SIEMENS

Equipment Manual

CONNECTION MODULE IOT

www.siemens.com/cm-iot

SIEMENS

Connection Module IOT

Equipment Manual

Connection Module IOT
Firmware V2.2.1

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 Aktiengesellschaft. 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.

Table of contents

Introduction 1

1.1 About Digital Drive Train

Description

The product portfolio of Digital Drive Train includes drive simulation solutions and efficient engineering tools as well as the simple connection of drives to the corresponding platforms, smart analytics and drive system services.

1.2 About this manual

1.2.1 Content

These instructions describe the Connection Module IOT 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.

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

To illustrate possible application areas for our products, typical use cases are listed in this product documentation and in the online help. These are purely exemplary and do not constitute a statement on the suitability of the respective product for applications in specific individual cases. Unless explicitly contractually agreed, Siemens assumes no liability for such suitability. Suitability for a particular application in specific individual cases must be assessed by the user, taking into account all technical, legal, and other requirements on a case-by-case basis. Always observe the descriptions of the technical properties and the relevant constraints of the respective product contained in the product documentation.

1.2.2 Target group

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

1.2.3 Standard scope

The functions of the system as delivered can only be found in the order documents.

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.

1.2.4 Websites of third-party companies

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

1.3 Service and support

You can find additional information about the product:

- via ID link

- using the Siemens Industry Online Support

    – Website: SIOS (https://support.industry.siemens.com/cs/ww/en/)

    – App Industry Online Support (for Apple iOS and Android)

Product-specific information via ID link

The QR code on your product and on the product packaging contains the ID link.

ID link is a globally unique identifier according to IEC 61406-1.

You can use the ID link to access product data, manuals, Declarations of Conformity, certificates and other information about your product.

Figure 1-1   QR code with ID link included

The ID link is characterized by a frame with a black corner at the bottom right.

Content of Siemens Online Support

- Product support

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

- Local contact persons via the contact person database (→ Contact)

- Product information

- FAQs (frequently asked questions)

- Application examples

- Manuals

- Downloads

- Compatibility tool

- Newsletter with product selection

- Catalogs/brochures

- Certificates

1.4 Important product information

1.4.1 Open-source software (OSS)

Description

The license conditions and copyright information of the open-source software components used by the device are saved on the device itself. You can download license and copyright information onto your PC via the support page of the integrated web server.

1.4.2 Compliance with the General Data Protection Regulation

Siemens complies with the principles of data protection, in particular the data minimization rules (privacy by design).

For this product, this means:

The product does not process or store any personal data, only technical function data (e.g. time stamps). If the user links this data with other data (e.g. shift plans) or if he/she stores personal data on the same data medium (e.g. hard disk), thus personalizing this data, he/she must ensure compliance with the applicable data protection stipulations.

More information

Data privacy statement (https://www.siemens.com/global/en/general/privacy-notice.html)

Safety instructions

2

2.1 General safety instructions

The Connection Module IOT conforms to the applicable 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.

Note

The operating company is responsible for machine safety in compliance with the applicable guideline.

Battery

When operating the device with lithium batteries (not included in the scope of supply), observe the following notes:

⚠ **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 above the maximum permissible temperature.
- Protect the battery from direct solar radiation, humidity and condensation.

2.2 Qualified personnel

Only qualified personnel may perform work on the Connection Module IOT. 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 Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity 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 cybersecurity 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 cybersecurity measures that may be implemented, please visit
https://www.siemens.com/cybersecurity-industry (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 Cybersecurity RSS Feed under
https://new.siemens.com/cert (https://www.siemens.com/industrialsecurity).

2.4 Specific security information for Connection Modules

Carefully comply with the following security measures to protect Connection Modules against unauthorized access.

Wi-Fi access

- Secure the Wi-Fi network using the WPA2 protocol.
- If possible, by adapting the antenna alignment or the transmit power, limit the Wi-Fi signal range within the company grounds to prevent unauthorized access.
- Regularly update the firmware of the Wi-Fi access point (e.g. router) and change passwords in order to guarantee network security.
- Note that the following functions are not supported:
  - Proxy configuration, i.e. only one direct Internet connection is possible.
  - Enterprise Wi-Fi authentication protocol such as EAP-TLS, PEAP and EAP-TTLS.

Bluetooth access

To prevent unauthorized access, ensure that the Bluetooth range of the Connection Module does not extend outside of the company site (approx. 5-10 meters).

"Connection Module IOT Config" and mobile end device

- 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. Do not leave your mobile end device unattended.
- Ensure that you are using the latest version of the "Connection Module IOT Config" application.
- Change the user name and the password after the first login in step 1/7 "Login data "of the commissioning wizard in application "Connection Module IOT Config".

Disposal of the product

Incomplete or **unreliable** deletion of data can mean that third parties can misuse the data. It is crucial that you reset all settings to the factory settings. All data are therefore deleted.

Data security

The data are backed up using the following mechanisms:

- No personal data is saved in the Connection Modules and the "Connection Module IOT Config" application.

- The collected Condition Monitoring data are saved in the Connection Modules until they are transferred to the Drivetrain Analyzer Cloud or a MQTT broker.

- The following measures guarantee the integrity of the data when transferring to the Drivetrain Analyzer Cloud:

  - Encrypted transmission via a Wi-Fi interface according to the WPA2 standard

  - Transmission of data to the Insights Hub (Drivetrain Analyzer Cloud) via a secure HTTPS connection with TLS encryption

  - Transmission of data to the MQTT broker via a secure connection with TLS encryption

Description

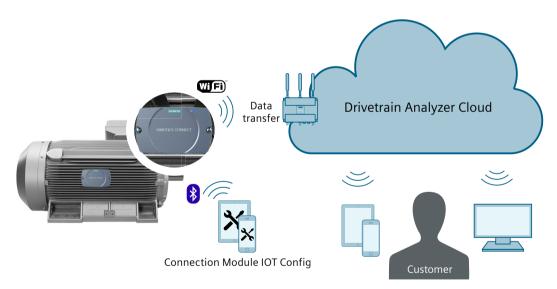<div style="text-align: right; font-size: 2em;">3</div>

3.1 Drivetrain Analyzer Cloud

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 solution Drivetrain Analyzer Cloud, 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 "Drivetrain Analyzer Cloud" Insights Hub application for low-voltage motors, converters and other elements of the drive train allows you to continuously visualize, analyze and monitor your drive data.

Connection Modules

The CONNECTION MODULE IOT or SIMOTICS CONNECT 400 Connection Modules connect drive train components with the cloud-based analytics of the Insights Hub application Drivetrain Analyzer. 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 Insights Hub application Drivetrain Analyzer with a Connection Module:

You can transfer operating data to Drivetrain Analyzer via the Connection Module to save and analyze it. Drivetrain Analyzer 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.

More information

More information on the topic Drivetrain Analyzer is provided in the "Drivetrain Analyzer Cloud " (https://support.industry.siemens.com/cs/ww/en/view/109769880) Operating Manual.

3.2 Connection Module IOT

The Connection Module IOT attached to the motor acquires important operating and status information about the motor.

The captured motor data are transmitted to Drivetrain Analyzer via a Wi-Fi interface and analyzed. From firmware version 2.2.0, data acquired by the CM IOT can be flexibly and independently accessed via an implemented MQTT interface. Using the MQTT interface, you can integrate the CONNECTION MODULE IOT seamlessly into your existing systems and workflows, allowing you to flexibly monitor your drive train components.

The Connection Module IOT can be used in combination with rib-cooled low-voltage induction motors and synchronous motors (see CONNECTION MODULE IOT Equipment Manual, technical specifications section).

In addition to motor monitoring, "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 Connection Module IOT comprises the following components:

- Integrated sensors to measure the motor data

- Data memory

- Processor

- Bluetooth module

- Wi-Fi communication module

- Connection possibility for dual power supply via 24 V DC or inserted lithium batteries

The scope of supply of the Connection Module IOT Bundle (9SA2054-0AA02-0AB0) includes the following components:

- Connection Module IOT with fixing screws and blanking plugs (9SA2054-0AA00-0AB0)

- Mounting bracket for standard application with M12 cable gland (plastic) (9SA2054-0AA01-0BB0)

MQTT interface

The MQTT interface was implemented to provide a flexible and independent possibility of accessing data acquired by the CONNECTION MODULE IOT. Using this interface, measurement data can be directly read out without using the Drivetrain Analyzer Cloud application. The MQTT interface has the following functions:

- Exporting measured and preprocessed signals

- Configuring CONNECTION MODULE IOT operating parameters

- Firmware update

- Output of detailed status information and error messages

See also

Technical data (Page 40)

Preparation for use

4

4.1   Shipping and storage conditions

> **Note**
>
> **Storage conditions**
>
> Observe the data provided, e.g. storage temperature, provided in Section "Technical specifications (Page 40)".

4.2 Requirements

Mobile end device for the "Connection Module IOT Config" application

To set up the Connection Module, install the "Connection Module IOT Config" application on a mobile end 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

- Bluetooth interface to communicate to CONNECTION MODULE IOT: The Connection Module supports standard Bluetooth Low Energy V5.2 or older versions.

Download the "Connection Module IOT Config" application from the Google Play Store or the Apple AppStore (see the Commissioning Manual Connection Modules CONNECTION MODULE IOT & SIMOTICS CONNECT 400, Section "Installing the "Connection Module IOT Config" application").

Wi-Fi connection

The current firmware version of the Connection Module does not support proxy server configuration. Use a direct Internet connection.

The Connection Module IOT does not support Wi-Fi authentication protocols in accordance with IEEE 802.1X.

The Connection Module encrypts your data according to security standard WPA2. The Connection Module supports Wi-Fi connections in the 2.4 GHz and 5 GHz frequency band with the Wi-Fi standard 802.11 a/b/g/n for data transmission. Only Wi-Fi passwords with a maximum length of 32 characters are supported.

Ports that are used

Enable the following ports used by the Connection Module IOT for an Internet connection:

- Secure data exchange with Drivetrain Analyzer: 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

- You can define the port used for the MQTT connection to the MQTT broker when commissioning the broker. By default, the CONNECTION MODULE IOT is set to port 1883 for non-encrypted and port 8883 for encrypted connectors.

Mounting

<div style="text-align: right; font-size: 3em;">5</div>

Requirement

To mount the Connection Module, glue the mounting bracket permanently to the motor. You can screw the Connection Module onto the mounting bracket either before or after gluing the mounting bracket on the motor.

No motor parameters have been imported into the Connection Module. You must configure the device after mounting. For commissioning, follow the description in the Commissioning Manual CONNECTION MODULE IOT & SIMOTICS CONNECT 400 Connection Modules, Section "Commissioning".

5.1 Power supply

The Connection Module IOT can be operated both with a 24 V DC external power supply or with batteries. Operation with a 24 V DC external power supply and batteries inserted at the same time is also possible. In this case, the electronics modules are supplied exclusively via the external 24 V DC source. No current flows from the batteries in this state; they only serve as a back-up. As soon as the external 24 V DC supply is interrupted or permanently disconnected, the batteries take over the power supply to the electronics.

Operation with external power supply

To connect an external, wired power supply, remove the blanking plug on the underside of the housing and fit the M12 cable gland (plastic), which is supplied together with the mounting bracket in a separate package (article number 9SA2054-0AA01-0BB0).

When fastening, make sure that the sealing ring is present on the cable gland to ensure degree of protection IP66. Tighten the cable gland applying a torque of 1.5 Nm. Higher torques can result in damage to the cable gland.

The cable gland is suitable for cables with an outer diameter between 3.0 mm and 6.5 mm. We recommend using a cable with two cores, each with a cross-section of 0.25 mm^2 to 0.5 mm^2. Both stranded wires and wire lines are permitted. For the best possible results, we recommend the use of stranded wires.

The following conductors are specified for connecting to the terminals in the device:

Clamping range, min.	0.13 mm^2
Clamping range, max.	1.5 mm^2
Conductor connection cross-section AWG, min.	AWG 28
Conductor connection cross-section AWG, max.	AWG 14
Solid, min. H05(07) V-U	0.2 mm^2
Solid, max. H05(07) V-U	1.5 mm^2
Finely stranded, min. H05(07) V-K	0.2 mm^2
Finely stranded, max. H05(07) V-K	1.5 mm^2
With end sleeve with collar DIN 46 228/4, min.	0.25 mm^2
With end sleeve with collar DIN 46 228/4, max.	0.75 mm^2
With end sleeve acc. to DIN 46 228/1, min.	0.25 mm^2
With end sleeve acc. to DIN 46 228/1, max.	1.5 mm^2

Remove the sheath of the cable to a length of approx. 60 mm and remove the conductor insulation to 8 mm. If end sleeves are used, 8 mm end sleeve must be used. For the stripped length in this case, observe the specifications of the manufacturer of the end sleeve. Feed the cable through the cable gland until the outer sheath is flush with the inside of the cable gland and tighten the cable gland applying a torque of 1.5 Nm.

Thread the two single conductors through the center web as shown in the diagram and connect the 24 V conductor to the right-hand terminal marked L+. Connect the neutral conductor/ground reference to the left-hand terminal marked M. To connect, use a small screwdriver to press in the white spring-loaded terminal and at the same time insert the stranded wire or wire into the corresponding terminal up to the sheath. Make sure that no individual wires of the stranded wire stick out and could possibly cause a short-circuit. If you want to use end sleeves, make sure that the maximum diameter of the sleeve is not larger

than 3.0 mm so that the wires can still be inserted through the center web. Alternatively, you can attach the end sleeves after threading through the center web, or use end sleeves according to DIN 46228/1 (without collar).

Figure 5-1   24 V connection

When closing the housing cover, make sure that the cables are not pinched. There is a particular risk if the individual conductors are too long.

A non-grounded (SELV) power supply must be used for the 24 V DC infeed.

Note

The connection must be made in accordance with IEC 60364.

*   Permissible voltage range: 24 V +/- 20%
*   Current consumption: 5 mA at 24 V. Peak value when switching on approx. 200 mA for approx. 10 ms

The Connection Module IOT is protected against polarity reversal of the power supply. In this case, the LED on the front remains dark. Please correct the voltage connection immediately to avoid damaging the device. If the power supply is connected correctly, the LED on the front lights up.

Operation with batteries

To operate the Connection Module IOT with batteries, please use 4 lithium thionyl chloride (Li/SOCl$_2$) batteries of the same type in accordance with the following specifications:

*   Size AA / ER14500 or ER14505
*   Rated voltage 3.6 V
*   Rated capacity min. 2000 mAh

- Continuous discharge current approx. 50 mA

- Pulse current min. 100 mA

- Temperature stability according to application (for use on electric motors, we recommend a maximum permissible temperature of 80 °C or higher)

- The cells used must be certified in accordance with UL1642.

- The batteries are approved by the manufacturer for use in battery holders.

- Only cells with the same state of charge (SoC) may be used; mixed operation of cells with different states of charge is not permitted.

- Only cells of the same type may be used; mixed operation of cells of different types is not permitted

Insert all batteries with the positive pole facing the top of the housing, according to the markings on the housing. The Connection Module IOT has mechanical and electronic protection against batteries inserted with reversed polarity.

To remove the battery cells, lever them out of the battery holders using a blunt object. Take care not to damage the cells in the process.

Note

Warranty

SIEMENS does not accept any warranty for the use of third-party products.

5.2 Installing the mounting bracket

The mounting bracket is permanently bonded to the motor. For this purpose, use the mounting bracket supplied in the Connectivity Kit (Page 39) and an approved adhesive (see Note). You can screw the Connection Module IOT onto the mounting bracket either before or after gluing the mounting bracket on the motor.

Note

The mounting bracket and the four fixing screws are floating.

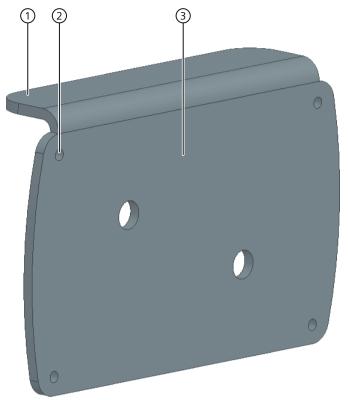Make sure that the Connection Module is kept at the greatest possible distance from live cables.

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 fixing screws of the Connection Module

③ Long arm of the mounting bracket: Surface for screw connection of the Connection Module

Mounting position

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

The center point of the Connection Module should be horizontal at ⅓ of the housing length toward the drive end, but it must not protrude beyond the cooling ribs.

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.

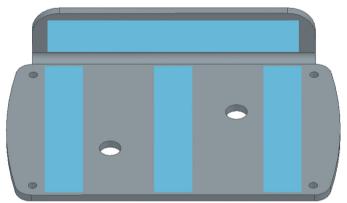- You have carefully read the usage instructions on the adhesive package.

Procedure

1. Mount the Connection Module on the mounting bracket. (Page 28) You can optionally mount the Connection Module after you have glued the mounting bracket on the motor.

2. Select the position for the Connection Module on the motor. The following figures show examples of the position for the Connection 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.

5.3   Installing the Connection Module IOT

The Connection Module IOT has four screws that are used to fasten the housing cover to the lower part of the housing and the complete device to the mounting bracket.

Note
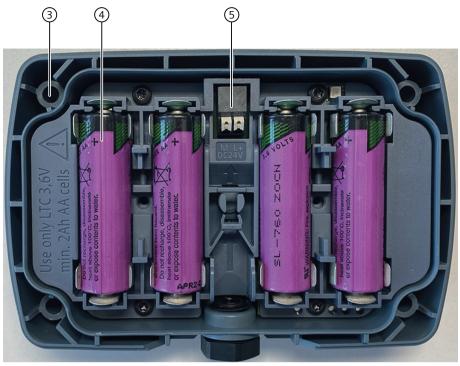
The mounting bracket and the four fixing screws are floating.

Mounting elements

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

①   Front cover
②   Fixing screws

③   Hole for fixing screws

④   Battery

⑤   24 V DC connection

Procedure

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

1. Insert the four batteries into the holder (for battery operation) or connect the 24 V DC cable to the Connection Module (for operation with external power supply, see section "Power supply" (Page 22)).

2. Close the housing cover.

3. Fasten the Connection Module to the mounting bracket using the four fixing screws.

Commissioning

<div style="text-align:right;font-size:2em;font-weight:bold">6</div>

6.1 Commissioning the Connection Module IOT

Follow the description in the Commissioning Manual CONNECTION MODULE IOT / SIMOTICS CONNECT 400 Connection Modules, Section "Commissioning".

Disposal

7

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.

7.1 Disposal of the Connection Module

1. Check whether the Connection Module is still functional.

2. If the Connection Module is still functional, reset all settings to the factory settings. All data are thus deleted.

3. Remove the battery.

4. Dispose of the battery in compliance with the applicable national regulations or recycle the battery.

5. Dispose of the Connection Module according to national regulations or recycle it.
   Comply with the directive of the European Parliament and Counsel regarding old electrical and electronic devices (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012L0019).

Troubleshooting/FAQs

<div style="text-align: right">

8

</div>

8.1 LED control

As soon as a Connection Module IOT powered by batteries has completely booted, the LED flashes in blue, twice in quick succession at an interval of 10 seconds.

When operated with an external 24V power source, the LED lights up continuously.

If the LED remains dark, check the power supply or contact SIEMENS Technical Support.

More information

<div style="text-align: right; font-size: 3em; font-weight: bold;">9</div>

9.1 Product information

Further user documentation

- Drivetrain Analyzer Operating Manual (https://support.industry.siemens.com/cs/ww/en/view/109769880)

- Commissioning Manual CONNECTION MODULE IOT & SIMOTICS CONNECT 400 Connection Modules (https://support.industry.siemens.com/cs/ww/en/view/109978929)

More information about monitoring the drive train

- More information about monitoring the drive train is provided here (http://www.siemens.com/cm-iot)

Using open-source software (OSS)

In the Connection Module IOT product, open source software is used in unchanged form, or as amended by us.

License conditions and open source software used and which are to be published are stored on the CD-ROM supplied with the Connection Module IOT.

9.2 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 Connection Module data ready:

- Connection Module IOT firmware version
- Connection Module IOT 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
- Manufacturer and type of the battery cells used as well as the date of manufacture of the battery cells 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 (https://support.industry.siemens.com/cs/ww/en/ps/25522)

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".

9.3   Spare parts

Spares on Web

A list of available spare parts is available through the spare parts service "Spares on Web (<u>https://www.sow.siemens.com/</u>)" by selecting the serial number and the MLFB of the motor. In "Drivetrain Analyzer", you can call the "Support" dialog via the ⬚ icon in the asset view. Here you can call "Spares on Web" for each configured asset.

Spare parts for the Connection Module IOT

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

The following spare parts are available for the Connection Module:

* Connection Module IOT with fixing screws and blanking plugs (9SA2054-0AA00-0AB0)
* Mounting bracket for standard application with M12 cable gland (plastic) (9SA2054-0AA01-0BB0)

More information

A brief description of how to use "Spares on Web" is provided in the Internet (<u>http://support.automation.siemens.com/WW/news/en/25248626</u>).

9.4 Technical data

General information	
Brand name of the product	Connection Module IOT
Product category	Sensor and communication device
Product description	Using integrated sensors, Connection Module IOT monitors the state of various drive train components (motors, gearboxes, pumps ...), to make their operation transparent and to simplify application and process optimization. Connection Module IOT can only be used in combination with the Insights Hub application "Drivetrain Analyzer Cloud".
Monitoring application	Data analyses based on the digital twin of the motor and visualization of the motor's condition are provided comprehensively in the Insights Hub application "Drivetrain Analyzer".
Measured motor parameters	Temperature, radial/tangential/axial vibration, electrical stator frequency, slip frequency, noise emission
Calculated motor parameters	Motor state (on/off), speed, torque, electrical power consumption, energy consumption, energy efficiency, number of motor starts, operating hours, noise level (partially calculated in Drivetrain Analyzer Cloud)
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	Dual: 24V DC power supply and/or 4x 3.6-V lithium battery cells, size AA (not rechargeable).
Life of the battery	Operating time up to 4 years*, replaceable to extend the service 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 Insights Hub connection is interrupted * At a measuring interval of 1 minute
Communication	
Bluetooth ®	BGM220PC22 Bluetooth module for communication with a mobile device for commissioning* and configuring the Connection Module Compliant with Bluetooth ® V5.2 RF output power: 2400 – 2483.5 MHz: ≤ 20 dBm (max. EIRP) Range: up to 10 m * Commissioning comprises integration into the local Wi-Fi and onboarding to Insights Hub.

Wi-Fi	Wi-Fi communications module CC3135MOD for transmitting measured data to "Drivetrain Analyzer" via encrypted HTTPS connection using TLS 1.2 protocol, and for firmware updates*
	IEEE 802.11 a/b/g/n
	Dual mode: 2.4 GHz and 5 GHz band
	• RF output power: 2400 – 2483.5 MHz: ≤ 20 dBm (max. EIRP)
	• RF output power: 5.1 GHz band: ≤ 23 dBm (max. EIRP) RF output power: 5.8 GHz band: ≤ 33 dBm (max. EIRP) (The permissible frequencies in the 5 GHz band are country-specific and are set using the country code during commissioning.)
	Range: up to 100 m
	* Insights Hub 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 Connection Module and mounting plate
Vibration measurement	
Physical measurement principle	Total vibration V_{RMS} 3 axes
Area	Bandwidth: 5 Hz to 6.3 kHz Sampling rate: 26.7 kHz
Field measurement	
Area	0.01 Hz to 300 Hz Motor stray field
Standards, approvals, certificates	
See Directives and standards (Page 43)	
Degree of protection and protection class	
Degree of protection according to EN 60529	IP66
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	Connection Module IOT 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 mounting bracket	Stainless steel
Dimensions	
Length x Height x Depth	125.4 mm x 85 mm 35 mm
Weight	
Weight of the Connection Module	0.25 kg (without batteries) 0.31 kg (with batteries) plus 0.26 kg mounting bracket
Documentation and information	
Further technical product information and documentation is available at: www.siemens.com/cm-iot (www.siemens.com/cm-iot)	

9.5 Directives and standards

RED Directive 2014/53/EU

The product is designed for use in industry.

Safety requirements	EN 62368-1
	EN 62479
EMC standards	EN 300 328
	EN 301 893
	EN 301 489-1
	EN 301 489-17

Further applicable standards

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

- RoHS Directive 2011/65/EU

- EN 63000

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**
	The Connection Module IOT is compliant 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

	FCC Declaration of Conformity
	This device complies with Part 15 of FCC regulations. 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 authorization to operate this device.
	This device has been tested and found to comply with the limits for a Class B digital device, in accordance with Part 15 of FCC regulations. These limit values are designed to provide reasonable protection against harmful interference in residential environments. This device generates, uses and can radiate radio frequency energy. This can cause harmful interference to radio communications if the device is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by applying one or more of the following measures:
	• Reorient or relocate the antenna.
	• Increase the distance between the device and receiver.
	• Connect the device to a socket outlet in a circuit that is not the one to which the receiver is connected.
	• Contact the dealer or an experienced radio/TV technician for support.
	Declaration on radio frequency exposure
	This device 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 device must not be arranged or operated in conjunction with any other antennas or transmitters.

IC	This device complies with Industry Canada license-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.
SRRC	**China**
	The device meets the requirements for the SRRC approval.
	CIMIT ID: 25J99S34R737
TDRA	**United Arab Emirates**
	The device meets the requirements for the TRA approval.
201-190034 020-200011	**Japan**
	当該機器には電波法に基づく、技術基準適合証明等を受けた特定無線設備を装着している。
	This equipment contains specified radio equipment that has been certified to the Technical Regulation Conformity Certification under the Radio Law.
ICT	**Vietnam**
	The device meets the requirements for the ICT approval.
CRC	**Colombia**
	The device meets the requirements for the CRC approval.

Index

B

Bluetooth, 20

C

Certificates and approvals
    EMC Directive, 43

D

Data security, 13
Disclaimer of liability, 6
Disposal, 34
Drivetrain Analyzer Cloud, 15

E

EMC Directive, 43

O

On-site service, 38
Overview, 16

Q

Qualified personnel, 10

R

Requirements, 20
Retrofit, 28

S

Safety instructions, 9
Spare parts, 39
    Spares on Web, 39
Spares on Web, 39

T

Technical Support, 38