Fiber Optic Media Converter Box

PSC2.CP.SR.26.26.16-Y7017109*

Manual

Your automation, our passion.

PEPPERL+FUCHS

With regard to the supply of products, the current issue of the following document is applicable: The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"

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1 Introduction

1.1 Content of this Document

This document contains information that you need in order to use your product throughout the applicable stages of the product life cycle. These can include the following:

- Product identification
- Delivery, transport, and storage
- Mounting and installation
- Commissioning and operation
- Maintenance and repair
- Troubleshooting
- Dismounting
- Disposal

Note

This document does not substitute the instruction manual.

Note

For full information on the product, refer to the instruction manual and further documentation on the Internet at www.pepperl-fuchs.com.

Note

For specific device information such as the year of construction, scan the QR code on the device. As an alternative, enter the serial number in the serial number search at www.pepperl-fuchs.com.

The documentation consists of the following parts:

- Present document
- Instruction manual
- Datasheet

Additionally, the following parts may belong to the documentation, if applicable:

- EU-type examination certificate
- EU declaration of conformity
- Attestation of conformity
- Certificates
- Control drawings
- Functional safety manual
- Additional documents

1.2 Manufacturer

Pepperl+Fuchs Group Lilienthalstraße 200, 68307 Mannheim, Germany
Internet: www.pepperl-fuchs.com

1.3 Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

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Only appropriately trained and qualified personnel may carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the product. The personnel must have read and understood the instruction manual and the further documentation.

Prior to using the product make yourself familiar with it. Read the document carefully.

1.4 Symbols Used

This document contains symbols for the identification of warning messages and of informative messages.

Warning Messages

You will find warning messages, whenever dangers may arise from your actions. It is mandatory that you observe these warning messages for your personal safety and in order to avoid property damage.

Depending on the risk level, the warning messages are displayed in descending order as follows:

Danger!

This symbol indicates an imminent danger.

Non-observance will result in personal injury or death.

Warning!

This symbol indicates a possible fault or danger.

Non-observance may cause personal injury or serious property damage.

Caution!

This symbol indicates a possible fault.

Non-observance could interrupt the device and any connected systems and plants, or result in their complete failure.

Informative Symbols

Note

This symbol brings important information to your attention.

Action

1. This symbol indicates a paragraph with instructions. You are prompted to perform an action or a sequence of actions.

2 General Description

2.1 Intended Use

The fiber optic media converter box is used to extend the communication range between Ethernet devices to communicate over longer distances, improving network flexibility. The fiber optic media converter box can connect up to 4 Ethernet devices to a fiber optic network.

2.2 Certification

The device is certified for use in hazardous areas up to ATEX/IECEx Zone 2/22 and NEC Class I, II, Div. 2 and has an environmental rating of Type 4X.

2.3 Marking

Typically, each control panel is labeled as shown below:

Figure 2.1

Warning!

The ratings shown are the maximum values for explosion protection and must not be exceeded for safe operation.

2.4 Labels

ETL Certification Label (lid outside):

Figure 2.2

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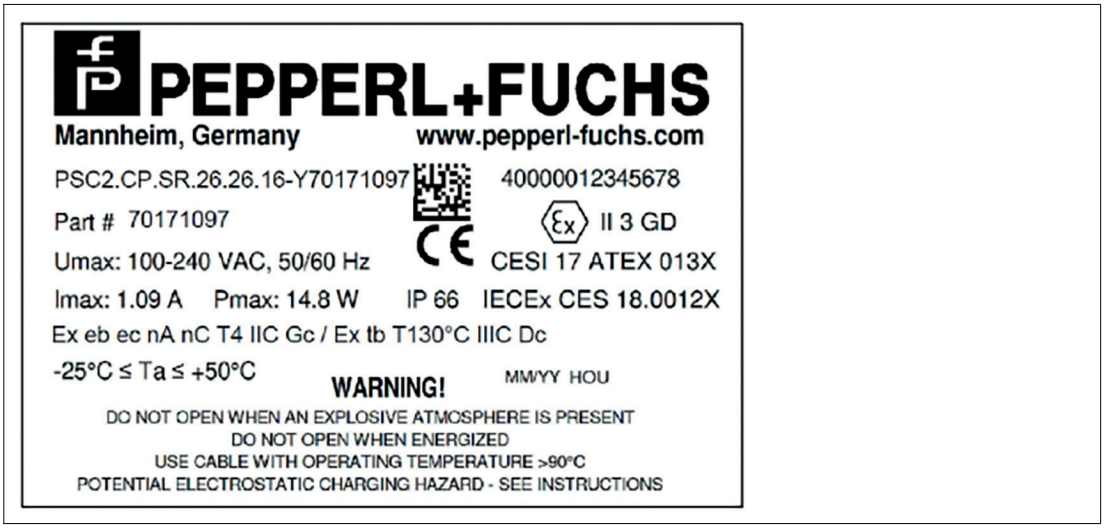
ATEX/IECEx Certification Label (lid outside):



UL-Certification Label (lid inside):

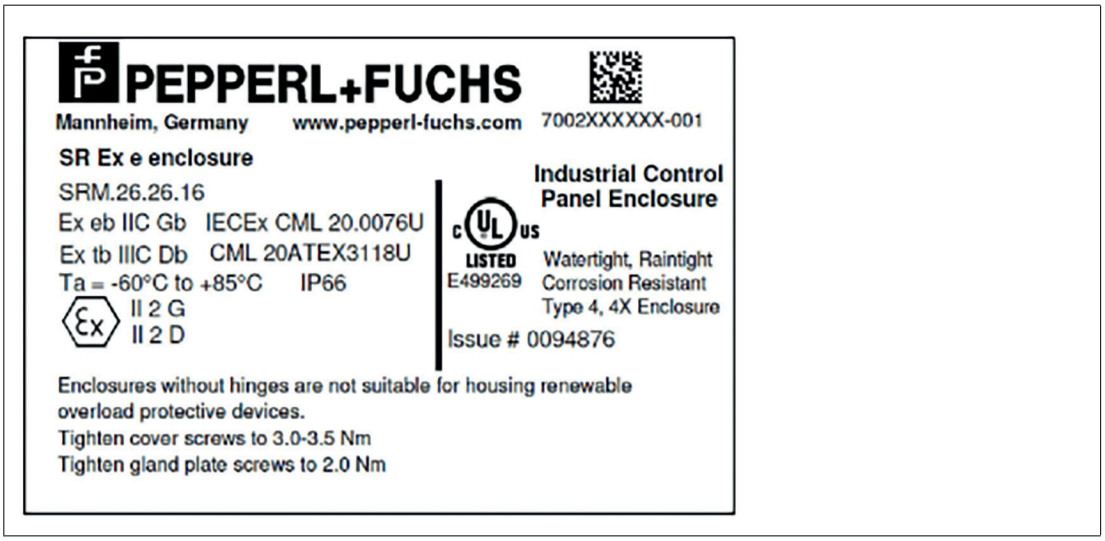


Figure 2.3

Field Wiring Guide

Figure 2.4

Note

For labels of the components please refer to the corresponding datasheet (see next chapter).

2.5 Components

This product consists of:

Figure 2.5

No.	Component	Note
#1	Ethernet Fiber Optic Switch EDS-205A Series (T-models)	Please refer to the technical datasheet for more information: https://www.moxa.com
#2	Power supply PS1000-A6-24.5 (AC variants)	Please refer to the technical datasheet for more information: https://files.pepperl-fuchs.com

2.6 Application Scenarios

4x HMI (Multimode, DC)

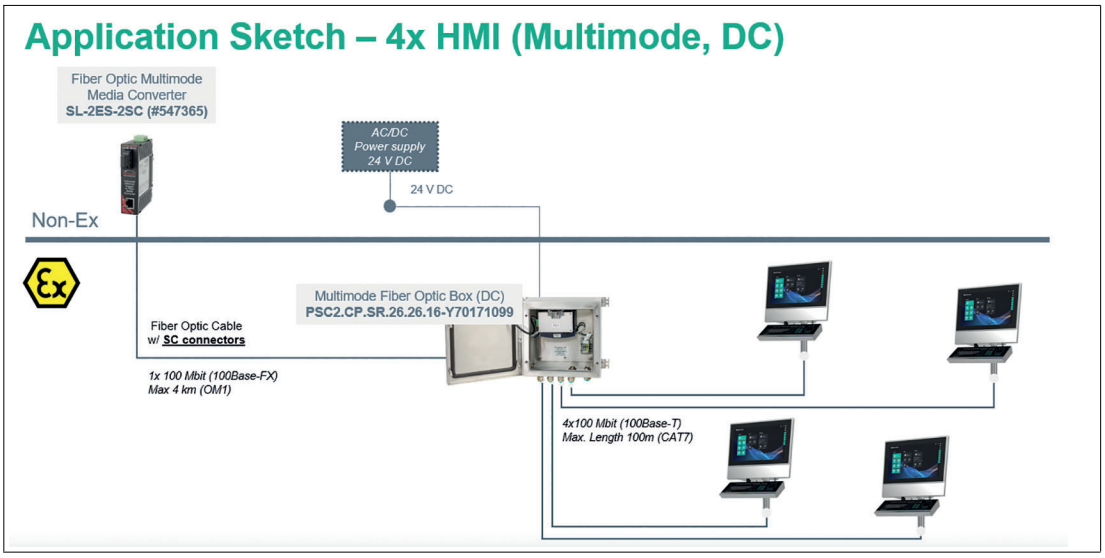


Figure 2.6

4x Ethernet Devices (Multimode, DC)

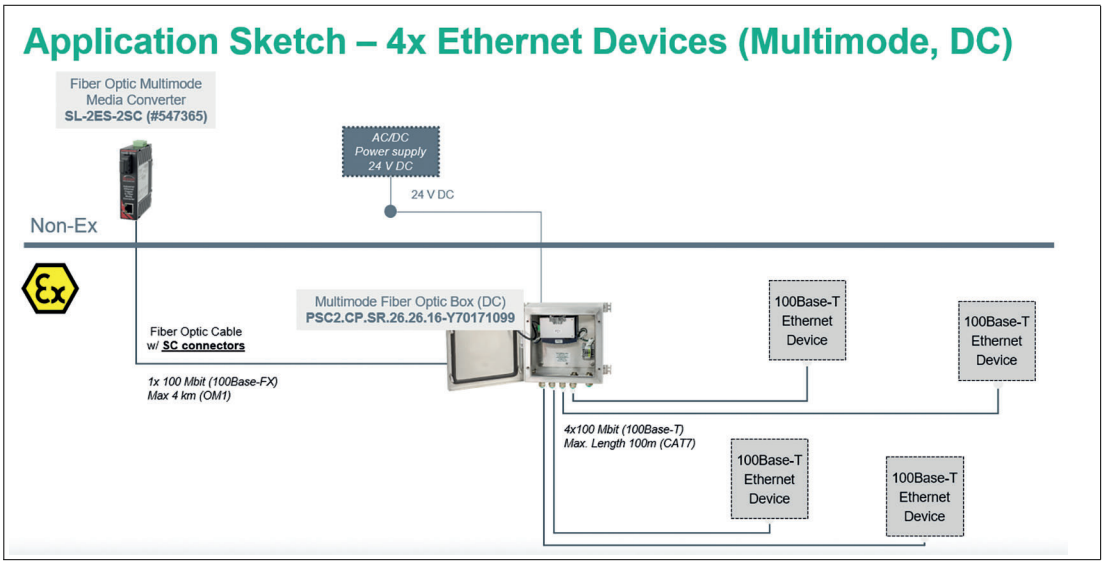


Figure 2.7

4x HMI (Multimode, AC)

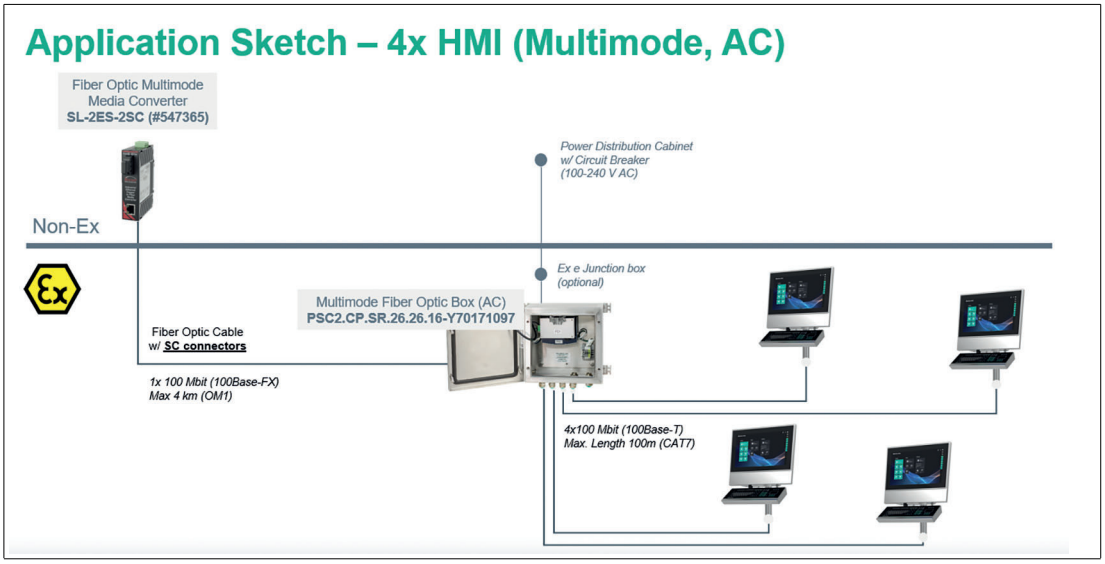


Figure 2.8

4x HMI (Multimode)

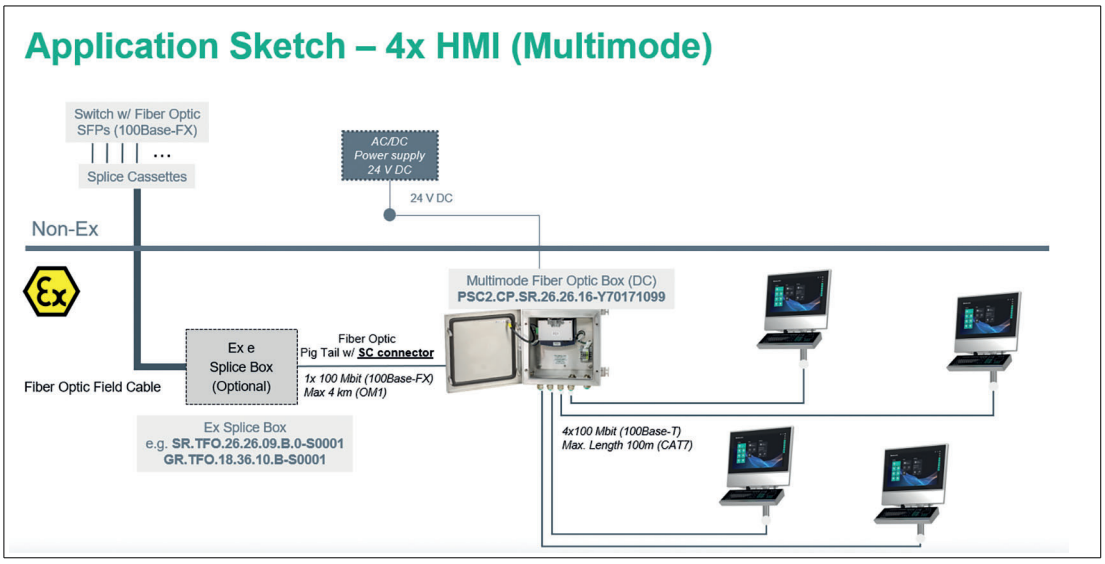


Figure 2.9

Partial Redundancy (Multimode, DC)

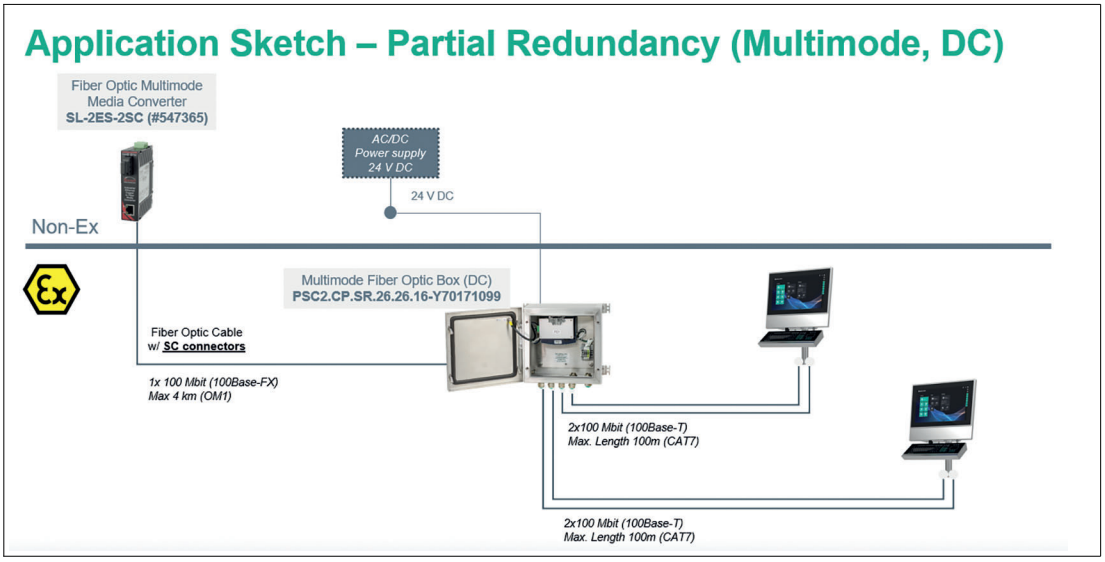


Figure 2.10

Full Redundancy (Multimode, DC)

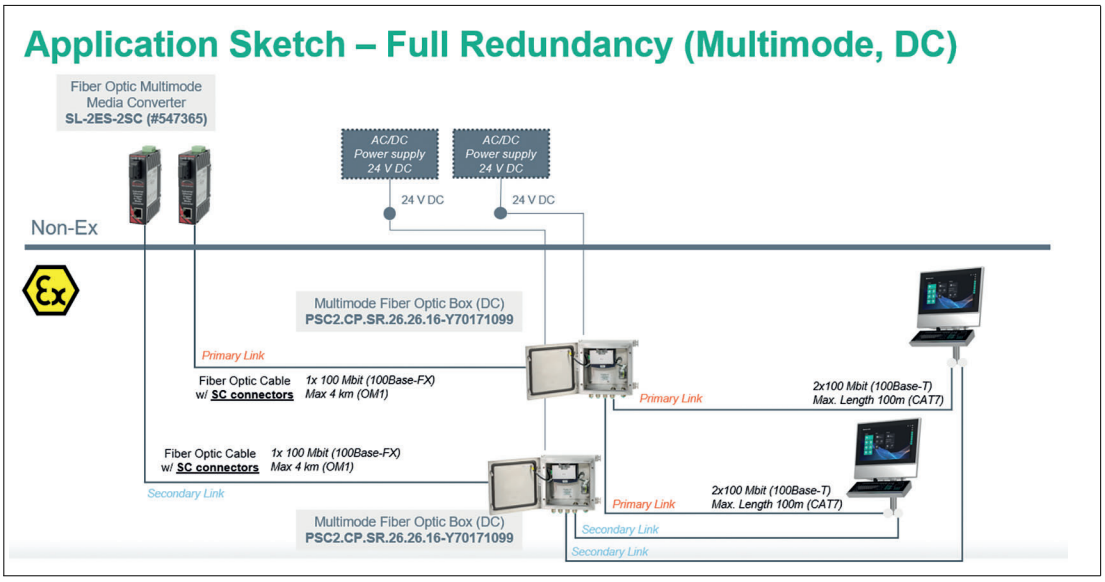


Figure 2.11

Warning!

No other device can be connected to the power supply but the already connected media converter. Connecting another device can lead to permanent damage.

Note

When connecting a single-mode fiber optic transceiver, it is recommended to use an attenuator to avoid damage caused by excessive optical power.

Note

Calculate the “typical distance” to a given fiber optic transceiver as follows: Link Budget (dB) > Dispersion Loss (dB) + Total Link Loss (dB).

3 Technical data

Manufacturer	Pepperl+Fuchs SE Lilienthalstraße 200 68307 Mannheim Germany
Manufacturing location	Pepperl+Fuchs, Inc. 502 Cane Island Parkway Katy, TX 77494

Mechanical specifications	
Material	Glass fiber reinforced polyester
Degree of protection	IP66 / TYPE 4X
Dimensions	260 x 260 x 160 mm (W x L x D)
Ambient temperature (in °C)	Wide temperature: -25 °C - 50 °C

Supply	
Rated voltage	AC: 100 ... 240 V 50/60 Hz DC: 24 V
Input current	AC: 1.09 A DC: 0.1 A
Max. power dissipation	14.8 W

Ethernet Interface	
10/100BaseT(X) Ports (RJ45 connector)	EDS-205A/205A-T: 5 EDS-205A-M-SC/M-ST/S-SC Series: 4 All models support: - Auto negotiation speed - Full/half duplex mode - Auto MDI/MDI-X connection
100BaseFX Ports (multi-mode SC connector)	EDS-205A-M-SC Series: 1
100BaseFX Ports (multi-mode ST connector)	EDS-205A-M-ST Series: 1
100BaseFX Ports (single-mode SC connector)	EDS-205A-S-SC Series: 1
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control

Data for application in connection with hazardous areas	
Refer the attached data sheet	
Group, category, type of protection, temperature class	Suitable for Class I, Division 2 Groups B,C,D T4

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Data for application in connection with hazardous areas	
Applied standards	For ETLus: NFPA 70 (NEC) UL50-2007 UL50E-2007 UL508A UL 121201 For cETL: CSA C22.2 No.14 CSA 22.1-12 (CEC) CSA C22.2 No. 94.1-07 CSA C22.2 No. 94.2-07 CSA C22.2 No. 213 For IECEX: IEC 60079-0 Edition 6 IEC 60079-7 Edition 5 IEC 60079-31 Edition 2 For ATEX: EN 60079-0: 2012 EN 60079-7:2015 EN 60079-31:2014
CID2/Zone 2 Certification	ETLus 5003368
CID2/Zone 2 Marking	Class I Division 2 Groups ABCD T4 Class II Division 2 Groups FG T135°C
ATEX Certification	CESI 17 ATEX 013X
ATEX Marking	II3GD Ex eb ec nA nC T4 Gc
IECEx Certification	IECEx CES 18.0012X
IECEx Marking	Ex tb db T130°C Dc
Ex Marking	Class I Division 2 Groups ABCD T4 / Class II Division 2 Groups FG T135 °C
Ex Marking	II 3 GD Ex eb ec nA nC T4 IIC Gc / Ex tb T130 °C IIIC Dc

Attributes	Item number	Part Number
AC / Single Mode	PSC2.CP.SR.26.26.16-Y70171096	70171096
AC / Multimode	PSC2.CP.SR.26.26.16-Y70171097	70171097
DC / Single Mode	PSC2.CP.SR.26.26.16-Y70171098	70171098
DC / Multimode	PSC2.CP.SR.26.26.16-Y70171099	70171099

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4 Installation and Commissioning

4.1 Installation Requirements

Caution!

This is a Class 1 Laser/LED product. To avoid serious damage to your eyes, do not stare directly into the laser beam.

Caution!

Use of the device!

The use of the device is only permitted under the ambient conditions (temperature, humidity, vibration and shock) which are specified in the technical data. Failure to comply with any of these conditions void the warranty for the device. Pepperl+Fuchs cannot be held liable for any damage arising from improper use and handling.

Warning!

Device damage!

Mount the device in such a way that it is protected from ultraviolet radiation and sunlight. Do not expose the device to direct sunlight! The device might get damaged.

Warning!

Device damage!

Protect the device from external heat sources (e.g sunlight).

Note

Wall mounting is recommended.

Note

Install the device in a shaded location.

Note

Use sunshields to further improve thermal heat reflection.

4.2 Opening the housing

1. Loosen the 4 screws on the housing cover

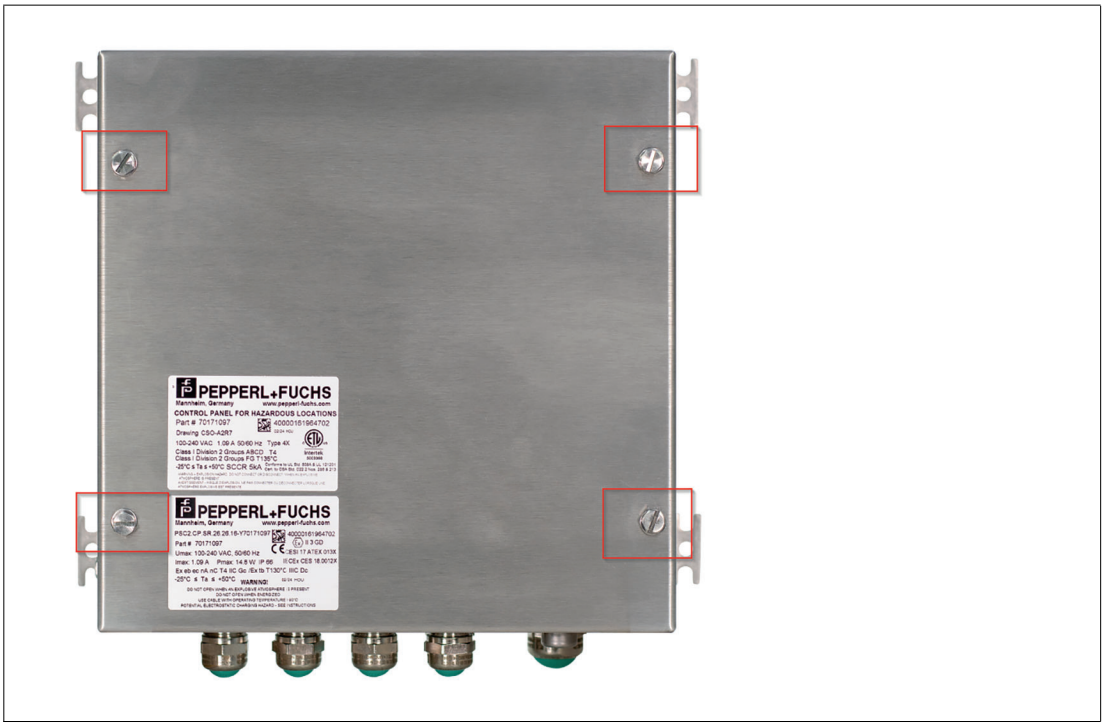


Figure 4.1

2. Disconnect the grounding cable from the housing cover.

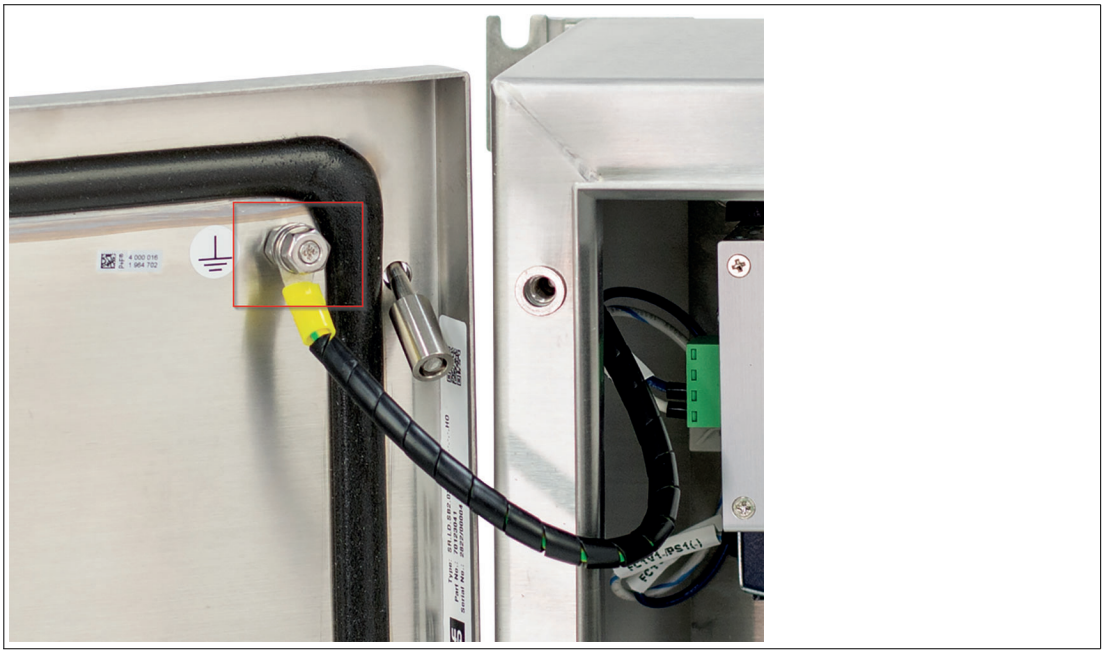


Figure 4.2

3. Mount the housing in the required location (wall mount is recommended).

4.3 Connecting the DC power supply

The cable glands for the DC options PSC2.CP.SR.26.26.16-Y70171098 (Part No.: 70171098) and PSC2.CP.SR.26.26.16-Y70171099 (Part No.: 70171099) are arranged as follows:

1. Loosen the cable gland #3 (see picture).

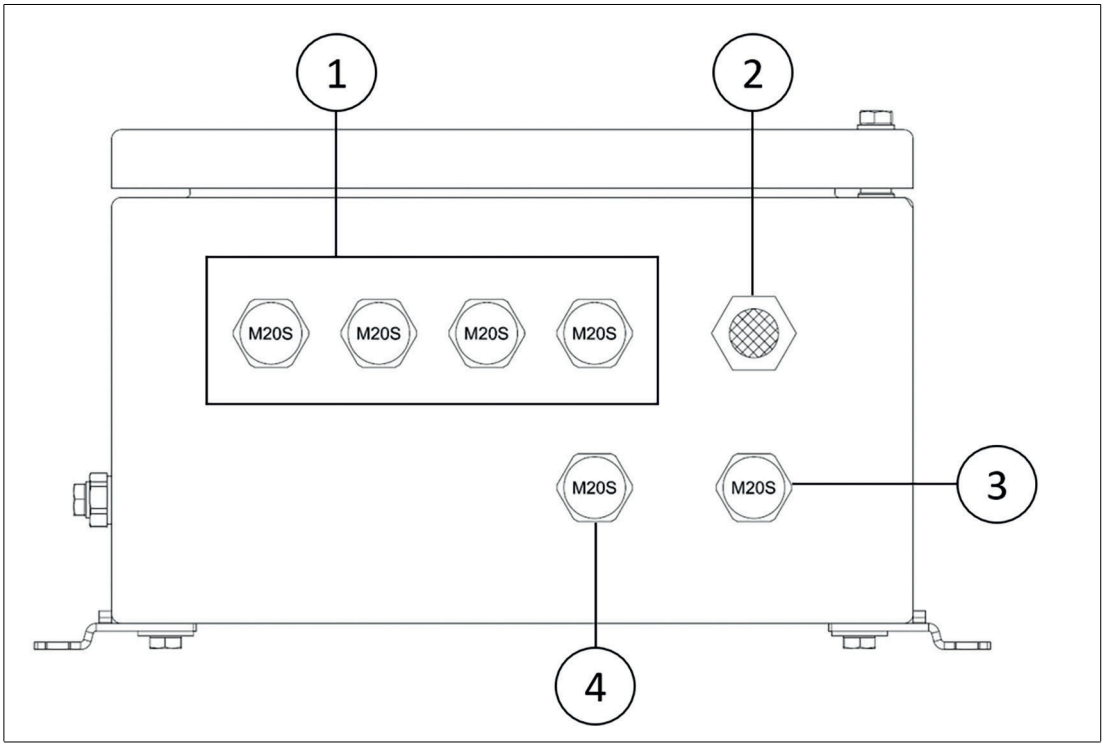


Figure 4.3

No.	Description
1	Ethernet Cable
2	Breather
3	DC Power Supply Cable
4	Fiber Optic Cable

2. Prepare the power supply cable. Adjust the cable gland to the diameter of the cable.

3. The cable glands have 3 different seal combinations, depending on the cable diameter. Each seal combination has a possible cable diameter and a specific torque value.

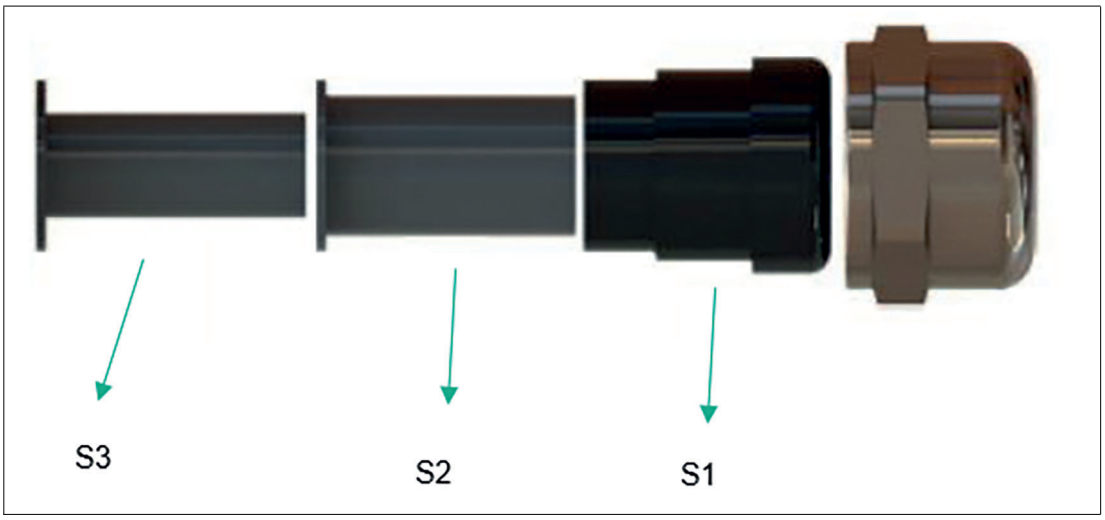


Figure 4.4

Seal combination for M20 gland (for AC option, Part-No: #291258)

Seal combination	Torque value	Diameter
S1	18 Nm	14.5 ... 16 mm
S1 + S2	22 Nm	12 ... 14.5 mm
S1 + S2 + S3 (default)	24 Nm	10 ... 12 mm

Seal combination for M20s gland (for AC and DC option, Part-No: #291257)

Seal combination	Torque value	Diameter
S1	15 Nm	9 ... 12 mm
S1 + S2	18 Nm	6 ... 9 mm
S1 + S2 + S3 (default)	20 Nm	4 ... 6 mm

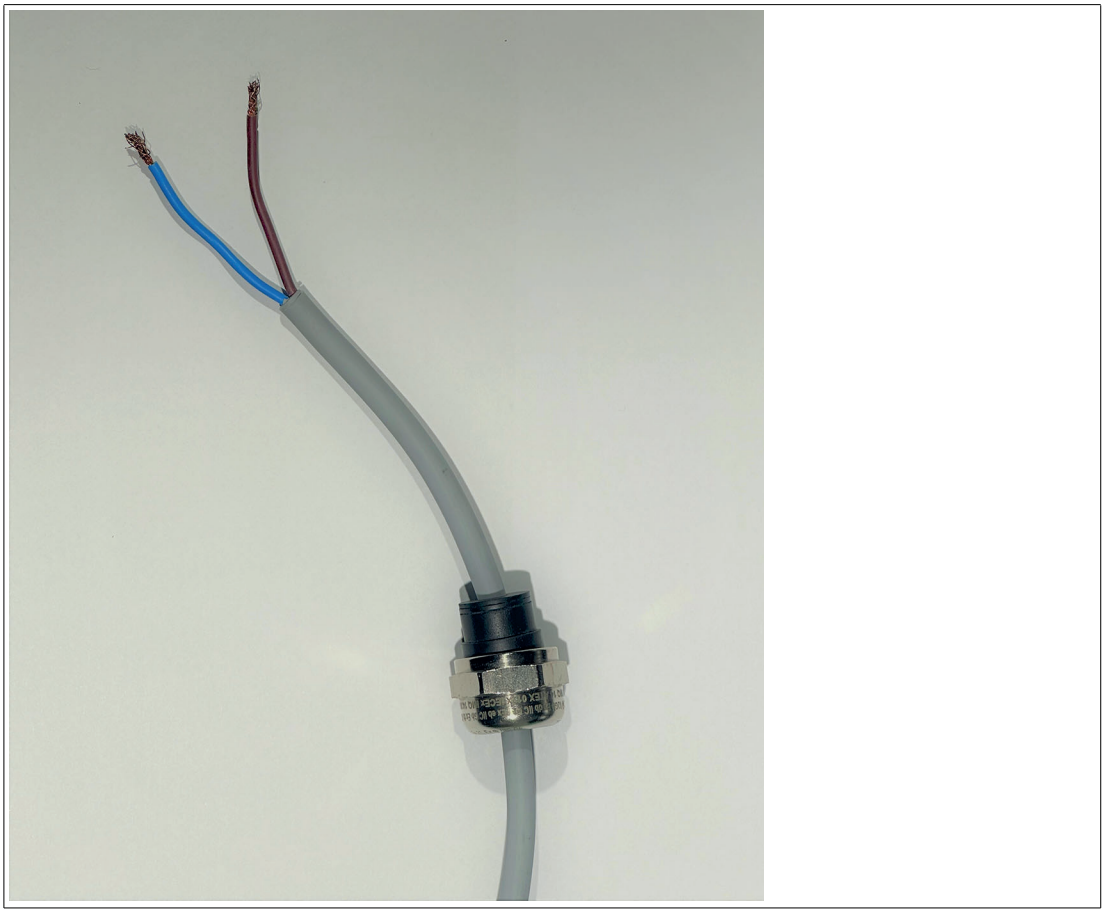


Figure 4.5

4. Guide the cable through the cable gland (3) into the inside of the box.

Figure 4.6

5. Pull out the green connector from the Moxa Switch and connect the DC power supply cable as shown. Tighten the screws of the connector with a torque of 0.6 - 0.8 Nm. Then plug the connector back into the Moxa switch.

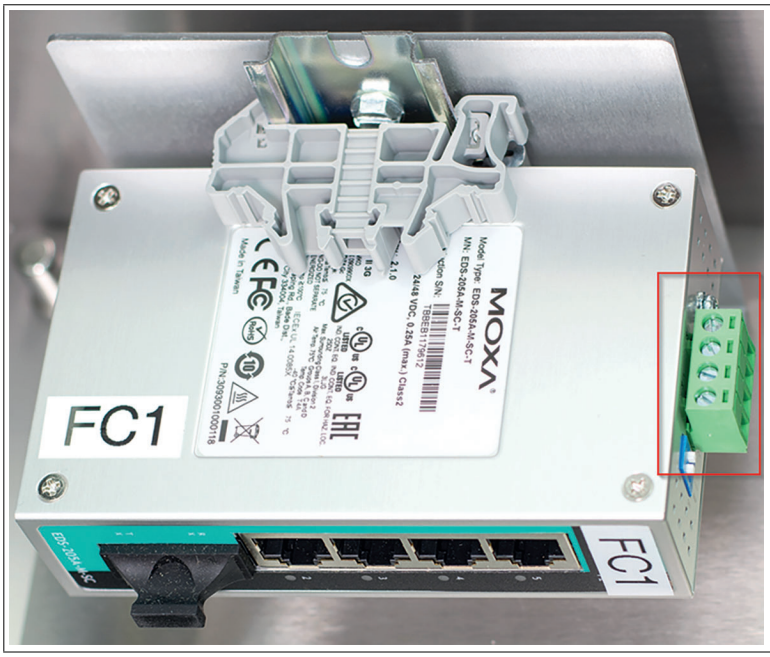


Figure 4.7

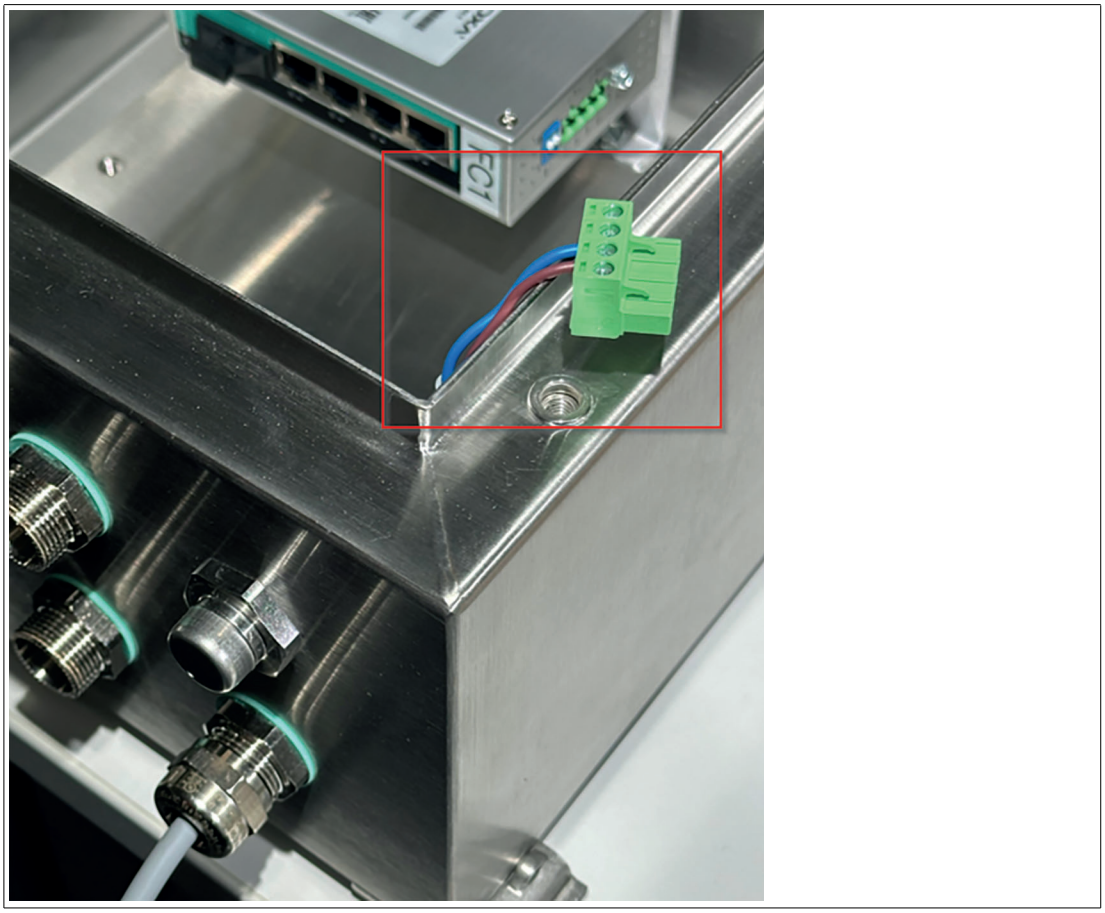


Figure 4.8

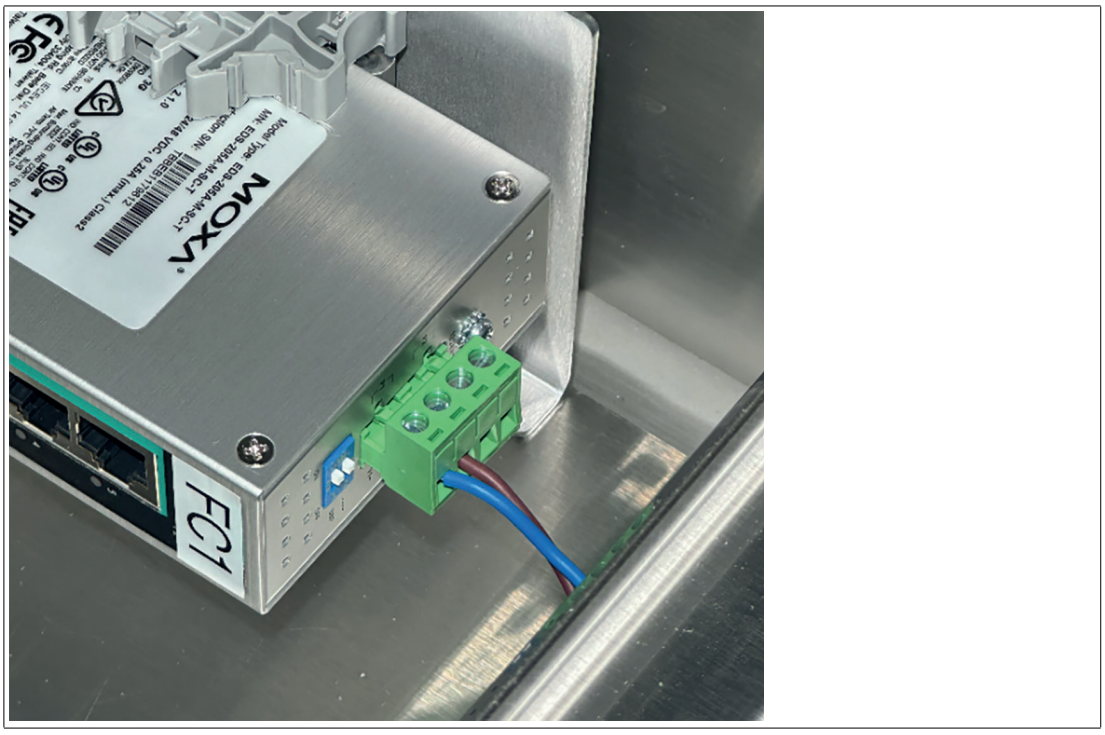


Figure 4.9

6. Tighten the cable gland with the specific torque value (see table for M20s).

Note

For further information regarding the AC power supply please refer to the PS1000 manual for instructions. In the chapter "Electrical Installation" you can find further instructions on how to connect the AC power supply. The manual can be found at www.pepperl+fuchs.com.

Note

The diameter of the power cable depends on the selected seal (see table above).

Warning!

The power cable passing through the cable gland should have a cable sheath to ensure Ex conformity.

4.4 Connecting the AC power supply

1. Loosen the cable gland #3 (see picture).

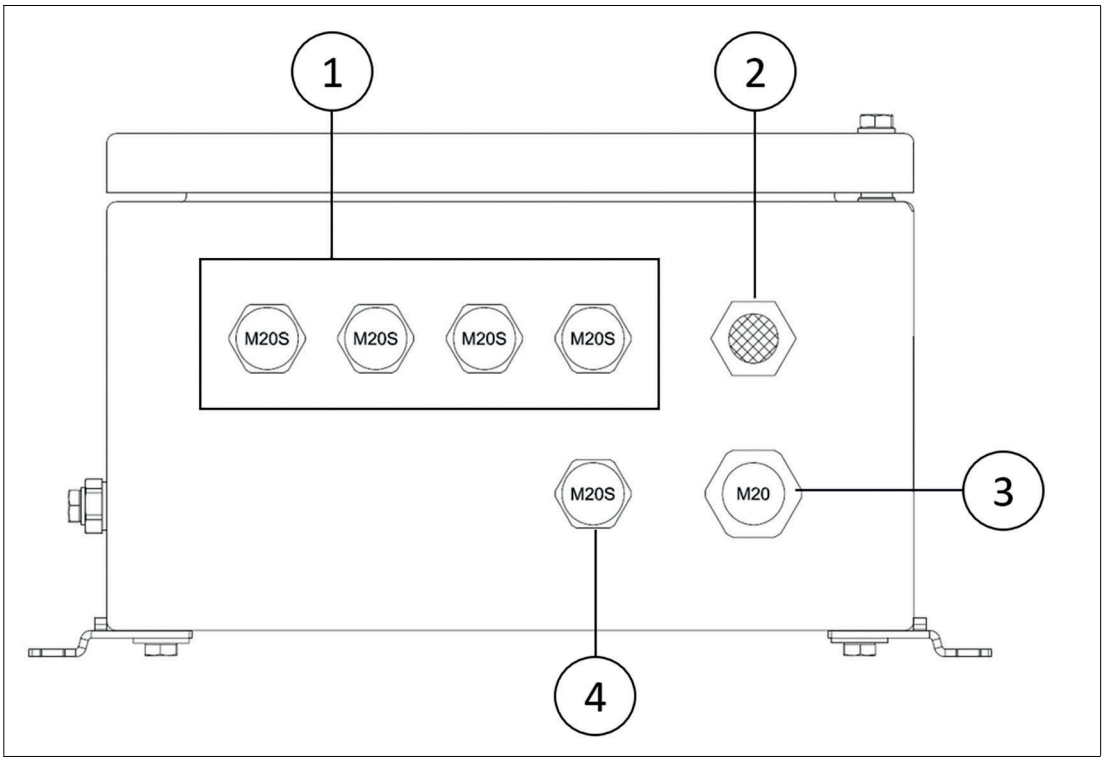
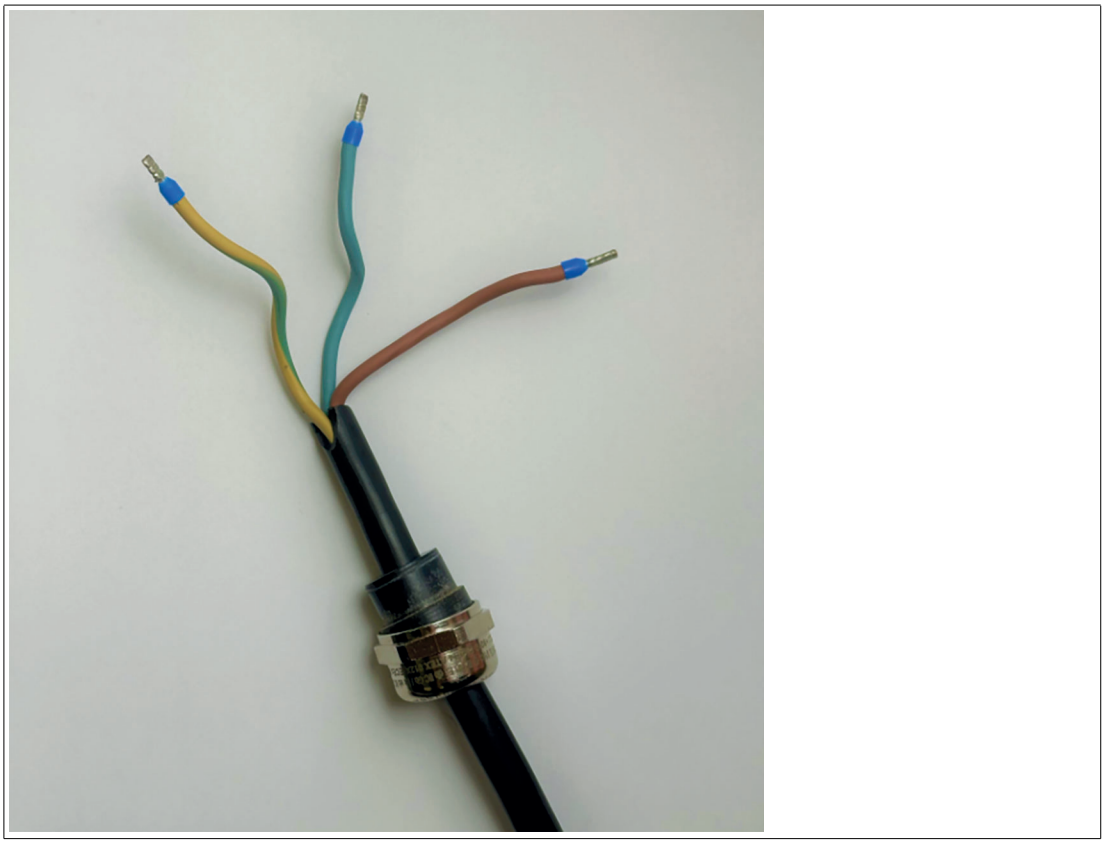


Figure 4.10

No.	Description
1	Ethernet Cable
2	Breather
3	AC Power Supply Cable
4	Fiber Optic Cable

2. Prepare the power supply cable. Adjust the cable gland to the diameter of the cable (see table in previous chapter).



3. Guide the cable through the cable gland (3) into the inside of the box. Tighten the screws on the connector with a torque of 0.6 - 0.8 Nm.

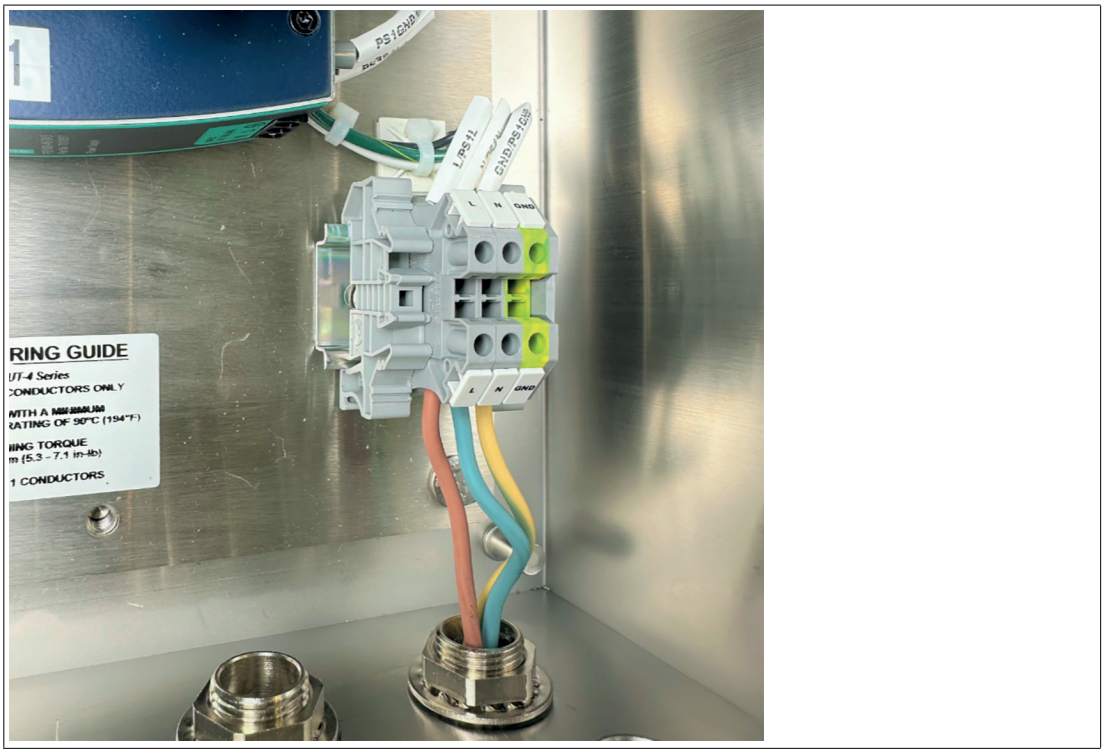


Figure 4.11

4. Tighten the cable gland with the specific torque value (see table for M20).

4.5 Connecting the fiber optic cable to the fiber optic switch

1. Loosen the cable gland #4 shown in the drawing above (same for AC and DC).
2. Prepare the FO cable. Adjust the cable gland to the diameter of the cable (see table in chapter).

Figure 4.12

3. Insert the field FO cable (trimmed cable) into the cable gland.

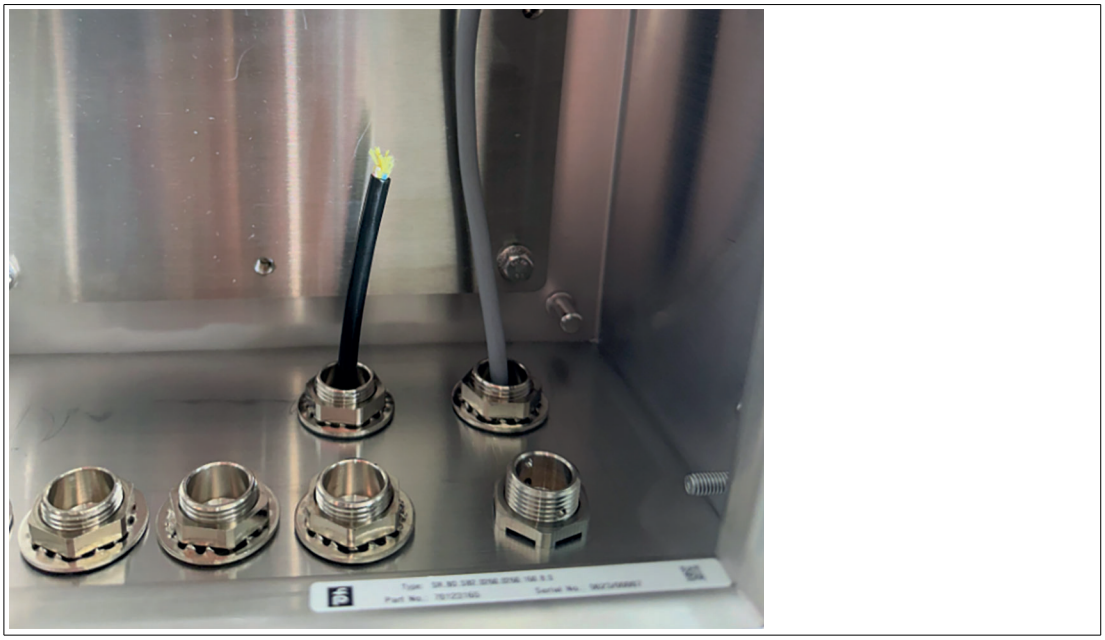


Figure 4.13

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4. Splice the trimmed FO cable to the FO connector (for example SC connector).

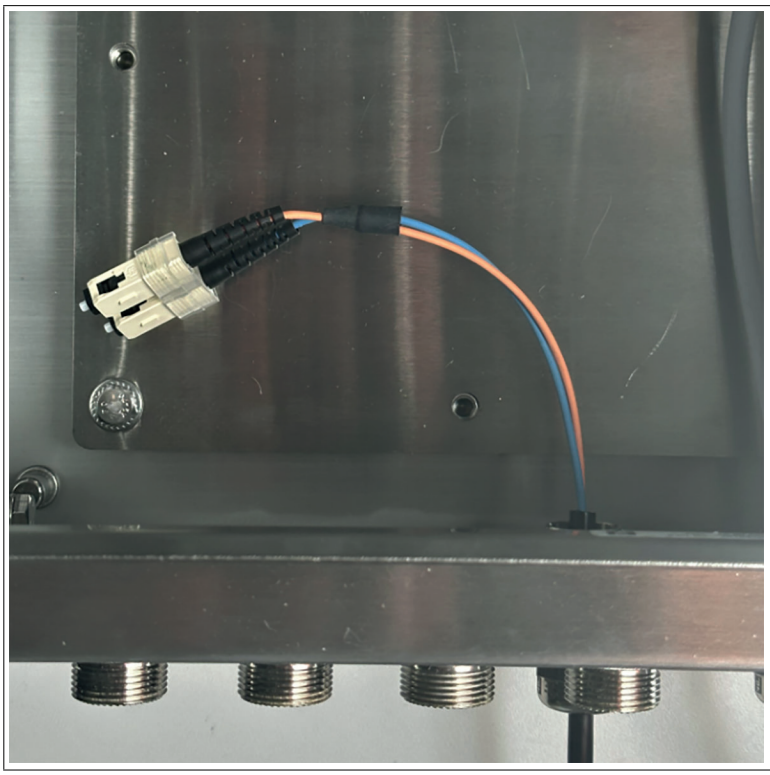

Figure 4.14

5. Remove the black blind plug from the FO switch and connect the FO cable to the FO plug on the switch.

Tip

If the plug is difficult to connect, grab it by the clear plastic cover at the back and press it together slightly.

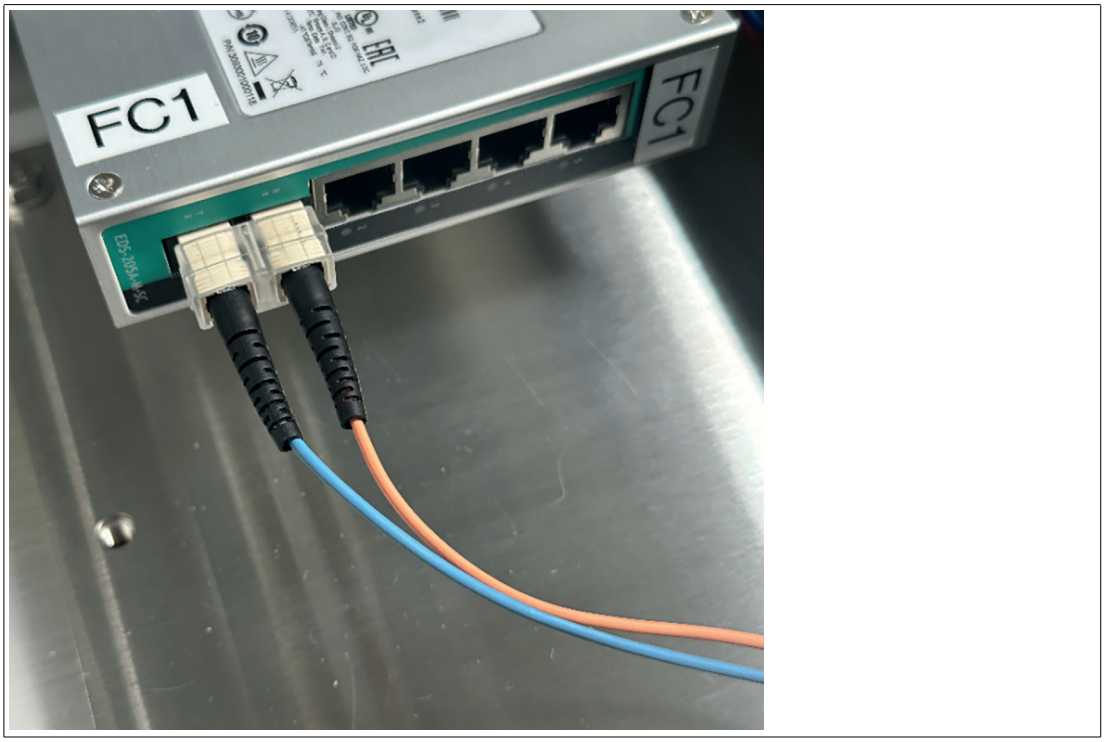

Figure 4.15

6. Tighten the cable gland with the specific torque value (see table above)

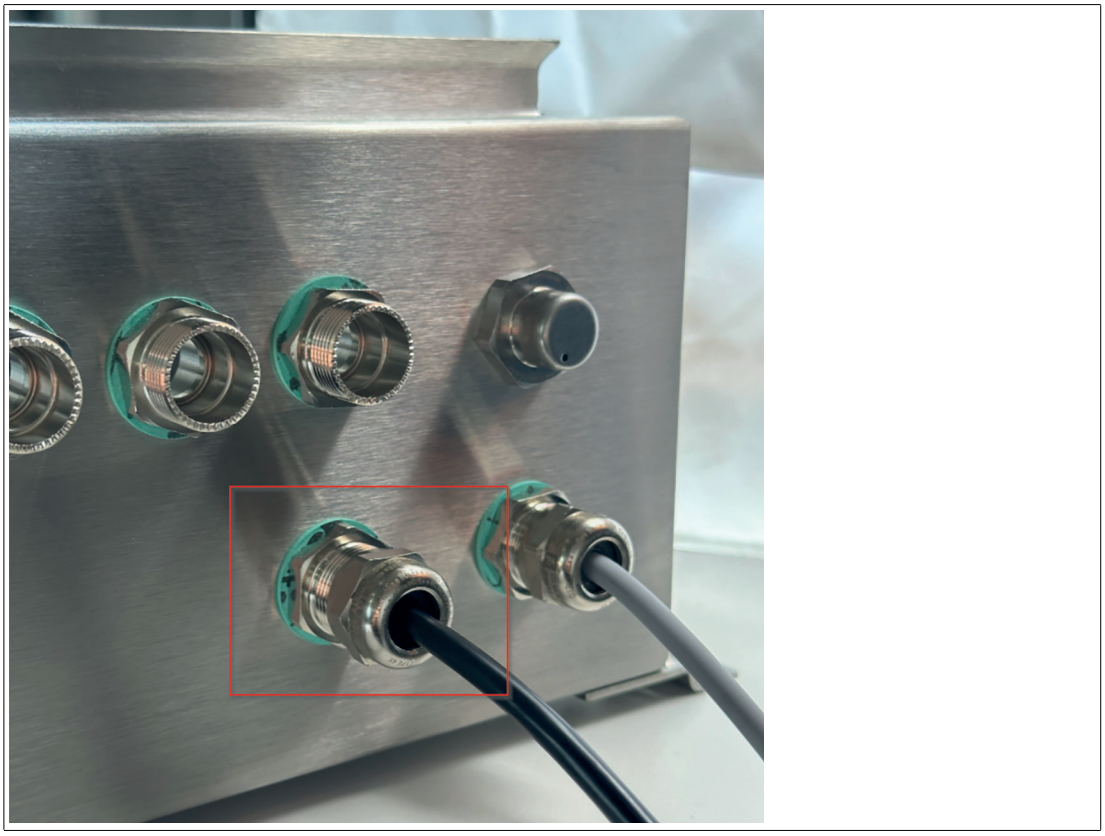

Figure 4.16

Note

The diameter of the power cable depends on the selected seal (see table 2).

Warning!

The power cable passing through the cable gland should have a cable sheath to ensure Ex conformity.

4.6 Connecting the field Ethernet cable to the FO switch

Up to 4 Ethernet devices can be connected to the FO switch.

1. Loosen the amount of cable glands (#1) needed as shown in the drawing above in chapter 4.2 and 4.3 (same for AC and DC).
2. Prepare the trimmed Ethernet cable(s). Adjust the cable gland(s) to the diameter of the cable (see table in chapter 4.2).

Figure 4.17

3. Guide the cable through the cable gland into the inside of the box.

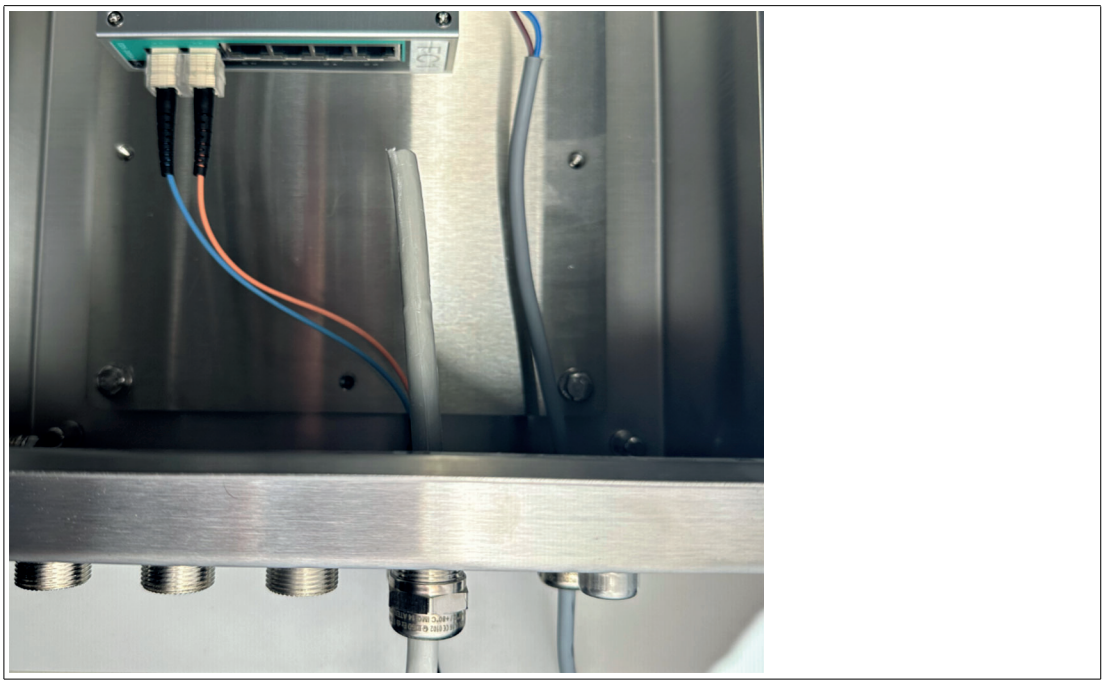

Figure 4.18

4. Connect the trimmed Ethernet cable to a RJ45 field connector ST-RJ45-1-BTR (Part No.: #218119).

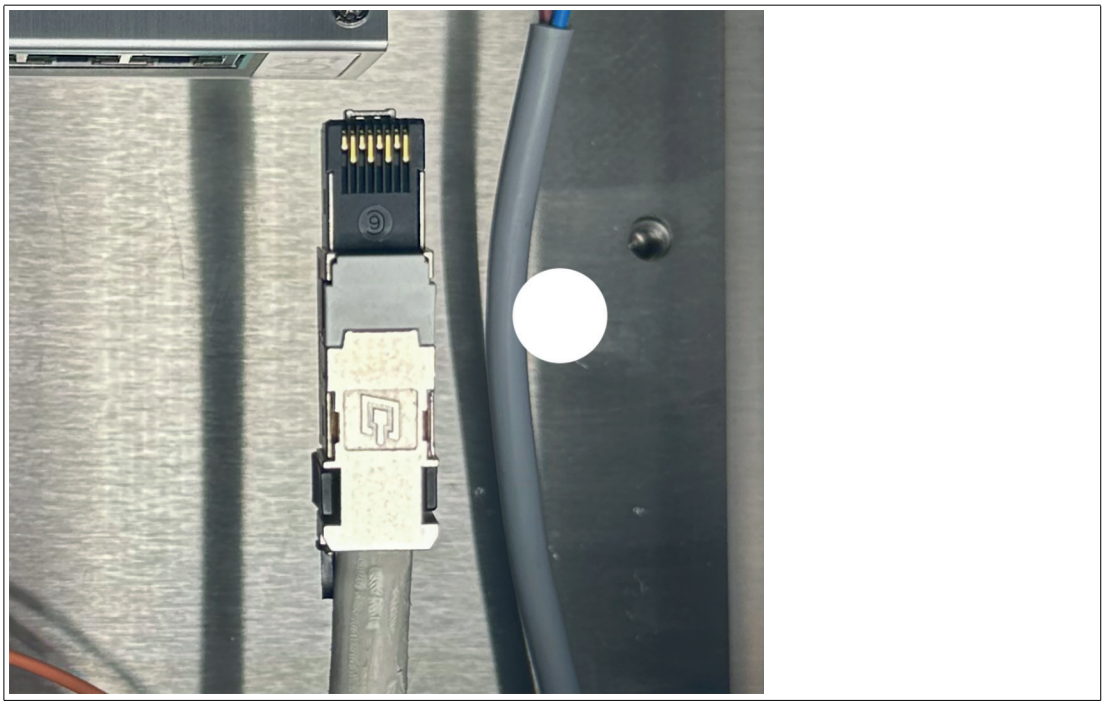

Figure 4.19

5. Connect the Ethernet cable to one of the four Ethernet plugs on the FO switch

Figure 4.20

6. Tighten the cable gland with the specific torque value (see table in chapter 4.2).

Note

The diameter of the power cable depends on the selected seal (see table 2).

Warning!

The power cable passing through the cable gland should have a cable sheath to ensure Ex conformity.

Up to 4 Ethernet devices can be added:

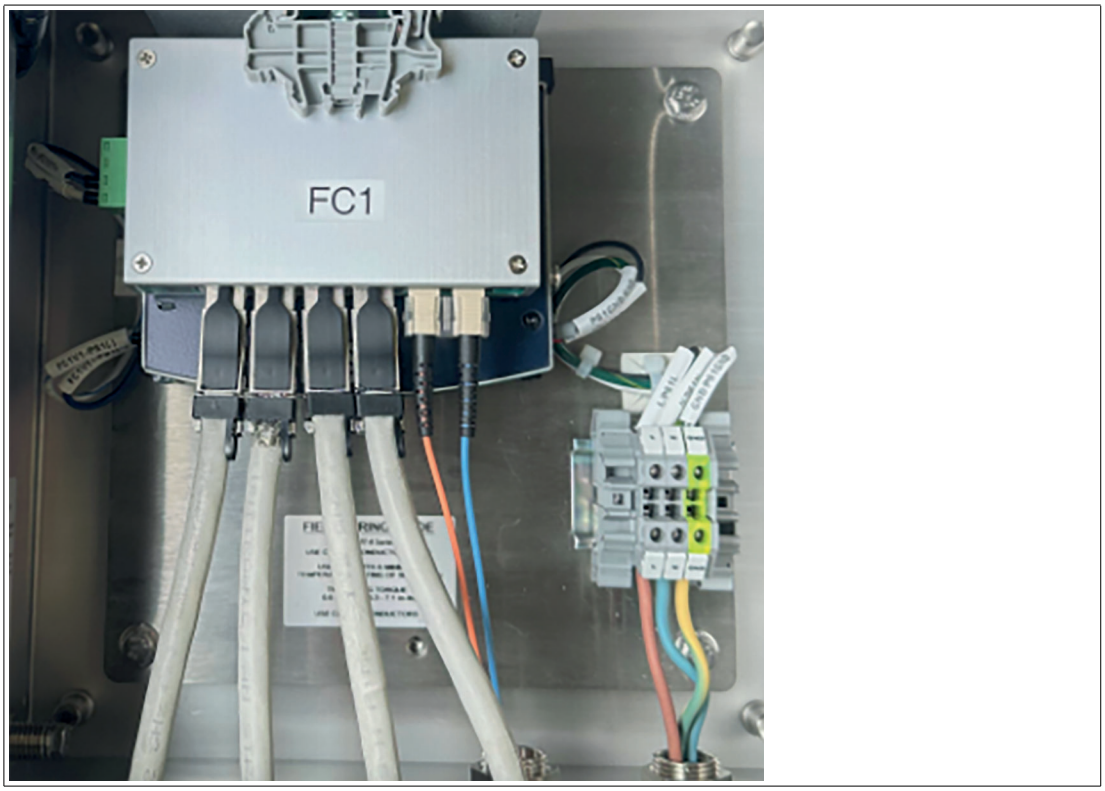

Figure 4.21

Figure 4.22

4.7 Closing The Lid

Before closing the housing, reconnect the grounding cable to the lid. Tighten the 4 screws of the housing cover with a torque of 3 - 3.5 Nm.

4.8 Installer Notes

INSTALLER NOTE FOR ATEX / IECEx SOLUTIONS:

Install per applicable local, state, or national standards and/or Directives, including but not limited to IEC/EN 60079-0, 60079-7, 60079-14, 60079-15, 60079-31.

INSTALLER NOTE FOR NORTH AMERICAN SOLUTIONS:

A branch circuit protective device (fuse or circuit breaker) complying with UL508A Section 40 must be installed on the load side of any supplying ungrounded conductor to this circuit and shall be rated for 1.5 A.

5 Fault elimination

Control panels and the electrical and electronic devices which are used in explosion-hazardous area applications must not be altered in any way.

In the event of a fault, the control panel or the device(s) must be replaced. Defective enclosure parts must be replaced with original parts only. Fault elimination work may only be performed by suitably qualified and authorized personnel.

6 Maintenance

The equipment supplied is essentially maintenance free, however the following maintenance procedure or checks should be undertaken in order to ensure the safe operation of the equipment:

Caution!

To avoid electrostatics charging, the enclosure or installed equipment should only be wiped or cleaned using a damp cloth.

7 Disposal

The packaging materials and the control panel must be disposed of in accordance with the regulations pertaining to the country in which they are installed.

No batteries which must be separately disposed of are contained within the control panel.

Your automation, our passion.

Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

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/ DOCT-8903