

Operating Manual URB40

updated: 2024-01-24 / dr
from Firmware: 0-00

For more information and help about this product please scan the [QR-Code](#) or choose the following link: [URB40](#)

Operating manual, Quick guide, Datasheet, Connection diagram, CAD Data
Firmwareupdates, FAQ, Videos about installation and settings, Certificates

- Relay expansion box for UR-Devices

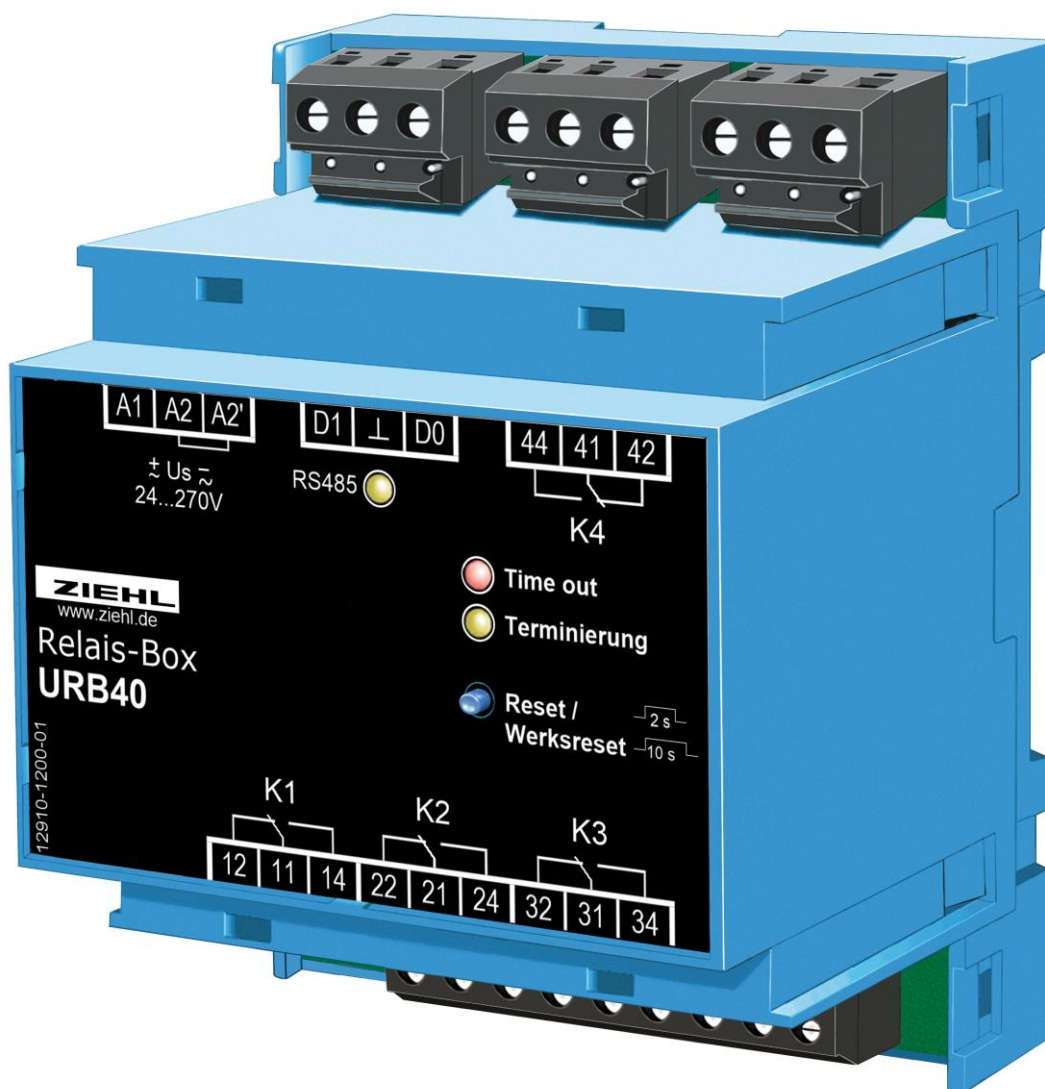


Table of contents

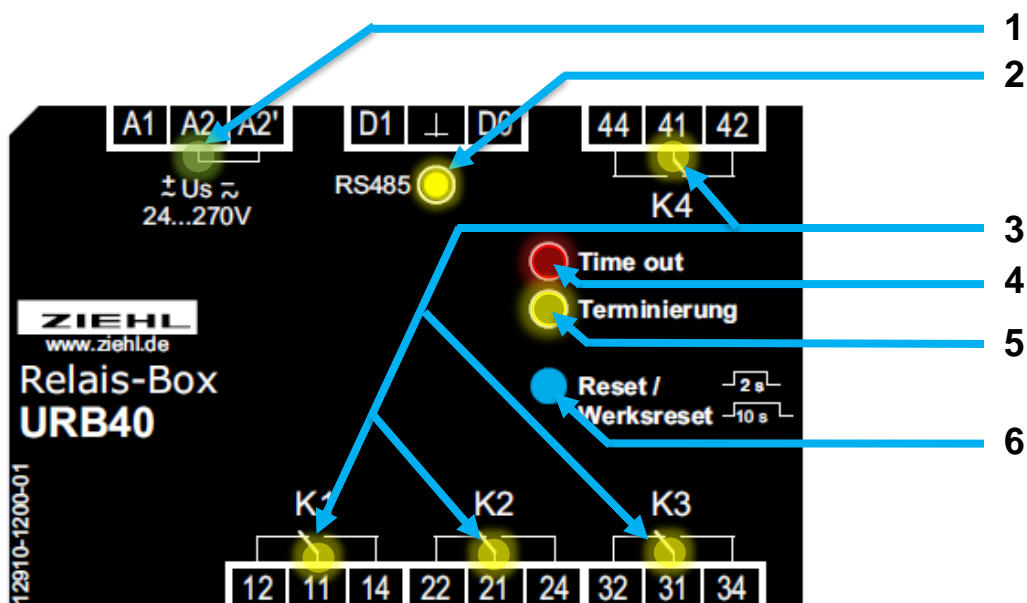
| | | |
|-----|---|------------------------------------|
| 1 | General Notes | 3 |
| 2 | Display and controls | 3 |
| 3 | Factory setting..... | 4 |
| 4 | Application and short description..... | 4 |
| 5 | Overview of functions | 4 |
| 6 | Connecting diagram | Fehler! Textmarke nicht definiert. |
| 7 | Important Information | 6 |
| 8 | Installation | 6 |
| 9 | Commissioning..... | 7 |
| 9.1 | Overview of commissioning | Fehler! Textmarke nicht definiert. |
| 9.2 | Overview of the predefined standard ranges..... | Fehler! Textmarke nicht definiert. |
| 10 | Diagram for setting a predefined range | Fehler! Textmarke nicht definiert. |
| 11 | Error search | 7 |
| 12 | Technical data | 8 |
| 13 | Type V4 | 10 |
| 14 | Disposal | 10 |

1 General Notes

Compliance with the following instructions is mandatory to ensure the functionality and safety of the product. If the following instructions given especially but not limited for general safety, transport, storage, mounting, operating conditions, commissioning and disposal / recycling are not observed, the product may not operate safely and may cause a hazard to the life and limb of users and third parties.

Deviations from the following requirements may therefore lead both to the loss of the statutory material defect liability rights and to the liability of the buyer for the product that has become unsafe due to the deviation from the specifications.

2 Display and controls



| | |
|----------|---|
| 1 | Power LED |
| | <ul style="list-style-type: none"> • Off: Device is not powered • On: Device is powered • Flashing: Search mode (Address: 247) is active |
| 2 | TxRx LED |
| | <ul style="list-style-type: none"> • On: New data packet arrived • Flashing: Communication timeout |
| 3 | LED Relays K1 ... K4 |
| | <ul style="list-style-type: none"> • On: Relay is energised, contacts 11 ↔ 14 connected • Off: Relay is deenergised, contacts 11 ↔ 12 connected |
| 4 | LED Time out display |
| | <ul style="list-style-type: none"> • On: At least one time out occurred in the past • Off: No time out occurred |
| 5 | LED Termination status |
| | <ul style="list-style-type: none"> • On: Bus termination is active • Off: Bus termination is inactive |
| 6 | Button |
| | <ul style="list-style-type: none"> • Pressed for more than 2 s: Reset • Pressed for more than 10 s: Factory reset |

3 Factory setting

- Initial Modbus address: 248
- Baud rate: 9600Bd
- Parity: Even
- Stop Bits: 1 Stoppbit
- Timeout: 10s
- Terminativ resistor: inactive

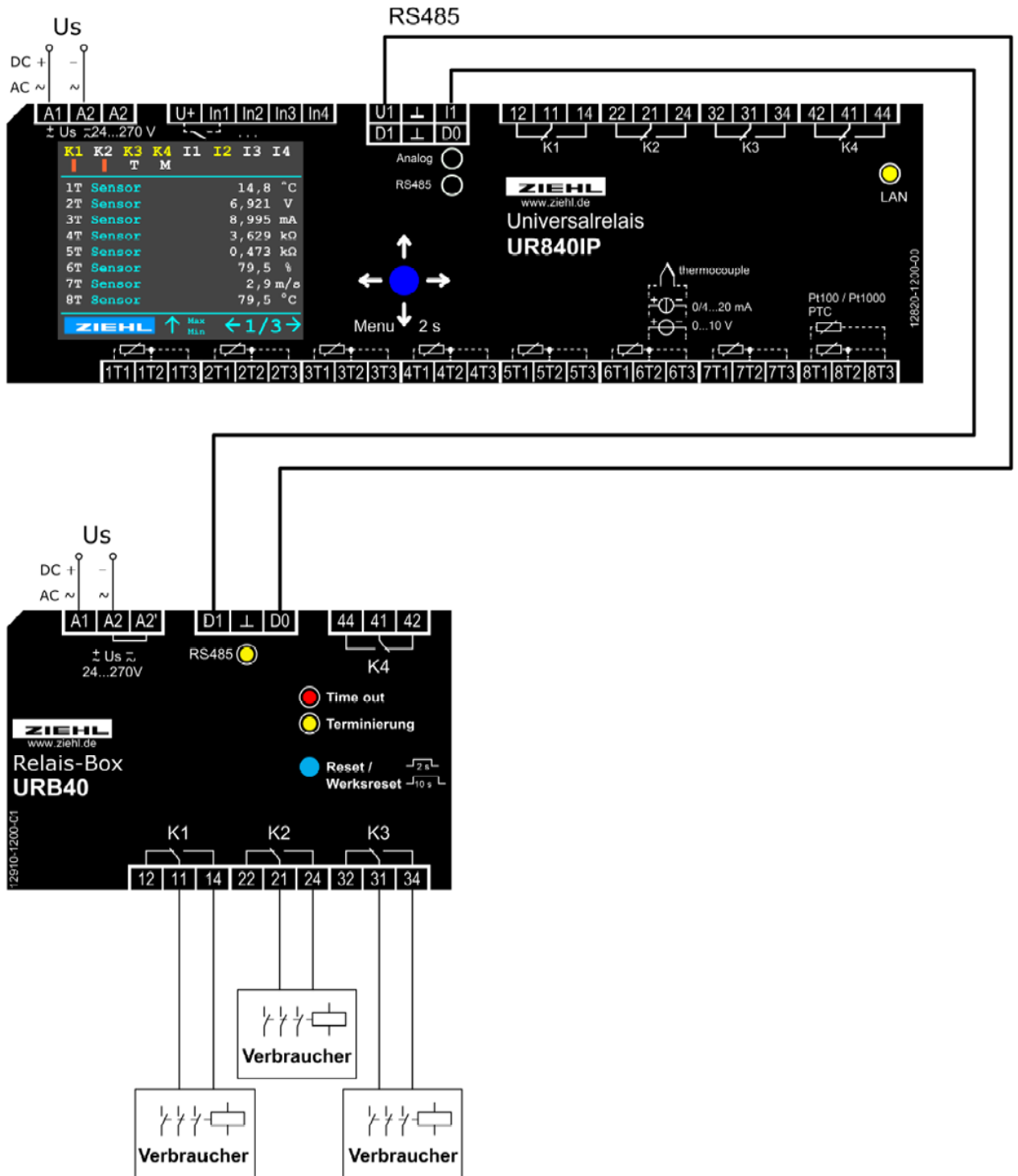
4 Application and short description

The Universal-Relay Box URB40 is an expansion box for UR and other Client Devices, which can be used to control up to four additional relay outputs via Modbus RTU. The URB40 monitors the communication between the devices and allows for each relay output to be placed in a predefined state in case of a timeout. The device has no controls and can only be accessed & configured via the RS-485 interface.

5 Overview of functions

- Controlled by UR-Devices or other Modbus RTU Clients (e.g. UR840IP)
- Wide range power supply 24 – 270 (AC/DC)
- LEDs displaying the state of communication and relay positions
- Modbus RTU (RS485 interface)
- Up to 32 participants
- Baud rate 4800, 9600, 19200, 57600, 115200
- 4 dry contacts (relay outputs)
- Housing can be snapped onto a mounting rail
- Dimensions H x B x T: 90 x 70 x 58 [mm]

6 Connecting diagram



7 Important Information



DANGER!

Hazardous voltage!

Will cause death or serious injury. Turn off and lock out all power supplying this device before working on this device.



Attention! Universal power supply

The device have a universal power supply, that is suitable for DC- and AC-voltages. Before connecting the device to supply-voltage make sure that the connected voltage corresponds with the voltage on the lateral type on the device



Reference to isolation of input and output as well as relay contacts:

Unless otherwise noted, the devices have basic insulation accordingly the measurement insulation voltage of the device. When higher isolation or safe separation is required for the application, this must be ensured due to additional measures.

To use the equipment flawless and safe, transport and store properly, install and start professionally and operate as directed.

Only let persons work with the equipment who are familiar with installation, start and use and who have appropriate qualification corresponding to their function. They must observe the contents of the instructions manual, the information which are written on the equipment and the relevant security instructions for the setting up and the use of electrical units.

The equipment is built according to DIN VDE/EN/IEC and checked and leave the plant according to security in perfect condition. If, in any case the information in the instructions manual is not sufficient, please contact our company or the responsible representative.

In order to maintain this status, you must observe the safety regulations entitled "caution" in this operating manual. Failures to follow the safety regulations can result in death, personal injury or property damage to the device itself and to other devices and facilities.

To maintain this condition, you must observe the safety instructions in this instruction manual titled "Important Information". Failure to follow the safety instructions may result in death, personal injury, or property damage to the equipment itself and other equipment and facilities.

Instead of the industrial norms and regulations written in this instruction manual valid for Europe, you must observe out of their geographical scope the valid and relevant regulations of the corresponding country.

8 Installation

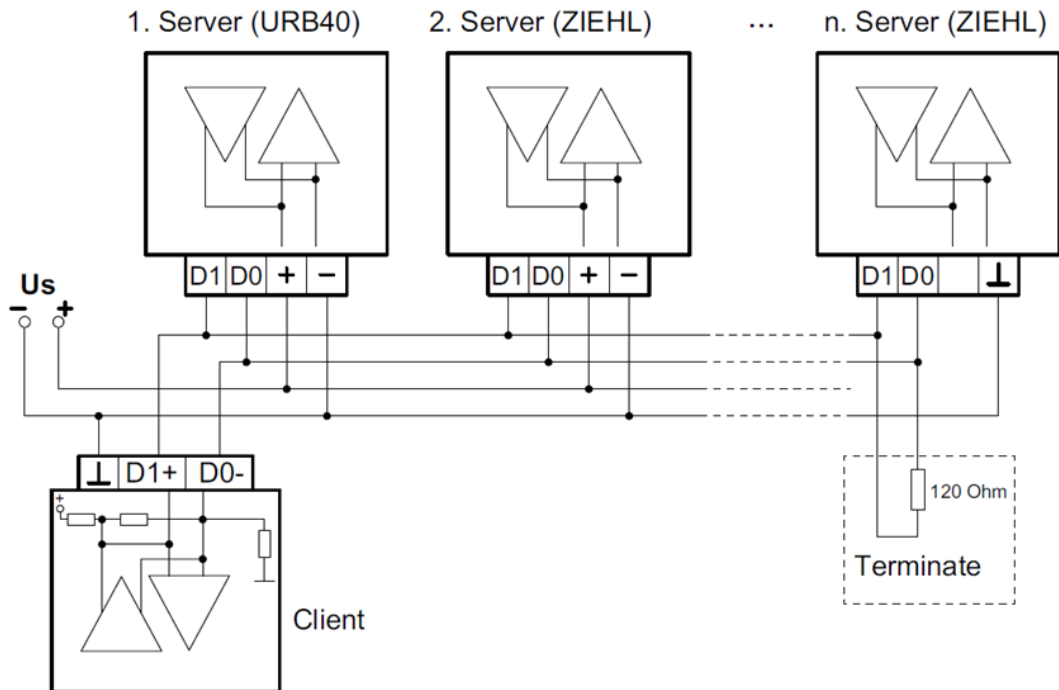
- mount on 35 mm mounting rail according to EN 60715
- wall-mount with 3 x screws M4
- connecting wires refer to the connection plan to prevent miss-operation and malfunction.



A circuit-breaker or switch must be situated within easy reach of the unit and fused. Installation excess current protection should be ≤ 10 A.

9 Commissioning

9.1 Connecting to the Bus-System



9.2 Transmission parameters setting

The URB40 is configured via an external device connected to the RS485 interface. The communication protocol at use is Modbus RTU. All default parameters for establishing an initial connection can be viewed [here](#). More information about all setting options of the device can be found in the Modbus instruction manual.

9.3 Setting the Modbus device address

A valid Modbus address must be assigned to the device when it's commissioned for the first time. For this purpose, the search address 247 is stored in the device which keeps the device available for 60s after a reset. An unique address (1-246) can then be assigned to the device via the corresponding Modbus register (LINK). While the search function is active, the power LED flashes, indicating the availability of the device view the search address.

Attention: During the device search, the search address 247 must not be active for any device on the bus, apart from the URB40.

10 Error search & solutions

| Error | Cause | Proposed solution |
|---|---|--|
| TxRx LED flashes, LED Time out display is activ → No packages received by the device | A communication error occurred and the time out counter has been exceeded | Check or re-establish the connection, Delete the error afterwards using the corresponding Modbus register (see LINK) |
| TxRx LED is activates with each packages received, LED Time out display is still activ → Packages are being received by the device | A communication error has occurred in the past and the time out counter has been exceeded | Delete error via the corresponding Modbus register (see LINK) |

11 Technical data

| | | | | |
|--|--|--|---------------|---------------|
| Rated supply voltage U_s | | DC/AC 24 – 270 V 0/50/60 Hz | | |
| Tolerance | | DC 20,4 - 297 V | AC 20 - 297 V | |
| Power consumption | | < 0,8 W | < 1,2 VA | |
| Output relay K1, K2, K3, K4 | | 4 x 1 change over contact | | |
| Switching voltage | | max. AC 300 V; DC 300 V | | |
| Switch-on current (NO) | | AC 15 A 4s 10% ED | | |
| min. voltage / current | | 12 V 10 mA | | |
| conventional thermal current I_{th} | | max. 5 A | | |
| Switching power max. AC $\cos \varphi = 1$ | | 1500 VA | | |
| Switching power max. DC (ohm) | | 0.3 A 300 V; 0.4 A 120 V; 0.8 A 60 V; 8 A 30 V | | |
| Contact life electrical | | $\cos \varphi = 1 \rightarrow 30 \times 10^3$ operating cycles 250 V / 2 A | | |
| Contact life mechanical | | 3×10^7 cycles | | |
| Utilization category | | AC-15 $I_e = 3,0$ A $U_e = 250$ V | | |
| Rated operational current | | DC-13 $I_e = 2,0$ A $U_e = 24$ V | | |
| Rated operational voltage | | DC-13 $I_e = 0,4$ A $U_e = 120$ V | | |
| | | DC-13 $I_e = 0,2$ A $U_e = 240$ V | | |
| RS485 - Interface | | | | |
| Baud rate | | 4800, 9600, 19200, 57600, 115200 Baud | | |
| Address | | 1 - 247 | | |
| Data bits | | 8 Bits | | |
| Stop bits | | 1, 2 Bits | | |
| Parity | | even, odd, no | | |
| Terminating resistor | | 120 Ohm (connectable / disconnectable) | | |
| Test conditions | | EN 61010-1 | | |
| Rated impulse voltage | | 4000 V | | |
| Overtoltage category | | III | | |
| Pollution degree | | 2 | | |
| Rated insulation voltage U_i | | 300 V | | |
| On-period | | 100 % | | |
| Insulation test voltage | | 3,5kV, U_{eff} , 50 Hz, 1min. | | |
| EMC-tests | | EN 61326-1 industrielle Umgebung | | |
| Emission | | EN 61326-1; CISPR 11 Klasse B | | |
| Immunity | | EN 61326-1 industrielle Umgebung | | |
| Electrical fast transient/Burst | | EN 61326-1; EN 61000-4-4 | | |
| | | Pulse 5/50 ns, $f = 5$ kHz, $t = 15$ ms, $T = 300$ ms | | |
| | | ± 4 kV (supply lines & relay outputs) | | |
| | | ± 2 kV (communication lines) | | |
| SURGE immunity | | EN 61326-1; IEC 61000-4-5 ± 2 kV | | |
| Electrostatic discharge | | EN 61326-1; IEC 61000-4-2 | | |
| | | ± 6 kV contact discharge | | |
| | | ± 8 kV over air | | |
| Reliability – failure rate | | EN 61709/ SN29500 | | |
| Ambient conditions | | Local operation in dry rooms | | |
| Operation time 24/7/365 | | 8760 h/y | | |
| Failure rate (FIT) | | $T_u = 40$ °C | $T_u = 60$ °C | $T_u = 80$ °C |
| | | 1007 FIT | 1965 FIT | 4232 FIT |
| $T_u = T_{ref}$ (component not in operation) | | 113 Jahre | 58 Jahre | 27 Jahre |

Installation conditions

| | |
|---------------------------------|--------------------------------|
| Permissible ambient temperature | -20 °C ... +65 °C |
| Permissible storage temperature | -20 °C ...+70 °C |
| Installation height | < 2000 m over N.N. |
| Climatic conditions | 5-85% rel. F., no condensation |
| Permissible wiring temperature | -5 °C ...+70 °C |
| Vibration test | IEC 60255-21-1 / Klasse 1 |
| Shock test | IEC 60255-21-2 / Klasse 1 |
| Seismic test | IEC 60255-21-3 / Klasse 1 |

Housing

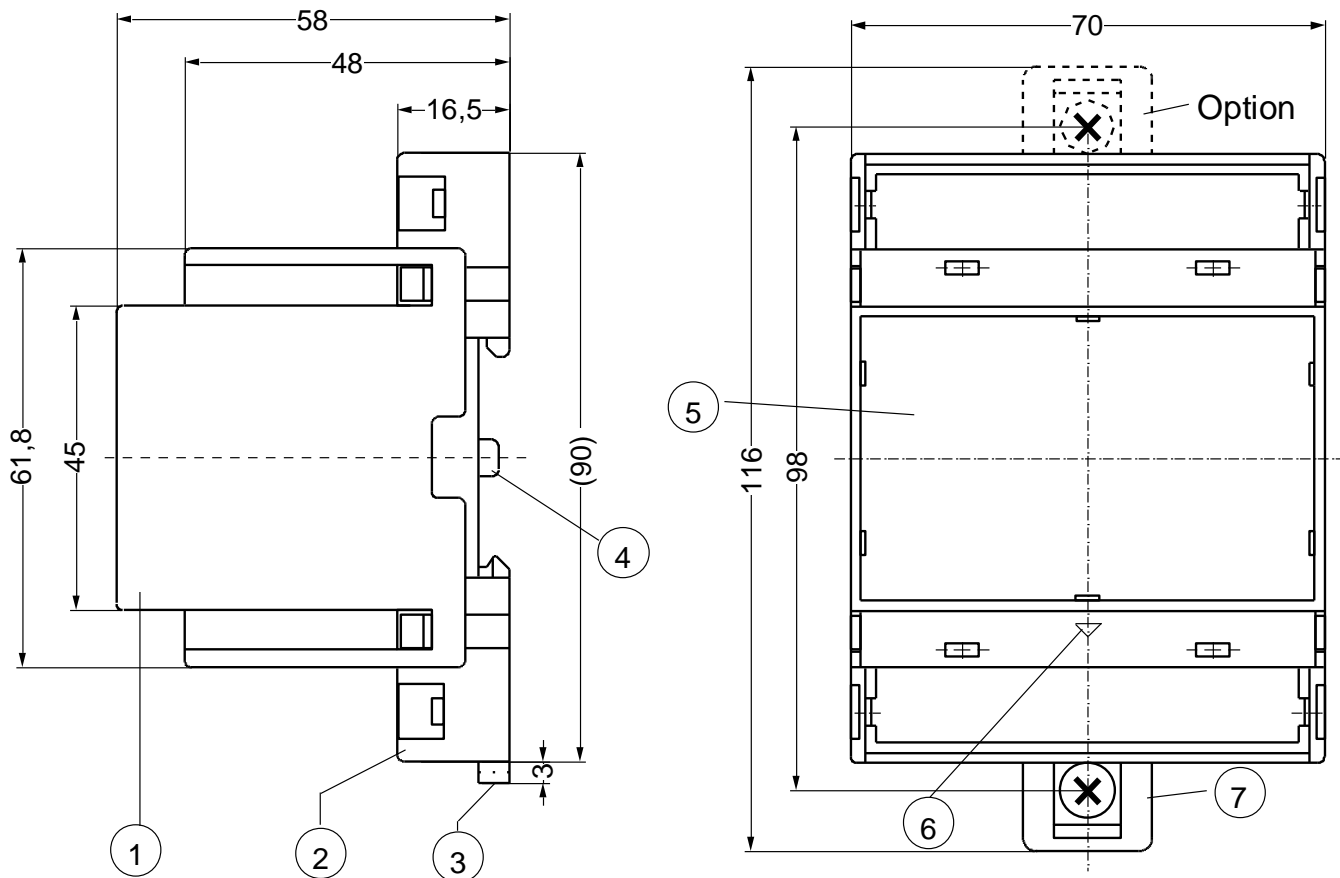
Type V4

| | |
|---------------------------------------|---|
| Dimensions (W x H x D) | 70 x 90 x 58 mm |
| Width | 4 M |
| Protection class housing | IP30 |
| Mounting | Snap mounting on 35 mm standard rail EN60715 or M4 screws (additional bar not included) |
| Installation position | any |
| Weight | app. 200 g |
| <u>Terminal</u> | |
| Protection class terminals | IP20 |
| Line connection solid wire | 1 x 0,34 - 1,5 mm ² / AWG 22 - 14 |
| Stranded wire with insulated ferrules | 1 x 0,1 - 1,0 mm ² / AWG 27 - 16 |
| Abisolierlänge | 8 mm |
| torque | 0,5 Nm |

Subject to technical changes

12 Type V4

Measurements in mm



- 1 Oberteil / cover
- 2 Unterteil / base
- 3 Riegel / bar for snap mounting
- 4 Plombenlasche / latch for sealing
- 5 Frontplatteneinsatz / front panel
- 6 Kennzeichen für unten / position downward
- 7 Riegel bei Wandbefestigung mit Schrauben. Riegelbohrung \varnothing 4,2 mm / for fixing to wall with screws, \varnothing 4,2 mm

13 Disposal



Disposal should be carried out properly and in an environmentally friendly manner in accordance with legal provisions.

ZIEHL is registered with the EAR Foundation under WEEE no. : DE 49 698 543.