# SCX...POE 2LX

## Industrial outdoor PoE switch



Data sheet
108709_en_04

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## 1 Description

The Smart Ethernet Box is used to connect PoE end devices such as IP cameras to a video server. You can use the Smart Ethernet Box to supply voltage to PoE end devices and other external devices.
The Smart Ethernet Box is a manageable outdoor PoE switch with a power supply unit, a wiring space for the AC voltage supply, replaceable surge protective modules, and an area with an integrated 24 V DC supply and a DIN rail for mounting additional devices.
The Smart Ethernet Box integrates the functions of conventional connection boxes equipped with standard DIN rail devices in a compact device. This saves you time during planning and installation.
Numerous management and monitoring functions ensure reliable operation of the system.

**Features**

- Cost savings with an all-in-one solution that provides all functions in a single device
- Significant time savings with adapter for wall and mast mounting
- Minimal wiring effort
- Replaceable surge protection
- A wide range of alarm messages via SNMP, such as in the event of sabotage attempts or defective surge protection
- Advanced PoE management for reliable operation of IP cameras
- Quick and easy startup and configuration via web-based management or the FL Network Manager software
- Integrated splice tray for safe storage of fiber connections and fiber reserves
- Managed Ethernet Switch with RSTP, VLAN, SNMP, and other functions
- Up to 40 devices in the ring with RSTP, up to 70 devices in the ring with LTS

**Observe this note**

Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.com/product/1102626
The additional information in the user manual must also be strictly observed.

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# 3 Ordering data

| Description | Type | Item no. | Pcs./Pkt. |
|---|---|---|---|
| Smart Ethernet Box for connecting PoE end devices, four PoE ports, two uplink ports (SFP slots), integrated managed switch, surge protection, and splice tray, supply voltage 100 ... 240 V AC, wall or mast mounting | SCX 4POE 2LX | 1102626 | 1 |
| Smart Ethernet Box for connecting PoE end devices, two PoE ports, two uplink ports (SFP slots), integrated managed switch, surge protection, and splice tray, supply voltage 100 ... 240 V AC, wall or mast mounting | SCX 2POE 2LX | 1108543 | 1 |

| Accessories | Type | Item no. | Pcs./Pkt. |
|---|---|---|---|
| Replacement plug for the SCX Smart Ethernet Box for the N-PE path. | F-MS 12 HD ST | 1224885 | 10 |
| Replacement plug for the SCX Smart Ethernet Box for the L-N path. | VAL-MS 320 HD ST | 1224886 | 10 |
| Surge protection connector type 2 with high-capacity varistor for VAL-MS base element, thermal monitoring, visual fault warning. Design: 230 V AC | VAL-MS 230 ST | 2798844 | 10 |
| Surge protection connector type 2 with series connection consisting of varistor and gas-filled spark gap for VAL-MS base element, thermal monitoring, visual fault warning. Design: 350 V AC | VAL-MS 350 VF ST | 2856595 | 10 |
| Mast clamps, 2 pcs, with quick mounting connection for installation on masts with a diameter of 51 ... 127 mm | SCX-CLAMP 14X51-127 | 1175556 | 1 |
| Mast clamps, 2 pcs, with quick mounting connection for installation on masts with a diameter of 102 ... 254 mm | SCX-CLAMP 14X102-254 | 1188634 | 1 |
| Mounting adapter for mast and panel mounting of the Smart Ethernet Box (SCX … T and SCX … LX) | SCX-CASE-MOUNTING-PLATE | 1801987 | 1 |
| Splice tray incl. tray cover for the Smart Ethernet Box (SCX … LX) | SCX-SPLICE-TRAY | 1801988 | 1 |
| Flange plate incl. cable glands (5 x M25, 2 x M20) and mounting screw 3 mm x 10 mm for the Smart Ethernet Box (SCX ... T and SCX … LX) | SCX-GLAND-PLATE | 1801989 | 1 |
| Door without printing incl. four door hinges for the Smart Ethernet Box (SCX … T and SCX … LX) | SCX-CASE-TOP | 1801990 | 1 |
| Multi-mode OM4 duplex jumper, LC-LC, UPC polishing, length 5 m | FOC-LC:PA-LC:PA-OM4:D01/5 | 1115621 | 1 |
| Single-mode OS2 duplex jumper, LC-LC, UPC polishing, length 5 m | FOC-LC:PA-LC:PA-OS2:D01/5 | 1115626 | 1 |
| FO accessories, degree of protection: IP20 | FOC-SPLICEHOLDER:10 | 1086804 | 1 |
| Shrink splice protection, design: Straight, degree of protection: IP20, cable outlet: above and below, color: transparent | FOC-SHRINKSPLICE-PROTECT | 1019676 | 12 |

| Accessories | Type | Item no. | Pcs./Pkt. |
|---|---|---|---|
| Crimp splice protection, design: Straight, degree of protection: IP20, connection method: Crimp connection, cable outlet: above and below, color: Bare metallic | FOC-CRIMPSPLICE-PROTECT | 1019678 | 12 |
| Stable door lock with locking tab for securely locking the Smart Ethernet Box, protects against unauthorized access, for a padlock with a shackle diameter of up to 12 mm | SCX-DOOR-LOCK | 1184401 | 1 |
| Gigabit SFP module for transmission up to 2 km with a wavelength of 1310 nm. | FL SFP SX2 | 2702397 | 1 |
| Gigabit SFP module for transmission up to 10 km with a wavelength of 1310 nm. | FL SFP LX10-B | 1025401 | 1 |
| Gigabit SFP module for transmission up to 100 m. | FL SFP GT | 2989420 | 1 |
| SNMP-based software for easy commissioning and monitoring of network components such as switches, routers, and WLAN access points | FL NETWORK MANAGER BASIC | 2702889 | 1 |
| Network cable, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5, cable outlet: straight, Ethernet | NBC-R4AC-R4AC-IE8/.../... | 1411842 | 1 |
| NPT adapter, stainless steel, M20 to 1/2-inch | SCX M20-1/2NPT | 1247389 | 1 |
| The FL DIN-RAIL ADAPTER 22.5 is designed to allow products 22.5 mm wide to be mounted flush to a standard 35 mm DIN rail, in any orientation. | FL DIN-RAIL ADAPTER 22.5 | 1085485 | 1 |
| The FL DIN-RAIL ADAPTER 40 is designed to allow products 40 mm wide to be mounted flush to a standard 35 mm DIN rail, in any orientation. | FL DIN-RAIL ADAPTER 40 | 1085484 | 1 |
| Surge protection in accordance with Class $E_A$ ($CAT6_A$), for Gigabit Ethernet (up to 10 Gbps), token ring, FDDI/CDDI, ISDN, and DS1. Suitable for Power over Ethernet (PoE++ / 4PPoE) “Mode A” and “Mode B”. RJ45 attachment plug with separate grounding cable and ground connection snap-on foot for NS 35 DIN rails. | DT-LAN-CAT.6+ | 2881007 | 1 |
| Plastic mounting bracket, with NS 35/7.5 DIN rail, to snap onto modular terminal blocks with a universal foot, profile length: 35 mm | MW 35/35 | 5040078 | 10 |
| The FL PANEL ADAPTER 45 is designed to allow products 45 mm wide to be mounted flush to a panel, in any orientation. | FL PANEL ADAPTER 45 | 1456055 | 1 |
| The FL DIN-RAIL ADAPTER 45 is designed to allow products 45 mm wide to be mounted flush to a standard 35 mm DIN rail, in any orientation. | FL DIN-RAIL ADAPTER 45 | 1456045 | 1 |

# 4 Technical data

| | |
|---|---|
| **Supply** | |
| Supply voltage range | 100 V AC ... 240 V AC (Single-phase) |
| Tolerance | -15 % ... +10 % |
| Nominal frequency | 50 Hz ... 60 Hz |
| Nominal current range | 1.2 A ... 2.9 A |
| Miniature circuit breaker/fuse | Miniature circuit breaker, 6 A ... 16 A, characteristics B, C, D, K |
| Rated insulation voltage | 3 kV AC (Input / output, IEC/EN 60950-1) |
| Protection class | I (Protective grounding of all conductive housing parts) |
| Power supply system | TN, TT |
| **Connection method** | **Push-in spring connection** |
| Stripping length | 10.00 mm |
| Conductor cross section | |
| flexible | 0.2 mm² ... 6 mm² |
| rigid | 1 mm² ... 6 mm² |
| AWG flexible | 24 ... 10 |
| Flexible with ferrules without plastic sleeve | 0.2 mm² ... 4 mm² |
| Flexible with ferrules with plastic sleeve | 0.2 mm² ... 4 mm² |
| 2 conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve | 0.5 mm² ... 1.5 mm² |

| | |
|---|---|
| **Cable gland** | |
| Thread type, cable screw connection | 5x M20, 5x M25<br>in accordance with UL: 2x M20, 5x M25 |
| Tightening torque, cable gland | |
| M20 | 2 Nm |
| M20, UL | 4 Nm |
| M25 | 3.5 Nm |
| M25, UL | 5 Nm |
| External cable diameter | |
| M20 | 6 mm ... 12 mm |
| M25 | 6 mm ... 10 mm |
| Strain relief | IEC 62444 |

For mounting in accordance with UL, use conduit fittings: 3x 1/2″ NPT (L, N, PE)

| PoE ports | SCX 4POE 2LX | SCX 2POE 2LX |
|---|---|---|
| Number of ports | 4 (RJ45 ports) | 2 (RJ45 ports) |
| Designation | Ethernet / Fast Ethernet / Gigabit Ethernet | |
| Connection method | RJ45 jack | |
| Note on the connection method | Auto negotiation and autocrossing | |
| Transmission medium | Copper | |
| Transmission speed | 10/100/1000 Mbps | |
| Transmission length | 100 m (per segment) | |
| **Power over Ethernet** | **PoE standard IEEE 802.3bt, at, af** | |
| Maximum output power | 165 W (>55°C derating, see data sheet)<br>155 W (If switching output is active, >55°C derating) | |
| | 90 W (per port POE1...3, >50°C derating, see data sheet)<br>30 W (POE4) | 90 W (per port POE1/2, >50°C derating, see data sheet) |

| Uplink ports | |
|---|---|
| Number of ports | 2 (SFP ports) |
| Note on the connection method | The SFP modules are available as accessories |
| Transmission medium | depending on the SFP module used |
| Transmission speed | 100/1000 Mbps (depending on the SFP module used) |
| Transmission length | < 80 km (depending on the SFP module used) |

| Configuration interface | |
|---|---|
| Number of ports | 1 (RJ45 port) |

| Store-and-forward switch, complies with IEEE 802.3 | |
|---|---|
| Management | Web-based management (HTTP/HTTPS)<br>SNMPv2/v3<br>Command Line Interface (Telnet, SSH) |
| Diagnostic functions | RMON History<br>LLDP (Link Layer Discovery Protocol)<br>SNMP traps<br>N:1-Portmirroring<br>ACD (Address Conflict Detection) |
| Filter functions | Port prioritization<br>VLAN (up to 32 VLANs) |
| Redundancy | RSTP (Rapid Spanning Tree Protocol in accordance with IEEE 802.1D-2004)<br>Large Tree Support<br>FRD (Fast Ring Detection) |
| Time synchronization | SNTP (Simple Network Time Protocol) |
| IP parameterization | DHCP client<br>BootP<br>Static IP address |
| Additional functions | Jumbo frames |
| MAC address table | 8k |

| | |
|---|---|
| **Switching output** | |
| Number of ports | 1 (Push-in Technology) |
| Configuration | Configuration via web-based management |
| Output nominal voltage | 24 V DC ±10 %<br>(Supply for devices within the Smart Ethernet Box) |
| Output current | 300 mA (typical) |
| Load/output load current output | no inductive load |
| **Connection method** | **Push-in spring connection** |
| Stripping length | 10 mm |
| Conductor cross section | |
| flexible | 0.2 mm² ... 1.5 mm² |
| rigid | 0.2 mm² ... 1.5 mm² |
| AWG flexible | 24 ... 16 |
| Flexible with ferrules without plastic sleeve | 0.25 mm² ... 1.5 mm² (Stripping length 8 mm) |
| Flexible with ferrules with plastic sleeve | 0.25 mm² ... 0.75 mm² (Stripping length 8 mm) |
| If you use the switching output, the available | PoE power will be reduced by 10 W. |

| | |
|---|---|
| **Surge protection** | |
| IEC test classification | II T2 |
| Standards/regulations | IEC 61643-11<br>EN 61643-11 |

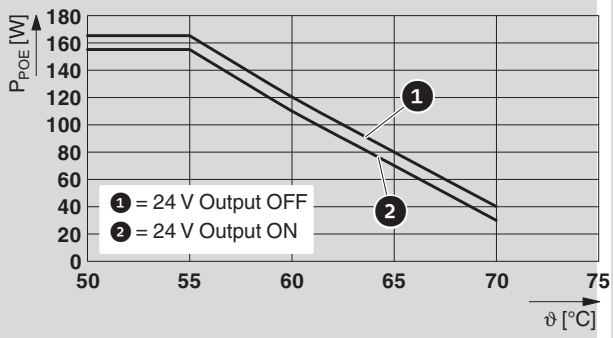
| | |
|---|---|
| **General data** | |
| Dimensions (W/H/D) | 284 mm x 364 mm x 121 mm |
| Material | |
| Housing | Polycarbonate |
| Cable gland | Polyamide |
| Cable gland seal | Neoprene |
| Color | |
| | light grey (7035) |
| Degree of protection | IP65 (in accordance with DIN EN 60529: Complete touch protection, dust cannot enter, spray water from any direction) |
| Impact strength | IK10 (in accordance with IEC 62262: Impact energy of 20 J, corresponds to 5 kg from a height of 40 cm) |
| Degree of pollution | 2 |
| Flammability rating according to UL 94 | V0 (Housing, a vertically clamped sample is extinguished within 10 seconds, no flaming droplets of molten plastic, smoldering for a maximum of 60 seconds) |
| | V2 (Cable gland; a vertically tensioned sample is extinguished within 30 seconds; flaming droplets are permitted) |
| Fire protection | DIN EN 45545-2, requirement set R22, hazard level HL3 |
| Vibration resistance in accordance with EN 60068-2-6/ IEC 60068-2-6 | 1g |

| General data | |
|---|---|
| Shock in accordance with EN 60068-2-27/IEC 60068-2-27 | 15g, 11 ms |
| Halogen-free (housing, bromine: <900 ppm, chlorine: <900 ppm, total halogen content: <1,500 ppm) | IEC 61249-2-21 |
| Other resistance | UV-resistant in accordance with UL746C, f1 listing/rating (Outdoor housing, subject to 1,000 hour xenon weather testing, 7-day water submergence test) |
| Mounting type | Panel mounting<br>Mast mounting |
| Enclosure (UL50/50E): UL (NEMA) Enclosure Type Rating: 4X, watertight and corrosion resistant, suitable for indoor or outdoor use | |
| Overvoltage category | |
| With protection modules plugged in | III |
| Without protection modules | II |

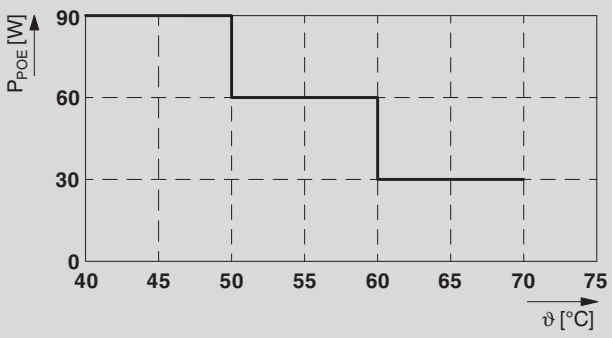
| MTTF (mean time to failure) | SCX 4POE 2LX | SCX 2POE 2LX |
|---|---|---|
| SN 29500 standard, temperature 25°C, operating cycle 21% | 450 Years | 547 Years |
| SN 29500 standard, temperature 40°C, operating cycle 34.25% | 228 Years | 272 Years |
| SN 29500 standard, temperature 40°C, operating cycle 100% | 96 Years | 113 Years |

| Ambient conditions | |
|---|---|
| Ambient temperature | |
| Operation | -40 °C ... 70 °C (>50°C derating) |
| Storage/transport | -40 °C ... 85 °C |
| Humidity | |
| Operation | 10 % ... 95 % (non-condensing) |
| Altitude | 2000 m |

**Derating (PoE power total)**




**Derating per port**



| Conformance/Approvals | |
|---|---|
| CE | CE-compliant |
| UL, USA/Canada | Listed<br>UL 61010-1, 3rd Edition<br>UL 61010-2-201, 2nd Edition<br>CAN/CSA C22.2 No. 61010-1-12<br>CSA C22.2 No. 61010-2-201:18 |
| Corrosive gas test | ISA-S71.04-1985 G3 Harsh Group A |

| Conformance with EMC Directive 2014/30/EU | | |
|---|---|---|
| **Immunity in accordance with EN 61000-6-2** | | |
| Electrostatic discharge | EN 61000-4-2 | |
| | Contact discharge | ± 6 kV |
| | Discharge in air | ± 8 kV |
| | Indirect discharge | ± 6 kV |
| | Comments | Criterion B |
| Electromagnetic HF field | EN 61000-4-3 | |
| | Frequency range | 80 MHz ... 3 GHz (80% amplitude modulation with 1 kHz) |
| | Field intensity | 10 V/m |
| | Comments | Criterion A |
| Fast transients (burst) | EN 61000-4-4 | |
| | Input | ± 2.2 kV (1 minute) |
| | Signal | ± 2.2 kV (1 minute) |
| | Comments | Criterion B |
| Surge current loads (surge) | EN 61000-4-5 | |
| | Input | ± 1 kV (AC supply, line to line)<br>± 2 kV (AC supply, line to ground) |
| Conducted interference | EN 61000-4-6 | |
| | Frequency range | 0.15 MHz ... 80 MHz (80% amplitude modulation with 1 kHz) |
| | Voltage | 10 V |
| | Comments | Criterion A |

| | |
|---|---|
| Criterion A | Normal operating behavior within the specified limits. |
| Criterion B | Temporary impairment to operational behavior that is corrected by the device itself. |

| Noise emission | |
|---|---|
| Noise emission | EN 61000-6-4, Class B, domain of use: residential and small commercial |
| Conducted noise emission | EN 61000-6-3 Class B, domain of use: residential and small commercial |

# 5 Dimensions

Figure 1 Dimensions

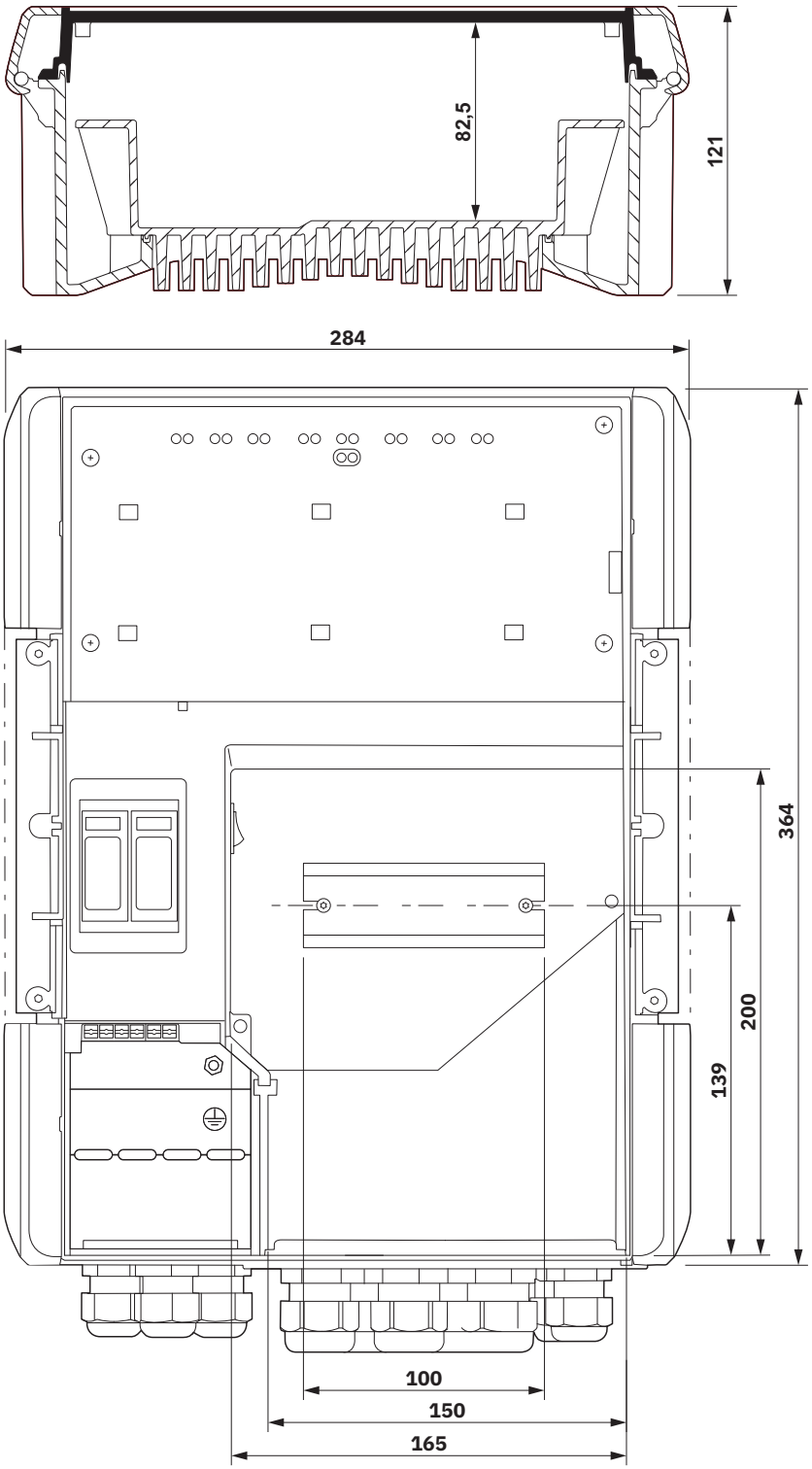
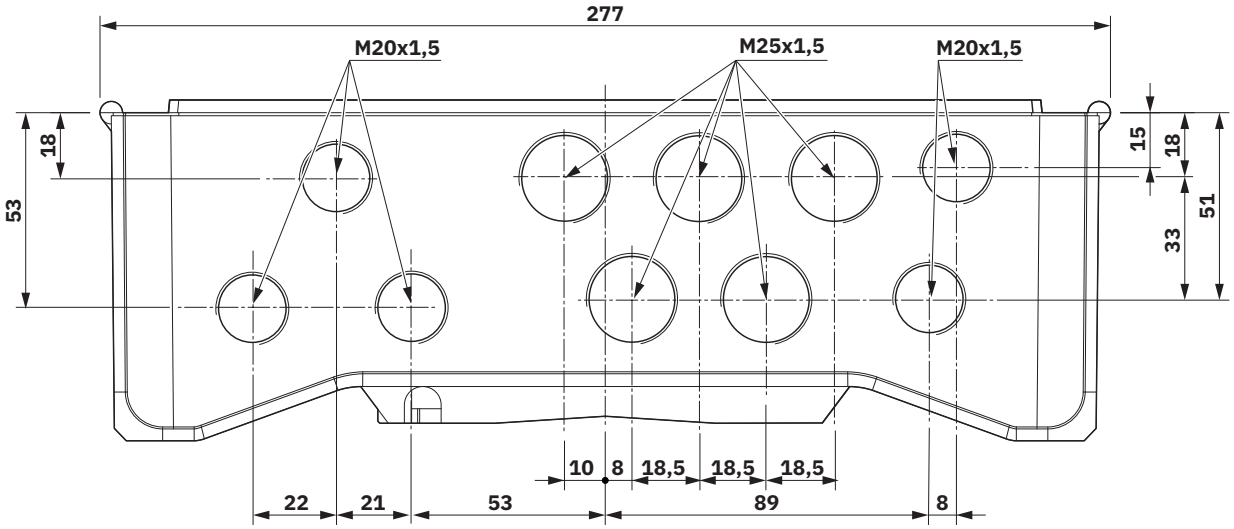
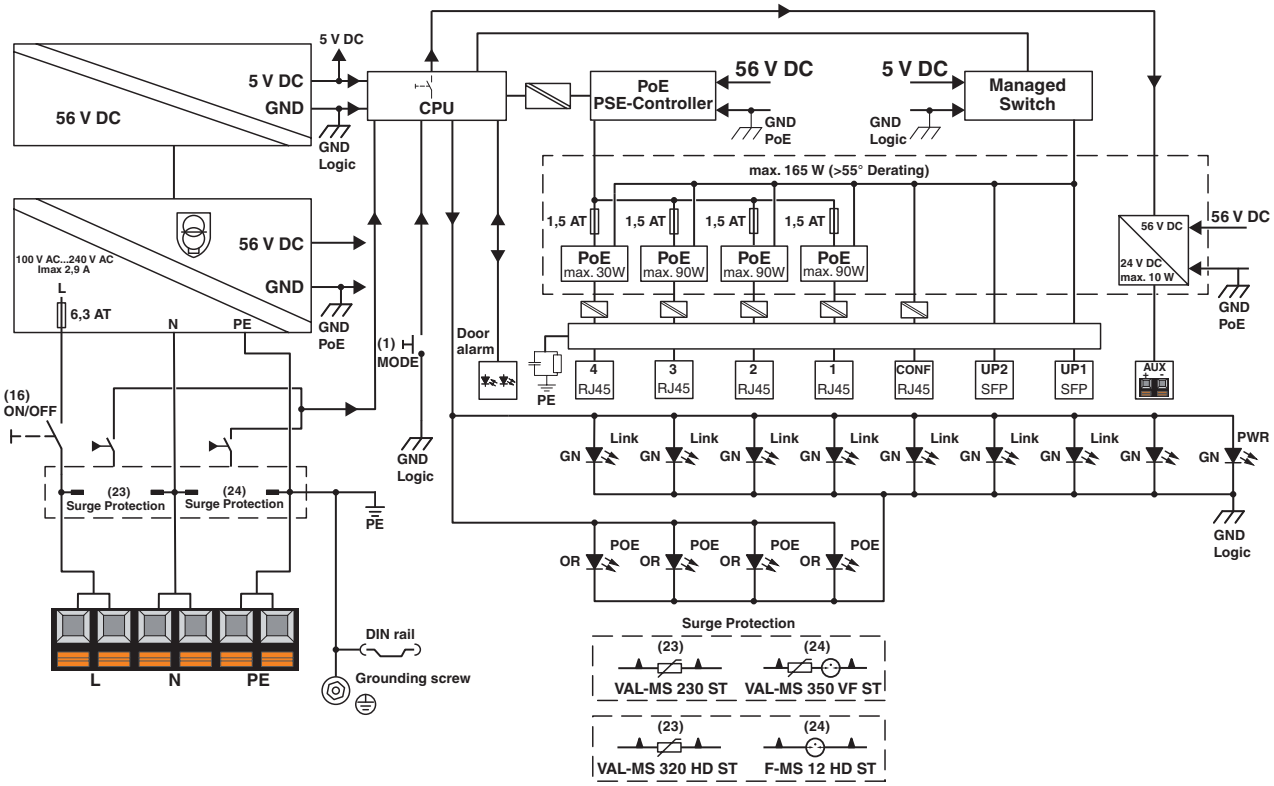


Figure 2 Underside dimensions



# 6 Basic circuit diagram

Figure 3 Basic circuit diagram



# 7 UL notes

To install the device according to the UL/CSA/IEC standard, the following rules must be observed.

**CAUTION!**

– The external circuits intended to be connected to this device, except for MAINS supply of the equipment, shall be galvanically separated from MAINS supply or hazardous live voltage by reinforced or double insulation and meet the requirements of Class 2 of NEC or SELV/PELV - Limited Energy of UL/ CSA 61010-1, -2-201 or Limited Power Source of UL/CSA 60950.

– Communication cable shall meet the requirements of UL Standard 444 / CSA Standard (C22.2) No. 214, be suitable for the application and be marked "Outdoor" to indicate its suitability for installation outdoors on dwellings.

– SFP transceiver(s) shall meet the relevant requirements of UL 60950-1, CAN/ CSA C22.2 No. 60950-1, be rated ''Laser Class I'' and comply with 21 CFR 1040 - Laser Class.

– The device is designed to be maintenance-free. Repairs are not permitted to be carried out.

– The hub (conduit hub adapter) shall be connected to the conduit before the hub is connected to the enclosure.

Information:

- The switch or circuit breaker must be included in the installation, be suitably located, easily reached and marked as the disconnecting device for the equipment. If there is only one device - one switch or one circuit breaker - symbols 9 and 10 of Table 1, UL/ CSA/IEC 61010 are sufficient if the symbols are marked on or adjacent to the switch or circuit breaker.
  a) Circuit breakers used as a disconnecting device shall meet the relevant requirements of UL Standard 489 / CSA Standard (C22.2) No. 5 / IEC 60947-2, be suitable for the application and installed near the equipment.
  b) Switch used as a disconnecting device shall meet the relevant requirements of UL Standard 508 / CSA Standard (C22.2) No. 14 / IEC 60947-3, be suitable for the application and installed near the equipment.
- Equipment intended to be energized from a MAINS supply shall be protected by fuses, circuit breakers, thermal cut-outs, impedance limiting circuits or similar means, to provide protection against excessive current being drawn from the MAINS in case of a fault in the equipment.
  a) Overcurrent protection devices shall not be fitted in the protective conductor. Fuses or single pole circuit breakers shall not be fitted in the neutral conductor of multi-phase equipment.
  b) A single-pole circuit breaker used as an overcurrent protective device shall be connected in the ungrounded supply conductor.
  c) A multiple-pole circuit breaker used as an overcurrent protective device or devices shall be so constructed as to interrupt all of the neutral (grounded) and ungrounded conductors of the MAINS supply simultaneously.
  d) Fuses shall meet the relevant requirements of UL Standard 248 / CSA Standard (C22.2) No. 248 / IEC 60127, be suitable for the application and installed near the equipment.
  e) A single fuse used as an overcurrent protective device shall be connected in the ungrounded supply conductor.

f) Where fuses are used as overcurrent protective devices in both the neutral (grounded) and ungrounded supply conductors, the fuseholders shall be mounted adjacent to each other and the fuses shall be of the same RATING and characteristics.

g) The screw shell of a plug fuseholder and the ACCESSIBLE contact of an extractor fuseholder connected to the ungrounded supply conductor shall be connected towards the load. The ACCESSIBLE contact or screw shell of fuseholders connected in the neutral (grounded) conductor shall be located towards the grounded supply line.

- If the equipment is not used in specified manner, the protection provided by the equipment may be impaired.
- Minimum temperature rating of the cable to be connected to the field wiring terminals (MAINS supply)

  75 °C, AWG 24 ... 10

  Use copper conductors only.
- Minimum temperature rating of the cable to be connected to the field wiring terminals (Digital output)

  75 °C, AWG 24 ... 16

  Use copper conductors only.

# 8 Housing description

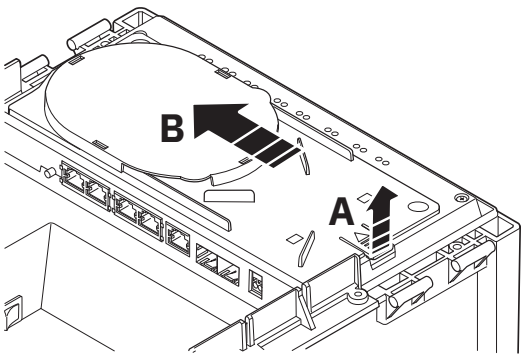
As of hardware version 21, the optimized housing offers the following functions:

– Removable splice tray
– Removable flange plate
– Expandable cable gland for supply lines

**Removable splice tray**

The splice tray can be removed for easy installation.

Figure 4 Splice tray

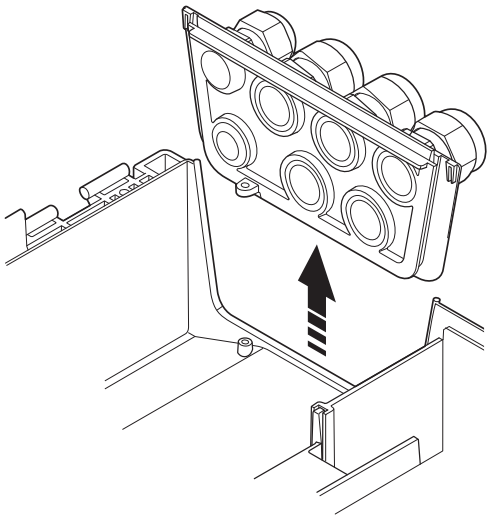



**Removable flange plate**

The flange plate with the cable glands can be removed.

- Tighten the mounting screw for the flange plate to a maximum of 1 Nm. The screw is only used to secure the flange plate when the cover is opened.

Figure 5 Flange plate



**Expandable cable gland for supply lines**

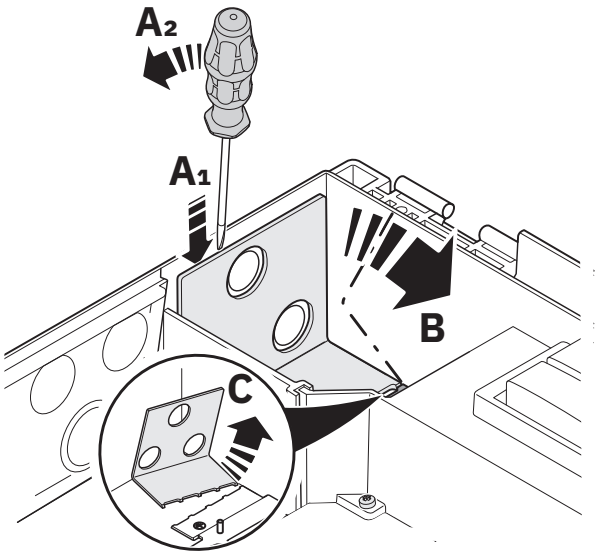
If required, you can enlarge one of the cable glands to M32. To make space, you can break the shielding plate at the perforation.

**NOTE: Risk of injury**

Sharp edges and burrs can result when the shielding plate is broken out.

- If necessary, deburr the edges of the breaking point.

Figure 6 Shielding plate



# 9 Revision history

| Document revision | Hardware version | Firmware version | Date | Description |
|---|---|---|---|---|
| 00 | - | - | 2020-04-16 | First publication |
| 01 | 11 | 101 | 2020-11-03 | UL approval added to technical data, “UL notes” section added, accessories updated, dimensional drawing and basic circuit diagram added |
| 02 | - | - | 2020-08-01 | Accessories updated, “General data” table extended (flammability rating, freedom from halogen, other resistance), “Dimensions – lower side” illustration added |
| 03 | - | - | 2023-09-21 | Product designation changed to “Smart Ethernet Box” |
| 04 | 21 | 111 | 2025-05-14 | New housing with modified cable gland, removable splice tray, and flange plate: dimensional drawings updated, “Housing description” section added |