion: (internal) motor digital twin version, which is used during the onboarding
- ElectricalDataIndex: selected motor operating point index
- FirmwareVersion: installed firmware version of SIMOTICS CONNECT 400
- GenericVibrationMonitoring: true, if SIMOTICS CONNECT 400 was onboarded as sensor for generic vibration monitoring.
- ManufacturerProductNumber: manufacturer's product article number (MLFB) of the motor
- OperatingMode: Motor operating mode  
Possible values are: {1 = DOL, 2 = VSD}
- PoleNumber: number of motor poles
- RelubricationInterval: motor relubrication interval in hours
- ScanCycle: SIMOTICS CONNECT 400 sensor measurement interval in the "duration" format defined in standard ISO 8601
- SerialNumber: motor serial number
- TransmitCycle: SIMOTICS CONNECT 400 data transfer interval in the "duration" format defined in standard ISO 8601
- VoltageDropResets: number of SIMOTICS CONNECT 400 brownout resets

You can call up the list of assets integrated in the application and the variables of each asset using the "Asset Management Service" of MindSphere.

The documentation and the API specification can be found at the following link (<https://developer.mindsphere.io/apis/advanced-assetmanagement/api-assetmanagement-overview.html>):

**Example:**

GET

`https://gateway.eu1.mindsphere.io/api/assetmanagement/v3/assets`

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

## Signals

All Time Series data of the IQFleet signals are available in the aspects of the "Simotics" asset type:

core.basicasset / core.basicdevice / iqdev.Simotics			
Aspects			
Name ↕		Aspect	
BatchData	iqdev.BatchData		
Name ↕		Unit	Data type
AccelerationGeometricMean		mm/s <sup>2</sup>	DOUBLE
BearingState		-	DOUBLE
UnbalanceState		-	DOUBLE
VelocityGeometricMean		mm/s	DOUBLE
HighFrequency	iqdev.HighFrequency		
Name ↕		Unit	Data type
ElectricalStatorFrequency		Hz	DOUBLE
RMSVelX		mm/s	DOUBLE
RMSVelY		mm/s	DOUBLE
RMSVelZ		mm/s	DOUBLE
Temperature		°C	DOUBLE
LowFrequency	iqdev.LowFrequency		
Name ↕		Unit	Data type
ElectricalEnergy		MWh	DOUBLE
ElectricPower		kW	DOUBLE
EnergyEfficiency		%	DOUBLE
RotationSpeed		rpm	DOUBLE
SlipFrequency		Hz	DOUBLE
Torque		Nm	DOUBLE
MechanicalAnalysis	iqdev.MechanicalAnalysis		
Name ↕		Unit	Data type
BearingCondition		State	INT
UnbalanceCondition		State	INT
MotorStatus	iqdev.MotorStatus		
Name ↕		Unit	Data type
CalibrationHours		Hour	DOUBLE
DisconnectionHours		Hour	DOUBLE
MotorState		State	INT
NoOperationHours		Hour	DOUBLE
NumberOfStarts		Number	INT
OperationHours		Hour	DOUBLE

In order to read out the SIDRIVE IQ Fleet signals, all data points within a time period are provided by the "IOT Time Series Service" of MindSphere. The description and the API specification can be found at the following link (<https://developer.mindsphere.io/apis/iot-iottimeseries/api-iottimeseries-overview.html>):

As an alternative to individual data points, you can also use the "Aggregates Service" of MindSphere. The description is provided at the following link: (<https://developer.mindsphere.io/apis/iot-iottsaggregates/api-iottsaggregates-overview-v4.html>)

## 7.1 Reading assets and asset properties for the EU1 region (MindSphere running on AWS)

### Example - IOT Time Series Service:

GET

```
https://gateway.eu1.mindsphere.io/api/iottimeseries/v3/
timeseries/789ffa1f911f4cc08e5a8021208d9476/LowFrequency?
to=2020-07-11T07:00:00.00Z&sort=desc
```

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

### Example - Aggregates Service:

GET

```
https://gateway.eu1.mindsphere.io/api/iottsaggregates/v3/aggregates/
daa80a036ad74578b49c72e76ded3a24/LowFrequency?
from=2020-05-01T00:00:00.000Z&to=2020-06-23T08:00:00.00Z&intervalUnit=hour&interv
alValue=8&select=ElectricalEnergy
```

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

## Notifications

Event type: IQFleetEvent

Event Type Id: 015578eb-c77a-4f85-8ac7-8fbbd6e1d181

You can access all protocols that were created for the assets of the tenant via the "Event Management Service" of MindSphere. The documentation and the API specification can be found at the following link: (<https://developer.mindsphere.io/apis/advanced-eventmanagement/api-eventmanagement-overview.html>)

### Example:

GET

```
https://gateway.eu1.mindsphere.io/api/eventmanagement/v3/
events?filter={%22and%22:{%22timestamp%22:
{%22after%22:%222019-04-26T21:00:00.000Z%22},{%22typeId%22:%22015578eb-
c77a-4f85-8ac7-8fbbd6e1d181%22}}
```

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

**Example response model:**

```

{
  "id": "7d7f518f-5962-40e6-bbdd-6d82a48f977d",
  "typeId": "015578eb-c77a-4f85-8ac7-8fbbd6e1d181",
  "correlationId": "63884d7db29503c577262efa351192b3",
  "timestamp": "2022-12-01T00:45:45Z",
  "entityId": "b3cf3b0191d64fb5a5c1ebed191d2506",
  "etag": 0,
  "_links": {
    "self": {
      "href": https://gateway.eu1.mindsphere.io/api/
eventmanagement/v3/events/7d7f518f-5962-40e6-bbdd-6d82a48f977d
    }
  },
  "logType": "multiplethresholdviolation",
  "severity": 20,
  "kpiValue": "14.0674",
  "acknowledged": false,
  "kpiName": "RMSVely",
  "description": "Error Threshold Connect Vibration Tangential
(y)",
  "thresholdValue": "10",
  "date2": "2022-12-01T06:44:39.000Z",
  "date1": "2022-12-01T00:45:45.000Z",
  "title": "Error Threshold Connect Vibration Tangential (y)",
  "serviceTag": false,
  "comment": "",
  "detail": "Between 12/1/2022 12:45:45 AM and 12/1/2022
6:44:39 AM, the Connect Vibration Tangential (y) error threshold
value 10 mm/s has been exceeded by 46 data point(s) with the
maximum value of 14.067 mm/s.",
  "category": "",
  "parameter1": "46"
}

```

## Comments

Event Type: IQFleetCommentEvent

EventTypeId: 953b4143-fc09-4ebe-a05d-eeb0a5c6af34

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

### Example response model:

```
{
  "id": "3cc0f416-7f7a-41a8-b005-390c6d9def0d",
  "typeId": "953b4143-fc09-4ebe-a05d-eeb0a5c6af34",
  "correlationId": "638864a59080059201c35254c34fdc21",
  "timestamp": "2022-12-01T08:24:05.114Z",
  "entityId": "b3cf3b0191d64fb5a5c1ebed191d2506",
  "etag": 0,
  "_links": {
    "self": {
      "href": "https://gateway.eu1.mindsphere.io/api/eventmanagement/v3/events/3cc0f416-7f7a-41a8-b005-390c6d9def0d"
    }
  },
  "severity": 0,
  "parentLogId": "7d7f518f-5962-40e6-bbdd-6d82a48f977d",
  "acknowledged": false,
  "serviceTag": false,
  "userEmail": "user@email.com",
  "commentText": "This is a comment"
}
```

## 7.2 Reading assets and asset properties for the CN1 region (MindSphere running on AliCloud)

The following provides an overview of the data that you can access as a user of your client tenant.

## SIDRIVE IQ Fleet assets

SIDRIVE IQ Fleet assets are of the type "Simotics" (core.basicdevice -> tenant\_name."Simotics").

### Asset variables

- AgentSerialNumer: serial number of the SIMOTICS CONNECT 400 device
- Application: motor application  
Possible values are: Pump, fan, compressor, other
- AssetTypeVersion: asset type version number
- BatteryRuntimeLeft: estimate of the remaining battery time in months
- BatteryStatus: battery status as a percentage (%)
- BearingCondition: Motor bearing condition  
Possible values are: {0 = calibration/missing data, 1 = OK , 2 = low/medium probability of failure, 3 = high probability of failure}
- ConditionState: asset status that is derived from the open reports in the logbook.  
Possible values are: {0 = OK, 1 = info, 2 = warning, 3 = error, 4 = unknown}
- ConnectedAt: date and time of the last data that SIMOTICS CONNECT 400 transferred to SI IQ Fleet
- ConnectionState: SIMOTICS CONNECT 400 connection status.  
Possible values: {0 = connected, 1 = temporarily interrupted, 2 = disconnected}
- CreateDate: date and time that the asset was created
- DigitalTwinVersion: (internal) motor digital twin version, which is used during the onboarding
- ElectricalDataIndex: selected motor operating point index
- FirmwareVersion: installed firmware version of SIMOTICS CONNECT 400
- ManufacturerProductNumber: manufacturer's product article number (MLFB) of the motor
- OperatingMode: Motor operating mode  
Possible values are: {1 = DOL, 2 = VSD}
- PoleNumber: number of motor poles
- RelubricationInterval: motor relubrication interval in hours
- ScanCycle: SIMOTICS CONNECT 400 sensor measurement interval in the "duration" format defined in standard ISO 8601
- SerialNumber: motor serial number
- TransmitCycle: SIMOTICS CONNECT 400 data transfer interval in the "duration" format defined in standard ISO 8601
- VoltageDropResets: number of SIMOTICS CONNECT 400 brownout resets

You can call up the list of assets integrated in the application and the variables of each asset using the "Asset Management Service" of MindSphere.

The documentation and the API specification can be found at the following link (<https://developer.mindsphere.io/apis/advanced-assetmanagement/api-assetmanagement-overview.html>):

**Example:**

GET

https://gateway.cn1.mindsphere-in.cn/api/assetmanagement/v3/assets

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

**Signals**

All Time Series data of the IQFleet signals are available in the aspects of the "Simotics" asset type:

BatchData		iqdev.BatchData	
Name	Unit	Data type	
AccelerationGeometricMean	mm/s <sup>2</sup>	DOUBLE	
BearingState	-	DOUBLE	
VelocityGeometricMean	mm/s	DOUBLE	
HighFrequency		iqdev.HighFrequency	
Name	Unit	Data type	
ElectricalStatorFrequency	Hz	DOUBLE	
RMSVelX	mm/s	DOUBLE	
RMSVelY	mm/s	DOUBLE	
RMSVelZ	mm/s	DOUBLE	
Temperature	°C	DOUBLE	
LowFrequency		iqdev.LowFrequency	
Name	Unit	Data type	
ElectricalEnergy	MWh	DOUBLE	
ElectricPower	kW	DOUBLE	
EnergyEfficiency	%	DOUBLE	
RotationSpeed	rpm	DOUBLE	
SlipFrequency	Hz	DOUBLE	
Torque	Nm	DOUBLE	
MotorStatus		iqdev.MotorStatus	
Name	Unit	Data type	
CalibrationHours	Hour	DOUBLE	
DisconnectionHours	Hour	DOUBLE	
MotorState	State	INT	
NoOperationHours	Hour	DOUBLE	
NumberOfStarts	Number	INT	
OperationHours	Hour	DOUBLE	

## 7.2 Reading assets and asset properties for the CN1 region (MindSphere running on AliCloud)

In order to read out the SIDRIVE IQ Fleet signals, all data points within a time period are provided by the "IOT Time Series Service" of MindSphere. The description and the API specification can be found at the following link (<https://developer.mindsphere.io/apis/iot-iottimeseries/api-iottimeseries-overview.html>):

As an alternative to individual data points, you can also use the "Aggregates Service" of MindSphere. The description is provided at the following link: (<https://developer.mindsphere.io/apis/iot-iottsaggregates/api-iottsaggregates-overview-v4.html>)

**Example - IOT Time Series Service:**

GET

```
https://gateway.eu1.mindsphere.io/api/iottimeseries/v3/
timeseries/789ffa1f911f4cc08e5a8021208d9476/LowFrequency?
to=2020-07-11T07:00:00.00Z&sort=desc
```

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

**Example - Aggregates Service:**

GET

```
https://gateway.eu1.mindsphere.io/api/iottsaggregates/v3/aggregates/
daa80a036ad74578b49c72e76ded3a24/LowFrequency?
from=2020-05-01T00:00:00.000Z&to=2020-06-23T08:00:00.00Z&intervalUnit=hour&interv
alValue=8&select=ElectricalEnergy
```

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

**Notifications**

Event type: IQFleetEvent

Event Type Id: Event Type Id: 3c68be7c-75fd-4cee-8d6d-5d58c3152c5c (for Alibaba)

You can access all protocols that were created for the assets of the tenant via the "Event Management Service" of MindSphere. The documentation and the API specification can be found at the following link: (<https://developer.mindsphere.io/apis/advanced-eventmanagement/api-eventmanagement-overview.html>)

**Example:**

GET

```
https://gateway.cn1.mindsphere-in.cn/api/eventmanagement/v3/events?filter={%22and%22:%22timestamp%22:%22after%22:%222019-04-26T21:00:00.000Z%22},%22typeId%22:%223c68be7c-75fd-4ce-8d6d-5d58c3152c5c%22}}
```

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

**Example response model:**

```
{
  "id": "7d7f518f-5962-40e6-bbdd-6d82a48f977d",
  "typeId": "015578eb-c77a-4f85-8ac7-8fbbd6e1d181",
  "correlationId": "63884d7db29503c577262efa351192b3",
  "timestamp": "2022-12-01T00:45:45Z",
  "entityId": "b3cf3b0191d64fb5a5c1ebed191d2506",
  "etag": 0,
  "_links": {
    "self": {
      "href": https://gateway.eu1.mindsphere.io/api/eventmanagement/v3/events/7d7f518f-5962-40e6-bbdd-6d82a48f977d
    }
  },
  "logType": "multiplethresholdviolation",
  "severity": 20,
  "kpiValue": "14.0674",
  "acknowledged": false,
  "kpiName": "RMSVely",
  "description": "Error Threshold Connect Vibration Tangential (y)",
  "thresholdValue": "10",
  "date2": "2022-12-01T06:44:39.000Z",
  "date1": "2022-12-01T00:45:45.000Z",
  "title": "Error Threshold Connect Vibration Tangential (y)",
  "serviceTag": false,
  "comment": ""
```

## 7.2 Reading assets and asset properties for the CN1 region (MindSphere running on AliCloud)

```

        "detail": "Between 12/1/2022 12:45:45 AM and 12/1/2022
6:44:39 AM, the Connect Vibration Tangential (y) error threshold
value 10 mm/s has been exceeded by 46 data point(s) with the
maximum value of 14.067 mm/s.",
        "category": "",
        "parameter1": "46"
    }

```

**Comments**

Event Type: IQFleetCommentEvent

EventTypeId: 50276fd0-10b3-4cda-a473-3cf7cc45e86b (for Alibaba)

Header:

- Content-Type: application/json
- Authorization: Bearer <Bearer Token>

**Example response model:**

```

{
    "id": "3cc0f416-7f7a-41a8-b005-390c6d9def0d",
    "typeId": "953b4143-fc09-4ebe-a05d-eeb0a5c6af34",
    "correlationId": "638864a59080059201c35254c34fdc21",
    "timestamp": "2022-12-01T08:24:05.114Z",
    "entityId": "b3cf3b0191d64fb5a5c1ebed191d2506",
    "etag": 0,
    "_links": {
        "self": {
            "href": "https://gateway.eu1.mindsphere.io/api/
eventmanagement/v3/events/3cc0f416-7f7a-41a8-b005-390c6d9def0d"
        }
    },
    "severity": 0,
    "parentLogId": "7d7f518f-5962-40e6-bbdd-6d82a48f977d",
    "acknowledged": false,
    "serviceTag": false,
    "userEmail": "user@email.com",
    "commentText": "This is a comment"
}

```

}

## More information

### 8.1 Product information

#### SIMOTICS CONNECT 400 and SIDRIVE IQ Fleet

Additional information about digitalization of low-voltage motors with SIMOTICS CONNECT 400, SIDRIVE IQ Fleet and MindSphere is available on our website (<https://siemens.com/digital-motor>).

You can also find information on the following topics on our website:

- How you get started (<https://new.siemens.com/global/en/products/drives/digitalization-in-drive-technology/data-analytics/digitalize-low-voltage-motors.html#Howyougetstarted>) step-by-step descriptions of how you can monitor your low-voltage motor
- Quick Support (<https://new.siemens.com/global/en/products/drives/digitalization-in-drive-technology/data-analytics/digitalize-low-voltage-motors.html#Quicksupport>)  
Links to all information about SIMOTICS CONNECT 400, SIDRIVE IQ Fleet, MindSphere and SIDRIVE IQ Config

#### MindSphere

- MindSphere Store for the purchase of the SIDRIVE IQ Fleet basic package and upgrade package (<https://www.dex.siemens.com/mindsphere/applications/sidrive-iq-fleet-package-basic>)
- MindSphere documentation for the "Settings" application to manage users and subtenants (<https://documentation.mindsphere.io/resources/html/settings/en-US/index.html>)
- MindSphere documentation for the "Usage Transparency" application to track the usage of the resources (<https://documentation.mindsphere.io/resources/html/usage-transparency-service/en-US/index.html>)
- MindSphere documentation for the "Sharing assets with Cross-Tenancy" (<https://documentation.mindsphere.io/resources/html/asset-manager/en-US/125945951755.html>)

### 8.2 Product support

#### Technical questions or additional information

If you have any technical questions or require additional information, please contact Technical Support (<https://support.industry.siemens.com/cs/ww/en/sc/4868>).

Have the following connectivity module data ready:

- SIMOTICS CONNECT 400 firmware version
- SIDRIVE IQ Config app version

## 8.2 Product support

- Tenant name
- Asset name (onboarded)
- Serial number and manufacturer's article number (MLFB) of the motor (onboarded)
- Detailed error description with logged messages if possible
- Date of manufacture of the battery cells that is stamped on the lower edge of the battery cell

### Contact person

Please contact your local partner if you wish to request service. This office will contact the responsible service center on your behalf. You can find your local partner in the relevant contact database ([www.siemens.com/yourcontact](http://www.siemens.com/yourcontact)).

### Siemens product support

You can find additional information about the product at:

Product support (<http://www.siemens.com/automation/service&support>)

The following is provided at this address:

- Current product information (product data sheets) FAQs (frequently asked questions), downloads.
- The Newsletter contains the latest information about the products that you are using.
- The Knowledge Manager (intelligent search) helps you find the documents that you are looking for.
- Users and specialists from around the world share their experience and knowledge in the Forum.
- Information about our local service, repairs, spare parts and much more is provided under "Services".

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