

# User Guide

Fieldbus Junction Box  
**FJB**





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# 1 Introduction

Vaisala K-PATENTS® Fieldbus Junction Box FJB is designed to make easier connections of Vaisala K-PATENTS instrumentations to Fieldbus and Industrial Ethernet through a Fieldbus converter. The Fieldbus Junction Box allows easy and safe device connections to the Modbus/TCP, Modbus RTU, Ethernet/IP networks, Profinet and Profibus.

The junction box is either in a polycarbonate or a stainless steel housing. There is also a package for DIN rail mounting (without field housing) for mounting in user's own control cabinet.

The IP67/Nema 4 protective housings of the fieldbus junction boxes are designed for wall mounting. They also withstand harsh industrial environments and prevent dust, water and moisture reaching the electrical connections.

**Note:** The converter can only send data. E.g. it is not possible to change the parameters through the converter.

 **Important:** This product shall not be used contrary to these user instructions provided by the manufacturer, or safe use of the product may be compromised.

## 1.1 Disposal

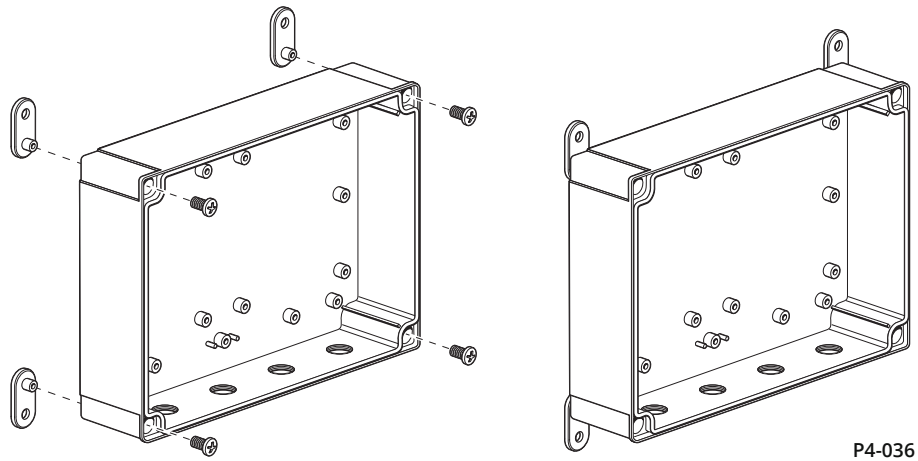
When wishing to dispose of an instrument or any parts thereof, please observe local and national regulations and requirements for the disposal of electrical and electronic equipment.



## 2 Mounting

The fieldbus junction box can be mounted either indoors or outdoors. It is mounted on a wall, preferably with easy access. Vaisala recommends that the junction box is protected from rain and dripping water.

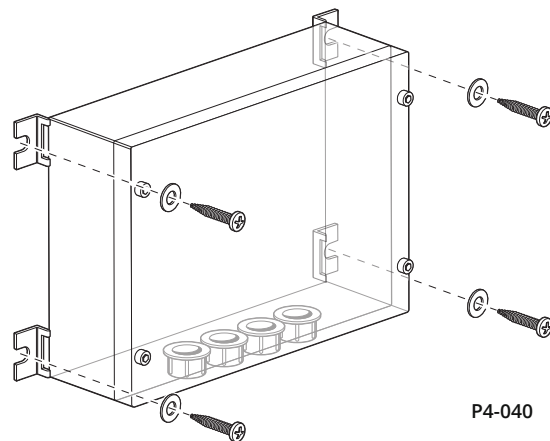
### 2.1 Wall mounting polycarbonate box (FJB-UN-PCE)



**Figure 2.1** Mounting the polycarbonate junction box (FJB-UN-PCE) on a wall

For the exact placement of the mounting feet, see Figure 5.2.

### 2.2 Wall mounting steel junction box (FJB-UN-SS)



**Figure 2.2** Mounting the steel junction box (FJB-UN-SS) on a wall

For the exact placement of the mounting screws, see Figure 5.3.

### 2.3 Mounting PR-10941 Terminal connection rail

PR-10941 fieldbus converter can be mounted on a DIN rail. For PR-10941 dimensions see Figure 5.4.

## 3 Connections

The Refractometer Converter helps to insert Vaisala K-PATENTS refractometers into Modbus/TCP, Modbus RTU, Ethernet/IP, Profinet and Profibus networks. The software runs on a MOXA UC-2112 computer PR-7112. The computer has two Ethernet connectors. The one marked as "LAN1" should be connected to a Modbus/TCP, Ethernet/IP or Profinet capable device (if used in one of these modes), the other one ("LAN2") to a Vaisala K-PATENTS refractometer (or, in case of PR-23, the DTR transmitter). If used in Modbus RTU or Profibus mode, serial port P1 should be connected to a Modbus RTU/Profibus network.

**Note:** Supported Baud rates in Profibus use: 9600, 19200, 45450, 93750, 187500.

The converter gets the data from the refractometer via UDP/IP communication and stores them in its Modbus registers and Ethernet/IP objects. On the "LAN1" port the converter acts as a Modbus/TCP server, Ethernet/IP adapter or Profinet device. On serial port P1 the converter acts as Modbus RTU or Profibus slave.

**Note:** Vaisala recommend the user to install an external power switch for the fieldbus junction box, see figures 3.1, 3.2, 3.3, 3.4 and 3.5. The power switch should be placed near the junction box in an easily accessible location.

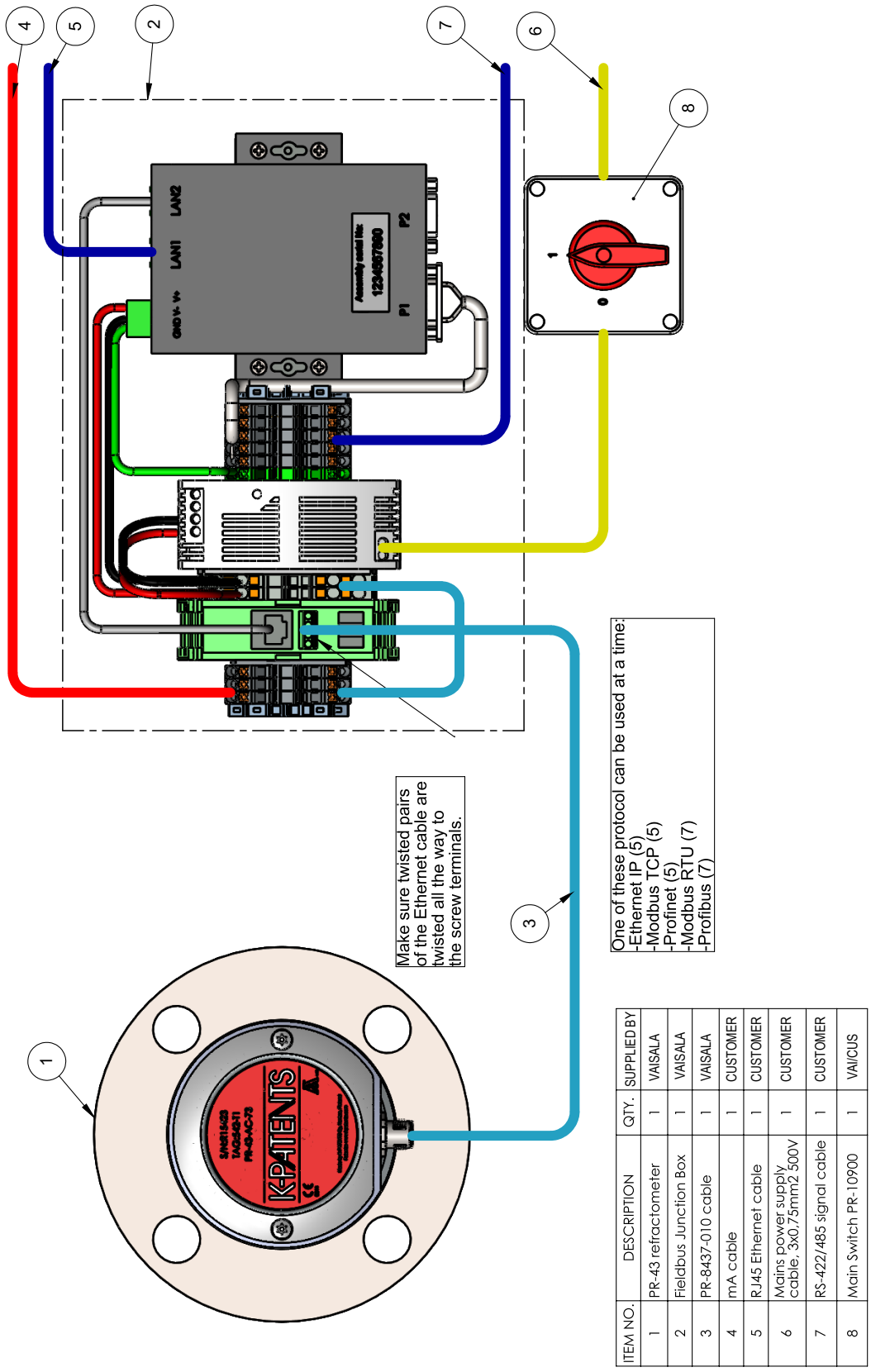


Figure 3.1 Connecting a PR-43 refractometer



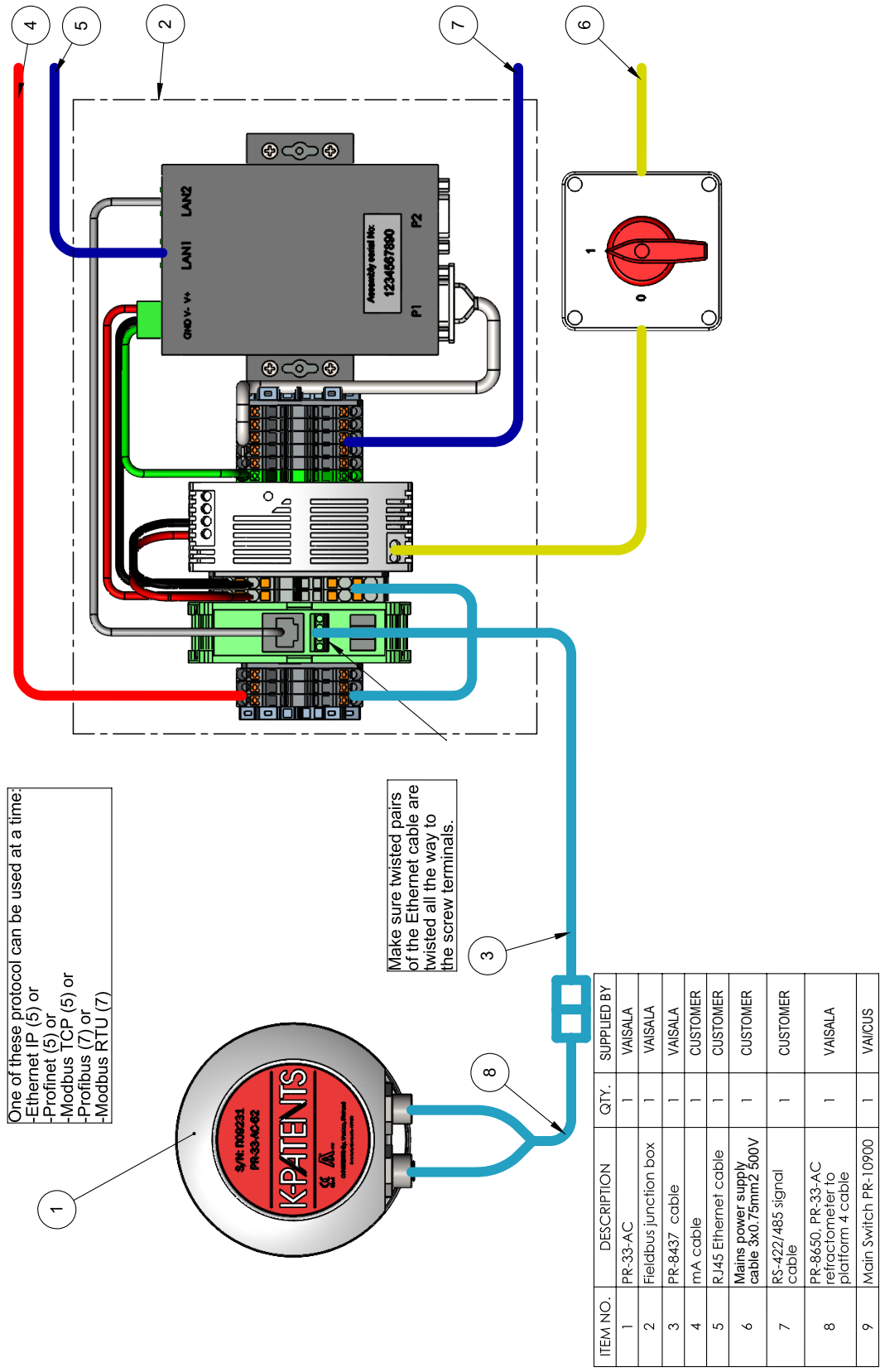


Figure 3.2 Connecting a PR-33 refractometer

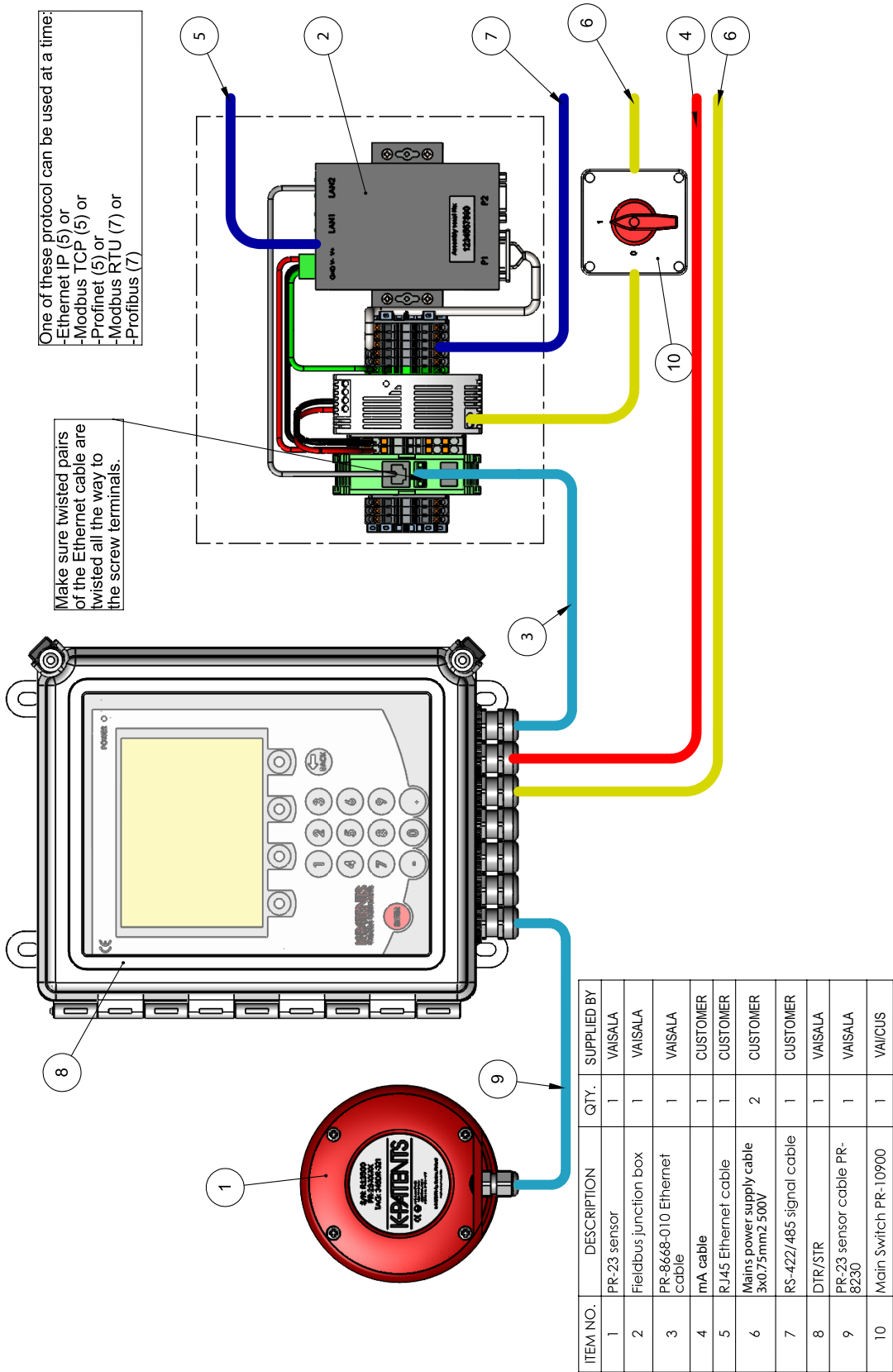


Figure 3.3 Connecting a PR-23 refractometer system

### 3.1 Electrical connections

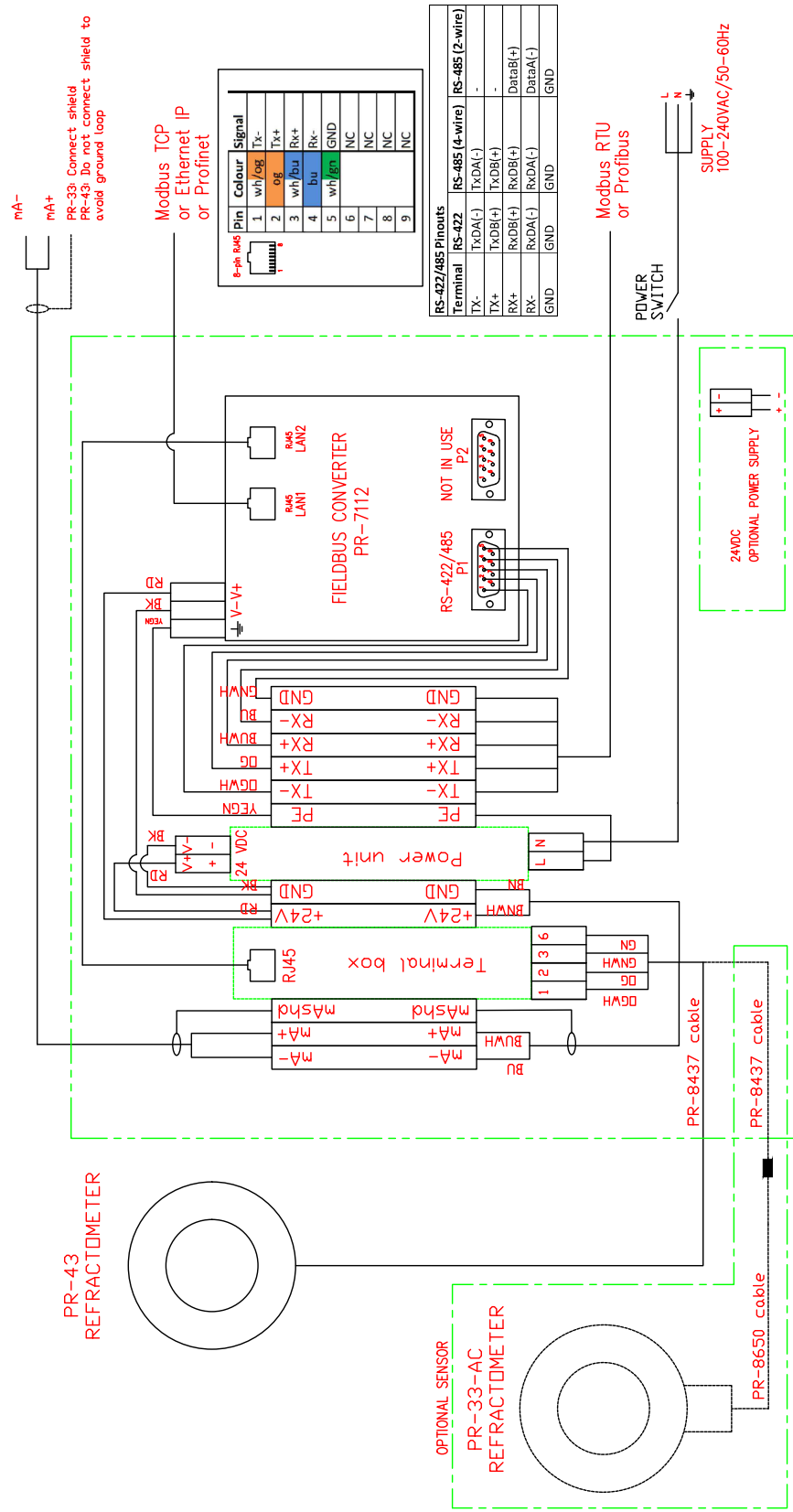


Figure 3.4 Wiring for PR-43 or PR-33

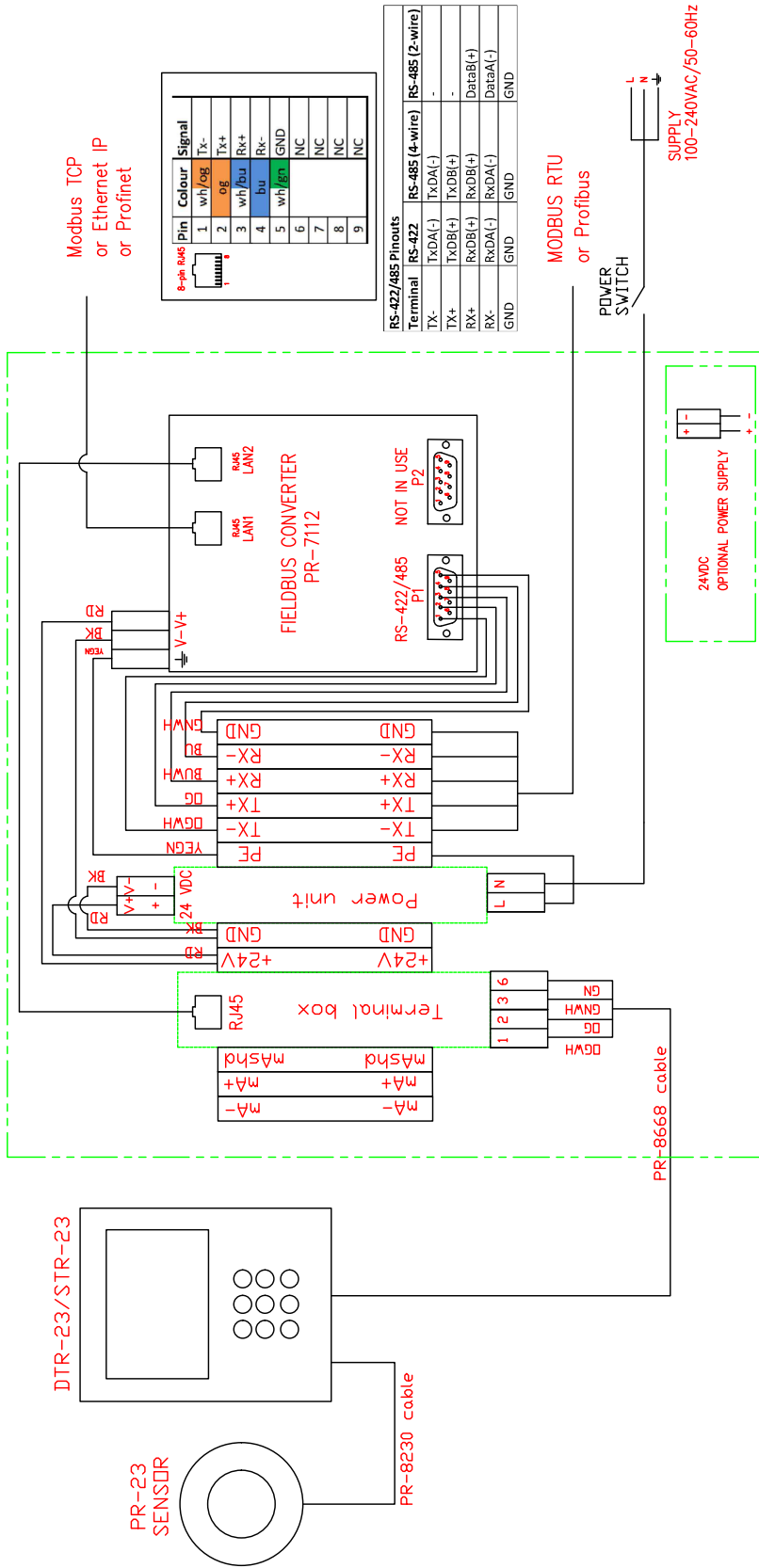


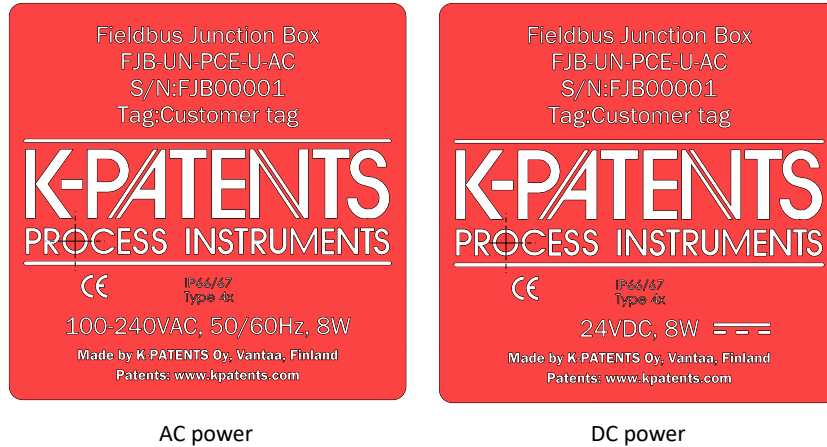
Figure 3.5 Wiring PR-23

## 4 Maintenance

Clean the enclosure with a damp cloth. Do not use solvents on the polycarbonate enclosure. Dry the enclosure before opening it. Make sure the groove between the cover and the body of the enclosure is clean before you open the enclosure.

## 5 Specifications

### 5.1 Labels



**Figure 5.1** Fieldbus junction box labels

### 5.2 Model code

#### Fieldbus Junction Box

Model and description	Model
FJB = Fieldbus Junction Box	FJB
<b>Electrical classifications</b>	
-UN = Unclassified area, general purpose, ordinary location	-UN
<b>Enclosure type</b>	
-PCE = Polycarbonate	-PCE
-SS = AISI 316L	-SS
<b>Cable connections</b>	
-U = ½inch NPT type conduit hubs	-U
-M = M20x1.5 metric cable glands	-M
<b>Power supply</b>	
-AC = Power supply 100-240 VAC 50/60 Hz	-AC
-DC = Power supply 24 VDC	-DC

For example FJB-UN-PCE-U-AC

Model and description	Model
PR-8437-010 = Platform 4 cable free ends (for Junction Box JB), 10 meters	PR-8437-010
PR-8650 = PR-33-AC to Platform 4 cable, length 1 meter	PR-8650
PR-8668 = PR-23 to Platform 4 cable, length 1 meter	PR-8668
PR-10941 = DIN rail mount fieldbus converter	PR-10941
PR-7112 = Fieldbus converter	PR-7112

### 5.3 Fieldbus junction box dimensions

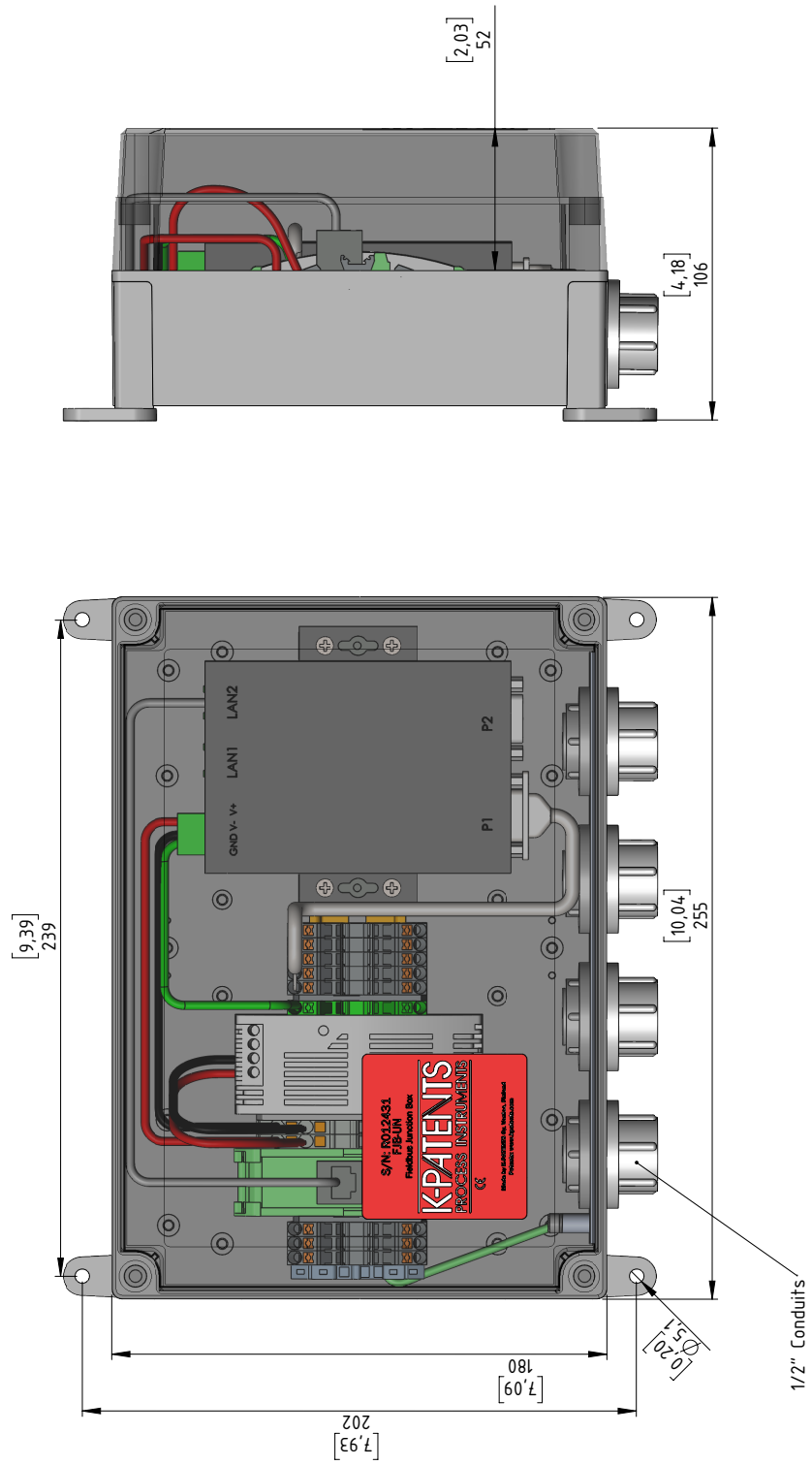


Figure 5.2 Dimensions of the polycarbonate enclosure

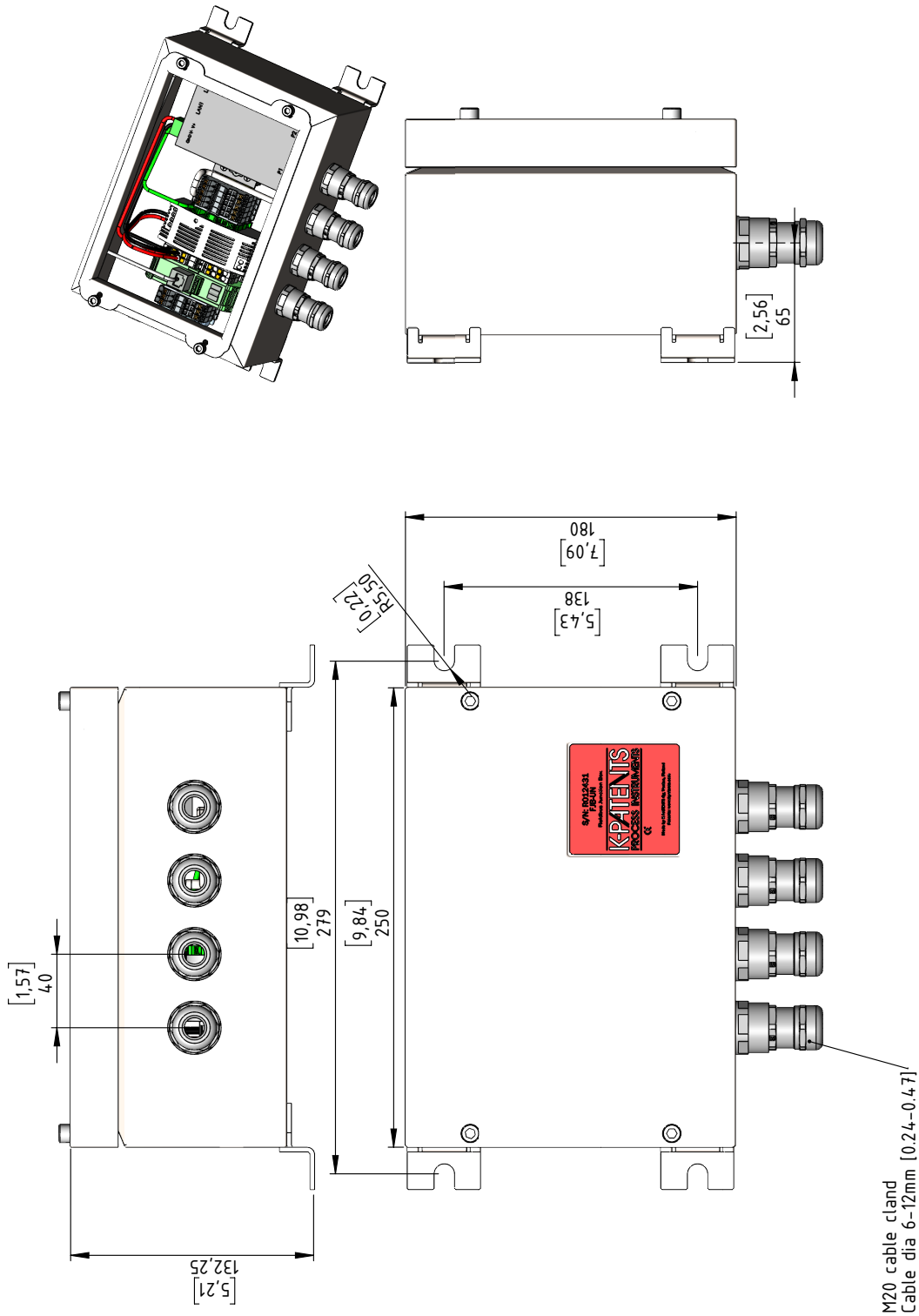


Figure 5.3 Dimensions of the stainless steel enclosure



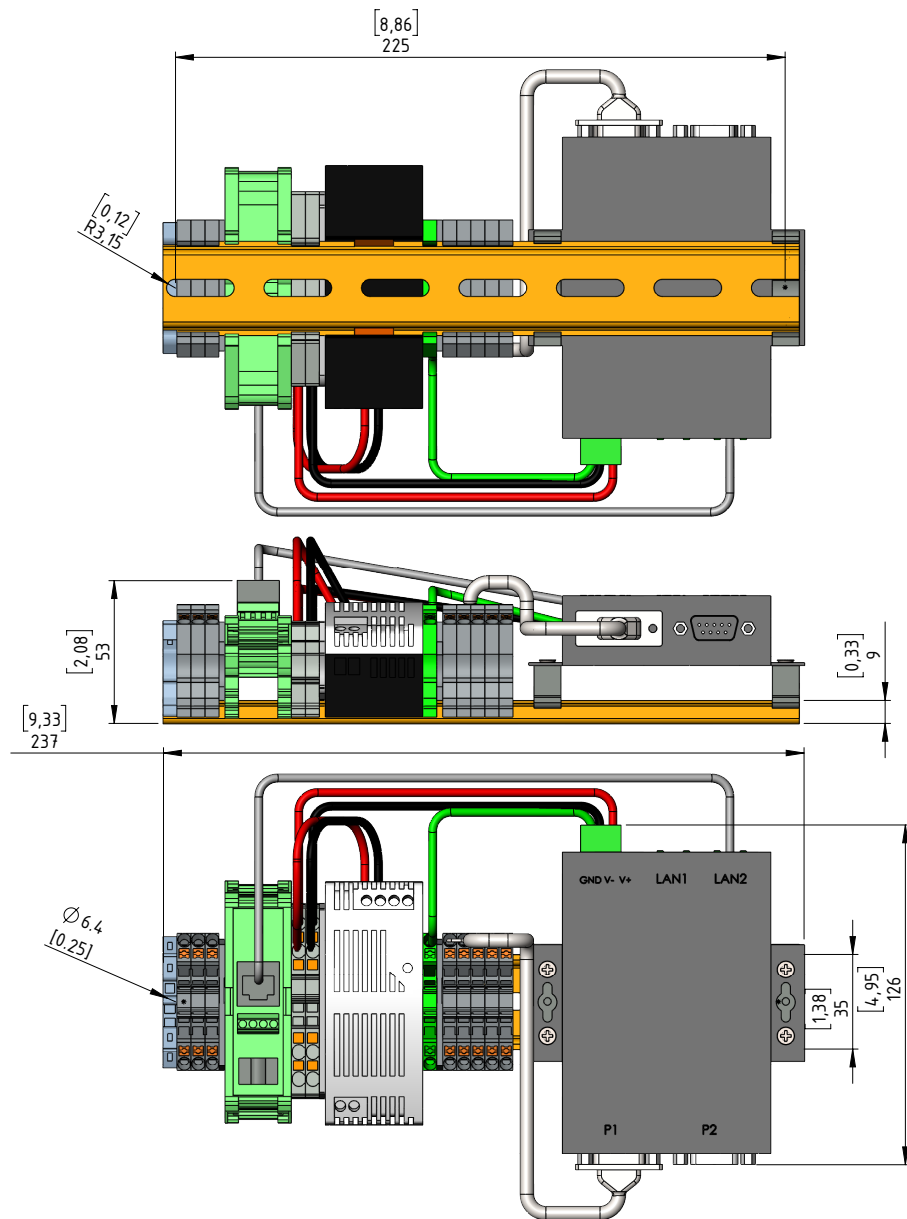


Figure 5.4 DIN rail mount fieldbus converter dimensions

## 5.4 Fieldbus junction box specifications

<b>Ambient temperature range (operational)</b>	-10°C...60°C
<b>Maximum altitude</b>	2000 m
<b>Protection class</b>	<b>Polycarbonate enclosure:</b> IP66/67, NEMA 1, 4, 4X, 6, 12, 13 <b>AISI316L enclosure:</b> IP66/67, Nema 4
<b>Weight</b>	<b>Polycarbonate enclosure:</b> 3.8 kg (8.4 lb) <b>AISI316L enclosure:</b> 4.6 kg (10.1 lb)
<b>Electrical specifications:</b>	
<b>Nominal input voltage range</b>	<b>AC power supply:</b> 100 V AC...240 V AC <b>DC power supply:</b> 10 V DC...32 V DC
<b>AC frequency range</b>	<b>AC power supply:</b> 45 Hz...65 Hz <b>DC power supply:</b> 0 Hz
<b>Nominal power consumption</b>	8 W
<b>Input fuse</b>	<b>AC power supply:</b> 1.25 A (slow-blow, internal) <b>DC power supply:</b> 6.3 A (slow-blow, internal)
<b>Choice of circuit breakers</b>	<b>AC power supply:</b> 6 A...16 A (characteristics B, C, D, K)
<b>Nominal output voltage</b>	<b>AC power supply:</b> 24 V DC ± 1% <b>DC power supply:</b> 24 V DC ± 1%
<b>Approvals</b>	<b>AC power supply:</b> UL/C-UL listed UL508 UL/C-UL Recognized UL 60950 NEC Class as per UL 1310 <b>DC power supply:</b> UL/C-UL listed UL508 UL/C-UL Recognized UL 60950-1 <b>Polycarbonate enclosure:</b> cUL/UL FILE E 75645 Vol1 Sec. 7



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