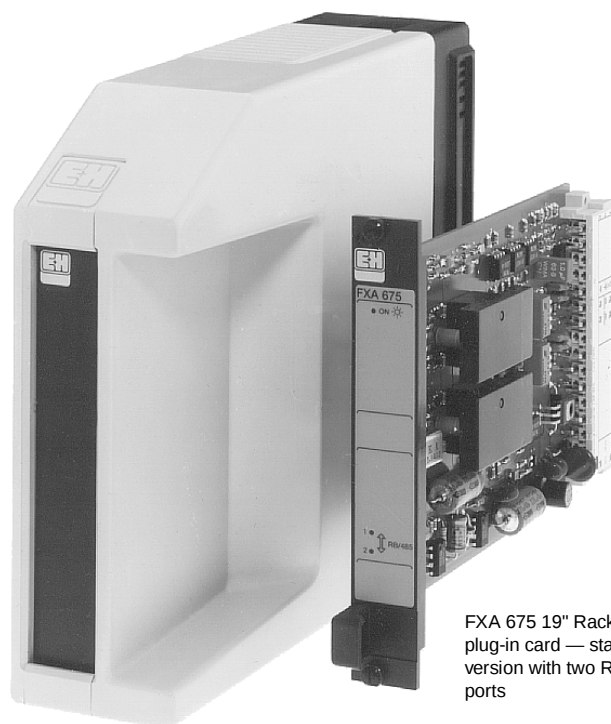


Field Communication

FXA 675 Rackbus RS-485 Interface

monorack II RS-485

For distributed control of Commutec transmitters and field transmitters with RS-485 interface



FXA 675 19" Racksyst
plug-in card — standard
version with two RS-485
ports

Monorack II RS-485
comprises an interface
card in a Monorack II
housing with a blind
front panel

Application

The FXA 675 interface is a 4 HP, 19" Racksyst plug-in card. It converts Rackbus signals to Rackbus RS-485 signals and vice versa. Two versions are available:

- Standard version with two RS-485 ports
- Single port version in Monorack housing

The ports are electrically isolated from the rest of the circuitry and each other. Two LEDs on the front panel light when data is being transferred over the corresponding bus.

Features and Benefits

- Enables central display and control of level, pressure, flow, bulk flow, temperature and analysis measurements
- Provides reliable communication over distances up to 1200 m (3900 ft)
- Connects up to 25 field transmitters with Rackbus RS-485 interface per channel to a master rack containing a gateway — up to 10 transmitters in hazardous areas (EEx e/EEx d)
- Connects a master rack to a secondary rack
- Connects a bus segment to a master rack

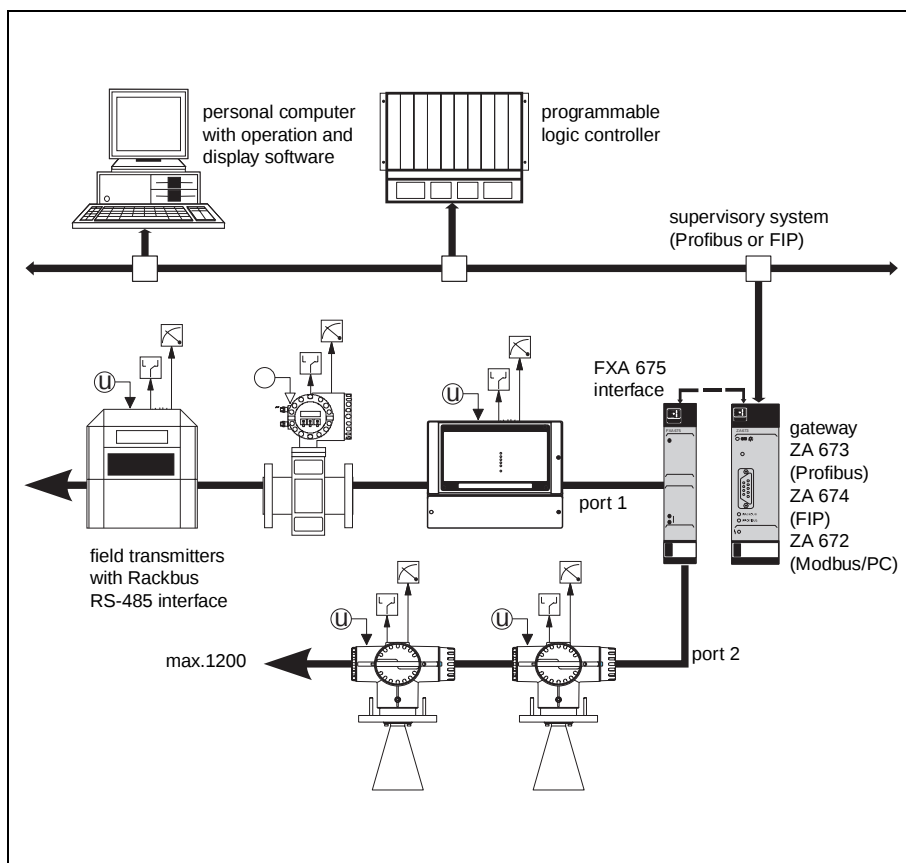
Endress + Hauser

Nothing beats know-how

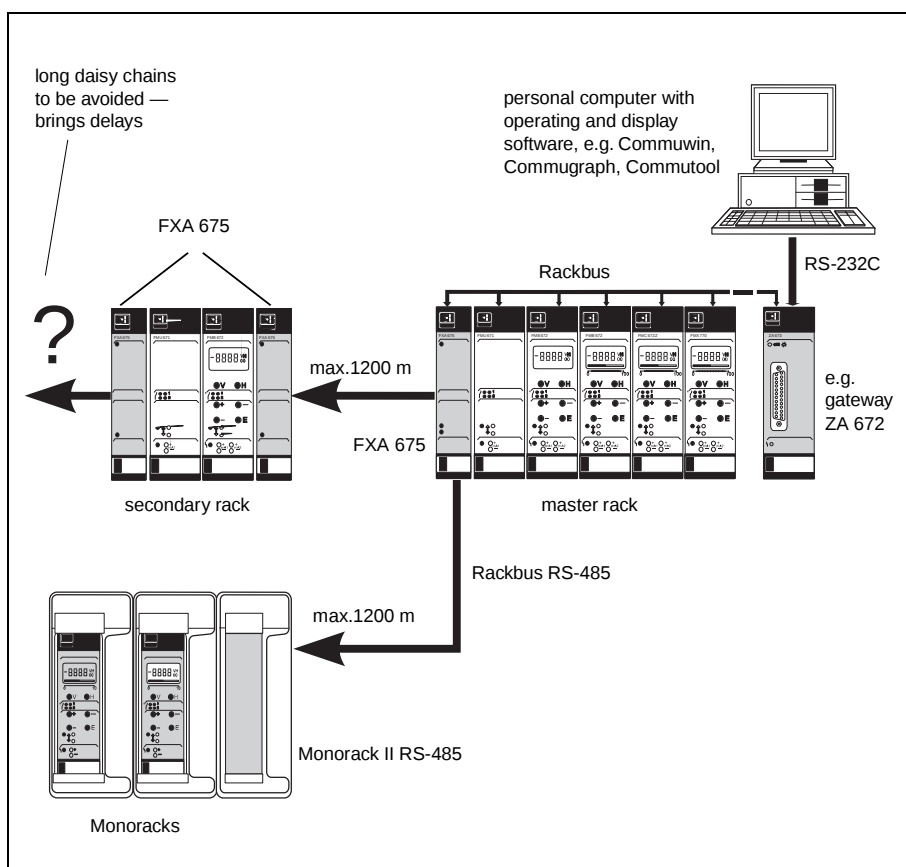


Measuring System

Connection to a supervisory system via the FXA 675 interface and a ZA... gateway — the field transmitters are equipped with a Rackbus RS-485 interface

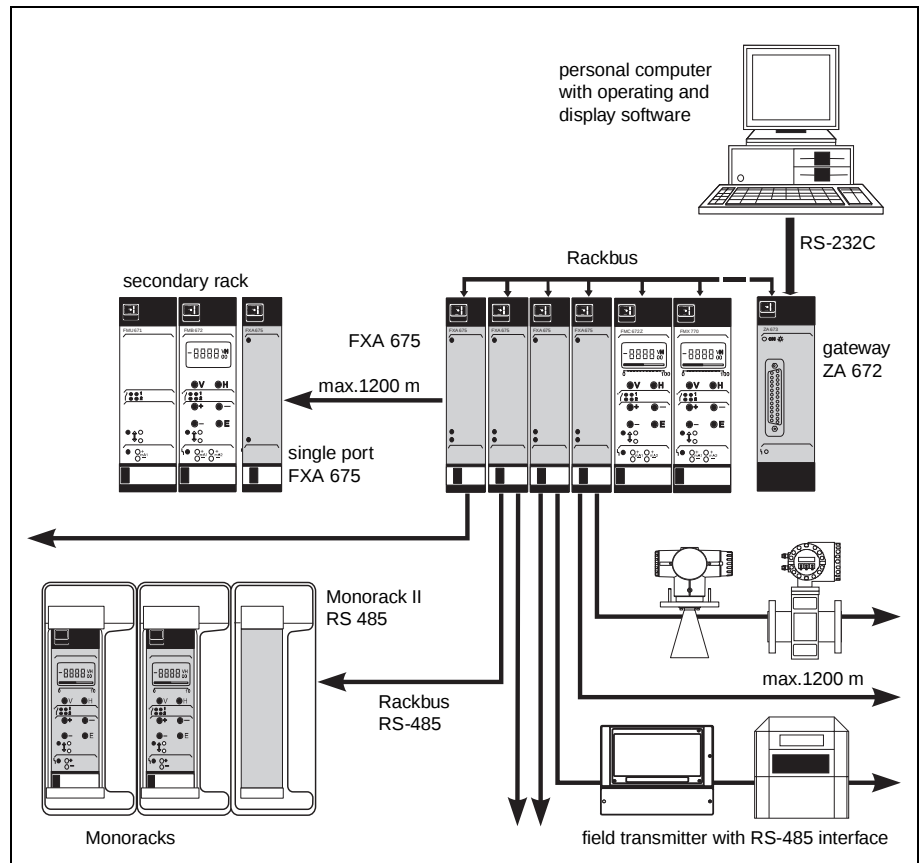


Connection of two subracks to a master rack via the FXA 675 interface — the distance from the master rack can be up to 1200 m



Measuring System

Star topology: Several FXA interfaces in the master rack provide optimum segmentation of the bus. The maximum line length of each segment is 1200 m



System Components

The FXA 675 serves primarily as a link between individual or groups of transmitters and a master rack. Depending upon the topology, the measuring system may comprise:

- One or more FXA 675 interfaces in the master rack
- Up to 25 field transmitters (10 in hazardous areas) with Rackbus RS-485 interface per port, e.g. Prosonic, Micropilot, Promag, Promass
- FXA 675 interface in the secondary rack with Commutec transmitters, e.g. Nivotester FMU, Commutec PMX, Promag II
- Monorack II RS-485 (single port FXA 675) with Commutec transmitters in Monorack field housing
- ZA gateway in the master rack for connection to a personal computer, programmable logic controller or supervisory system
- If required, operation and display software, e.g. Commuwin, Commugraph and Commutool.

Up to 64 field and Commutec transmitters can be connected to a ZA gateway.

Daisy Chains

Although daisy chains — serial linking of several secondary racks to one port — are feasible, there is a delay of approximately 60 μ s at each interface. The cumulative delay at the interfaces may cause time-out malfunctions at the ZA gateway.

Segmentation

For extensive buses with many stations it is recommended that the bus be split into segments. This enables any faulty instrument to be located quickly.

Direct Connection to Personal Computers

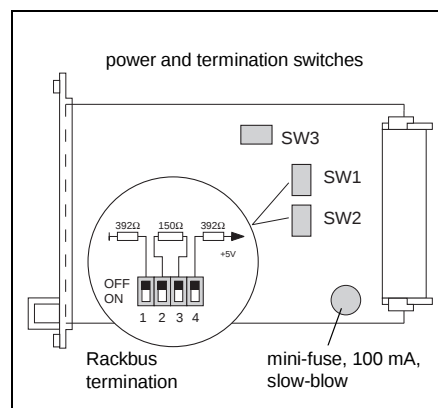
Field transmitters with Rackbus RS-485 interface can also be connected directly to a personal computer without the use of the FXA 675 interface and ZA gateway by using a RS-485 interface card (Part No. 016399-0000) or RS-485/RS-232C converter (230 V: Part No. 016398-0000 115 V: Part No. 016398-0050)

Installation

Configuration FXA 675

Each of the two channels can be regarded as a separate bus which may be up to 1200 m in length. Two DIP-switches, SW 1 for channel 1 and SW 2 for channel 2, set the bus power and terminal resistance.

- The interface in the master rack has bus power and terminal resistance switched on (ON, ON, ON, ON)
- An interface in a secondary rack has bus power switched off and terminal resistance switched on (OFF, ON, ON, OFF)
- The switch for an unused channel is set to ON, ON, ON, ON
- Switch SW 3 must be switched on if less than 32 Commutec transmitters are connected to the secondary Rackbus.



Side view of two-port FXA 675 card showing position of configuration elements

Configuration Monorack II RS-485

The Monorack II RS-485 is usually used in secondary racks.

- The bus power must be switched off and terminal resistance switched on (SW 1 = OFF, ON, ON, OFF)
- SW 3 closed for < 32 Commutecs open for > 32 Commutecs.

Mounting FXA 675

Racksyst plug-in cards must be installed outside hazardous areas in a rack or protective housing, e.g.:

- 19" rack (84 HP wide) for mounting in the control room
- Half 19", 42 HP wide, field housing with protection IP 65.

Mounting Monorack II RS-485

The Monorack must be installed in a safe area and the site chosen must provide an operating temperature of

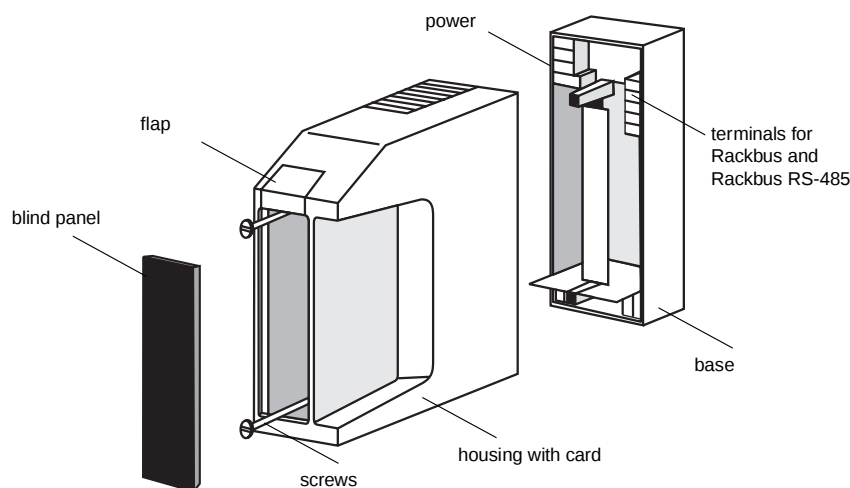
- -20 °C...+60 °C for one Monorack
- -20 °C...+50 °C for row mounting

Drilling plans for single mounting are included in the technical data.

- Should the Monorack be mounted at an exposed site, then it is recommended that it is installed in a protective housing, degree of protection IP 55. Details can be found in TI 099F/00/en.

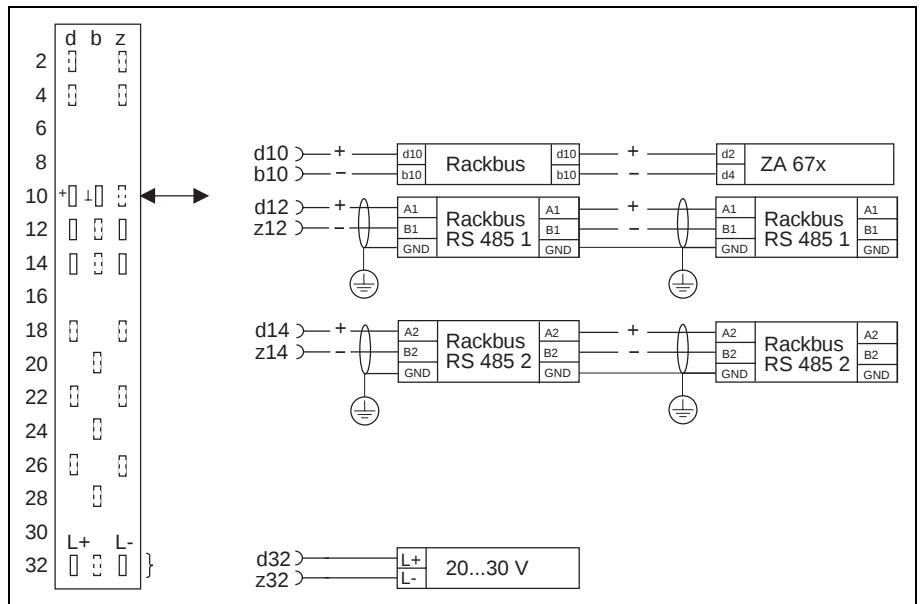
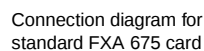


Field housing



Assembling the Monorack II RS-485 unit

Electrical Connection



Bus Wiring

For the bus lines use screened, twisted pairs with typical kilometre values $L' = 270 \mu\text{H}$, $C1' = 88 \text{ nF}$, $R' = 43 \Omega$, $C1s' = 90 \text{ nF}$.

- The maximum line length per port is 1200 m (3900 ft)
- The bus screen must exhibit electrical continuity through the bus
- We recommend that the screen is grounded at every bus station — observe earth bonding requirements.

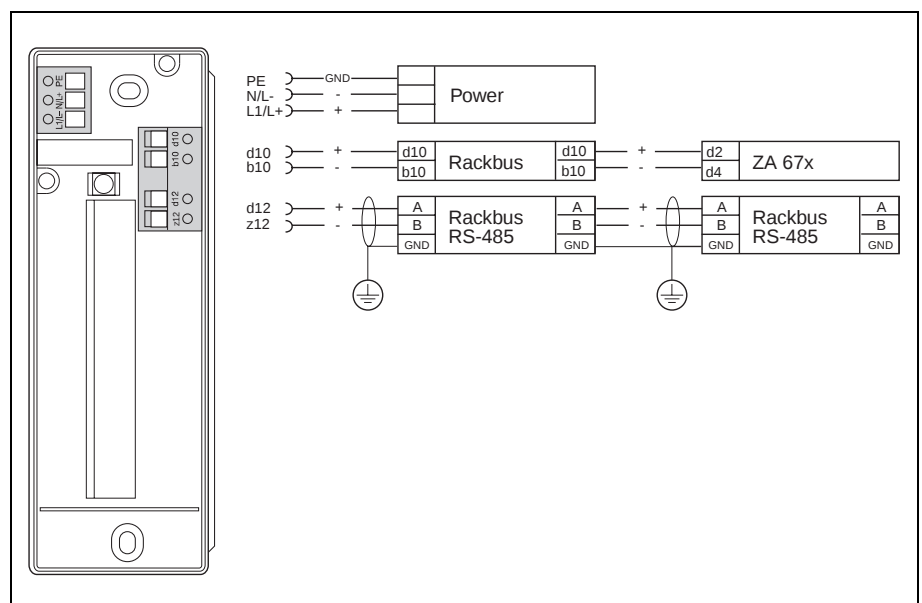
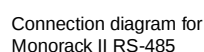
FXA 675 Interface

- Terminals d10 and b10 are for the Rackbus
- Terminals d12 — Data A, z12 — Data B and d14 — Data A, z14 — Data B are for the Rackbus RS-485 ports 1 and 2 respectively
- The bus screen must be grounded to the rack chassis which itself must be grounded

Monorack II RS-485

The bus and power terminals are located in the base of the Monorack housing:

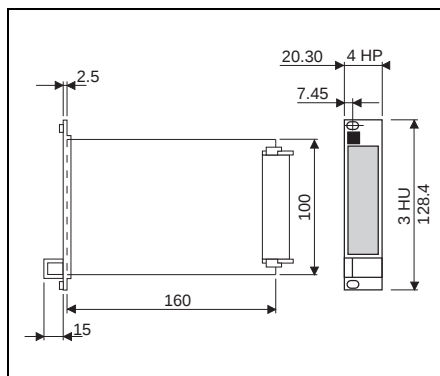
- Route the Rackbus leads from the other Commutecks in the Monorack assembly to the terminals d10 and b10.
- Route the Rackbus RS-485 leads from the FXA 675 card in the master rack as follows: d12: Data A; z12: Data B
- Ground bus screen
- Where several Monorack units are mounted compactly in groups, the housing power supplies can be interconnected by using the contacts supplied.



Technical Data

FXA 675 Interface

Dimensions FXA 675
interface card
1" = 25.4 mm



Construction

- Design: 19", 4 HP, Racksyst II* plug-in card to DIN 41 494 (Europa card)
- Front panel: black synthetic with blue field inlay, grip and markings
- Ingress protection (DIN 40 050): Front panel IP 20 Card IP 00
- Dimensions: see diagram
- Weight: approx. 0.14 kg
- Multipoint plug: conforming to DIN 41 612, Part 3, Type F (25-pole)
- Rack installation kit 25/2.

Environment

- Operating temperature: 0 °C...+70 °C
Storage temperature: -25 °C...+85 °C
- Climatic class to DN 40 040: KSE
- German Lloyd vibration test:
f = 2.0 Hz to 13.2 Hz; a = ± 1 mm
f = 13.2 Hz to 100 Hz; 0.7 g
- Electromagnetic compatibility to
EN 50 081-2 — Emission,
EN 50 082-2 — Immunity
and NAMUR draft recommendations
to 10 V/m

*Racksyst II cards cannot be installed in Monorack I housings

Electrical Connection

- Power supply:
24 V DC (20 V...30 V);
- residual ripple 2 Vpp, within tolerance
- Supply current: max. 70 mA
- Power consumption:
max. 2 W at 24 V, max. 2 W at 30 V
- Fuse: 100 mA slow-blow
- Protection against reverse polarity and overloading.

Signal Inputs and Outputs

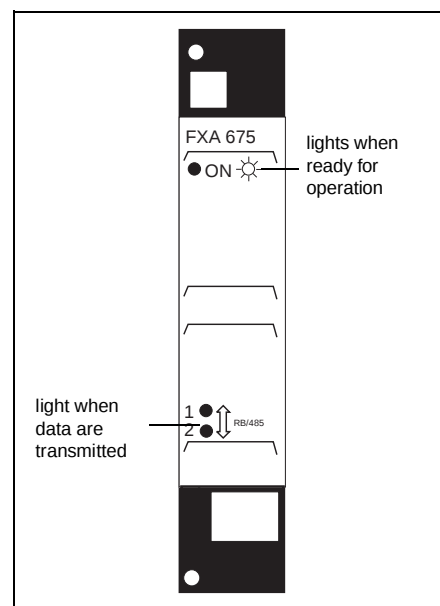
Electrically isolated from the rest of the circuitry.

- Rackbus interface
- Rackbus RS-485 interface with 2 ports
- Transmission Rate: 19.2 kBits/s
- Protocol: Rackbus
- Conversion delay: ca. 60 µs per interface
- Terminal resistance and bus power: selectable with 4 gang DIP switch.

Status Information

- LED ON lit: ready for operation
- LED 1 lit: communication on port 1
- LED 2 lit: communication on port 2.

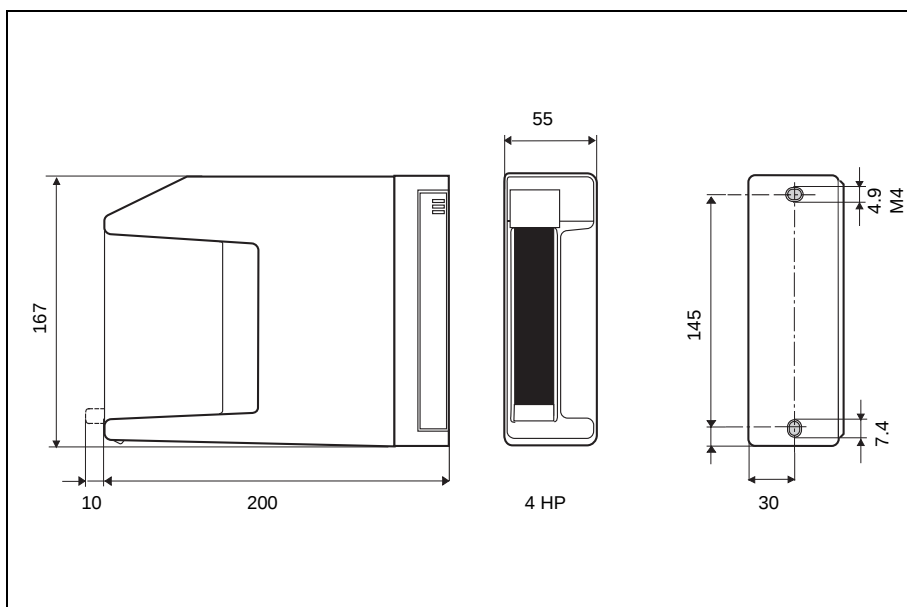
Front panel of FXA 675
interface card
the Monorack II RS-485
version has no display
elements



Technical Data

Monorack II RS-485

Dimensions and drill
holes for individual
mounting of Monorack II
RS-485
1" = 25.4 mm



Construction

- Mounting: housing for wall-mounting
- Housing: ABS, grey
- Base: ABS, black
- Card: built into housing, with blind panel
 - Weight: approx. 0.14 kg
- Protection type to DIN 40 050:
 - IP 40 mounted on flat wall
- Ambient temperature:
 - mounted singly or with 1 cm gap, nominal range: 0 °C...+60 °C
 - extreme range: -20 °C...+60 °C
 - row mounted: max. +50 °C
- Humidity:
 - Class KSE to DIN 40 040
- Weight:
 - with power pack and FXA card, ca. 0.94 kg

Electrical connection:

- Power supply: 3 terminals
- Input and output signals:
 - 4 pole terminal block
- Terminal size:
 - up to 4 mm² wire
 - up to 2.5 mm² (fine strand)
 - up to 2 x 1.5 mm² (fine strand)
- Cross connectors:
 - for power connection only, rating: ground max. 5 A, line max. 4 A per connection

Power Pack

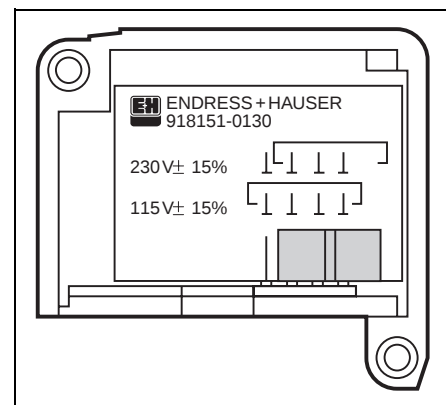
- 115/230 V AC ±15 %, 50/60 Hz or 100/200 V AC ±15 %, 50/60 Hz or 24/48 V AC ±15 %, 50/60 Hz or 16...60 V DC (If the permissible voltage range is exceeded, safe isolation can be guaranteed only with the use of a suitable external fuse) or 24 V DC external supply (without power pack)
- Secondary side: electrically isolated from the primary side
- Output voltage: ca. 21 V
- Output current: max. 165 mA
- Output power: max. 3.5 W
- Overload/short-circuit protection

Accessories (included):

- 3 coding strips
- 5 cross connectors
- 1 blue cable gland

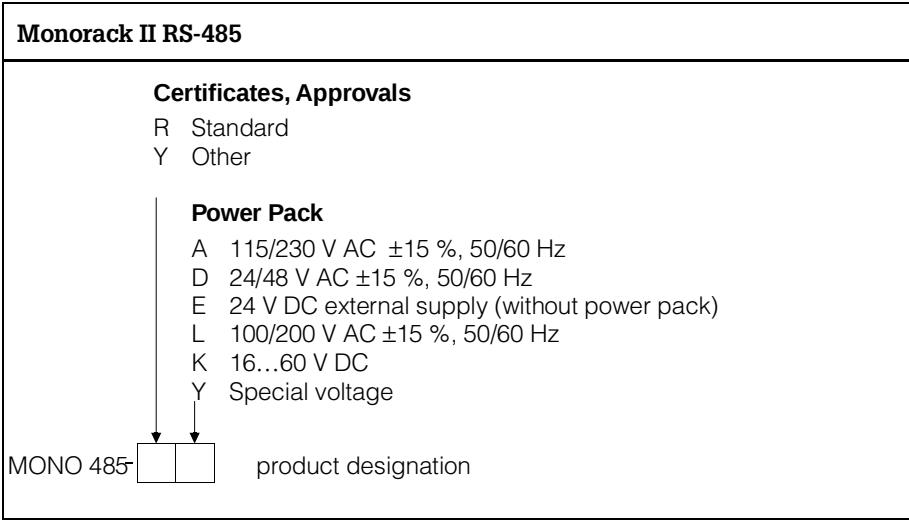
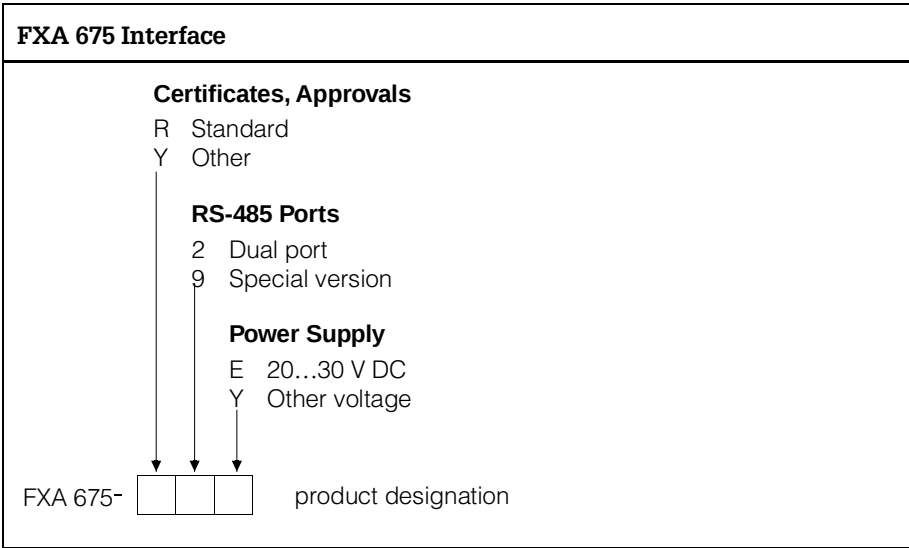
Certificates

- PTB No. Ex-84.B.2085 U



Voltage range selection
for AC power packs

Product Structure



Supplementary Documentation

- ☐ Rackbus
System Information SI 014F/00/e

☐ Rackbus RS-485
Operating Instructions BA 134F/00/e

☐ ZA 672 Modbus Gateway
Technical Information TI 148/00/en
- ☐ ZA 673 Profibus Gateway
Technical Information TI 162F/00/en

☐ ZA 674 FIP Gateway
Technical Information TI 167F/00/en

☐ Monorack II
Technical Information TI 183F/00/en

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