



9203mmP01

Desigo™ TRA

Room automation stations PXC3.E7...

- Modular, programmable room automation stations for HVAC, lighting, and shading.
- BACnet / IP communications; BACnet profile ASC (BTL label).
- Island bus to connect TX-I/O modules with any data point mix (including bus supply).
- KNX PL-Link peripheral bus to connect sensors, actors and room units (including bus supply).
- DALI bus to connect ballasts (including bus supply) (PXC3...A types only).
- Connection of individual devices with KNX S-Mode via KNX PL-Link.
- Ethernet switch for communication and tool connection.
- USB Device interface.
- Operating voltage AC 24 V.
- Mounting on standard mounting rail.

Use

Starting with Desigo V5, PXC3 series room automation stations with Total Room Automation applications (TRA) can be used for buildings with more sophisticated requirements on functionality and flexibility. TRA is used when several disciplines (HVAC, lighting, shading) are combined to form one total solution and when total flexibility is required. TRA is perfect for solutions optimizing energy (class A) without loss of comfort.

Functions

Control of several rooms

A PXC3 series room automation station can assume control for multiple rooms.

These freely programmable room automation stations provide the infrastructure to provide and process system- and application-specific functions.

Communication

- The room automation stations have a 2-port Ethernet switch to support for low-cost cabling via line topology.
- A USB Device port is available for service and commissioning.
- TX-I/O modules connected directly to the PXC3 allow for direct connection of field devices. This offers maximum flexibility.
- The KNX PL-Link peripheral bus supports room operator units, sensors, and actuating devices. Plug & play allows for connecting selected Siemens field devices to the KNX PL-Link bus (devices with the KNX PL-Link logo). The KNX PL-Link bus supports integration of commercially available devices with KNX S-Mode (requires ETS engineering).
- The DALI bus (with PXC3...A types) supports lighting control. Commercially available DALI EBGs (electronic ballasts) can be connected.

Type summary: Room automation stations

| Product No. Stock No. | Function | BACnet/IP | KNX PL-Link bus | TX-I/O modules | DALI bus |
|---------------------------------|---|--------------|-----------------------|---------------------------------|----------------------------|
| PXC3.E72 S55376-C100 | typically 4 rooms typically 8 room segments *) | 2 interfaces | max. 64 devices | max. 72 physical I/O points | -- |
| PXC3.E72A S55376-C101 | typically 4 rooms typically 8 room segments *) | 2 interfaces | max. 64 devices | max. 72 physical I/O points | max. 64 ballasts **) |
| PXC3.E75 S55376-C102 | typically 8 rooms typically 16 room segments *) | 2 interfaces | max. 64 devices | max. 200 physical I/O points | -- |
| PXC3.E75A S55376-C103 | typically 8 rooms typically 16 room segments *) | 2 interfaces | max. 64 devices | max. 200 physical I/O points | max. 64 ballasts **) |

*) Architectural building grid (also called room axis)

***) Commercially available DALI -ballasts with a DALI address

Equipment combinations

PXC3 series room automation stations can be operated with **TX-I/O** devices and devices with **KNX PL-Link**.

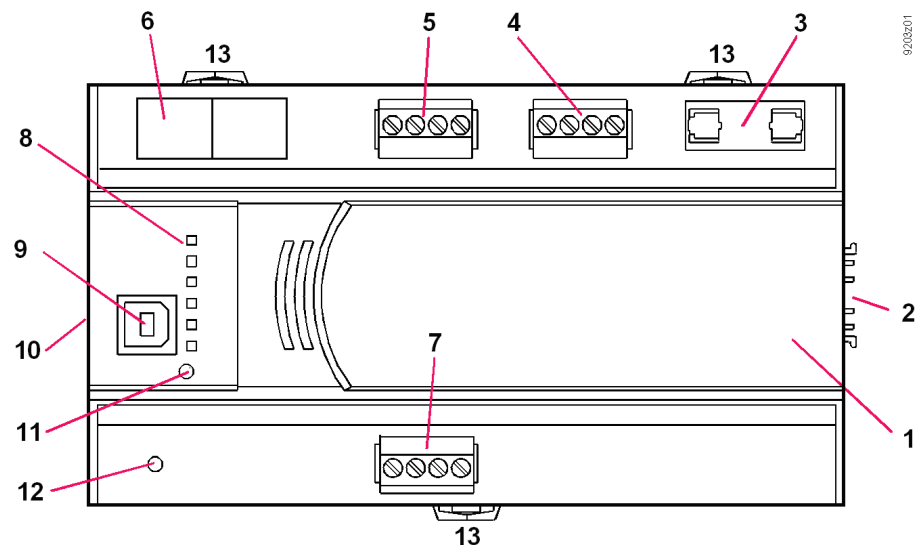
DALI support: see table below.

| Peripheral devices DALI (PXC3...A types only) | DALI Device Type | Supported |
|---|------------------|-----------|
| Fluorescent Lamps | 0 | Yes |
| Switching Function | 7 | Yes |
| Self-contained Emergency Lighting | 1 | No |
| Low Voltage Halogen Lamps | 3 | Partly *) |
| Conversion digital into D.C. Voltage | 5 | Partly *) |
| Incandescent Lamps | 4 | No |
| HID Discharge Lamps | 2 | No |
| LED Modules | 6 | Partly *) |
| Colour Control | 8 | No |
| Sequencer | 9 | No |
| Optical Control | 10 | No |

*) Partly supported means that basic functions are supported like with type 0, but no further type specific functions.

Mechanical design

The compact build allows for mounting the devices on a standard mounting rail.



- 1 Plastic housing
- 2 Island bus plug connection
- 3 T 10 A fuse for AC 24 V peripheral supply via island bus
- 4 Plug-in terminal block (operating voltage)
- 5 Plug-in terminal block KNX PL-Link
- 6 2-port Ethernet switch (with 2 LEDs per port for display purposes)
- 7 DALI bus (only active in PXC3...A types)
- 8 LED display for device and system status
- 9 USB Device interface
- 10 Interface for extension modules
- 11 Service pin
- 12 Service pin DALI (only in PXC3...A types)
- 13 Slider for mounting on DIN rail

Power supply

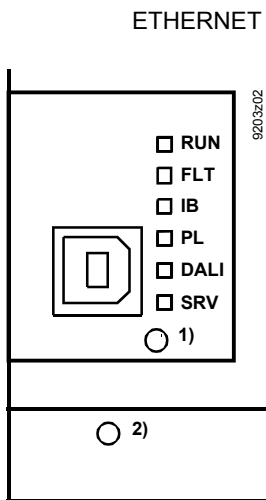
The bus supplies for island bus, KNX PL-Link and DALI are integrated in the room automation station. They are switched off automatically as long as no device is connected to the respective bus in ABT.

For better reliability of the room automation station, the bus supplies and the AC 24 V outlets are independent from the room automations station's own supply.

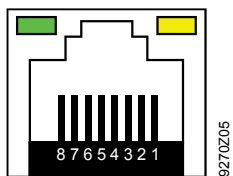
KNX PL-Link supply: The internal KNX PL-Link supply must not be operated in parallel with an external supply. It must be switched off manually in the ABT (KNX PL-Link rail properties) when using an external supply. This is typically the case if the devices connected to the KNX PL-Link consume more than the 160 mA available from the internal supply. See TRA installation guide CM111043 for details.

Island bus supply: The internal bus supplies can be reinforced by external power supply modules. See TRA installation guide CM111043 for details. An additional TXS1.12F10 supply module must be switched on and off at the same time as the room automation station. Otherwise, DC 24 V island bus supply may sag, resulting in alarms.

LED indicators

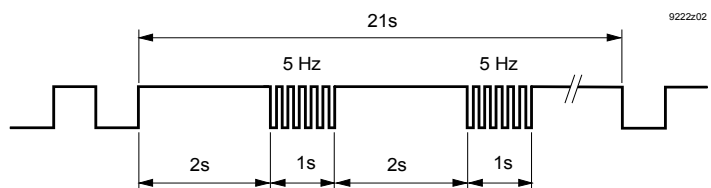


- 1) Service pin
- 2) Service pin DALI (only PXC3...A types)



| LED | Color | Activity | Function |
|------------------------|--------|---|--|
| RUN | Green | Continuously ON Continuously OFF Flashing | Device ready to operate. No supply for device. Start-up or program halted |
| FLT | Red | Continuously OFF Continuously ON Rapid flashing | OK. HW or SW error. Wrong or corrupted application. |
| IB | Yellow | Continuously ON Flashing Continuously OFF | OK. Island bus communication. No modules connected TX-I/O modules not configured or communication fault. |
| PL | Yellow | Continuously ON Flashing Continuously OFF | OK. KNX PL-Link communication. KNX PL-Link not used or communication fault. |
| DALI | Yellow | Continuously ON Flashing Continuously OFF | OK (only PXC3...A types) DALI bus communication (only PXC3...A types). DALI not used or communication fault. |
| SVC | Red | Continuously OFF Blinking Blinking per wink command*) | OK. No application loaded. Physical identification of the room automation station. |
| Ether- net 1 / 2 | Green | Continuously ON Continuously OFF Flashing | Link active Link inactive Network activity |
| | Yellow | Continuously ON Continuously OFF | Link 100 Mbps Link 10 Mbps |

*) Wink command pattern:



Service pins

| Pin | Action | Description |
|-----|---------------------------|--|
| 1) | Short press | Physical identification of the room automation station in the network (Ethernet). |
| 2) | Short press Long press | DALI test: All ballasts On or Off. DALI test: Start / stop the following function: "All ballasts blink (2 s On, 2 s Off)". |

Product documentation

- Engineering and commissioning: See ABT online help.
- Installation: See installation manual Desigo TRA, CM111043.

Engineering

Caution! 

- Each device has a unique identification number for commissioning support. It is also located on the removable barcode label: See the ABT online help for the associated workflow.
- Each device has a unique serial number.
- Cable length, topology, etc.: See installation manual Desigo TRA, CM111043.
- The cable insulation must always comply with the present rated voltage.
- When the supply voltage of the room automation station is transited to external devices, the cable **cross section** must always correspond to the rated current of the safety circuit breaking device. Observe local regulations in any case.

Mounting

The room automation stations can be snapped onto a standard mounting rail.

The automation station has pluggable screw terminal blocks to connect the AC 24 V supply, the AC 24 V outlets, the KNX PL-Link, and the DALI bus.

The TX-I/O modules are snapped onto the mounting rail on the right side of the room automation station. The island bus is created automatically in this process.

Mounting position

| Recommended | With restrictions *) |
|--|--|
| <ul style="list-style-type: none">• Wall, horizontal from left to right or from right to left• Wall, vertical from bottom to top. | <ul style="list-style-type: none">• Over head.• On a horizontal surface.• Wall, vertical from top to bottom. |
| Ambient temperature -5...50 °C | Ambient temperature -5...45 °C *) |

*) 50°C is admissible if the bus supplies use max. 2/3 of the specified load: KNX PL-Link 105mA, DALI 85mA and island bus 400mA.

Note **You must ensure, however, that sufficient ventilation is available to maintain the permissible ambient temperature for the devices (inside the cabinet / installation box). Outside, the temperature should be 10 K lower.**

Installation



Note!

See installation manual Desigo TRA, CM111043.

Island bus Polarity: If a TXS1.12F10 supply module is connected to output \uparrow 24 V, do not exchange \sim and \perp .

The devices are not damaged but island bus communication will not work.

Commissioning

In order to prevent equipment damage and/or personal injuries always follow local safety regulations and the required safety standards.

See the help file of the Setup and service assistant (SSA) for commissioning details.

Interfaces for tool access

Access for the tools to the room automation station is provided by the following interfaces on the room automation station

- Ethernet switch (BACnet/IP).
- USB Device interface (serves for FW download and generally for access to the entire LAN. For details see SSA (Setup & Service Assistant) Commissioning, CA111050).


Pause / restart of the application

The ABT supports stop / pause / resume of the application:

- HALT / RUN, e.g. to debug the code.
- STOP / RUN for a restart of the application.

Technical data

| | | |
|--|--|---|
| Operating voltage (24V \sim , \perp) | Safety extra-low voltage SELV or protection by extra-low voltage PELV Half-wave load | AC 24 V -15 % / +20% 48...63 Hz Symmetric |
| Power consumption | Max. permissible input current AC 24 V (through terminals 5 and 6) | Total max. 10 A (Ext. fusing compulsory: max. T 10 A melting fuse or max.C 10 A circuit breaker) |
| | Base load (without loading by modules and field devices) | 8 VA / 0.33 A |
| | Island bus supply DC 24 V / max. 600 mA | 30 VA / 1.25 A |
| | KNX PL-Link supply DC 29 V / max. 160 mA *) | 12 VA / 0.50 A |
| | *) The bus supply can be switched off manually via ABT if not used. Factory setting: "Auto detection" | |
| | DALI supply DC 16 V / max. 128 mA | 9 VA / 0.37 A |
| | Transit power AC 24 V | |
| | TX-IO: AC 24V / 6 A (island bus) | 144 VA / 6 A |
| | KNX PL-Link: AC 24V / 2 A (terminals 3, 4) | 48 VA / 2 A |
| | AC 24 V / 6 A (terminals 7 and 8, for additional AV 24 V consumers) | 144 VA / 6 A (only if the sum of 10 A at terminals 5 and 6 is not exceeded) |

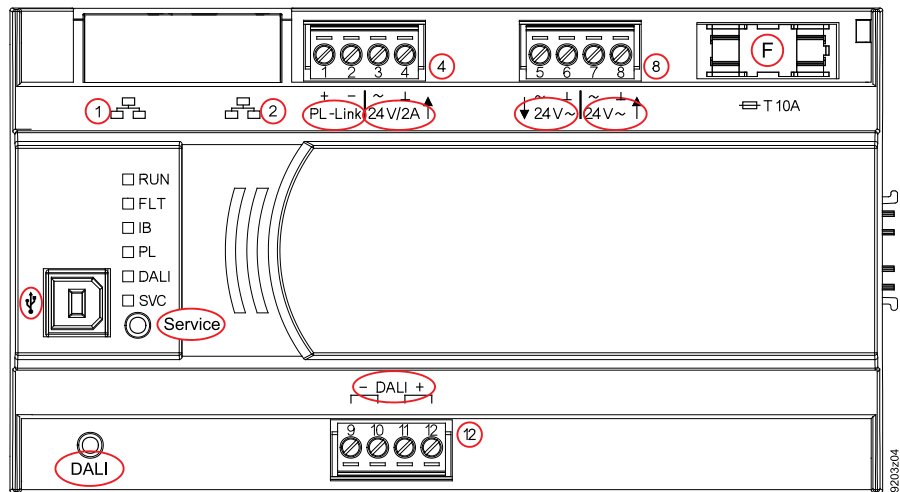
| | | |
|---|--|---|
| Fusing of the supply outputs for field supply | AC 24 V / 2 A \uparrow (KNX PL-Link, terminals 3 and 4) AC 24 V \uparrow (terminals 7 and 8) Island bus conductor V~ | PTC resistor, short-circuit proof No internal fusing T 10A fuse (slow, exchangeable) |
| Caution!  | | |
| Response to power / communication failure | <ul style="list-style-type: none"> • Energy reserve (supercap) to support real-time clock (3 days). • Start-up time after power failure: approx. 90 s | |
| Ethernet interface | Plug Interface type Bit rate Protocol | 2 x RJ45, screened 100BaseTX, IEEE 802.3 compatible 10 / 100 Mbps, autosensing BACnet over UDP/IP |
| USB interface | Plug Data rate (USB 1.1) Galvanic isolation of \perp Protective circuit against surges and over current | Type B (USB device) 12MBit/s No Yes (balancing currents are limited, also in the GND conductor) |
| Island bus interface | | |
| DC output | Nominal voltage Max. supply Parallel switchable with 3 supply modules TXS1.12F10 Short-circuit proof, overload-proof | DC 24V 600 mA (sufficient for typically 8 TX-I/O modules) For details, see: TX-I/O planning and installation manual, CM110562) Self-resetting |
| Communications | Interface type Protection | Siemens specific protocol Short-circuit proof |
| Island bus connector on side | Protection against faulty wiring with AC 24 V | No electric protection. Use the terminal cover. |
| KNX PL-Link interface | Interface type Transceiver Baud rate Bus power supply <i>Note: for devices with higher power requirement, use the output AC 24 V 2 A, see above.</i> Protection | KNX, galvanically separated TP-UART 9.6 kbps 160 mA for max 32 devices with KNX PL-Link. Default: Auto detection; must be turned off via ABT if external bus supply is used. Up to 64 devices with KNX PL-Link can be operated using one or two external bus supplies. Short-circuit proof Protection against miswiring up to AC 24 V |
| DALI interface (only PXC3....A types) | Interface type Baud rate Insulation strength Bus power supply Protection | DALI, galvanically separated 1.2 kBit/s Reinforced insulation for 230 V (1.5 kV) Suitable for installations in overvoltage category III (4 kV). 128 mA for max 64 DALI devices Short-circuit proof Upon power-on, AC 230 V bus voltage is recognized on terminals DA+ and DA-. |
| | | NO protection against miswiring with AC 24 V or AC 230 V: Voltage between DA+ / DA+ or between DA- / DA- will destroy the DALI PCB! |
| Wiring, topology, cable length | See installation manual TRA, CM111043. | |

| | | | |
|---------------------------------------|--|---|----------------------|
| Connection terminals, plug-in | Construction type | Pluggable screw terminals | |
| | Copper-wire or Cu-strand with wire end sleeve | 1 x 0.6 mm dia. to 2.5 mm ² or 2 x 0.6 mm dia. to 1,0 mm ² | |
| | Copper-strand without wire end sleeve | 1 x 0.6 mm dia. to 2.5 mm ² or 2 x 0.6 mmØ to 1.5 mm ² | |
| | Screwdriver | Slot screws Screwdriver, size 1 | |
| | Max. tightening torque | 0.6 Nm | |
| Cable lengths and wire cross sections | See Desigo TRA installation guide, CM111043 | | |
| Assignment as per EN 60730 | Operation of automatic controller | Type 1 | |
| | Degree of pollution | | |
| | Construction type | 2 Protection class III | |
| Housing protection standard | Protection type as per EN 60529 | | |
| | Front parts in the DIN section | IP30 | |
| | Terminal part | IP20 | |
| Ambient conditions | Operation | As per IEC 60721-3-3 | |
| | Climatic conditions | Class 3K5 | |
| | Temperature | -5 ... 50 / 45 °C (see page 5) | |
| | Humidity | 5...95% r.h. | |
| | Mechanical conditions | Class 3M2 | |
| | Transport | As per IEC 60721-3-2 | |
| | Climatic conditions | Class 2K3 | |
| | Temperature | -25...70 °C | |
| | Humidity | 5...95% r.h. | |
| | Mechanical conditions | Class 2M2 | |
| Standards, directives and approvals | Product safety | | |
| | Automatic electrical controls devices for household and similar use | EN 60730-1 | |
| | General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 3: Electrical safety requirements | EN 50491-3 | |
| | Electromagnetic compatibility | | |
| | Immunity (industry & residential) | EN 60730-1 | |
| | Emissions (residential) | EN 60730-1 | |
| | General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 3: Electrical safety requirements | EN 50491-5-3 | |
| | CE conformity | | |
| | Electromagnetic compatibility | 2004/108/EC | |
| | RoHS Directive | 2011/65/EU | |
| | C-tick conformity (EMC) | AS/NZS 61000-6-3. | |
| | UL approbation | UL 916 | |
| | Satisfies the requirements for eu.bac certification. | | |
| | See product list on: http://www.eubacert.org/licences-by-criteria.asp | | |
| | License | Application | Control accuracy [K] |
| | 212196 | Fan-Coil 4-pipe Heating / Cooling | 0.3 / 0.1 |



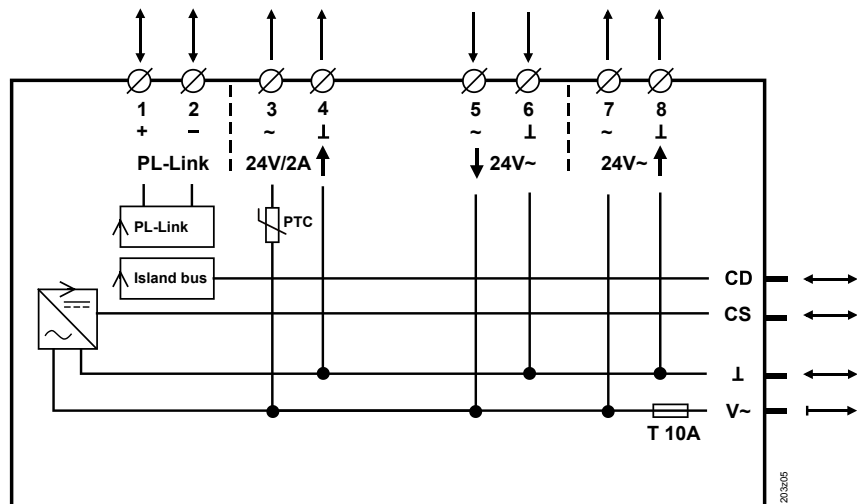
| | | |
|-----------------------------|--|---|
| Environmental compatibility | The product environmental declaration CM1E9203 contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal) | ISO 14001 (Environment) ISO 9001 (Quality) |
| Color | Housing | RAL 7035 (light-gray) |
| Dimensions | Housing as per DIN 43 880, see dimensions | |
| Weight | With / without packaging | 373g / 349g |

Connection terminals and interfaces



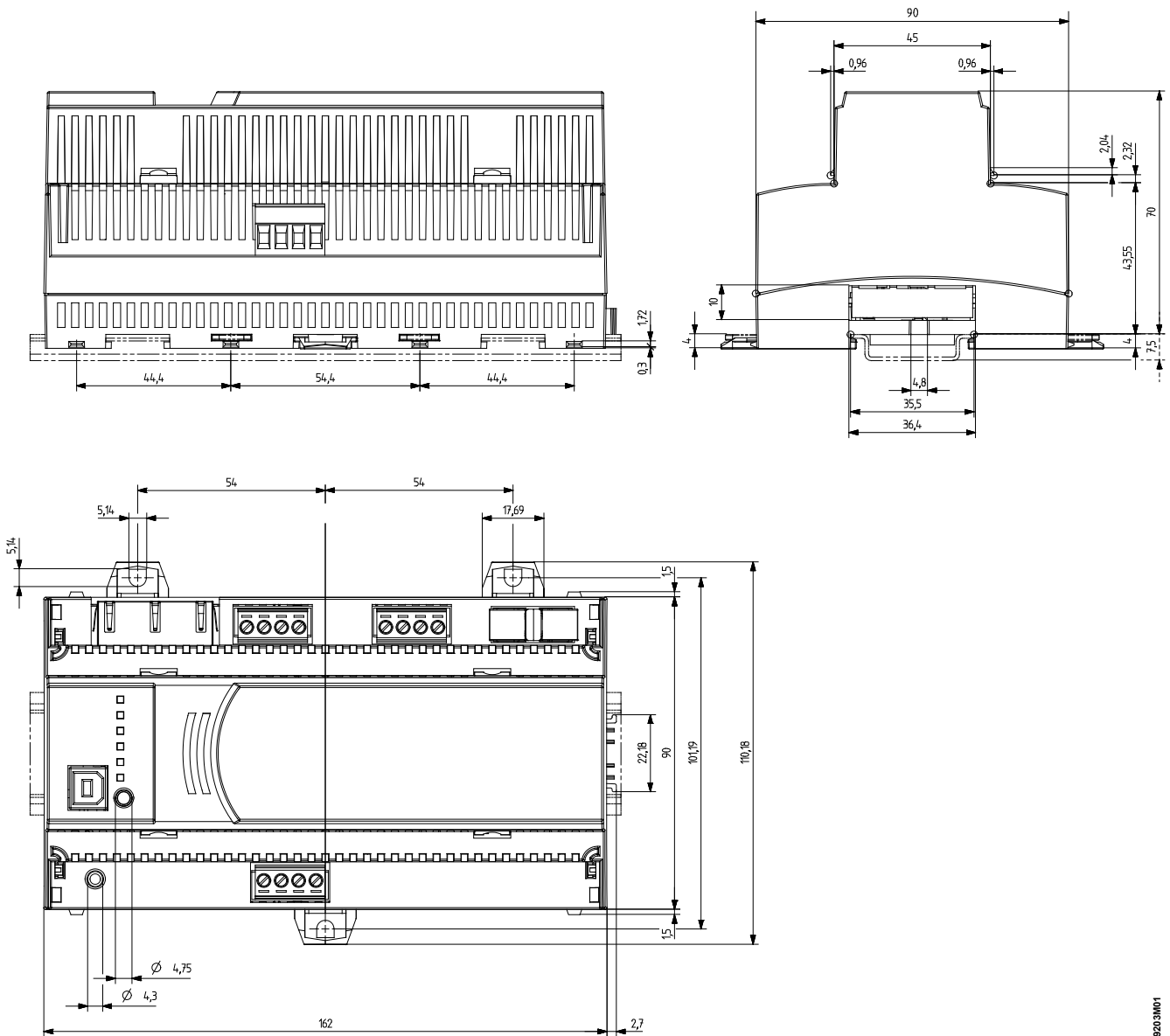
| | | |
|---------------|-----------|---|
| 1, 2 | | 2 x RJ45 interface for Ethernet (2-port Ethernet switch) |
| 4 KNX PL-Link | +, - | KNX PL-Link connection |
| 4 24 V / 2A ↑ | ~, ⊥, 2 A | Output AC 24 V for externally supplied devices with KNX PL-Link Short-circuit proof with PTC resistor |
| 8 ↓ 24 V~ | ~, ⊥ | Operating voltage AC 24 V |
| 8 24 V ↑ | ~, ⊥, 6 A | Output AC 24 V to supply other PXC3... room automation stations (internally connected to ↓ 24 V on pcb – no internal fusing) |
| F | | T 10 A fuse for island bus conductor V~ |
| | USB | USB interface |
| 12 | DALI | DALI bus connection (only for PXC3...A types) |
| Service | | Service pin Ethernet |
| DALI | | DALI test (only for PXC3...A types) |

Basic circuit diagram (connections AC 24 V, fusing)



Dimensions

All dimensions in mm



9203M01

Disposal



The devices are considered electronics devices for disposal in terms of European Directive 2002/96/EC (WEEE) and may not be disposed of as domestic waste.

Dispose of the devices via the proper channels.

Follow all local and currently applicable laws and regulations.