TDE Instruments

Digalox® DPM72-MP+/MPN+-DIN
Instruction manual (Rev-2024-05)
Multimeter for DIN rail

Package contents: Digalox® DPM72, 5 jumpers, 2 instruction manuals (EN + DE)

1. Safety instructions

- Read instruction manual carefully before operating the device! Keep for later reference.
- Mounting and installation must be carried out by suitably qualified and competent persons only.
- **WARNING: The measurement inputs of the device can carry life-threatening voltages!**
- **When working on the device hazardous voltages must not be connected to the device! The terminals J1-J12 are not isolated from the measuring circuit.**
- **The device must not be used as the only protective device or protective shutdown.**
- The device is not intended to protect persons or facilities against harm. Specific devices must be used to guarantee safety (protection relays, cut-off switches, etc.).
- When connecting switches to the terminals J1-J8, only switches must be used whose isolation voltage is at least twice the maximum occurring measurement voltage. For example, when measuring 250 V AC switches must be isolated for at least 500 V.
- Do not open the housing!
- Do not use the device in the presence of explosive or flammable substances!
- All cables carrying hazardous voltages must be secured with external separators.

2. Meaning of symbols

General warning sign
(Attention, observe the documentation!)

Warning of an electrical hazard

3. Intended use

- Measurement of current, voltage, power and frequency in the specified measuring ranges.
- Indoor use non condensing, non corrosive.
- Mounting on DIN rail or screwing on.
- Failure to comply with these instructions will void all guarantee and warranty.
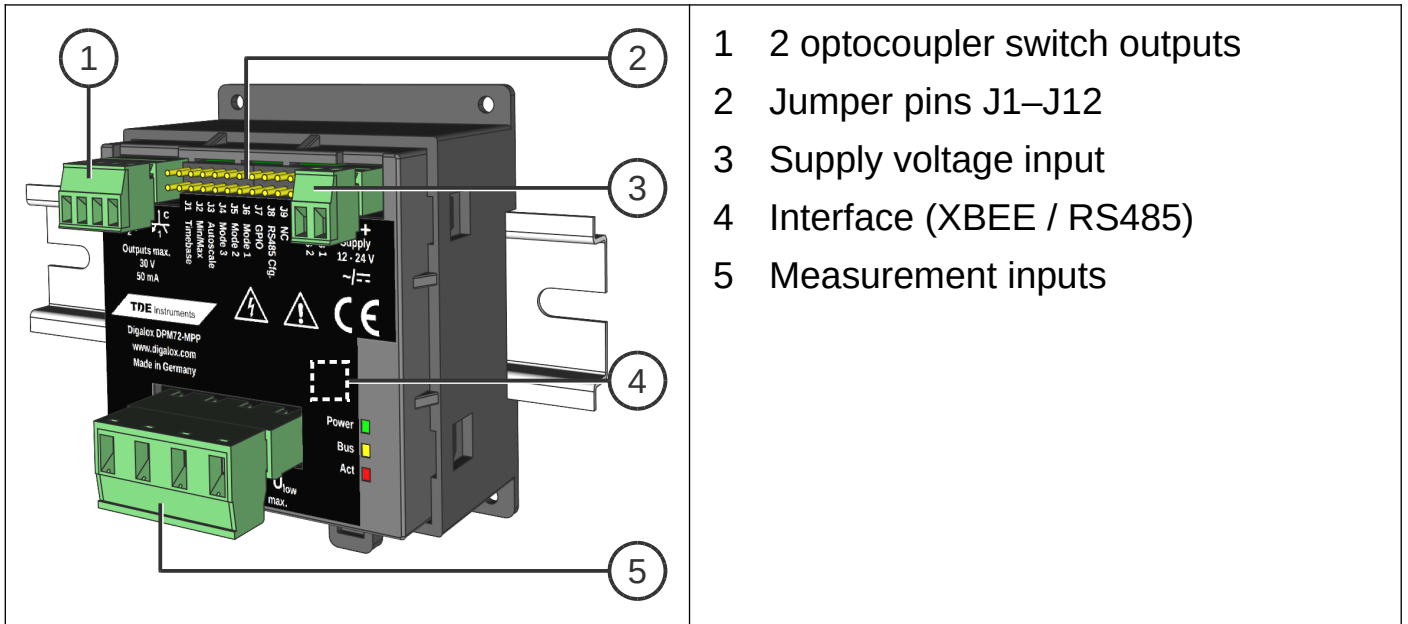
4. Description

A variety of measurement types (volt AC/DC, ampere AC/DC, frequency, power, cos phi) are supported. As individually adjustable threshold values are reached, two galvanically isolated alarm outputs enable the device to perform switch-on or switch-off operations.

Using the configuration software "Digalox® Manager" the device can be configured, e.g. thresholds for alarm output, hysteresis, and more.

Depending on the model, measured values can be transmitted via XBEE radio technology or RS485 Modbus interface. In addition, the device features a counting function with data retention. This enables operating-hours-counters or time-counters for exceeding and falling below threshold values, as well as ampere-hour and energy meters. The device can be mounted on DIN rails as well as on other backgrounds through corresponding holes in the housing.
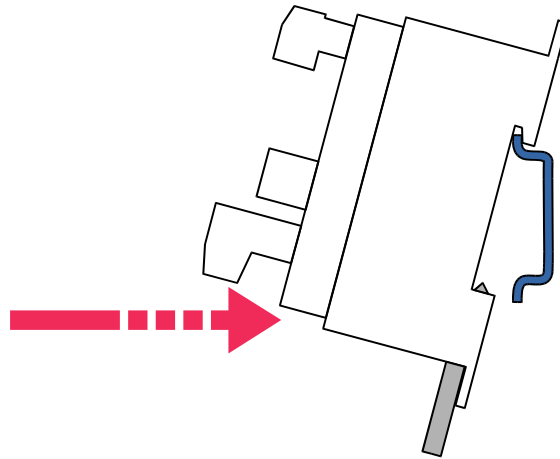
In the "Downloads" area of **www.digalox.com** you can find the latest version of the instruction manual and the software "Digalox® Manager".

5. Product overview

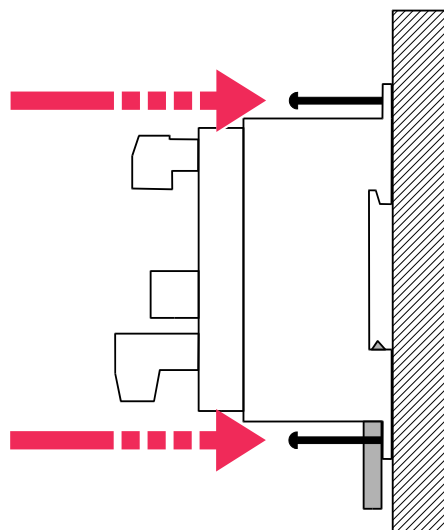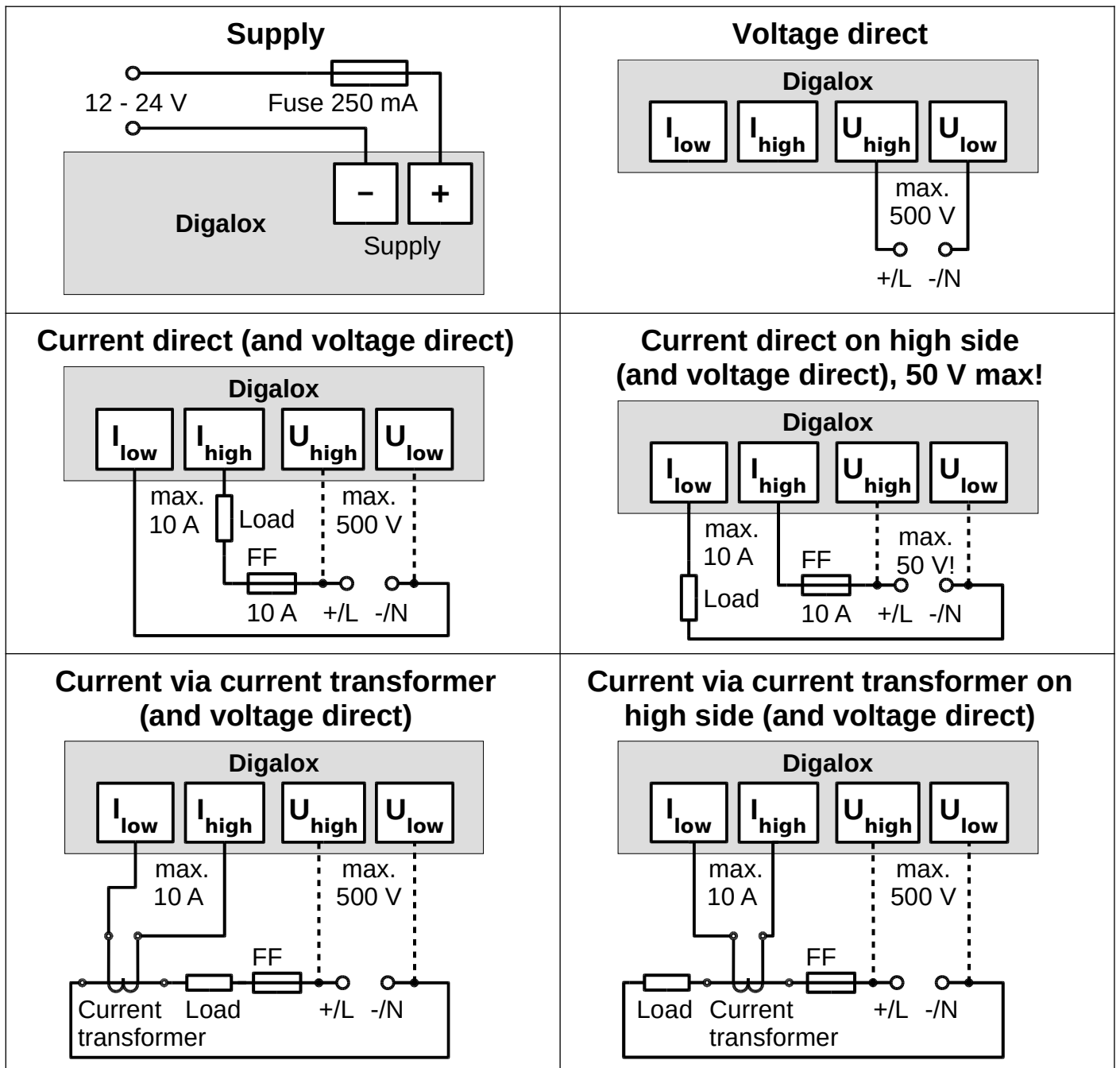|	
1	2 optocoupler switch outputs
2	Jumper pins J1–J12
3	Supply voltage input
4	Interface (XBEE / RS485)
5	Measurement inputs

6. Mounting

Hook the device into the top-hat rail from above and then press it at the bottom until the latch engages.

Alternatively, attach the device with 4 screws.

7. Electrical connections DPM72-MP$^+$

Supply

12 - 24 V Fuse 250 mA

Digalox

− +

Supply

Voltage direct

Digalox

I_{low} I_{high} U_{high} U_{low}

max. 500 V

+/L -/N

Current direct (and voltage direct)

Digalox

I_{low} I_{high} U_{high} U_{low}

max. 10 A Load max. 500 V

FF

10 A +/L -/N

Current direct on high side (and voltage direct), 50 V max!

Digalox

I_{low} I_{high} U_{high} U_{low}

max. 10 A max. 50 V!

Load FF

10 A +/L -/N

Current via current transformer (and voltage direct)

Digalox

I_{low} I_{high} U_{high} U_{low}

max. 10 A max. 500 V

FF

Current transformer Load +/L -/N

Current via current transformer on high side (and voltage direct)

Digalox

I_{low} I_{high} U_{high} U_{low}

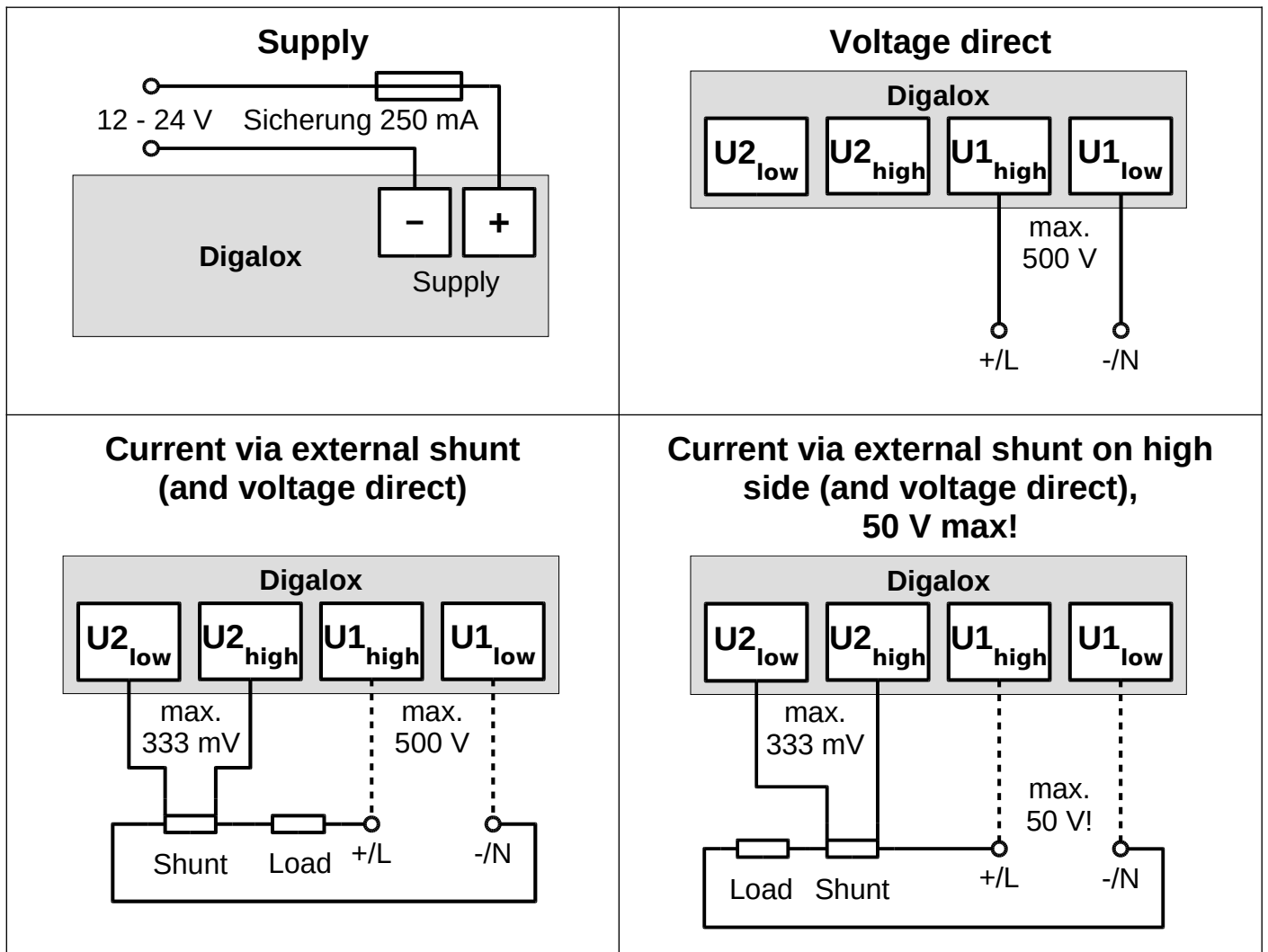max. 10 A max. 500 V

FF

Load Current transformer +/L -/N

WARNING: The device may only be operated in one of the connection options shown above! Use an ultra-fast-acting fuse (FF) at the current measurement input.

DANGER: Direct current measurement on the high side (between plus and load) only for voltages up to 50 V! In this case the entire device is on high potential. Particularly to be considered when connecting switches to J1-12.

8. Electrical connections DPM72-MPN$^+$

Supply

12 - 24 V   **Sicherung 250 mA**

Digalox

| − | + |

Supply

Voltage direct

Digalox

| U2$_{low}$ | U2$_{high}$ | U1$_{high}$ | U1$_{low}$ |

max. 500 V

+/L   -/N

Current via external shunt (and voltage direct)

Digalox

| U2$_{low}$ | U2$_{high}$ | U1$_{high}$ | U1$_{low}$ |

max. 333 mV   max. 500 V

Shunt   Load   +/L   -/N

Current via external shunt on high side (and voltage direct), 50 V max!

Digalox

| U2$_{low}$ | U2$_{high}$ | U1$_{high}$ | U1$_{low}$ |

max. 333 mV

max. 50 V!

Load   Shunt   +/L   -/N

⚠ **WARNING: The device may only be operated in one of the connection options shown above! When measuring current, an external shunt must be connected to U2!**

⚡ **DANGER: Current measurement on the high side (between plus and load) only for voltages up to 50 V! In this case the entire device is on high potential. Particularly to be considered when connecting switches to J1-12.**

9. Configuration

Connect the device to a computer:
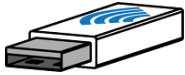
XBEE: Insert the XBEE stick into the computer. The device driver is installed automatically if the computer is connected to the Internet. In order to reset the XBEE settings, short-circuit terminal J8.
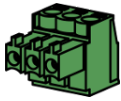
RS485: Short-circuit terminal J8. Disconnect the device from the Modbus network and connect it to the computer using an RS485 USB adapter. After completing the configuration, open J8 again.

Start the "Digalox® Manager" software and connect it to the device. Settings can then be made on the various tabs and saved in the device.
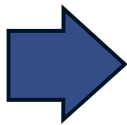
> **After restart, the first four display values are provided or the one selected via connections J4-J6 and the three following display values.**

Note: AC and DC measurement cannot be done simultaneously. The first display value used defines the type of measurement.

10. Maintenance

Periodically check all external cable connections.

11. Cleaning

Observe the safety instructions before cleaning the device. Clean the device with a dry lint-free soft cloth. Do not use solvents.

12. Specification

	DPM72-MP[+]	DPM72-MPN[+]
Supply	12 - 24 V AC/DC ±10% (50/60 Hz ±10%), galvanically isolated	
Required external fuse for supply	250 mA, fast (F)	
Power consumption	Max. 1.2 W	
Measuring range voltage	±500 V AC/DC, 10 - 500 Hz	
Accuracy voltage	±1 % true RMS	
Internal resistance voltage	2.6 MΩ	
Measuring range ampere	±10 A AC/DC and 5 A AC for current transformer, 10 - 500 Hz	±333 mV AC/DC at shunt, 10 - 500 Hz, Short-term load: 1 V (< 10 s)
Accuracy ampere	±1 % true RMS	
Internal resistance ampere	5 mΩ	20 kΩ
Required external fuse for ampere	For rated current, ultrafast (FF)	–
Measuring range frequency	10 - 1000 Hz	
Accuracy frequency	±0.1 Hz	
Measuring value update	5 Hz (32 kHz sampling rate)	
Alarm outputs	2 optocoupler outputs max. 30 V DC, 50 mA	
Connections (measuring inputs) - Wire gauge - Wire strip length - Pitch	0.2 - 3.3 mm² (24 to 12 AWG) 7 - 8 mm 7.62 mm	
Connections (supply, alarm outputs and RS485) - Wire gauge - Wire strip length - Pitch	0.13 - 1.3 mm² (26 to 16 AWG) 6 - 7 mm 3.5 mm	
Operating temperature	0 °C to +50 °C	
Storage temperature	-20 °C to +70 °C	
Operating altitude	0 to 2000 m above sea level	
IP code	IP00	
Dimensions	67.5 mm × 93.5 mm × 61.2 mm	
Depth	61.2 mm (with plugs, cable outlet at the front) 78.7 mm (with antenna)	
Net weight	106 g	

13. Dimensions [mm]

67.5
57.5
ø3.2
82.5
67.5
75.0
11.0

RS485

35.0
61.2

XBEE

78.7
86.9
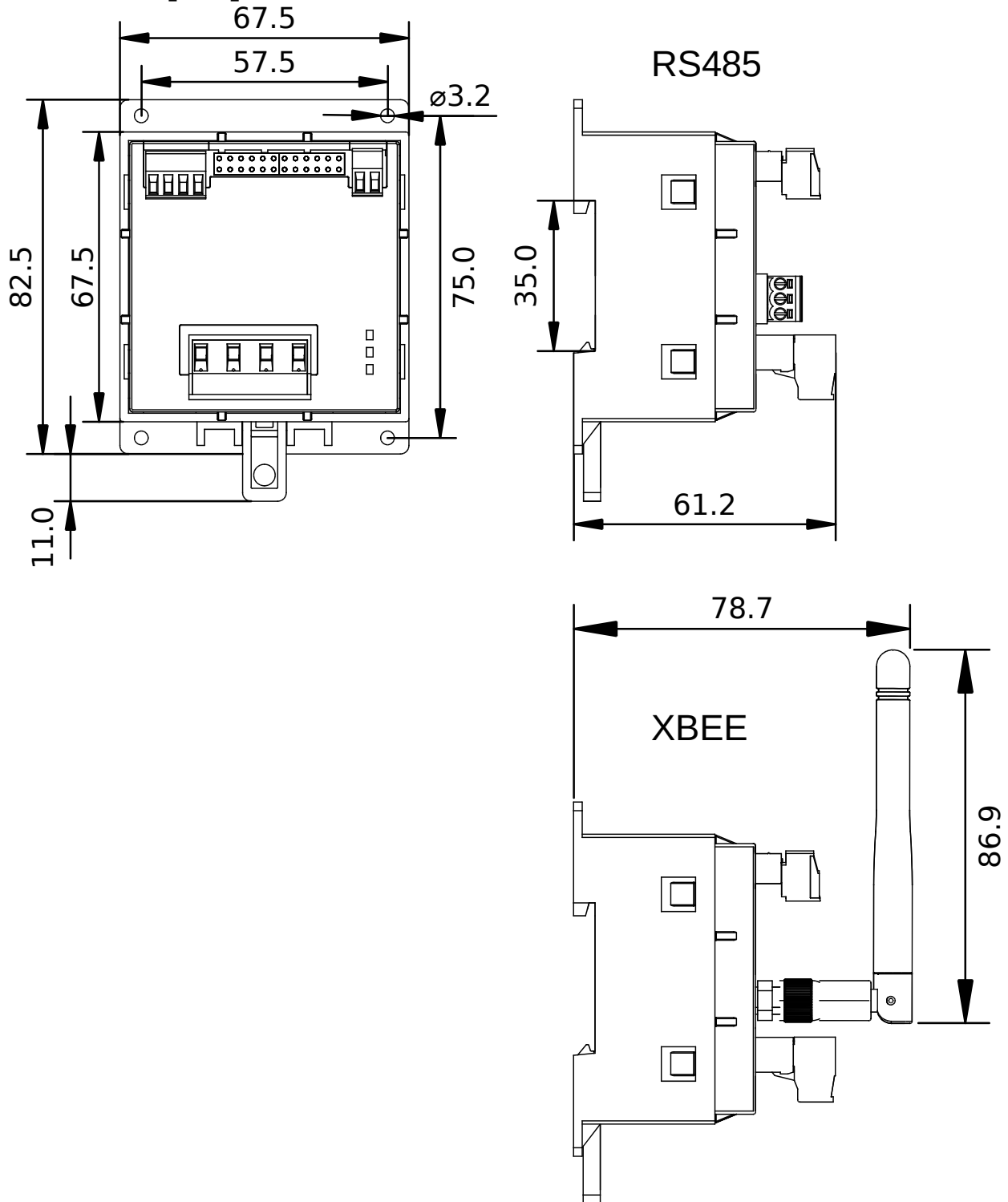
14. Available accessories

- MP$^+$: ENTES ENT.A Current transformer with 5 A secondary current

- MPN$^+$: ENTES ENS.CCT Current transformer with 333 mV output

15. Contact information

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