

## VARIOMOD XC and Interface Module XC Communication and interface modules for LZQJ-XC and DMTZ-XC

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## Installation and commissioning

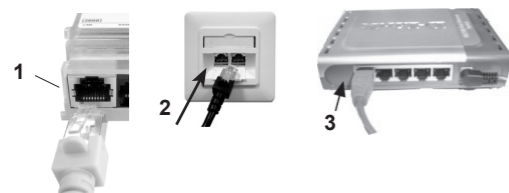
### Assembly of the antenna at VARIOMOD XC<sup>GPRS</sup>



The magnetic base antenna [1] or external antenna [2] (both available as accessories) are plugged to the FAKRA plug of the module. To guarantee optimal reception, the magnetic base antenna should be mounted outside meter cabinets, upright on a magnetic surface.

### Network connection of VARIOMOD XC<sup>ethernet</sup>

To connect the module to a network, plug the network cable into the left socket [1]. The plug must snap in. The other side of the network cable is plugged into a network socket [2], into a switch [3] or into a network socket of a computer.



## Important notes

### Target group

This manual is intended for technicians, who are responsible for assembly, connection and maintenance of the devices. The devices are only allowed to be installed and put into operation by qualified electricians in accordance with the generally accepted rules of engineering and the regulations, which are relevant for the installation of telecommunications facilities and terminal devices.

### Intended use

The VARIOMOD XC series devices have to be used only for transferring measurement data in conjunction with approved measuring instruments in accordance with the technical description and after proper installation.

The Interface Module XC have to be used only for interface extension and only in combination with approved LZQJ-XC and DMTZ-XC series devices according to the technical description and proper installation.

### Maintenance and warranty information

The devices are maintenance-free. Damages (e.g. caused during transportation or storage) must not be made repaired. The guarantee will be rendered null and void if the device is opened. The same applies if a defect is caused by external influences (e.g. lightning, water, fire, extreme temperatures and weather conditions, incorrect or negligent use or handling respectively).

### Basic safety instructions

The following safety instructions have to be considered:

- The devices have to be inspected for outward signs of transportation damage prior to installation.
- The communication module has to be stored, used and transported in such a way that the contact pins are not bent.
- Observe the local standards, guide lines, regulations and instructions for safety at work and electrical installations.

## CAUTION!

**The radio transmitter can interfere with the functionality of electronic devices! Observe prohibition of mobile communication!**

The VARIOMOD XC<sup>GPRS</sup> module contains a radio transmitter which can interfere with the functionality of the electronic device. This applies in particular for not correctly isolated medical instruments and equipment.

- Ask the attending physician or the manufacturer of the medical instruments and equipment
- Observe warning signs and do not operate the device in an area where mobile communication is prohibited.

## General description

The VARIOMOD XC is a communication module with modem functionality to enable a remote access for the LZQJ-XC and DMTZ-XC series devices. Furthermore the VARIOMOD XC has a loop-through RS485 interface to enable a remote access for additionally connected electricity, gas or water meter.

The modul meets the requirements according to unaltered data transfer of the meter certification (national certification for Germany: type approval).

The following communication moduls are available:

VARIOMOD XC<sup>GPRS</sup>, VARIOMOD XC<sup>ethernet</sup> and VARIOMOD XC<sup>analog</sup>.

The Interface Module XC has a RS232 and a RS485 interface.

## Technical data

Power supply	Via meter or external power supply unit
Temperature range	Operation: -20 °C...+55 °C Storage: -40 °C...+80 °C
Humidity	max. 95 %, non-condensing
Dimensions	45 x 105/115 x 27 (W x H x D) mm
Type of protection	Housing: IP 20
Weight	approx. 90 g

## Scope of delivery

Check the contents of the packaging for completeness before starting to install and commission the device.

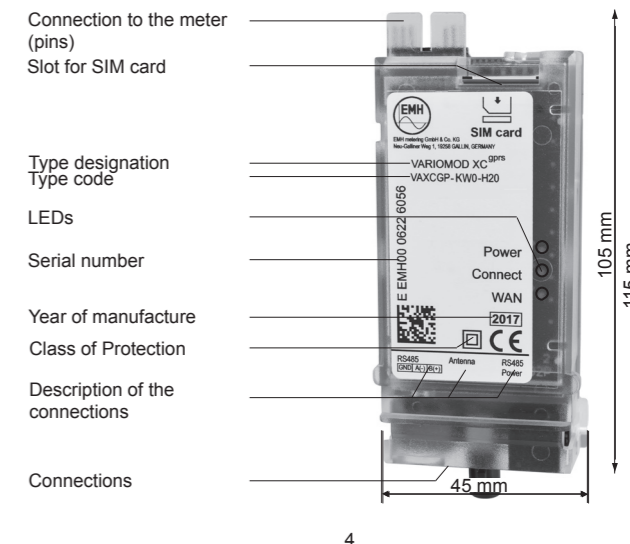
Contents of the packaging:

- 1 Communication module or 1 interface module
- 1 instructions for use
- Accessories (depending on the modem version):
  - Analogue: TAE cable (3 m) with TAE plug (N-coded) and modular plug connections

If the content is not complete or is damaged, please contact your source of supply. Please retain the packaging materials in case you need to return or store the device.

## Housing and display elements

The following figure shows the housing and display elements:



### Insert/remove the SIM card at VARIOMOD XC<sup>GPRS</sup>

#### CAUTION!

#### Damage of the SIM card!

- Only insert the SIM card into the VARIOMOD XC<sup>GPRS</sup> when the device is disconnected from the power supply.

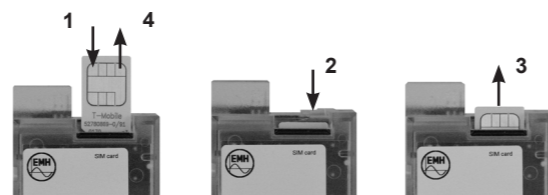
Before final assembly of the module a SIM card must be inserted, which has been activated for the data transfer. SIM cards with a deactivated PIN or a PIN „0000“ can be used. If a SIM card with another PIN should be inserted, the module has to be reconfigured via the VARIOMOD Manager. The SIM card is not part of the delivery!

#### Insert the SIM card

Slide the SIM card [1] in card slot until it snaps in.

#### Remove the SIM card

Push the SIM card slightly down [2]. The card automatically slides up [3]. Remove the card after that [4].



### Connect the Variomod XC<sup>analog</sup> to the telephone network

1. Plug the telephone cable into the socket next to the terminal block [1]. The plug must snap in.
2. Plug the other end of the telephone cable into the telephone socket [2] respectively the telephone system.

**i** The telephone line has to be laid in a distance according to DIN EN 50174-2 from the supply lines.

### Assembly of the module:

#### ! DANGER!

**Contact of parts under voltage is life-endangering!**

Assembly of the module can be done unter voltage.

- Do not touch life parts in the area of the meter connection terminals.

1. Remove the terminal cover [5].
2. Open the module compartment cover [1].
3. For GSM/GPRS modem: Insert the SIM-card.
4. Insert the module [3] into the module compartment [2].
5. Push the module into the module compartment [2] until the module snaps in.
6. Connect the connection cable with the module.
7. Close the module compartment cover [1].
8. Mount the terminal cover [5] on the terminal block [4].

### Disassembly of the module:

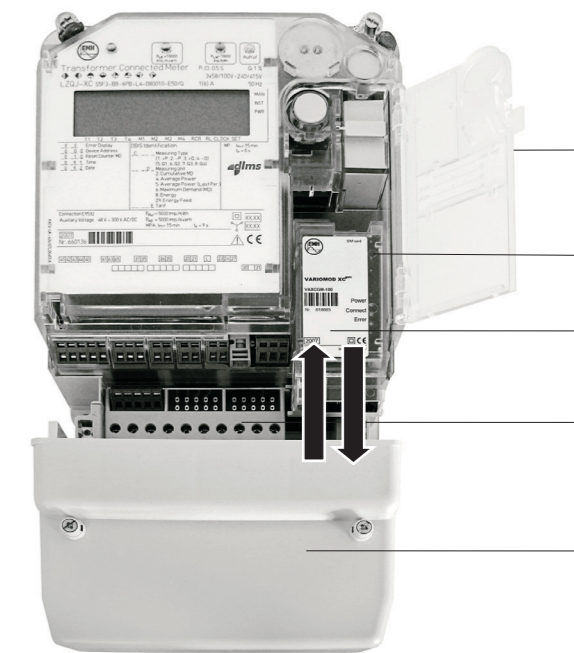
#### ! DANGER!

**Contact of parts under voltage is life-endangering!**

Disassembly of the module can be done unter voltage.

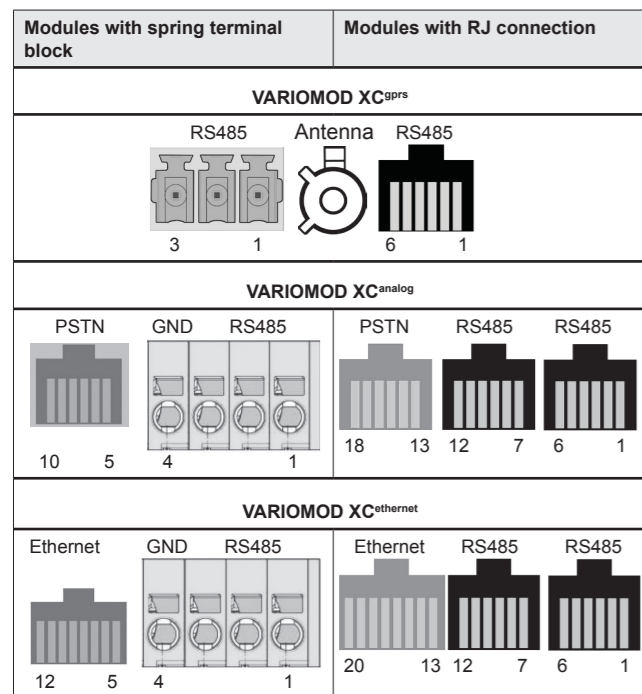
- Do not touch life parts in the area of the meter connection terminals.

1. Remove the terminal cover [5].
2. Open the module compartment cover [1].
3. Disconnect all connection cables.
4. Push down the module [2].
5. Close the module compartment cover [1].
6. Mount the terminal cover [5] on the terminal block [4].



- 1 Module compartment cover
- 2 Module compartment
- 3 Module
- 4 Terminal block
- 5 Terminal cover

## Connections of the VARIMOD XC

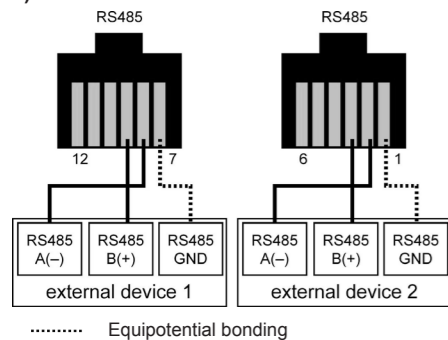


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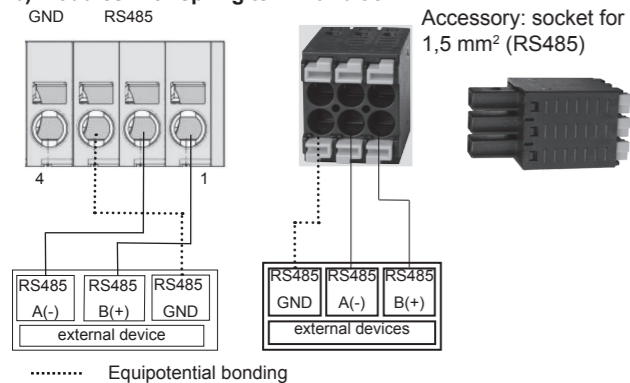
### Device connection to the RS485 interface of VARIMOD XC

Connect the module with external devices according to the wiring diagram shown below.

#### a) Modules with RJ connection



#### b) Modules with spring terminal block



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## VARIOMOD XC<sup>GPRS</sup>, VARIOMOD XC<sup>analog</sup>, VARIOMOD XC<sup>ethernet</sup>

Pin-Nr. RJ connection	Pin-Nr. spring terminal block	Designation	Function
1	3,4	GND	Ground
2	2	RS485 A (-)	„negative“ connection of the RS485 interface
3	1	RS485 B (+)	„positive“ connection of the RS485 interface
4	—	N.C.	non connected
5	—	GND	Ground
6	—	+UB	external supply 12-18 V DC (optional)
7	—	GND	Ground
8	—	RS485 A (-)	„negative“ connection of the RS485 interface
9	—	RS485 B (+)	„positive“ connection of the RS485 interface
10	—	N.C.	not connected
11	—	N.C.	not connected
12	—	N.C.	not connected

#### VARIOMOD XC<sup>analog</sup>

Pin-Nr. RJ connection	Pin-Nr. spring terminal block	Designation	Function
13	5	N.C.	not connected
14	6	N.C.	not connected
15	7	PSTN	analog telephone network
16	8	PSTN	analog telephone network
17	9	N.C.	not connected
18	10	N.C.	not connected

#### VARIOMOD XC<sup>ethernet</sup>

Pin-Nr. RJ connection	Pin-Nr. spring terminal block	Designation	Function
13	5	TX+	Ethernet 10BaseT 100BaseTX assignment
14	6	TX-	
15	7	RX+	
16	8	RX-	
17	9		
18	10		
19	11		
20	12		

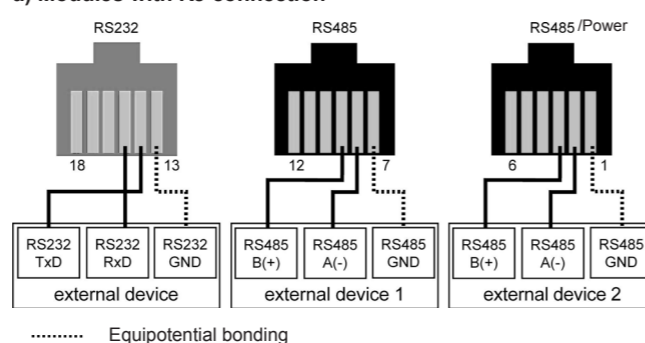
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### Device connection to the Interface Module XC

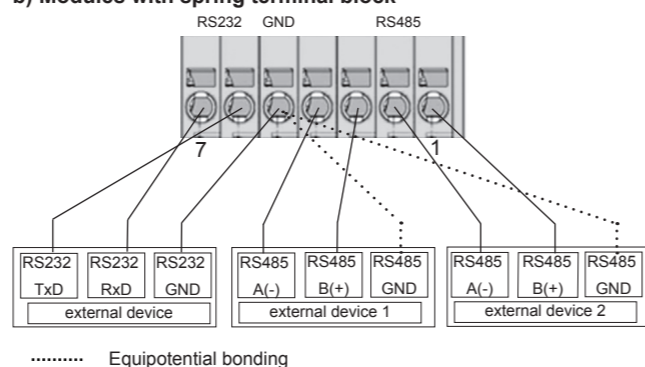
The Interface Module XC has a RS232 and a loop-through RS485 interface. However, only one interface option can be used at one time. Parallel operation is not possible!

For the connection of external devices, refer to the wiring diagram shown below:

#### a) Modules with RJ connection

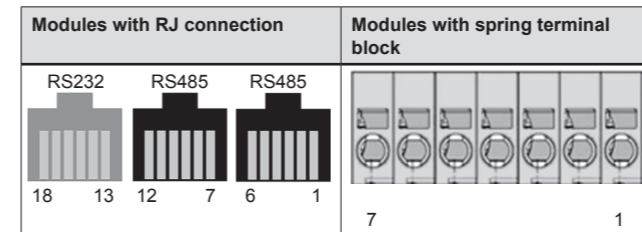


#### b) Modules with spring terminal block



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## Connection of the Interface Module XC



#### a) Modules with RJ connection

Pin-Nr. RJ connection	Designation	Function
1 - 12		Refer to table for VARIOMOD XC on page 10.
13	GND	Ground
14	RS232 TxD	Transmission line
15	RS232 RxD	Receiving line
16	N.C.	not connected
17	N.C.	not connected
18	N.C.	not connected

#### b) Modules with spring terminal block

Pin-Nr. spring terminal block	Designation	Function
1	RS485 B (+)	„positive“ connection of the RS485 interface
2	RS485 A (-)	„negative“ connection of the RS485 interface
3	RS485 B (+)	„positive“ connection of the RS485 interface
4	RS485 A (-)	„negative“ connection of the RS485 interface
5	GND	Ground
6	RS232 RxD	Transmission line
7	RS232 TxD	Receiving line

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### VARIOMOD XC LED functions

After applying power (Power-LED lights/flashes) or after a reboot (reset), the VARIOMOD XC performs an initialisation.

If the Error-LED flashes or lights up a fault has occurred. In this case please contact your supplier.

LED	VARIOMOD XC <sup>GPRS</sup>	VARIOMOD XC <sup>analog</sup>	VARIOMOD XC <sup>ethernet</sup>
Power (green)	<b>Flashes:</b> Connection to meter established, SIM card is initialised, display of the field strength (switching time or number of flashes is the measurement taken for the field strength) <b>Lights up:</b> Voltage applied but no connection to meter or SIM card does not initialise or connection to GSM-network not possible. <b>Off:</b> No voltage applied	<b>Flashes:</b> Connection to meter and to analog telephone network established <b>Lights up:</b> Voltage applied but no connection to meter or to analog telephone network	<b>Flashes:</b> Connection to meter and to network established <b>Lights up:</b> Voltage applied but no connection to meter or to network
Connect (yellow/green)	<b>Off:</b> No IP-Address <b>Flashes:</b> Connection establishment (Assignment of an IP-Adresse) <b>Lights up:</b> Connection established (IP-Adresse assigned)	<b>Flashes:</b> Connection establishment <b>Fast flashes:</b> IPT log in in progress <b>Lights up:</b> Connection established/ IPT log in has taken place (in IPT mode)	Not applicable
Error (red)	Not applicable, all LEDs are flashing in case of error	<b>Flashes:</b> Error <b>Lights up:</b> Error	<b>Flashes:</b> Error <b>Lights up:</b> Error

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### c) Cross-sectional area of the conductor, module with spring terminal block

Type	min.	max.
Fixed	0,2 mm <sup>2</sup>	4 mm <sup>2</sup>
Flexible	0,2 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Flexible with wire end ferrule and plastic collar	0,25 mm <sup>2</sup>	1,5 mm <sup>2</sup> stripped length 8 mm

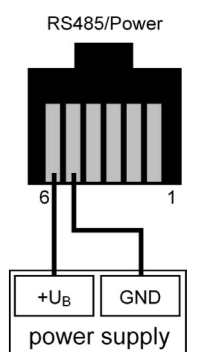
#### VARIOMOD XC<sup>GPRS</sup>

Art	min.	max.
Fixed	0,2 mm <sup>2</sup>	1,5 mm <sup>2</sup>
Flexible with wire end ferrule and plastic collar	0,25 mm <sup>2</sup>	0,75 mm <sup>2</sup> stripped length 9-10 mm

### Power supply of the module

The supply of the communication module and the interface module with operating voltage takes place via the meter, if the meter is equipped with the appropriate power supply unit.

For information about the availability of this power supply unit, refer to the configuration of the meter. If an appropriate power supply is not available, contact your supplier or supply the module via an external DC power source, if it is a module with RJ jack. The operating voltage is 12-18V DC, the power consumption max. 0,5 A, depending on the module type. The connection of the power supply has to be realized as shown in the figure.



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**i** When a failure occurs all three LEDs of the VARIOMOD<sup>GPRS</sup> flash simultaneously.

### Care and disposal instructions

Clean the housing using a dry cloth. Do not use chemical cleaning agents!

The following table lists the components and how to handle them at the end of their life cycle:

Components	Waste collection and disposal
PCB's	Electronic waste: dispose in accordance with local regulations
LED's, LC-display	Special waste: dispose in accordance with local regulations
Metal parts	Scrap, recyclable: separate according to type in metal containers
Plastic parts	Separate according to type and recycle (re-granulate). Send for waste incineration if necessary (energy generation by thermal process).

### EU declaration of conformity

Hereby EMH metering declares that the VARIOMOD XC models VARIOMOD XC<sup>GPRS</sup>, VARIOMOD XC<sup>ethernet</sup>, VARIOMOD XC<sup>analog</sup> and the Interface Module XC comply with the following directives:

- Elektromagnetic compatibility (EMC) 2014/30/EU
- Radio equipment Directive (RED) 2017/53/EU

**i** The current EU Declaration of Conformity can be found in the download area of [www.emh-metering.com](http://www.emh-metering.com).

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