

SITRANS F

Wireless communication modules SITRANS FM MAG 8000 IIoT Wireless Communication Module

Operating Instructions

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Add-on module for use with flowmeter type
SITRANS F M MAG 8000
7ME6810-.....-..S/T.
7ME6820-.....-..S/T.

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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Introduction

1.1 Purpose of this documentation

These instructions contain all information required to commission and use the device. Read the instructions carefully prior to installation and commissioning. In order to use the device correctly, first review its principle of operation.

The instructions are aimed at persons mechanically installing the device, connecting it electronically, configuring the parameters and commissioning it, as well as service and maintenance engineers.

1.2 Document history

The following table shows major changes in the documentation compared to the previous edition.

Edition	Remark
07/2022	First edition

1.3 Designated use

Use the device in accordance with the information on the nameplate and in the Technical specifications (Page 45).

NOTICE
<p>Use in a domestic environment</p> <p>This Class A Group 1 equipment is intended for use in industrial areas.</p> <p>In a domestic environment this device may cause radio interference.</p>

1.4 Checking the consignment

1. Check the packaging and the delivered items for visible damages.
2. Report any claims for damages immediately to the shipping company.

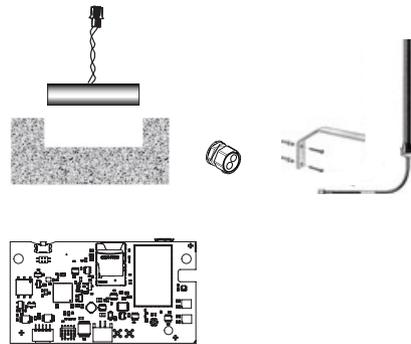
3. Retain damaged parts for clarification.
4. Check the scope of delivery by comparing your order to the shipping documents for correctness and completeness.

 WARNING
Using a damaged or incomplete device
Risk of explosion in hazardous areas.
<ul style="list-style-type: none">• Do not use damaged or incomplete devices.

1.5 Items supplied

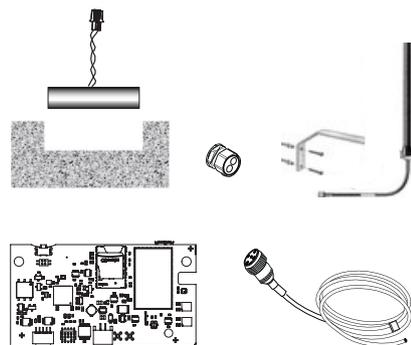
Wireless Communication Module without analog input cable

- Wireless Communication Module
- Rechargeable battery with holder
- Antenna with mounting bracket
- Cable gland



Wireless Communication Module with analog input cable

- Wireless Communication Module
- Rechargeable battery with holder
- Antenna with mounting bracket
- Analog input cable
- Cable gland (dual entry)



The scope of delivery may vary depending on selections at ordering.

1.6 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>.

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>.

1.7 Transportation and storage

To guarantee sufficient protection during transport and storage, observe the following:

- Keep the original packaging for subsequent transportation.
- Devices/replacement parts should be returned in their original packaging.
- If the original packaging is no longer available, ensure that all shipments are properly packaged to provide sufficient protection during transport. Siemens cannot assume liability for any costs associated with transportation damages.

NOTICE

Insufficient protection during storage

The packaging only provides limited protection against moisture and infiltration.

- Provide additional packaging as necessary.

Special conditions for storage and transportation of the device are listed in Technical specifications (Page 45).

1.8 Notes on warranty

The contents of this manual shall not become part of or modify any prior or existing agreement, commitment or legal relationship. The sales contract contains all obligations on the part of Siemens as well as the complete and solely applicable warranty conditions. Any statements regarding device versions described in the manual do not create new warranties or modify the existing warranty.

The content reflects the technical status at the time of publishing. Siemens reserves the right to make technical changes in the course of further development.

Safety notes

2.1 Preconditions for use

This device left the factory in good working condition. In order to maintain this status and to ensure safe operation of the device, observe these instructions and all the specifications relevant to safety.

Observe the information and symbols on the device. Do not remove any information or symbols from the device. Always keep the information and symbols in a completely legible state.

2.1.1 Laws and directives

General requirements

Installation of the equipment must comply with national regulations: for example EN 60079-14 for the European Community.

Observe ALL test certification, provisions and laws applicable in your country during connection, assembly and operation.

FCC NOTICE

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by Siemens could void the user's authority to operate this equipment.

Instrument safety standards

The device has been tested at the factory, based on the instrument safety standards. In order to maintain this condition over the expected life of the device the requirements described in these operating instructions must be observed.

CE-marked equipment

The CE mark on the device symbolizes the compliance of the device with the following directives:

Radio and telecommunica- tions terminal equipment R&TTE 1999/5/EC	Directive of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.
--	--

 WARNING
Improper device modifications
Risk to personnel, system and environment can result from modifications to the device, particularly in hazardous areas.
<ul style="list-style-type: none">• Only carry out modifications that are described in the instructions for the device. Failure to observe this requirement cancels the manufacturer's warranty and the product approvals.

2.2 Application security precautions

NOTICE
Potting
For units already installed the customer is expected to pot the system in order to obtain the IP68 protection rating.
In case this procedure is not followed, the manufacturer's warranty becomes void.

Note

Your device may cause TV or radio interference (for example, when using the module in close proximity to receiving equipment).

The FCC or Industry Canada can require you to stop using your telephone if such interference cannot be eliminated. If you require assistance, contact your local contact person, see "Further information".

NOTICE
This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
<ol style="list-style-type: none">1. This device may not cause harmful interference.2. This device must accept any interference received, including interference that may cause undesired operation.

2.3 Lithium batteries

Lithium batteries are primary power sources with high energy content designed to provide the highest possible degree of safety.

 WARNING
Potential hazard Lithium batteries may present a potential hazard if they are abused electrically or mechanically. Observe the following precautions when handling and using lithium batteries: <ul style="list-style-type: none">• Do not short-circuit, recharge or connect with false polarity.• Do not expose to temperatures beyond the specified temperature range.• Do not incinerate.• Do not crush, puncture or open cells or disassemble.• Do not weld or solder to the battery's body.• Do not expose contents to water.

2.4 Rechargeable battery

The Wireless Communication Module is supplied with a rechargeable battery as an energy buffer. This battery is charged automatically. Allow the battery to fully charge (up to 15 hours) before the first logon to the wireless network.

 WARNING
Risk of explosion Do NOT expose battery to fire. Do NOT try to recharge battery using an external power source.

2.5 Installation in hazardous area

 WARNING
NOT allowed for use in hazardous areas! Equipment used in hazardous areas must be Ex-approved and marked accordingly! This device is NOT approved for use in hazardous areas!

2.5 Installation in hazardous area

 **WARNING**

500 V insulation test

The device is not capable of withstanding the 500 V insulation test required by Clause 6.3.12 of EN60079-11. This must be taken into account when installing the device.

Description

3.1 Data transmission

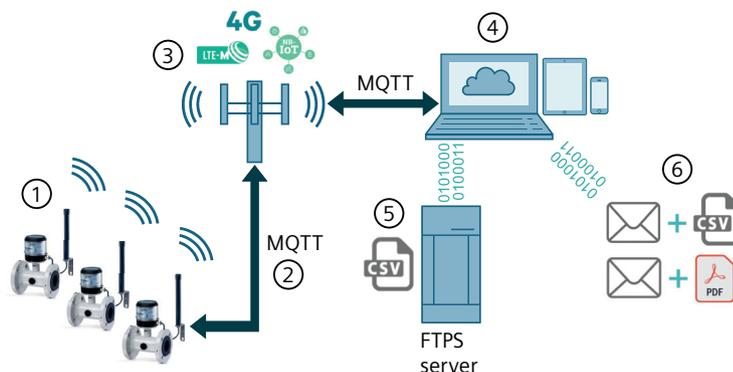
The Wireless Communication Module transmits information using a wireless network (4G/LTE, LTE-M, NB-IoT, 2G). Automatic network selection is possible.

Communication with users takes place through a industrial internet of things (IIoT) web application.

The Wireless Communication Module has the following capabilities:

- sending and receiving to a web interface
- sending measurement data (in csv file format) by email to the predefined email addresses or customer specified FTP server

The measurement data collected from MAG 8000 is stored in the Wireless Communication Module until it is fully transmitted. In case of a power or network failure the collected data is stored on the SD card in the Wireless Communication Module.



- | Pos. | Description |
|------|--|
| ① | MAG 8000 with Wireless Communication Module |
| ② | Message Queuing Telemetry Transport (MQTT) |
| ③ | Mobile network |
| ④ | Industrial internet of things (IIoT) web application |
| ⑤ | CSV file on FTPS server |
| ⑥ | Email with CSV or PDF file attached |

Figure 3-1 Data transmission

3.2 Features

Features and benefits

The Wireless Communication Module logs data of the MAG 8000 and transmits the data via email, web interface or FTP. If sent by email the measurement data can be retrieved by an OPC server. If sent by FTP the measurement data is directly accessible for further processing.

Feature	Benefit
LTE/4G communication	A great amount of data (in csv format) can be sent via email or FTP with or without encryption.
Web interface	No on-site commissioning required
Built-in solution	Maintains the IP68 rating
Remote Qualification Certificate	Off-site device diagnostic and audit
NTP time synchronization	Always accurate timestamps in measurement data
Data transmission synchronization	One command to synchronize the data transmission time of all devices in the field
3-in-1 measurement	2-channel analog signal input from external devices, e.g. pressure transducer and alarm detector
Real-time alarm	New alarms will be received immediately

Installing/mounting

4.1 Introduction

The installation consists of the following steps:

1. Installing Wireless Communication Module (Page 15)
2. Installing rechargeable battery (Page 18)
3. Installing Antenna (Page 19)

Note**Wireless Communication Module ordered as spare part**

If you have ordered the Wireless Communication Module as a spare part the FCC and IC label is in an enclosed envelope. Stick the label somewhere on the enclosure.

4.2 Installing Wireless Communication Module

Note**Retrofit systems**

The following procedure applies only to retrofit systems.

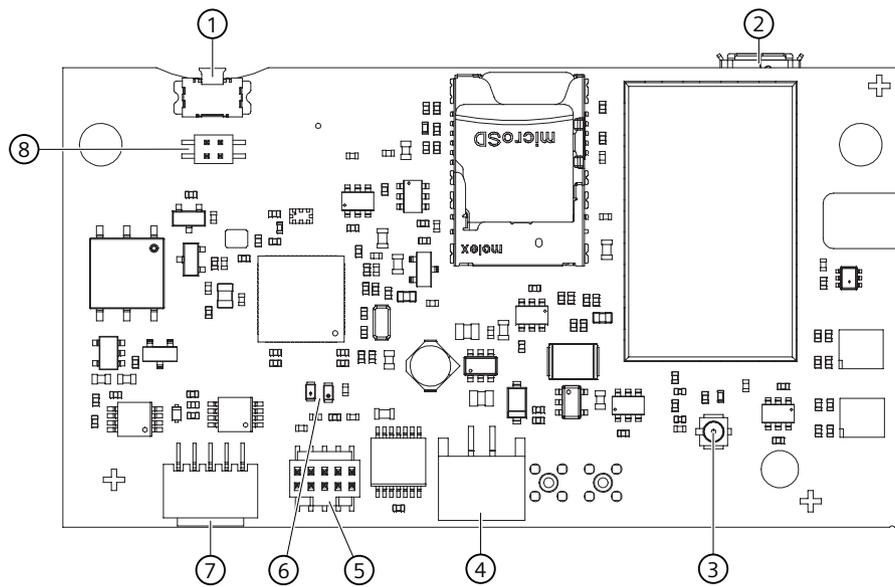
Note**SIM card replacement prohibited**

Only use the SIM card provided by Siemens.

Note**MAG 8000 and Wireless Communication Modules are matching pairs**

The Wireless Communication Module matches to the MAG 8000 it is delivered with. Upgrade kits can only be paired with one MAG 8000.

4.2 Installing Wireless Communication Module



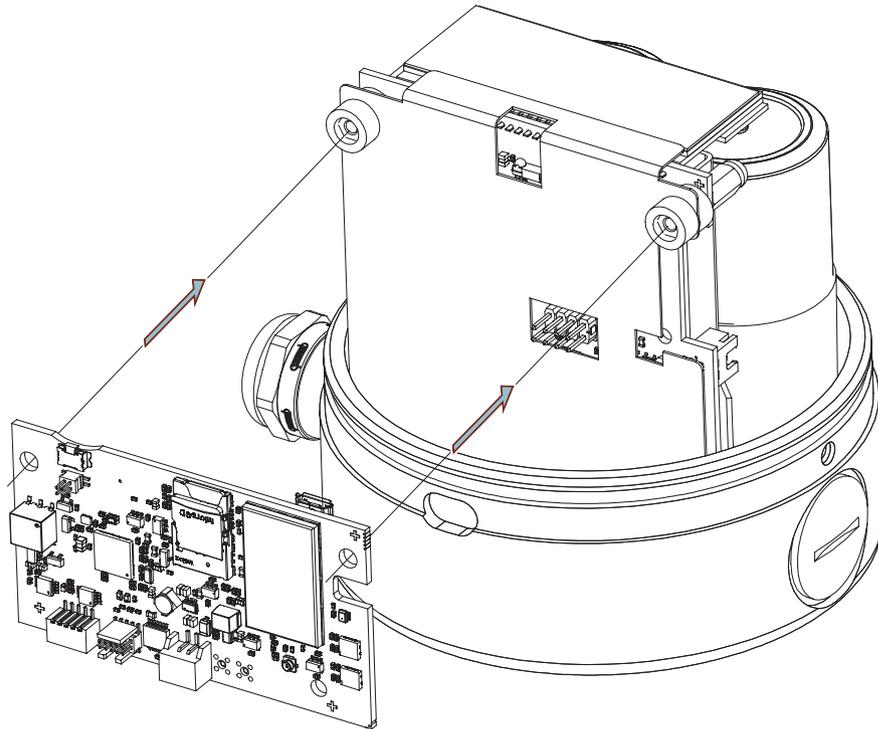
- Pos. Connector
- ① Function button (Page 31)
 - ② USB service port for communication chip - only to be used by service personnel
 - ③ Antenna
 - ④ Rechargeable battery connector
 - ⑤ Service port for firmware updates - only to be used by service personnel
 - ⑥ LEDs
 - ⑦ Analog input cable
 - ⑧ Jumper - only to be used by service personnel

Figure 4-1 Connectors

Installation procedure for connecting a Wireless Communication Module to a MAG 8000 transmitter is as follows:

1. Place module on back of MAG 8000 electronics.
2. Snap module onto back of electronics.

3. Ensure module is fixed correctly to eight-pin connector and spacer.
4. Use the two 3-mm screws and washers to fix module to MAG 8000 electronics.



4.3 Installing rechargeable battery

The Wireless Communication Module requires installation of an additional 750 mAh lithium-ion rechargeable battery. The battery must be installed in the base of the MAG 8000 enclosure and connected as shown below.

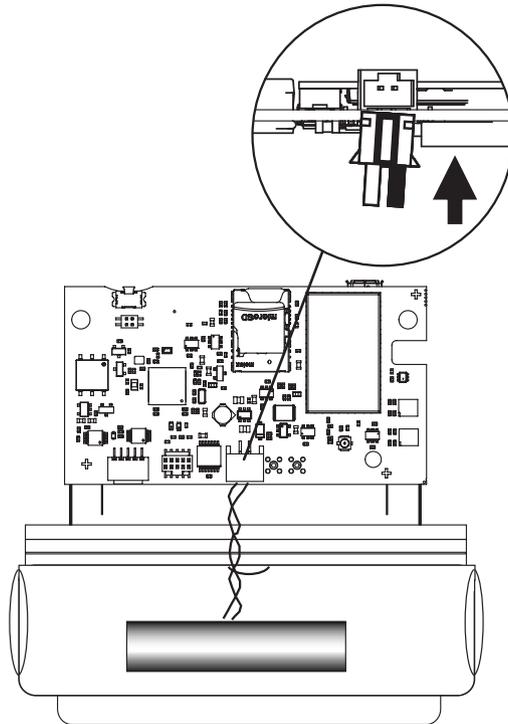


Figure 4-2 Battery installation

Put the battery holder in position as shown below with the wider side of the battery holder positioned downwards.

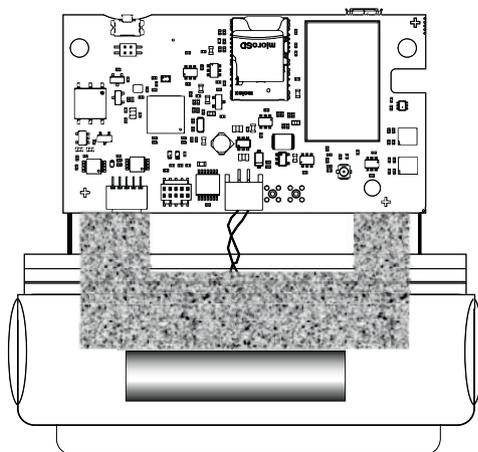


Figure 4-3 Battery holder installation

4.4 Installing Antenna

The antenna is designed for wall mounting or for mounting inside concrete chambers, where signal is weak.

The antenna must be installed vertically as shown below.

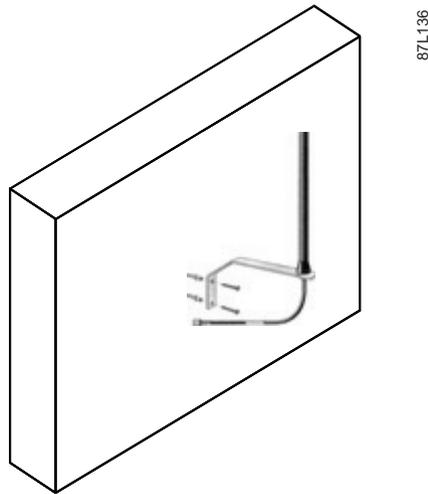


Figure 4-4 Wall mounting antenna installation

Note

The antenna must be placed where the optimal signal strength from the network is available in order to obtain long battery life and strong wireless signal coverage. Avoid placing the antenna close to high-voltage units, high-power lines or metal plates.

The antenna is rated IP68 and will not be damaged by flooding. However, *transmission* cannot be guaranteed during flooding.

Connecting

Note

Follow the instructions in this chapter closely to maintain the protection rating of the flowmeter and to ensure correct operation of the module.

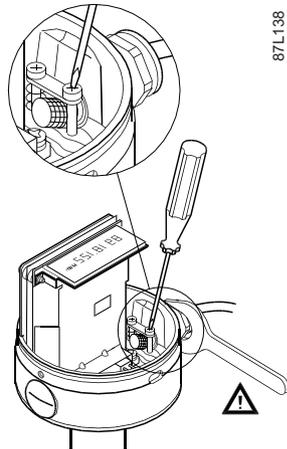
Connect cable(s) to the Wireless Communication Module as follows:

1. Prepare MAG 8000.
2. Connect antenna cable(s) through the cable gland(s)
 - Antenna cable without analog input cable (Page 22) or
 - Antenna cable with analog input cable (Page 23)
3. Connect the antenna adaptor cable to the Wireless Communication Module

5.1 Preparing MAG 8000

Prepare MAG 8000 for connection as follows:

1. Remove blind plug from MAG 8000.
2. Loosen cable clamp kit.



5.2 Antenna cable(s) connection

Follow one of the instructions below in order to prepare cable(s) for connection.

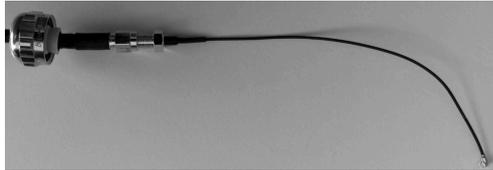
- Connect antenna cable without analog input cable (Page 22)
- Connect antenna cable with analog input cable

5.2.1 Antenna cable without analog input cable

Mounting cable gland onto antenna

Mount the cable gland onto the antenna as follows:

1. Connect antenna adapter cable to antenna SMA/M connector making sure the SMA connector is tightened, so that a good connection is guaranteed.



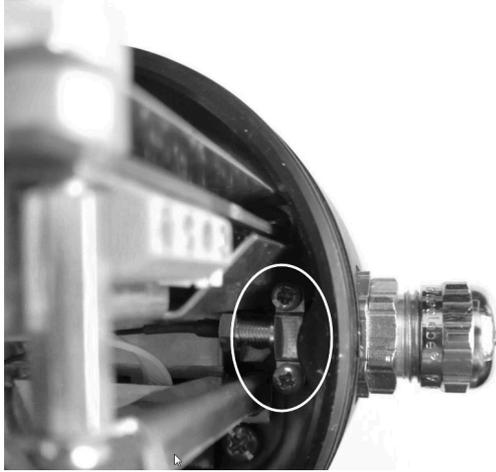
2. Mount the antenna into the cable gland, and then connect antenna adapter cable.



3. Mount M20 to M16 reduction onto the MAG 8000, making sure the reduction is tightened correctly to guarantee IP68 rating.



4. Mount M16 cable gland into M20 reduction and tighten the clamp piece on the antenna connector for grounding.
Make sure the gland is tightened to torque 10 Nm.



5. Tighten the cable gland to fix the antenna cable.

5.2.2 Antenna cable with analog input cable

Assembly of the analog input cable

1. Open 2-hole cable gland (M20).



2. Push the cable gland over the open end of the analog inputs cable.



3. Slide the M12 connector parts onto the cable in the order shown below.



Cable wiring

See pin numbers on plastic of M12 connector under Analog inputs cable (Page 46).

NOTICE
Damage on the external pressure transducer
If you do not re-assign the wiring on the connector of the analog input cable according to the electrical connection of the external pressure transducer, the external pressure transducer might be damaged.
Always re-assign the wiring on the connector of the analog input cable according to the electrical connection of the external pressure transducer.



1. Screw together the M12 connector parts, making sure the parts are tightened correctly.



2. Screw the protection cover onto the M12 female. The plastic loop must be around the cable.



Mount cable gland with antenna and analog inputs cable

1. Push the antenna cable through the upper and cover parts of cable gland.



2. Using, for example, a screw driver, push through the rubber tubing to open its side.



3. Carefully push the antenna cable into the rubber tubing from the side and remove the tool (e.g. screw driver).



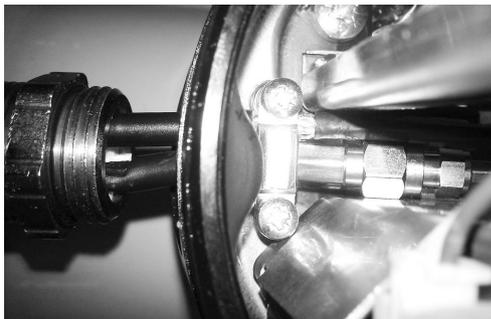
4. Check that the two cables are inserted correctly into the rubber tubing.



5. Insert cables into MAG 8000 hole.

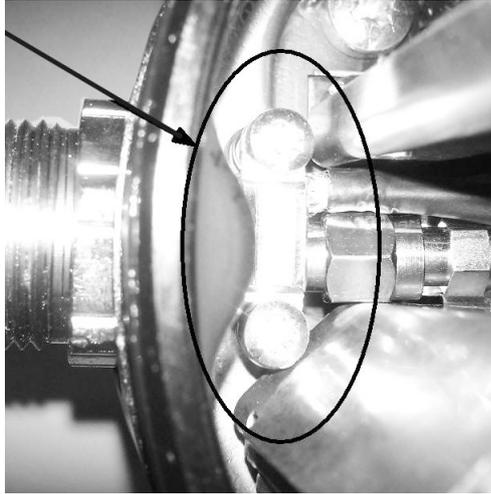


6. Screw M20 cable gland into MAG 8000 housing.
Make sure the gland is tightened to torque 10 Nm.



5.3 Cable connection to the Wireless Communication Module

7. Push rubber tubing into M20 cable gland. Adjust antenna cable and analog inputs cable making sure that the shield of the analog inputs cable and the SMA connector are fixed by the cable clamp kit. Tighten the two screws of the cable gland kit.



8. Mount the M20 cable gland cover. Tighten it to torque 10 Nm.



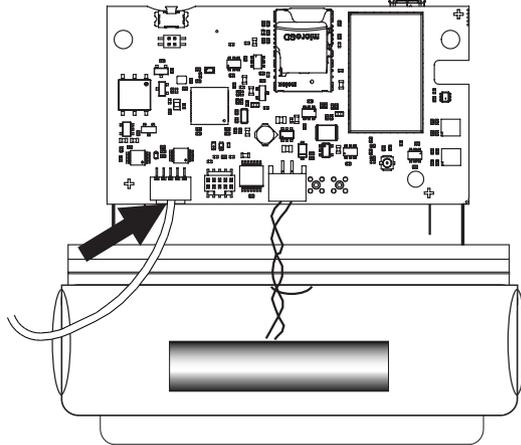
5.3 Cable connection to the Wireless Communication Module

Note

Shielding

One end of each cable must have its shield connected to protective earth. If a connector is used at this end, the shell of the connector must be connected to the shield of the cable.

1. Snap small connector in the module.



2. Prepare coupling cable for physical analog inputs, see Analog inputs cable (Page 46) for pin description.

⚠ WARNING

Overvoltage

Overvoltage to analog inputs can damage internal electronic components.

Analog inputs must not exceed 6 V DC.

Commissioning

6.1 Registering your device

Before you register your device

- Install/mount the Wireless Communication Module Installing/mounting (Page 15)
- Connect the Wireless Communication Module Connecting (Page 21)
- Turn on the transmitter

Note**PIN must match the factory setting [1000]**

Reset the PIN to factory setting [1000] before commissioning.

Note**Only use this procedure for first company account**

Create further accounts through the web application: Adding additional users (Page 30). Otherwise misalignments caused by spelling errors of "Company name" are possible.

Note**Change the serial number for MAG 8000 demo kits**

The standard serial number for a MAG 8000 demo kit is always 123456H123. Change the serial number to a unique identifier. The requirements for new serial number are:

- Length of max. 12 characters
 - Must only consist of upper and lower case letters or numbers
-

Procedure

1. Register your device by going to IIoT web application registration (<http://www.siemens.com/mag8000iiotwcmclaiming>).
2. Enter the IMEI from a sticker on the Wireless Communication Module.
3. Enter the ICCID from the SIM card enclosure.
4. Enter the serial number from the nameplate of the transmitter.

- 5. Click "Continue". You have 2 options:
 - Create a new account.
 - Add to an existing account.

For terms and conditions and data privacy notes go to: Legal information (www.siemens.com/mag8000iiott+c)

- 6. Enter your credentials and log on.

Your device appears in the navigation tree on the left.

6.2 Adding additional users

Before you start

Log in at IIoT web application (<http://www.siemens.com/mag8000iiotwebapplication>).

Procedure

- 1. Click on "Administraion".
- 2. Click on "User".
- 3. Click on "Create".
- 4. Enter all relevant information and click on "Create".

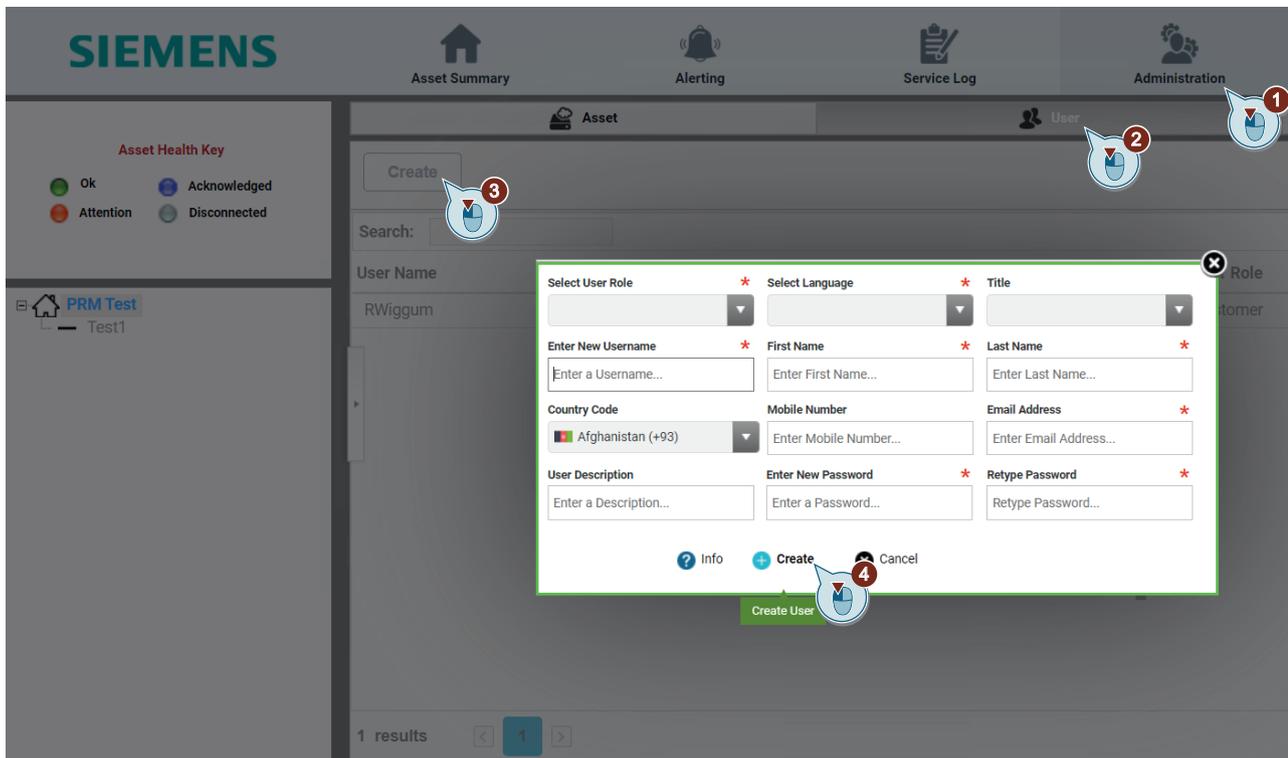


Figure 6-1 User management

Operating

7.1 Function button

Three functions can be performed by pressing the function button on the IloT Wireless Communication Module.

Function	Duration of button press	Description	LED behavior
Manual paging	5 seconds	Module wakes up and connects to the mobile network to check for new messages.	green lights up once
Hot swapping of microSD card	10 seconds	The microSD card can be removed without triggering an alarm. A microSD card must be inserted again before returning to operation.	green lights up twice after releasing the push button blue lights up permanently
	10 seconds	The Wireless Communication Module returns back to operation and can use the microSD card again.	green lights up twice and goes off after releasing the push button
Module reset	20 seconds	Resets all IloT Wireless Communication Module parameters to their default values.	green lights up three times

Note

Network communication

The green and blue LED will also light up to indicate network communication.

7.2 Reading and changing parameters

Before you start

- Register your device: Registering your device (Page 29)
- Log on at IloT web application (<http://www.siemens.com/mag8000iiotwebapplication>).

Procedure

1. On the left select a device. You will see all active alarms for your device.
2. Click on the tab "Device Properties".
3. Filter the parameters by selecting a category.

7.2 Reading and changing parameters

- 4. Select a parameter.
 - Parameters that are read only have a gray background.
 - Parameters that are editable have a white background.
- 5. After selecting a parameter you have the following options:
 - a: "Request Property Update" will request the latest value from the device.
 - b: "Refresh Table" will update the table with the latest values received from the device.
 - c: If you select an editable parameter you can change the parameter. "Save" will send the new parameter value back to the device.

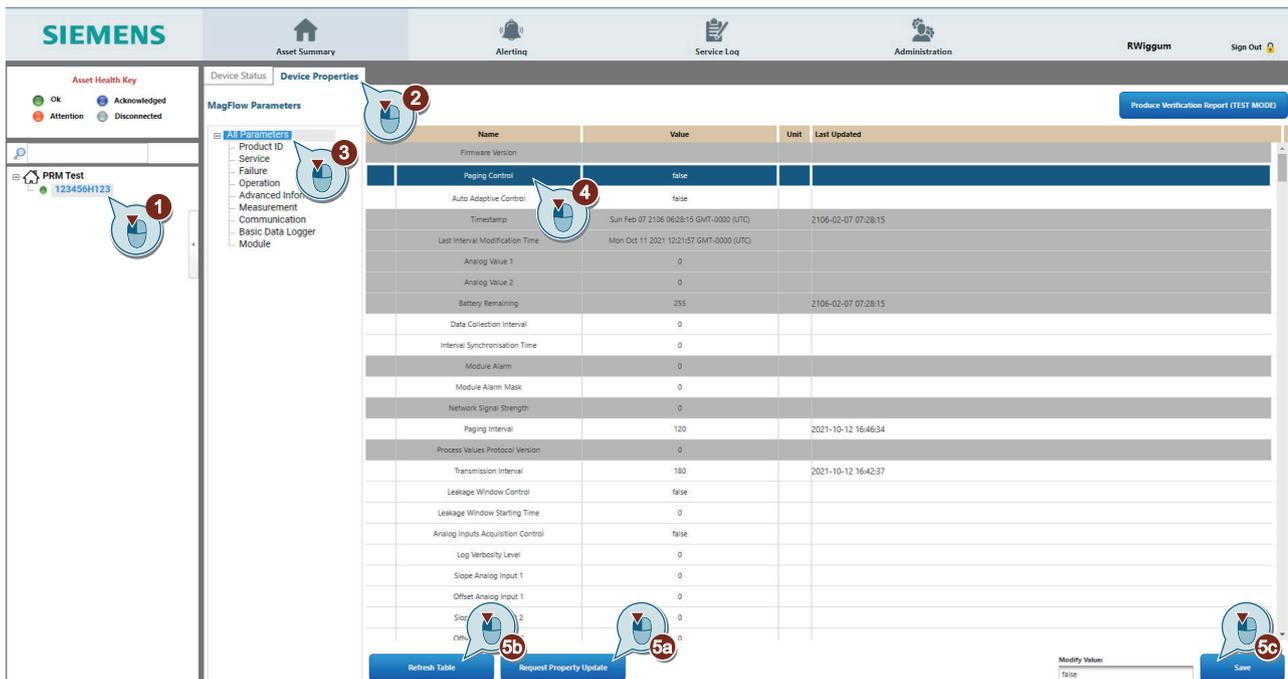
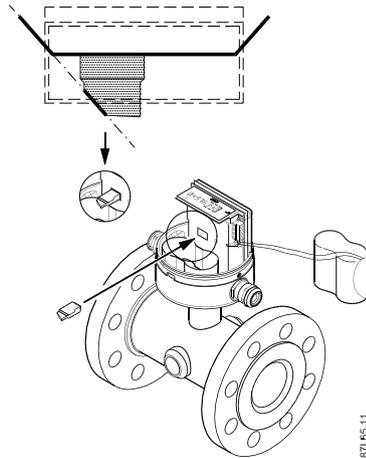


Figure 7-1 Reading and changing parameters

Using the hardware key



A hardware key is installed in the hardware lock hole to change protected parameters. The hardware lock hole is located in the front of the PCB board behind the battery. For a complete list of protected parameters go to MAG 8000 Operating Instructions (<https://support.industry.siemens.com/cs/us/en/ps/7ME681.-.....-..../man>).

7.3 Subscribe or escalate alarm messages

Before you start

- Log on at IIoT web application (<http://www.siemens.com/mag8000iiotwebapplication>).
- Add all relevant users Adding additional users (Page 30)

Procedure

1. Click on "Alerting".
2. Click on "Configuration".
3. On the left select a device.

- 4. On the relevant alarm or for all alarms click on:
 -  to subscribe which will notify of new alarms immediately.
 -  to escalate which will notify of new alarms after a customizable delay.

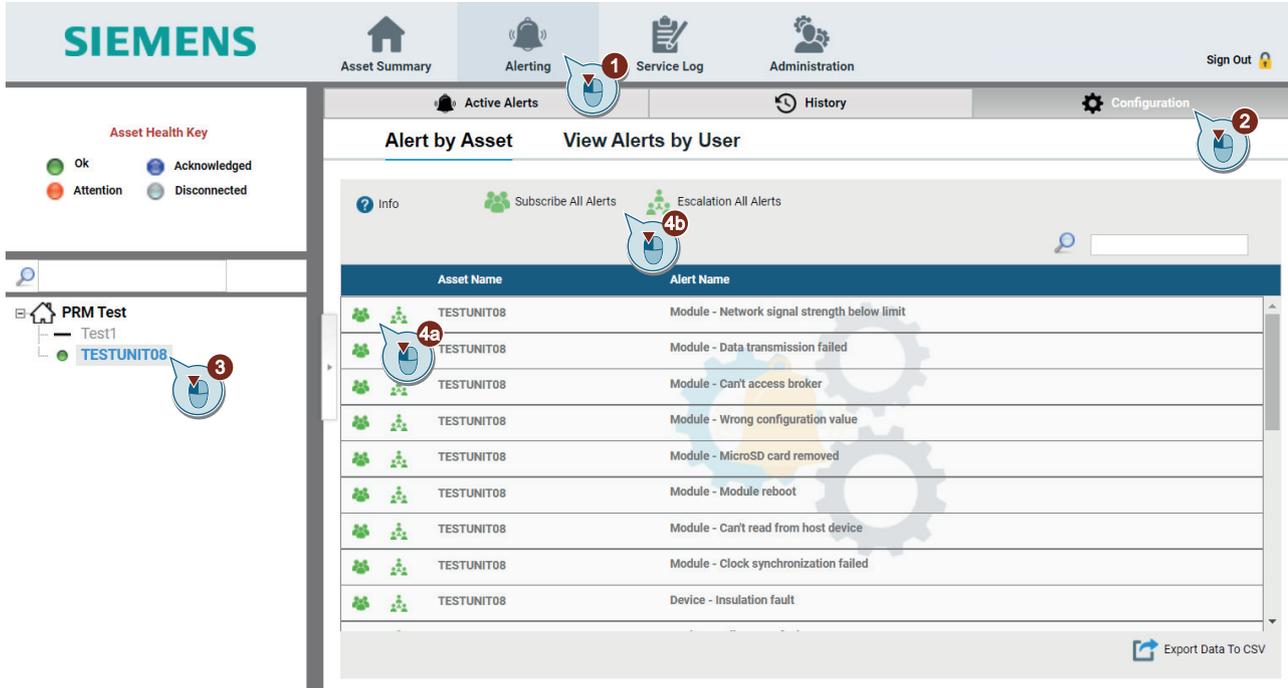


Figure 7-2 Alert configuration

- 5. Add all relevant users and set a delay if applicable.
- 6. Click on "Save".

7.4 Creating a Node

Before you start

Log on at IloT web application (<http://www.siemens.com/mag8000iiotwebapplication>).

Procedure

1. Click on "Administration".
2. Click on "Org".
3. Click on "Create".
4. Enter a name and click on "Create".

The Node appears on the left. You can now move Assets to the Node. Moving an Asset to a Node (Page 35).

7.5 Moving an Asset to a Node

Before you start

- Log on at IIoT web application (<http://www.siemens.com/mag8000iiotwebapplication>).
- Create at least one Node. (Page 34)

Procedure

1. Click on "Administration".
2. Click on "Asset".
3. Select an Asset.
4. Click on "Move".
5. Select the Node to which you want to move your Asset.
6. Click on "Move".

7.6 Submitting measurement data by email

Before you start

- Register your device: Registering your device (Page 29)
- Log on at IIoT web application (<http://www.siemens.com/mag8000iiotwebapplication>).

Procedure

1. Click on "Administration".
2. Select an Asset.
3. Click on the email button  in the lower right corner.
4. Click on "Add Entry"
5. Enter your email address in the new line.
6. Click on "Confirm".

7.7 Submitting measurement data with FTPS (File Transfer Protocol Secure)

Before you start

- Register your device: Registering your device (Page 29)
- Log on at IIoT web application (<http://www.siemens.com/mag8000iiotwebapplication>).

Procedure

1. Click on "Administration".
2. Select an Asset.
3. Click on the FTPS button  in the lower right corner.
4. Enter your FTPS server URL, port, credentials and destination path.
5. Click on "Save".
6. Click on "Back".

7.8 Setting up periodic transmission of measurement data

Before you start

- Register your device: Registering your device (Page 29)
- Log on at IIoT web application (<http://www.siemens.com/mag8000iiotwebapplication>).

Principle

Note

The "Interval Synchronization Time" has to be set to a past point in time

If the "Interval Synchronization Time" is not set to a past point in time, an error message will appear.

The "Interval Synchronization Time" is set in unix time stamp format. The unix time stamp tracks the time as a running total of seconds, starting on January 1st, 1970 at UTC. To convert a specific date and time to a Unix timestamp and vice versa go to: unix time stamp conversion (<https://www.unixtimestamp.com/index.php>).

If the "Interval Synchronization Time" is left on the default setting of 4294967295, the last change of either "Paging Interval", "Data Collection Interval" or "Transmission Interval" will determine the starting time for sending the CSV file via email or FTPS. Subsequently the CSV file is then sent after every "Transmission Interval". The latest change can be seen in the "Last Interval Modification Time" parameter (read only).

As an example if you want to transmit measurement data every 8 hours, starting May, 11th 2022 at 10:00 am as point of reference, proceed as followed:

Procedure

1. Go to unix time stamp conversion (<https://www.unixtimestamp.com/index.php>) and convert May, 11th 2022 to 1652256000.
2. Set the "Interval Synchronization Time" to 1652256000.
3. Set the "Transmission Interval" to 28800 (8 hours).

Result

The CSV file with measurement data will be sent every 8 hours with May, 11th 2022, 10:00 am as the starting point of reference. Therefore measurement data will be sent every day at 02:00 am, 10:00 am and 6:00 pm in the future.

Parameter assignment

8.1 Parameter list

Parameter	Description	Default value	Min. value	Max. value
Log Verbosity Level ¹⁾	<p>Defines the information saved on the microSD card.</p> <ul style="list-style-type: none"> • 0 : disabled • 1 : error • 2 : errors + warnings • 3 : error + warnings + info <p>Please be aware of higher battery consumption and microSD memory usage. Siemens recommends keeping the default value.</p>	1	0	3
Firmware Version	Firmware Version of the IIoT Wireless Communication Module.	Read only		
Network Signal Strength	Network Signal Strength from 0 (lowest) to 5 (strongest).	Read only		
Paging Interval ¹⁾	<p>Paging interval (in seconds) where the IIoT Wireless Communication Module wakes up and connects to the mobile network to execute any read/write requests.</p> <p>The lower the value, the higher the battery consumption. Recommendation: Configure this parameter to less than one hour only for startup and then set it back to greater than one hour for regular operation.</p>	3600	300	2678400
Timestamp	UTC Unix time → always GMT in seconds from 1970	Read only		
Paging Control	Enable paging interval (if disabled, the read/write requests will be executed during transmission intervals).	true	false	true
Auto Adaptive Control	Sets up the transmission interval to 30 min in case the MAG 8000 is in mains powered operation.	false	false	true
Last Interval Modification Time	Not active in current release.	Read only		
Analog Value 1	Value in millivolts [0 - 5000]. Returns 0 if "Analog Inputs Acquisition Control" is disabled.	Read only		
Analog Value 2		Read only		
Battery Remaining	Capacity of the MAG 8000 main battery in %	Read only		

Parameter assignment

8.1 Parameter list

Parameter	Description	Default value	Min. value	Max. value
Data Collection Interval	Interval the IIoT Wireless Communication Module samples data from the MAG 8000 (in seconds).	600	60	86400
Interval Synchronization Time	The Interval Synchronization Time has to be in the past. When "Interval Synchronisation Time" is not used then this parameter is showing the latest change and actual start point of the transmission. This parameter is influenced by "Paging Interval", "Data Collection Interval" and "Data Transmission Interval". For more details go to: Setting up periodic transmission of measurement data (Page 36)	4294967295		
Module Alarm	See next table for alarm description.	Read only		
Module Alarm Mask	See next table for alarm description.	Read only		
Transmission Interval ¹⁾	Interval to send CSV files by email or FTP (in seconds).	10800	3600	2678400
Leakage Window Control	Not active in current release.	Read only		
Leakage Window Starting Time	Not active in current release.	Read only		
Analog Inputs Acquisition Control	Enable analog inputs ¹⁾	true	false	true
Slope Analog Input 1				
Offset Analog Input 1				
Slope Analog Input 2				
Offset Analog Input 2				
Leakage Window Starting Point	Not active in current release.	Read only		
Prefix Of The CSV File	User configurable prefix of the CSV file (max 13 characters).	MAG 8000	Min. string ASCII character value 32	Max. string ASCII character value 126
Analog Cutoff	Analog cut off shared for both entries (mV).	20	0	5000
Network Signal Strength Alarm Threshold	Threshold for network signal strength alarm (from 0 to 4).	2	0	4
Process Values Protocol Version	Internal parameter for versioning.	Read only		

¹⁾ Please be aware that battery consumption can be highly affected by modifying this parameter.

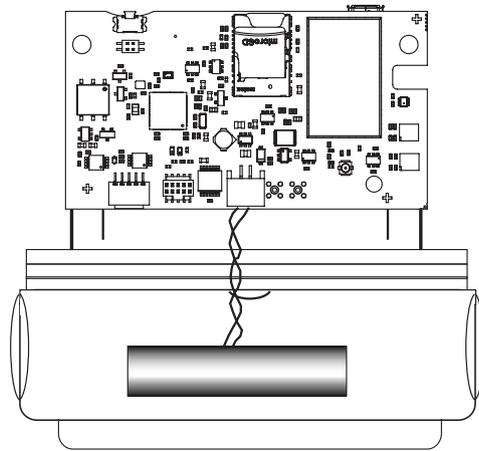
Service and maintenance

9.1 Rechargeable battery

The life of the rechargeable lithium ion battery depends on the charge/recharge cycles and operating temperature.

The battery should be replaced after approximately four years. When the battery is used for more than four years, a trouble-free operation cannot be guaranteed.

If the battery is used where the surrounding temperature is close to the maximum allowable (60°C), the battery should be replaced after two years.



9.2 Return procedure

To return a product to Siemens, see Returns to Siemens (www.siemens.com/returns-to-siemens).

Contact your Siemens representative to clarify if a product is repairable, and how to return it. They can also help with quick repair processing, a repair cost estimate, or a repair report/cause of failure report.

NOTICE
Decontamination
The product may have to be decontaminated before it is returned. Your Siemens contact person will let you know for which products this is required.

Note

Return of products with lithium batteries

Lithium batteries are dangerous goods according to the Regulation of Dangerous Goods, UN 3090 and UN 3091.

- Remove lithium batteries prior to shipment.
 - If the battery cannot be removed, return the product according to the Regulation of Dangerous Goods with special transport documentation.
-

9.3 Disposal



Devices described in this manual should be recycled. They may not be disposed of in the municipal waste disposal services according to the Directive 2012/19/EC on waste electronic and electrical equipment (WEEE).

Devices can be returned to the supplier within the EC and UK, or to a locally approved disposal service for eco-friendly recycling. Observe the specific regulations valid in your country.

Further information about devices containing batteries can be found at: Information about battery / product return (WEEE) (<https://support.industry.siemens.com/cs/document/109479891/>)

Diagnostics and troubleshooting

Module alarm bit	Alarm ID	Message	Action
0	AL01	Network signal strength is below limit	Place the antenna in a more suitable location.
2	AL03	Can not access broker	If this error is still present during the next communication cycle, please contact technical support (Page 50).
3	AL04	Wrong configuration value	Check the min, max values and allowed characters in the Wireless Communication Module parameter list (Page 39). Also check the parameters for MAG 8000.
4	AL05	MicroSD card removed	Use the procedure described for hot swapping the microSD card under Function button (Page 31).
5	AL06	Module reboot	If this error is still present during the next communication cycle, please contact technical support (Page 50).
6	AL07	Can not read from host device	If this error is still present during the next communication cycle, please contact technical support (Page 50).
7	AL08	Clock synchronization failed	If this error is still present during the next communication cycle, please contact technical support (Page 50).

Technical specifications

11.1 4G/LTE add-on module

4G/LTE add-on module

Description	Specification
Wireless module	SARA R422S
Frequency bands and data transmission	Secure Cloud LTE-M, NB-IoT and EGPRS module for multi-regional use
Supply voltage range	3.3...4.5 V Charging control for Lithium batteries
Temperature range	-20°C...+60°C
Rated operating conditions	Air humidity: max. 80%
Supported protocols	Web interface Email (SMTP/SMTPS ¹) FTP/FTPS ¹
Hardware requirements	SD card with min. 4 GB of free memory
Web browser	Chrome

¹⁾ TLS 1.1/1.2/1.3/SSL3.0 based encryption

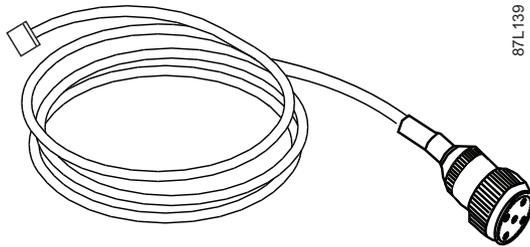
11.2 Antenna

Antenna

Description	Specification
Type	Omni-directional outdoor Antenna
Frequency range	LTE 700 ... 2700 MHz
Enclosure rating	IP68
Gain	2.2 dBi
Cable length	5 m
Connector type	SMA male
Adapter cable	SMP to UFL

11.3 Analog inputs cable

Analog inputs cable



Connector	Wire color	Function
Pin 1	White	+5 V sensor supply, Analog Input 1
Pin 2	Gray	+0-5 V sensor signal, Analog Input 1
Pin 3	Brown	+5 V sensor supply, Analog Input 2
Pin 4	Yellow	+0-5 V sensor signal, Analog Input 2
Pin 5	Green	Grounding of sensor

Figure 11-1 Analog inputs cable connectors



Figure 11-2 Female cable adaptor

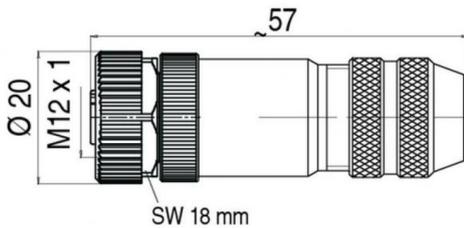


Figure 11-3 Female cable adaptor dimensions

11.4 Battery

Battery lifetime

A 750 mAh Li-Ion re-chargeable battery is required by the wireless module as energy buffer for the wireless signal transmission. The charging process is controlled by an embedded power management program in the wireless module.

11.4 Battery

Product documentation and support

A.1 Product documentation

Process instrumentation product documentation is available in the following formats:

- Certificates (<http://www.siemens.com/processinstrumentation/certificates>)
- Downloads (firmware, EDDs, software) (<http://www.siemens.com/processinstrumentation/downloads>)
- Catalog and catalog sheets (<http://www.siemens.com/processinstrumentation/catalogs>)
- Manuals (<http://www.siemens.com/processinstrumentation/documentation>)
You have the option to show, open, save, or configure the manual.
 - "Display": Open the manual in HTML5 format
 - "Configure": Register and configure the documentation specific to your plant
 - "Download": Open or save the manual in PDF format
 - "Download as html5, only PC": Open or save the manual in the HTML5 view on your PC

You can also find manuals with the Mobile app at Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/sc/2067>). Download the app to your mobile device and scan the device QR code.

Product documentation by serial number

Using the PIA Life Cycle Portal, you can access the serial number-specific product information including technical specifications, spare parts, calibration data, or factory certificates.

Entering a serial number

1. Open the PIA Life Cycle Portal (<https://www.pia-portal.automation.siemens.com>).
2. Select the desired language.
3. Enter the serial number of your device. The product documentation relevant for your device is displayed and can be downloaded.

To display factory certificates, if available, log in to the PIA Life Cycle Portal using your login or register.

Scanning a QR code

1. Scan the QR code on your device with a mobile device.
2. Click "PIA Portal".

To display factory certificates, if available, log in to the PIA Life Cycle Portal using your login or register.

A.2 Technical support

Technical support

If this documentation does not completely answer your technical questions, you can enter a Support Request (<http://www.siemens.com/automation/support-request>).

For help creating a support request, view this video here.

Additional information on our technical support can be found at Technical Support (<http://www.siemens.com/automation/csi/service>).

Service & support on the Internet

In addition to our technical support, Siemens offers comprehensive online services at Service & Support (<http://www.siemens.com/automation/serviceandsupport>).

Contact

If you have further questions about the device, contact your local Siemens representative at Personal Contact (<http://www.automation.siemens.com/partner>).

To find the contact for your product, go to "all products and branches" and select "Products & Services > Industrial automation > Process instrumentation".

Contact address for business unit:

Siemens AG
Digital Industries
Process Automation
Östliche Rheinbrückenstr. 50
76187 Karlsruhe, Germany

Spare parts & Abbreviations

B.1 Ordering of spare parts

Condition

- You have a Siemens Industry Mall account.

Procedure

- Open the Process instrumentation catalog (<https://www.siemens.com/processinstrumentation/catalogs>).
- Select the desired language.
- To find spare parts for your device, do one of the following:
 - Enter the complete order number of your device (e.g. 7ME4633-4KA51-8DC3-Z A05+B11+E06+F11) into the "Product number" field and click "Go".
 - Enter the serial number of your device (e.g. N1KXXXXXXXX) in the "Serial number" field and click "Go".
 - If you do not know the product or serial number, search for your device under "Product family".
- Navigate to the "Spare parts" tab. You see the list of spare parts available for your device.



- Select a spare part and add it to your watch list. The watch list opens.
- Click "Add to cart of Industry Mall".



The Siemens Industry Mall opens and you can order your spare part.

B.2 Abbreviations

A/I 1

Analog input 1

A/I 2

Analog input 2

APOP

Authenticated Post Office Protocol

ASCII

American Standard Code for Information Interchange

CSV

Comma Separated Values (pseudo file format used to store tabular data in plain text form)

DA

Data access

dB

Decibel

DCS

Distributed Control System

DNS

Domain Name System

DX

Data exchange

EU

European Union

FAQ	Frequently asked questions
FFS	Flash File System
FL	Flow
FW	Firmware
GB	Giga bytes
GGSN	Gateway GPRS Support Node
GND	Ground
GPRS	General Packet Radio Service
GSM	Global System for Mobile communication
SF	System failure
HDA	Historical Data Access
HMI	Human Machine Interface

B.2 Abbreviations

IP	Internet Protocol (or Ingress Protection)
LED	Light Emitting Diode
MCU	Micro-Controller Unit
MSISDN	Mobile Station International Subscriber Directory Number (mobile phone number)
NTP	Network Time Protocol
OPC	OLE for Process Control
OTAP	Over-the-air programming
PIN	Personal Identification Number
PLC	Programmable Logic Control
PLMN	Public Land Mobile Network
POP3	Post Office Protocol - Version 3
PUK	Personal Unlocking Code

R&TTE	Radio and Telecommunications Terminal Equipment
RAM	Random Access Memory
RAT	Radio Access Technology
RG	Coaxial connector type for radio signals
RTU	Remote Terminal Unit
SCADA	Supervisory Control and Data Acquisition
SDK	Software Development Kit
SIM	Subscriber Identity Module
SMA	SubMiniature version A
SMP	SubMiniature version P
SMTP	Simple Mail Transfer Protocol
SQL	Structured Query Language

B.2 Abbreviations

SSL

Secure Sockets Layer

SW

Software

UA

Unified Architecture

UTC

Universal Time, Coordinated

VU

Volume Units

WCM

Wireless Communication Module - module added to MAG 8000 unit to extend in with GSM/GPRS functionality

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