

INSTRUCTION MANUAL

Termination Units for Foxboro - EcoStruxure (Evo)



Common Specifications

General description

This instruction manual refers to the following termination units that can be connected to the Foxboro - EcoStruxure (Evo) system:

- TUE-16-INV-001 page 3
 - TUE-32-INV-001 page 6
- Common features to all models are redundant power supply.
They are supported by plastic chassis for installation on DIN-Rail.

Start-up

Before powering the unit check that all wires are properly connected, particularly supply conductors and their polarity.
Check conductors for exposed wires that could touch each other causing dangerous unwanted shorts.

Warning

Termination Units are installed onto standard EN/IEC60715 TH 35 DIN-Rail located in Safe Area within the specified operating temperature limits Tamb -40 to +70 °C. Termination Units must be installed, operated and maintained only by qualified personnel, in accordance to the relevant national/international installation standards, following the established installation rules.

Failure of a proper installation or use of the equipment may risk to damage the unit or severe personal injury.

Termination Units cannot be repaired by the end user and must be returned to the manufacturer or his authorized representative. Any unauthorized modification must be avoided.

Common features

Redundant power supply connections and LED indications are shown here below.

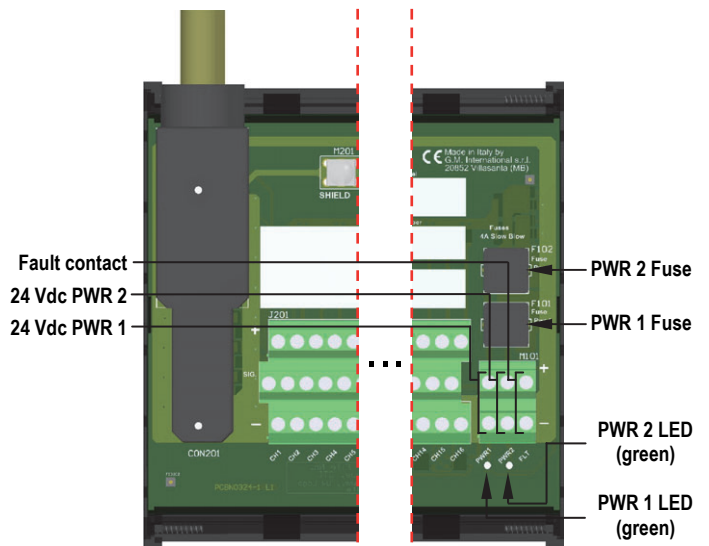
LED Signaling:

Meaning of LEDs on termination units:

TAG	LED COLOR	MEANING
PWR 1	GREEN	The LED is on when the PWR 1 is present
PWR 2	GREEN	The LED is on when the PWR 2 is present

Fault contact:

Fault contact is closed if both power supplies are connected and active, while it opens otherwise.

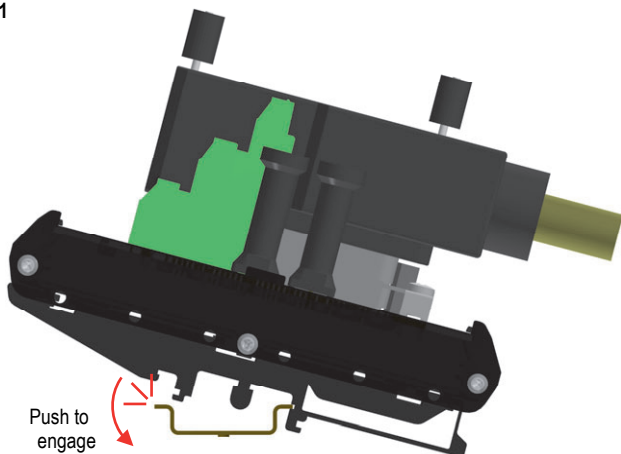


Models mounting and removing

Mounting:

To mount Termination Unit on 35 mm DIN-Rail, hook one side of the mounting foot over the rail's lip and press the Termination Unit down firmly until fixed (see Fig. 1).

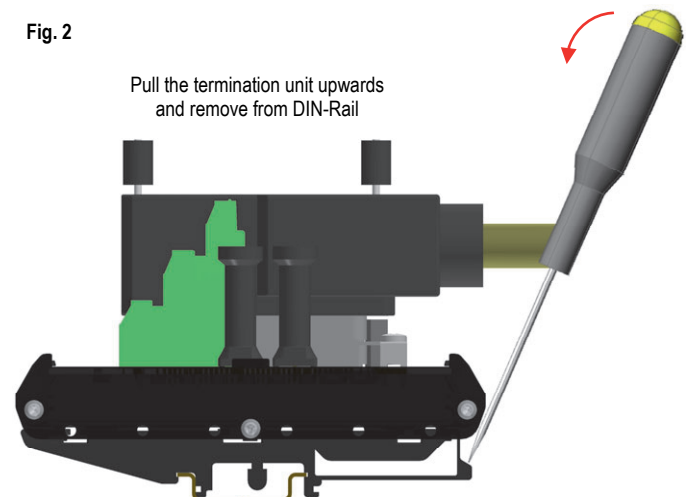
Fig. 1



Removing:

To remove a Termination Unit from the mounting rail, insert a blade screwdriver in the mounting foot and lever (see Fig. 2).

Fig. 2



Characteristics:**General description:**

This Termination Unit with Enclosure (TUE) provides direct connection between the I/O Card of the system and the field terminals. It supports all types of analog current transmitters, 2-wire passive or active, as well as 3 or 4-wire field devices. HART® signals are transferred transparently between system and field in both directions. On-board voltage and current protections avoid damages due to unintentional short circuits. Redundant power supply with voltage monitoring is supported.

Termination Units general characteristics:

Number of positions	Features
16	Power supply voltage redundancy Power supply fault signaling

Supported EVO I/O Cards:

Refer to DTS0496.

Installation:

TUE-16-INV-001 is a Termination Unit supported by a plastic shell suitable for installation on EN/IEC60715 TH 35 DIN-Rail.

TUE-16-INV-001 unit can be mounted with any orientation over the entire ambient temperature range.

Electrical connections are the following:

- PWR1, PWR2, FLT and CH1 to CH16: polarized screw terminal blocks for conductors up to 2.5 mm² (13 AWG) with a torque of 0.5-0.6 Nm.
- M201: screw terminal block for conductors up to 2 mm² (14 AWG) fully tight.
- CON201: SUB D37 connector with screws retaining method.

Electrical connection can be plugged in/out into a powered unit without suffering or causing any damage. Connect only one individual conductor per each clamping point.

Wiring has to be sized according to the current and the length of the cables. On the section "Function Diagram" a block diagram identifies all connections.

Installation and wiring must be in accordance to the relevant national/international installation standards, make sure that conductors are well isolated from each other and do not produce any unintentional connection.

The unit shall be installed in an area of not more than pollution degree 2 according to EN/IEC60664-1. The end user is responsible to ensure that the operating temperature of the module is not exceeded in the end use application.

Units must be protected against dirt, dust, extreme mechanical (e.g. vibration, impact and shock) and thermal stress, and casual contacts. If enclosure needs to be cleaned use only a cloth lightly moistened by a mixture of detergent in water.

Any penetration of cleaning liquid must be avoided to prevent damage to the unit.

Any unauthorized card modification must be avoided.

According to EN61010, TUE-16-INV-001 unit must be connected to SELV or PELV supplies.

All circuits connected to TUE-16-INV-001 unit must comply with the overvoltage category II (or better) according to EN/IEC60664-1.

Technical Data:**Supply:**

24 Vdc nom (20 to 30 Vdc), reverse polarity protected, redundant power supply, with OR diodes to mix supply voltages.

Max allowed current consumption: 3 A (as total supply).

Connection: by screw with terminations up to 2.5 mm².

Protection fuse: 4 A time lag.

Voltage monitor: contact closed if both power supplies are connected and active.

I/O Card Interface:

Connection: 1 x 37-pin D-sub male connector (require female mating connector).

Cable: system cable Type 4.

Field Interface:

Connection: by screw with terminations up to 2.5 mm².

Max supply current per channel: 250 mA.

Signal current range: 0 to 25 mA.

Compatibility:

CE mark compliant, conforms to Directive: 2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

Environmental conditions:

Operating: temperature limits – 40 to + 70 °C, relative humidity max 90 % non condensing, up to 35 °C.

Max altitude: 2000 m a.s.l.

Storage: temperature limits – 45 to + 80 °C.

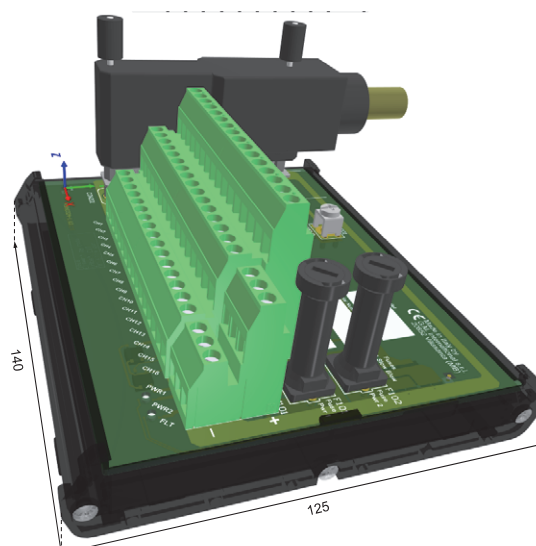
Mounting:

Hardware included for mounting on single DIN-rail 35 mm.

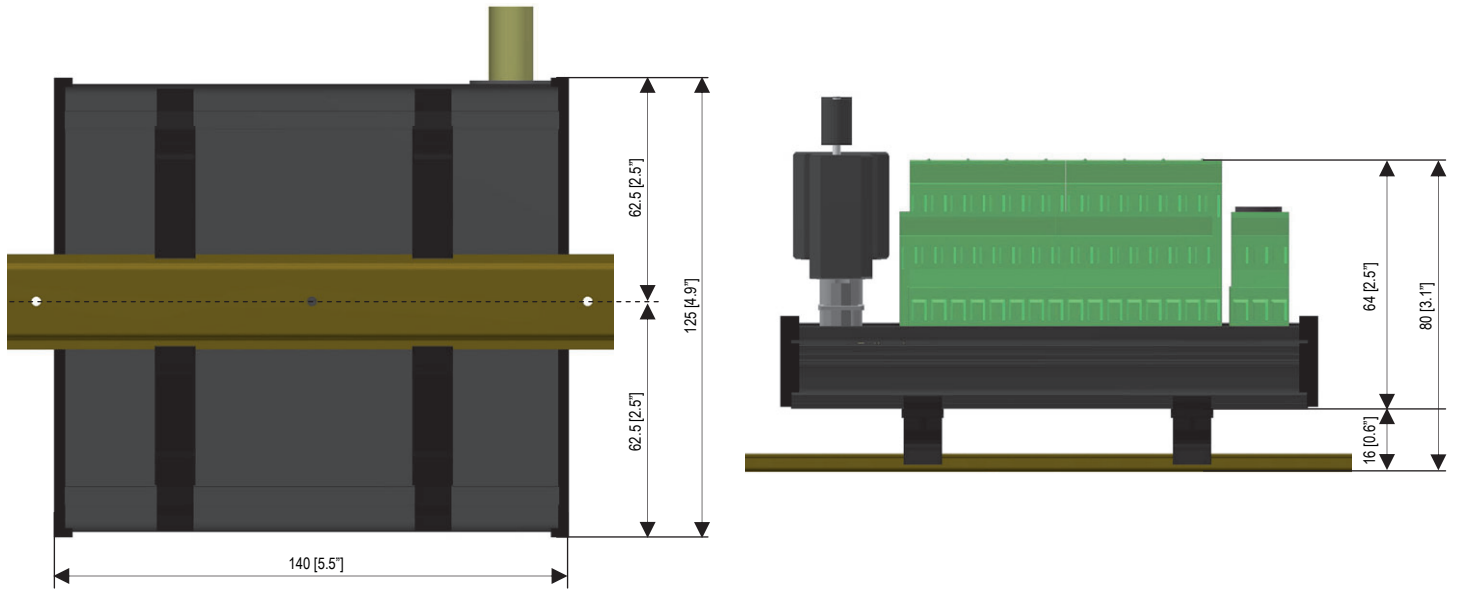
Weight: about 490 g.

Location: installation in Safe Area.

Dimensions: Width 140 mm, Depth 125 mm, Height 80 mm.

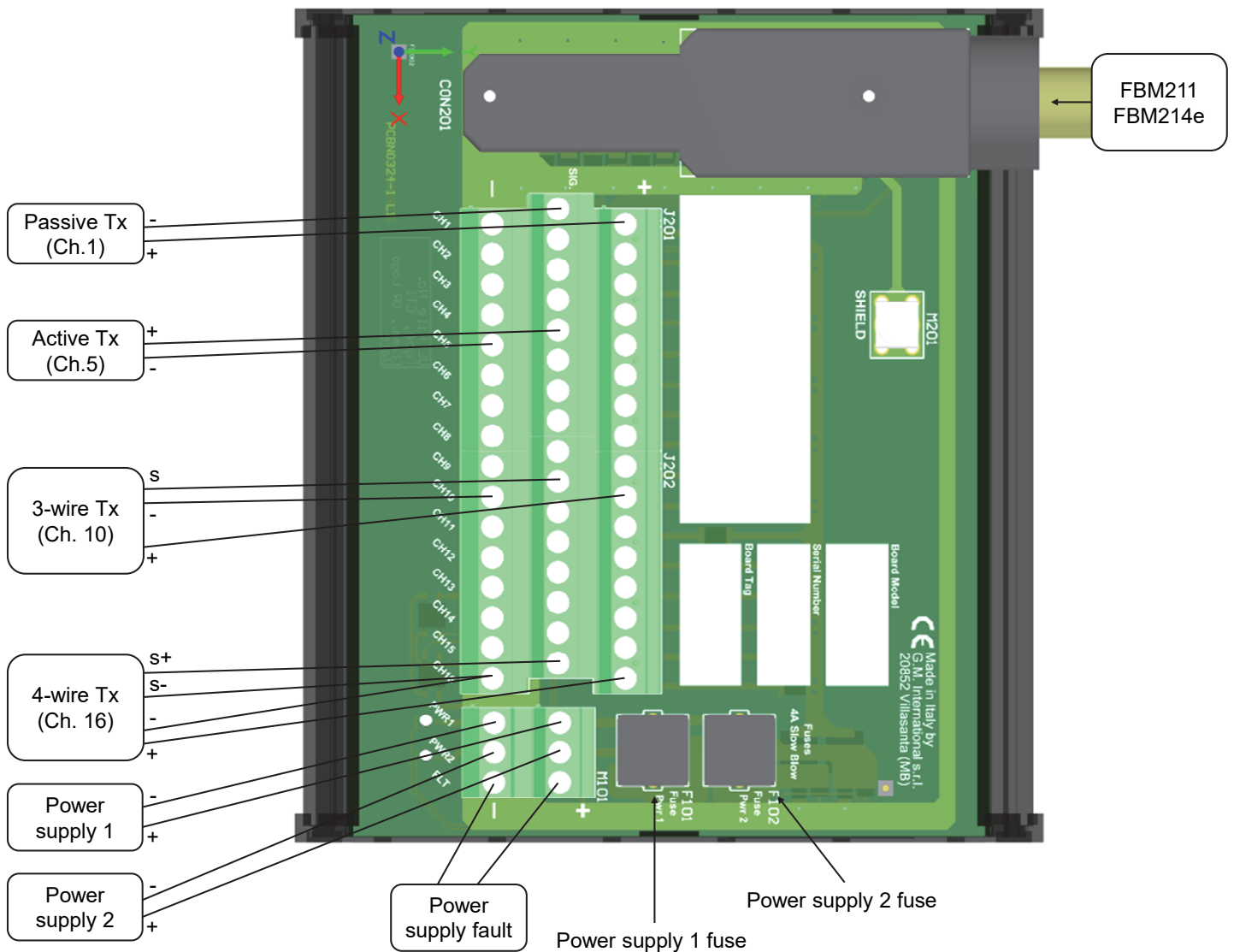
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Overall dimensions:



All dimensions are expressed in millimeters [inches]

Termination Unit Description



Connections Table to Interface Cards

Interface card(s) channel number	Channel positive connection (CON201)	Channel negative connection (CON201)	Notes
1	18	36	CON201: • Unconnected pins: 2, 19, 20, 37. • Shield pins: 1. • All negative pins are connected to power supply ground potential.
2	17	35	
3	16	34	
4	15	33	
5	14	32	
6	13	31	
7	12	30	
8	11	29	
9	10	28	
10	9	27	
11	8	26	
12	7	25	
13	6	24	
14	5	23	
15	4	22	
16	3	21	

Characteristics:**General description:**

This Termination Unit with Enclosure (TUE) provides galvanic isolation through opto-couplers between the I/O Card of the system and the field terminals for Digital Input applications. It supports free-voltage contacts as well as NAMUR proximity sensors. The status (open or closed) of each channel is also indicated through individual LEDs. Redundant power supply with voltage monitoring is supported.

Termination Units general characteristics:

Number of positions	Features
32	Power supply voltage redundancy Power supply fault signaling

Supported EVO I/O Cards:

Refer to DTS0496.

Installation:

TUE-32-INV-001 is a Termination Unit supported by a plastic shell suitable for installation on EN/IEC60715 TH 35 DIN-Rail.

TUE-32-INV-001 unit can be mounted with any orientation over the entire ambient temperature range.

Electrical connections are the following:

- PWR1, PWR2, FLT and CH1 to CH32: polarized screw terminal blocks for conductors up to 2.5 mm² (13 AWG) with a torque of 0.5-0.6 Nm.
- CON201: SUB D37 connector with screws retaining method.

Electrical connection can be plugged in/out into a powered unit without suffering or causing any damage. Connect only one individual conductor per each clamping point.

Wiring has to be sized according to the current and the length of the cables. On the section "Function Diagram" a block diagram identifies all connections.

Installation and wiring must be in accordance to the relevant national/international installation standards, make sure that conductors are well isolated from each other and do not produce any unintentional connection.

The unit shall be installed in an area of not more than pollution degree 2 according to EN/IEC60664-1. The end user is responsible to ensure that the operating temperature of the module is not exceeded in the end use application.

Units must be protected against dirt, dust, extreme mechanical (e.g. vibration, impact and shock) and thermal stress, and casual contacts. If enclosure needs to be cleaned use only a cloth lightly moistened by a mixture of detergent in water.

Any penetration of cleaning liquid must be avoided to prevent damage to the unit.

Any unauthorized card modification must be avoided.

According to EN61010, TUE-32-INV-001 unit must be connected to SELV or PELV supplies.

All circuits connected to TUE-32-INV-001 unit must comply with the overvoltage category II (or better) according to EN/IEC60664-1.

Technical Data:**Supply:**

24 Vdc nom (20 to 30 Vdc), reverse polarity protected, redundant power supply, with OR diodes to mix supply voltages.

Current consumption (total supply): 0.42 A typical, with all input channels shorted.

Connection: by screw with terminations up to 2.5 mm².

Protection fuse: 2 A time lag.

Voltage monitor: contact closed if both power supplies are connected and active.

Isolation:

System/Field (including TUE power supply) 1.5 kV.

Supply fault detection:

The on-board diagnostics monitors both power supplies integrity. Any malfunction is reported by deactivating a solid-state relay and activating the corresponding red LED. Alarm is issued if power supply 1 or 2 < 10 Vdc.

Alarm is removed if power supply 1 and 2 ≥ 20 Vdc.

Connection: terminations up to 2.5 mm².

Output rating: 100 mA 35 V (≤ 0.5 V voltage drop).

I/O Card Interface:

Connection: 1 x 37-pin D-sub male connector (require female mating connector).

Cable: system cable Type 4.

Field Interface:

Connection: by screw with terminations up to 2.5 mm².

Input equivalent source: 8 V with 1 kΩ typical (8 V no load, 8 mA short).

Input switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA.

Compatibility:

CE mark compliant, conforms to Directive:

2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

Environmental conditions:

Operating: temperature limits -20 to +60 °C (Vsupply ≤ 25.2 Vdc), -20 to +50 °C (Vsupply > 25.2 Vdc), relative humidity max 90 % non condensing, up to 35 °C.

Max altitude: 2000 m a.s.l.

Storage: temperature limits -45 to +80 °C.

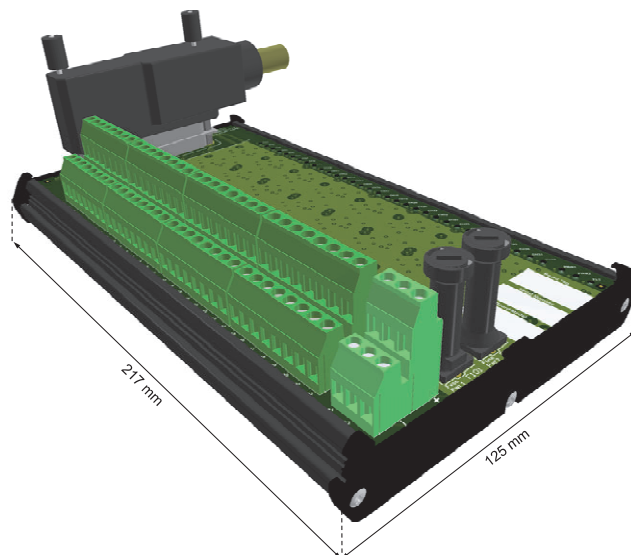
Mounting:

Hardware included for mounting on single DIN-rail 35 mm.

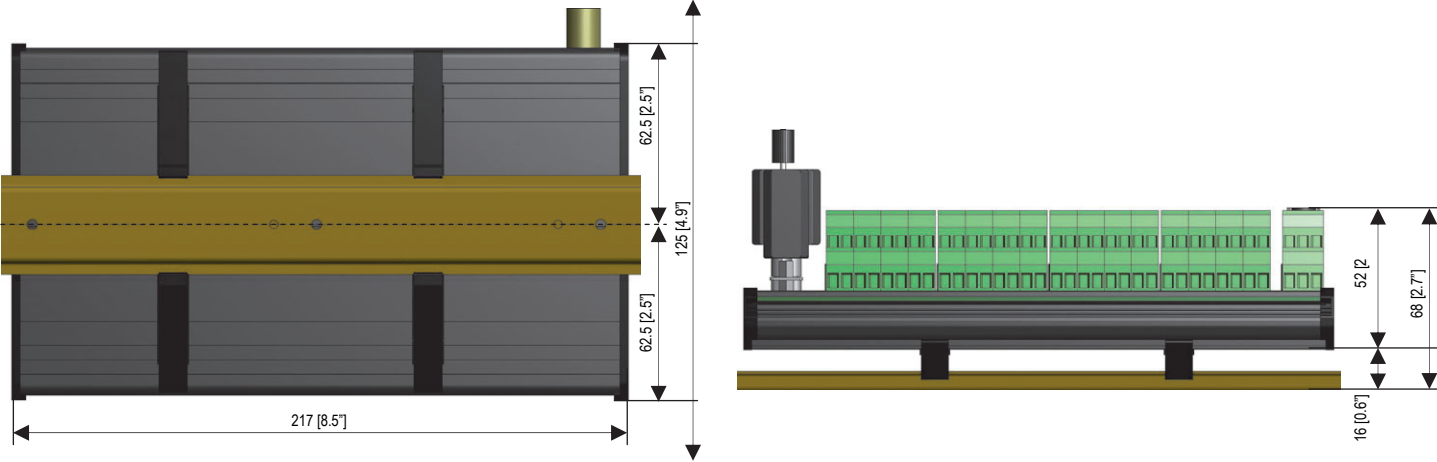
Weight: about 420 g.

Location: installation in Safe Area.

Dimensions: Width 217 mm, Depth 125 mm, Height 68 mm.

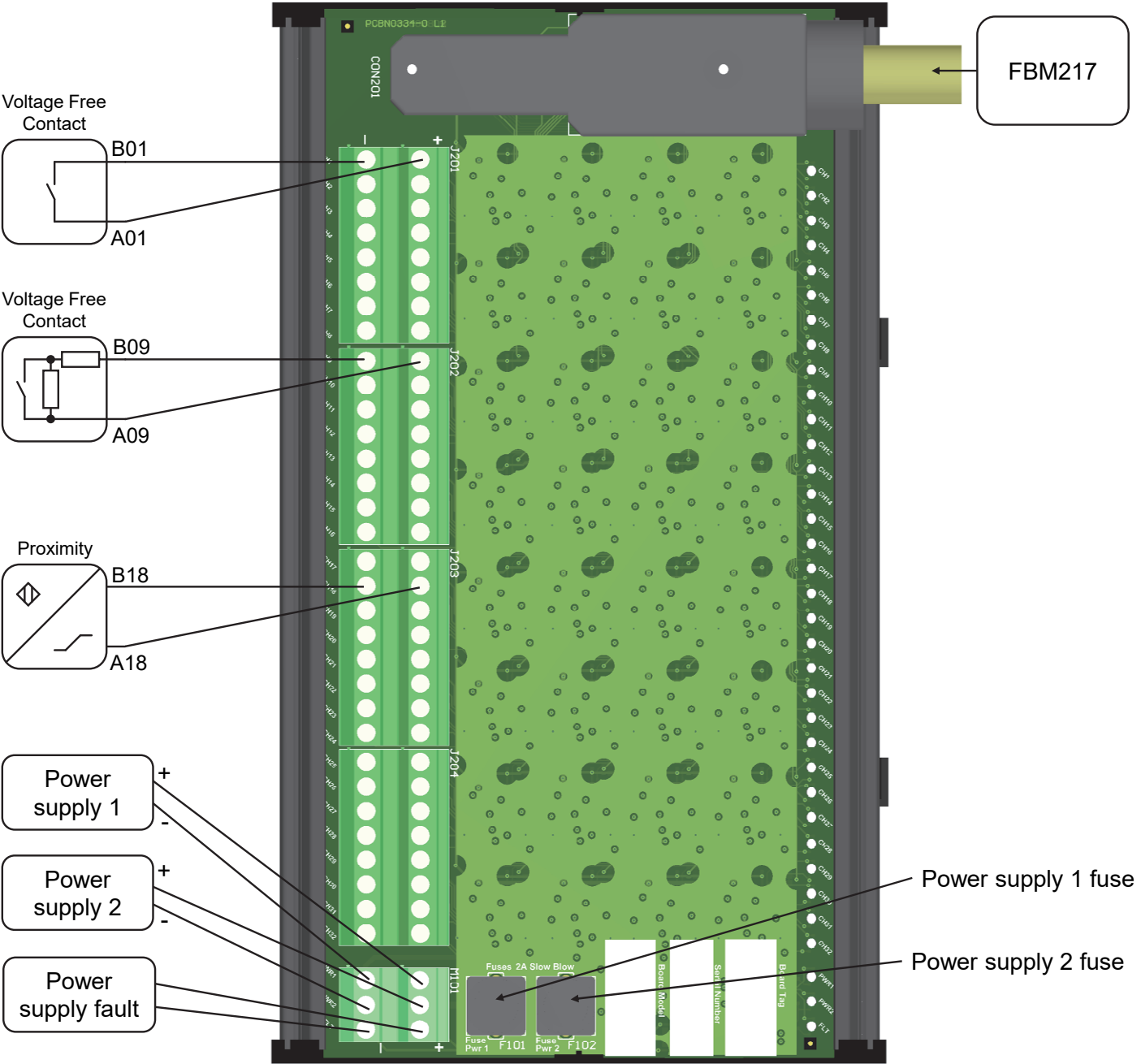
Image:

Overall dimensions:



All dimensions are expressed in millimeters [inches]

Termination Unit Description



Connections Table to Interface Cards

Interface card(s) channel number	Channel connection (CON201)	Notes
1	18	CON201: • Unconnected pins: 1, 2. • Shorted pins: 20, 37. • Power supply pins: 19.
2	36	
3	17	
4	35	
5	16	
6	34	
7	15	
8	33	
9	14	
10	32	
11	13	
12	31	
13	12	
14	30	
15	11	
16	29	
17	10	
18	28	
19	9	
20	27	
21	7	
22	25	
23	8	
24	26	
25	5	
26	23	
27	6	
28	24	
29	3	
30	21	
31	4	
32	22	