Cloud Connector M

(as of firmware 1.0.0)

User manual

Janitza®

Cloud Connector M (as of firmware 1.0.0)

Doc. no. 2.100.117.1.a
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The German version is the original edition of the documentation.

Subject to technical alterations.

The contents of our documentation have been compiled with great care and reflect the current state of the information available to us. Nonetheless, we wish to point out that updates of this document are not always possible at the same time as technical refinements are implemented in our products. Information and specifications are subject to change at any time.

Please see our website under www.janitza.com for the current version.

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1.   Information on the device and the user manual

1.1   Disclaimer

Compliance with the usage information for the devices is a prerequisite for safe operation and attaining the stated performance characteristics and product features.

Janitza electronics GmbH assumes no liability for bodily injury, material damage or financial losses which result from disregard of the usage information.

Make sure that your usage information is readily available and legible.

1.2   Copyright notice

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1.3   Technical changes

- Make sure that your device matches the user manual.
- This user manual is valid for the Cloud Connector software component. Separate validities and distinctions are marked.
- First make sure you have read and understood the usage information accompanying the product.
- Keep the usage information associated with the product available for the entire service life and pass it on to any possible subsequent users.
- Find out about device revisions and the associated modifications of the usage information associated with your product at www.janitza.com.
- This manual is also valid for alternative device fronts.

1.4   About this user manual

If you have questions, suggestions or ideas for improvement of the user manual, please let us know via email at: info@janitza.com.

ⓘ INFORMATION

This user manual describes the software component of the Cloud Connector and provides information on the operation of the device. Separate validities and distinctions of the device are marked.

For this user manual, refer to the further usage information for your device, such as:
· **Usage information from the device manufacturer.**
· **Installation instructions.**

ⓘ INFORMATION

Our usage information uses the grammatical masculine form in a gender-neutral sense! This form always refers equally to women, men and diverse. In order to make the texts more readable, distinctions are not made. We ask for your understanding for these simplifications.

New Terms used by the Modbus organization!
In a **Modbus system**, the **Modbus organization (modbus.org)** uses the terms **"Client"** and **"Server"** to describe Modbus communication, characterized by communication between client devices that initiate communication and make requests and server devices that process the requests and return an appropriate response (or error message).

1.5   Defective device/disposal

Before sending **defective devices, modules, or components** back to the device manufacturer for testing:
- Contact the device manufacturer's support department.
- Send devices, modules or components complete with all accessories.
- When doing so, please bear the terms for transportation in mind.

ⓘ *INFORMATION*

Please return defective or damaged devices to the device manufacturer in accordance with the shipping instructions for air or road freight (complete with accessories).
Observe special regulations for devices with built-in batteries or rechargeable batteries!

Do not attempt to open or repair the device (the component) on your own because otherwise all warranty claims become invalid!

Observe national regulations for the **disposal** of the device! Dispose of individual parts as needed depending on their composition and existing country-specific regulations, for example, as:
- Electronic waste,
- Batteries and rechargeable batteries.
- Plastics.
- Metals.
Engage a certified disposal company to handle scrapping as needed.

2.   Safety

The chapter on Safety contains information which must be observed to ensure your personal safety and avoid material damage.

2.1   Display of warning notices and safety information

The warning notices shown below
• are found throughout all of the documentation,
• indicate potential risks and hazards,
• underscore aspects of the information provided that clarifies or simplifies procedures.

This general warning symbol draws attention to a possible risk of injury. Be certain to observe all of the information listed under this symbol in order to avoid possible injury or even death.

(i) *INFORMATION*

Observe the warning symbols and safety information in the usage information provided by the device manufacturer and on the device.

2.2   Hazard levels

Warning and safety information is marked by a warning symbol, and the hazard levels are shown as follows, depending on the degree of hazard:

⚠ DANGER
Warns of an imminent danger which, if not avoided, results in serious or fatal injury.

⚠ WARNING
Warns of a potentially hazardous situation which, if not avoided, could result in serious injury or death.

⚠ CAUTION
Warns of an immediately hazardous situation which, if not avoided, can result in minor or moderate injury.

ATTENTION
Warns of an immediately hazardous situation which, if not avoided, can result in material or environmental damage.

(i) *INFORMATION*

Indicates procedures in which there is **no** hazard of personal injury or material damage.

2.3   Product safety

The device reflects current engineering practice and accepted safety standards, but hazards can arise nonetheless.

Observe the safety regulations and warning notices. If notices are disregarded, this can lead to personal injury and/or damage to the product.

Every type of tampering with or use of this device,
• which goes beyond the mechanical, electrical or other operating limits can lead to personal injury and/or damage to the product;
• constitutes "misuse" and/or "negligence" under the product's warranty and thus voids the warranty for any possible resulting damage. In this regard, please take note of section „3.3 Intended use" on page 11.

Read and understand the user manual and, if applicable, the usage information before installing, operating, maintaining and using the device.

Only operate the device when in perfect condition and in compliance with this user manual and the usage information that is included. Send defective devices back to the manufacturer in compliance with proper transport conditions.
Retain the user manual throughout the service life of the device and keep it at hand for consultation.

When using the device, also observe the legal and safety regulations for your system that are applicable for the respective use case.

2.4   Hazards when handling the device in the switchboard cabinet

When operating electric devices, it is unavoidable for certain parts of these devices to conduct hazardous voltage. Consequently, severe bodily injury or material damage can occur if they are not handled properly.

Therefore, when handling our devices, always observe the following:

- do not exceed the limit values specified in the user manual and on the rating plate! This must also be observed during testing and commissioning!
- Take note of the safety and warning notices in all usage information that belongs to the device!

⚠ WARNING

Risk of injury due to electrical voltage!
Severe bodily injury or death can result! Therefore please abide by the following:
· **Switch off your installation before commencing work! Secure it against being switched on! Check to be sure it is de-energized! Ground and short circuit! Cover or block off adjacent live parts!**
· **During operation and troubleshooting (especially for DIN rail devices), check your system for dangerous voltages and switch these off if necessary!**
· **Wear protective clothing and protective equipment in accordance with applicable guidelines when working on electrical systems!**
· **Do not touching bare or stripped leads that are energized! Equip stranded conductors with wire ferrules!**
· **Hazardous voltages can be present in all circuitry parts that are connected to the power supply!**
· **Protect wires, cables and devices with a suitable line circuit breaker/fuse!**
· **Never switch off, remove or tamper with safety devices!**
· **Do not exceed the limit values specified in the user manual and on the rating plate! This must also be observed during testing and commissioning.**
· **Take note of the safety and warning notices in the documents that belong to the device!**

2.5 Electrically qualified personnel

To avoid bodily injury and material damage, only electrically qualified personnel are permitted to work on the devices and their components, modules, assemblies, systems and current circuits who have knowledge of:

- The national and international accident prevention regulations.
- Safety technology standards.
- Installation, commissioning, operation, disconnection, grounding and marking of electrical equipment.
- The requirements concerning personal protective equipment.

Electrically qualified persons within the scope of the technical safety information of all usage information associated with the device and its components are persons who can furnish proof of qualification as an electrically skilled person.

⚠ WARNING

Warning against unauthorized manipulation or improper use of the device or its components!
Opening, dismantling or unauthorized manipulation of the device and its components which goes beyond the mechanical, electrical or other operating limits indicated can lead to material damage or injury, up to and including death.
· **Only electrically qualified personnel are permitted to work on the devices and their components, assemblies, systems and current circuits.**
· **Always use your device or component only in the manner described in the associated documentation!**
· **If there is discernible damage, send the device or the component back to the manufacturer**

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3.   Product description

3.1   Device description

The device is an interface between measurement devices and the GridVis® Cloud and is suitable for
- the retrieval of measured values from a maximum of 100 measurement devices.
- the transfer of the measured values to the GridVis® Cloud.
- Connection to measurement devices via Ethernet, via an Ethernet gateway (e.g. UMG 512-PRO), or Modbus.
- the connection to the GridVis® Cloud via Internet.
- the independent detection of Janitza® measurement devices in the network.
- the manual addition of Janitza® measurement devices.
- the manual addition of third-party devices by means of Modbus drivers.

3.2   Incoming goods inspection

Safe and trouble-free operation of this device and its components presupposes proper transport, proper storage, set-up and assembly as well as operation and maintenance in addition to compliance with the safety information and warning notices.

Exercise due caution when unpacking and packing the device, do not use force and only use suitable tools.

Before installing the device check the following:
- Its flawless mechanical condition by visual inspection.
- The scope of delivery for completeness.

If it can be assumed that safe operation of the device is no longer possible:
- Disconnect the device from operation immediately!
- Secure the device against being switched on again!

It can be assumed that safe operation is no longer possible if the device, for example
- Has visible damage.
- No longer functions despite an intact power supply.
- Was subjected to extended periods of unfavorable conditions (e.g. storage outside of the permissible climate thresholds without adjustment to the room climate, condensation, etc.) or transport stress (e.g. falling from an elevated position, even without visible external damage, etc.).

3.3   Intended use

The device is:
- Also intended for use in the industrial sector.
- Designed for indoor use.
- Also intended for installation in switchboard cabinets and small distribution boards.
- Not intended for installation in vehicles! Use of the device in non-stationary equipment constitutes an exceptional environmental condition and is only permissible by special agreement.
- Not intended for installation in environments with harmful oils, acids, gases, vapors, dusts, radiation, etc.

Safe and trouble-free operation of the device requires proper transport, storage, assembly, installation, operation and maintenance.

3.4   Performance characteristics

Function
- Connection of measurement devices via Ethernet and optionally via Modbus.
- Automatic recognition of Janitza® measurement devices, thus quick and easy commissioning.
- Dedicated Web interface for configuration and connection diagnostics.
- Retrieval of measured values from a maximum of 100 measurement devices.
- Encrypted transmission of the measured values to the GridVis® Cloud.
- Firmware update via the GridVis® Cloud.

3.5   Scope of delivery

Quan-tity	Part. no.	Designation
1	51.00.420 [1)	Cloud Connector M
1	33.03.867	Installation instructions

1) For part number see delivery note

ⓘ *INFORMATION*

All supplied options and design variants are de-scribed on the delivery note.

3.6   Operating concept

The operating concept of the device consists of the following method:
- **Web interface** for configuration and operation of the Cloud Connector.

This user manual describes the configuration and operation of the device via the Web interface.

3.7   GridVis® Cloud

The GridVis® Cloud (https://www.GridVis.Cloud) is an online tool for reading and analyzing measurement data.

Performance characteristics of the GridVis® Cloud
- Encrypted data storage.
- Graphic display of measured values.
- Store measurement data in databases.
- Analysis of read measured values.
- Fixed dashboards.
- Location-independent access via the Internet.
- Individual user access.
- Automatic summation based on your own hierarchy.
- Manual recording of meter readings via the Web interface.
- Overview of all integrated measurement devices and measured values.

4.   Connection

Proceed as follows to connect the device:

1. Connect the device to the power supply.
2. Connect the device to the network via the Ethernet interface.
3. Optionally connect further measurement devices to the device via the Modbus interface.

ATTENTION
Material damage due to disregard of the connection instructions! Disregard of the connection instructions can damage or destroy your device. **Observe the following:** · **Observe the voltage and frequency specifications on the rating plate!** · **Use commercially available patch cables for the intended interfaces.**

⚠ CAUTION
Malfunction and damage of the device or risk of injury due to improper connection. Improperly connected devices can deliver incorrect measured values, damage the device or pose a risk of injury to persons. **Observe the following:** · **Improper connection of the power supply can cause damage to the device.** · **Cloud Connector and the measurement devices must be in the same network.**

ⓘ *INFORMATION*

After connection, the device performs an update. No access via Ethernet is possible while this takes place. The process can take up to ten minutes.
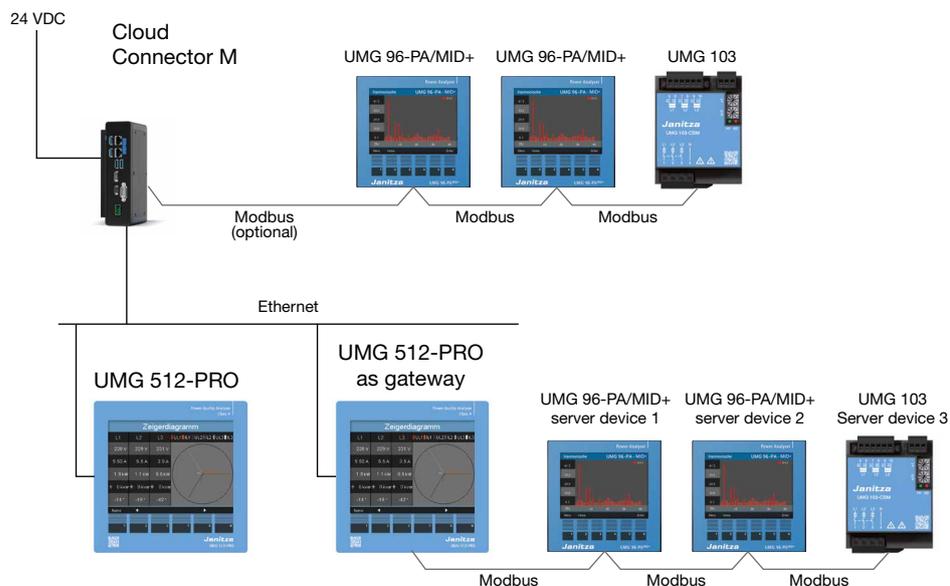

Fig. 1: Connection example

5.   Configuration / Operation

5.1   Preparation of the measurement devices

Ensuring correct data transmission requires that the measurement devices be configured accordingly.

5.1.1   Time synchronization

The time used in the device must be synchronous with the system time. If necessary, synchronize the measurement devices manually or automatically. For more information on time synchronization, refer to the respective usage information of the measurement device.

5.1.2   Recording configuration

Configure the following measured values:
- Active energy, sum L1..L3
- Consumed active energy, sum L1..L3
- Supplied active energy, sum L1..L3

The work values should ideally be recorded at 15-minute intervals. Longer recording cycles are possible, but result in a lower resolution of the measured values. For more information on the recording configuration, refer to the respective usage information of the measurement device.

5.2   Open web interface

Open the web interface of the device:
DHCP mode is activated in the device at the factory.
1. Open a browser and enter the IP address of the device in the address bar. The IP address of the device can be found in your DHCP server. Alternatively, enter the factory-set hostname *janitza-connect*.
2. If necessary, contact your IT department.

(i) *INFORMATION*

Observe the port requirements (see section „Ports and protocols").

ATTENTION

Material damage due to incorrect network settings.
Incorrect network settings can cause faults in the IT network.
Ask your network administrator about the correct network settings for your device.

ATTENTION

Material damage due to security vulnerabilities in programs, IT networks and protocols.
Security vulnerabilities can lead to data misuse and faults and even the standstill of your IT infrastructure.
· **To protect your IT system, network, data communication and device:**
· **Inform your network administrator and/or IT representative.**
· **Always keep the device firmware up to date and protect the communication to the device with an external firewall. Close unused ports.**
· **Take protective measures against viruses and cyber attacks from the Internet, e.g. through firewall solutions, security updates and virus protection programs.**
· **Eliminate security vulnerabilities and update or renew existing protection for your IT infrastructure.**
· **Change the default password when you log in for the first time.**

5.3   Initial commissioning

5.3.1   Set up Cloud connection

When called for the first time, the window for set-ting up the cloud connection (known as claiming) opens. To do so, proceed as follows:
1. Click on *Link to Cloud account*.
2. If necessary, log in to the GridVis® Cloud with your Janitza ID and the associated password.
3. The Cloud connection can be canceled with the *Skip* button. As long as the Cloud connection has not yet been set up, the window opens again each time the web interface is opened.
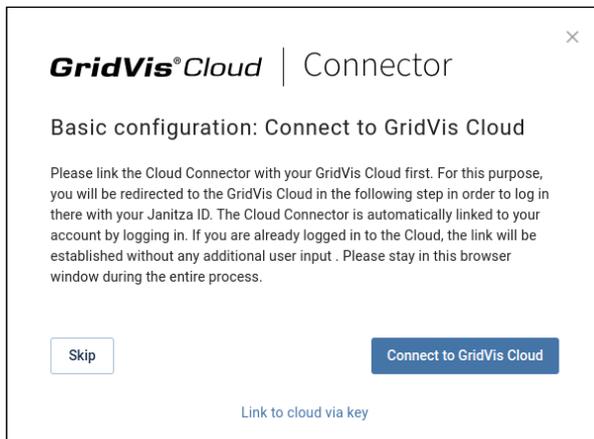
Fig. 2: Set up Cloud connection

5.3.2   Initial device query

During initial commissioning, the network (subnet) is initially scanned for connected Janitza® mea-surement devices. Only Janitza® measurement devices that are directly connected to the network are found. Indirectly connected devices (e.g. via Modbus) must be added manually (see section 5.7). The device information and the device mem-ory of all measurement devices found are read out. To do so, proceed as follows:
1. Click on *Start process*.
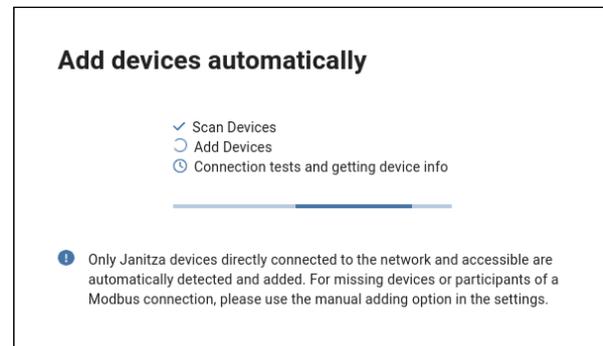2. After completing the device query, click *Finalize*.

Fig. 3: Initial device query

The following Janitza® measurement devices can-not currently be detected automatically and must be added manually:
- UMG 96RM-E
- UMG 96RM-PN
- UMG 104
- UMG 801 (automatic detection only as of firm-ware 1.3.1)
- UMG 806
- ProData 2

ⓘ *INFORMATION*

Claiming requires a connection to the GridVis® Cloud and the Janitza® ID server.

ⓘ *INFORMATION*

· Newly connected Janitza® measurement de-vices are also detected automatically while the system is running. It can take up to 30 minutes before measured values are read out.
· Make sure that the respective measurement de-vice firmware is up to date to ensure automatic detection.

5.4 Start page

The left column contains all measurement devices connected to the Cloud Connector. The measurement devices are separated into Janitza® and third-party devices and are sorted according to their respective connection type.

In the *Connector Overview* area, the following information is available:
• Cloud Connector name
• Connection status to the GridVis® Cloud
• Time stamp of the last measurement device reading
• Time stamp of the last measured value transmission
• Cloud Connector serial number
• Firmware version of the Cloud Connector

The *Devices overview* area contains an overview of the connected measurement devices. The following information is available for each measurement device:
• Device designation
• Device type
• Serial number
• IP address or IP address of the Modbus client*
• Modbus address
• Connection status

The *GridVis® Cloud* button takes you to the GridVis® Cloud connected to the device.

Fig. 4: Device overview

*See note Modbus organization
(„1.4 About this user manual" on page 6)

5.5   Cloud Connector settings

Open the settings (⚙). Make the settings for
- the device name.
- the connection type:
    - DHCP mode or
    - Static network settings (IP address, subnet mask, gateway, and DNS server).

Fig. 5: General settings and network settings

In addition, here you can
- add and remove devices manually.
- activate a regular time synchronization of the connected measurement devices. With this function, the Cloud Connector synchronizes the system time of the connected measurement devices with its local system time every day at 00:05 (UTC).

Fig. 6: Device settings

- Add and remove device drivers.

Fig. 7: Device driver settings

5.6　Device driver

5.6.1　Adding a device driver

To connect measurement devices from other manufacturers with the Cloud Connector, corresponding drivers are required. Device drivers are generic Modbus profiles. They are created with the GridVis® desktop and then uploaded to the Cloud Connector (file name extension: *.xml). For information on creating device drivers, refer to the GridVis® online help at https://wiki.janitza.de/pages/viewpage.action?pageId=42804364.

To do so, proceed as follows:
1. In the settings (⚙), click on *Upload driver*. A pop-up window will open.
2. Enter a designation in the *Device type* field. Under this designation, the driver appears in the list of available device drivers.
3. Select the appropriate device driver by clicking on *Select file*.
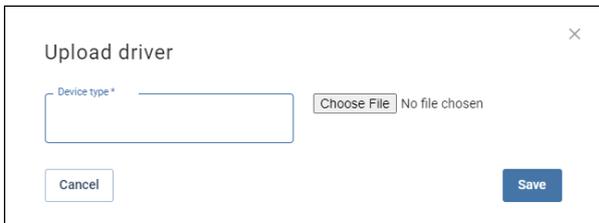4. Upload the driver by clicking *Save*.

Fig. 8: Adding a device driver

5.6.2　Removing a device driver

Device drivers installed on the Cloud Connector can be removed when they are no longer needed. Measurement devices that require this driver can then no longer be added.

To do so, proceed as follows:
1. Open the settings (⚙). In the list of device drivers, select the driver to be removed and open the context menu (⋮).
2. Click on *Delete*. A pop-up window will open.
3. Confirm the operation by clicking *Delete* button.

    Note: Used drivers cannot be deleted. The delete function is deactivated and accordingly displayed in light gray.
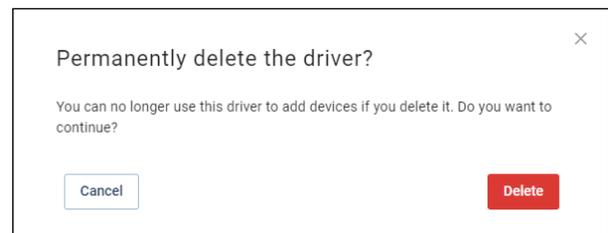

Fig. 9: Removing a device driver

5.7   Manual device connection

5.7.1   Adding a device manually

The Cloud Connector automatically searches for and connects to Janitza® measurement devices on the network. Additional devices can be added manually. Server devices* must be connected manually.

To do so, proceed as follows:
1. In the settings (⚙), click on *Add device*.
2. In the field *Device type*, select the appropriate device driver. Click the information icon for more information.
3. Enter the connection data. Click the information icon for more information.
4. Add the device by clicking on *Save*.

5.7.2   Removing a device manually

Devices connected to the Cloud Connector can be removed manually. If these devices are still directly connected to the network, they will be found during the next automatic scan, and the Cloud Connector will reconnect to them (Janitza® measurement devices only).

To do so, proceed as follows:
1. In the settings (⚙), click on *Remove device*. A pop-up window will open.
2. Select the device you want to remove from the list. You can remove multiple devices at the same time.
3. Remove the selected devices by clicking *Remove*.
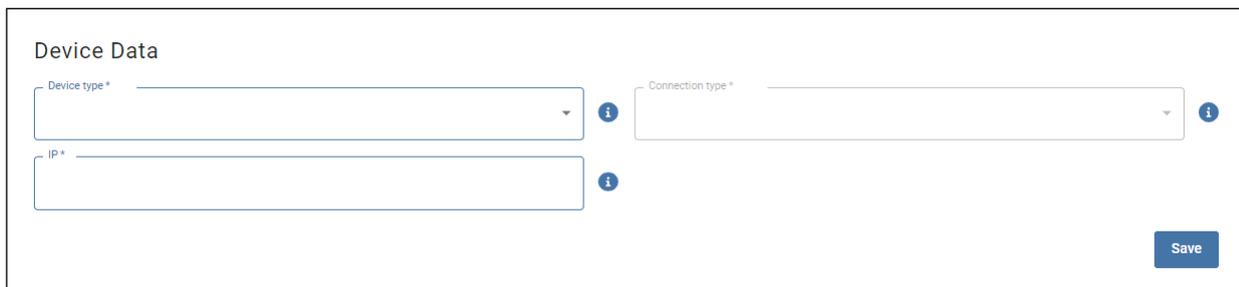
Fig. 10: Adding a device manually

6.   Service and maintenance

6.1   Repair

Have the device repaired by the device manufacturer only!

⚠ WARNING
Warning of unauthorized tampering or improper use of the device! Opening, dismantling or unauthorized manipulation of the device which goes beyond the mechanical, electrical or other operating limits indicated can lead to material damage or injury, up to and including death. · **Only electrically qualified personnel are permitted to work on the devices and their components, assemblies, systems and current circuits!** · **Always use your device or component only in the manner described in the associated documentation!** · **If there is discernible damage, including for repairs, send the device back to the manufacturer!**

6.2   Service

For questions not answered or described in this manual, please contact the manufacturer.

Please be certain to have the following information ready to answer any questions:
• Device designation (see rating plate)
• Serial number (see rating plate)
• Firmware, software, and hardware version (log in to the connector Web interface for this)
• Supply voltage
• An exact error description.

6.3   Firmware update

Firmware updates are performed automatically. To this end, make sure that the connection to the Balena update server is ensured.

ⓘ *INFORMATION*

· Note the port requirements of the Balena update server (see section „Ports and protocols").
· Make sure you have access to the domain *.balena-cloud.com.
· If necessary, update the firewall whitelist.

6.4   Clock/Battery

The supply voltage powers the internal clock of the device. If the supply voltage fails, the battery takes over the supply of voltage to the clock.

Time synchronization is performed via the permanently set NTP server (see technical data).

ⓘ *INFORMATION*

Note the battery specifications in the usage information of the device manufacturer.

⚠ CAUTION
Risk of injury due to fire or burns. The battery used in the device may cause fire or burns if used improperly. · **In case of damage, return devices with a built-in battery to the manufacturer, observing the transport conditions.**

6.5   Restart

Disconnect the device from the power supply for approx. 30 seconds.

7. Procedure in the event of a malfunction

Failure mode	Cause	Remedy
Device does not respond	Device not connected to the power supply.	Check the connection from the device to the power supply.
	External fuse for the supply voltage has tripped.	Replace fuse.
No connection to measurement devices	Ethernet not connected.	Connect Ethernet.
	Incorrect network settings.	Check the network settings. If necessary, contact your IT department.
	Device and measurement devices are not in the same network.	Check the network settings. If necessary, contact your IT department.
	Faulty connection via the Modbus interface.	Check the connection to the Modbus interface.
No connection to the GridVis® Cloud	Ethernet not connected.	Connect Ethernet.
	Cloud connection faulty.	Enable access to the GridVis® Cloud in the firewall. Check Internet access. If necessary, contact your IT department.
Web interface not accessible	Ethernet not connected.	Connect Ethernet.
	Wrong IP address used.	Check IP address. If necessary, contact your IT department.
	Network access blocked.	Check ports and enable them if necessary. If necessary, contact your IT department.
Despite the above measures, the device does not function.	Device defective.	Send the device and error description to the manufacturer for inspection.

8. Ports and protocols

Ports / protocols	
External	HTTPS (443 TCP)* NTP (123 UDP)* DNS (53 UDP)*
Internal	HTTPS (443 TCP) Modbus (502 TCP) OPC-UA (4840, only UMG 801) Broadcast (1111 UDP)

*Also for the connection to the Balena update server

ⓘ *INFORMATION*

· Automatic man-in-the-middle (MITM) can dis-
  rupt / slow down the application.
· Add *.balena-cloud.com to the whitelist of your
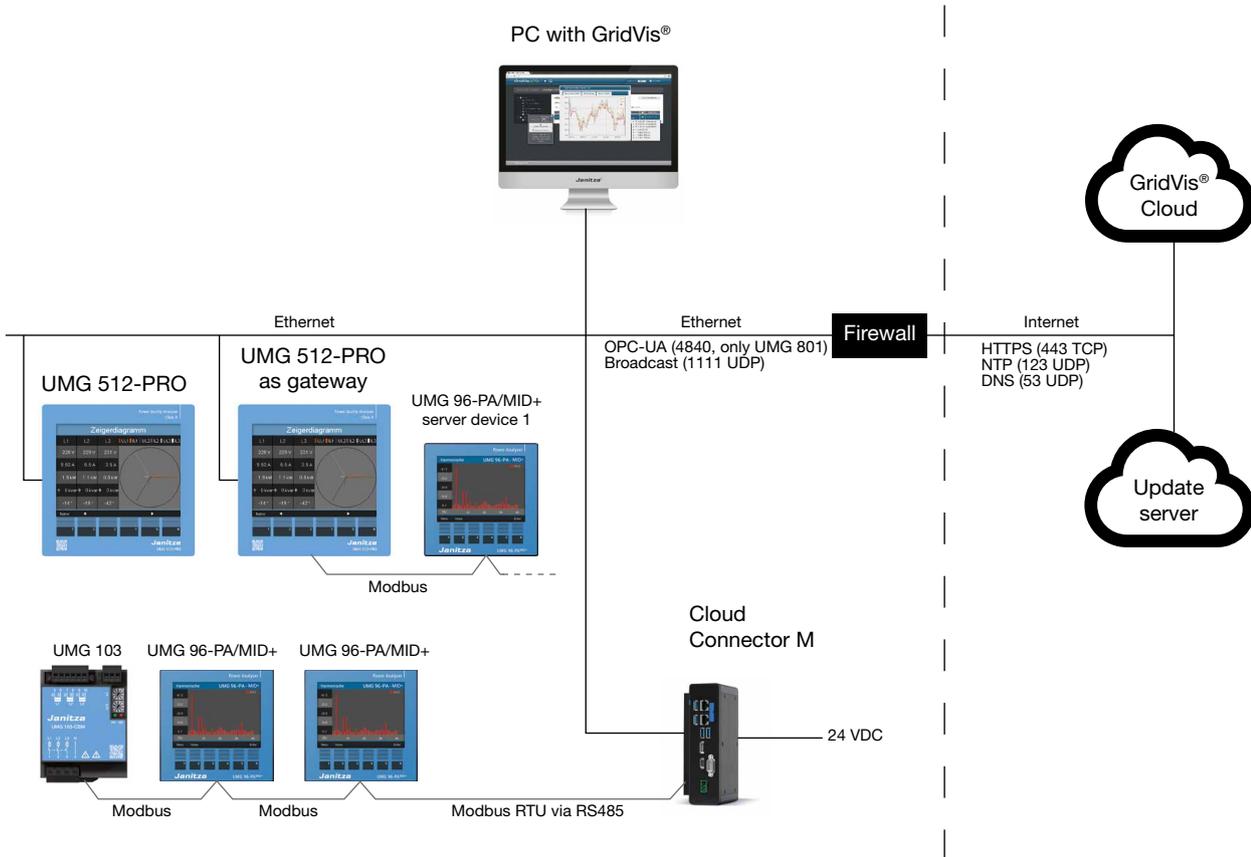 firewall.

9.   Connection example

Fig. 11: Connection example (incl. port specification)

Janitza®

Janitza electronics GmbH
Vor dem Polstück 6 | 35633 Lahnau
Germany

Tel. +49 6441 9642-0
info@janitza.com | www.janitza.com