SIEMENS

Operating Instructions

Connectivity Module

SIMOTICS CONNECT 400

Edition 04/2023

www.siemens.com/digital-motor

SIEMENS

SIMOTICS CONNECT 400

Operating Instructions

SIMOTICS CONNECT 400 V1.0.3.0
SIDRIVE IQ Config (Android) V2.5.0
SIDRIVE IQ Config (iOS) V2.5.0
SIDRIVE IQ Fleet V2.11

07/2023
A5E50161952B AM

Legal information

Warning notice system

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

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

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

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

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

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

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

Trademarks

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

Disclaimer of Liability

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

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Ⓟ 07/2023 Subject to change

Table of contents

Introduction

1

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.

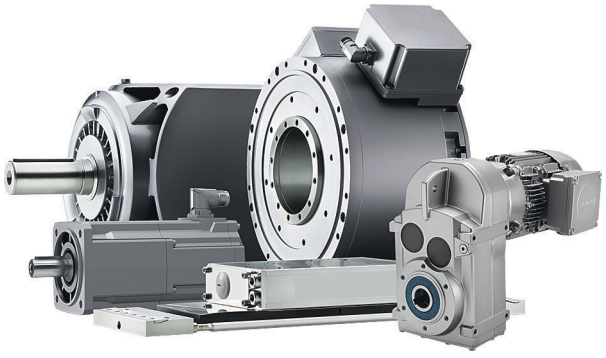
Whether high efficiency for an optimum energy balance, explosion protected for the highest safety standards, sector or customer specific: Every motor is equipped as standard with the widest range of features for the highest cost effectiveness.

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



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 connectivity module, and provide you with information on how to use the product – from installation through to maintenance.

Keep these instructions in a safe place for subsequent use.

In this documentation, the generic term "Connectivity module" is subsequently used for the "SIMOTICS CONNECT 400" product.

Read these instructions before you use the connectivity module, and follow the instructions and notes carefully. In this way you can ensure safe, problem-free operation and a long service life.

1.3.2 Target group

This documentation is intended for planners, configuring engineers, technologists, installation personnel, programmers, commissioning personnel, service and maintenance personnel

1.3.3 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.

1.3.4 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.

1.4 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[1)]	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

1) 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)
- 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.

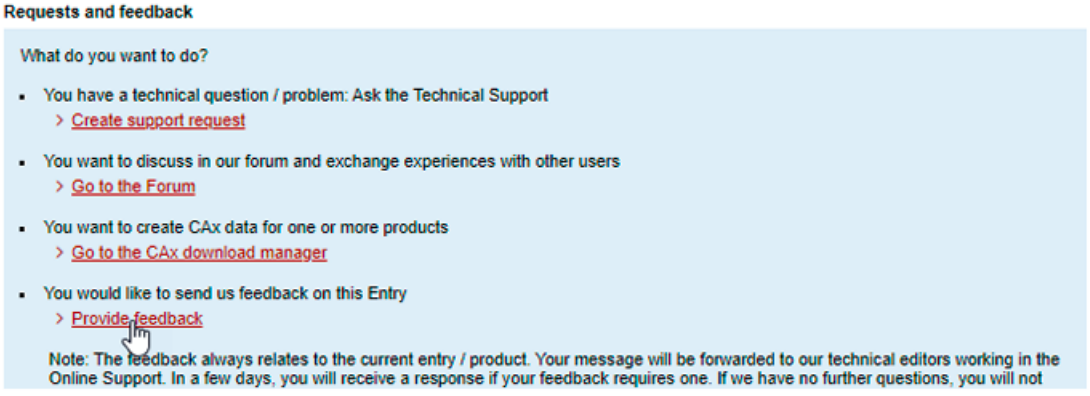


Figure 1-2 Requests and feedback

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):

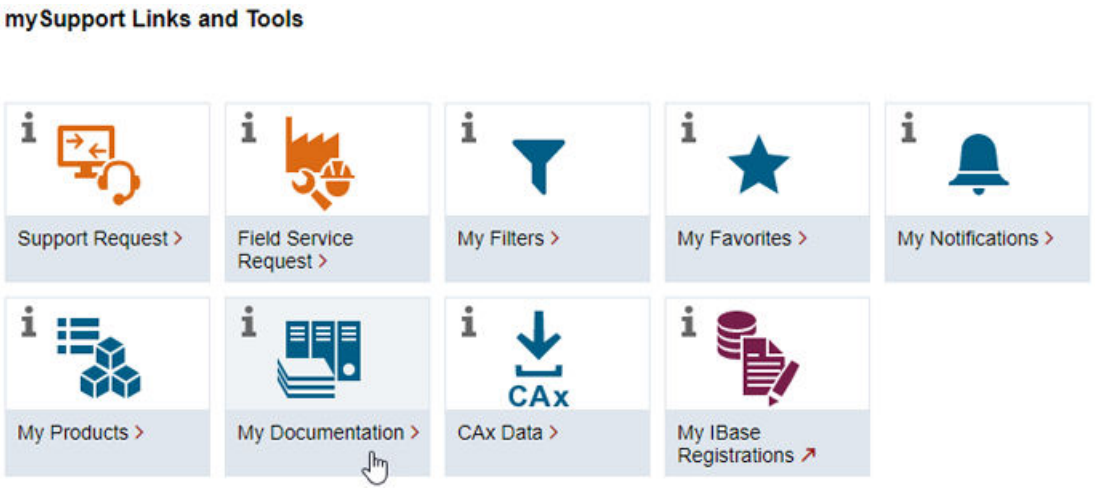


Figure 1-3 mySupport

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)
- "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 ofthe 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.

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 is 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 this data is created, the author must give thought to data protection consent for this optional data. Siemens takes no responsibility for this data.
  This support contact data can be read and is freely accessible in, for example, the user interface as well as in the diagnostics report. This data is not encrypted.

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

The personal data is 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 it serves 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

2.1 General safety instructions

The connectivity module conforms to the pertinent safety regulations according to IEC, VDE and EN. If you have questions about the validity of the installation in the planned environment, please contact your service representative.

Battery

⚠ WARNING

Danger of explosion and the release of harmful substances!

Improper handling of lithium batteries can cause them to explode.

Explosion of the batteries and the released pollutants can cause severe physical injury and/or represent a serious health risk. Used batteries jeopardize the function of the device.

Note the following when handling lithium batteries:

- Replace the lithium battery only with an identical battery or types recommended by the manufacturer.
- Do not throw the batteries into a fire.
- Do not solder at the cell body of the battery.
- Do not recharge the battery.
- Do not open the battery.
- Do not short-circuit the battery.
- Do not connect the battery with the incorrect polarity.
- Do not heat up the battery to over 100 °C.
- Protect the battery from direct solar radiation, humidity and condensation.

2.2 Qualified personnel

Only qualified personnel may perform work on the connectivity module. For the purpose of this documentation, qualified personnel is taken to mean people who fulfill the following requirements:

- Through appropriate training and experience, they are able to recognize and avoid risks and potential dangers in their particular field of activity.
- Those responsible have instructed them to carry out the work.

2.3 Security information

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 threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a 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 such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit
https://www.siemens.com/industrialsecurity (https://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
https://www.siemens.com/cert (https://www.siemens.com/industrialsecurity).

Specific security information for SC400

- Make sure that the Bluetooth range of SIMOTICS CONNECT 400 does not extend outside of the company site (approx. 5-10 meters).
- Make sure that the Wi-Fi is used with awareness of security issues. This includes using the WPA2 security protocol. Make sure that the Wi-Fi range does not extend outside of the company site.
- The mobile device used must be maintained to keep in line with the latest IT security standards. This includes PIN/password protection, virus and malware protection, operating system and security patches kept up to date.
- Change the user name and the password after the first login in step 1/7 "Login data "of the commissioning Wizard in application "SIDRIVE IQ Config".

Description

3

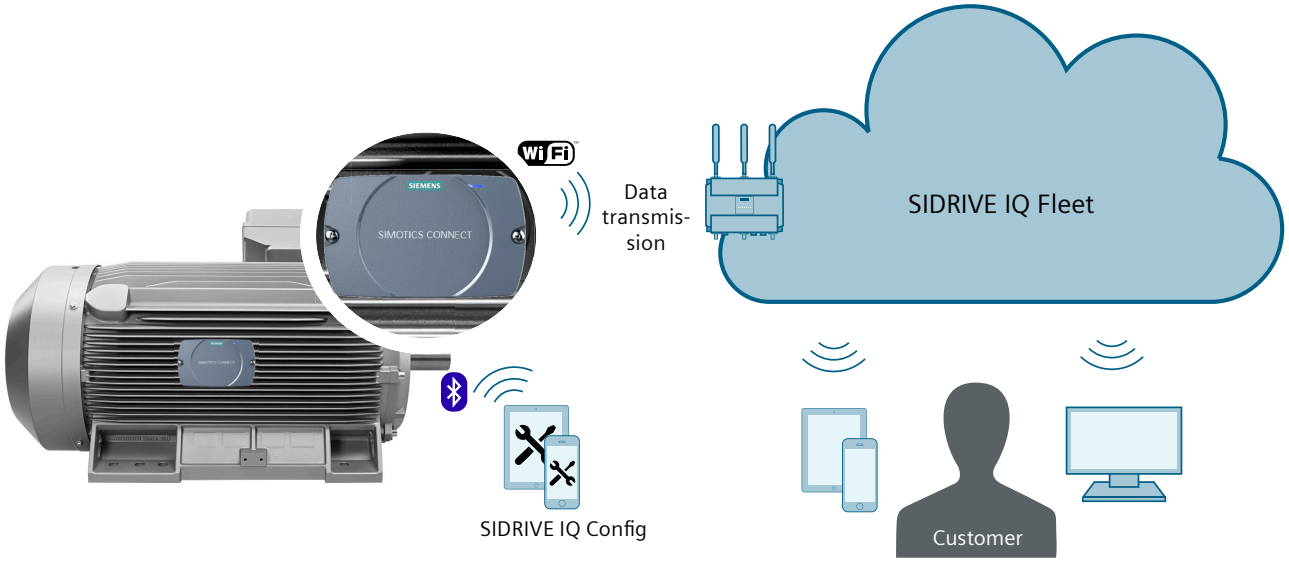
3.1 SIDRIVE IQ Fleet

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 transfer, 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.

Further information

You will find further information on SIDRIVE IQ Fleet in the "SIDRIVE IQ Fleet" (https://support.industry.siemens.com/cs/ww/en/view/109769880) operating instructions.

3.2 "SIMOTICS CONNECT 400" connectivity module

The connectivity module mounted on the motor captures important operating and status information of the motor.

The captured motor data are transmitted to SIDRIVE IQ Fleet via a Wi-Fi interface and analyzed.

Note

The SIMOTICS CONNECT 400 connectivity module can be used in combination with rib-cooled low-voltage induction motors (see Technical specifications (Page 210)).

In addition to motor monitoring, from V1.0.2.0, "Generic Vibration monitoring" can be set. Using this function, additional components of the drive train can be monitored, for example, gearbox, coupling, pillow block bearing, pump, fan, compressor as well as other rotating and non-rotating parts.

Components

The connectivity module encompasses the following components:

- Integrated sensors to measure the motor data
- Data memory
- Processor
- Bluetooth module
- Wi-Fi communication module
- Lithium battery for the power supply

The Connectivity Kit contains the following components in addition to the connectivity module:

- Metal bracket for mounting on the motor housing
- Fastening screws

Data security

The data are backed up using the following mechanisms:

- Data are stored in the connectivity module until they are transferred to the cloud
- Encrypted transmission via a Wi-Fi interface according to the WPA2 standard
- Transmission of data to the cloud via a secure HTTPS connection with TLS encryption

Preparations for use

4

4.1 Visual inspection

After mounting the motor, visually inspect the connectivity module for any damage. In case of damage, please contact Product Support (Page 208).

4.2 Shipping and storage conditions

⚠ WARNING

Transporting hazardous goods

This product is a hazardous good according to UN 3091 (https://support.industry.siemens.com/cs/products?dtp=Certificate&mfn=ps&pnid=25522&lc=en-WW).

The product contains lithium-metal batteries. The batteries contain approximately 2.6 g of lithium. When the product is transported, it is not permissible for the battery connector to be in contact with the electronics module.

Carefully comply with the regulations that are applicable for transport.

NOTICE

Damage to the connectivity module due to external influences

The connectivity module is supplied in separate packaging or is mounted on the motor in the factory. During transport, storage and when the motor is operated, the connectivity module can be damaged due to external influences.

Do not damage the connectivity module while the motor is being transported, stored and operated. It is not permissible that the connectivity module is subject to mechanical loads and stress.

4.3 Requirements

Mobile device for the "SIDRIVE IQ Config" application

To set up the connectivity module, install the "SIDRIVE IQ Config" application on a mobile device. The mobile device must satisfy the following requirements:

- Android operating system with Version ≥ 8.0 or iOS operating system with Version ≥ 13.0
- Functioning Internet connection

Download the "SIDRIVE IQ Config" application from the Google Play Store (Page 38) or the Apple AppStore (Page 77).

Mobile device with Bluetooth

The mobile device must have an integrated Bluetooth interface that supports the Bluetooth Low Energy V4.1 standard - or a later standard.

Wi-Fi connection

The current version of the connectivity module does **not** support a proxy server configuration. Use a direct Internet connection.

The connectivity module encrypts your data according to security standard WPA2. For data transfer, the connectivity module supports Wi-Fi connections with a frequency of 2.4 GHz and the Wi-Fi standard 802.11b/g/n. Only Wi-Fi passwords with a maximum length of 32 characters are supported.

Note

The SIMOTICS CONNECT 400 connectivity module does not support Wi-Fi authentication protocols according to IEEE 802.1X.

Ports that are used

Release the following ports used by SIMOTICS CONNECT 400 to allow an Internet connection to be established:

- Secure data exchange with SIDRIVE IQ Fleet: TCP port 443
- Name resolution via DNS: TCP port 53; UDP port 53
- Time synchronization via NTP: UDP port 123
- IP address assigned via DHCP: TCP port 67, 68; UDP port 67, 68
- The mobile device firmware is updated in the same Wi-Fi network: TCP port 9999

Mounting and installation

5

NOTICE
SIMOTICS CONNECT 400 housing with an IP54 degree of protection If the ambient conditions according to IP54 cannot be ensured at the installation location – or if a higher degree of protection is required – then the user must apply additional measures to ensure safe and reliable operation. With production version ≥ FS03, SIMOTICS CONNECT 400 housings have an IP65 degree of protection.

Requirement

Upgrade your motor with a connectivity module. To mount the connectivity module, glue the mounting bracket permanently to the motor. You can screw the connectivity module onto the mounting bracket either before or after gluing the mounting bracket on the motor.

No motor parameters have been imported into the connectivity module. You must configure the device after mounting. Follow the instructions in Chapter Commissioning (Page 37).

Note

Motors with connectivity module mounted in the factory

Certain motors are supplied with the connectivity module mounted in the factory. In this case, you must ensure that the battery is contacted.

Mounting or removal is only necessary if the connectivity module has to be replaced.

Further Information relating to installation

- SIMOTICS CONNECT 400 Connectivity Kit (https://support.industry.siemens.com/cs/de/en/view/109774000)installation instructions
- Video tutorial How to mount SIMOTICS Connect (https://www.youtube.com/watch?v=RShjaqjapxo)

5.1 Installing the mounting bracket

The mounting bracket is durably glued on the motor. For this purpose, use the mounting bracket supplied in the Connectivity Kit (Page 208) and an approved adhesive (see Note). You can screw (Page 35) the connectivity module onto the mounting bracket either before or after gluing the mounting bracket on the motor.

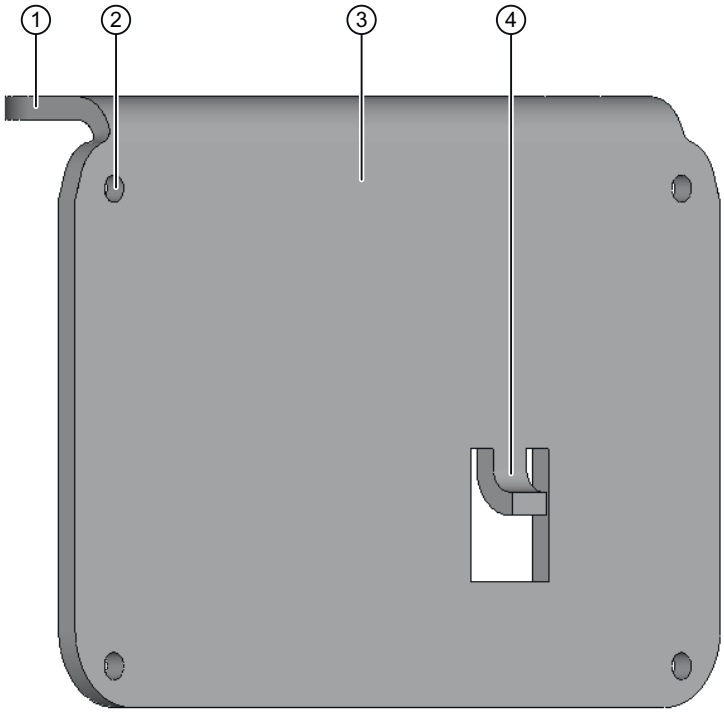
Make sure that the connectivity module is kept at the greatest possible distance from live cables.

Note

Approved adhesives:

- Henkel LOCTITE HY 4090™
- Weicon Fast Metal Minute Adhesive
- 3M Scotch-Weld DP 8407 NS

The mounting bracket is shown in the following diagram:

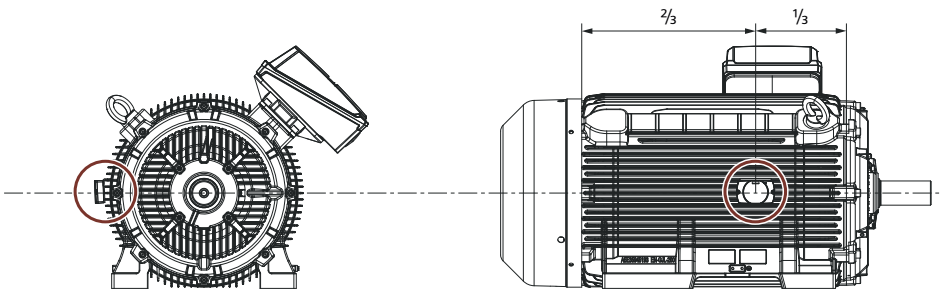


① Short arm of the mounting bracket: Inner side for gluing to the motor cooling ribs over the full surface area
② Thread for the fastening screws of the connectivity module
③ Long arm of the mounting bracket: Surface for attaching the connectivity module using screws
④ Thermally conducting contact

Mounting position

In the vertical plane, the connectivity module is mounted at the height of the motor shaft and on the side of the motor opposite the motor connection cable.

In the horizontal plane, the center of the connectivity module should be ⅓ of the way along the housing length from the drive end.



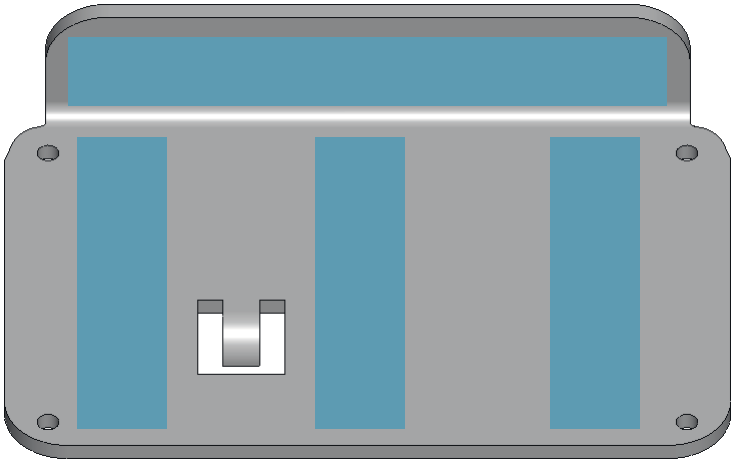
Requirements

- The mounting bracket is clean, dry and free of any grease.
- The cooling ribs to which the mounting bracket is to be bonded are thoroughly cleaned, dry and free of any grease.
- You have carefully read the usage instructions on the adhesive package.

Procedure

1. Mount the connectivity module on the mounting bracket. (Page 35) You can optionally mount the connectivity module after you have glued the mounting bracket on the motor.
2. Choose the position for the connectivity module on the motor. The following figures show examples of the position for the connectivity module on the motor.

3. Attach the adhesive to the recommended positions on the inner side of the mounting bracket (see the blue marked areas in the following diagram). Carefully ensure that no adhesive enters the threads for the fastening screws.



Note

Handling the adhesive

Follow the handling instructions on the packaging of the adhesive.

The recommended adhesives set quickly. Therefore handle them quickly.

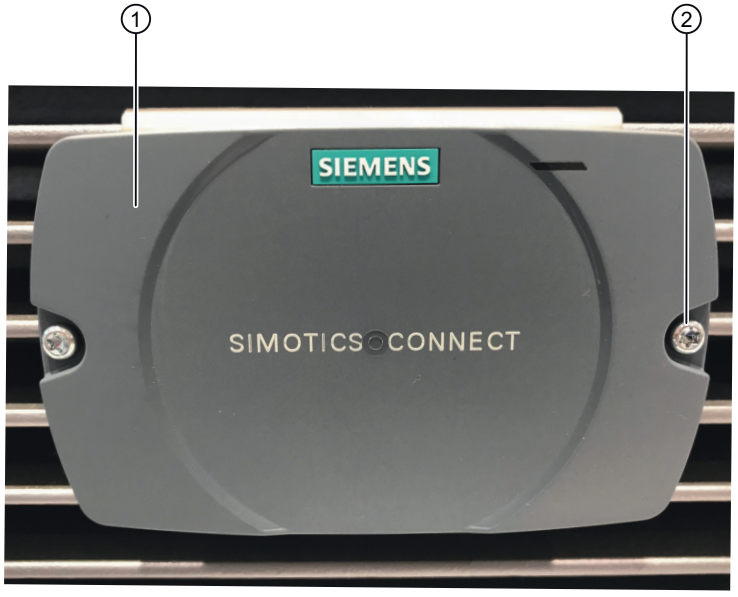
4. Place the mounting bracket on the motor cooling ribs. The short arm of the mounting bracket must be in complete contact with a cooling rib. The long mounting bracket arm must be in contact with one or several edges of the cooling ribs.
5. Press the mounting bracket onto the motor cooling ribs using your hand.
6. Allow the adhesive applied to the mounting bracket to dry. Carefully comply with the usage instructions provided on the adhesive package.
7. Allow the adhesive to completely dry.

5.2 Mounting the connectivity module

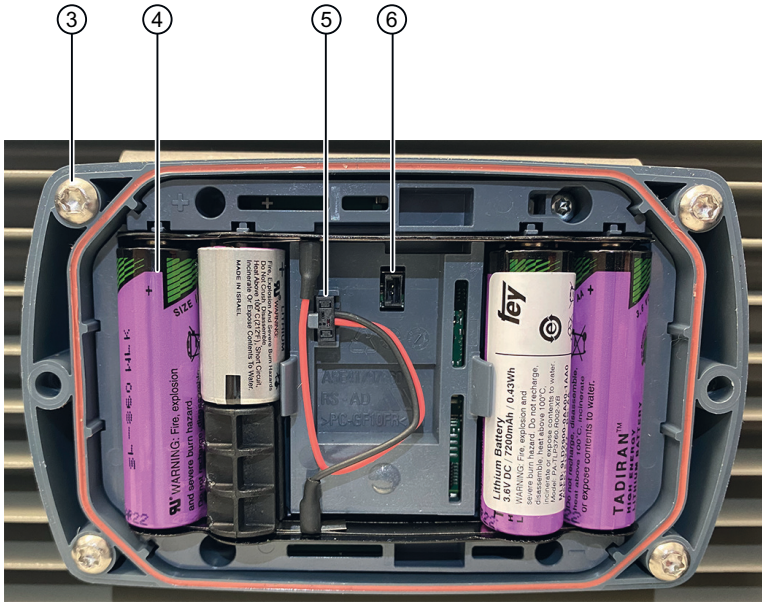
For easier handling while mounting on the motor, we recommend first screwing the connectivity module to the mounting bracket. The battery is not contacted in the delivered condition.

Mounting elements

The following figures provide an overview of the relevant mounting elements of the connectivity module in the closed and open condition:



① Front cover
② Cover fastening screws



③ Fastening screws
④ Battery
⑤ Battery plug
⑥ Plug-in socket

Procedure

Note

The tool that you require is a hexalobular internal/Torx® T20 screwdriver.

1. On the front cover ①, unscrew the 2 central fastening screws ②.
   To avoid losing the screws, do not turn the screws completely out of the cover.
2. Remove the front cover.
3. Place the new connectivity module in the mounting bracket.
4. Insert the fastening screws and tighten them ③.
5. Visually inspect the battery for damage ④.
6. Plug the battery plug ⑤ in by pressing it lightly onto the plug-in socket provided for this purpose ⑥. The plug has polarization coding that prevents insertion with incorrect polarity. The LED display of the connectivity module may light up for longer than 40 seconds for the battery test.
7. Put the front cover back in position. Ensure that the cover fits precisely.
8. Tighten the 2 central fastening screws at the front cover by hand.

Commissioning

6

6.1 Requirements

- The connectivity module battery is now connected.
- The Bluetooth interface of the mobile device with Bluetooth Low Energy V4.1 or newer is activated.
- The function to determine position data in the mobile device is activated, and a valid position can be determined before onboarding. To do this, before activation a certain preprocessing time may be required. Further, it should be taken into account that determining the position in buildings may be faulted. If determining the position data before onboarding was not successful, then the correct position of the asset cannot be displayed in SIDRIVE IQ Fleet. (Note: The function to determine position data is not available in every country.)
- The mobile device has an Internet connection via Wi-Fi or GSM/LTE
- There is a Wi-Fi access point to connect the connectivity module to the Internet.
- You have valid access data for "SIDRIVE IQ Fleet".

6.2 Commissioning with Android

6.2.1 Installing the "SIDRIVE IQ Config" application

1. Open the Google Play Store. (https://play.google.com/store/apps/details?id=com.siemens.configapp)

2. Install the Siemens "SIDRIVE IQ Config" application.

   After the first start of the application, the terms of use are displayed once. Take note of them and click "Accept" to confirm.
   The "SIDRIVE IQ Config" application requires the following access authorizations:

   - Bluetooth interface
   - Localization data (to determine the asset location)
     Note: not available in every country
   - Camera (to scan the motor data matrix code)
   - Memory (to update the firmware of the connectivity module (Page 134))

SIDRIVE IQ Config is available in German, English, French, Italian, Spanish, Turkish and Czech. The language is automatically preset depending on the system language of your mobile device. A Chinese version is available for use in China.

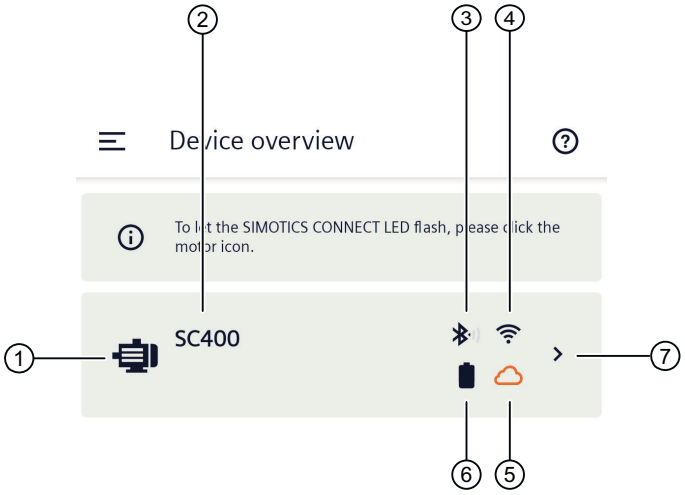
6.2.2 Establishing the connection to the connectivity module

Start the "SIDRIVE IQ Config" application on your mobile device. The application automatically activates the Bluetooth interface of your mobile device, and shows active connectivity modules in a range of approximately 10 m. The BLE name (=Bluetooth name of the device) set in the factory is "SC400". You can change the name at a later point in time.

Use the "Identify" function to check that you are connected with the required connectivity module (Page 118).

"Device overview" page

When the "SIDRIVE IQ Config" application starts, by default, you see a list of all of the currently visible assets on the "Device overview" page. You can also display all of the assets visible in the history. A list entry contains the information about an asset. The following diagram explains the pictograms in a list entry.



① To identify an asset, press the motor icon (LED of the connectivity module flashes)

② BLE name of the currently selected connectivity module

③ Bluetooth interface signal strength display

④ Wi-Fi configuration status of the connectivity module:

- "Black" status: Wi-Fi configured and operating correctly
- "Red" status: Wi-Fi not configured or has a fault

⑤ Connection status of the connectivity module to the MindSphere application SIDRIVE IQ Fleet (onboarding status)

- "Black" status: Connected
- "Orange" status: No Onboarding yet
- "Red" status: Error during upload

⑥ Status of the connectivity module battery:

- "Black" status: sufficient charge
- "Orange" status: 40% or less *)
- "Red" status: 20% or less

*) **Note:** Replace the battery in good time. If disturbances occur in data transmission, replace the batteries (Page 200).

⑦ "Connect" button to establish a connection to the connectivity module
If necessary, confirm a pairing request to establish the Bluetooth connection.

Procedure

1. Open the "SIDRIVE IQ Config" application.
2. Select an asset.
3. Tap on the ">" button to establish a connection to the connectivity module.

6.2.3 Log in with the connectivity module

After a connection has been established from the "SIDRIVE IQ Config" application to the connectivity module, a window is displayed where you can enter the login data for the connectivity module.

Factory settings for logging in

The factory settings for logging in are as follows:

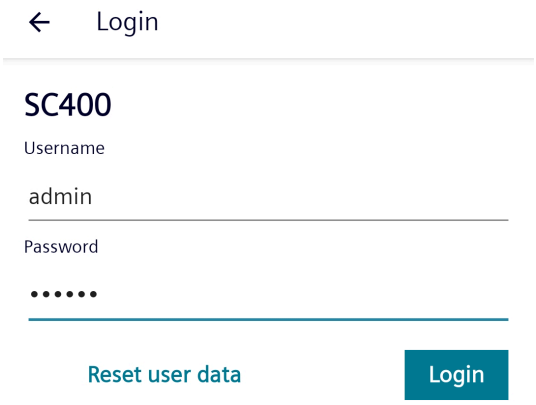
- User name: "admin"
- Password: Comprising the last 6 digits of the serial number on the rating plate of the connectivity module.
  Caution: Not the serial number of the motor!

Note

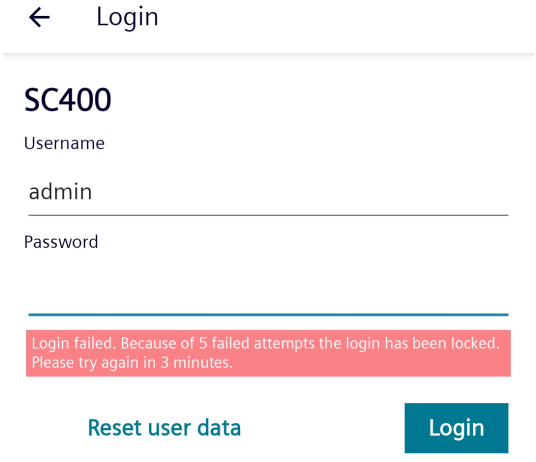
Change the user name and password after logging on for the first time for protection against unauthorized access to the connectivity module. In the "Device Credentials" step of the commissioning wizard, you are requested to change the login data.

Procedure

1. The view to enter the login data for the connectivity module is displayed once the Bluetooth pairing has been successfully established.
   Enter the user name and password. Make sure that no blank is inserted at the end of your entry.

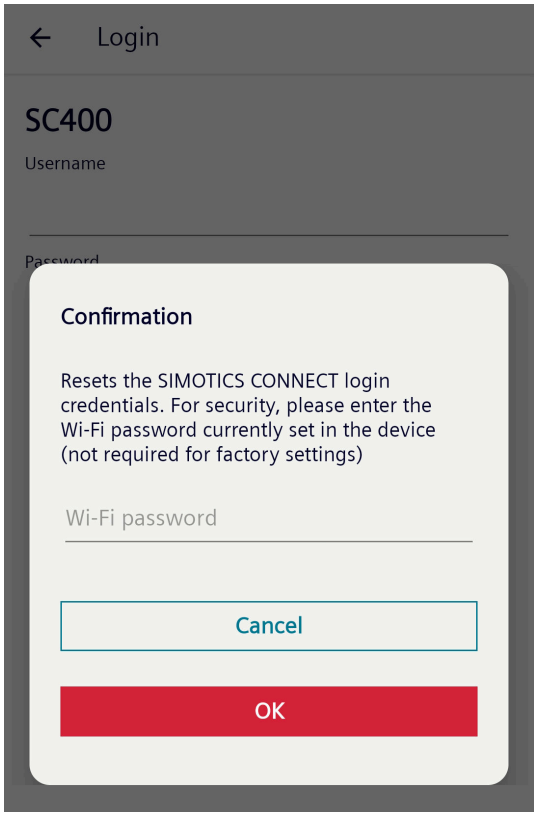


2. Confirm your entries using the "Login" button.
   The data are transferred. The dashboard view is displayed. Here, you can fully access all connectivity module functions.
3. After 5 unsuccessful attempts with an invalid user name or an invalid password, for security reasons, the login is locked for 3 minutes. You can then attempt to log in again.



Reset user credentials

If you have forgotten your password, you can reset the user name and the password for the connectivity module back to the factory settings using function "Reset user data".



Note

This function requires additional entry of the Wi-Fi password. This ensures that only authorized persons can reset the user login information. If the Wi-Fi has not yet been configured in SC400, the "Wi-Fi password" field must remain empty.

6.2.4 Guided commissioning

6.2.4.1 Starting the commissioning wizard

The commissioning wizard guides you step by step through the commissioning of the connectivity module.

Note

Commissioning wizard - Help

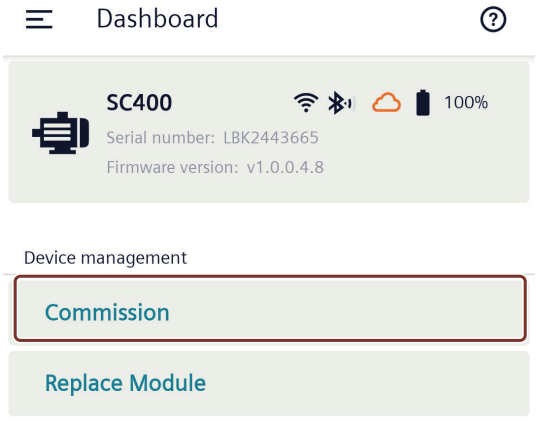
For each commissioning step, you can call help with the ⓘ icon.

Requirement

You are logged in to the connectivity module via the "SIDRIVE IQ Config" application.

Procedure

1. Start the commissioning wizard with the "Commission" button.

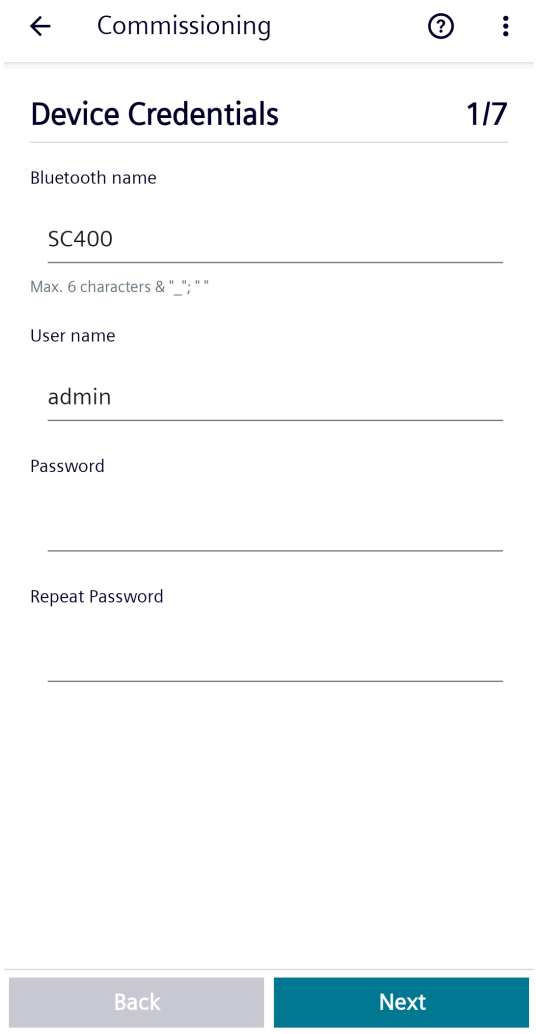


6.2.4.2 Device Credentials - Step 1/7

Change the login data for protection against unauthorized access to the connectivity module.

Procedure

1. Change the Bluetooth name (BLE name). The BLE name is used for simple identification of the device via Bluetooth. The length of the name is limited to 6 characters. The following characters are permitted: a-z, A-Z, 0-9, -, _.



2. Change the user names. The user name must not comprise more than 21 characters.
3. Change the password in the "Password" field. The password must meet the following requirements:
   - Minimum of 6 characters
   - Maximum 15 characters
   - At least one uppercase letter (A-Z)
   - At least one lowercase letter (a-z)
   - At least one numeral (0-9)
   - The following special characters are permitted: Hyphens (-) and underscores (_) are allowed.

4. Enter the new password again in the "Repeat password" field.
5. Move on to the next step with the "Next" button.

6.2.4.3 Wi-Fi - Step 2/7

Connect the connectivity module to the Wi-Fi network.

Supported Wi-Fi networks

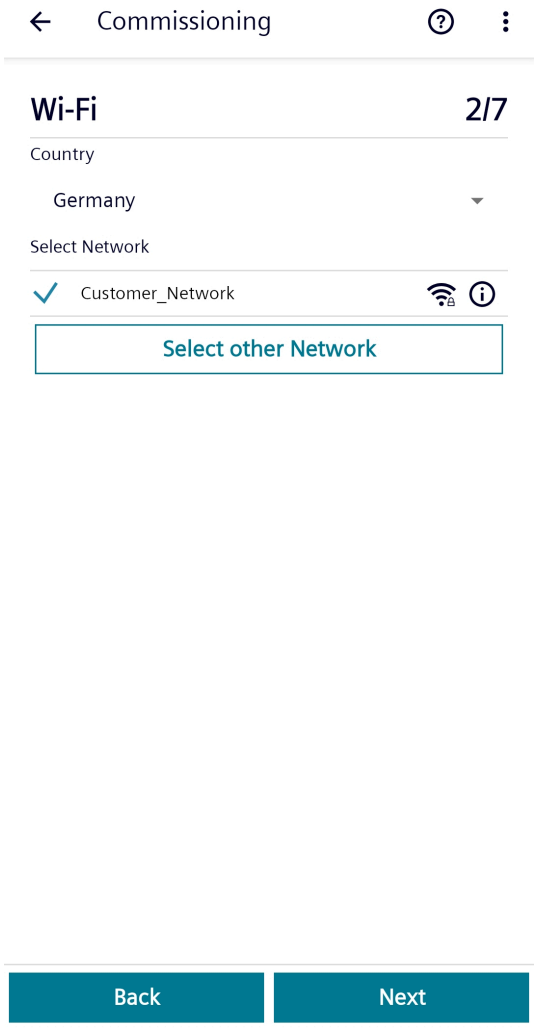
The current version of the SIMOTICS CONNECT 400 connectivity module does **not** support proxy server configuration.

The connectivity module encrypts your data according to security standard WPA2. For data transfer, the connectivity module supports Wi-Fi connections with a frequency of 2.4 GHz and the Wi-Fi standard 802.11b/g/n. Wi-Fi authentication protocols according to IEEE 802.1X are not supported.

Procedure

1. The country code is determined automatically. Check that it is correct and modify the country code, if necessary.
2. With the "Select other network" button, you can display the visible Wi-Fi networks.
3. Select the required Wi-Fi network from the list of visible networks.
4. Enter the Wi-Fi password. The Wi-Fi password must not exceed a maximum length of 32 characters.

5. Confirm your entry with the "Connect" button. The connection is established.



6. Move on to the next step with the "Next" button.

6.2.4.4 Firmware - Step 3/7

To keep the firmware of the connectivity module up to date and to implement new functions, firmware updates are regularly made available. The firmware is provided by Siemens as a file in "*.bin" format.

Note

You will find the latest firmware version at Siemens Industry Online Support (SIOS) (https://support.industry.siemens.com/cs/de/en/ps/25522/dl). When you log on to SIOS, you can include the URL in your list of Favorites and be informed about available firmware updates in a newsletter.

Firmware version 0.6.0.3 or later must be installed as precondition for onboarding. If such a version has already been installed on your connectivity module, then you can skip step

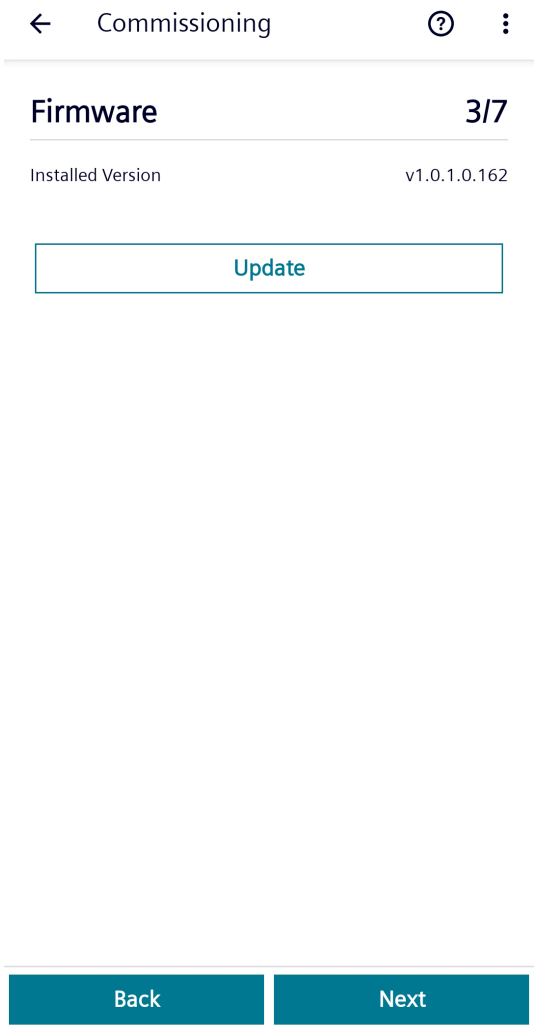
3/7 "Firmware". After commissioning, the firmware can then be automatically updated via MindSphere. To do this, activate this function in the asset settings in "SIDRIVE IQ Fleet".

Requirements

- On your mobile device, allow access the "SIDRIVE IQ Config" application memory.
- The connectivity module must be located in the same Wi-Fi network as is presently being used by the mobile device.
- The Wi-Fi network allows communication between the participants, i.e. between the connectivity module and the mobile device.
- Load the latest firmware version onto your mobile device.

Procedure

1. Update the firmware by clicking on the "Update" button, and then proceed as described below.
   If you do not want to update the firmware, move on to the next step with the "Next" button.



2. Select the appropriate "*.bin" file. Downloading starts immediately upon selection. During downloading, a progress bar is displayed. Wait until downloading is complete.
   Result:
   After the firmware file has been downloaded, a security check is performed and the Bluetooth connection to the mobile device is reset.
   The firmware is then updated. This process takes approximately 1 to 2 minutes. During this time, the LED on the front of the connectivity module first flashes slowly – and then faster. The LED goes dark after the firmware has been updated. The connectivity module automatically restarts after the firmware has been successfully updated.
3. Log on again after the connectivity module has restarted and restart the commissioning wizard.

6.2.4.5 Intervals - Step 4/7

In this step, you can define the intervals for measurements and data transfers. The remaining battery life is recalculated based on your entry.

Note

Calculated battery life

The calculated battery life is a statistical value. The actual remaining battery life may differ depending on temperature influences or the connection quality of the Wi-Fi network.

Note

Effects that influence the battery life

Shorter intervals result in a shorter battery life.

The following intervals are preset in the factory:

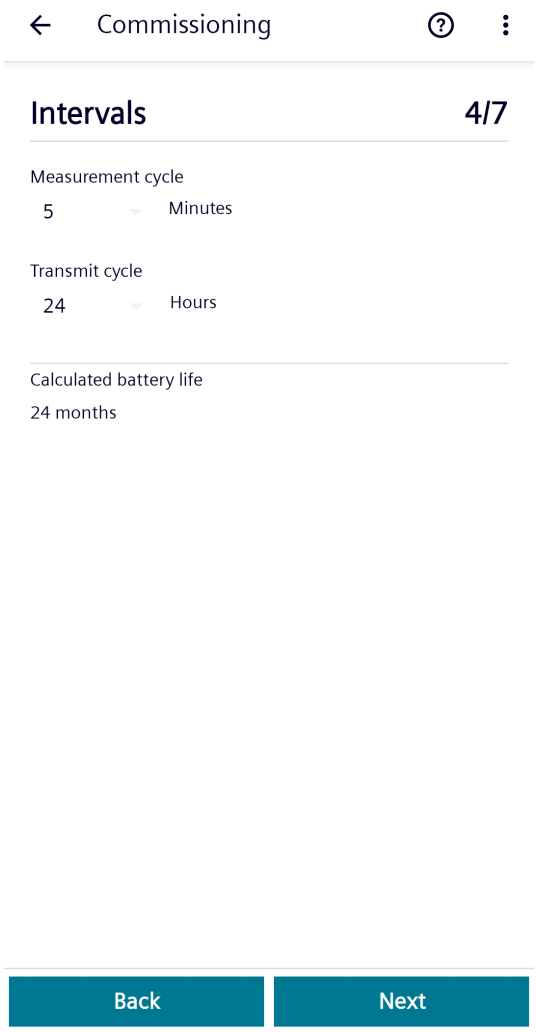
- 5 minutes - interval for measuring temperature, vibration, rotational frequency, operating status
  You can change these settings within a specified range.
- 10 minutes - interval to calculate speed, torque and energy consumption
  This interval cannot be set, it is dependent on the selected measurement interval. The calculation interval is three times as long, i.e. 3 minutes, for a measurement interval of 1 minute. The calculation interval is twice as long for measurement intervals 2 and 5 minutes. The calculation interval is the same length for all other measurement intervals.
- 24 hours - interval for transmission of the stored data to "SIDRIVE IQ Fleet"
  You can modify these settings within a preset range of 1 to 48 hours.

Note

To calculate the bearing status, the measuring cycle must be set to ≥ 5 minutes.

Procedure

1. Change the measurement interval. The "Calculated battery life" is updated.
2. Change the synchronization interval. The "Calculated battery life" is updated.



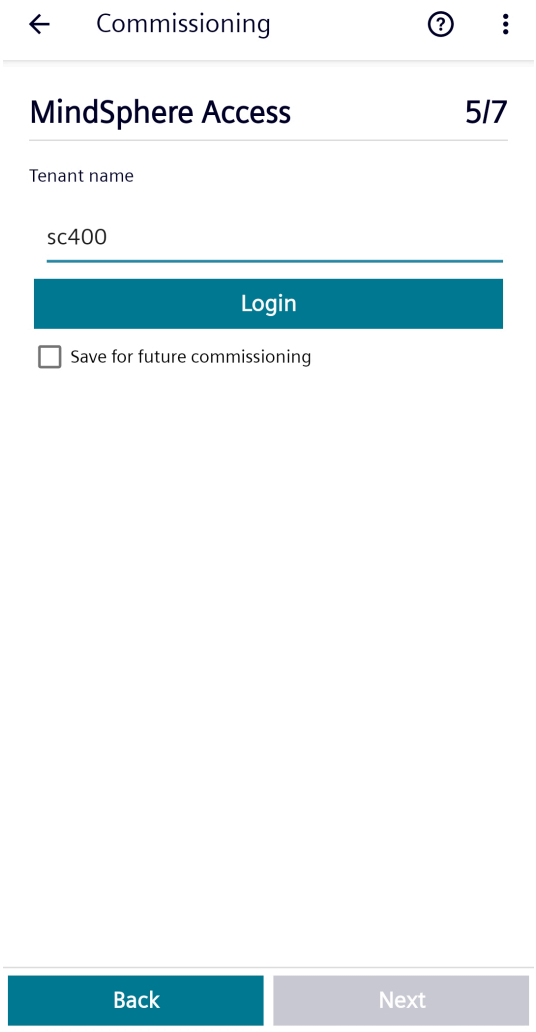
3. Move on to the next step with the "Next" button.

6.2.4.6 MindSphere Access - Step 5/7

In the following step, you establish the MindSphere access for onboarding. The process applied from connecting and registering the connectivity module through to the MindSphere application "SIDRIVE IQ Fleet", including all settings, is called onboarding.

Procedure

1. Enter the MindSphere tenant name in the "Tenant name" field. The length is limited to 8 characters. If you have received a special URL from Siemens for onboarding, enter it in the "Tenant name" field. Start entering the URL with "https://".

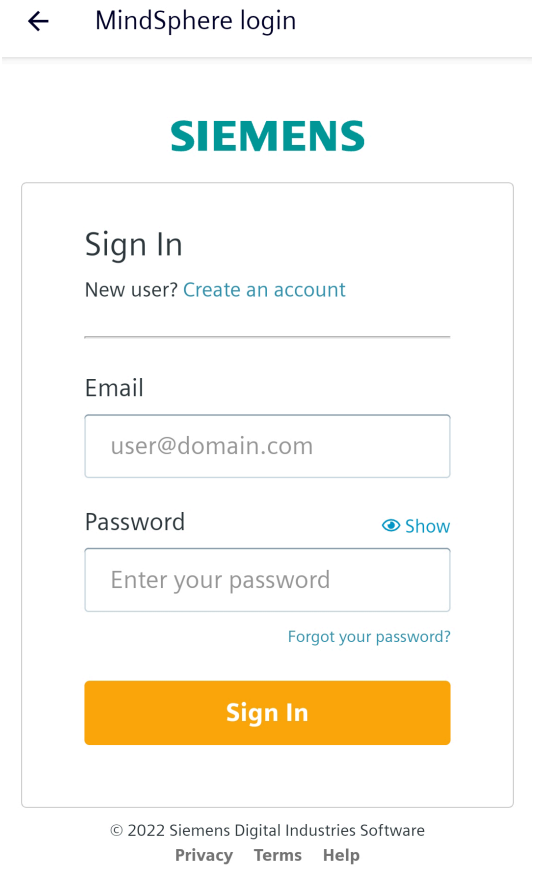


2. With the option "Save for future commissioning", you can save the tenant name you entered or the URL for further commissioning operations. Select this option if it is required.
3. Confirm your entries using the "Login" button.

4. For onboarding, log in using your MindSphere login data.

Note

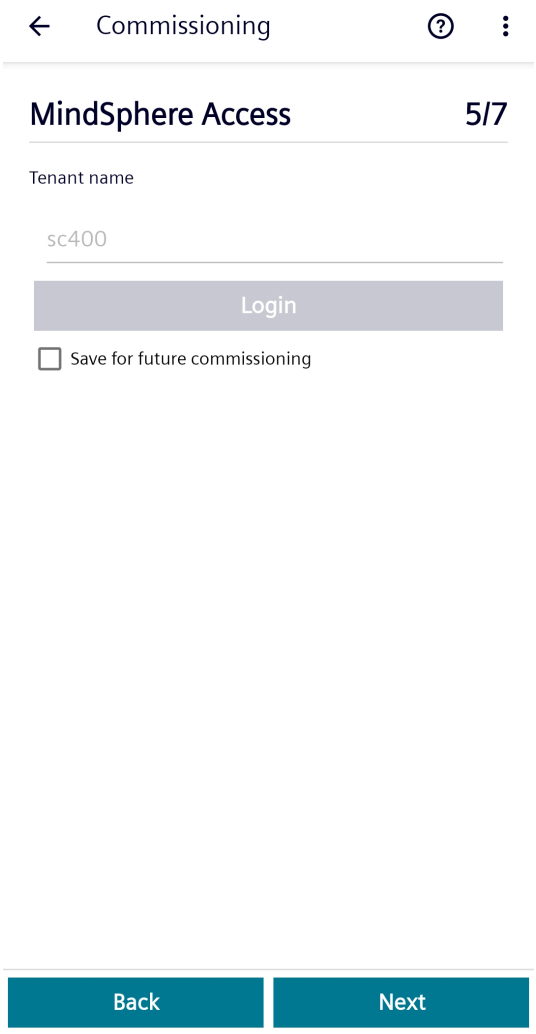
It is possible that the Recognize text / Word suggestions function of your mobile device enters a blank at the end of the email address that is entered. Delete this blank before logging in.



5. Confirm your entry of the login data with the "Sign In" button.
   After successfully logging in, the "Login" button is deactivated in the commissioning wizard.

Note

The "Tenant name" can now no longer be changed. If you wish to change the "Tenant name", exit the commissioning wizard and close "SIDRIVE IQ Config". Restart the "SIDRIVE IQ Config" application and the commissioning wizard. Enter the required "Tenant name".



6. Move on to the next step with the "Next" button.

6.2.4.7 Motor Details - Step 6/7

To be able to use the functionality of the connectivity module optimally, SIMOTICS CONNECT 400 requires the correct assignment to the motor. With the serial number and the product article number, the electrical and mechanical characteristics of the motor are copied from its digital twin stored in the cloud and transferred into the connectivity module.

If the connectivity module is retrofitted or replaced with a replacement device, the serial number and the product article number of the motor must be reassigned. This operation

then updates the associated motor information. Only assign the connectivity module to the motor on which it is mounted.

Note

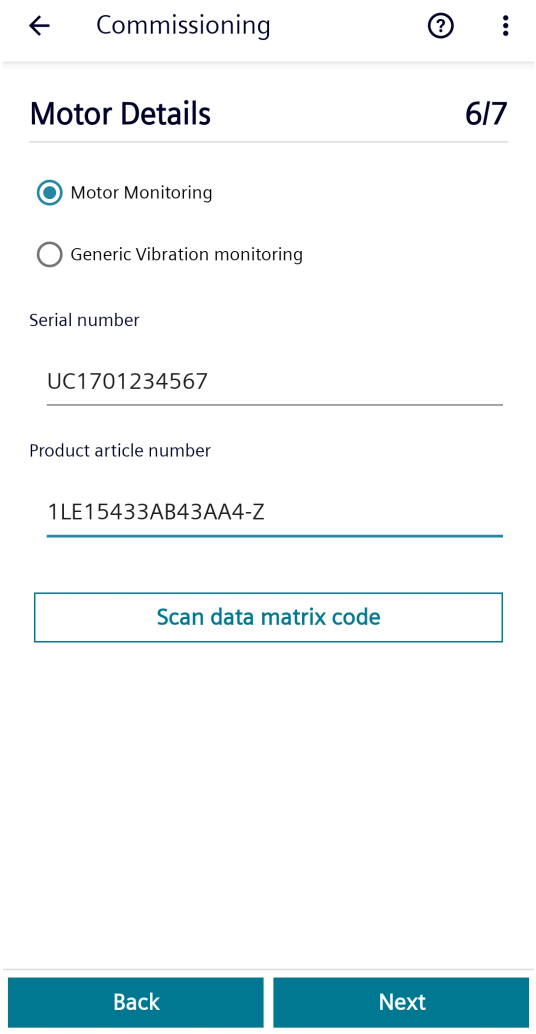
In addition to motor monitoring, from V1.0.2.0, "Generic Vibration monitoring" can be set. Using this function, additional components of the drive train can be monitored, for example, gearbox, coupling, pillow block bearing, pump, fan, compressor as well as other rotating and non-rotating parts.

Procedure

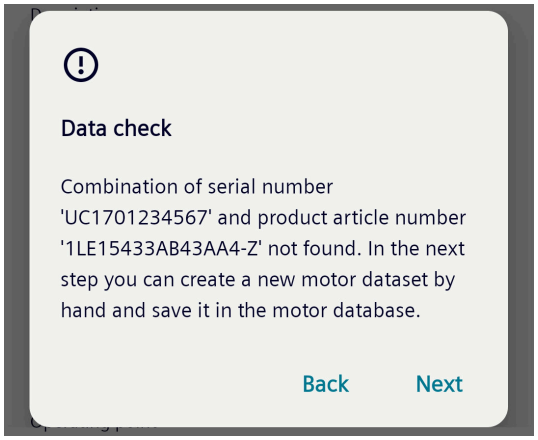
1. Select "Motor Monitoring" or "Generic Vibration monitoring". "Motor Monitoring" is selected in the following example.
2. Enter the serial number and the product article number. The following options are available:
   - **Manual entry of the serial number and the product article number**
     Enter the serial number and the product article number of the motor in the relevant fields.
   - **Scanning the data matrix code of the motor**
     If the motor is equipped with a scannable code, you can identify the motor to which you have local access. The scan reads the serial number and the product article number. Scan the data matrix code of the motor by tapping the "Scan data matrix code" button.

     Note

     Motor assignment by scanning the data matrix code is only possible if the Siemens motor has been provided with a 2D code.



3. For "Motor Monitoring", using the "Next" button you synchronize with the cloud. If the motor data set is present in the digital twin database, you go on to Step 7/7 - Asset Info.
   If there is no data set for your motor in the digital twin database, e.g. for motor models from before 2011 or for motors of other manufacturers, the following message is displayed:



Note

If you selected "Generic Vibration monitoring", then synchronization with the cloud does not take place. The values that were entered are used to identify the asset.

4. With the "Back" button, you can check the data that you entered and correct them if necessary.
   With the "Next" button, you call up the dialog box to create a new motor data set.
   If the motor is not found in the motor database by a combination of the serial number and the product article number, you will have to enter the motor data yourself and save them in the database. This applies both to Siemens motors and to motors of other manufacturers.
   Proceed as described below to create a new motor data set.

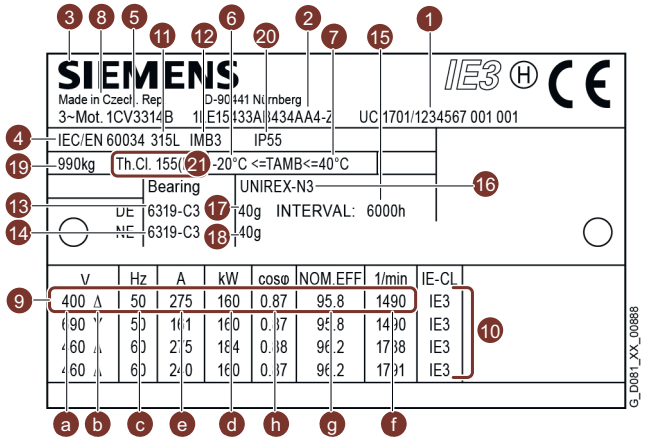
Procedure - Creating a new motor data set

Note

Settings cannot be modified subsequently

Select the following settings carefully. There is no way of modifying the settings after onboarding. A subsequent change can only be made by Siemens Service (Page 208).

Creating a new motor data set is explained using the following rating plate as example.


SIEMENS
IE3
Made in Czech. Rep.
3~Mot. 1CV3314
IEC/EN 60034 315L IMB3 IP55
990kg
Th.Cl. 155(
-20°C <=TAMB<=40°C
Bearing
UNIREX-N3
DE 6319-C3
NE 6319-C3
40g
INTERVAL: 6000h
V Hz A kW cosφ NOM.EFF 1/min IE-CL
400 Δ 50 275 160 0.87 95.8 1490 IE3
690 Y 50 161 160 0.87 95.8 1490 IE3
460 Δ 60 275 184 0.88 96.2 1738 IE3
460 Δ 60 240 160 0.87 96.2 1731 IE3
G_D081_XX_00888

Proceed as follows to enter a new motor data set:

1. Enter the motor data. Depending on how complete the data entered are, you can analyze and monitor the data via the Insights Hub application "SIDRIVE IQ Fleet".
   The motor data are acquired in 3 steps:
   - General data
   - Electrical data
   - Mechanical data

   The "Next" button takes you to the next step in each case.

Note

Mandatory fields

The input fields marked "*" are mandatory fields.

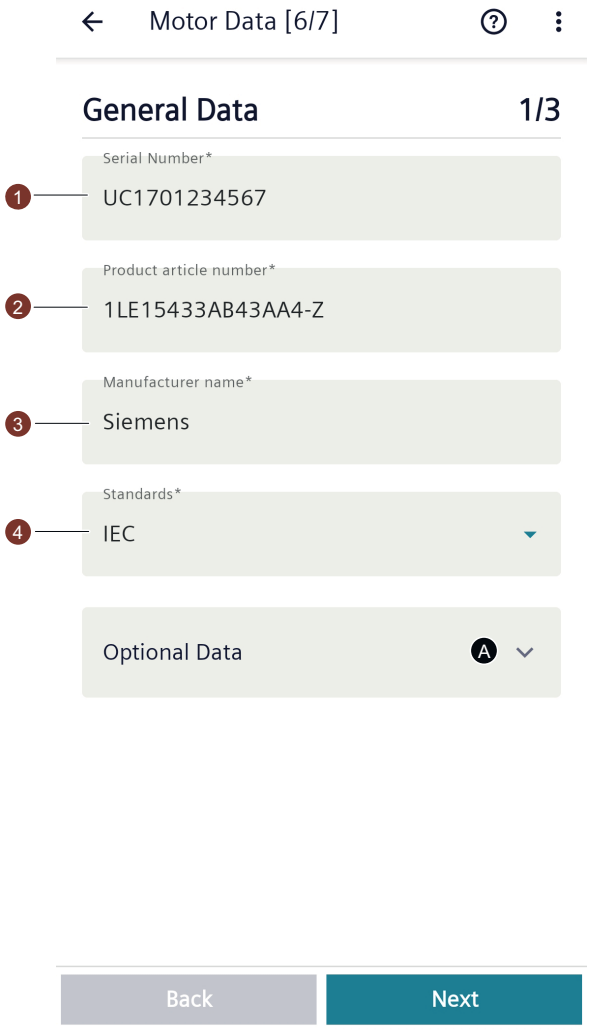
Note

Text color in input fields

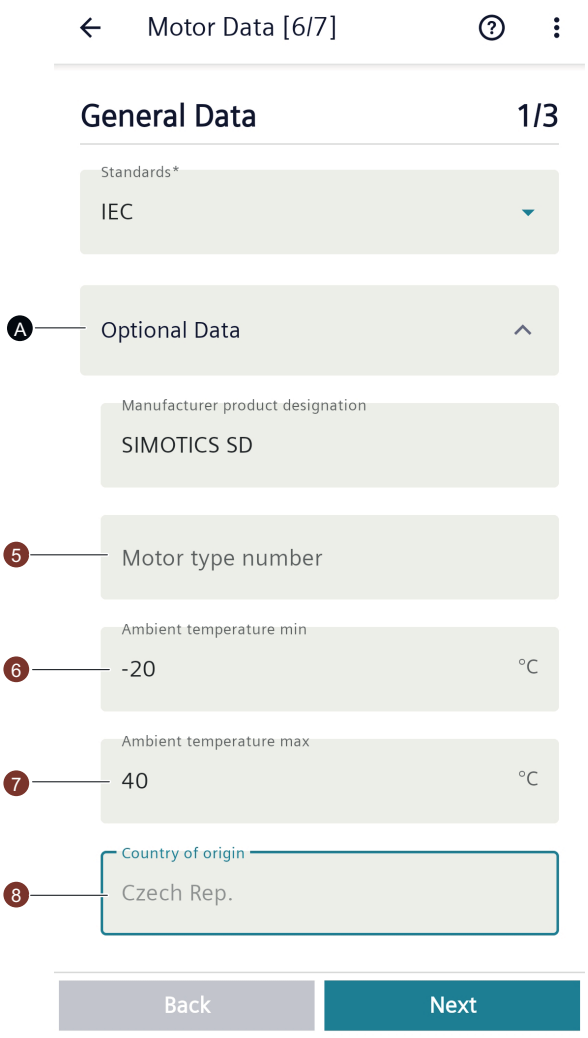
black = suggested values, can be overwritten

gray = expected input format

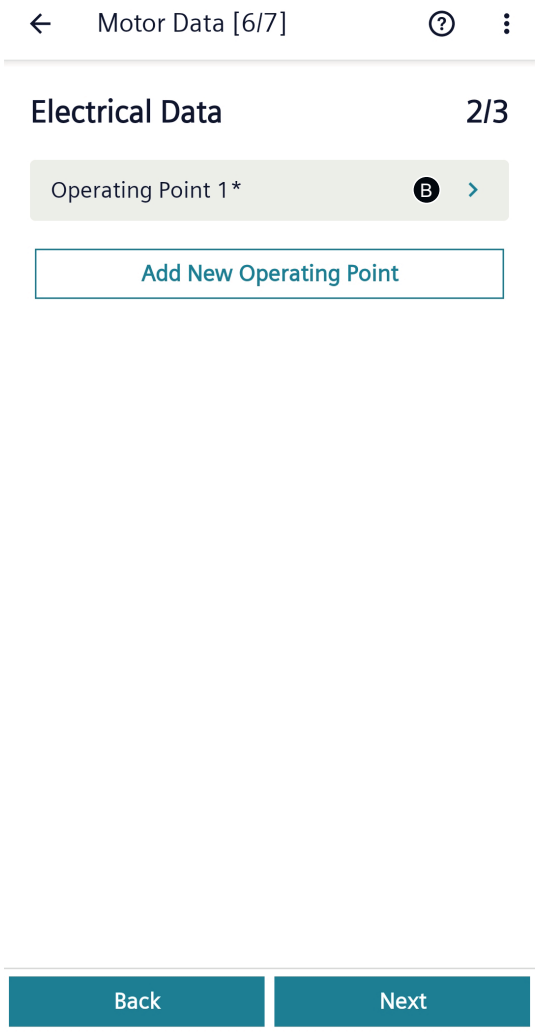
– **General data**



(A) Via the button you can display additional fields for general "Optional Data".


Motor Data [6/7]
General Data
1/3
Standards*
IEC
A
Optional Data
Manufacturer product designation
SIMOTICS SD
5
Motor type number
Ambient temperature min
6
-20
°C
Ambient temperature max
7
40
°C
Country of origin
8
Czech Rep.
Back
Next

– **Electrical data**



You must enter the data for at least one operating point.

Note

Adding a new operating point

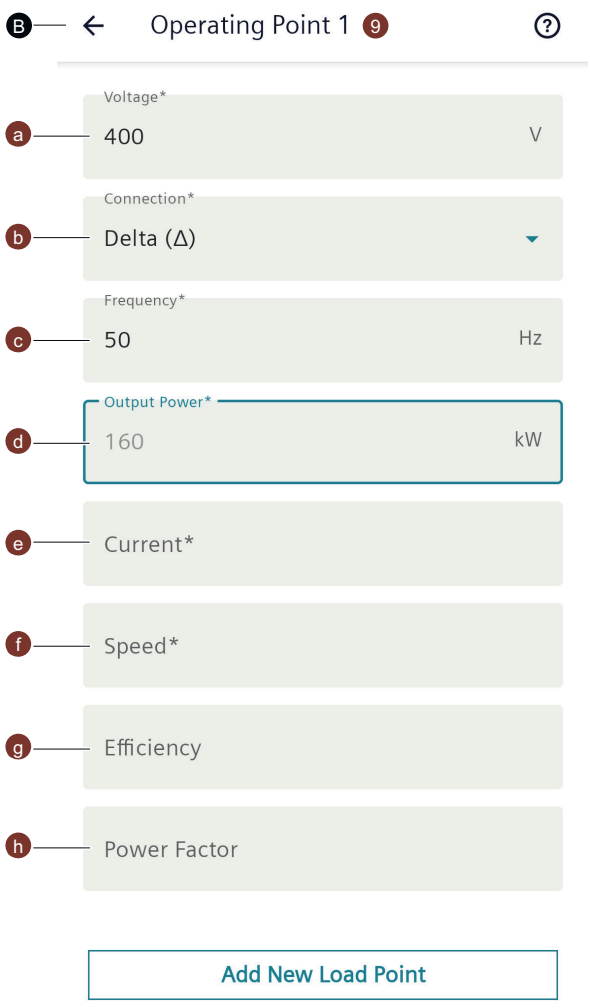
Here, you can enter additional data according to the rating plate that do not match the currently selected connection type. If you were onboarding the same machine again, but with a different connection type, then you do not have to re-enter the data.

Note

Deleting a new operating point

You can also delete added operating points that you do not need. To do this, select the corresponding operating point. The "Delete Operating Point" button is used to delete the operating point.
Operating point 1 is mandatory and can therefore not be deleted.

(B) Use the button > to switch to the "Operating Point 1" dialog.



The "Add New Load Point" button takes you to the "Load Point" dialog.

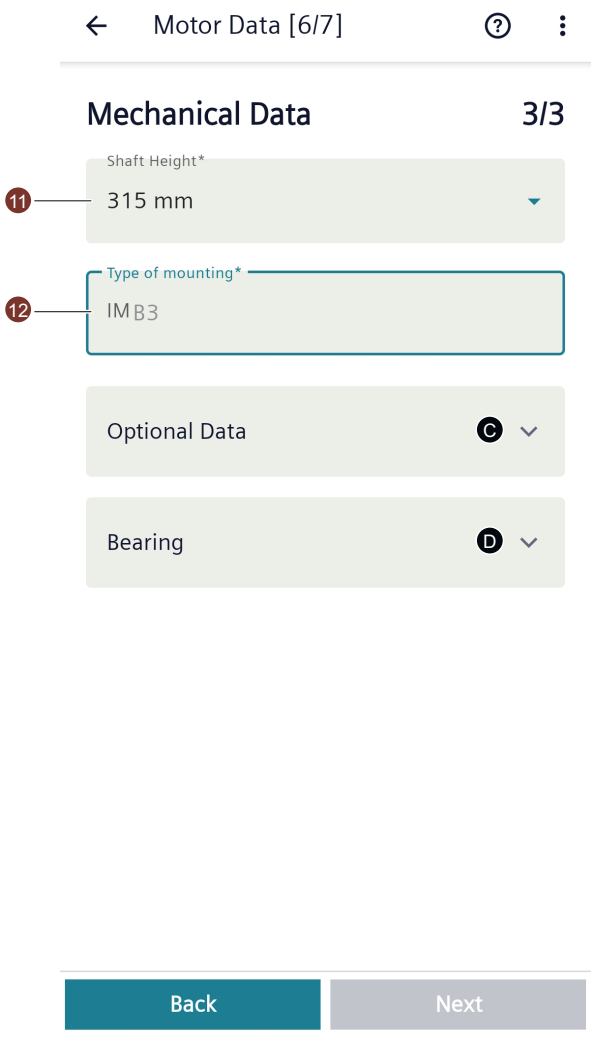
Note

Load point

To increase the accuracy of the calculated motor model, you can also enter additional data for one or more load points at the first operating point. The data can be found, for example, in the data sheet of the motor. The load data are defined for the following load points:

- No-load operation:
  For this, it is only necessary to enter the no-load current.
- 2/4, 3/4, 5/4 load:
  For this, besides current, you can also enter values for speed, efficiency, and power factor. You must enter at least one value for a selected load point. The more values you enter, the more accurate the calculation of the motor model.

– **Mechanical data**

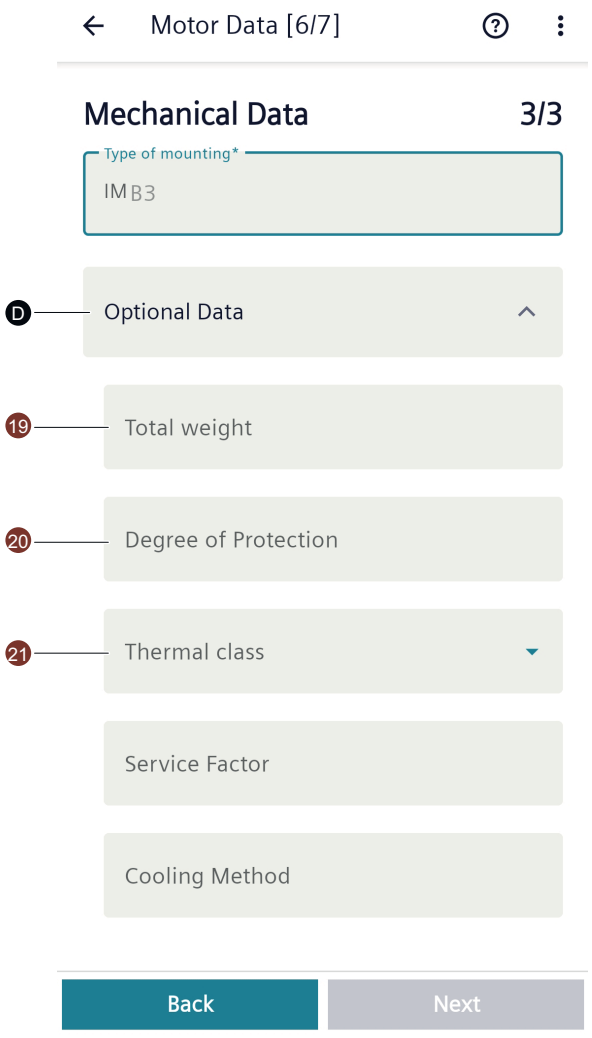


Note

Shaft height

If the shaft height is not stated on the rating plate, you must measure the shaft height.

(C) Via the button you can display additional fields for mechanical "Optional Data".



Note

Service factor and cooling method

- Service factor according to NEMA MG-1 (if applicable)
- Cooling method according to IEC60034-6

(D) Via the button you can display additional fields for information on the "Bearing".

2. Check the data entered and confirm with the "Next" button.
3. Continue to commission the equipment.

6.2.4.8 Asset Info (Motor Monitoring) - Step 7/7

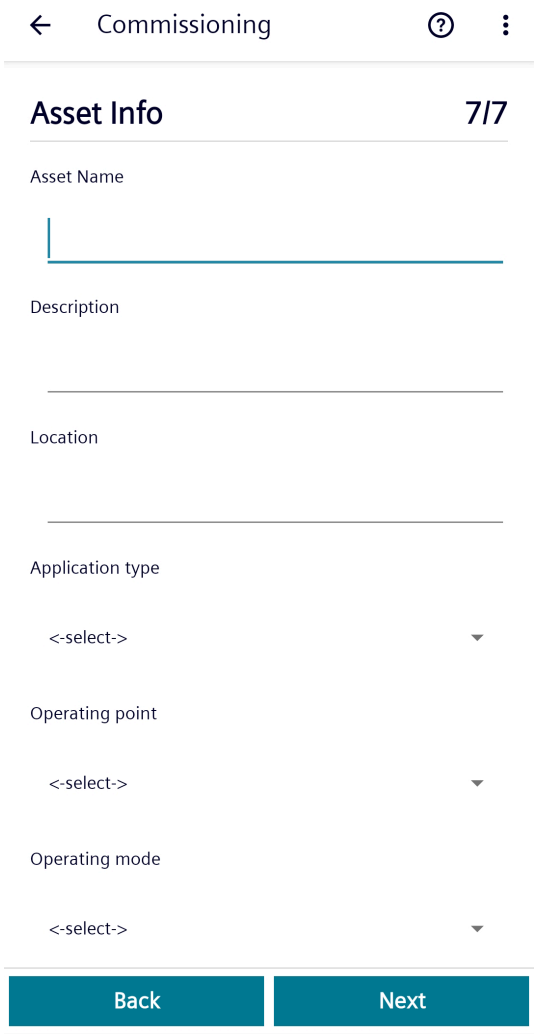
Note
Settings cannot be modified subsequently

Select the following settings carefully. There is no way of modifying the settings after selection.

If you choose an incorrect setting, repeat the onboarding process.

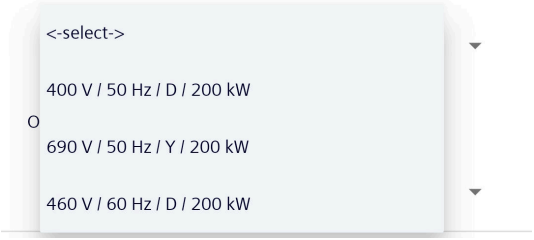
Procedure

1. Enter the asset data. The following fields are mandatory fields:
   - MindSphere asset display name:
     Choose an asset name to which the asset can be uniquely assigned in "SIDRIVE IQ Fleet".
     Avoid using asset names that have already been used.
   - Asset description
   - Location



2. Select the application type.

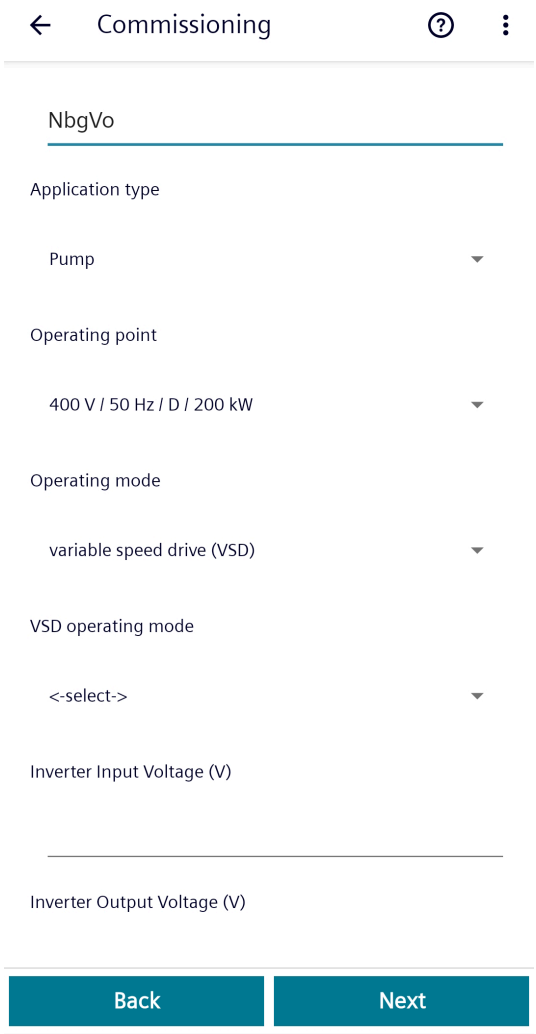
3. Select the operating point. If there are multiple parameter sets in the rating data, select the parameter set that matches the connection conditions of your motor.



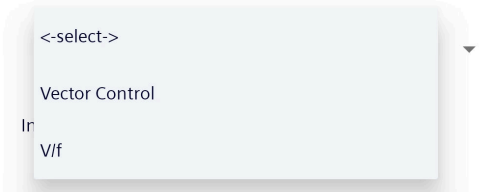
4. Select one of the following operating modes:
   – Line operation - direct-on-line operation (DOL)
   – Converter operation - variable speed drive operation (VSD)

When selecting "direct-on-line operation (DOL)", you can immediately continue with step 7.
When selecting "variable speed drive (VSD)", the following additional fields are displayed.

– VSD operating mode
– Inverter input voltage (V)
– Inverter output voltage (V)



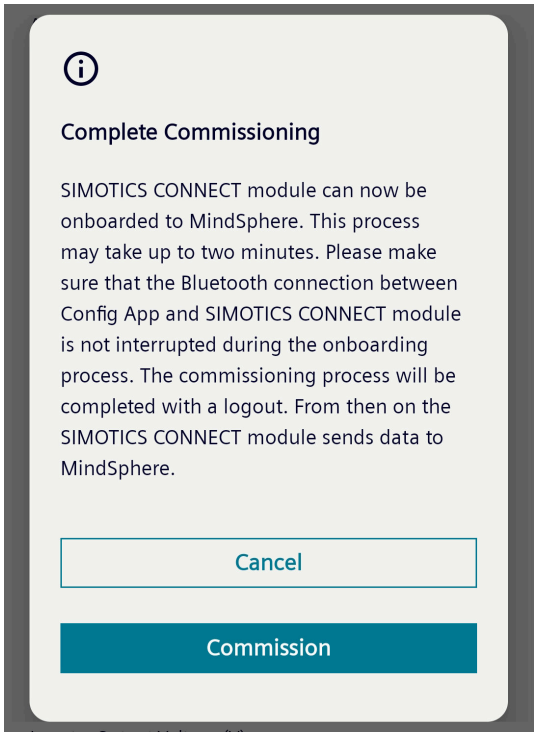
5. When selecting "variable speed drive (VSD)", select one of the following control modes.
   – Vector control
   – U/f control



   If you are not certain when making the selection, or if the converter is not operated in one of the specified control modes, then select U/f.

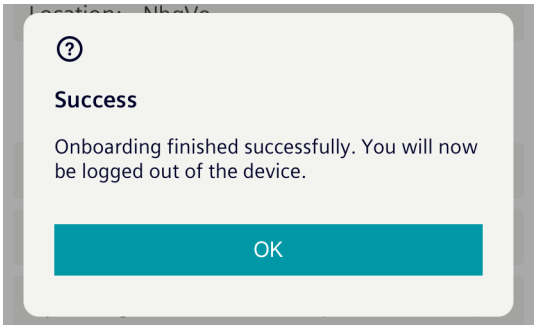
6. Enter the inverter input voltage (V). The inverter output voltage (V) is determined when entering the inverter input voltage.

7. Exit step 7/7 using the "Next" button.
8. Finish commissioning with the "Commission" button.



Result

The further onboarding process is performed automatically. This process takes approximately one minute. Successful completion of the onboarding process is confirmed.



After commissioning has been completed, you are automatically logged off from the device and the Bluetooth connection is disconnected.

The connectivity module starts to record data and transfer data in the preselected intervals.

After the first measurements, a first connection is automatically established to "SIDRIVE IQ Fleet", which means that you can see the actual connection status shortly after commissioning.

The connectivity module automatically starts the calibration procedure on the motor. It requires 10 measuring cycles with the motor in the "ON" state and 10 measuring cycles with

the motor in the "OFF" state. Precise data is displayed in "SIDRIVE IQ Fleet" as an "operating mode" signal only after the calibration process:

- Value "0": Motor off (OFF), sensor calibrated
- Value "1": Motor status not defined, sensor not calibrated
- Value "3": Motor on (ON), sensor calibrated

No additional measures are required to support calibration.

Note

During onboarding, the Smart Provisioning mechanism provides the "SIDRIVE IQ Fleet" application with the resources required for the new asset. Via MindSphere, Smart Provisioning issues an email regarding the packages available on your tenant.

If it involves the first asset in the tenant, then the resources for "SIDRIVE IQ Fleet Package Basic" are provided, and you receive an appropriate email.

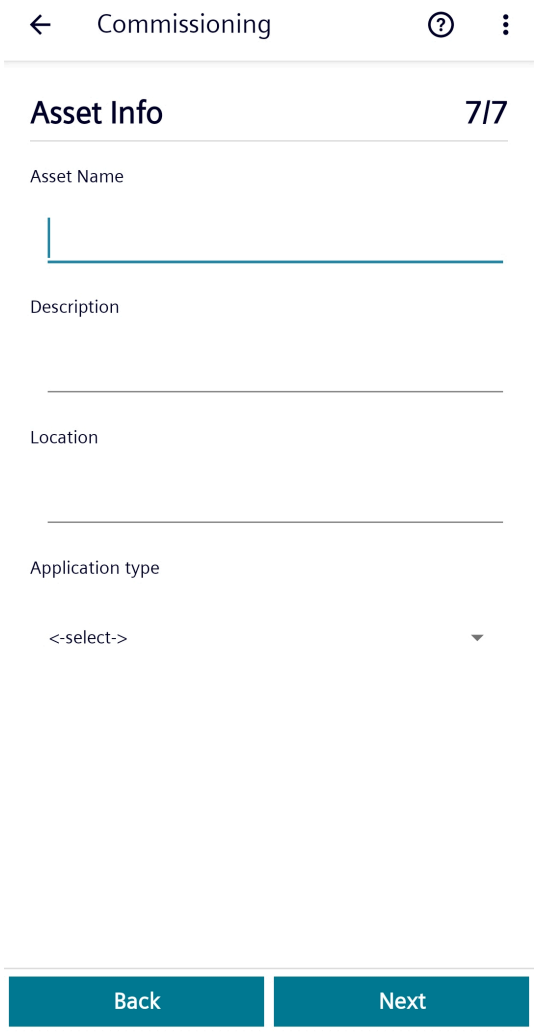
Every onboarding initiates the provision of resources for "SIDRIVE IQ Fleet Package 1 Asset", and you receive a corresponding email.

These provisions do not result in any additional costs for your account. All costs are already included in the SIDRIVE IQ Fleet Asset package that you purchased.

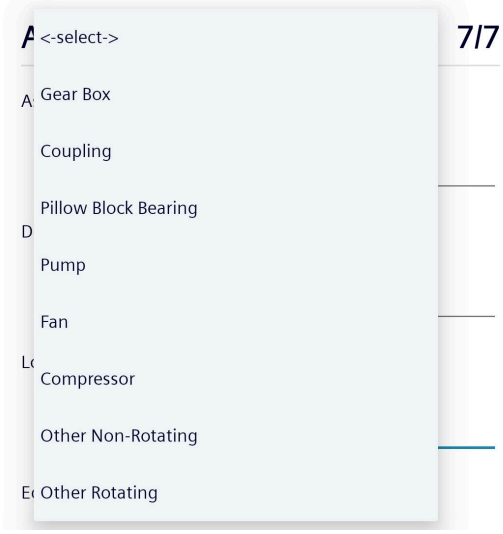
6.2.4.9 Asset Info (Generic Vibration monitoring) - Step 7/7

Procedure

1. Enter the asset data. The following fields are mandatory fields:
   - MindSphere asset display name:
     Choose an asset name to which the asset can be uniquely assigned in "SIDRIVE IQ Fleet".
     Avoid using asset names that have already been used.
   - Asset description
   - Location

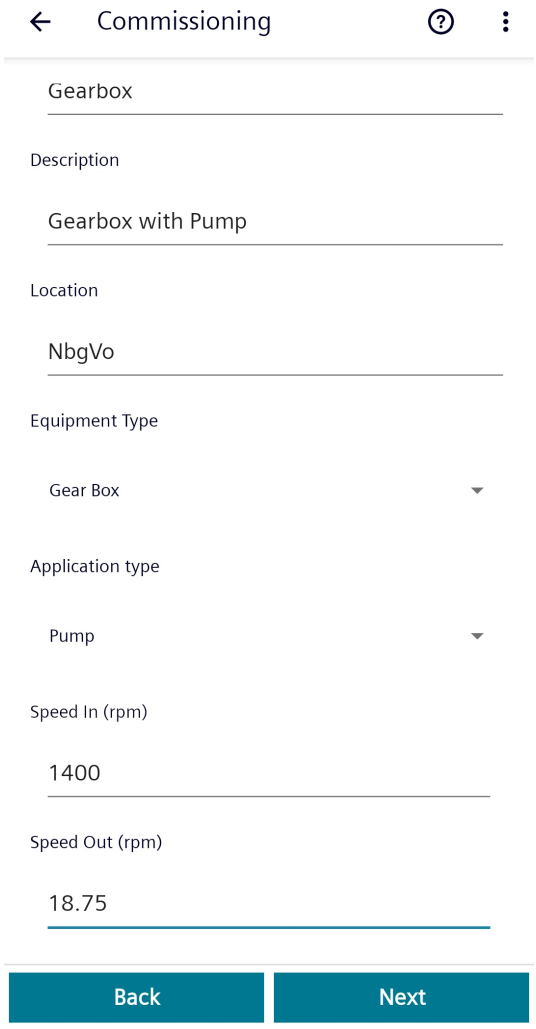


2. Select the device type.

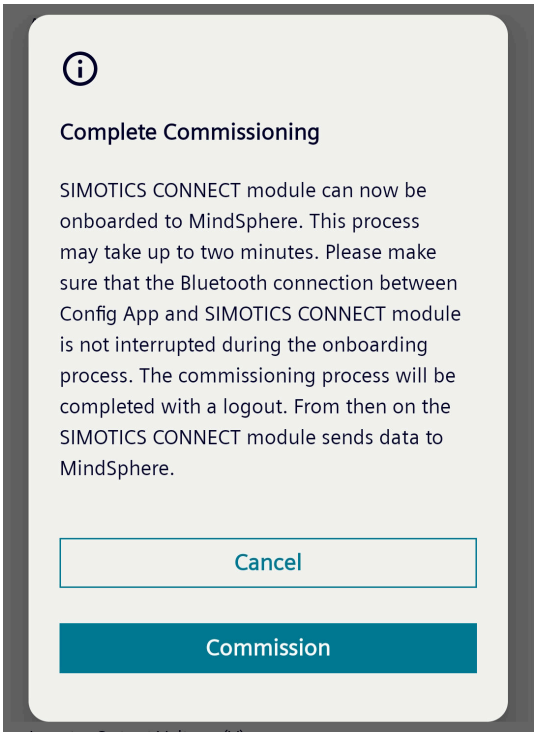


3. Select the application type.

4. Enter the input speed and the output speed.
   Fields Speed In (rpm) and Speed Out (rpm) are only displayed for a Gearbox device type.

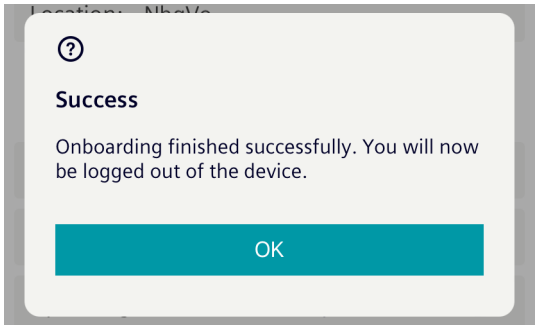


5. Exit step 7/7 using the "Next" button.
6. Finish commissioning with the "Commission" button.



Result

The further onboarding process is performed automatically. This process takes approximately one minute. Successful completion of the onboarding process is confirmed.



After commissioning has been completed, you are automatically logged off from the device and the Bluetooth connection is disconnected.

The connectivity module starts to record data and transfer data in the preselected intervals.

After the first measurements, a first connection is automatically established to "SIDRIVE IQ Fleet", which means that you can see the actual connection status shortly after commissioning.

Note

During onboarding, the Smart Provisioning mechanism provides the "SIDRIVE IQ Fleet" application with the resources required for the new asset. Via MindSphere, Smart Provisioning issues an email regarding the packages available on your tenant.

If it involves the first asset in the tenant, then the resources for "SIDRIVE IQ Fleet Package Basic" are provided, and you receive an appropriate email.

Every onboarding initiates the provision of resources for "SIDRIVE IQ Fleet Package 1 Asset", and you receive a corresponding email.

These provisions do not result in any additional costs for your account. All costs are already included in the SIDRIVE IQ Fleet Asset package that you purchased.

6.3 Commissioning with iOS

6.3.1 Installing the "SIDRIVE IQ Config" application

1. Open the App Store (https://apps.apple.com/de/app/sidrive-iq-config/id1578297088).
2. Install the Siemens "SIDRIVE IQ Config" application.

   After the first start of the application, the terms of use are displayed once. Take note of them and click "Accept" to confirm.
   The "SIDRIVE IQ Config" application requires the following access authorizations:

   – Bluetooth interface
   – Localization data (to determine the asset location)
     Note: not available in every country
   – Camera (to scan the motor data matrix code)
   – Memory (to update the firmware of the connectivity module (Page 134))

SIDRIVE IQ Config is available in Chinese, German, English, French, Italian, Spanish, Turkish and Czech. The language is automatically preset depending on the system language of your mobile device.

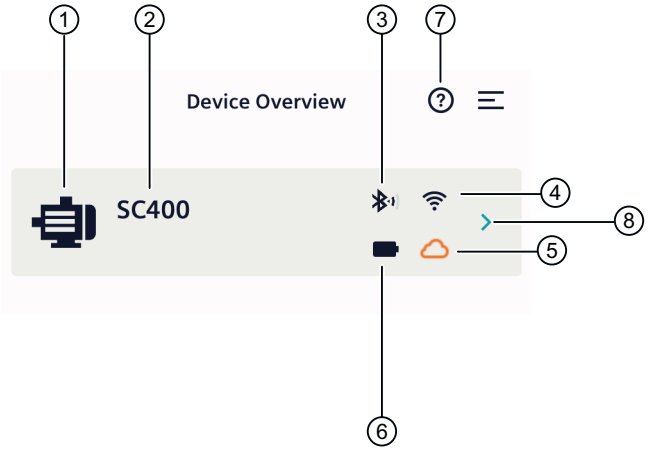
6.3.2 Establishing the connection to the connectivity module

Start the "SIDRIVE IQ Config" application on your mobile device. The application automatically activates the Bluetooth interface of your mobile device, and shows active connectivity modules in a range of approximately 10 m. The BLE name (=Bluetooth name of the device) set in the factory is "SC400". You can change the name at a later point in time.

Use the "Identify" function to check that you are connected with the required connectivity module (Page 118).

"Device overview" page

When the "SIDRIVE IQ Config" application starts, by default, you see a list of all of the currently visible assets on the "Device overview" page. You can also display all of the assets visible in the history. A list entry contains the information about an asset. The following diagram explains the pictograms in a list entry.



① To identify an asset, press the motor icon (LED of the connectivity module flashes)

Note: Identification is not possible if firmware version < 0.6.0 is installed. A message to that effect is displayed requesting you to update the firmware.

② BLE name of the currently selected connectivity module

③ Bluetooth interface signal strength display

④ Wi-Fi configuration status of the connectivity module:

- "Black" status: Wi-Fi configured and operating correctly
- "Red" status: Wi-Fi not configured or has a fault

⑤ Connection status of the connectivity module to the MindSphere application "SIDRIVE IQ Fleet" (onboarding status)

- "Black" status: Connected
- "Yellow" status: No Onboarding yet
- "Red" status: Error during upload

⑥ Status of the connectivity module battery:

- "Black" status: sufficient charge
- "Orange" status: 40% or less *)
- "Red" status: 20% or less

*) **Note:** Replace the battery in good time. If disturbances occur in data transmission, replace the batteries (Page 200).

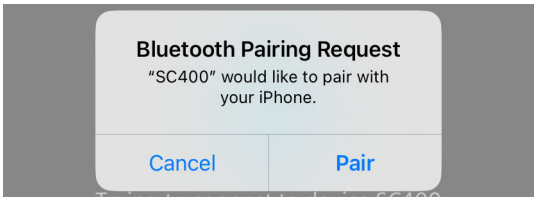
⑦ Button for opening help

⑧ Button for establishing a connection to the connectivity module

If necessary, confirm a pairing request to establish the Bluetooth connection.

Procedure

1. Open the "SIDRIVE IQ Config" application.
2. Select an asset from the list.
3. Tap the > button to establish a connection.
4. Confirm the pairing request (Bluetooth) with the "Pair" button.



If the firmware version installed on your connectivity module is < 0.6.0.0, you will need to enter the Bluetooth pairing PIN for the Bluetooth pairing between the connectivity module and "SIDRIVE IQ Config".
For Bluetooth pairing with PIN input, follow the instructions in the following section.

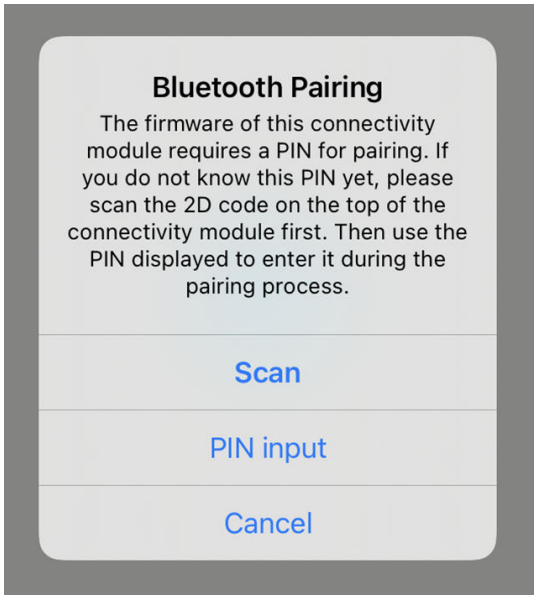
Note

If an older firmware version is installed on your connectivity module, we recommend performing a firmware update.

Bluetooth pairing with PIN input- Procedure

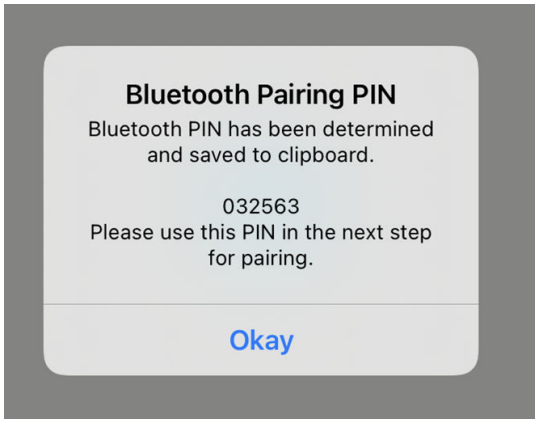
Proceed as follows for Bluetooth pairing with PIN input:

1. With the "Scan" button, you find out the required PIN.
   If you already have the PIN, you can skip the "Scan" step. Tap on the "PIN input" button. In this case, you go directly to 4.

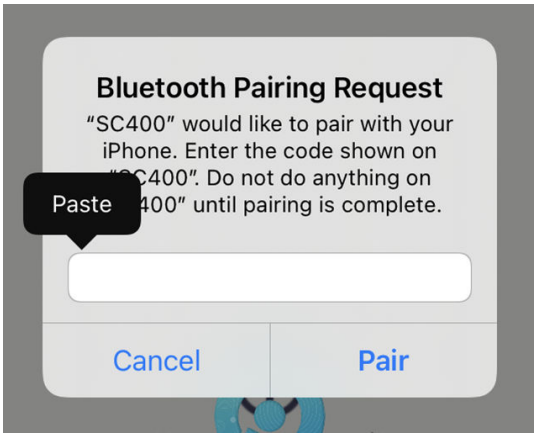


2. To scan, hold the camera of your mobile device over the 2D code on the left at the top of the connectivity module.

3. If scanning was successful, "SIDRIVE IQ Config" displays the Bluetooth pairing PIN and copies it to the clipboard.



4. Enter the Bluetooth pairing PIN or insert the PIN from the clipboard.



5. Tap the "Pair" button to complete pairing.

6.3.3 Log in with the connectivity module

After a connection has been established from the "SIDRIVE IQ Config" application to the connectivity module, a window is displayed where you can enter the login data for the connectivity module.

Factory settings for logging in

The factory settings for logging in are as follows:

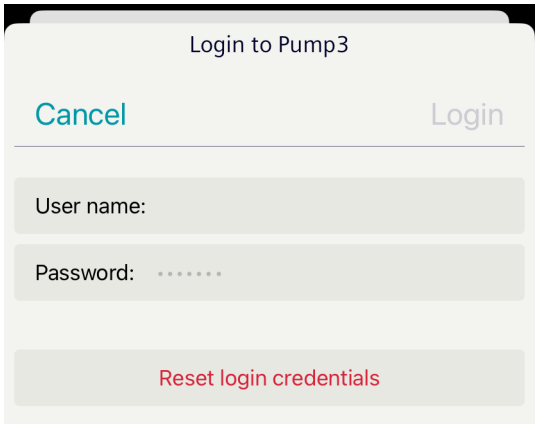
- User name: "admin"
- Password: Comprising the last 6 digits of the serial number on the rating plate of the connectivity module.
  Caution: Not the serial number of the motor!

Note

Change the user name and password after logging on for the first time for protection against unauthorized access to the connectivity module. In the "Device Credentials" step of the commissioning wizard, you are requested to change the login data.

Procedure

1. The view to enter the login data for the connectivity module is displayed once the Bluetooth pairing has been successfully established.
   Enter the user name and password. Make sure that no blank is inserted at the end of your entry.



2. Confirm your entry with the "Login" button.
   The data are transferred. The dashboard view is displayed. Here, you can fully access all connectivity module functions.
3. After 5 unsuccessful attempts with an invalid user name or an invalid password, for security reasons, the login is locked for 3 minutes. You can then attempt to log in again.

Note

If you have forgotten your password, you can reset the user name and the password for the connectivity module back to the factory settings using function "Reset user data".

See also

Basic functions (iOS) (Page 141)

6.3.4 Guided commissioning

6.3.4.1 Starting the commissioning wizard

The commissioning wizard guides you step by step through the commissioning of the connectivity module.

Note

Commissioning wizard - Help

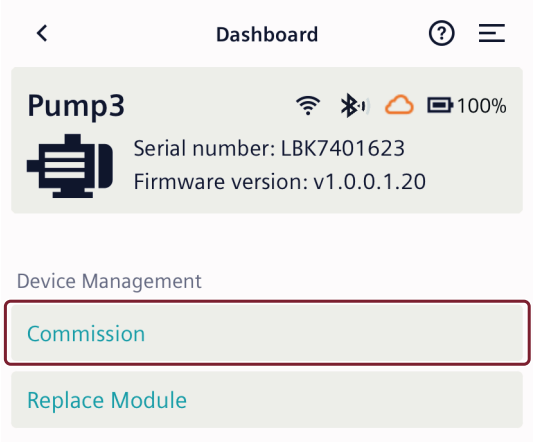
For each commissioning step, you can call help with the ? icon.

Requirement

You are logged in to the connectivity module via the "SIDRIVE IQ Config" application.

Procedure

1. Start the commissioning wizard with the "Commission" button.

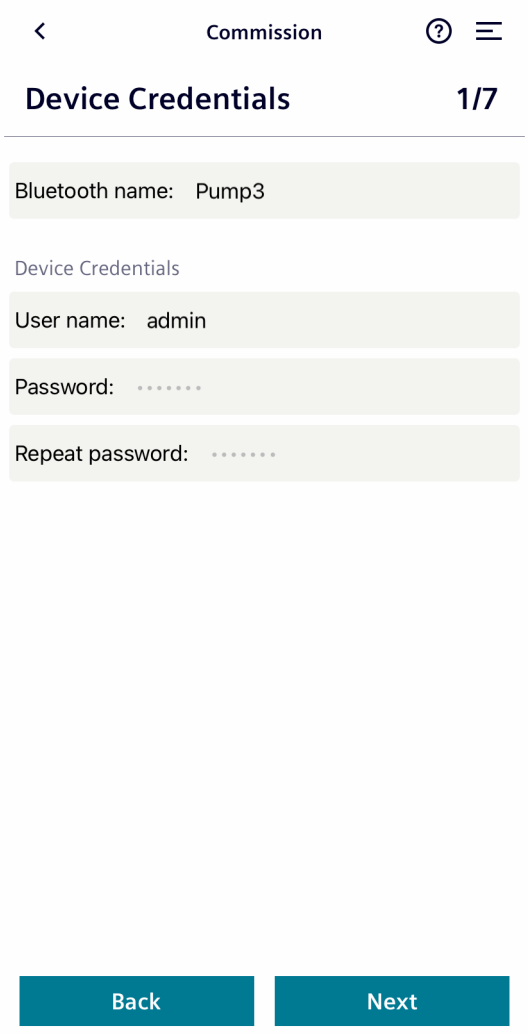


6.3.4.2 Device Credentials - Step 1/7

Change the login data for protection against unauthorized access to the connectivity module.

Procedure

1. Change the Bluetooth name (BLE name). The BLE name is used for simple identification of the device via Bluetooth. The length of the name is limited to 6 characters. The following characters are permitted: a-z, A-Z, 0-9, -, _.



2. Change the user names. The user name must not comprise more than 21 characters.
3. Change the password in the "Password" field. The password must meet the following requirements:
   - Minimum of 6 characters
   - Maximum 15 characters
   - At least one uppercase letter (A-Z)
   - At least one lowercase letter (a-z)
   - At least one numeral (0-9)
   - The following special characters are permitted: Hyphens (-) and underscores (_) are allowed.

4. Enter the new password again in the "Repeat password" field.
5. Move on to the next step with the "Next" button.

6.3.4.3 Wi-Fi - Step 2/7

Connect the connectivity module to the Wi-Fi network.

Supported Wi-Fi networks

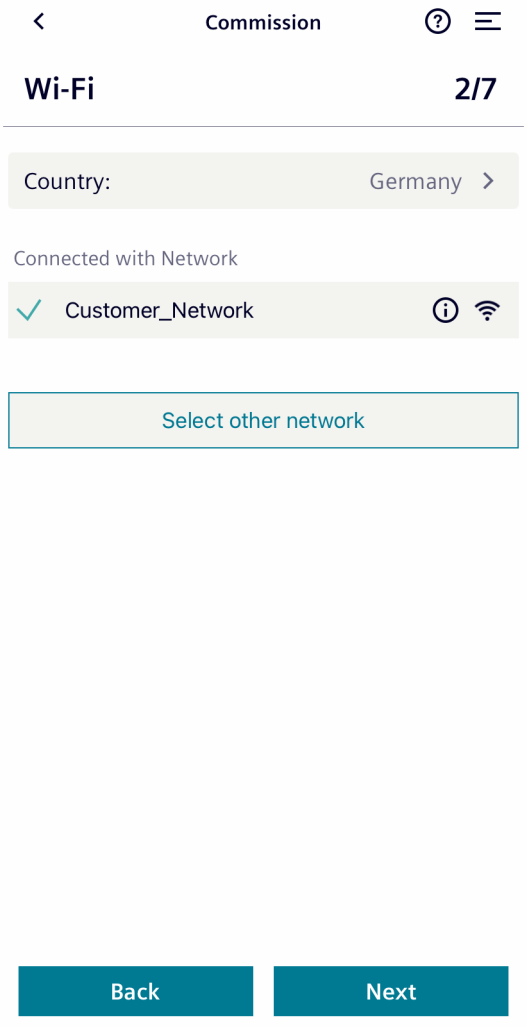
The current version of the SIMOTICS CONNECT 400 connectivity module does **not** support proxy server configuration.

The connectivity module encrypts your data according to security standard WPA2. For data transfer, the connectivity module supports Wi-Fi connections with a frequency of 2.4 GHz and the Wi-Fi standard 802.11b/g/n. Wi-Fi authentication protocols according to IEEE 802.1X are not supported.

Procedure

1. The country code is determined automatically. Check that it is correct and modify the country code, if necessary.
2. With the "Select other network" button, you can display the visible Wi-Fi networks.
3. Select the required Wi-Fi network from the list of visible networks.
4. Enter the Wi-Fi password. The Wi-Fi password must not exceed a maximum length of 32 characters.

5. Confirm your entry with the "Connect" button. The connection is established.



6. Move on to the next step with the "Next" button.

6.3.4.4 Firmware - Step 3/7

To keep the firmware of the connectivity module up to date and to implement new functions, firmware updates are regularly made available. The firmware is provided by Siemens as a file in ".bin" format.

Note

You will find the latest firmware version at Siemens Industry Online Support (SIOS) (https://support.industry.siemens.com/cs/de/de/ps/25522/dl). When you log on to SIOS, you can include the URL in your list of Favorites and be informed about available firmware updates in a newsletter.

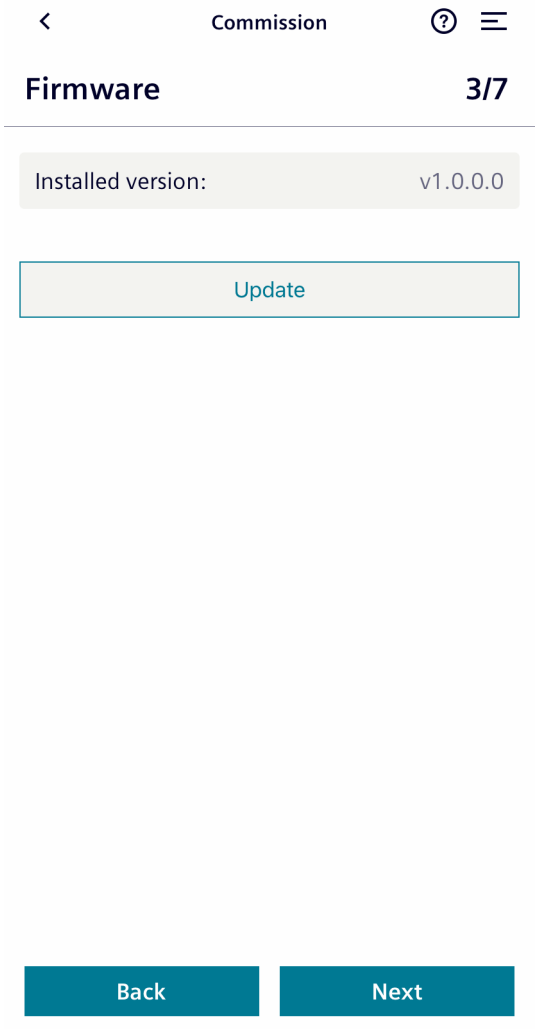
From firmware version 0.6.0.0, updates can be provided via MindSphere and installed automatically. Activate this function after commissioning in "SIDRIVE IQ Fleet".

Requirements

- On your mobile device, allow access the "SIDRIVE IQ Config" application memory.
- The connectivity module must be located in the same Wi-Fi network as is presently being used by the mobile device.
- The Wi-Fi network allows communication between the participants, i.e. between the connectivity module and the mobile device.
- Load the latest firmware version onto your mobile device.

Procedure

1. Update the firmware by clicking on the "Update" button, and then proceed as described below.
   If you do not want to update the firmware, move on to the next step with the "Next" button.



2. Select the appropriate "*.bin" file. Downloading starts immediately upon selection. During downloading, a progress bar is displayed. Wait until downloading is complete.
   Result:
   After the firmware file has been downloaded, a security check is performed and the Bluetooth connection to the mobile device is reset.
   The firmware is then updated. This process takes approximately 1 to 2 minutes. During this time, the LED on the front of the connectivity module first flashes slowly – and then faster. The LED goes dark after the firmware has been updated. The connectivity module automatically restarts after the firmware has been successfully updated.
3. Log on again after the connectivity module has restarted and restart the commissioning wizard. If you restart the commissioning wizard within five minutes of disconnecting the Bluetooth connection, commissioning will be resumed at Step 4/7 - Intervals. If the Bluetooth connection is disconnected for longer than 5 minutes, start commissioning at Step 1/7 - Device Credentials.

6.3.4.5 Intervals - Step 4/7

In this step, you can define the intervals for measurements and data transfers. The remaining battery life is recalculated based on your entry.

Note

Calculated battery life

The calculated battery life is a statistical value. The actual remaining battery life may differ depending on temperature influences or the connection quality of the Wi-Fi network.

Note

Effects that influence the battery life

Shorter intervals result in a shorter battery life.

The following intervals are preset in the factory:

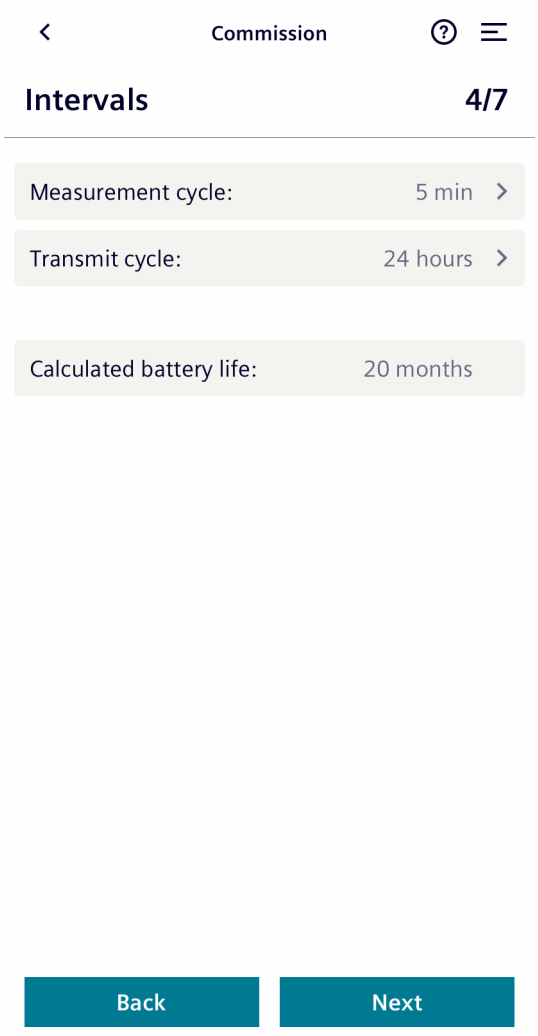
- 5 minutes - interval for measuring temperature, vibration, rotational frequency, operating status
  You can change these settings within a specified range.
- 10 minutes - interval to calculate speed, torque and energy consumption
  This interval cannot be set, it is dependent on the selected measurement interval. The calculation interval is three times as long, i.e. 3 minutes, for a measurement interval of 1 minute. The calculation interval is twice as long for measurement intervals 2 and 5 minutes. The calculation interval is the same length for all other measurement intervals.
- 24 hours - interval for transmission of the stored data to "SIDRIVE IQ Fleet"
  You can modify these settings within a preset range of 1 to 48 hours.

Note

To calculate the bearing status, the measuring cycle must be set to ≥ 5 minutes.

Procedure

1. Change the measurement interval. The "Calculated battery life" is updated.
2. Change the synchronization interval. The "Calculated battery life" is updated.



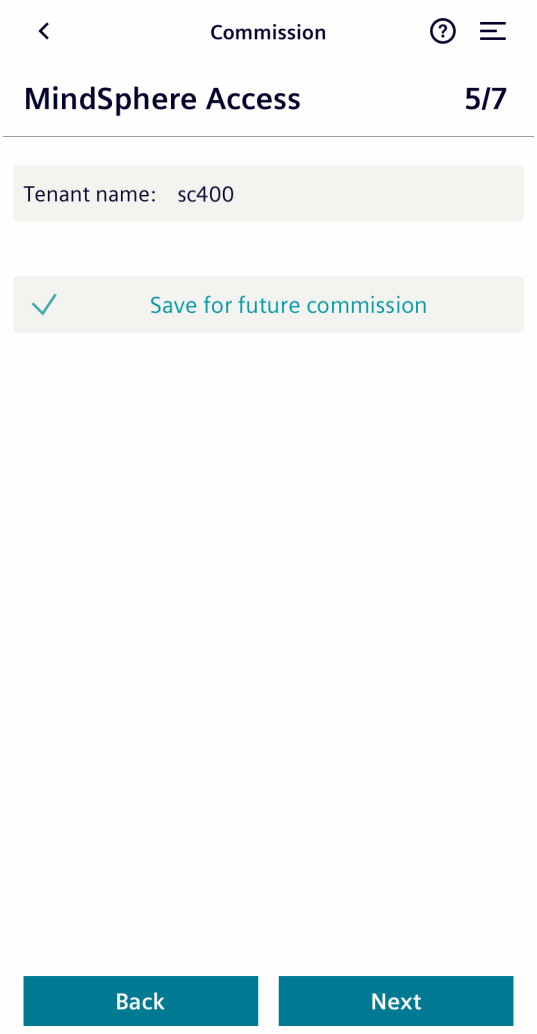
3. Move on to the next step with the "Next" button.

6.3.4.6 MindSphere Access - Step 5/7

In the following step, you establish the MindSphere access for onboarding. The process applied from connecting and registering the connectivity module through to the MindSphere application "SIDRIVE IQ Fleet", including all settings, is called onboarding.

Procedure

1. Enter the MindSphere tenant name in the "Tenant name" field. The length is limited to 8 characters. If you have received a special URL from Siemens for onboarding, enter it in the "Tenant name" field. Start entering the URL with "https://".

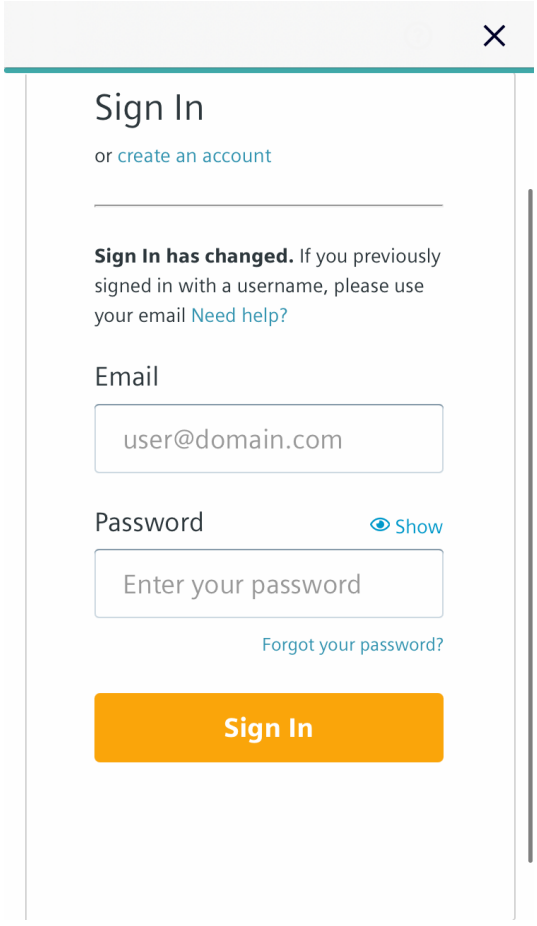


2. With the option "Save for future commissioning", you can save the tenant name you entered or the URL for further commissioning operations. Select this option if it is required.
3. With the "Next" button, the logon dialog box for MindSphere is displayed.

4. For onboarding, log in using your MindSphere login data.

Note

It is possible that the Recognize text / Word suggestions function of your mobile device enters a blank at the end of the email address that is entered. Delete this blank before logging in.



5. Confirm your entry of the login data with the "Sign In" button.
   After successful logon, you go directly to Step 6 - Motor Details.

6.3.4.7 Motor Details - Step 6/7

To be able to use the functionality of the connectivity module optimally, SIMOTICS CONNECT 400 requires the correct assignment to the motor. With the serial number and the product article number, the electrical and mechanical characteristics of the motor are copied from its digital twin stored in the cloud and transferred into the connectivity module.

If the connectivity module is retrofitted or replaced with a replacement device, the serial number and the product article number of the motor must be reassigned. This operation

then updates the associated motor information. Only assign the connectivity module to the motor on which it is mounted.

Note

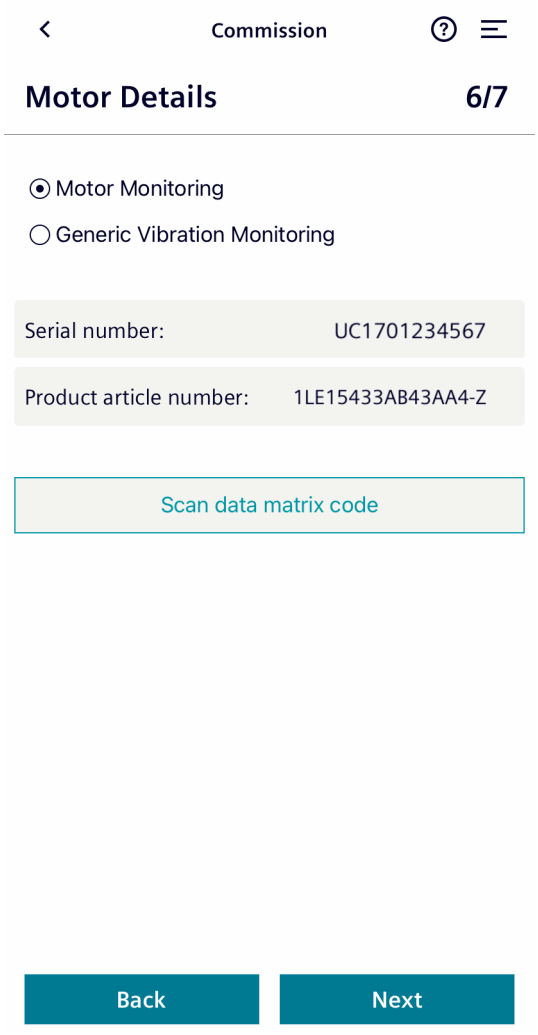
In addition to motor monitoring, from V1.0.2.0, "Generic Vibration monitoring" can be set. Using this function, additional components of the drive train can be monitored, for example, gearbox, coupling, pillow block bearing, pump, fan, compressor as well as other rotating and non-rotating parts.

Procedure

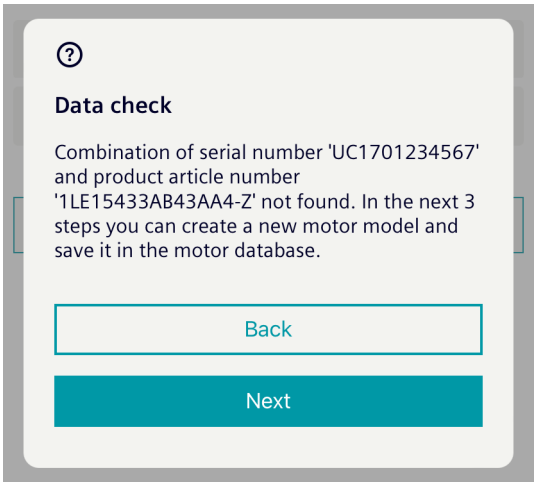
1. Select "Motor Monitoring" or "Generic Vibration monitoring". "Motor Monitoring" is selected in the following example.
2. Enter the serial number and the product article number. The following options are available:
   - **Manual entry of the serial number and the product article number**
     Enter the serial number and the product article number of the motor in the relevant fields.
   - **Scanning the data matrix code of the motor**
     If the motor is equipped with a scannable code, you can identify the motor to which you have local access. The scan reads the serial number and the product article number. Scan the data matrix code of the motor by tapping the "Scan data matrix code" button.

     Note

     Motor assignment by scanning the data matrix code is only possible if the Siemens motor has been provided with a 2D code.



3. For "Motor Monitoring", using the "Next" button you synchronize with the cloud. If the motor data set is present in the digital twin database, you go on to Step 7/7 - Asset Info.
   If there is no data set for your motor in the digital twin database, e.g. for motor models from before 2011 or for motors of other manufacturers, the following message is displayed:



Note

If you selected "Generic Vibration monitoring", then synchronization with the cloud does not take place. The values that were entered are used to identify the asset.

4. With the "Back" button, you can check the data that you entered and correct them if necessary.
   With the "Next" button, you call up the dialog box to create a new motor data set. This step is only relevant for "Motor Monitoring".
   If the motor is not found in the motor database by a combination of the serial number and the product article number, you will have to enter the motor data yourself and save them in the database. This applies both to Siemens motors and to motors of other manufacturers.
   Proceed as described below to create a new motor data set.

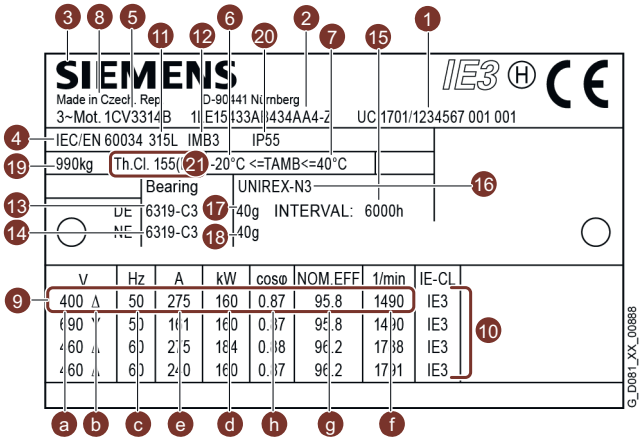
Procedure - Creating a new motor data set

Note

Settings cannot be modified subsequently

Select the following settings carefully. There is no way of modifying the settings after onboarding. A subsequent change can only be made by Siemens Service (Page 208).

Creating a new motor data set is explained using the following rating plate as example.


SIEMENS
IE3
Made in Czech. Rep.
D-90441 Nürnberg
3~Mot. 1CV3314B 1L E15 133A 434AA4-Z UC 1701/1234567 001 001
IEC/EN 60034 315L IMB3 IP55
990kg
Th.Cl. 155(F) -20°C <=TAMB<=40°C
Bearing
UNIREX-N3
DE 6319-C3 40g INTERVAL: 6000h
NE 6319-C3 40g
V Hz A kW cosφ NOM.EFF 1/min IE-CL
400 Δ 50 275 160 0.87 95.8 1490 IE3
690 Y 50 161 160 0.87 95.8 1490 IE3
460 Δ 60 275 184 0.88 96.2 1788 IE3
460 Δ 60 240 160 0.87 96.2 1791 IE3
G_D081_XX_00888
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
a
b
c
d
e
f
g
h

Proceed as follows to enter a new motor data set:

1. Enter the motor data. Depending on how complete the data entered are, you can analyze and monitor the data via the Insights Hub application "SIDRIVE IQ Fleet".
   The motor data are acquired in 3 steps:
   - General data
   - Electrical data
   - Mechanical data

   The "Next" button takes you to the next step in each case.

Note

Mandatory fields

The input fields marked "*" are mandatory fields.

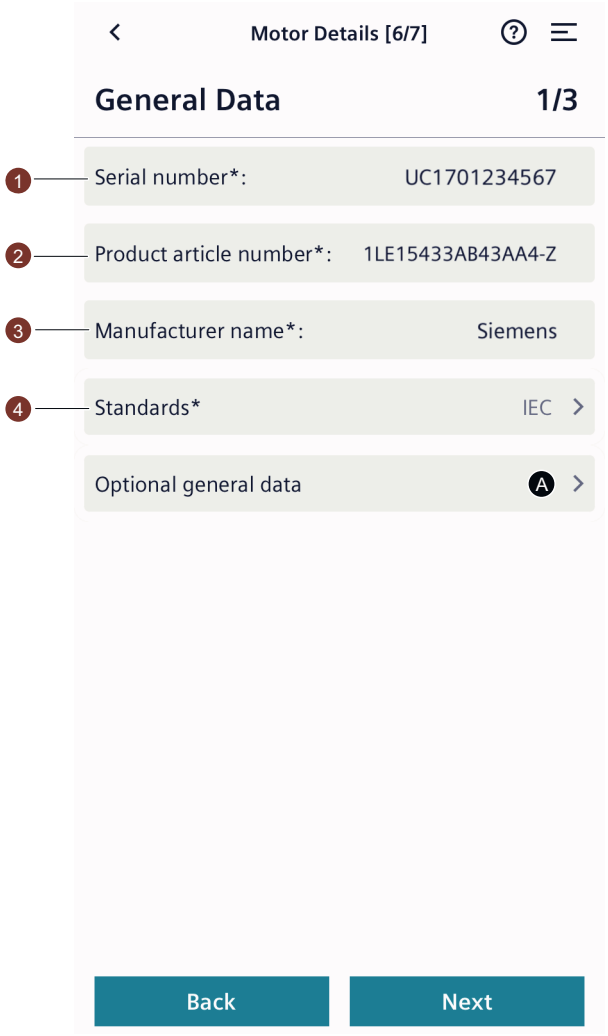
Note

Text color in input fields

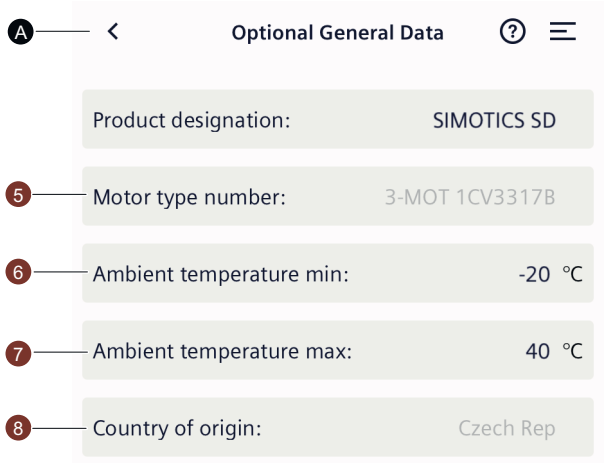
black = suggested values, can be overwritten

gray = expected input format

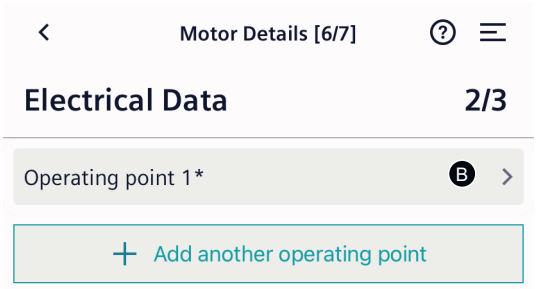
– **General data**



(A) Use the button > to switch to the "Optional General Data" dialog.



– **Electrical data**



You must enter the data for at least one operating point.

Note

Adding a new operating point

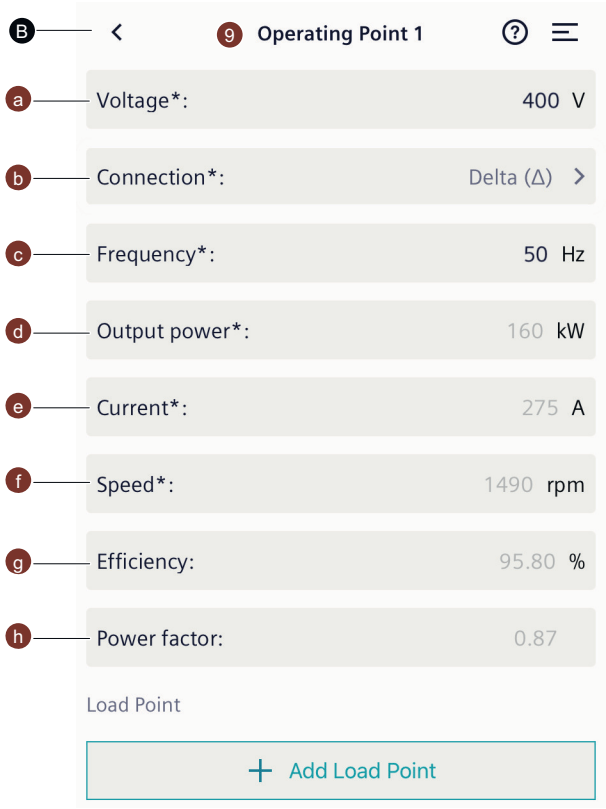
Here, you can enter additional data according to the rating plate that do not match the currently selected connection type. If you were onboarding the same machine again, but with a different connection type, then you do not have to re-enter the data.

Note

Deleting a new operating point

You can also delete added operating points that you do not need. To do this, select the corresponding operating point. The "Delete Operating Point" button is used to delete the operating point.
Operating point 1 is mandatory and can therefore not be deleted.

(B) Use the button > to switch to the "Operating Point 1" dialog.



The "+ Add Load Point" button takes you to the "Add New Load Point" selection.

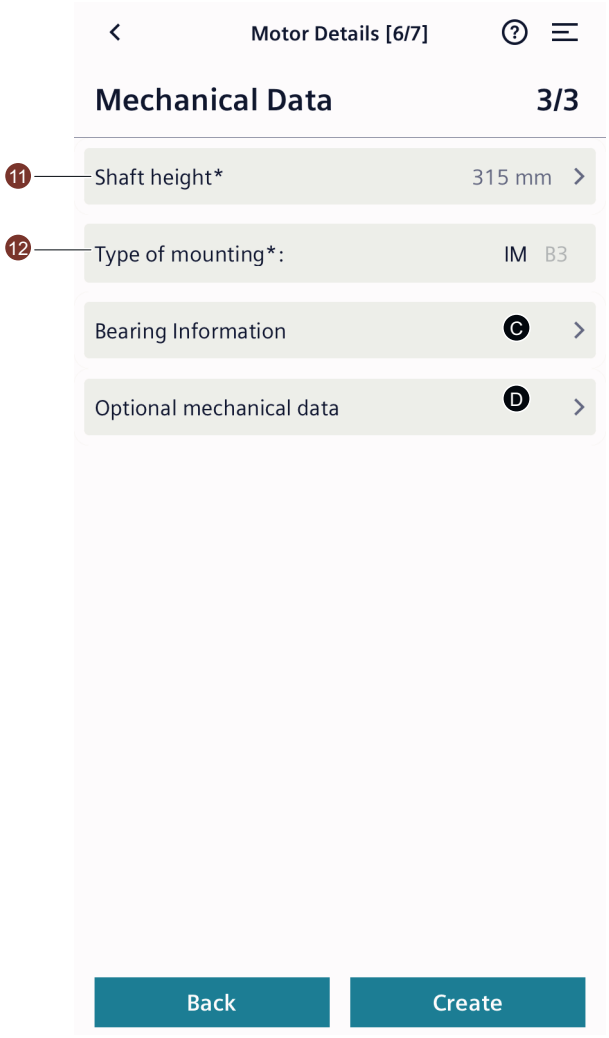
Note

Load point

To increase the accuracy of the calculated motor model, you can also enter additional data for one or more load points at the first operating point. The data can be found, for example, in the data sheet of the motor. The load data are defined for the following load points:

- No-load operation:
  For this, it is only necessary to enter the no-load current.
- 2/4, 3/4, 5/4 load:
  For this, besides current, you can also enter values for speed, efficiency, and power factor. You must enter at least one value for a selected load point. The more values you enter, the more accurate the calculation of the motor model.

– **Mechanical data**

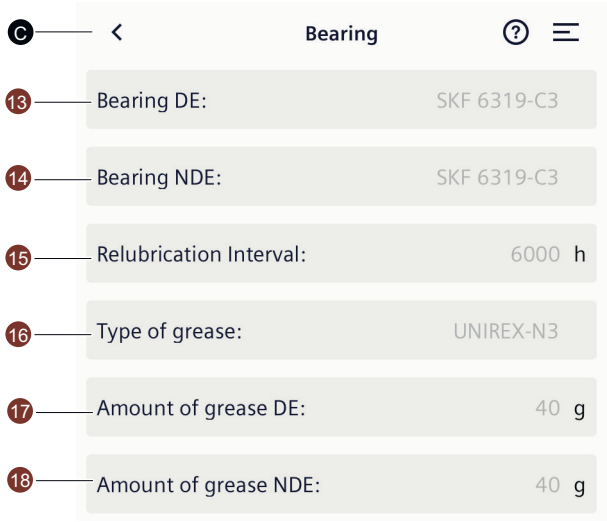


Note

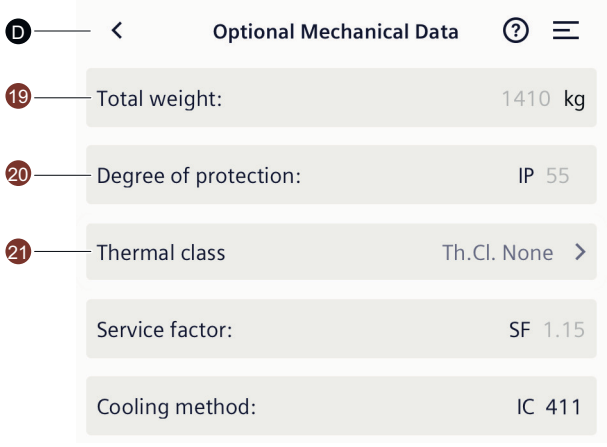
Shaft height

If the shaft height is not stated on the rating plate, you must measure the shaft height.

(C) Use the button > to switch to the "Bearing" dialog.



(D) Use the button > to switch to the "Optional Mechanical Data" dialog.



Note

Service factor and cooling method

- Service factor according to NEMA MG-1 (if applicable)
- Cooling method according to IEC60034-6

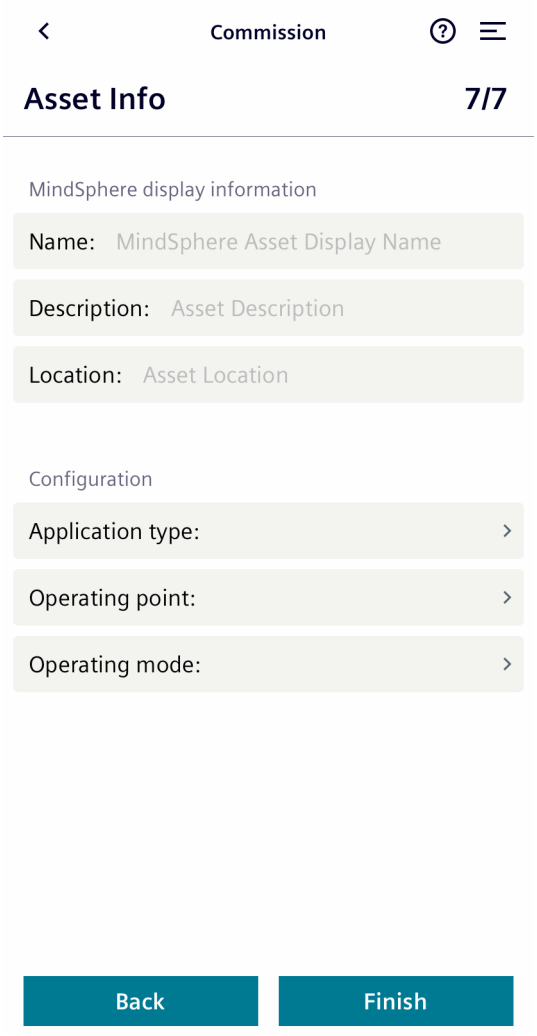
2. Check the data entered and confirm with the "Create" button.
3. Continue to commission the equipment.

6.3.4.8 Asset Info (Motor Monitoring) - Step 7/7

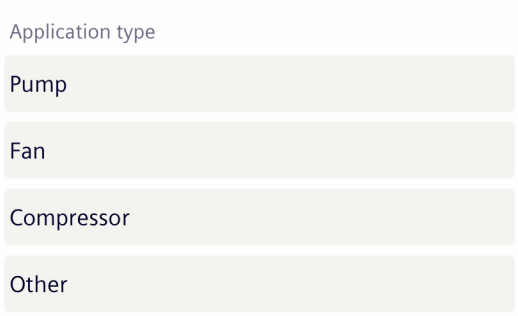
Enter the asset data in the last step of the commissioning wizard.

Procedure

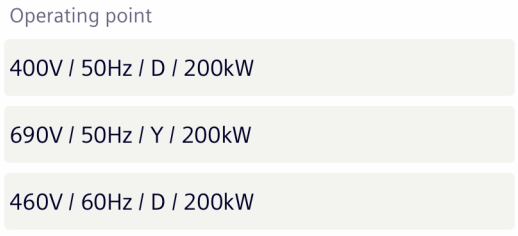
1. Enter the asset data. The following fields are mandatory fields:
   - MindSphere asset display name:
     Choose an asset name to which the asset can be uniquely assigned in SIDRIVE IQ Fleet.
     Avoid using asset names that have already been used.
   - Asset description
   - Location



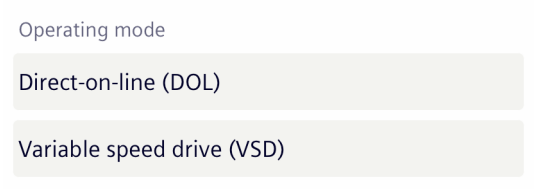
2. Select the application type.



3. Select the operating point. If there are multiple parameter sets in the rating data, select the parameter set that matches the connection conditions of your motor.

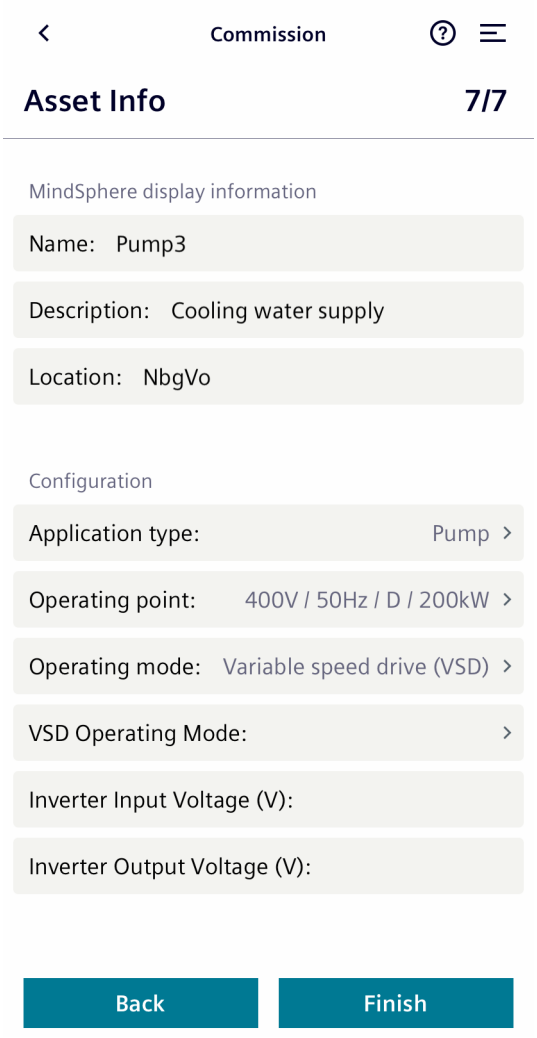


4. Select one of the following operating modes:
   – Line operation - direct-on-line operation (DOL)
   – Converter operation - variable speed drive operation (VSD)

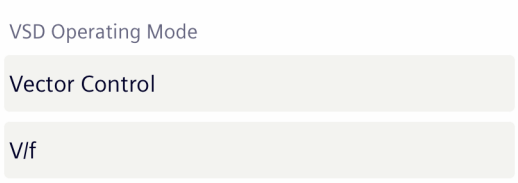


When selecting "direct-on-line operation (DOL)", you can immediately continue with step 7.
When selecting "variable speed drive (VSD)", the following additional fields are displayed.

– VSD operating mode
– Inverter input voltage (V)
– Inverter output voltage (V)



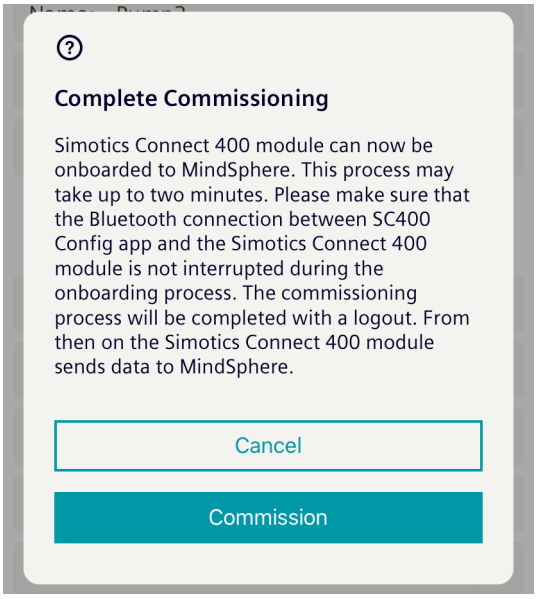
5. When selecting "variable speed drive (VSD)", select one of the following control modes.
   – Vector control
   – U/f control



   If you are not certain when making the selection, or if the converter is not operated in one of the specified control modes, then select U/f.

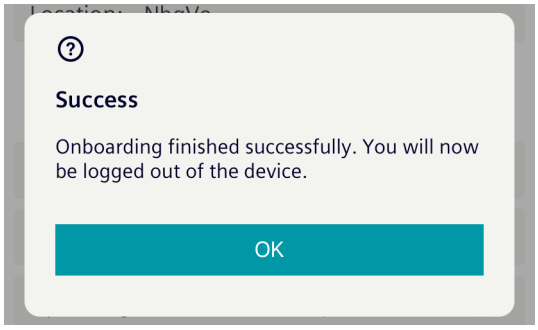
6. Enter the inverter input voltage (V). The inverter output voltage (V) is determined when entering the inverter input voltage.

7. Exit step 7/7 using the "Finish" button.
8. Finish commissioning with the "Commission" button.



Result

The further onboarding process is performed automatically. This process takes approximately one minute. Successful completion of the onboarding process is confirmed.



After commissioning has been completed, you are automatically logged off from the device and the Bluetooth connection is disconnected.

The connectivity module starts to record data and transfer data in the preselected intervals.

After the first measurements, a first connection is automatically established to SIDRIVE IQ Fleet, which means that you can see the actual connection status shortly after commissioning.

The connectivity module automatically starts the calibration procedure on the motor. It requires 10 measuring cycles with the motor in the "ON" state and 10 measuring cycles with

the motor in the "OFF" state. Precise data is displayed in SIDRIVE IQ Fleet as an "operating mode" signal only after the calibration process:

- Value "0": Motor off (OFF), sensor calibrated
- Value "1": Motor status not defined, sensor not calibrated
- Value "3": Motor on (ON), sensor calibrated

No additional measures are required to support calibration.

Note

During onboarding, the Smart Provisioning mechanism provides the "SIDRIVE IQ Fleet" application with the resources required for the new asset. Via MindSphere, Smart Provisioning issues an email regarding the packages available on your tenant.

If it involves the first asset in the tenant, then the resources for "SIDRIVE IQ Fleet Package Basic" are provided, and you receive an appropriate email.

Every onboarding initiates the provision of resources for "SIDRIVE IQ Fleet Package 1 Asset", and you receive a corresponding email.

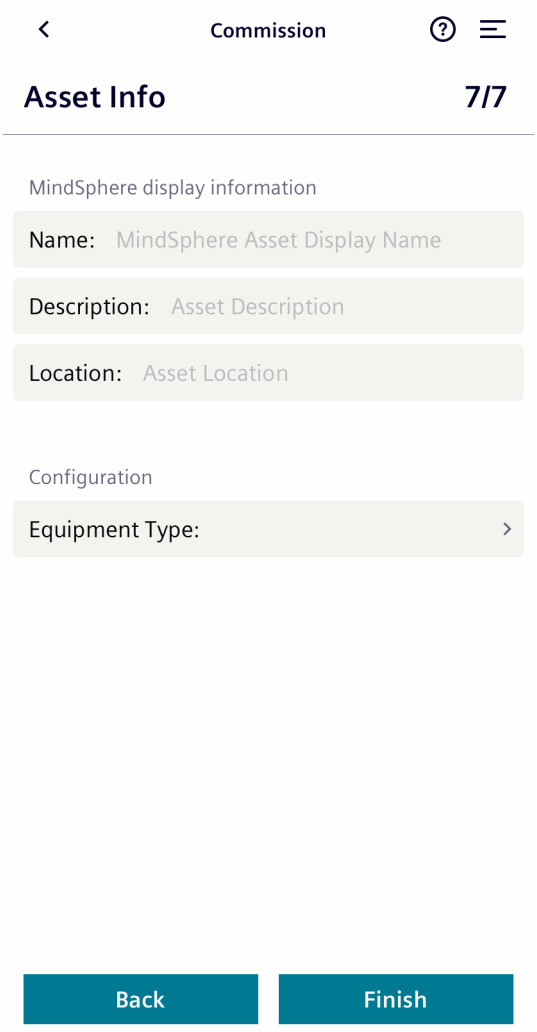
These provisions do not result in any additional costs for your account. All costs are already included in the SIDRIVE IQ Fleet Asset package that you purchased.

6.3.4.9 Asset Info (Generic Vibration monitoring) - Step 7/7

Enter the asset data in the last step of the commissioning wizard.

Procedure

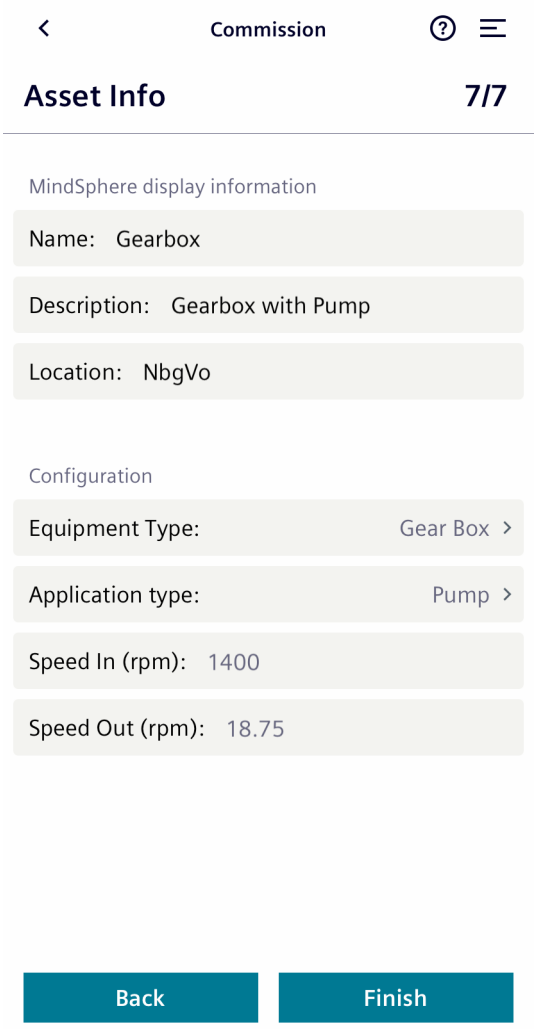
1. Enter the asset data. The following fields are mandatory fields:
   - MindSphere asset display name:
     Choose an asset name to which the asset can be uniquely assigned in SIDRIVE IQ Fleet.
     Avoid using asset names that have already been used.
   - Asset description
   - Location



2. Select the device type.

3. Select the application type.

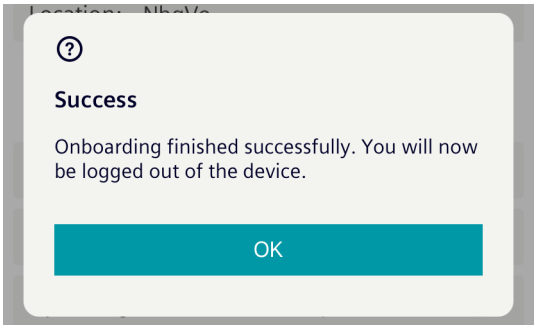
4. Enter the input speed and the output speed.
   Fields Speed In (rpm) and Speed Out (rpm) are only displayed for a Gearbox device type.



5. Exit step 7/7 using the "Finish" button.

Result

The further onboarding process is performed automatically. This process takes approximately one minute. Successful completion of the onboarding process is confirmed.



After commissioning has been completed, you are automatically logged off from the device and the Bluetooth connection is disconnected.

The connectivity module starts to record data and transfer data in the preselected intervals.

After the first measurements, a first connection is automatically established to SIDRIVE IQ Fleet, which means that you can see the actual connection status shortly after commissioning.

Note

During onboarding, the Smart Provisioning mechanism provides the "SIDRIVE IQ Fleet" application with the resources required for the new asset. Via MindSphere, Smart Provisioning issues an email regarding the packages available on your tenant.

If it involves the first asset in the tenant, then the resources for "SIDRIVE IQ Fleet Package Basic" are provided, and you receive an appropriate email.

Every onboarding initiates the provision of resources for "SIDRIVE IQ Fleet Package 1 Asset", and you receive a corresponding email.

These provisions do not result in any additional costs for your account. All costs are already included in the SIDRIVE IQ Fleet Asset package that you purchased.

Operation

7

You can find functions required for operation and maintenance in the dashboard view.
When commissioning (Page 37), depending on whether you selected "Motor Monitoring" or "Generic Vibration monitoring", the following icons are displayed in the dashboard view:

Motor Monitoring

Generic Vibration monitoring

Note:

For "Generic Vibration monitoring", functions Motor Data and Replace Motor are not shown.

7.1 Operation with Android

7.1.1 Offboarding process using the "SIDRIVE IQ Config" application

The process for detaching the connectivity module from the MindSphere application "SIDRIVE IQ Fleet" is called "offboarding". All onboarding information in the connectivity module is deleted.

If you onboarded the asset under "SIDRIVE IQ Fleet" Version 2.0.0 or higher, no further input is required. Under certain circumstances, e.g. if you carried out onboarding using an older software version, you may also have to specify the tenant under which the asset is registered.

The offboarding process permanently deletes all data stored in "SIDRIVE IQ Fleet", as well as the asset itself.

The asset instance used is released and is then available for onboarding a new asset under the relevant tenant.

After offboarding, transmission of measurement data to "SIDRIVE IQ Fleet" is no longer possible. To transfer data, start a new onboarding process.

Offboarding is the precondition for a new onboarding process to "SIDRIVE IQ Fleet".

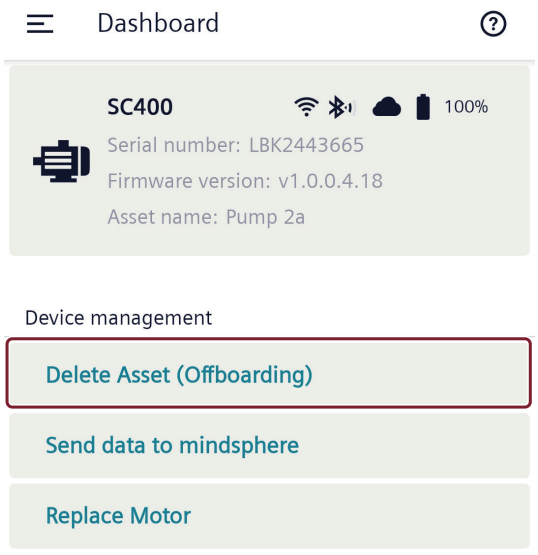
7.1.1.1 Initiating the offboarding process

Requirements

- You have logged onto the connectivity module (Page 40).
- The Wi-Fi connection has been set up.
- The SIMOTICS Connect 400 connectivity module is registered with IQFleet.
- You have the role "iqfleet.offboarding" in "SIDRIVE IQ Fleet". If you do not have this role, offboarding is canceled with an error message "Insufficient rights". Please contact your "SIDRIVE IQ Fleet" Tenant Administrator.

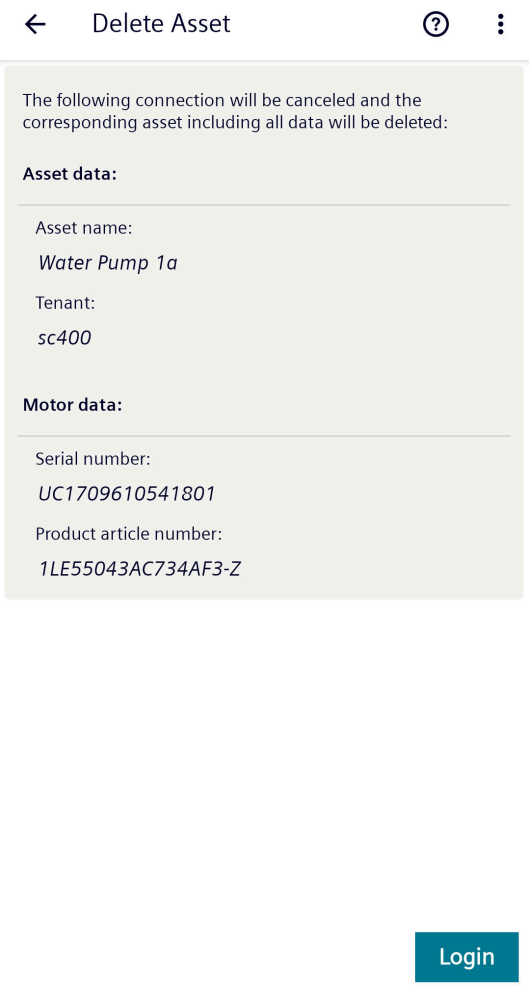
Procedure

1. Select "Delete asset (Offboarding)" in the dashboard view.



7.1.1.2 Logging in to MindSphere

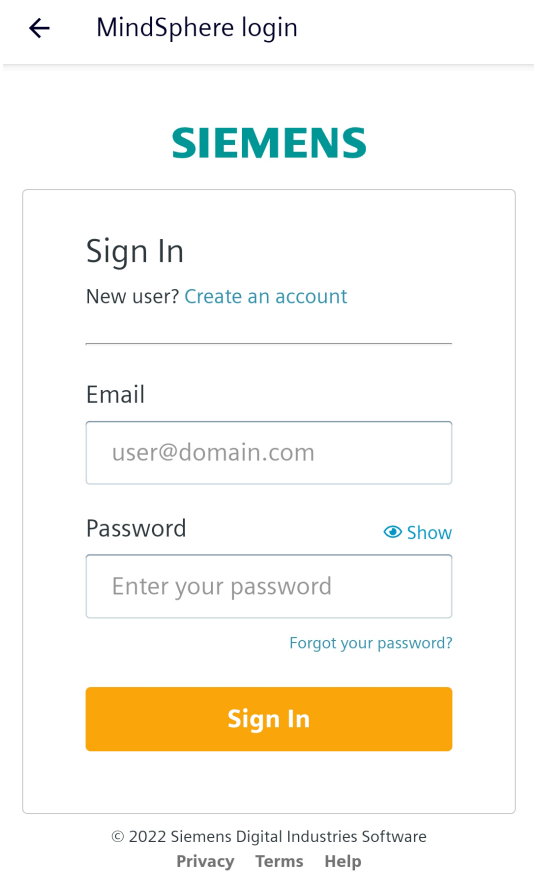
1. Start the login process via the "Login" button.



2. To execute offboarding, log in with your MindSphere login data.

Note

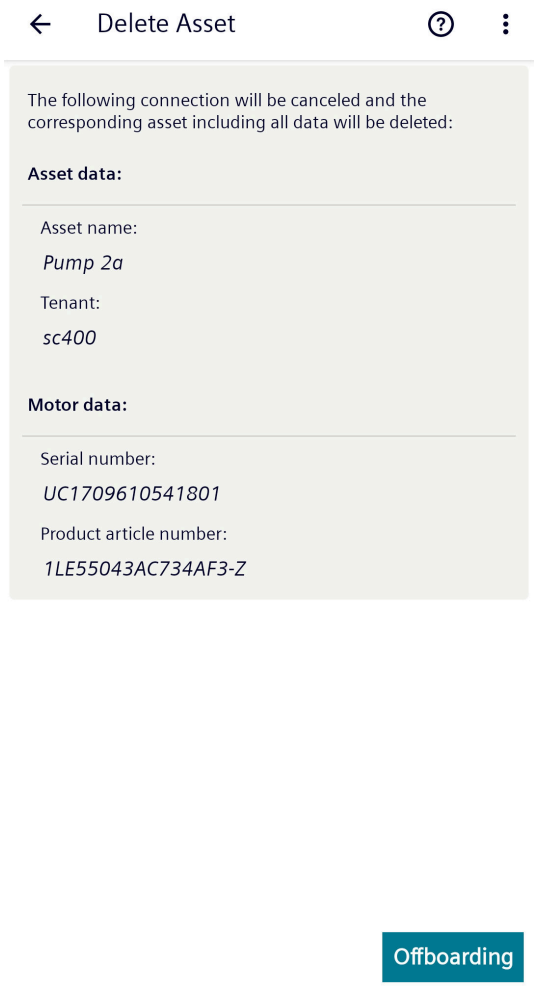
It is possible that the Recognize text / Word suggestions function of your mobile device enters a blank at the end of the email address that is entered. Delete this blank before logging in.



3. Confirm your entry with the "Sign In" button. The dialog for terminating the offboarding process (Page 118)is displayed.
   You remain logged in to the MindSphere tenant as long as you continue to use the "SIDRIVE IQ Config" application You are automatically logged off from MindSphere when you close the application.

7.1.1.3 Executing the offboarding process

1. Check the asset data.



2. Confirm the offboarding process by tapping on the "Offboarding" button.

Result

The remaining offboarding process is carried out automatically. This operation takes approx. 5 seconds. Successful completion of the offboarding process is confirmed. The connectivity module is now no longer connected to MindSphere and has deleted all the access data and saved motor data. "SIDRIVE IQ Fleet" has deleted the asset and all the related data.

7.1.2 Identifying the connectivity module via the "SIDRIVE IQ Config" application

Each connectivity module has a blue LED display in the front cover. The LED display is used to visually identify the connectivity module that is currently connected to "SIDRIVE IQ Config" more easily.

Use the "Identification" function to check whether you are connected with the required connectivity module.

Procedure

1. Open the "SIDRIVE IQ Config" application.
2. Select an asset.
3. Tap on the motor symbol in the list entry.
   The connectivity module LED flashes. The firmware version is read out and displayed.

7.1.3 Changing the measuring and send cycles

The following intervals are preset in the factory:

- 5 minutes - interval for measuring temperature, vibration, rotational frequency, operating status
  You can change these settings within a specified range.
- 10 minutes - interval to calculate speed, torque and energy consumption
  This interval cannot be set, it is dependent on the selected measurement interval. The calculation interval is three times as long, i.e. 3 minutes, for a measurement interval of 1 minute. The calculation interval is twice as long for measurement intervals 2 and 5 minutes. The calculation interval is the same length for all other measurement intervals.
- 24 hours - interval for transmission of the stored data to SIDRIVE IQ Fleet
  You can change these settings within a specified range of between 1 and 48 hours.

Note

Effects that influence the battery life

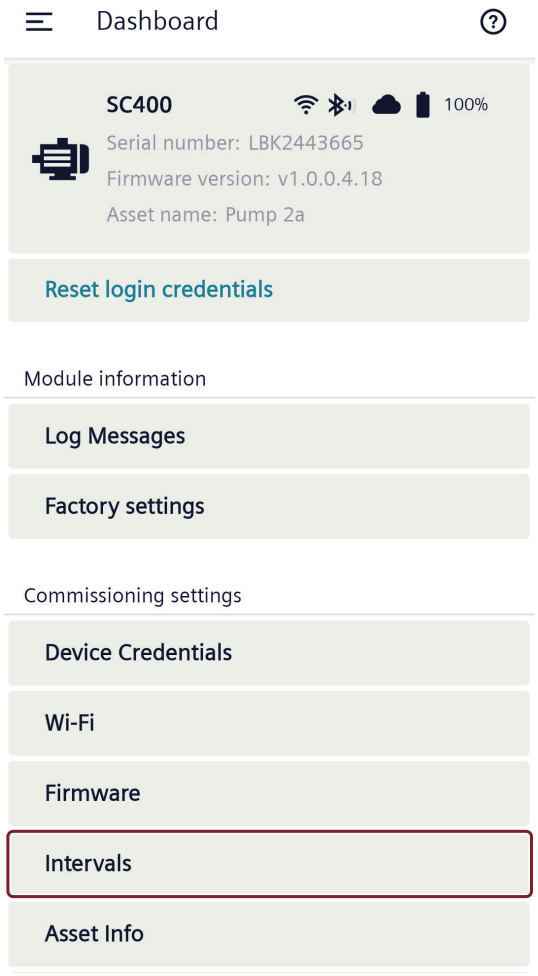
Shorter intervals result in a shorter battery life.

Note

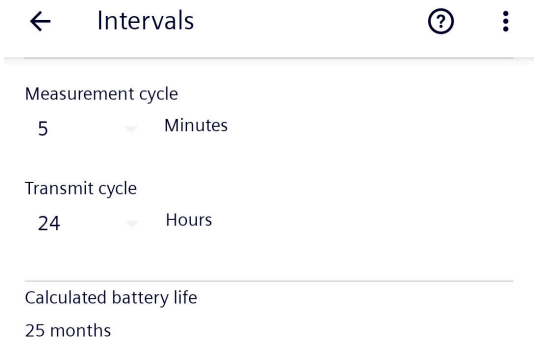
To calculate the bearing status, the measuring cycle must be set to ≥ 5 minutes.

Procedure

1. In the dashboard view, select "Intervals".

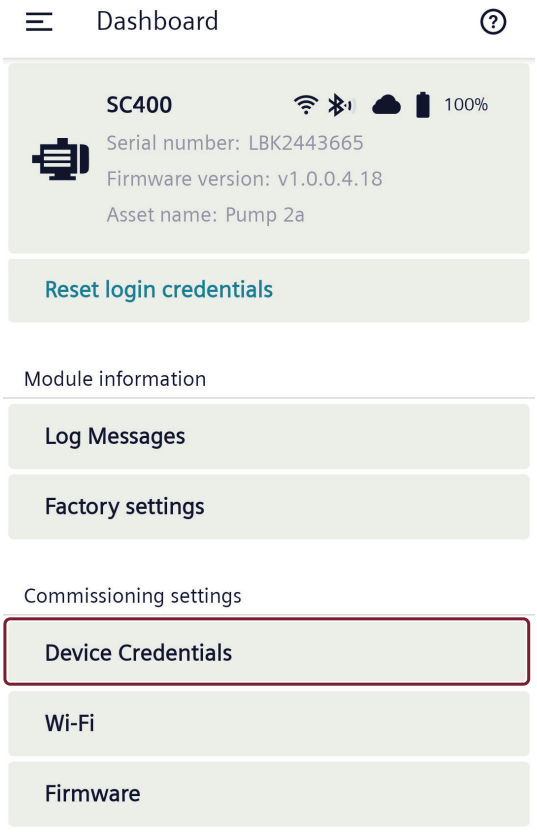


2. Change the measuring cycle. The "Calculated battery life" is updated.
3. Change the send cycle. The "Calculated battery life" is updated.

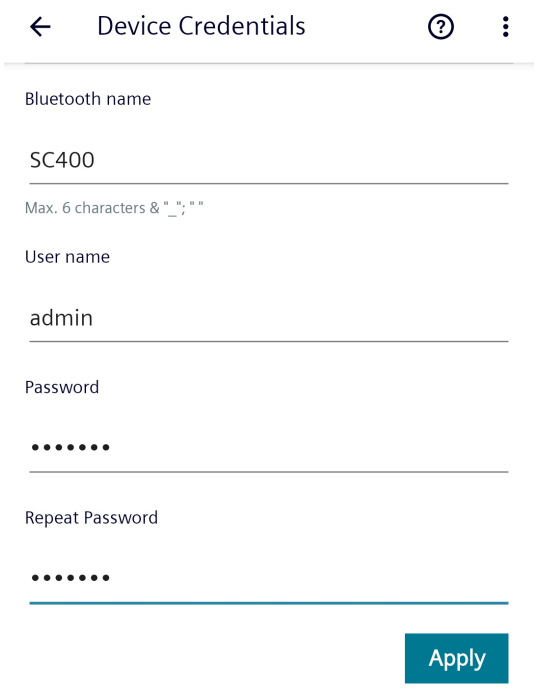


7.1.4 Changing the user data of the connectivity module

1. In the dashboard view, select "Device credentials".



2. Change the user names. The user name must not comprise more than 21 characters.



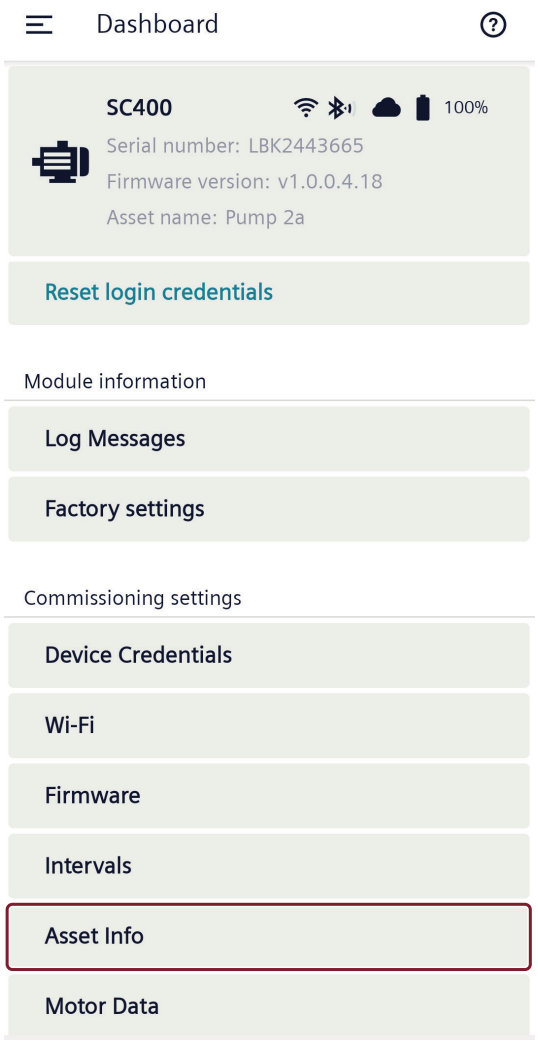
3. Change the password in the "Password" field. The password must meet the following requirements:
   - Minimum of 6 characters
   - Maximum 15 characters
   - At least one uppercase letter (A-Z)
   - At least one lowercase letter (a-z)
   - At least one numeral (0-9)
   - The following special characters are permitted: Hyphens (-) and underscores (_) are allowed.
4. Enter the new password again in the "Repeat password" field.
5. Confirm your changes by pressing "Apply"
   The user data are changed.

7.1.5 Check asset data

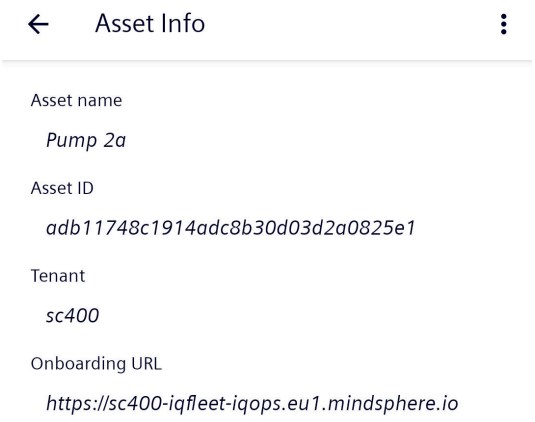
After onboarding, you can display the asset data stored in the connectivity module.

Procedure

Select "Asset Info" in the dashboard view.



The "Asset Info" dialog opens. The values displayed cannot be changed.


Asset Info
Asset name
Pump 2a
Asset ID
adb11748c1914adc8b30d03d2a0825e1
Tenant
sc400
Onboarding URL
https://sc400-iqfleet-iqops.eu1.mindsphere.io

7.2 Operation with iOS

7.2.1 Offboarding process using the "SIDRIVE IQ Config" application

The process for detaching the connectivity module from the MindSphere application "SIDRIVE IQ Fleet" is called "offboarding". All onboarding information in the connectivity module is deleted.

If you onboarded the asset under "SIDRIVE IQ Fleet" Version 2.0.0 or higher, no further input is required. Under certain circumstances, e.g. if you carried out onboarding using an older software version, you may also have to specify the tenant under which the asset is registered.

The offboarding process permanently deletes all data stored in "SIDRIVE IQ Fleet", as well as the asset itself.

The asset instance used is released and is then available for onboarding a new asset under the relevant tenant.

After offboarding, transmission of measurement data to "SIDRIVE IQ Fleet" is no longer possible. To transfer data, start a new onboarding process.

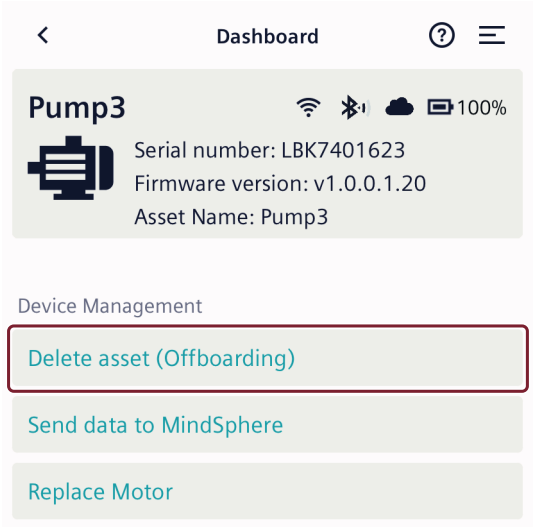
Offboarding is the precondition for a new onboarding process to "SIDRIVE IQ Fleet".

Requirements

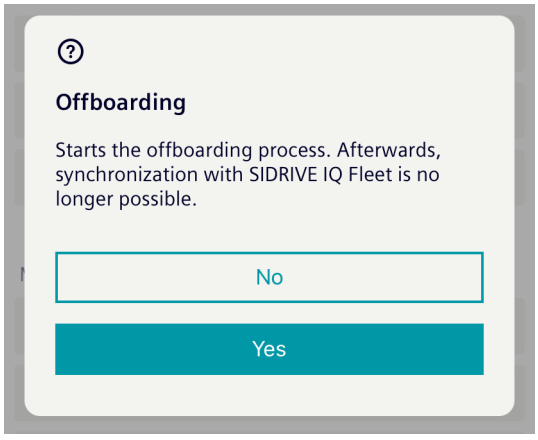
- You have logged onto the connectivity module (Page 81).
- The Wi-Fi connection has been set up. (Page 85)
- The SIMOTICS Connect 400 connectivity module is registered with IQFleet. (Page 102)
- You have the role "iqfleet.offboarding" in "SIDRIVE IQ Fleet". If you do not have this role, offboarding is canceled with an error message "Insufficient rights". Please contact your "SIDRIVE IQ Fleet" Tenant Administrator.

Procedure

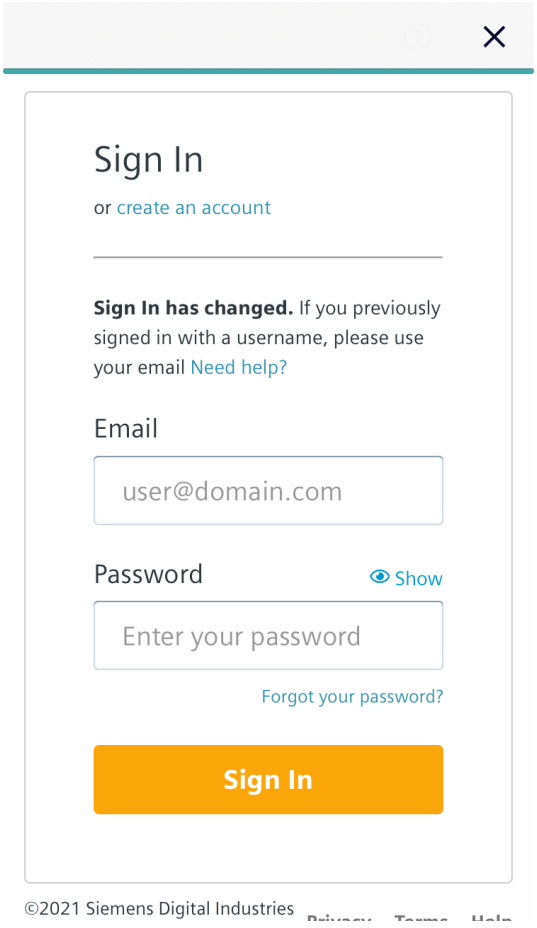
1. Select "Delete asset (Offboarding)" in the dashboard view.



2. Confirm initiation of the offboarding process with "Yes".



3. Sign in with your MindSphere login data. Make sure that no blank is inserted at the end of your entry.



4. Confirm your entry of the login data with the "Sign In" button.
The remaining offboarding process is carried out automatically. This process takes approximately 5 seconds.

Result

Successful completion of the offboarding process is confirmed. The connectivity module is now no longer connected to MindSphere and has deleted all the access data and saved motor data. "SIDRIVE IQ Fleet" has deleted the asset and all the associated data.

7.2.2 Identifying the connectivity module via the "SIDRIVE IQ Config" application

Each connectivity module has a blue LED display in the front cover. The LED display is used to visually identify the connectivity module that is currently connected to "SIDRIVE IQ Config" more easily.

Use the "Identify" function to check that you are connected with the required connectivity module.

Procedure

1. Open the "SIDRIVE IQ Config" application.
2. Select the required asset in the device overview.
3. Tap on the motor symbol .
   The connectivity module LED flashes.

7.2.3 Changing the measuring and send cycles

The following intervals are preset in the factory:

- 5 minutes - interval for measuring temperature, vibration, rotational frequency, operating status
  You can change these settings within a specified range.
- 10 minutes - interval to calculate speed, torque and energy consumption
  This interval cannot be set, it is dependent on the selected measurement interval. The calculation interval is three times as long, i.e. 3 minutes, for a measurement interval of 1 minute. The calculation interval is twice as long for measurement intervals 2 and 5 minutes. The calculation interval is the same length for all other measurement intervals.
- 24 hours - interval for transmission of the stored data to SIDRIVE IQ Fleet
  You can change these settings within a specified range of between 1 and 48 hours.

Note

Effects that influence the battery life

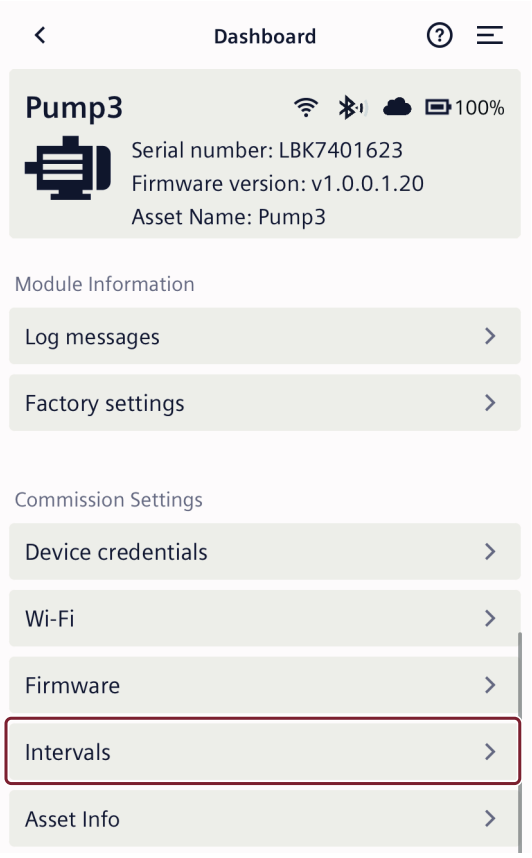
Shorter intervals result in a shorter battery life.

Note

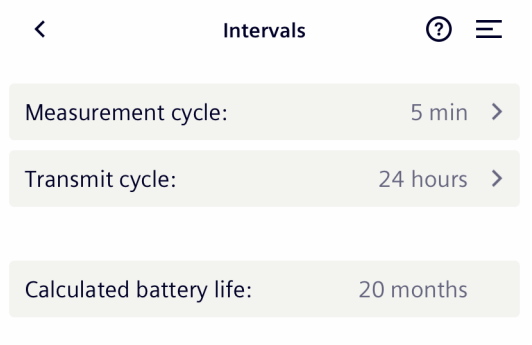
To calculate the bearing status, the measuring cycle must be set to ≥ 5 minutes.

Procedure

1. In the dashboard view, select "Intervals".

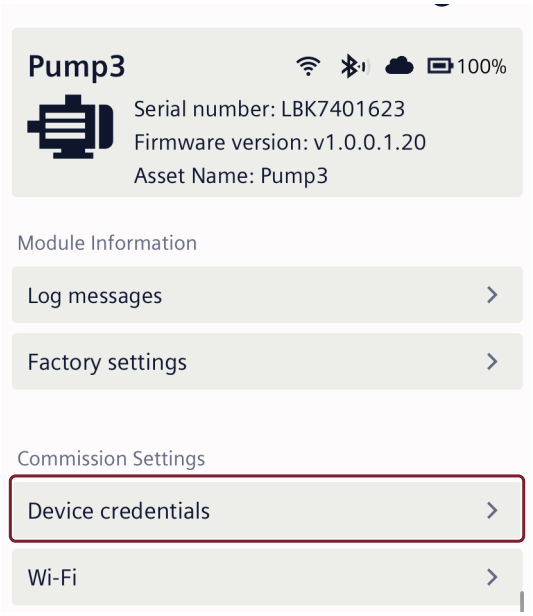


2. Change the measuring cycle. The "Calculated battery life" is updated.
3. Change the send cycle. The "Calculated battery life" is updated.

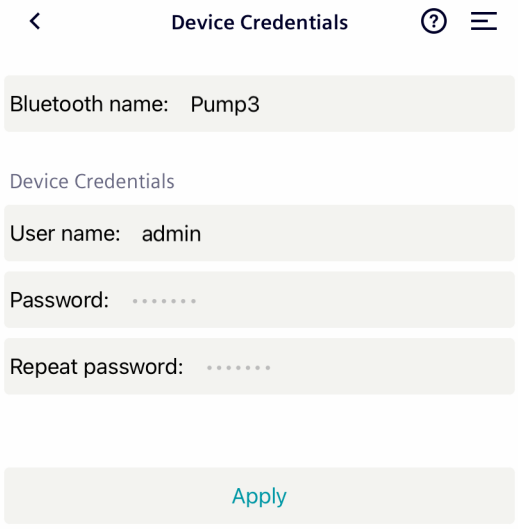


7.2.4 Changing the device credentials of the connectivity module

1. In the dashboard view, select "Device credentials".



2. Change the user names. The user name must not comprise more than 21 characters.



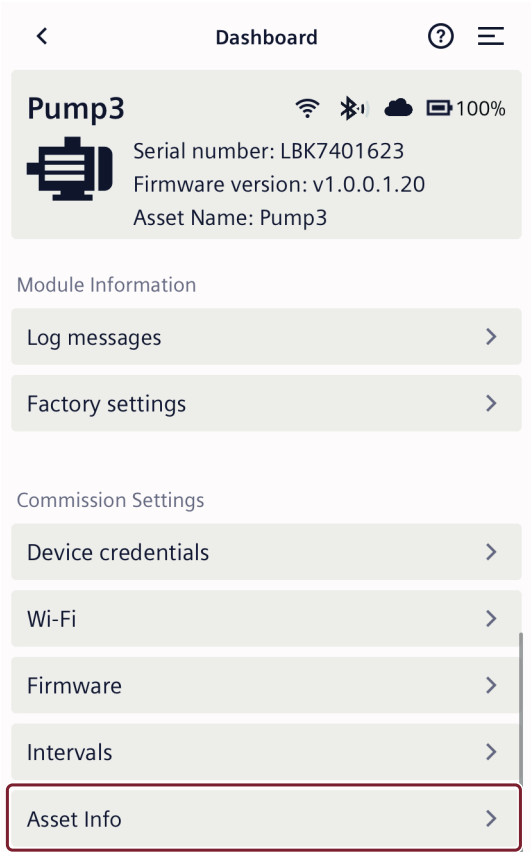
3. Change the password in the "Password" field. The password must meet the following requirements:
   - Minimum of 6 characters
   - Maximum 15 characters
   - At least one uppercase letter (A-Z)
   - At least one lowercase letter (a-z)
   - At least one numeral (0-9)
   - The following special characters are permitted: Hyphens (-) and underscores (_) are allowed.
4. Enter the new password again in the "Repeat password" field.
5. Confirm your changes by pressing "Apply"
   The user data are changed.

7.2.5 Check asset data

After onboarding, you can display the asset data stored in the connectivity module.

Procedure

Select "Asset Info" in the dashboard view.



The "Asset Info" dialog opens. The values displayed cannot be changed.

Maintenance

8

You can find functions required for operation and maintenance in the dashboard view. When commissioning (Page 37), depending on whether you selected "Motor Monitoring" or "Generic Vibration monitoring", the following icons are displayed in the dashboard view:

Motor Monitoring

Generic Vibration monitoring

Note:

For "Generic Vibration monitoring", functions Motor Data and Replace Motor are not shown.

8.1 Updating the software and firmware (Android)

Software updates are made available at regular intervals to keep the functionality of the "SIDRIVE IQ Config" application up-to-date and to implement new functions.

8.1.1 Updating the "SIDRIVE IQ Config" application

1. Update the "SIDRIVE IQ Config" application via the Google Play Store.
2. To do this, activate the "Automatic update to" or "Notification via App updates" function.

8.1.2 Updating the connectivity module firmware

To keep the firmware of the connectivity module up to date and to implement new functions, firmware updates are regularly made available. Update the firmware using the "SIDRIVE IQ Config" application.

You will find the latest firmware version at Siemens Industry Online Support (SIOS) (https://support.industry.siemens.com/cs/de/en/ps/25522/dl).

When you log on to SIOS, you can include the URL in your list of Favorites and be informed about available firmware updates in a newsletter.

Note

From firmware version 0.6.0.0, updates can be provided via MindSphere and installed automatically. Activate this function after commissioning in "SIDRIVE IQ Fleet".

Note

For an onboarded device, the saved measuring data is lost when the firmware is updated. Before updating the firmware, back up the data in the cloud. Use the "Send data to MindSphere" function to do this.

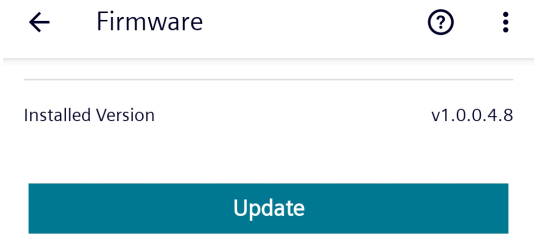
Requirements

- On your mobile device, allow access the "SIDRIVE IQ Config" application memory.
- The connectivity module must be located in the same Wi-Fi network as is presently being used by the mobile device.

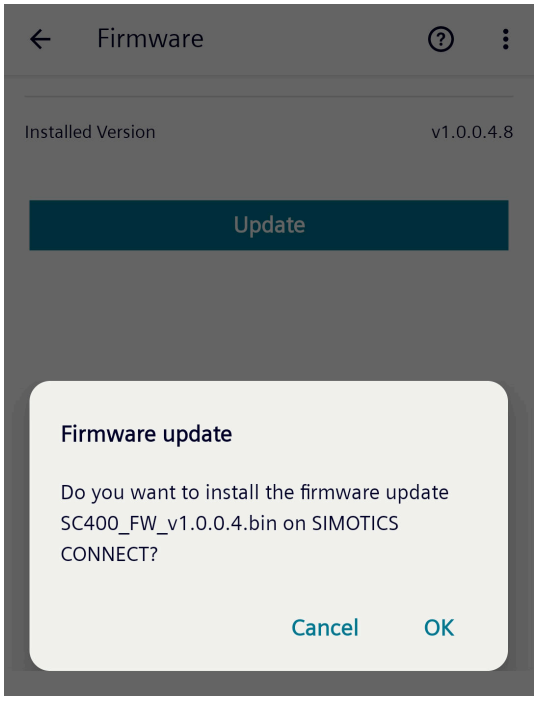
Procedure

NOTICE
Damage to the connectivity module by disconnecting the battery If the battery is disconnected while the firmware is being updated, this can result in irreparable damage to the connectivity module. Do not disconnect the battery while the firmware is being updated.

1. Activate the Wi-Fi on your mobile device.
2. Open the "SIDRIVE IQ Config" application.
3. If successful onboarding to the SIDRIVE IQ Fleet has already been performed with the connectivity module, first perform the basic function "Send data to MindSphere" (Page 139). This is necessary to avoid loss of data. Then continue with the following steps.
4. In the dashboard view, under "Commissioning settings", select function "Firmware".
5. Tap on the "Update" button. The Android File Picker opens.



6. Select the file that is locally on your mobile device, and confirm the transfer.
   The firmware is provided by Siemens as a file in ".bin" format.
7. In the following dialog, click on "OK" to start the update. A progress bar is displayed while the firmware file is being transferred.



Result

After transferring the firmware file, a security check is performed and then the firmware is updated. This process takes approximately 1 to 2 minutes. During this time, the LED on the front of the connectivity module first flashes slowly – and then faster. The LED goes dark after the firmware has been updated.

The connectivity module automatically restarts after the firmware has been successfully updated. The Bluetooth connection to the mobile device is reset. In rare cases, an error message may be displayed on the mobile device: for example, "BLE error".

8.2 Updating software and firmware (iOS)

Software updates are made available at regular intervals to keep the functionality of the "SIDRIVE IQ Config" application up-to-date and to implement new functions.

8.2.1 Updating the "SIDRIVE IQ Config" application

1. Update the "SIDRIVE IQ Config" application from the App Store.
2. In the iOS settings > App Store, activate "App Updates".

8.2.2 Updating the connectivity module firmware (iOS)

To keep the firmware of the connectivity module up to date and to implement new functions, firmware updates are regularly made available. The firmware is provided by Siemens as a file in "*.bin" format.

You will find the latest firmware version at Siemens Industry Online Support (SIOS) (https://support.industry.siemens.com/cs/de/de/ps/25522/dl).

When you log on to SIOS, you can include the URL in your list of Favorites and be informed about available firmware updates in a newsletter.

Note

From firmware version 0.6.0.0, updates can be provided via MindSphere and installed automatically. Activate this function after commissioning in "SIDRIVE IQ Fleet".

Note

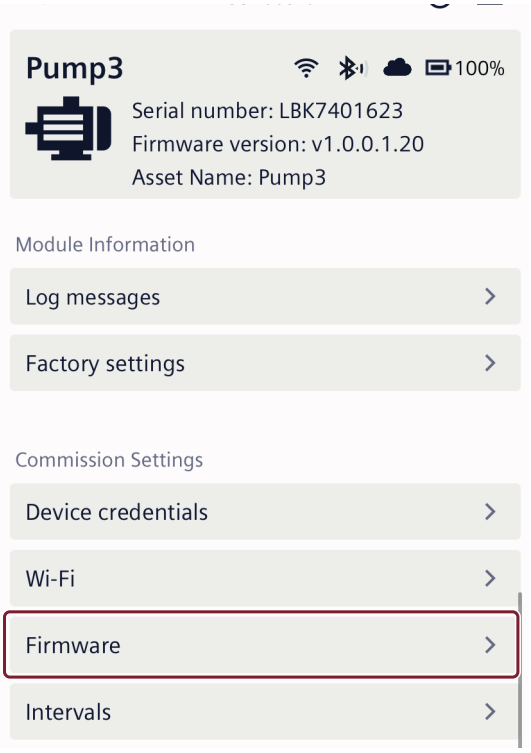
For an onboarded device, the saved measuring data is lost when the firmware is updated. Before updating the firmware, back up the data in the cloud. Use the "Send data to MindSphere" function to do this.

Requirements

- On your mobile device, allow access the "SIDRIVE IQ Config" application memory.
- The connectivity module must be located in the same Wi-Fi network as is presently being used by the mobile device.
- Load the latest firmware version onto your mobile device.

Procedure

1. Select "Firmware" in the dashboard view.



2. Start the process by tapping on the "Update" button.

3. Select the appropriate "*.bin" file. Downloading starts immediately upon selection. During downloading, a progress bar is displayed. Wait until downloading is complete.

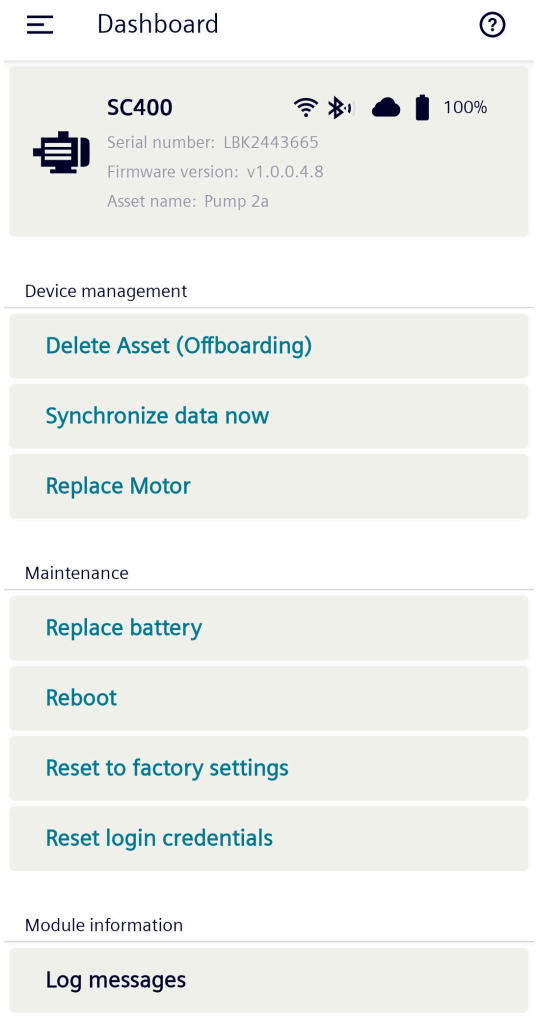
Result

After the firmware file has been downloaded, a security check is performed and the Bluetooth connection to the mobile device is reset.

The firmware is then updated. This process takes approximately 1 to 2 minutes. During this time, the LED on the front of the connectivity module first flashes slowly – and then faster. The LED goes dark after the firmware has been updated. The connectivity module automatically restarts after the firmware has been successfully updated.

8.3 Basic functions (Android)

You can find the most important basic functions for the connectivity module in the dashboard view of the "SIDRIVE IQ Config" application.



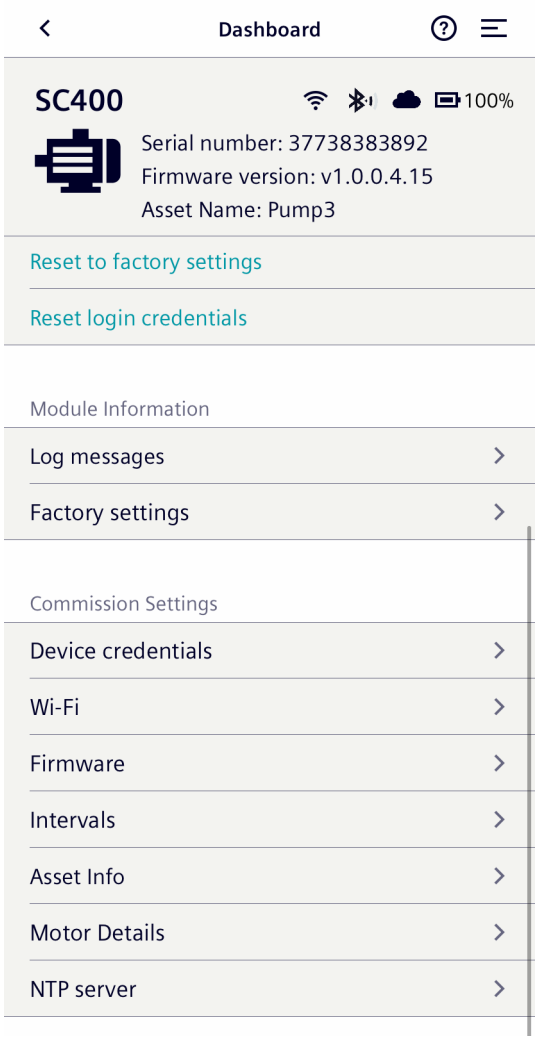
An overview of all of the basic functions is shown in the following table:

Function	Description
Commissioning	Starts the onboarding process for "SIDRIVE IQ Fleet".
Delete Asset (Offboarding)	The process to disconnect the connectivity module from the MindSphere application "SIDRIVE IQ Fleet" - including deleting all data - is called offboarding. Offboarding is the precondition for a new commissioning process (onboarding) to "SIDRIVE IQ Fleet".
Send data to MindSphere	Starts transfer of the measurement data from the memory of the connectivity module to "SIDRIVE IQ Fleet". **Precondition:** The onboarding process has already been performed.
Replace Motor (only for "Motor Monitoring")	Replacing the motor configuration without de-registering the asset from SIDRIVE IQ Fleet. You can change the motor type, the serial number, the application, the operating point or the operating mode. The new motor is continually monitored under the existing asset name. Data previously saved in SIDRIVE IQ Fleet are not deleted.

Function	Description
Battery replacement	Sets the battery status display to 100% after battery replacement (Page 200).
Restart	The connectivity module restarts. The connection to the connectivity module is disconnected. Measurement data that have still not been transferred to SIDRIVE IQ Fleet are lost. To avoid this data loss, run the "Send data to MindSphere" function before you restart the connectivity module.
Reset to factory settings	Restores the factory settings of the connectivity module. The user credentials are reset to the factory settings. All saved motor data and onboarding information are deleted.
Reset user credentials	Resets the user name and the connectivity module password to the factory settings. **Note:** This function requires additional entry of the Wi-Fi password. This ensures that only authorized persons can reset the user login information. If the Wi-Fi has not yet been configured in SC400, the "Wi-Fi password" field must remain empty.

8.4 Basic functions (iOS)

You can find the most important basic functions for the connectivity module in the dashboard view of the "SIDRIVE IQ Config" application.



An overview of all of the basic functions is shown in the following table:

Function	Description
Commissioning	Starts the onboarding process for "SIDRIVE IQ Fleet".
Delete Asset (Offboarding)	The process to disconnect the connectivity module from the MindSphere application "SIDRIVE IQ Fleet" - including deleting all data - is called offboarding. Offboarding is the precondition for a new commissioning process (onboarding) to "SIDRIVE IQ Fleet".
Send data to MindSphere	Starts transfer of the measurement data from the memory of the connectivity module to "SIDRIVE IQ Fleet". **Precondition:** The onboarding process has already been performed.

Function	Description
Replacing a motor (only for "Motor Monitoring")	Replacing the motor configuration without de-registering the asset from SIDRIVE IQ Fleet. You can change the motor type, the serial number, the application, the operating point or the operating mode. The new motor is continually monitored under the existing asset name. Data previously saved in SIDRIVE IQ Fleet are not deleted.
Battery replacement	Sets the battery status display to 100% after battery replacement (Page 200).
Restart	The connectivity module restarts. The connection to the connectivity module is disconnected. Measurement data that have still not been transferred to SIDRIVE IQ Fleet are lost. To avoid this data loss, run the "Send data to MindSphere" function before you restart the connectivity module.
Reset to factory settings	Restores the factory settings of the connectivity module. The user credentials are reset to the factory settings. All saved motor data and onboarding information are deleted.
Reset user credentials	Resets the user name and the connectivity module password to the factory settings. **Note:** This function requires additional entry of the Wi-Fi password. This ensures that only authorized persons can reset the user login information. If the Wi-Fi has not yet been configured in SC400, the "Wi-Fi password" field must remain empty.
Identification (press the motor symbol)	Helps you to visually identify the currently connected connectivity module. The connectivity module LED flashes for five seconds.

8.5 Replacing the connectivity module

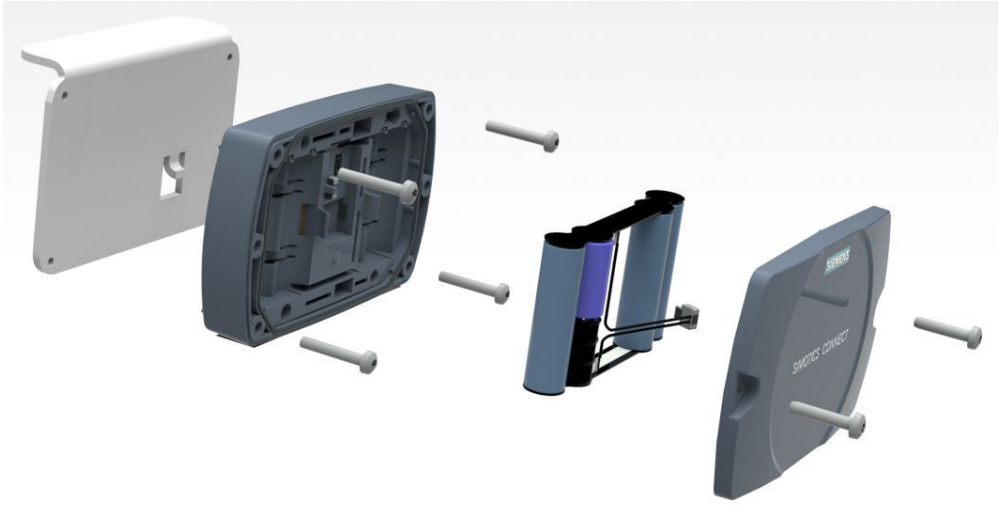
8.5.1 Replacing the connectivity module (hardware)

Connectivity module as a spare part

You can order the connectivity module as a spare part (Page 208). The battery is not connected and it has no motor parameters. You must configure the device from new.

Procedure

1. At the front cover release the two central fastening screws.
   To avoid losing the screws, do not turn the screws completely out of the cover.



2. Remove the front cover.
3. Withdraw the battery connector.
4. Release the 4 fastening screws that fix the connectivity module to the holder.
5. Remove the connectivity module from the mounting bracket.
6. Place the new connectivity module in the mounting bracket.
7. Retighten the 4 fastening screws.
8. Insert the battery connector.
9. Put the front cover back in position. Ensure that the cover fits precisely.
10. Tighten the 2 central fastening screws at the front cover by hand.
11. Reconfigure the connectivity module (Page 37).

8.5.2 Commissioning the connectivity module after hardware replacement (Android)

8.5.2.1 Starting the module replacement wizard

Using function "Replace Module", you can replace a SIMOTICS Connect 400 connectivity module by a new one. This means that you can still monitor your motor, which was already registered in SIDRIVE IQ Fleet, without losing any historical data.

The module replacement wizard guides you step-by-step through the replacement process.

Note

Module replacement wizard - Help

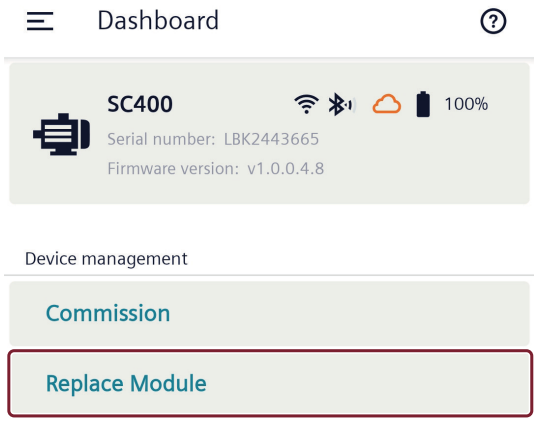
You can call help using icon ⓘ at the specific step.

Requirements

- You are logged on to the new connectivity module via the "SIDRIVE IQ Config" application.
- You have the necessary authorization (see operating instructions, SIDRIVE IQ Fleet, Section Activate MindSphere user account > SIDRIVE IQ Fleet roles). If you do not have the required role, then module replacement is canceled, and error message "Insufficient rights" output. Contact your "SIDRIVE IQ Fleet" tenant administrator.

Procedure

1. Start the module replacement wizard using the "Replace Module" button.

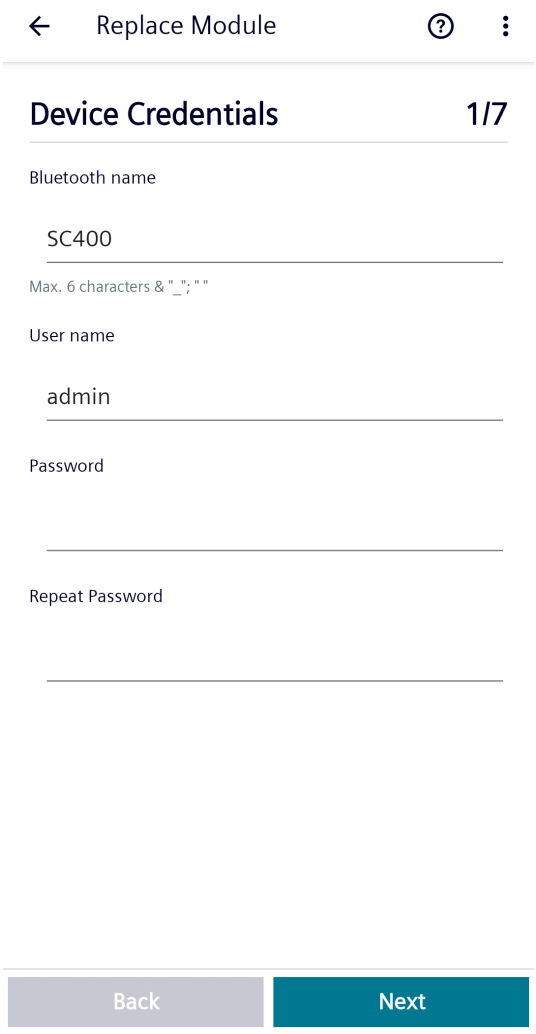


8.5.2.2 Device Credentials - Step 1/7

Change the login data for protection against unauthorized access to the connectivity module.

Procedure

1. Change the Bluetooth name (BLE name). The BLE name is used for simple identification of the device via Bluetooth. The length of the name is limited to 6 characters. The following characters are permitted: a-z, A-Z, 0-9, -, _.



2. Change the user names. The user name must not comprise more than 21 characters.
3. Change the password in the "Password" field. The password must meet the following requirements:
   - Minimum of 6 characters
   - Maximum 15 characters
   - At least one uppercase letter (A-Z)
   - At least one lowercase letter (a-z)
   - At least one numeral (0-9)
   - The following special characters are permitted: Hyphens (-) and underscores (_) are allowed.

4. Enter the new password again in the "Repeat password" field.
5. Move on to the next step with the "Next" button.

8.5.2.3 Wi-Fi - Step 2/7

Connect the connectivity module to the Wi-Fi network.

Supported Wi-Fi networks

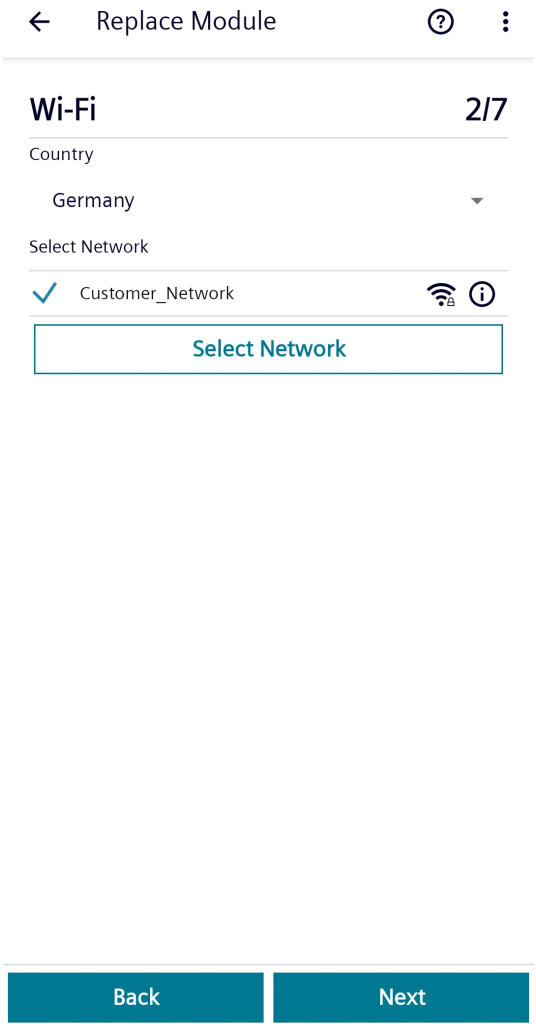
The current version of the SIMOTICS CONNECT 400 connectivity module does **not** support proxy server configuration.

The connectivity module encrypts your data according to security standard WPA2. For data transfer, the connectivity module supports Wi-Fi connections with a frequency of 2.4 GHz and the Wi-Fi standard 802.11b/g/n. Wi-Fi authentication protocols according to IEEE 802.1X are not supported.

Procedure

1. The country code is determined automatically. Check that it is correct and modify the country code, if necessary.
2. With the "Select other network" button, you can display the visible Wi-Fi networks.
3. Select the required Wi-Fi network from the list of visible networks.
4. Enter the Wi-Fi password. The Wi-Fi password must not exceed a maximum length of 32 characters.

5. Confirm your entry with the "Connect" button. The connection is established.



6. Move on to the next step with the "Next" button.

8.5.2.4 Firmware - Step 3/7

To keep the firmware of the connectivity module up to date and to implement new functions, firmware updates are regularly made available. The firmware is provided by Siemens as a file in ".bin" format.

Note

You will find the latest firmware version at Siemens Industry Online Support (SIOS) (https://support.industry.siemens.com/cs/de/de/ps/25522/dl). When you log on to SIOS, you can include the URL in your list of Favorites and be informed about available firmware updates in a newsletter.

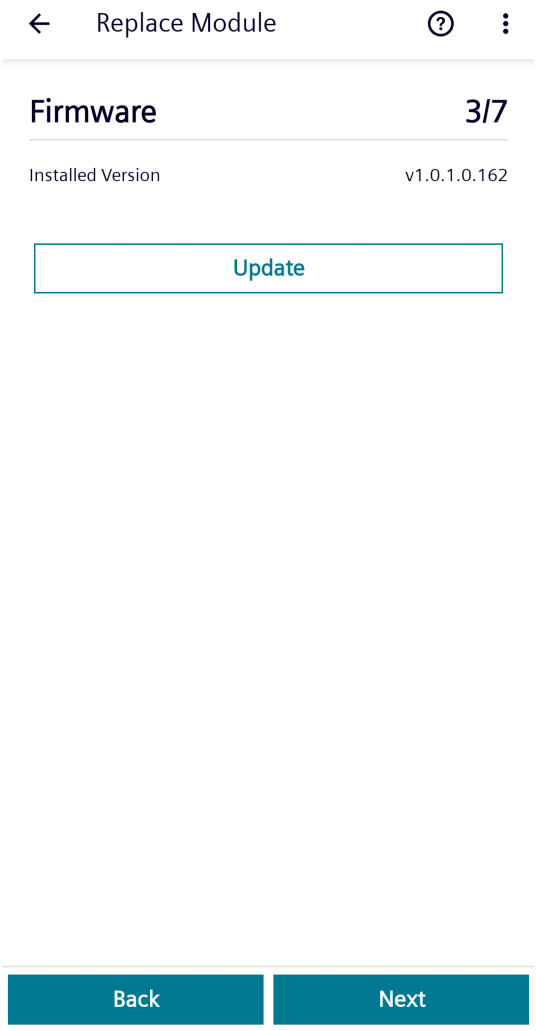
From firmware version 0.6.0.0, updates can be provided via MindSphere and installed automatically. Activate this function after replacing the module in "SIDRIVE IQ Fleet".

Requirements

- On your mobile device, allow access the "SIDRIVE IQ Config" application memory.
- The connectivity module must be located in the same Wi-Fi network as is presently being used by the mobile device.
- The Wi-Fi network allows communication between the participants, i.e. between the connectivity module and the mobile device.
- Load the latest firmware version onto your mobile device.

Procedure

1. Update the firmware by clicking on the "Update" button, and then proceed as described below.
   To update the firmware, tap on the "Update" button. The Android File Picker opens. Continue with the update as described in 2. and 3.
   If you do not want to update the firmware, move on to the next step with the "Next" button.



2. Select the appropriate "*.bin" file. Downloading starts immediately upon selection. During downloading, a progress bar is displayed. Wait until downloading is complete.
   Result:
   After the firmware file has been downloaded, a security check is performed and the Bluetooth connection to the mobile device is reset.
   The firmware is then updated. This process takes approximately 1 to 2 minutes. During this time, the LED on the front of the connectivity module first flashes slowly – and then faster. The LED goes dark after the firmware has been updated. The connectivity module automatically restarts after the firmware has been successfully updated.
3. Log on again after the connectivity module has restarted and restart the module replacement wizard and skip steps 1/7, 2/7 and 3/7.

8.5.2.5 Intervals - Step 4/7

In this step, you can define the intervals for measurements and data transfers. The remaining battery life is recalculated based on your entry.

Note

Calculated battery life

The calculated battery life is a statistical value. The actual remaining battery life may differ depending on temperature influences or the connection quality of the Wi-Fi network.

Note

Effects that influence the battery life

Shorter intervals result in a shorter battery life.

The following intervals are preset in the factory:

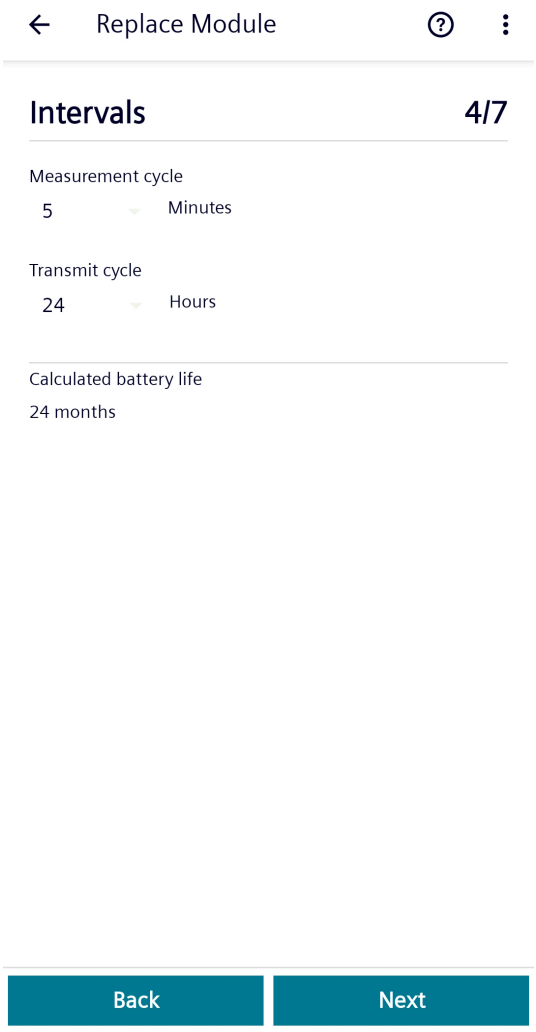
- 5 minutes - interval for measuring temperature, vibrations, rotational frequency, operating status
  You can change these settings within a specified range.
- 10 minutes - interval to calculate speed, torque and energy consumption
  This interval cannot be set, it is dependent on the selected measurement interval. The calculation interval is three times as long, i.e. 3 minutes, for a measurement interval of 1 minute. The calculation interval is twice as long for measurement intervals 2 and 5 minutes. The calculation interval is the same length for all other measurement intervals.
- 24 hours - interval for transmission of the stored data to "SIDRIVE IQ Fleet"
  You can modify these settings within a preset range of 1 to 48 hours.

Note

To calculate the bearing status, the measuring cycle must be set to ≥ 5 minutes.

Procedure

1. Change the measurement interval. The "Calculated battery life" is updated.
2. Change the synchronization interval. The "Calculated battery life" is updated.



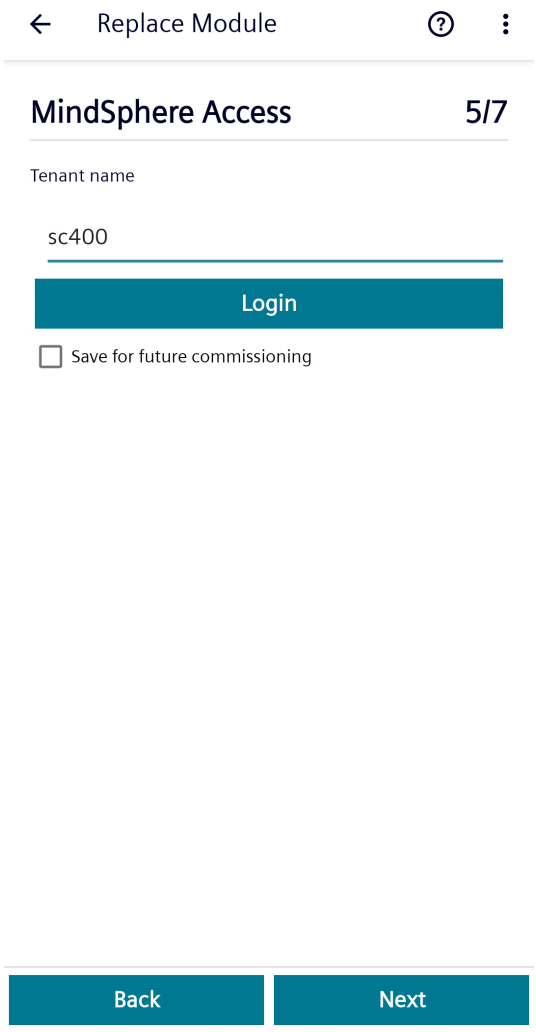
3. Move on to the next step with the "Next" button.

8.5.2.6 MindSphere Access - Step 5/7

In the following step, you establish the MindSphere access for onboarding. The process applied from connecting and registering the connectivity module through to the MindSphere application "SIDRIVE IQ Fleet", including all settings, is called onboarding.

Procedure

1. Enter the MindSphere tenant name in the "Tenant name" field. The length is limited to 8 characters. If you have received a special URL from Siemens for onboarding, enter it in the "Tenant name" field. Start entering the URL with "https://".

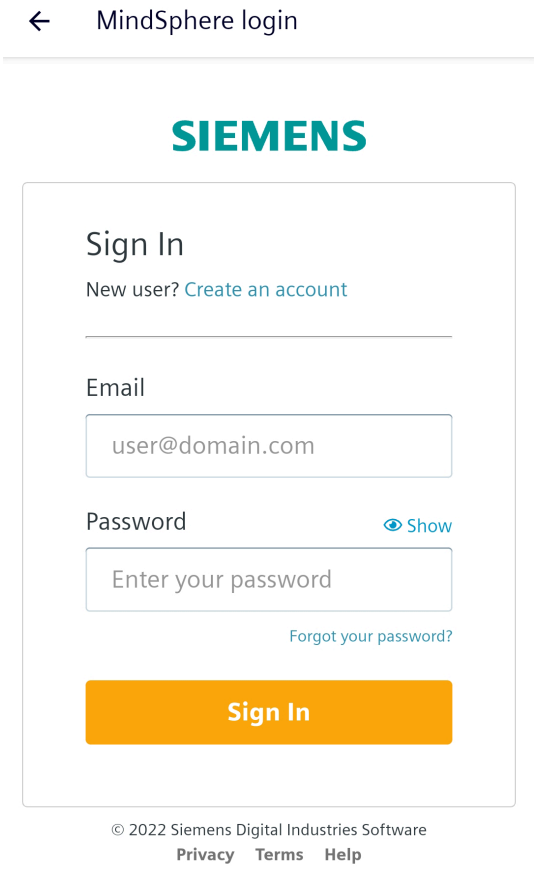


2. With the option "Save for future commissioning", you can save the tenant name you entered or the URL for further commissioning operations. Select this option if it is required.
3. Confirm your entries using the "Login" button.

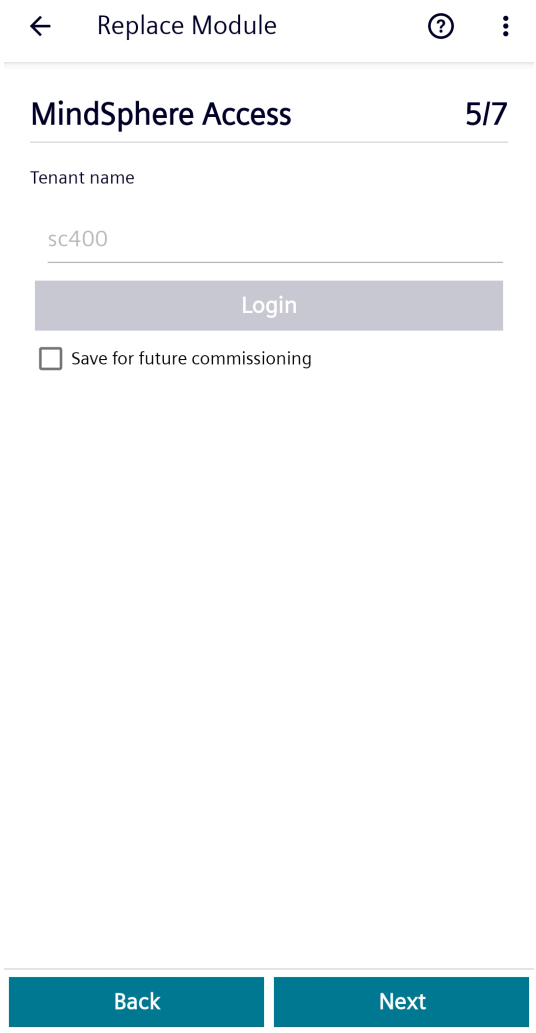
4. For onboarding, log in using your MindSphere login data.

Note

It is possible that the Recognize text / Word suggestions function of your mobile device enters a blank at the end of the email address that is entered. Delete this blank before logging in.



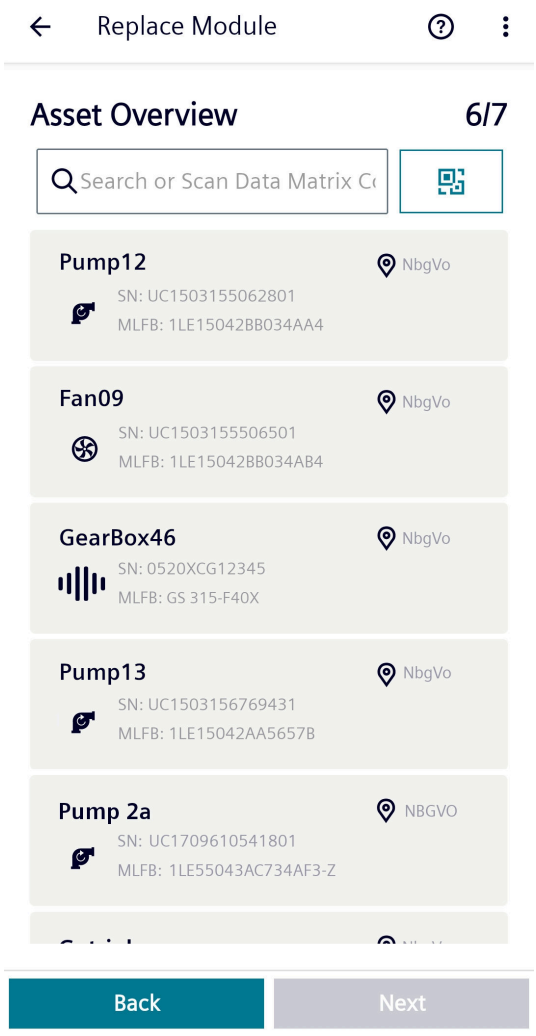
5. Confirm your entry of the login data with the "Sign In" button. The "Login" button is deactivated in the commissioning wizard once you have successfully logged in.



6. Move on to the next step with the "Next" button.

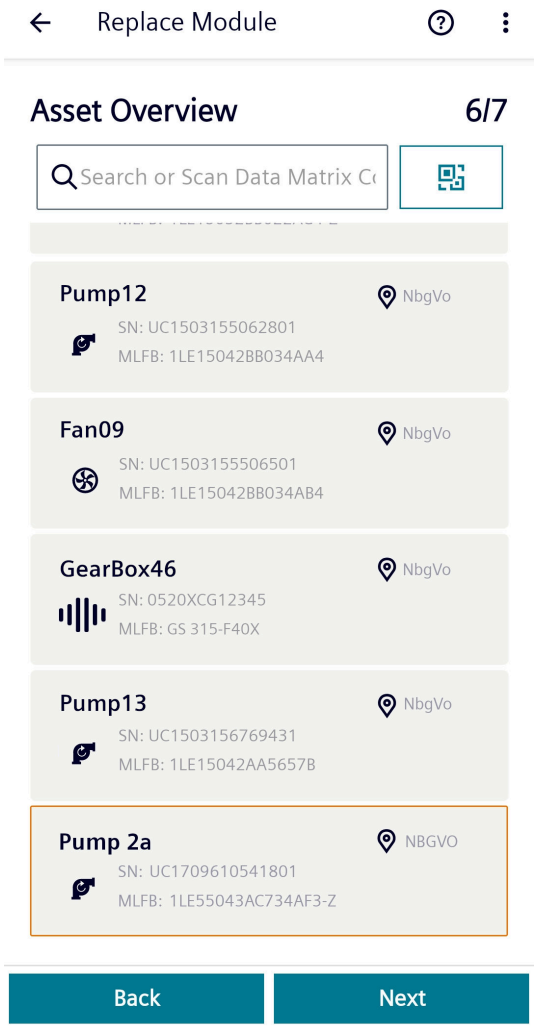
8.5.2.7 Asset Overview - Step 6/7

After you have logged in to SIDRIVE IQ Fleet, in Step "Asset Overview" you can see the list of all assets that are integrated in the tenant.

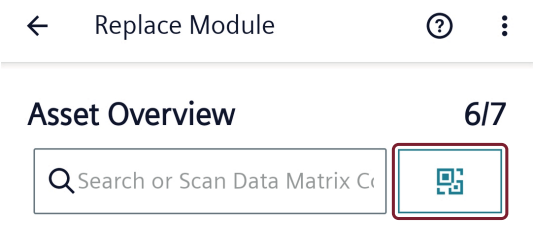


Procedure

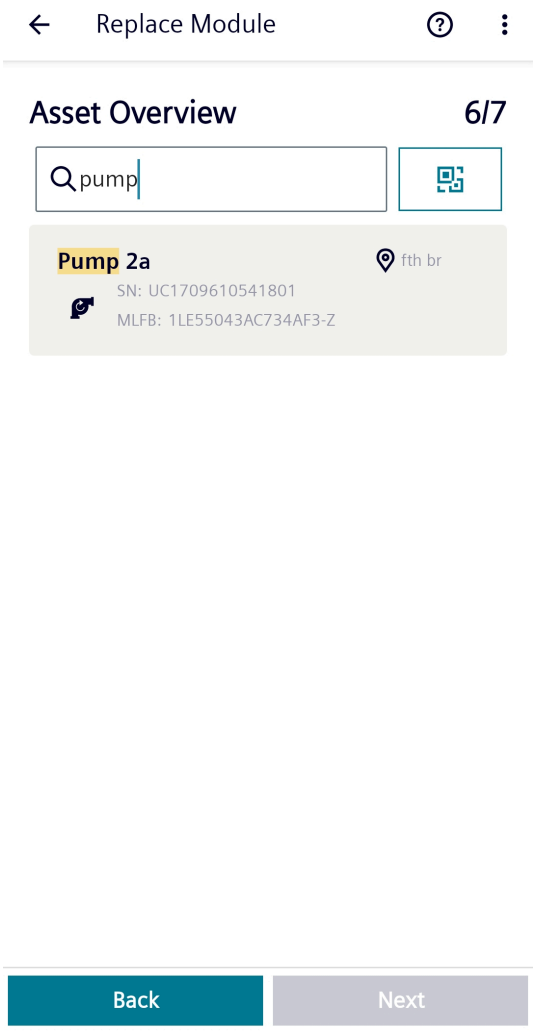
1. From the list, select the asset that you wish to connect to the new connectivity module.



– If the Siemens motor has a 2D code, you can assign the motor by scanning the "Data Matrix Code".
Press the Scan button. The corresponding asset is automatically selected from the list of assets.



– For several entries, you can search for an asset by entering one of the following parameters in the search field:
- Asset name
- Serial number
- Product article number
- Location



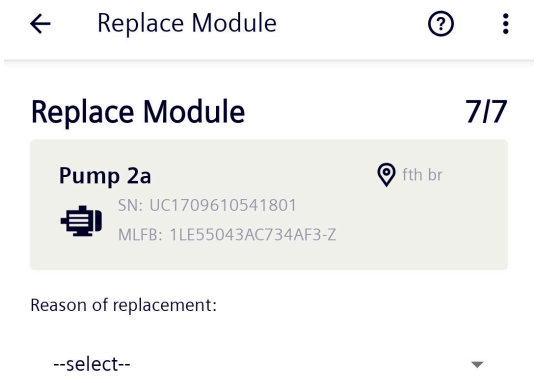
2. Move on to the next step with the "Next" button. Depending on whether the asset is configured for "Motor Monitoring" or for "Generic Vibration monitoring", follow the description Replacement reason (motor monitoring) - Step 7/7 (Page 157) or Replacement reason (Generic Vibration monitoring) - Step 7/7.

8.5.2.8 Replacement reason - Step 7/7

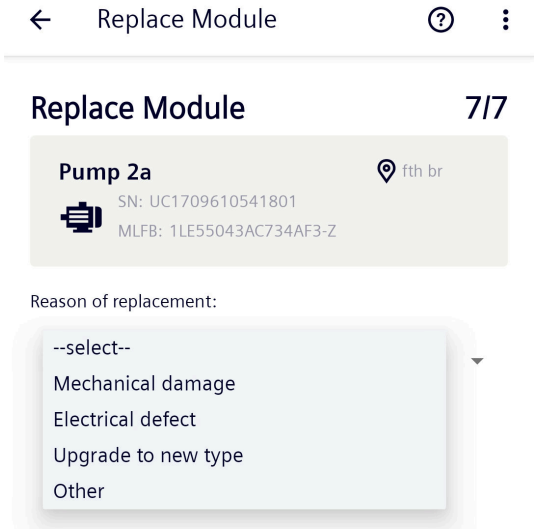
In the last step of the module replacement wizard, enter the reason for the replacement.

Procedure

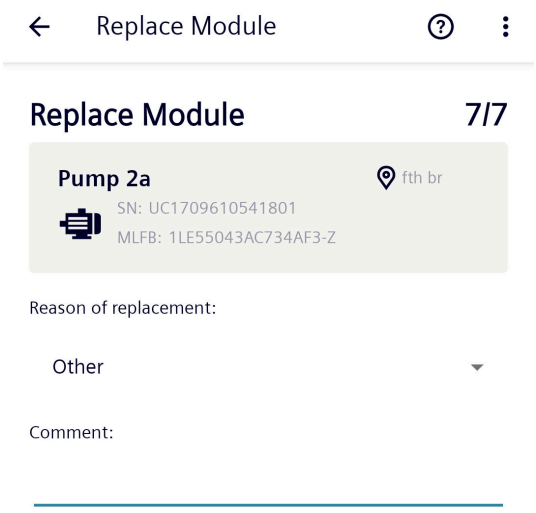
1. Under "Reason of replacement", open the drop-down list.



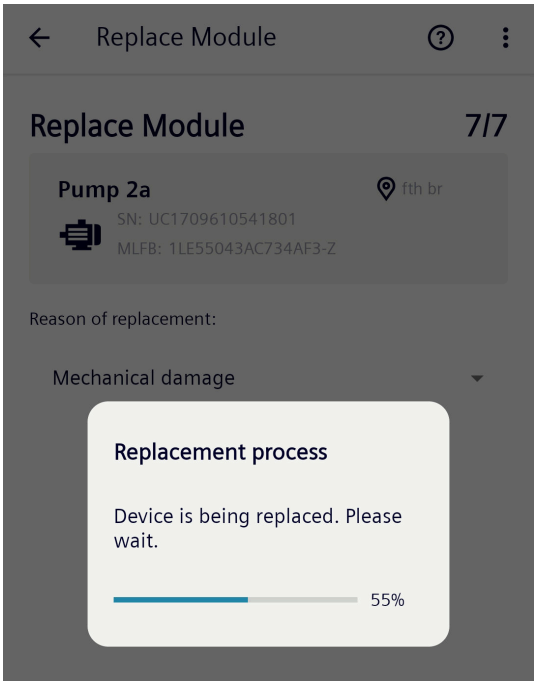
2. From the following list, select the reason why the module was replaced.



3. When selecting "Other" you have the option of entering a reason for the replacement in the "Comment" field.
4. Start the replacement process using the "Next" button.

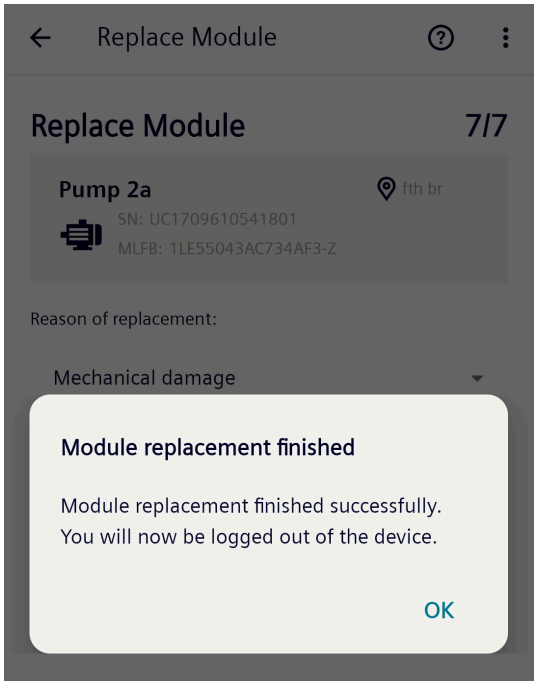


The progress of the replacement process is displayed.



Result

The following message is displayed after the module has been successfully replaced.



After commissioning has been completed, you are automatically logged off from the device and the Bluetooth connection is disconnected.

The connectivity module starts to record data and transfer data in the preselected intervals.

After the first measurements, a first connection is automatically established to SIDRIVE IQ Fleet, which means that you can see the actual connection status shortly after commissioning.

The connectivity module automatically starts the calibration procedure on the motor. It requires 10 measuring cycles with the motor in the "ON" state and 10 measuring cycles with the motor in the "OFF" state. Precise data is only displayed in SIDRIVE IQ Fleet as an "operating state" signal after the calibration process:

Value "0": Motor off (OFF), sensor calibrated

Value "1": Motor status not defined, sensor not calibrated

Value "3": Motor on (ON), sensor calibrated

No additional measures are required to support calibration.

8.5.3 Commissioning the connectivity module after hardware replacement (iOS)

8.5.3.1 Starting the module replacement wizard

You can replace a SIMOTICS Connect 400 connectivity module by a new one using function "Replace Module". This means that you can still monitor your motor, which was already registered in SIDRIVE IQ Fleet, without losing any historical data.

The module replacement wizard guides you step-by-step through the replacement process.

Note

Module replacement wizard - Help

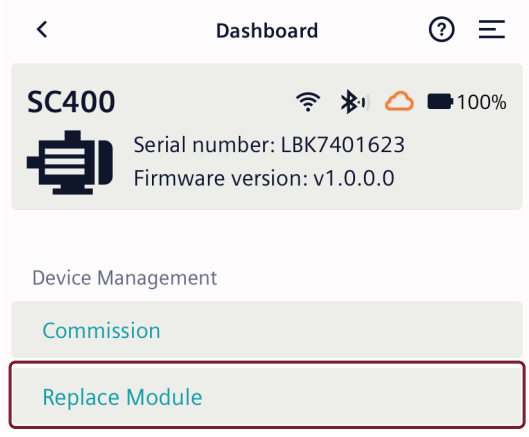
You can call help using icon ⓘ at the specific step.

Requirements

- You are logged on to the new connectivity module via the "SIDRIVE IQ Config" application.
- You have the necessary authorization (see operating instructions, SIDRIVE IQ Fleet, Section Activate MindSphere user account > SIDRIVE IQ Fleet roles). If you do not have the required role, then module replacement is canceled, and error message "Insufficient rights" output. Contact your "SIDRIVE IQ Fleet" tenant administrator.

Procedure

1. Start the module replacement wizard using the "Replace Module" button.

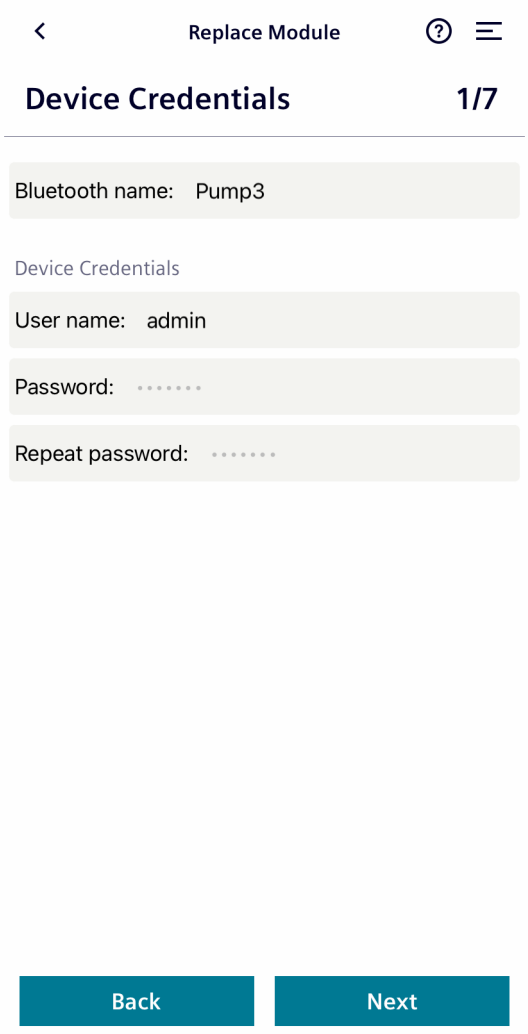


8.5.3.2 Device Credentials - Step 1/7

Change the login data for protection against unauthorized access to the connectivity module.

Procedure

1. Change the Bluetooth name (BLE name). The BLE name is used for simple identification of the device via Bluetooth. The length of the name is limited to 6 characters. The following characters are permitted: a-z, A-Z, 0-9, -, _.



2. Change the user names. The user name must not comprise more than 21 characters.
3. Change the password in the "Password" field. The password must meet the following requirements:
   - Minimum of 6 characters
   - Maximum 15 characters
   - At least one uppercase letter (A-Z)
   - At least one lowercase letter (a-z)
   - At least one numeral (0-9)
   - The following special characters are permitted: Hyphens (-) and underscores (_) are allowed.

4. Enter the new password again in the "Repeat password" field.
5. Move on to the next step with the "Next" button.

8.5.3.3 Wi-Fi - Step 2/7

Connect the connectivity module to the Wi-Fi network.

Supported Wi-Fi networks

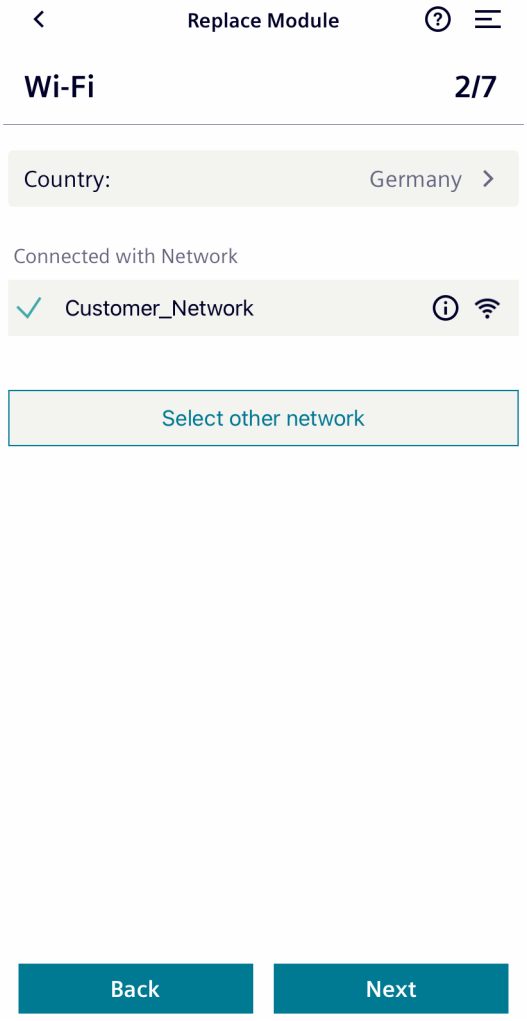
The current version of the SIMOTICS CONNECT 400 connectivity module does **not** support proxy server configuration.

The connectivity module encrypts your data according to security standard WPA2. For data transfer, the connectivity module supports Wi-Fi connections with a frequency of 2.4 GHz and the Wi-Fi standard 802.11b/g/n. Wi-Fi authentication protocols according to IEEE 802.1X are not supported.

Procedure

1. The country code is determined automatically. Check that it is correct and modify the country code, if necessary.
2. With the "Select other network" button, you can display the visible Wi-Fi networks.
3. Select the required Wi-Fi network from the list of visible networks.
4. Enter the Wi-Fi password. The Wi-Fi password must not exceed a maximum length of 32 characters.

5. Confirm your entry with the "Connect" button. The connection is established.



6. Move on to the next step with the "Next" button.

8.5.3.4 Firmware - Step 3/7

To keep the firmware of the connectivity module up to date and to implement new functions, firmware updates are regularly made available. The firmware is provided by Siemens as a file in ".bin" format.

Note

You will find the latest firmware version at Siemens Industry Online Support (SIOS) (https://support.industry.siemens.com/cs/de/de/ps/25522/dl). When you log on to SIOS, you can include the URL in your list of Favorites and be informed about available firmware updates in a newsletter.

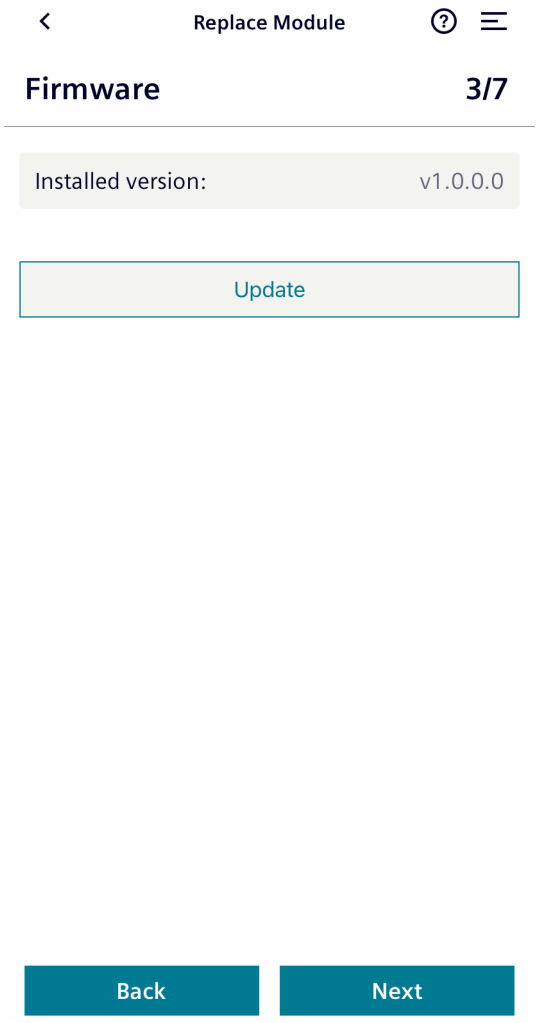
From firmware version 0.6.0.0, updates can be provided via MindSphere and installed automatically. Activate this function after replacing the module in "SIDRIVE IQ Fleet".

Requirements

- On your mobile device, allow access the "SIDRIVE IQ Config" application memory.
- The connectivity module must be located in the same Wi-Fi network as is presently being used by the mobile device.
- The Wi-Fi network allows communication between the participants, i.e. between the connectivity module and the mobile device.
- Load the latest firmware version onto your mobile device.

Procedure

1. Update the firmware by clicking on the "Update" button, and then proceed as described below.
   If you do not want to update the firmware, move on to the next step with the "Next" button.



2. Select the appropriate "*.bin" file. Downloading starts immediately upon selection. During downloading, a progress bar is displayed. Wait until downloading is complete.
   Result:
   After the firmware file has been downloaded, a security check is performed and the Bluetooth connection to the mobile device is reset.
   The firmware is then updated. This process takes approximately 1 to 2 minutes. During this time, the LED on the front of the connectivity module first flashes slowly – and then faster. The LED goes dark after the firmware has been updated. The connectivity module automatically restarts after the firmware has been successfully updated.
3. Log in again after the connectivity module has restarted and restart the module replacement wizard. If you restart the module replacement wizard within five minutes of disconnecting the Bluetooth connection, module replacement will be resumed at Step 4/7 - Intervals. If the Bluetooth connection is disconnected for longer than 5 minutes, start the module replacement and skip steps 1/7, 2/7 and 3/7.

8.5.3.5 Intervals - Step 4/7

In this step, you can define the intervals for measurements and data transfers. The remaining battery life is recalculated based on your entry.

Note

Calculated battery life

The calculated battery life is a statistical value. The actual remaining battery life may differ depending on temperature influences or the connection quality of the Wi-Fi network.

Note

Effects that influence the battery life

Shorter intervals result in a shorter battery life.

The following intervals are preset in the factory:

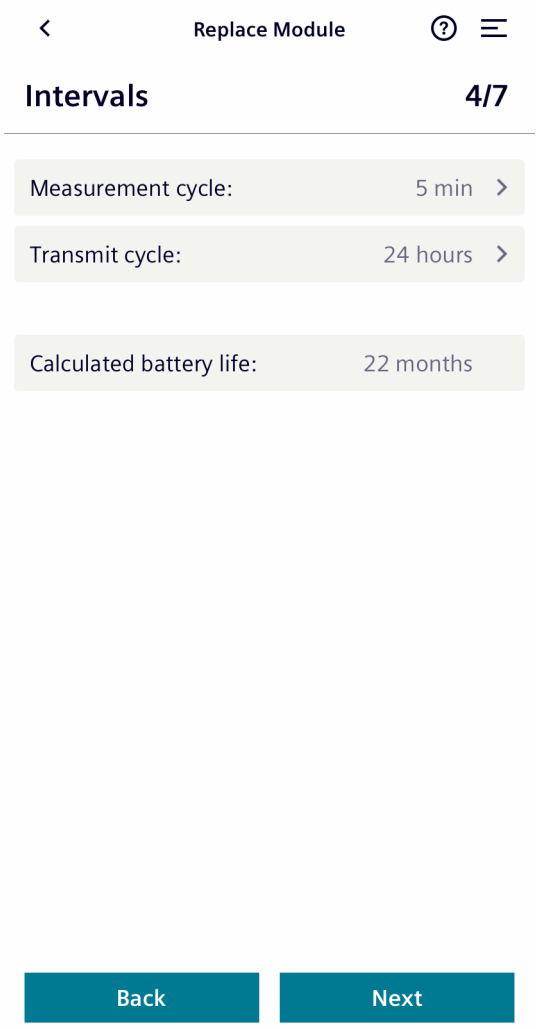
- 5 minutes - interval for measuring temperature, vibrations, rotational frequency, operating status
  You can change these settings within a specified range.
- 10 minutes - interval to calculate speed, torque and energy consumption
  This interval cannot be set, it is dependent on the selected measurement interval. The calculation interval is three times as long, i.e. 3 minutes, for a measurement interval of 1 minute. The calculation interval is twice as long for measurement intervals 2 and 5 minutes. The calculation interval is the same length for all other measurement intervals.
- 24 hours - interval for transmission of the stored data to "SIDRIVE IQ Fleet"
  You can modify these settings within a preset range of 1 to 48 hours.

Note

To calculate the bearing status, the measuring cycle must be set to ≥ 5 minutes.

Procedure

1. Change the measurement interval. The "Calculated battery life" is updated.
2. Change the synchronization interval. The "Calculated battery life" is updated.



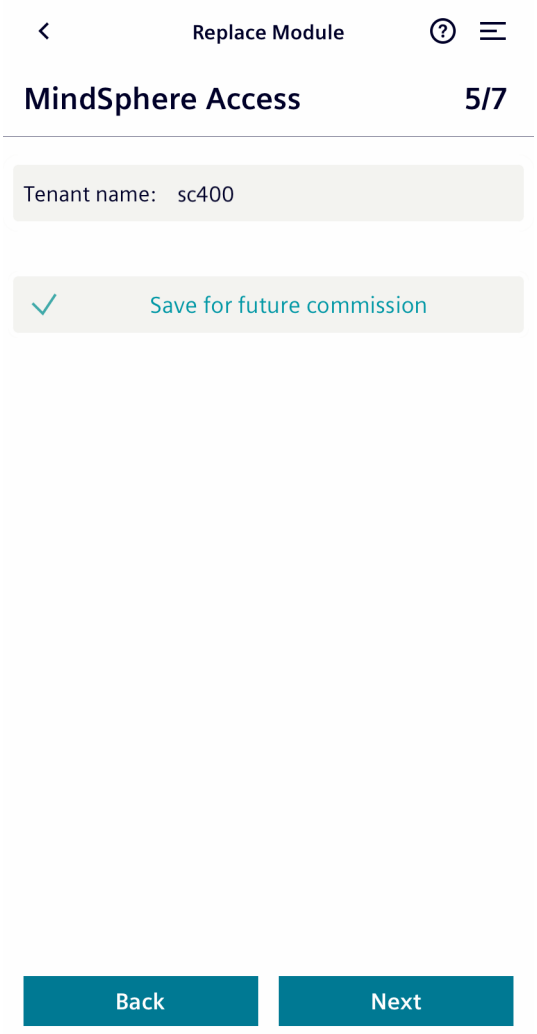
3. Move on to the next step with the "Next" button.

8.5.3.6 MindSphere Access - Step 5/7

In the following step, you establish the MindSphere access for onboarding. The process applied from connecting and registering the connectivity module through to the MindSphere application "SIDRIVE IQ Fleet", including all settings, is called onboarding.

Procedure

1. Enter the MindSphere tenant name in the "Tenant name" field. The length is limited to 8 characters. If you have received a special URL from Siemens for onboarding, enter it in the "Tenant name" field. Start entering the URL with "https://".

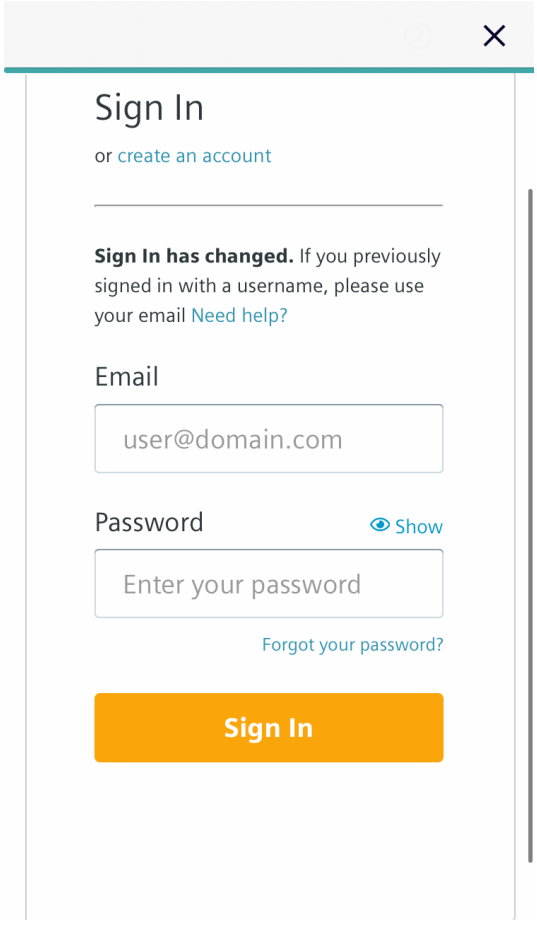


2. With the option "Save for future commissioning", you can save the tenant name you entered or the URL for further commissioning operations. Select this option if it is required.
3. With the "Next" button, the logon dialog box for MindSphere is displayed.

4. For onboarding, log in using your MindSphere login data.

Note

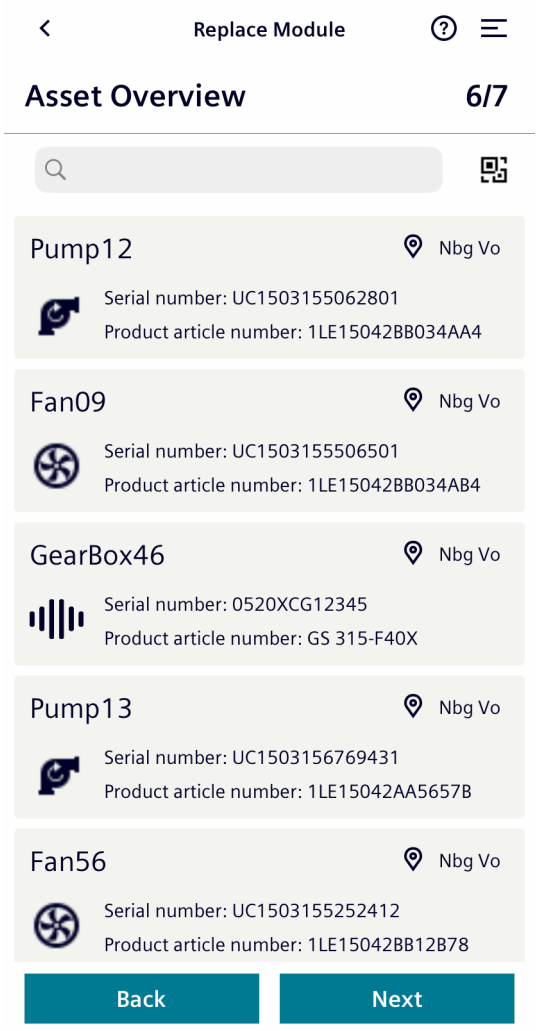
It is possible that the Recognize text / Word suggestions function of your mobile device enters a blank at the end of the email address that is entered. Delete this blank before logging in.



5. Confirm your entry of the login data with the "Sign In" button.
After successfully logging in, you go directly to Step 6 - Asset Overview.

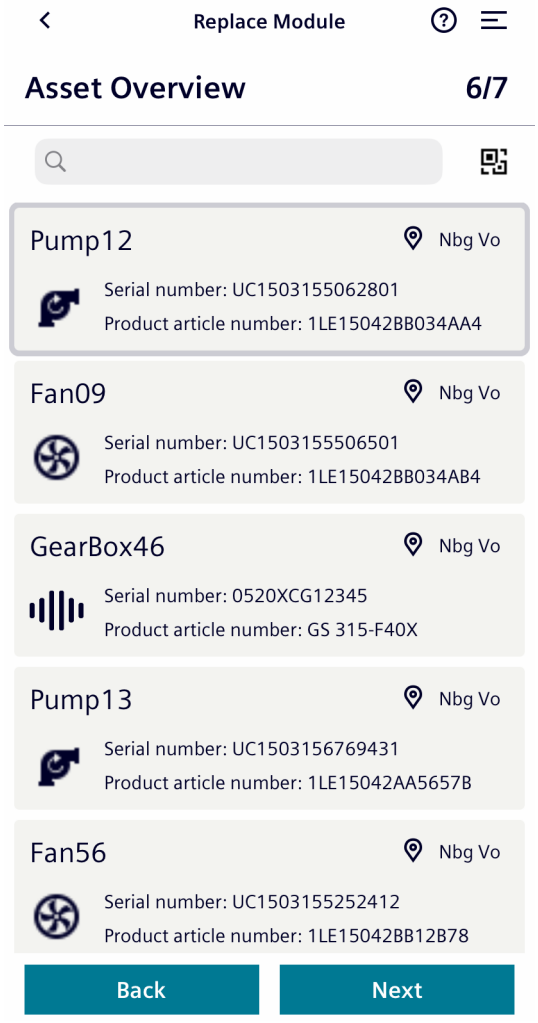
8.5.3.7 Asset Overview - Step 6/7

After you have logged into SIDRIVE IQ Fleet, in Step "Asset Overview", you can see the list of all assets that are integrated in the tenant.

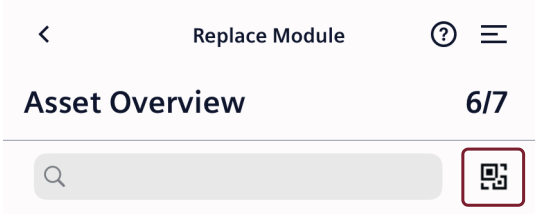


Procedure

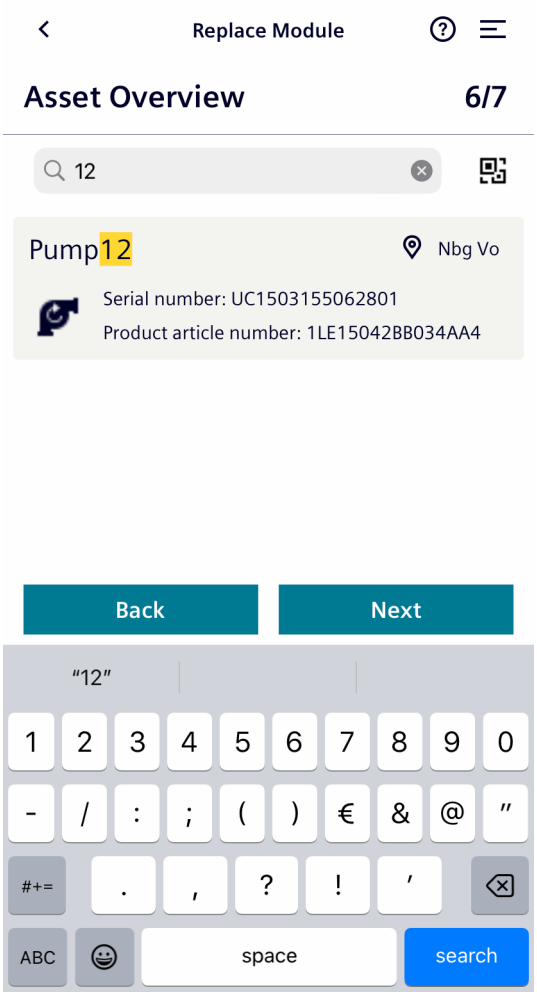
1. From the list, select the asset that you wish to connect to the new connectivity module.



– If the Siemens motor has a 2D code, you can assign the motor by scanning the "Data Matrix Code".
Press the Scan button. The corresponding asset is automatically selected from the list of assets.



– For several entries, you can search for an asset by entering one of the following parameters in the search field:
- Asset name
- Serial number
- Product article number
- Location



2. Move on to the next step with the "Next" button.

8.5.3.8 Replacement reason - Step 7/7

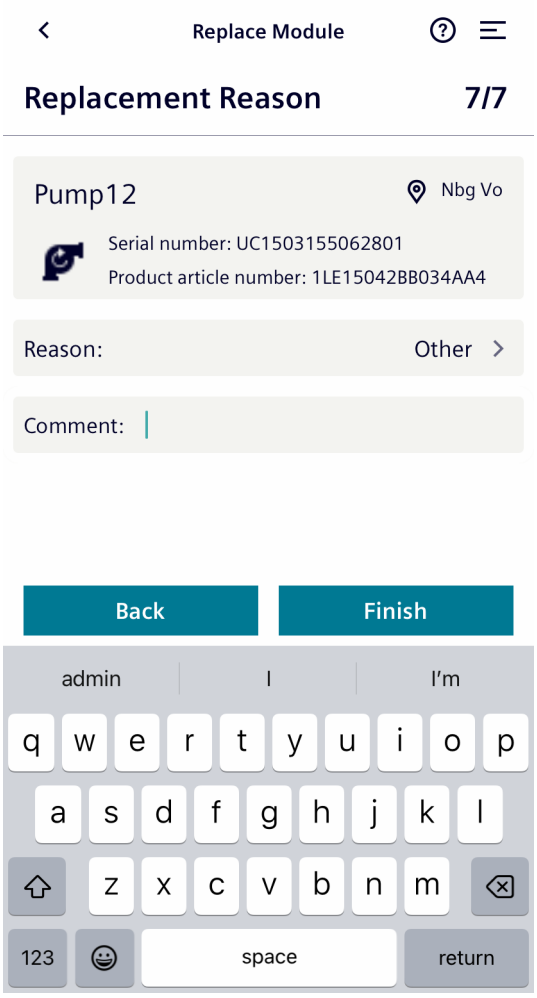
In the last step of the module replacement wizard, enter the reason for the replacement.

Procedure

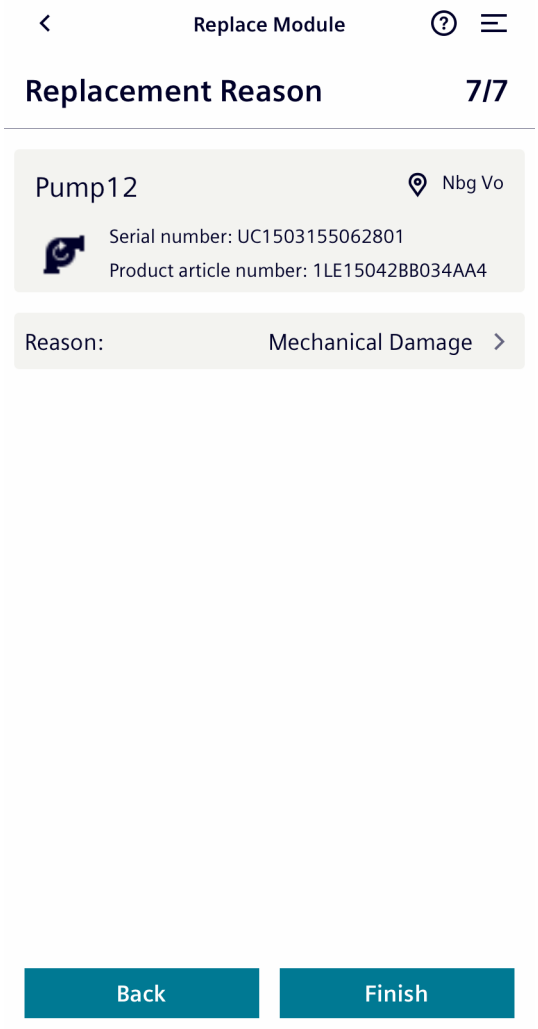
1. Press on > .

2. From the following list, select the reason why the module was replaced.

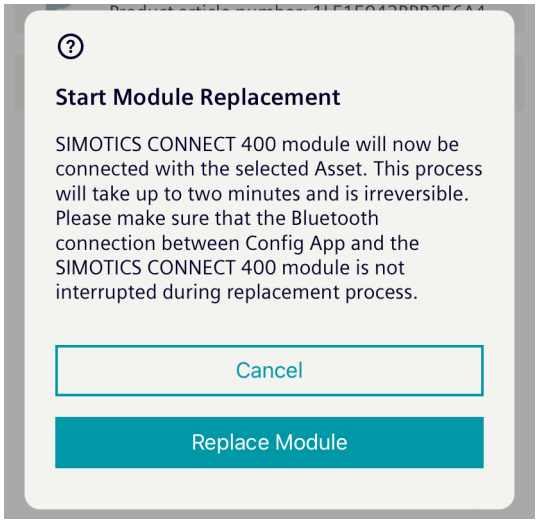
3. When selecting "Other" you have the option of entering a reason for the replacement in the "Comment" field.



4. Accept the selection, and confirm using the "Finish" button.

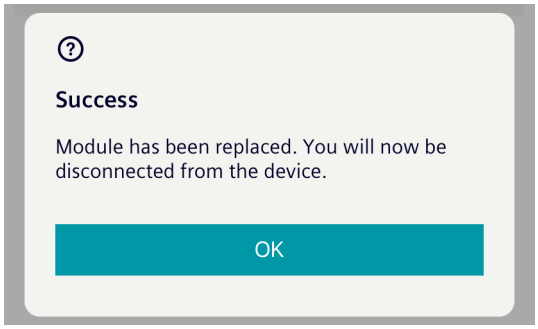


5. Start the replacement process using the "Replace Module" button.



Result

The following message is displayed after the module has been successfully replaced.



After commissioning has been completed, you are automatically logged off from the device and the Bluetooth connection is disconnected.

The connectivity module starts to record data and transfer data in the preselected intervals.

After the first measurements, a first connection is automatically established to SIDRIVE IQ Fleet, which means that you can see the actual connection status shortly after commissioning.

The connectivity module automatically starts the calibration procedure on the motor. It requires 10 measuring cycles with the motor in the "ON" state and 10 measuring cycles with the motor in the "OFF" state. Precise data is only displayed in SIDRIVE IQ Fleet as an "operating state" signal after the calibration process:

Value "0": Motor off (OFF), sensor calibrated

Value "1": Motor status not defined, sensor not calibrated

Value "3": Motor on (ON), sensor calibrated

No additional measures are required to support calibration.

8.6 Replacing a motor (Android)

8.6.1 Start the motor replacement wizard

Using function "Replace Motor", you can replace the motor configuration without having to create a new asset in "SIDRIVE IQ Fleet".

You can change the following data:

- Motor type
- Serial number
- Application
- Operating point
- Operating mode

The new motor continues to be monitored under the existing asset name. Data previously saved in "SIDRIVE IQ Fleet" are not deleted.

The motor replacement wizard guides you step-by-step through the replacement process.

Note

Motor replacement wizard - Help

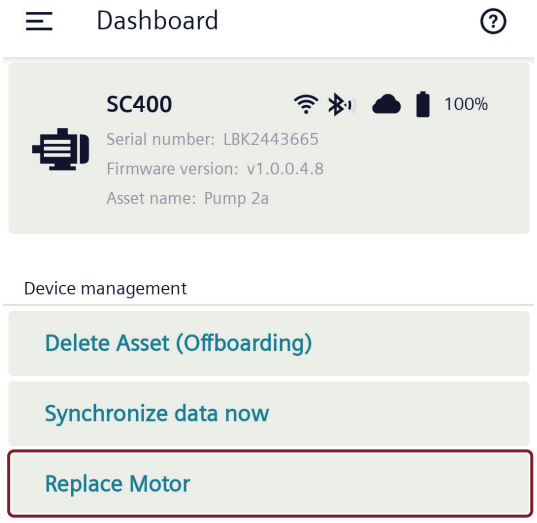
You can call help using icon ⓘ at the specific step.

Requirements

- You are logged in to the connectivity module via the "SIDRIVE IQ Config" application.
- The Wi-Fi connection has been set up.
- The SIMOTICS Connect 400 connectivity module is registered with SIDRIVE IQ Fleet.
- You have the necessary authorization (see operating instructions, SIDRIVE IQ Fleet, Section Activate MindSphere user account > SIDRIVE IQ Fleet roles). If you do not have the required role, then motor replacement is canceled, and error message "Insufficient rights" output. Contact your "SIDRIVE IQ Fleet" tenant administrator.

Procedure

1. Start the motor replacement wizard using the "Replace motor" button.



8.6.2 MindSphere access

The login dialog for MindSphere is displayed after starting the motor replacement wizard.

Note

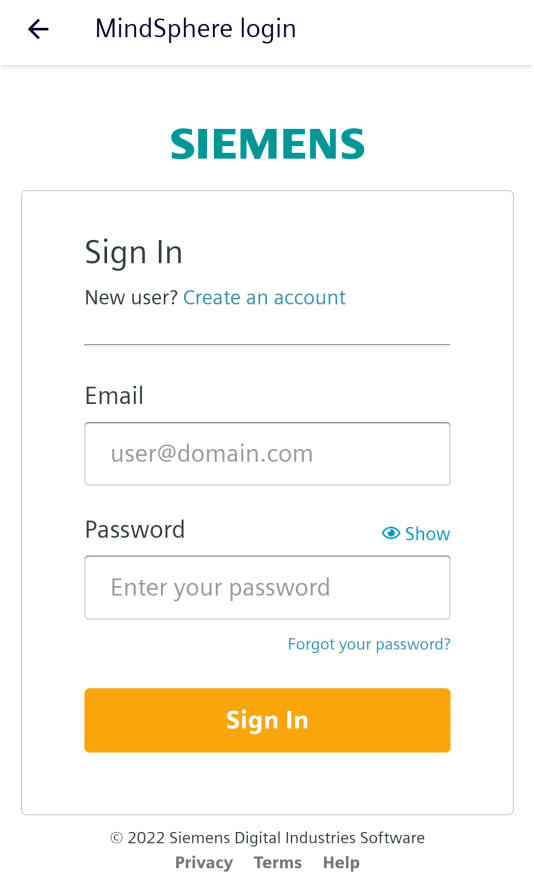
The tenant name is used under which the asset is registered. It is not possible to change the tenant.

Procedure

1. Sign in with your MindSphere login data.

   Note

   It is possible that the Recognize text / Word suggestions function of your mobile device enters a blank at the end of the email address that is entered. Delete this blank before logging in.



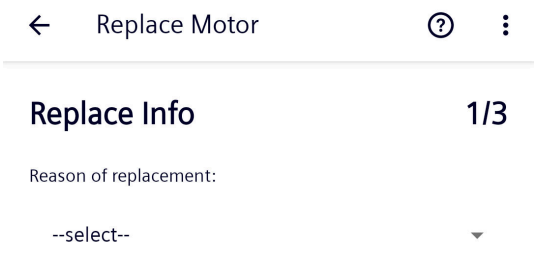
2. Confirm your entry of the login data with the "Sign In" button.
3. After you have successfully logged in, transition to the next step using the "Next" button.

8.6.3 Replacement reason - Step 1/3

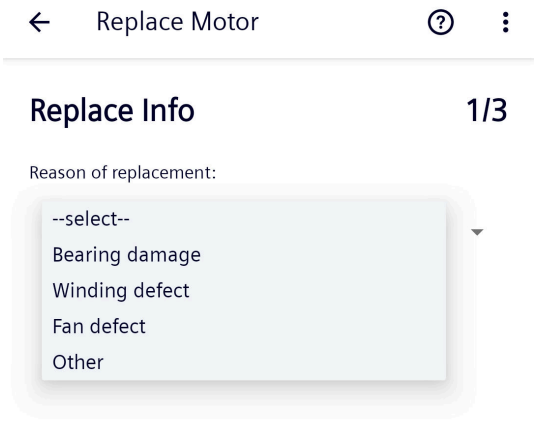
In Step 1 - Replacement information, enter the reason why the motor is being replaced.

Procedure

1. Press icon .



2. From the following list, select the reason why the motor was replaced.



3. When selecting "Other" you have the option of entering a reason for the replacement in the "Comment" field.
4. Move on to the next step with the "Next" button.

8.6.4 New motor data - Step 2/3

In the following step, use the serial number and manufacturer's article number of the new motor.

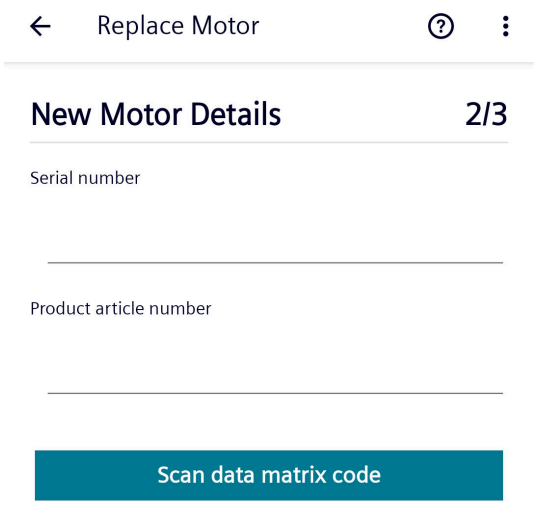
If you have not replaced the motor, but for instance you have only changed the operating mode, then you can use the data of the "old" motor.

Procedure

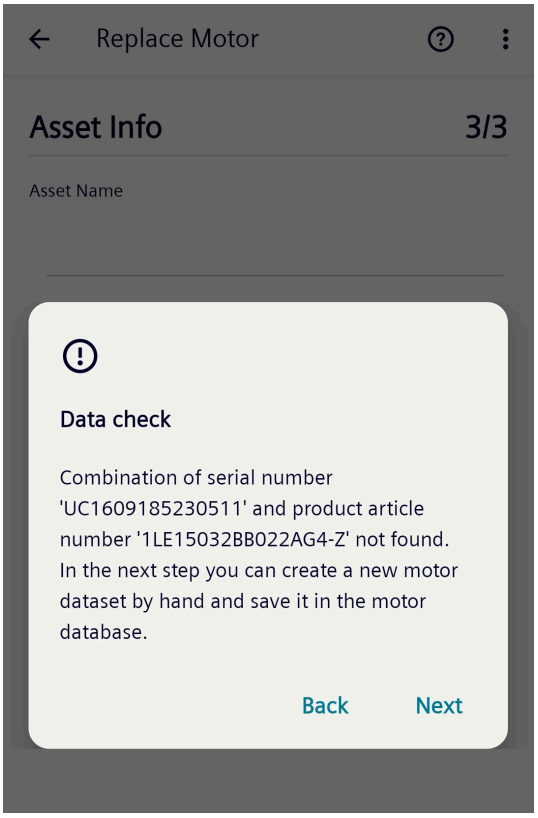
1. Enter the serial number and the product article number. The following options are available:
   - **Manual entry of the serial number and the product article number**
     Enter the serial number and the product article number of the motor in the relevant fields.
   - **Scanning the data matrix code of the motor**
     If the motor is equipped with a scannable code, you can identify the motor to which you have local access. The scan reads the serial number and the product article number. Scan the "Data Matrix Code" of the motor by tapping the "Scan Data Matrix" button.

     Note

     Motor assignment by scanning the data matrix code is only possible if the Siemens motor has been provided with a 2D code.



2. With the "Next" button, you synchronize with the cloud. If the motor data set is available in the digital twin database, then you proceed to Step 3/3 - Asset Info.
   If there is no data set for your motor in the digital twin database, e.g. for motor models from before 2011 or for motors of other manufacturers, the following message is displayed:



3. With the "Back" button, you can check the data that you entered and correct them if necessary.
   With the "Next" button, you call up the dialog box to create a new motor data set.
   If the motor is not found in the motor database by a combination of the serial number and the product article number, you will have to enter the motor data yourself and save them in the database. This applies both to Siemens motors and to motors of other manufacturers. To create a new motor data set, proceed the same as for commissioning, described in Section Procedure - Create a new motor data set (Page 53).

8.6.5 Asset Info - Step 3/3

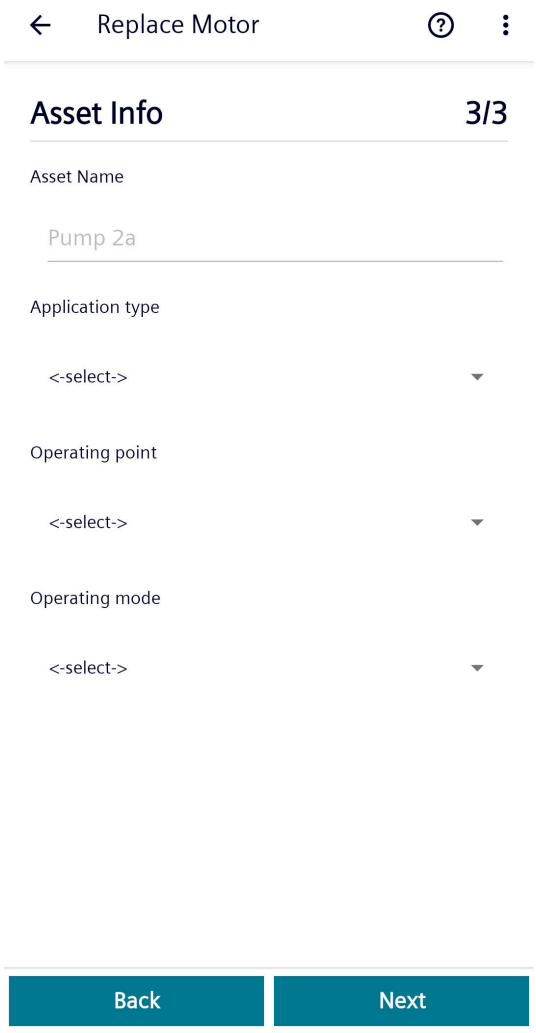
Enter the asset data in the last step of the motor replacement wizard.

Note

The asset name cannot be changed

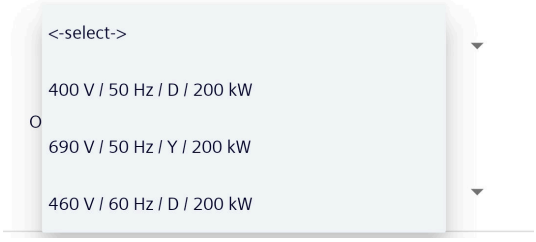
Procedure

1. Enter the asset data.



2. Select the application type.

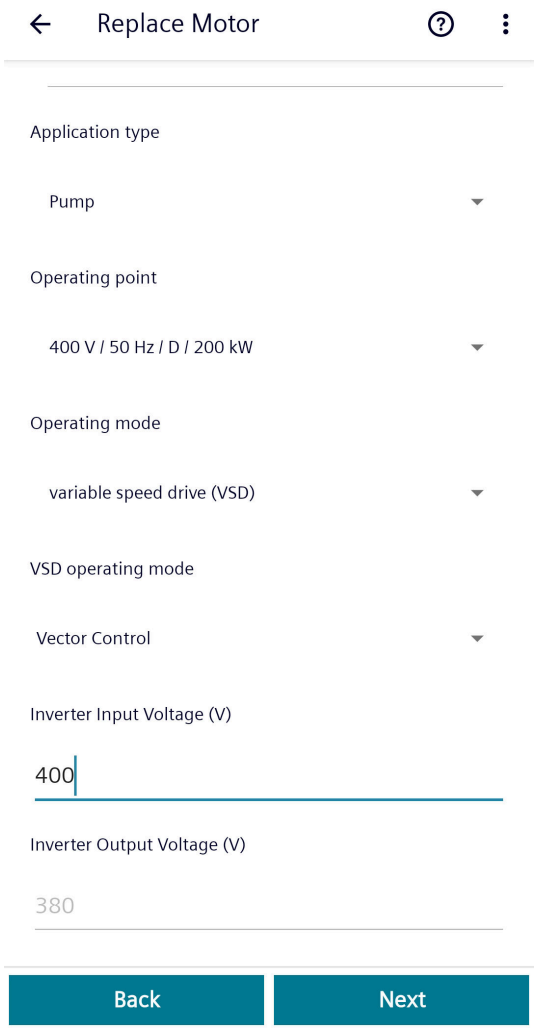
3. Select the operating point. If there are multiple parameter sets in the rating data, select the parameter set that matches the connection conditions of your motor.



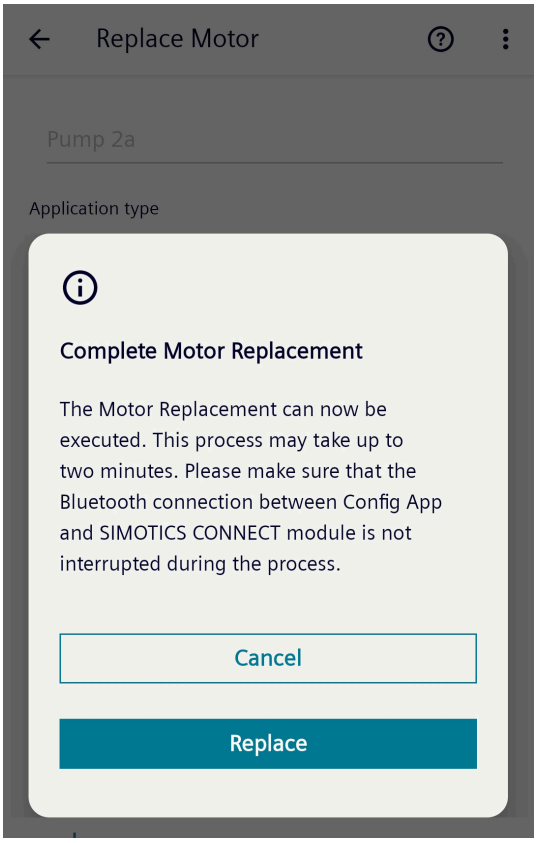
4. Select the operating mode.

   – Line operation - direct-on-line operation (DOL)
     When selecting "Direct-on-line operation (DOL)", you can immediately continue with step 6.
   – Converter operation - variable speed drive operation (VSD)
     When selecting "variable speed drive (VSD)", the following additional fields are displayed.
     - VSD operating mode
     - Inverter input voltage (V)
     - Inverter output voltage (V)
     When selecting "variable speed drive (VSD)", select one of the following control modes.
     - Vector control
     - U/f control
     If you are not certain when making the selection, or if the converter is not operated in one of the specified control modes, then select U/f.

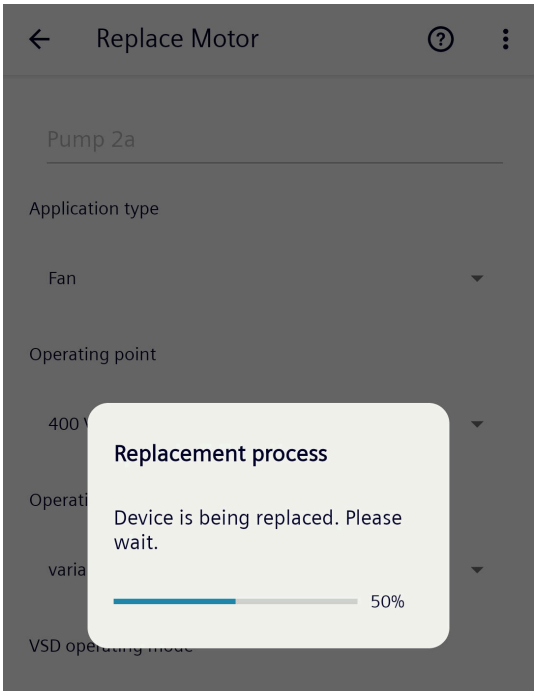
5. Exit step 4/4 using the "Next" button.



6. Complete the replacement process using the "Replace" button.

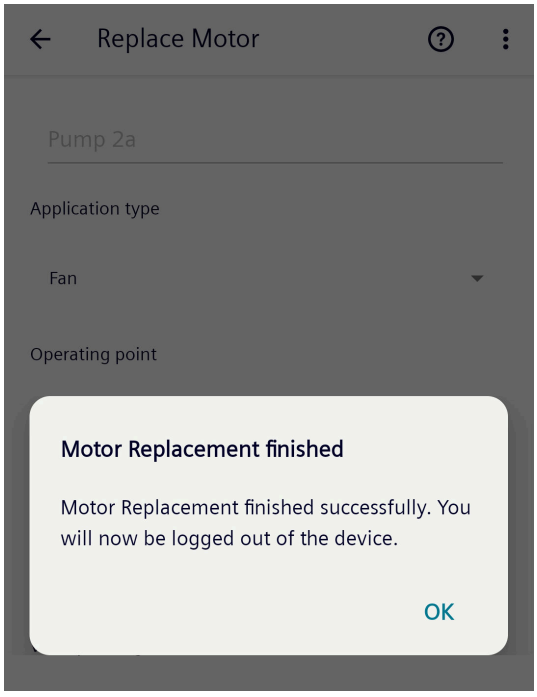


The progress of the replacement process is displayed.



Result

The following message is displayed after the motor has been successfully replaced.



After commissioning has been completed, you are automatically logged off from the device and the Bluetooth connection is disconnected.

The connectivity module starts to record data and transfer data in the preselected intervals.

After the first measurements, a first connection is automatically established to SIDRIVE IQ Fleet, which means that you can see the actual connection status shortly after commissioning.

The connectivity module automatically starts the calibration procedure on the motor. It requires 10 measuring cycles with the motor in the "ON" state and 10 measuring cycles with the motor in the "OFF" state. Precise data is displayed in SIDRIVE IQ Fleet as an "operating mode" signal only after the calibration process:

- Value "0": Motor off (OFF), sensor calibrated
- Value "1": Motor status not defined, sensor not calibrated
- Value "3": Motor on (ON), sensor calibrated

No additional measures are required to support calibration.

8.7 Replacing a motor (iOS)

8.7.1 Starting the motor replacement wizard

Using function "Replace Motor", you can replace the motor configuration without having to create a new asset in "SIDRIVE IQ Fleet".

You can change the following data:

- Motor type
- Serial number
- Application
- Operating point
- Operating mode

The new motor continues to be monitored under the existing asset name. Data previously saved in "SIDRIVE IQ Fleet" are not deleted.

The motor replacement wizard guides you step-by-step through the replacement process.

Note

Motor replacement wizard - Help

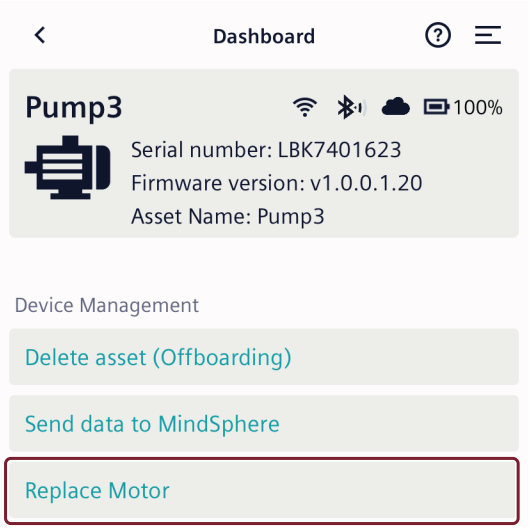
You can call help using icon ? at the specific step.

Requirements

- You are logged in to the connectivity module via the "SIDRIVE IQ Config" application.
- The Wi-Fi connection has been set up.
- The SIMOTICS Connect 400 connectivity module is registered with SIDRIVE IQ Fleet.
- You have the necessary authorization (see operating instructions, SIDRIVE IQ Fleet, Section Activate MindSphere user account > SIDRIVE IQ Fleet roles). Replacing the motor is canceled with error message "Insufficient rights" if you do not have the appropriate role. Contact your "SIDRIVE IQ Fleet" tenant administrator.

Procedure

1. Start the motor replacement wizard using the "Replace Motor" button.



8.7.2 MindSphere login

The login dialog for MindSphere is displayed after starting the motor replacement wizard.

Note

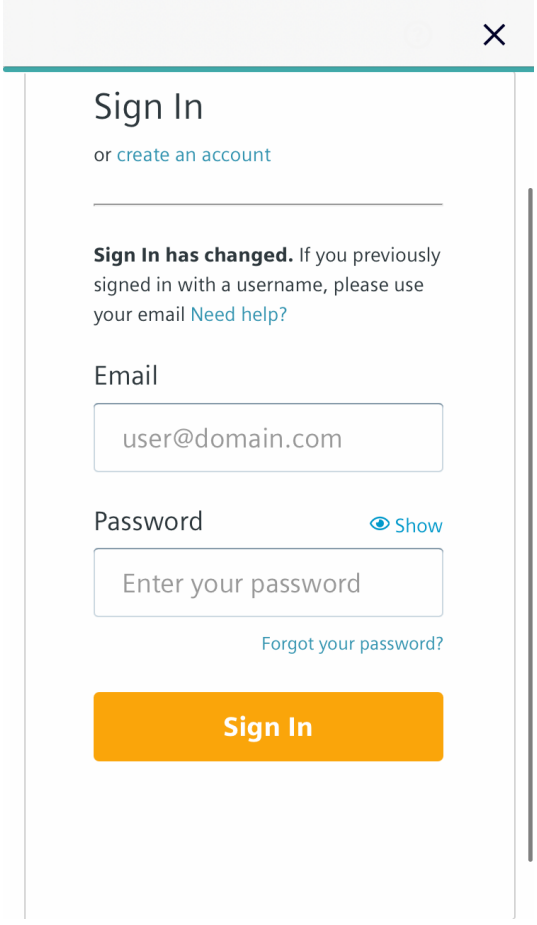
The tenant name is used under which the asset is registered. It is not possible to change the tenant.

Procedure

1. Sign in with your MindSphere login data.

   Note

   It is possible that the Recognize text / Word suggestions function of your mobile device enters a blank at the end of the email address that is entered. Delete this blank before logging in.



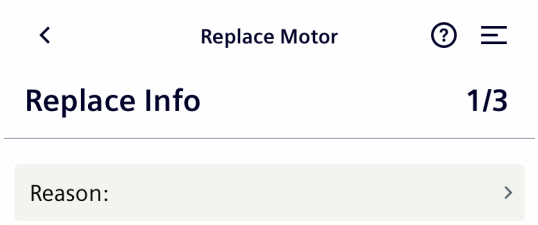
2. Confirm your entry of the login data with the "Sign In" button.
   After you have successfully logged in, you go directly to Step 1/3 of the motor replacement wizard.

8.7.3 Replacement Info - Step 1/3

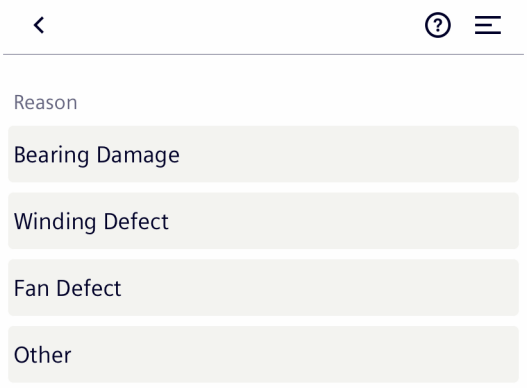
In Step 1 - Replacement information, enter the reason why the motor is being replaced.

Procedure

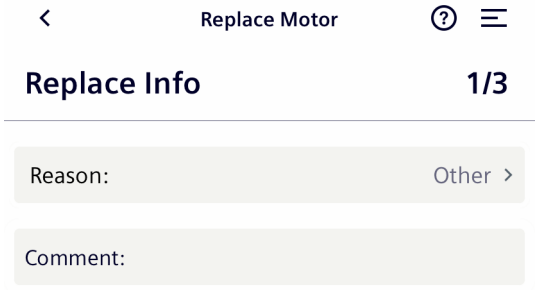
1. Press on > .



2. From the following list, select the reason why the motor was replaced.



3. When selecting "Other" you have the option of entering a reason for the replacement in the "Comment" field.



4. Move on to the next step with the "Next" button.

8.7.4 New motor data - Step 2/3

In the following step, use the serial number and manufacturer's article number of the new motor.

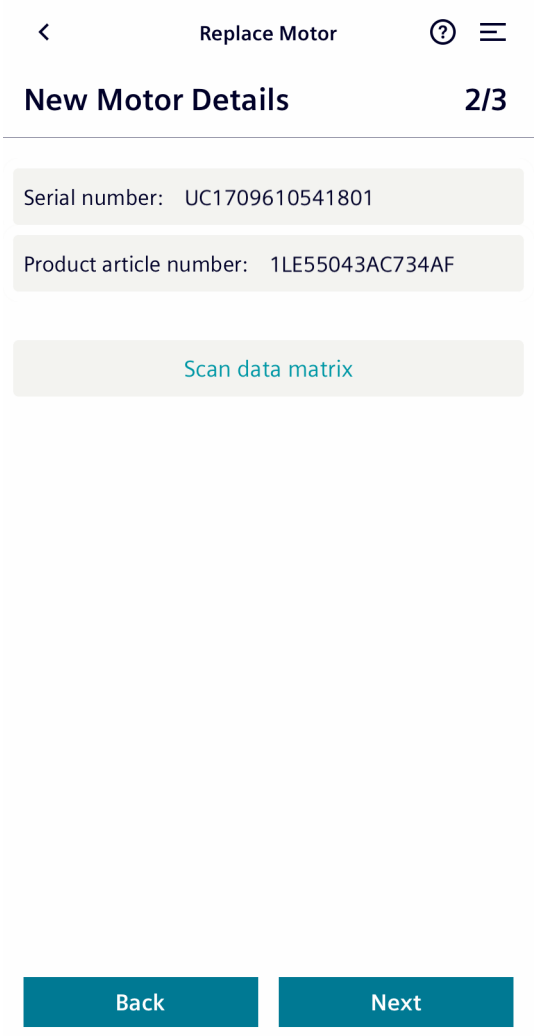
If you have not replaced the motor, but for instance you have only changed the operating mode, then you can use the data of the "old" motor.

Procedure

1. Enter the serial number and the product article number. The following options are available:
   - **Manual entry of the serial number and the product article number**
     Enter the serial number and the product article number of the motor in the relevant fields.
   - **Scanning the data matrix code of the motor**
     If the motor is equipped with a scannable code, you can identify the motor to which you have local access. The scan reads the serial number and the product article number. Scan the "Data Matrix Code" of the motor by tapping the "Scan Data Matrix" button.

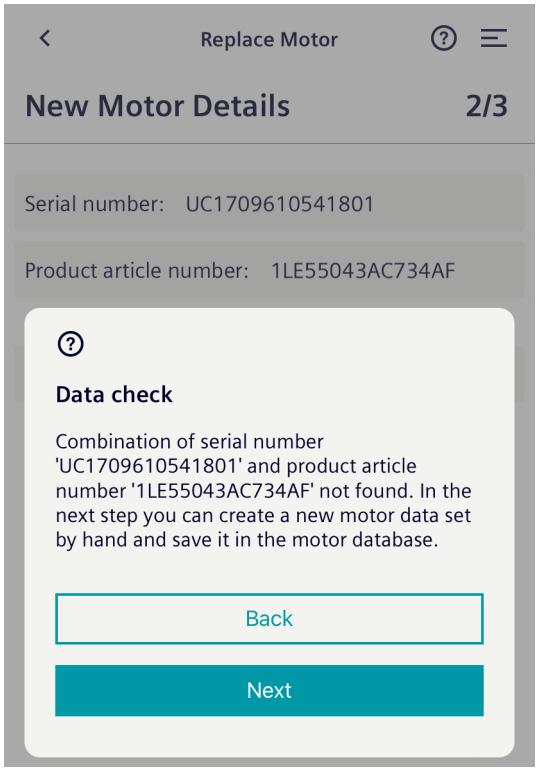
   Note

   Motor assignment by scanning the data matrix code is only possible if the Siemens motor has been provided with a 2D code.



2. With the "Next" button, you synchronize with the cloud. If the motor data set is available in the digital twin database, then you proceed to Step 3/3 - Asset Info.

If there is no data set for your motor in the digital twin database, e.g. for motor models from before 2011 or for motors of other manufacturers, the following message is displayed:



3. With the "Back" button, you can check the data that you entered and correct them if necessary.
   With the "Next" button, you call up the dialog box to create a new motor data set.
   If the motor is not found in the motor database by a combination of the serial number and the product article number, you will have to enter the motor data yourself and save them in the database. This applies both to Siemens motors and to motors of other manufacturers. To create a new motor data set, proceed the same as for commissioning, described in Section Procedure - Create a new motor data set (Page 92).

8.7.5 Asset Info - Step 3/3

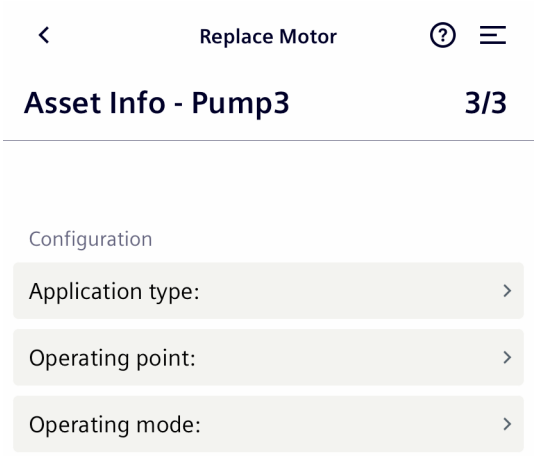
Enter the asset data in the last step of the motor replacement wizard.

Note

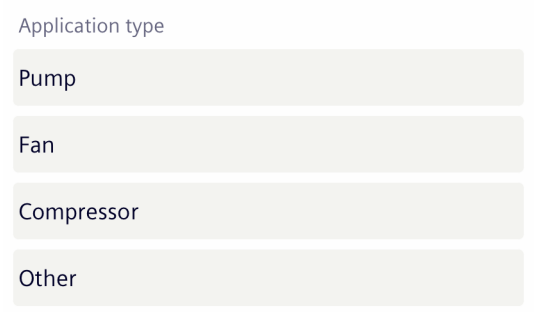
The asset name cannot be changed

Procedure

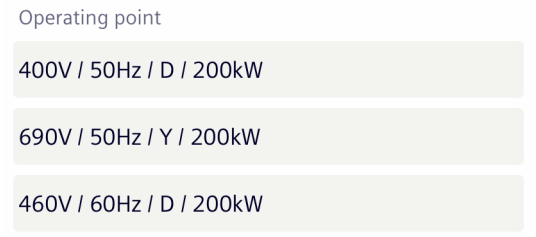
1. Enter the asset data.



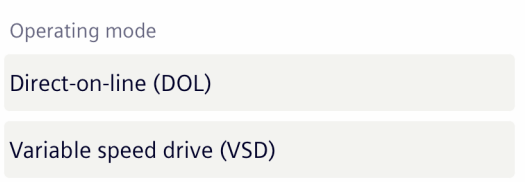
2. Select the application type.



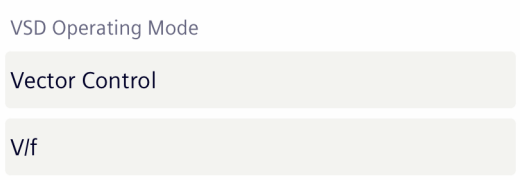
3. Select the operating point. If there are multiple parameter sets in the rating data, select the parameter set that matches the connection conditions of your motor.



4. Select the operating mode.

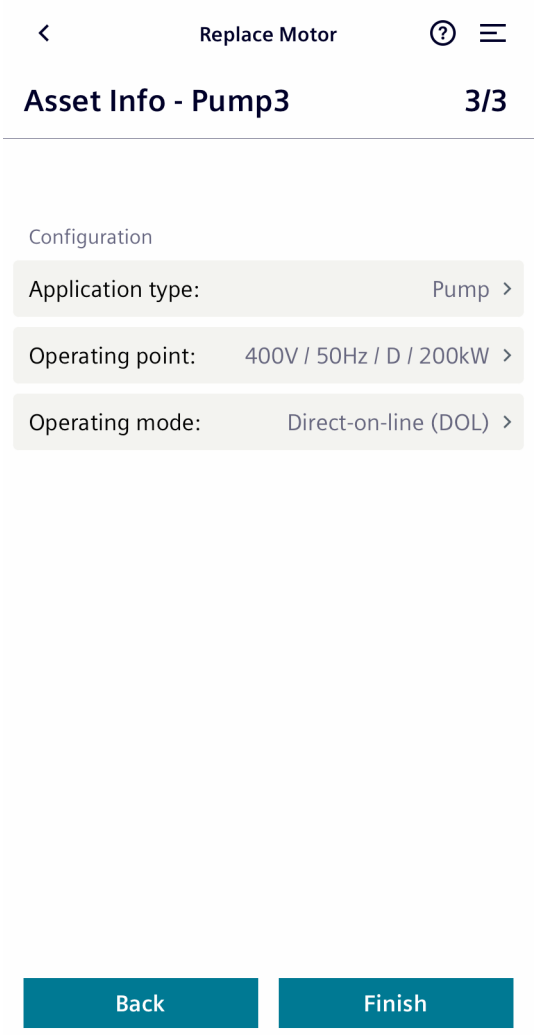


– Line operation - direct-on-line operation (DOL)
  When selecting "Direct-on-line operation (DOL)", you can immediately continue with step 6.
– Converter operation - variable speed drive operation (VSD)
  When selecting "variable speed drive (VSD)", the following additional fields are displayed.
  - VSD operating mode
  - Inverter input voltage (V)
  - Inverter output voltage (V)
  When selecting "variable speed drive (VSD)", select one of the following control modes.
  - Vector control
  - U/f control

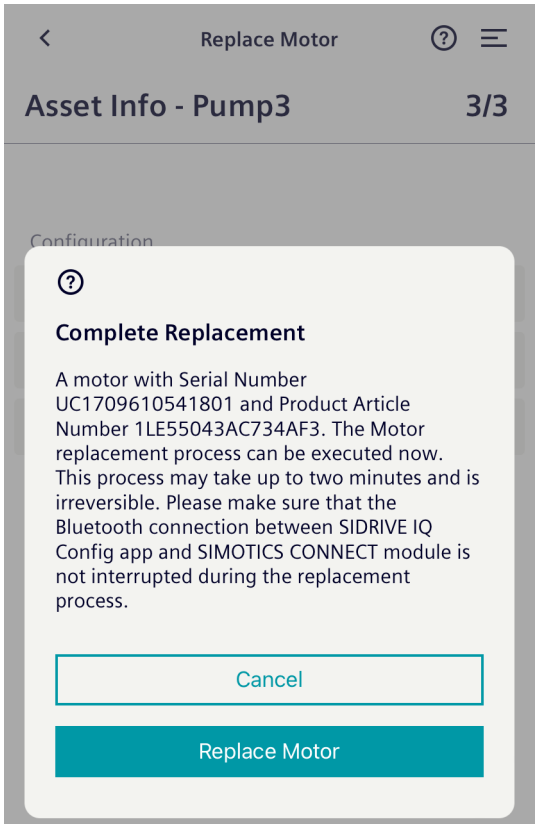


  If you are not certain when making the selection, or if the converter is not operated in one of the specified control modes, then select U/f.

5. Exit step 3/3 using the "Finish" button.

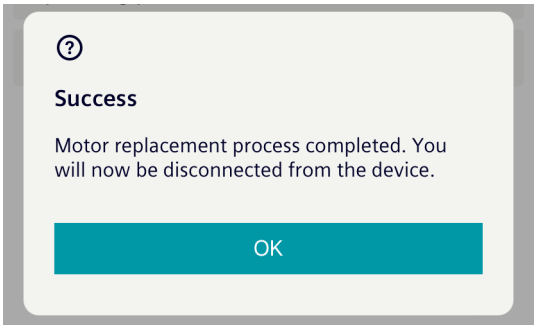


6. Complete the replacement process using button "Replace Motor".



Result

The following message is displayed after the motor has been successfully replaced.



After commissioning has been completed, you are automatically logged off from the device and the Bluetooth connection is disconnected.

The connectivity module starts to record data and transfer data in the preselected intervals.

After the first measurements, a first connection is automatically established to SIDRIVE IQ Fleet, which means that you can see the actual connection status shortly after commissioning.

The connectivity module automatically starts the calibration procedure on the motor. It requires 10 measuring cycles with the motor in the "ON" state and 10 measuring cycles with

the motor in the "OFF" state. Precise data is displayed in SIDRIVE IQ Fleet as an "operating mode" signal only after the calibration process:

- Value "0": Motor off (OFF), sensor calibrated
- Value "1": Motor status not defined, sensor not calibrated
- Value "3": Motor on (ON), sensor calibrated

No additional measures are required to support calibration.

8.8 Replace the battery

Batteries are consumables. You can order batteries as spare parts (Page 208). Replace the battery in plenty of time in order to guarantee the functionality of the device.

Shorter measuring and send cycles result in a shorter battery life (see Chapter Changing measuring and send cycles (Android) (Page 119) or Changing measuring and send cycles (iOS) (Page 128).

The ambient conditions, such as temperature, can also influence the battery life.

If the battery status display of the connectivity module is orange, then the charge is 40% or less.

If the battery status display of the connectivity module is red, then the charge is 20% or less.

Replace the battery in good time. If disturbances occur in data transmission, replace the batteries.

Batteries may only be replaced and connected up by qualified personnel.

NOTICE
Damage to the device if the wrong battery is used Replace the battery only with original batteries (Page 208).

⚠ **WARNING**
Danger of explosion and the release of harmful substances! Improper handling of batteries can cause them to explode. Explosion of the batteries and the released pollutants can cause severe physical injury. Worn batteries jeopardize the function of the device. Note the following when handling batteries: • Replace the batteries only with original batteries (Page 208). • Never throw batteries into fire. • Do not solder on the body of the battery. • Never recharge the battery. • Do not open the battery. • Do not short-circuit the battery. • Do not connect the battery with the incorrect polarity. • Do not heat up the battery above 100 °C. • Protect the battery from direct sunlight, moisture and condensation.

Data loss when the battery is changed

When a battery is changed, device configuration data are kept in the retentive memory.

The following data are lost:

- Measurement data after the last transmission to SIDRIVE IQ Fleet
- The associated date and time of the connectivity module

Note

Save data when the battery has adequate residual capacity

To avoid losing measurement data that has been captured, you can transfer data to MindSphere while the battery has sufficient residual capacity and before it is replaced.

To do this, use the "Send data to MindSphere" function in the "SIDRIVE IQ Config" application.

Procedure

1. Visually inspect the new battery for any damage.
2. Release the 2 central fastening screws at the front cover. You can find the relevant mounting elements for the connectivity module in Chapter Mounting and installation (Page 31). To avoid losing the screws, do not turn the screws completely out of the cover.
3. Remove the front cover.
4. Remove the battery connector by gently withdrawing it from the socket.
5. Remove the batteries from the holder.
6. Insert the new batteries.
7. Insert the battery connector by gently pressing on the socket provided.
8. Put the front cover back in position. Ensure that the cover fits precisely.
9. Tighten the 2 central fastening screws on the front cover.
10. In the "SIDRIVE IQ Config" application, use the "Battery replacement" function to reset the battery status display to 100 %.

8.9 Changing the attachment position of the mounting bracket

If the mounting position used for mounting in the factory is unsuitable because of the available space, you can mount the connectivity module on the opposite side of the motor (see Chapter Mounting the mounting bracket (Page 32)).

Disposal

9

Country-specific legislation

The product uses materials that you can recover or recycle. Correctly separating materials helps to simply recycle important materials.

- When disposing of the product or waste that occurs in the individual lifecycle phases, carefully comply with country-specific legislation.
- Please contact your local authorities for more information about disposal.

9.1 Disposing of the connectivity module

1. Check whether the connectivity module can still function.
2. If the connectivity module can still function reset all of the settings to the factory settings (Page 139).
3. Remove the battery.
4. Dispose of the battery in compliance with the applicable national regulations or recycle the battery (Page 205).
5. Dispose of the connectivity module in compliance with the applicable national regulations or recycle it.
   Comply with the directive of the European Parliament and Counsel regarding old electrical and electronic devices (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012L0019).

9.2 Disposing of the battery

When disposing, observe the following environmental protection measures:

- Do not throw used lithium batteries into household waste (garbage).
- Dispose of used lithium batteries individually as special waste.
- Dispose of used lithium batteries in compliance with all of the local regulations.
- Used lithium batteries can be recycled. Recycle your old batteries!

Further information

10

10.1 Product information

Further user documentation

- SIDRIVE IQ Fleet Operating Manual (https://support.industry.siemens.com/cs/ww/en/view/109769880)
- SIMOTICS CONNECT 400 Connectivity Kit (https://support.industry.siemens.com/cs/de/en/view/109774000) Installation Instruction
  The installation instructions are supplied with the SIMOTICS CONNECT 400 Connectivity Kit from the factory.
- Documents for the SIMOTICS CONNECT 400 Connectivity Kit (https://support.industry.siemens.com/cs/de/en/ps/9LD2200-0BA00-0AA0)

Further information about the motor status monitoring

- You will find further information about the motor status monitoring here (http://www.siemens.com/digital-motor)

Additional resources

- How to mount SIMOTICS Connect video tutorial (https://www.youtube.com/watch?v=RShjaqjapxo)

Using open-source software (OSS)

Open-source software is used in the product SIMOTICS CONNECT 400 either unchanged or modified by us.

License conditions and open-source software used that have to be published are stored on the CD-ROM supplied with SIMOTICS CONNECT 400.

10.2 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
- 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).

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".

Spares on Web

A list of available spare parts is available through the spare parts service "Spares on Web (https://www.sow.siemens.com/)" by selecting the serial number and the MLFB of the motor. In SIDRIVE IQ Fleet in the "Fleet" application area, you will find the link to "Spares On Web" for each configured asset.

Spare parts for the connectivity module

You can order spare parts through the regional Siemens support organization.

The following spare parts are available for the connectivity module:

- SIMOTICS CONNECT 400 incl. battery (9LD2200-0BA00-0AA0)
- SIMOTICS CONNECT 400 Spare Mounting Kit (9LD2900-0AA00-0AB0)
- Battery (9LD2900-0AA00-0AA0)

Further information

A brief description of how to use "Spares on Web" is provided in the Internet (https://support.industry.siemens.com/cs/ww/en/view/25248520).

10.3 Technical data

General information	
Brand name of the product	SIMOTICS CONNECT 400
Product category	Sensor and communication device
Product description	SIMOTICS CONNECT 400 with integrated sensors monitors the condition of the motor to provide information about motor operation and to enable optimization of the application and process. SIMOTICS CONNECT 400 can only be used in combination with the "SIDRIVE IQ Fleet" MindSphere application.
Monitoring application	Data analyses, based on the digital twin of the motor, and the visualization of the motor condition are offered comprehensively in the SIDRIVE IQ Fleet MindSphere application.
Measured motor parameters	Temperature, radial/tangential/axial vibration, electrical stator frequency, slip frequency
Calculated motor parameters	Motor status (on/off), speed, torque*, electrical energy*, energy consumption*, number of motor starts, operating hours * currently not available in converter operation (VSD)
Other motor parameters	Maintenance demanded, e.g. regreasing interval
Supported motors	Three-phase, rib-cooled low-voltage asynchronous motors in line operation (DOL) and in converter operation (VSD), IEC shaft heights 80 to 450 and NEMA shaft heights 48 to 680
Type of installation / mounting	
Type of mounting and position	Mounted outside using a (glued) mounting bracket* on the cooling ribs of the motor. * As described in the installation instructions.
Qualified adhesives	Henkel LOCTITE® HY 4090™, Weicon Fast Metal Minute Adhesive, 3M Scotch-Weld DP 8407 NS
Power supply	
Type of power supply	Battery pack included Li/$SOCl_{2,}$ 3.6 V, 4 cells, size AA, non-rechargeable
Life of the battery	Operating time up to 2 years*, replaceable to prolong the life * At an ambient temperature of 0° C to 40° C and with a measurement interval of 5 minutes and transmission of the stored data once every 24 hours
Memory	
Internal flash memory	Data storage for at least 48 hours* if the MindSphere connection is interrupted * At a measuring interval of 1 minute
Communication	
Bluetooth ®	SPBTLE-RF Bluetooth module for communication with a mobile device for commissioning and configuring the connectivity module Compliant with Bluetooth ® V4.1 Frequency: 2402 GHz – 2480 GHz RF output power: 2402 – 2480 MHz: 4.20 dBm (Max. e.i.r.p.) Range: up to 10 m * Commissioning comprises the integration into the local Wi-Fi network and onboarding to MindSphere.

Wi-Fi	Wi-Fi communication module SN8000/8000UFL to transfer measured data to SI-DRIVE IQ Fleet using an encrypted HTTPS connection via TLS 1.2 protocol as well as for firmware updates* IEEE 802.11b/g/n Frequency: 2400 GHz – 2483.5 GHz RF output power: 2412 – 2472 MHz: 18.5 dBm (Max. e.i.r.p.) Range: up to 100 m * MindSphere synchronization interval adjustable between 1 hour and 48 hours (default: 24 hours)
Status information	
Diagnostics LEDs (blue)	Status information during configuration
Integrated sensors	
Measurement interval	Configurable between 1 minute and 1 hour (default value: 5 minutes)
Temperature measurement	
Area	-40 °C to +85 °C
Resolution	0.03 °C * Temperature measured at the contact between the connectivity module and mounting plate
Vibration measurement	
Physical measurement principle	Total vibration V_{RMS} 3 axes
Area	0.02 - 180 mm/s Standard measurement: 10 Hz to 1.6 kHz (sampling rate: 3.3 kHz) Performance measurement for a daily detailed evaluation of the health status: 10 Hz to 3.3 kHz (sampling rate: 6.6 kHz, for measurement intervals ≥ 5 min)
Field measurement	
Area	0.01 Hz to 300 Hz Motor stray field
Standards, approvals, certificates	
See Directives and standards (Page 213)	
Degree of protection and protection class	
Degree of protection according to EN 60529	IP65
Shock resistance according to Class 3M4	Max. 100 m/s² (tested according to Class 3M4)
Ambient conditions	
Ambient temperature during operation	-40 °C to +80 °C
Ambient temperature during storage / transport	-20 °C to +40 °C
Relative humidity	5% to 95% (without condensation)
Software	
Mobile app for commissioning and configuration	SIDRIVE IQ Config Android version through the Google Play Store, iOS version through the Apple App-Store
Mechanics / material	
Material of the housing	Industrial plastic Durethan® (polyamide, halogen-free, glass-fiber reinforced), material of the cover seal made of silicone
Material of the mounting bracket	Stainless steel

Dimensions	
Length x Height x Depth	125 mm x 76 mm 29 mm
Weight	
Weight of the connectivity module, approx.	0.25 kg
Weight of the Connectivity Kit, including mounting accessories, approx.	0.50 kg
Documentation and information	
Further technical product information and documentation is available at: www.siemens.com/digital-motor (www.siemens.com/digital-motor)	

10.4 Directives and standards

RED Directive 2014/53/EU

The product is designed for use in industry.

Safety requirements	IEC 62368-1 :2018/COR1 :2020 EN IEC 62368-1 :2020+A11 :2020 DIN-EN IEC 62311:2020-12
EMC standards	EN 309 489-1 V2.2.3 EN 309 489-17 V3.2.4
Efficient use of a spectrum	EN 300 328 V2.2.2

Further applicable standards

Assessment of electrical and electronic devices in respect of limitation of hazardous materials:

- RoHS Directive 2011/65/EU
- EN50581 2012

The product meets the requirements if you observe the installation guidelines and safety instructions provided in these operating instructions.

CE	**Radio Equipment Directive 2014/53/EU** SIMOTICS CONNECT 400 complies with the Radio Equipment Directive 2014/53/EU. You can download the certificate at the following link: Declaration of Conformity (https://support.industry.siemens.com/cs/ww/en/view/109771797)
	The EC Declaration of Conformity is held on file available to the competent authorities at the following address: SIEMENS AG Frauenauracher Str. 80 91056 Erlangen, Germany
UK CA	SIMOTICS CONNECT 400 complies with the Radio Equipment Regulations UK SI 2017 No. 1206. This equipment must be installed and operated at a minimum distance of 20 cm between the device and users or bystanders. This equipment must not be co-located or operated in conjunction with any other antenna or transmitter.

FCC Declaration of Conformity

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications made to this equipment that are not expressly approved by SIEMENS could void the FCC authority to operate this device.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the device and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Declaration on radio frequency exposure

This equipment complies with the radio frequency exposure limits of the FCC in an uncontrolled environment.

This equipment must be installed and operated at a minimum distance of 20 cm between the device and users or bystanders.

This equipment must not be co-located or operated in conjunction with any other antenna or transmitter.

IC	This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage. (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement. This equipment complies with radio frequency exposure limits set forth by the Innovation, Science and Economic Development Canada for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the device and the user or bystanders. This device must not be co-located or operating in conjunction with any other antenna or transmitter. Cet équipement est conforme aux limites d'exposition aux radiofréquences définies par la Innovation, Sciences et Développement économique Canada pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre le dispositif et l'utilisateur ou des tiers. Ce dispositif ne doit pas être utilisé à proximité d'une autre antenne ou d'un autre émetteur.
NBTC	This telecommunication device meets the technical standard or requirement of NBTC, Thailand. (The equivalent text in Thai is provided below.) **เครื่องโทรคมนาคมและอุปกรณ์นมี้ีความสอดคล้องตามมาตรฐานหรือข้อกำหนดทางเทคนิคของ กสทช.**
	Australia and New Zealand (RCM, formerly C-Tick) SIMOTICS CONNECT 400 meets the requirements for RCM, Australia and New Zealand
	SIMOTICS CONNECT 400 meets the requirements for IMDA, Singapore.
IFETEL	SIMOTICS CONNECT 400 meets the requirements of ICASA, South Africa. Certificate number TA-2019/1776.
ICASA	SIMOTICS CONNECT 400 meets the requirements of SUBTEL, Chile.
SUBTEL	SIMOTICS CONNECT 400 meets the requirements for ARCOTEL, Ecuador.
ARCOTEL	SIMOTICS CONNECT 400 meets the requirements of ICASA, South Africa. Certificate number TA-2019/1776.
FAC	SIMOTICS CONNECT 400 meets the requirements of Minpromtorg of Russia. Декларация о соответствии ТР ТС 020/2011: Декларация о соответствии ЕАЭС N RU Д-DE.HA10.B.01575/18 от 17.10.2018 года, действительна до 16.10.2023 года, зарегистрирована 22.11.2018 года
SDPPI	SIMOTICS CONNECT 400 meets the requirements of SDPPI, Indonesia. Certificate number: 66064/SDPPI/2020 4770
CNC	SIMOTICS CONNECT 400 meets the requirements of CNC, Argentina.
MTC	SIMOTICS CONNECT 400 meets the requirements of MTC, Peru.
CRC	SIMOTICS CONNECT 400 meets the requirements of CRC, Columbia.
ETA	SIMOTICS CONNECT 400 meets the requirements of MTCTE, India.
SRRC	SIMOTICS CONNECT 400 meets the requirements of SRRC, China.
OFCA	SIMOTICS CONNECT 400 meets the requirements of OFCA, Hong Kong.

KVALITET 	SIMOTICS CONNECT 400 meets the requirements for KVALITET, Serbia Certification number: P1620134400
MOC	SIMOTICS CONNECT 400 meets the requirements of MOC, Israel Certification number: 51-78539
	SIMOTICS CONNECT 400 meets the requirements of ICT, Vietman Certification number: C0052180121AE01A3

Index

Q

R

S

T

U

V