Installation Manual

EEBUS Relais Converter

EEBUS Relais Converter S (1-04-01380)

EEBUS Relais Converter C (1-04-01381)

Date: 13 August 2026

Version: 1.1



Disclaimer

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1 Introduction

1.1 Complete documentation

Please also refer to the following documentation. Scan the QR code to access further documentation. Please pay particular attention to the ERC Webinterface Manual:

1.2 General Notes

NOTE
Please observe the notes and warnings in this document.
This product information contains important details for the following hardware variant:
STEU-R-1A-110-00, STEU-R-1A-110-01
It forms part of the product supplied.

This product information contains the necessary details for the intended use of the devices described herein. It is intended for qualified electrical personnel who have undergone specific training or possess relevant knowledge in the field of power engineering.

Knowledge of, and the technically correct implementation of, the safety instructions and warnings contained in this product information are essential for the safe installation and commissioning of the devices described, as well as for safety during their operation and maintenance. Only qualified electrical personnel (see chapter 2.4) possess the necessary specialist knowledge to correctly interpret and apply the safety instructions and warnings provided in this document in a general manner to specific individual cases.

This product information forms an integral part of the scope of supply. However, it cannot cover every detail relating to all versions of the devices described, nor can it account for every possible scenario regarding installation, operation or maintenance.

If you require further information or encounter specific problems that are not covered in sufficient detail in this document, please contact PPC:

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2 Safety information

2.1 Signal words

The warnings are highlighted by a warning triangle and are categorised as follows, depending on the level of risk:



DANGER

Danger means that death or serious injury will result if the specified measures are not taken.

Follow all instructions to avoid death or serious injury.



WARNING

A warning means that death or serious injury may occur if the specified measures are not taken.

Follow all instructions to avoid death or serious injury.



CAUTION

Caution means that moderate or minor injuries may occur if the specified measures are not taken.

Follow all instructions to avoid moderate or minor injuries.



ATTENTION

Warning means that property damage may occur if the specified measures are not taken.

Follow all instructions to avoid damage to material.



NOTE

A Note is important information about the product, its handling or the relevant section of the documentation to which particular attention should be drawn.

2.2 General safety instructions

All information in these installation manual is intended exclusively for qualified electricians. Its purpose is to describe the proper installation method of this product.

However, Power Plus Communications AG (PPC) has no influence whatsoever on the general conditions that may affect the installation of the product.

It is the responsibility of the user to ensure that the installation method is suitable for his or her own conditions. PPC is not responsible for any damage, whether incidental, consequential, indirect or punitive, arising out of the use or misuse of this product.

The device must only be installed or removed by qualified electricians or persons with electrical training.

Opening the device or making any alterations to the device by the installer or other persons is not permitted and may only be carried out by the manufacturer in the event of a repair.

Under no circumstances may the device be operated whilst removed from its mounting, not even for testing purposes, as this would compromise the protection against accidental contact and the strain relief of the supply voltage connections.

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Only connection kits approved by PPC may be used for installation. This applies to all ERC variants.

Only the installation method approved by PPC may be used for installation.

2.3 Intended use

The equipment (device, module) may only be used for the applications specified in the technical data sheet and only in conjunction with third-party devices and components recommended or approved by PPC. If the device is not used in accordance with this product information, the intended protection is impaired. Correct and safe operation of the product requires adequate transportation, storage, installation, and assembly as well as proper operation and maintenance.

The EEBUS Relais Converter (ERC) is intended for use with a smart meter gateway (SMGW) with control functionality (e.g. SMGWplus from PPC AG). The ERC receives control commands via the EEBUS protocol and converts them into relay circuits to control consumers and generation facilities as part of load management in accordance with Section 14a of the German Energy Industry Act (EnWG) and Section 9 of the German Renewable Energy Sources Act (EEG).

The device is intended for mounting on a DIN rail, and the connections must be covered. In doing so, the VDE FNN's technical application rules (TAR) and the locally applicable technical connection conditions (TAB) of the relevant network operator must be observed.

Compliance with the documentation supplied forms part of the intended use.

2.4 Qualified electrical personnel

All information in these installation instructions is intended exclusively for trained electricians. Its purpose is to describe the correct method of installing this product. These are persons authorised to commission, disconnect, ground and label devices, systems and circuits in accordance with safety engineering standards.

The information provided in these installation instructions is intended to describe the correct method of installing this product.

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3 Product and functional description

The EEBUS Relais Converter is available in the following hardware variants

- STEU-R-1A-110-00
- STEU-R-1A-110-01

This manual refers to the **EEBUS Relais Converter S** (1-04-01380) and **EEBUS Relais Converter C** (1-04-01381) products.

The **EEBUS Relais Converter C** (1-04-01381) is intended solely for **operation in compliance with certification requirements** (see chapter 7).

A permanent internet connection must be ensured for the operation of the **EEBUS Relais Converter S** (1-04-01380), particularly for firmware updates. Parameters can be configured and firmware updates can be made via the browser-based ERC Webinterface.

The ERC executes commands from a control unit and is not equipped with its own control logic. EEBUS communication is enabled via the RJ45 Ethernet interface; control commands are routed to the four potential-free switching outputs via monostable changeover relays.

The power supply output (5 V) can be used to power a 1TE DIN rail switch.

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4 Design and Connections

4.1 Design

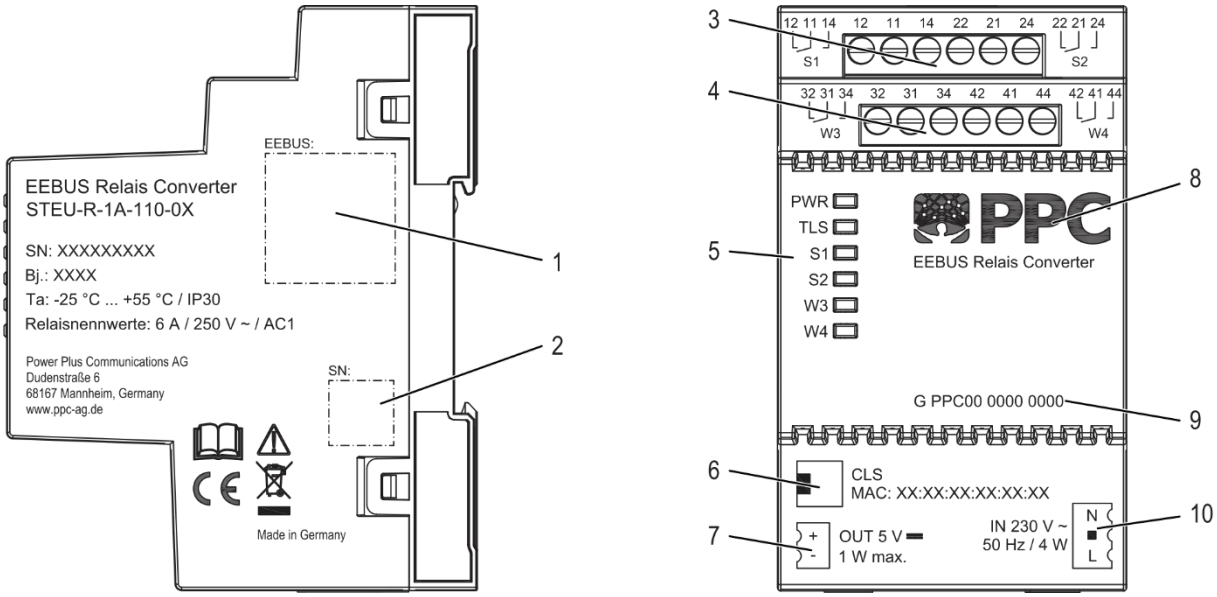


Figure 1: Device overview

1	EEBUS QR code	6	RJ45 Ethernet port
2	Data Matrix code – serial number	7	Accessory power supply output (5 V)
3	Relay connections S1 (12, 11, 14), S2 (22, 21, 24)	8	Product name and product type
4	Relay connections W3 (32, 31, 34), W4 (42, 41, 44)	9	Manufacturer-independent serial number (HUID)
5	Status LEDs	10	Power supply input

4.2 Connections



Figure 2: Interfaces on the STEU-R-1A-110-00 and STEU-R-1A-110-01 models, viewed from above and below

The following connections are available:

- 4 relay outputs (S1, S2, W3, W4)

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- 1 RJ45 Ethernet port
- 1 power supply input (230 V)
- 1 accessory power output (5 V)

A cable with a 3-pin connector is required to connect the power supply. For the pin configuration of the connectors, see the following table:

Interface	Label	Type	Signal description	Direction
CLS	CLS	Ethernet RJ45 Maximum cable length 30 metres	Intended for connection to a CLS port on an SMGW	
Power supply input*	L		Phase	In
			Not connected	
	N		Neutral	In
Power supply output**	5 V		5 V supply	Out
	0 V		0 V supply	Out
S1	12	Relay type: changeover	Normally closed contact	Passive
	11		Common contact	
	14		Normally open contact	
S2	22	Relay type: changeover	Normally closed contact	
	21		Common contact	
	24		Normally open contact	
W3	32	Relay type: changeover	Normally closed contact	
	31		Common contact	
	34		Normally open contact	
W4	42	Relay type: changeover	Normally closed contact	
	41		Common contact	
	44		Normally open contact	

* for the ERC's power supply

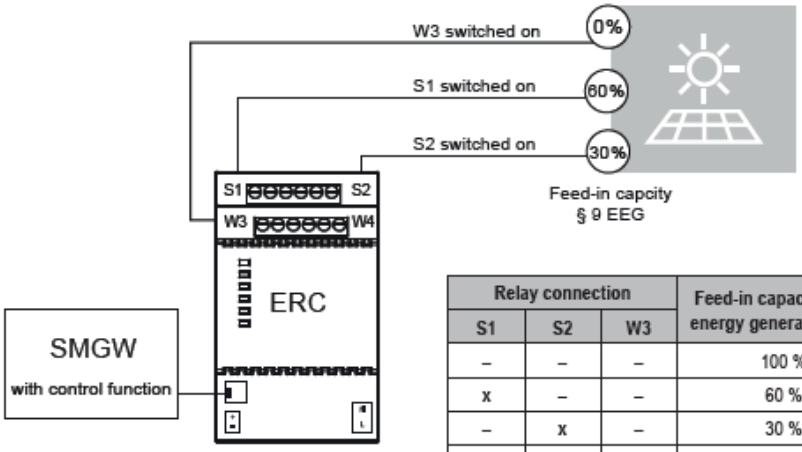
** for the switch's power supply

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5 Control concepts

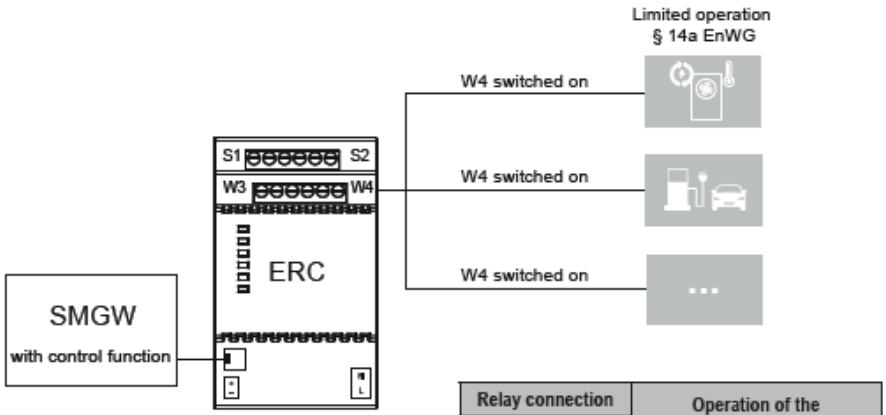
The relay functions comply with the VDE FNN control concepts for controllable consumer devices and power generation plants. The output of an power generation plant can be controlled in stages via relays S1, S2 and W3 (see Figure 3).

Concurrently, the operation of controllable consumer devices (e.g. heat pumps and wall boxes) can be controlled via relay W4 (see Figure 4).



Relay connection			Feed-in capacity of the energy generation plant
S1	S2	W3	
–	–	–	100 %
x	–	–	60 %
–	x	–	30 %
–	–	x	0 %

Figure 3: EEG control concept



Relay connection	Operation of the consumption facility
W4	
not energised	Unrestricted operation
energised	Restricted operation, guaranteed grid-connected power consumption according to § 14a EnWG

Figure 4: EnWG control concept

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6 Storage and transport

6.1 Storage

Store the device in dry and clean rooms. The temperature range for storing the device or any of the replacement modules is -25 °C to +55 °C. The relative humidity must not lead to condensation or ice formation.

6.2 Transport

If the devices are to be shipped elsewhere, please reuse the transportation packaging. When using different packaging, please ensure that the appropriate transportation requirements are adhered to. The storage packing of individual devices is not sufficent for transportation purposes.

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7 Applies only to the EEBUS Converter C: Requirements for certification-compliant operation

7.1 Scope of application

Various requirements must be observed for intended operation within the framework of the certification specifications in accordance with TR-03109-5. These are listed below. Failure to comply with these requirements places the device in a non-certified and therefore potentially unsafe state.

7.2 Identification of the certified device

The certified device can be identified by the BSI mark affixed to the front. The device type is identified by the product designation printed on the front, and the serial number by the imprint on the seal.

7.3 Mounting requirements

The EEBUS Relais Converter C is supplied from the factory in a pre-configured state. This basic configuration ensures safe commissioning and the correct and secure configuration of all device settings. For safe installation, it is therefore only necessary to mount the EEBUS Relais Converter C and make the basic connections. Details regarding the interfaces and the power supply can be found in the preceding chapters. The safe connection procedure is described below.

- The device must be installed in the sealed area.
- The CLS interface of the ERC must be connected to the CLS interface of the SMGW.
- The power supply must be established.
- The ERC's relays must be connected to controllable systems.

No further connections may be made.

7.4 Requirements during operation

The device must undergo regular visual inspections during operation to detect any tampering. To ensure this, on-site personnel must be informed of this measure. Suitable persons include, for example, the property owners, tenants or caretakers. Any visible damage to the housing, such as drill holes, cracks or removed seals, must be reported. The operator of the device is the point of contact for all reports of tampering.

7.5 Requirements for dismantling

When dismantling the device, it must be ensured that a factory reset has been carried out beforehand by the active external market participant (aEMT).

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8 Mounting

8.1 General safety instructions



DANGER
Electric shock due to high touch voltage
Failure to observe these instructions will result in death or serious injury.

- *Observe all operating, installation and warning instructions set out in this manual.*
- *The mounting location must be vibration-free and within the permissible temperature range.*
- *Ensure that the device is installed and connected only when the power is switched off.*
- *Improper installation or operation can lead to life-threatening electric shocks.*



WARNING
Improper operation
Failure to observe these instructions may result in malfunctions, damage to the device or hazardous operating conditions.

- *The mounting location must be free from vibration.*
- *The permissible ambient temperature as specified in the technical data sheet must be observed.*
- *Operation outside the permissible operating temperature range may lead to failure or malfunction of the device.*
- *Position the device so that it is not exposed to direct sunlight or extreme temperature fluctuations.*
- *The maximum altitude for installation and operation is 2,000 m above sea level (ASL). Do not operate the device above this permissible installation altitude.*



WARNING
Danger due to lack of protection and inadequate fire safety
Failure to comply may result in electric shock causing serious or fatal injury, fire or damage to the device.

- *When selecting the mounting location, ensure that degree of protection IP30 is maintained once the device is installed.*
- *The device must only be installed in an environment that meets the requirements of the specified protection rating.*
- *Install and operate the device only on the prescribed DIN TS 35 mounting rail within a suitable enclosed control cabinet made of metal or a material with equivalent fire resistance.*



WARNING
Personal injury or damage to property due to non-compliance with standards and regulations
Failure to comply with technical rules, standards and safety regulations may result in personal injury or damage to property.
Observe all applicable standards, regulations, accident prevention regulations and generally accepted engineering practices when carrying out any work.

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CAUTION
Device damage due to overvoltage is possible
Failure to comply may result in malfunctions or damage to the communication interface.

- *Use only shielded Ethernet cables to connect the device to external components.*
- *Ensure that the cables are laid and connected correctly.*

8.2 Safety instructions for the mounting location

The following requirements must be met:

The mounting location must be vibration-free (insignificant vibrations and shocks are permissible, e.g. at mounting locations mounted on light support structures that are affected by local blasting and pile-driving work, slamming doors and similar environmental conditions).

The relative humidity at the installation site must not be high enough to cause condensation. The mounting location must be indoors.

Electromagnetic interference at the mounting location must not exceed the levels typically found in residential and commercial buildings, as well as light industrial premises.

The permissible ambient temperature must be observed (see technical data sheet). Operation outside the permissible operating range may result in device failure.

The electrical connection to the plug itself must not be made or disconnected whilst live. First, the wires must be inserted into the plug. The pre-assembled plug may then be inserted into the device, and the power supply connected afterwards. Disconnection is carried out in the reverse order.

Please note the minimum and maximum conductor cross-sections for the terminal blocks used. These may vary depending on the type of terminal block (screw-type/screwless) and cable (rigid/flexible with ferrule terminals).

Once mounted, the housing component must no longer be accessible beneath the insulating cover.

8.3 Safety instructions for mounting

The signal and communication connections must not be connected directly to sensitive cables located outside buildings.

The Ethernet cables must be shielded. The maximum cable length must not exceed 30 m.

The maximum cable length for the RS485 cable must not exceed 3 m.

8.4 Mounting and dismantling

1. Snap the device onto a 35 mm DIN rail.
2. Remove the device by unlocking the locking foot with a screwdriver (see Figure 5).

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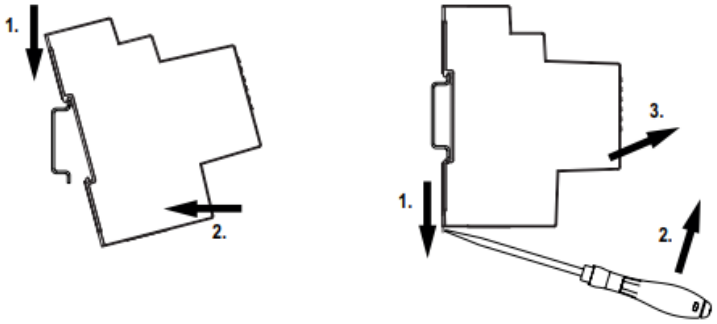


Figure 5: Mounting and removal

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9 Installation

9.1 General safety instructions

WARNING
Risk of electric shock when working on live parts
Working on live parts can result in death or serious injury.

- *Disconnect the device from the mains before carrying out any work and check that all accessible parts are de-energised.*
- *Secure the device to prevent it from being switched on again.*
- *Work on electrical components must only be carried out by qualified personnel.*
- *Observe the applicable national regulations and safety provisions for work on electrical installations.*

WARNING
Risk of electric shock due to insufficient insulation distances
Inadequate insulation clearances can compromise the protective insulation. This can lead to life-threatening body currents or damage to the device.

- *Check the insulation **distances** between live parts of the terminal block and the device connection plug and adjacent live parts of other devices or mechanical components.*
- *Maintain additional insulation clearances where necessary.*
- *Maintain a minimum **distance** of 3 mm in the area of the housing's ventilation slots from accessible SELV/PELV circuits and from conductive, unearthed parts.*
- *Switch SELV only where the switching contacts are assigned exclusively to SELV.*

9.2 Safety instructions for the installation

An all-pole isolating device must be installed for the supply circuit, which meets at least the requirements of DIN VDE 100.

An installation fuse in accordance with DIN VDE 100 must be installed for the supply circuit. In addition, short-circuit protection with a breaking capacity of I > 6000 A and energy limitation class 3 is required.

The network cables must be routed away from live cables and components.

The ERC's power supply must be fused at 16 A.

If several generation systems or loads are connected, additional external terminals or relays are required. In this regard, the applicable TABs and device specifications must be considered.

9.3 Installation

During installation, the current VDE-AR-N 4100 and the currently valid technical connection conditions (TAB) of the respective grid operator must be observed.

To install the device, carry out the following steps:

- Connect the Ethernet cable to the SMGW, LAN (switch) or end device (e.g.–ripple control receiver).
- Connect the relay to the end device (e.g. wallbox) (see Figure 6).

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- Supply power to the device.

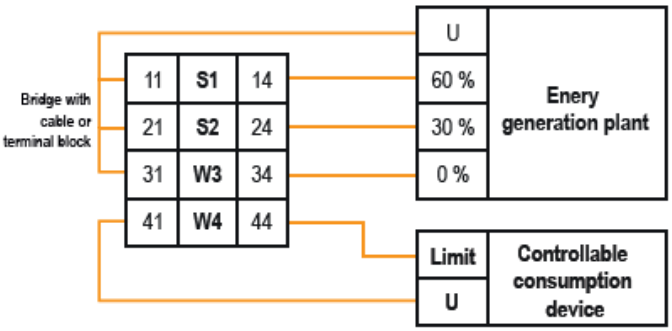


Figure 6: Connecting the relays to the end device

If several generation systems or loads are to be switched, additional external terminals or relays are required. In this case, the applicable TABs and device specifications must be taken into account.

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10 Commissioning

The following steps are required to commission the ERC:

1. Pairing between the ERC and the SMGW
2. Entering the rated power (PVmax) of the power generation plant
3. Adjusting the network configuration, if necessary

Commissioning the ERC S

For **ERC S**: You can carry out both steps in **the ERC Webinterface** (see chapter 10.1 and the **ERC Webinterface manual**). Please also refer to the supplementary documentation.

Commissioning of ERC C

For **ERC C**: For the ERC C, functional commissioning takes place on the aEMT backend.

10.1 ERC Webinterface

To carry out commissioning and access operational functions **of the ERC S,** you can access the ERC via the browser-based ERC Webinterface.

Prerequisite: The web browser must be up to date.

1. Connect a mobile device to the ERC directly or via a cable connected to an Ethernet switch, so that both devices are in the same network.
2. In the browser‘s address bar, enter the device address (use lowercase letters and no spaces):

- if there is only **one** ERC in the network: **https://erc.local**
- if there are **multiple** ERCs in the network: **https://huid.local**

⇨ The ERC Webinterface has started.

3. Follow the instructions in the ERC Webinterface manual. You can access the ERC Webinterface manual via the following QR code:

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11 Operation

The EEBUS Relais Converter operates automatically once fitted and installed.

11.1 LED status indicators

The status of the power supply and Ethernet connection, as well as the switching states of the relays, are indicated by LEDs on the front of the device.

The STEU-R-1A-110-00 and STEU-R-1A-110-01 models feature a total of 6 LEDs, which indicate the following statuses:

LED	Colour	Status
All LEDs	Green, 3x blinking	Power on process or restart after firmware update
PWR	Green	Power supply OK
	Off	No power supply
	Green blinking	Firmware update is running
TLS	Green	Ethernet connection OK
	Off	No Ethernet connection and no software signalling
	Green blinking	Ethernet activity
S1 S2 W3 W4	Green	S1: Relay 1 energised S2: Relay 2 energised W3: Relay 3 energised W4: Relay 4 energised
	Off	S1: Relay 1 not energised S2: Relay 2 not energised W3: Relay 3 not energised W4: Relay 4 not energised

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12 Maintenance and repair

The device requires no maintenance whatsoever after installation.

The user is not authorised to carry out repairs on the device if it is defective. This is because the device contains electronic components that may only be handled by the manufacturer in compliance with regulations for electrostatic sensitive devices (ESD). Furthermore, dangerous voltages can lead to fatal injuries if the device is not operated correctly. If you suspect that the device has a defect, PPC recommends sending the entire device back to the manufacturer. If possible, use the original transportation packaging or equivalent packaging.

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13 Disposal

This product is subject to the Waste Electrical and Electronic Equipment (WEEE) Directive and, as a B2B product, must not be disposed of via the public recycling system and has to be returned to Power Plus Communications AG for proper disposal.

Complies with RoHS.

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14 Technical data

Nominal voltage	230 VAC (± 15 %), 50 Hz
Power consumption	4 W
Current output	5 V DC / max. 1 W
Protection class	II
Overvoltage category	III
Degree of protection	IP30
Mains connection	SL-SMT 5.08HC/03/90G 1.5SN BK RL TB
Interfaces	1x Ethernet RJ45
Relays	4x CO relays Monostable changeover relays 6 mm², with plastic-collared ferrule, DIN 46228-4: 2.5 mm² max. 250 VAC, switching current max. 6 A
Operating temperature	-25 °C … +55 °C
Relative humidity	0 … 95 %, non-condensing
Weight	140 g
Ambient conditions Altitude	≤ 2000 m
Flammability class	V2
Dimensions (W x H x D)	90 mm x 54 mm x 70 mm, 3 modules
Standards and guidelines	– Vibration 1*g* according to DIN EN 61131-2 – Shock test 15*g* according to DIN EN 61131-2 – Impact test IK05 according to DIN EN 60898-1:2020-11 – EN 61010-1:2010+A1:2019+A1:2019/AC:2019-04 – EN IEC 61010-2-201:2018 (EN IEC 61010-2-201:2024) – EN IEC 61000-6-3:2021 + EN IEC 61000-6-2:2019 – IEEE 802.3 – EN IEC 63000:2018

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15 Declaration of Conformity

Power Plus Communications AG hereby declares that the devices of types STEU-R-1A-110-00 and STEU-R-1A-110-01 comply with Directives LVD 2014/35/EU and EMC 2014/30/EU and the RoHS 2011/65/EU.

The full text of the EU Declaration of Conformity is available at the following web address:

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