

Characteristics:

General description:

This Termination Board (TB) provides direct connection between the I/O Card of the system and D5000 / D6000 Series modules.
The Intrinsically Safe protection and signal isolation between Safe and Hazardous Area, is provided by D5000 Series Associated Apparatus. The 24 Vdc Power Supply of the TB is connected to two plug-in terminal blocks, for a redundant power supply.
The power supply for modules is given by TB power bus.

Termination Board general characteristics:

Number of positions	Features
16+16	1) Power Supply voltage redundancy; 2) Abnormal supply voltage signaling; 3) Cumulative module fault signaling.

Supported HIMA HIMax I/O Cards:

I/O Card Type	CB Type	I/O Card Model	Channels per I/O Card	CBs per board	Channels per board	Supported GM Modules(*)
Digital Output	X-CB 009 03, X-CB 009 04	X-DO 32 01	32	1	32	D5040S, D5048S, D5049S, D5090S, D5091S, D5094S, D5095S, D5096S, D5097S, D5098S,

(*) Do not mix D5000 Intrinsically Safe barriers with D5000 Relay modules or D6000 isolators on same termination board.

Technical Data:

Supply:

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

Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².

2 LEDs indication: green color, one for supply 1 and one for supply 2.

Protection fuse: 4 A time lag (spare fuse provided on Termination Board).

Fault detection:

1) Preventive - abnormal supply voltage: supply 1 or supply 2 is < 18 Vdc (Under Voltage, UV) or > 30 Vdc (Over Voltage, OV).

2) Critical - abnormal supply voltages or cumulative fault: both supplies are in under (< 18 Vdc) or over (> 30 Vdc) voltage condition OR cumulative fault indication (about presence of short or open field circuit for any DO channel).

LED fault signaling (for both case 1 and 2): 2 red LEDs (UV and OV of supply 1); 2 red LEDs (UV and OV of supply 2); a cumulative fault red LED.

Relay fault signaling (one for each case 1 or 2): a voltage free NE SPDT - 1 Form C relay contacts (de-energized in fault condition), with the following characteristics:

Contact material: AgCdO.

Contact rating: 2 A 36 Vac 72 VA, 2 A 48 Vdc 80 W (resistive load).

Mechanical / Electrical life: 30 * 10⁶ / 1 * 10⁵ operation, typical.

Coil status LED indication: yellow color, turn on when coil is energized.

Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².

I/O card interface:

Connection: one 96 poles male connector DIN 41612-R (require female mating connectors).

Cable type: X-CA 006.

Environmental conditions:

Operating: temperature limits – 40 to + 70 °C,

relative humidity max 90 % non condensing, up to 35 °C.

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

Mounting:

Hardware included for mounting on wall and single DIN rail.

Flat ribbon 34-poles cable included for PCB connection.

Weight: about 800 g (excluding modules and mounting options).

Location: Safe Area / Ordinary locations.

Dimensions: Width 534 mm, Depth 176 mm, Height 125 mm.

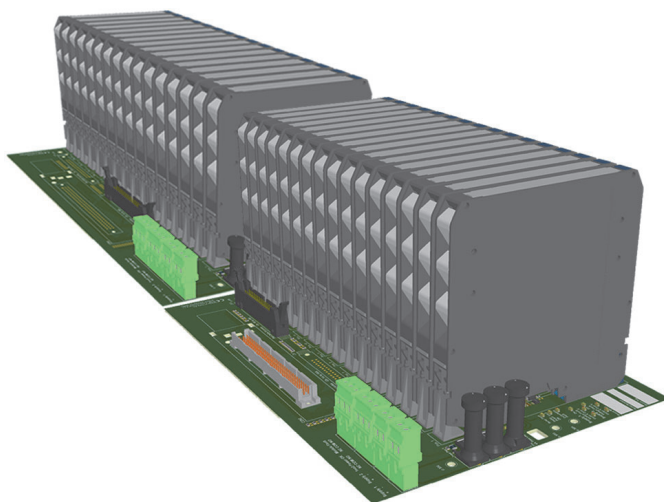
Features:

- HIMax DO Cards board interfaces.
- 16+16 positions Termination Board for up to 32 channels.
- Lower cables installation and maintenance costs.
- Power supplies fault monitoring.
- Spare fuse provided.
- Mounting hardware provided for:
 - Wall mounting, M4 thread screw;
 - Wall mounting, M4 self tapping screw;
 - Single Din Rail mounting kit.

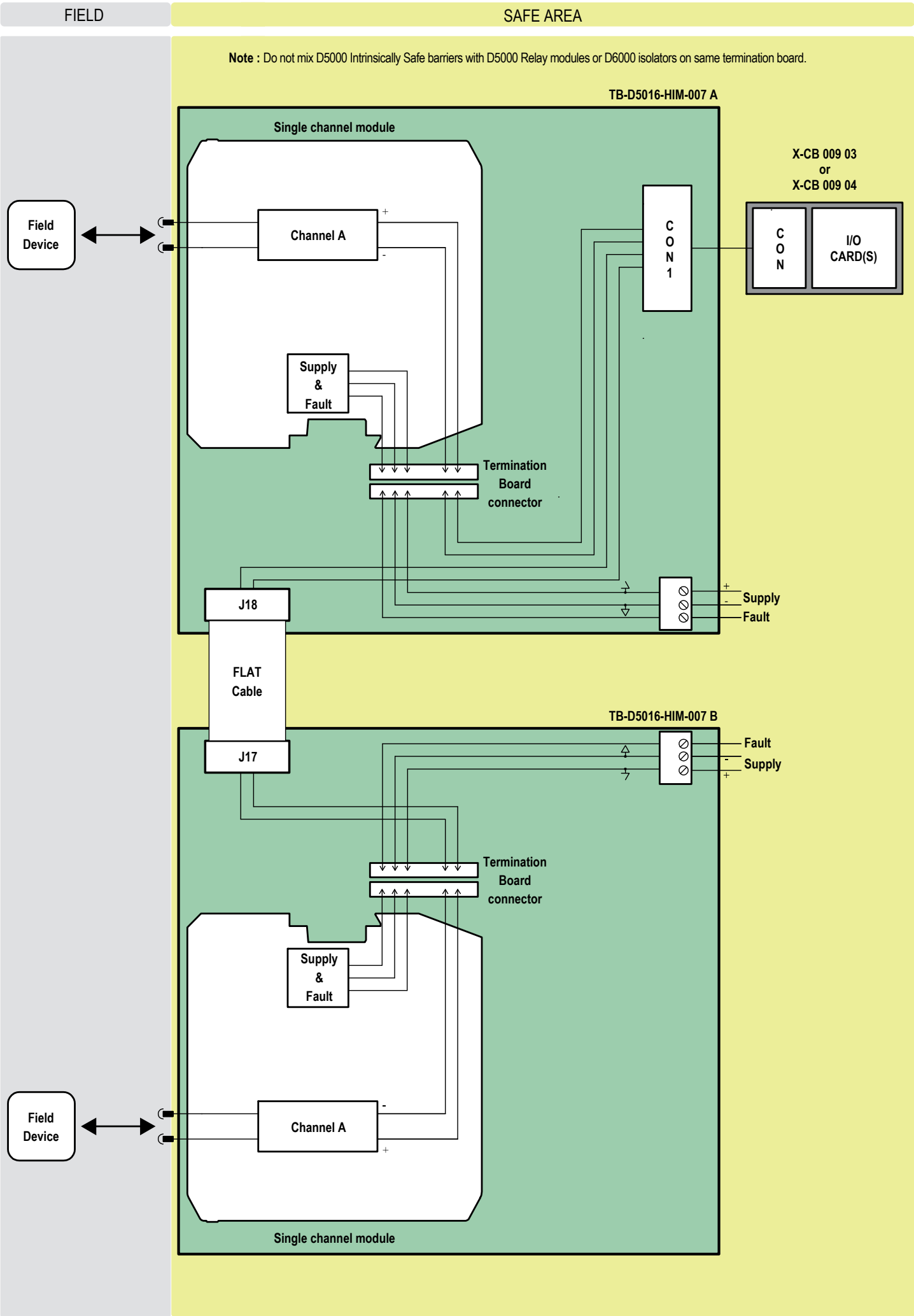
Ordering Information:

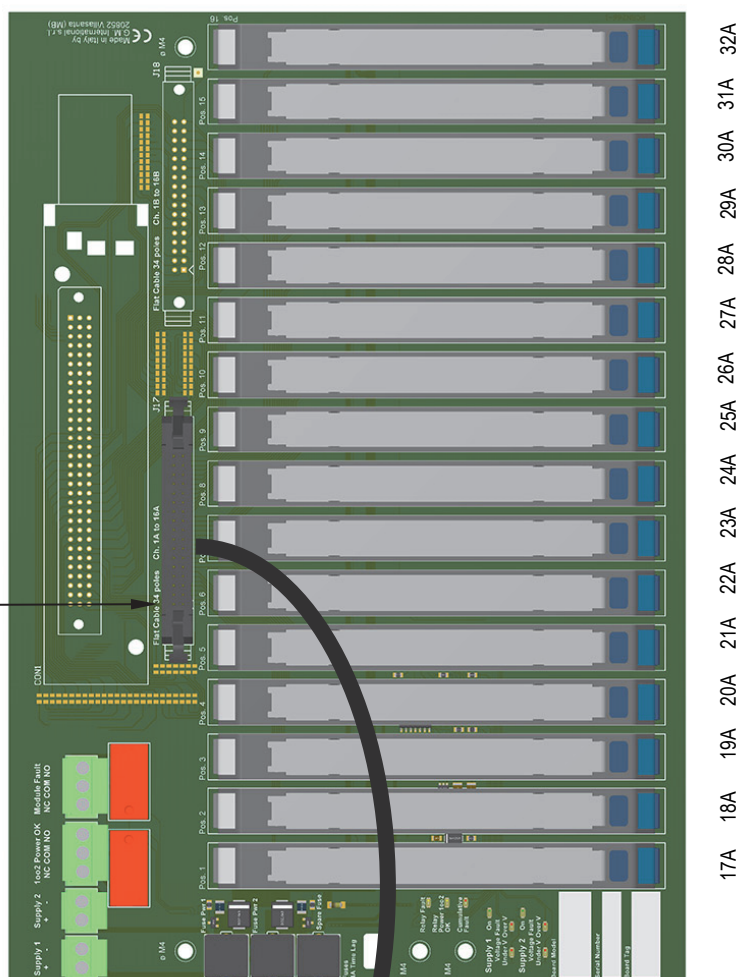
Model: TB-D5016-HIM-007

Image:



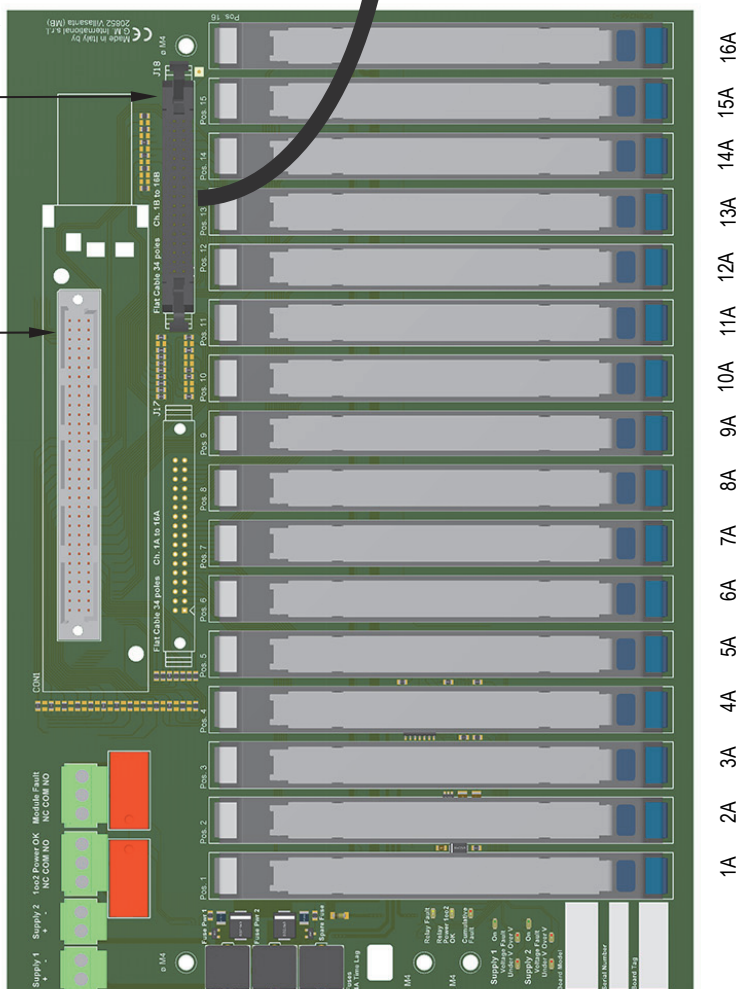
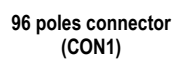
Loop Diagrams:





34 poles flat cable

TB-D5016-HIM-007 A



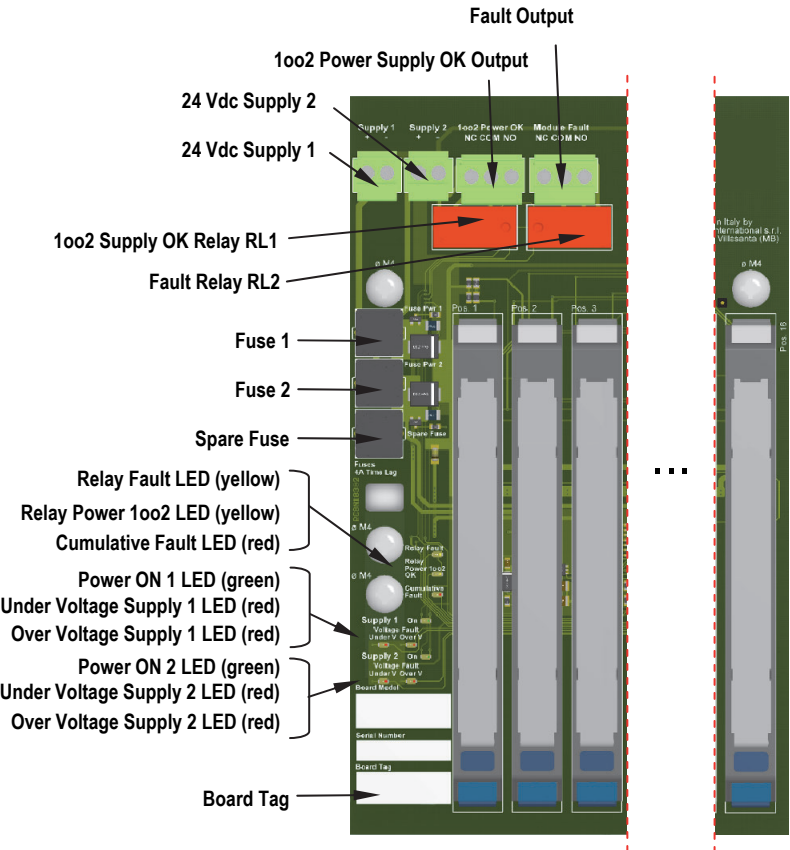
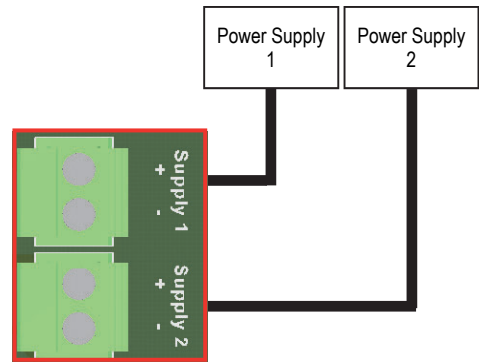
Connections table to Interface Cards:

MODULE POSITION	MODULE CHANNEL NUMBER	INTERFACE CARD(S) CHANNEL NUMBER	MODULE CHANNEL POSITIVE (+) CONNECTION (CON1)	MODULE CHANNEL NEGATIVE (-) CONNECTION (CON1)	NOTES
1	1A	1	c1	b1	CON1: • Poles a1-a32 are not connected.
2	2A	2	c2	b2	
3	3A	3	c3	b3	
4	4A	4	c4	b4	
5	5A	5	c5	b5	
6	6A	6	c6	b6	
7	7A	7	c7	b7	
8	8A	8	c8	b8	
9	9A	9	c9	b9	
10	10A	10	c10	b10	
11	11A	11	c11	b11	
12	12A	12	c12	b12	
13	13A	13	c13	b13	
14	14A	14	c14	b14	
15	15A	15	c15	b15	
16	16A	16	c16	b16	
17	17A	17	c17	b17	
18	18A	18	c18	b18	
19	19A	19	c19	b19	
20	20A	20	c20	b20	
21	21A	21	c21	b21	
22	22A	22	c22	b22	
23	23A	23	c23	b23	
24	24A	24	c24	b24	
25	25A	25	c25	b25	
26	26A	26	c26	b26	
27	27A	27	c27	b27	
28	28A	28	c28	b28	
29	29A	29	c29	b29	
30	30A	30	c30	b30	
31	31A	31	c31	b31	
32	32A	32	c32	b32	

Termination Board description:

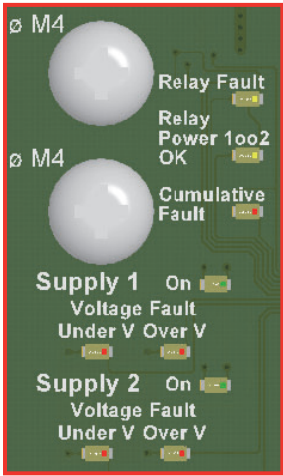
Note:
Relay contact is defined Normally Closed (NC) or Normally Open (NO) when RL1 or RL2 relays are de-energized (that is, coil status LED is turned off).
Relay is de-energized in fault status.

Power Supply redundancy:



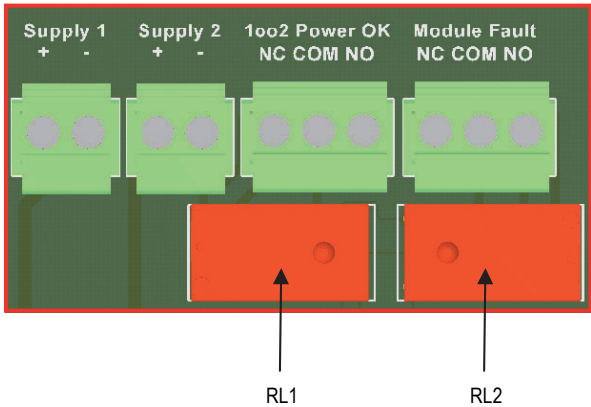
LED Signaling:
Meaning of LEDs on termination boards:

TAG	LED COLOR	MEANING
Supply 1 On	GREEN	The LED is on when the Supply 1 is present, regardless of its voltage
Supply 1 Under V	RED	The LED is on when the Supply 1 is under-voltage (<18 V)
Supply 1 Over V	RED	The LED is on when the Supply 1 is over-voltage (>30 V)
Supply 2 On	GREEN	The LED is on when the Supply 2 is present, regardless of its voltage
Supply 2 Under V	RED	The LED is on when the Supply 2 is under-voltage (<18 V)
Supply 2 Over V	RED	The LED is on when the Supply 2 is over-voltage (>30 V)
Cumulative Fault	RED	The LED is on when at least one module/barrier reported a fault
Relay Power 1002 OK	YELLOW	The LED is on when both supply voltages are within the regular range (>18 V and <30 V)
Relay Fault	YELLOW	The LED is on when the following two conditions hold: 1. at least one voltage supply is within the regular range (>18 V and <30 V) 2. no module/barrier fault is reported

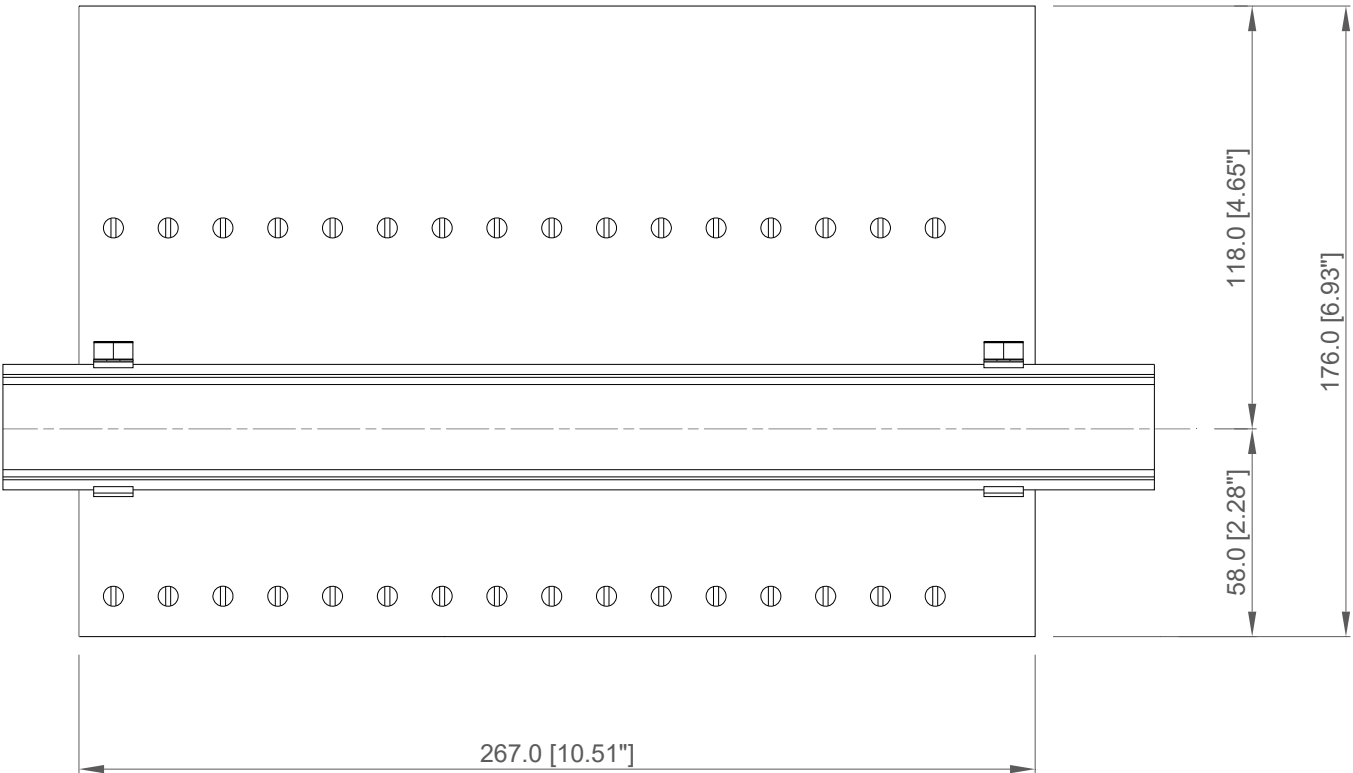


Relay Activation Conditions:
The two relays are activated according to the following rules:

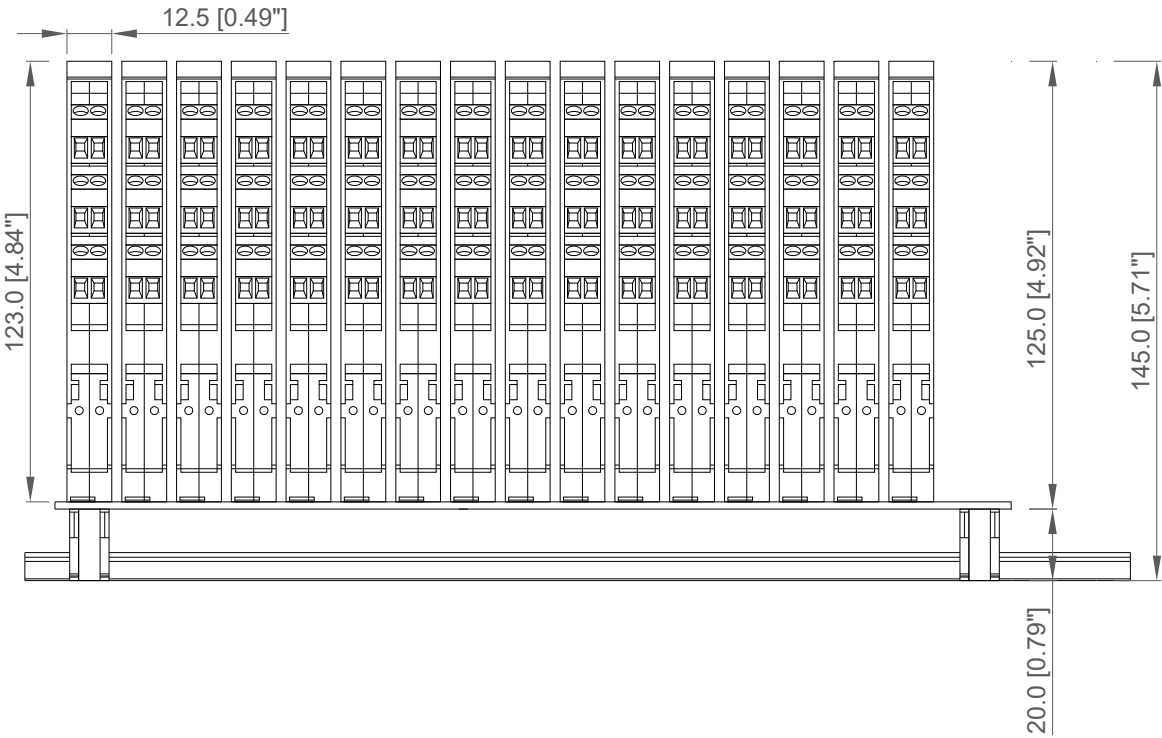
TAG	ACTIVATION
1002 Power OK (RL1)	The relay is energized when both supply voltages are within the regular range (>18 V and <30 V), i.e. when "Relay 1002 Power OK" yellow LED is on.
Module Fault (RL2)	The relay is energized when the following two conditions hold: 1. at least one voltage supply is within the regular range (>18 V and <30 V) 2. no module/barrier fault is reported Therefore, the relay is energized when the "Fault" yellow LED is on.



Bottom view

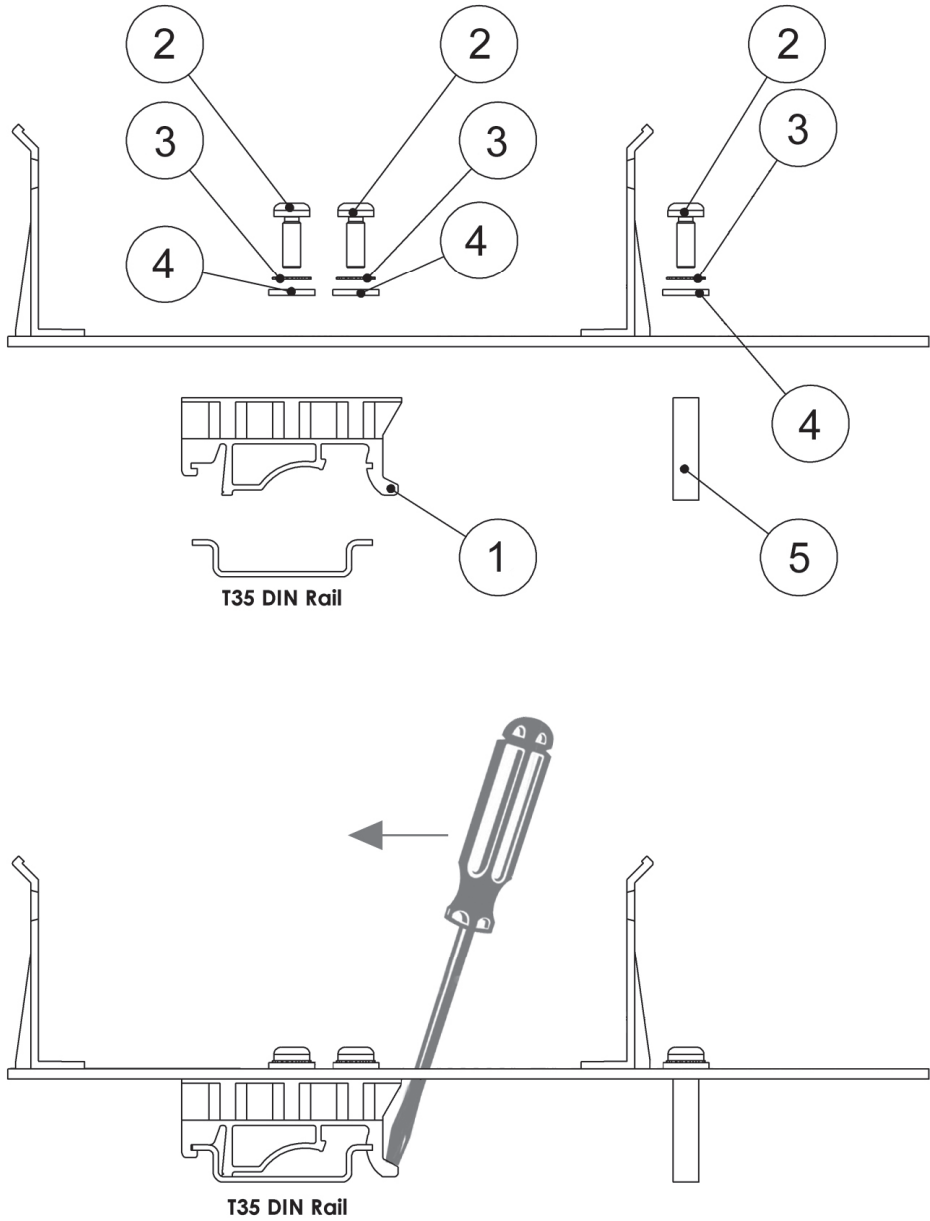


Side view



All dimensions are expressed in millimeters [inches]

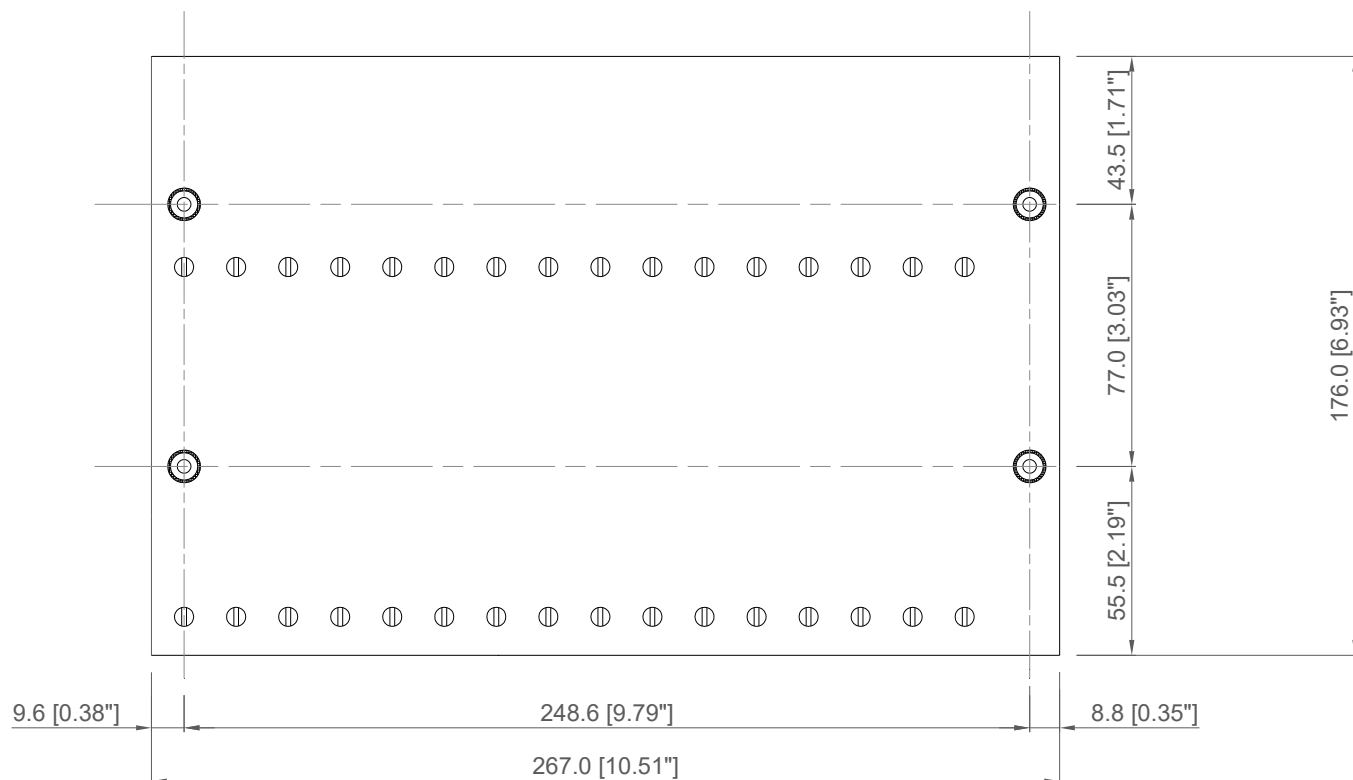
Mounting features kit TB-OPT-001



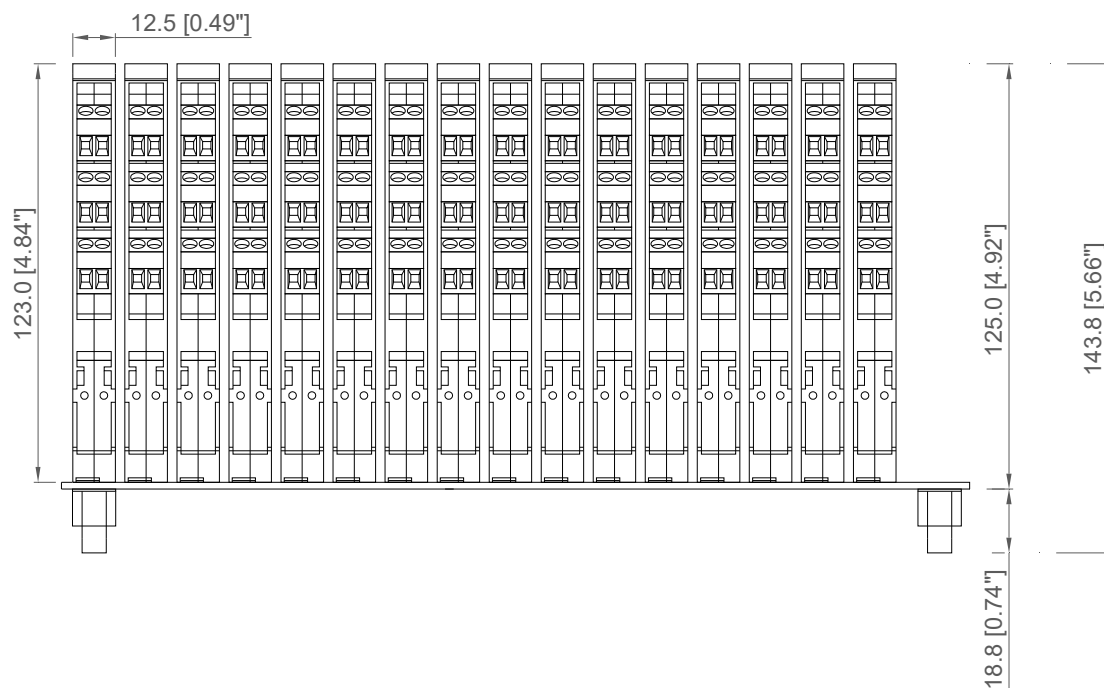
Ref. Nr	Q.ty	Description	Material
1	2	T35 Din Rail Adapter	PA
2	6	3.5 x 9.5 Self tapping screw	Stainless Steel
3	6	M3 External Tooth lock Washer	Stainless Steel
4	6	M3 Washer	Stainless Steel
5	2	6 c 20 Spacer	PA

Wall mounting overall dimensions for M4 self tapping screw:

Bottom view

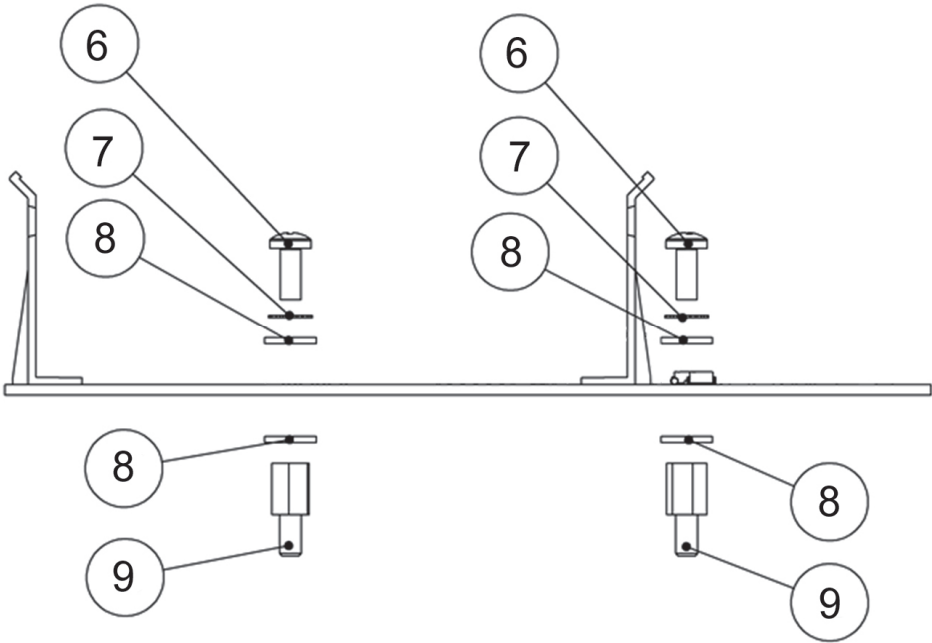
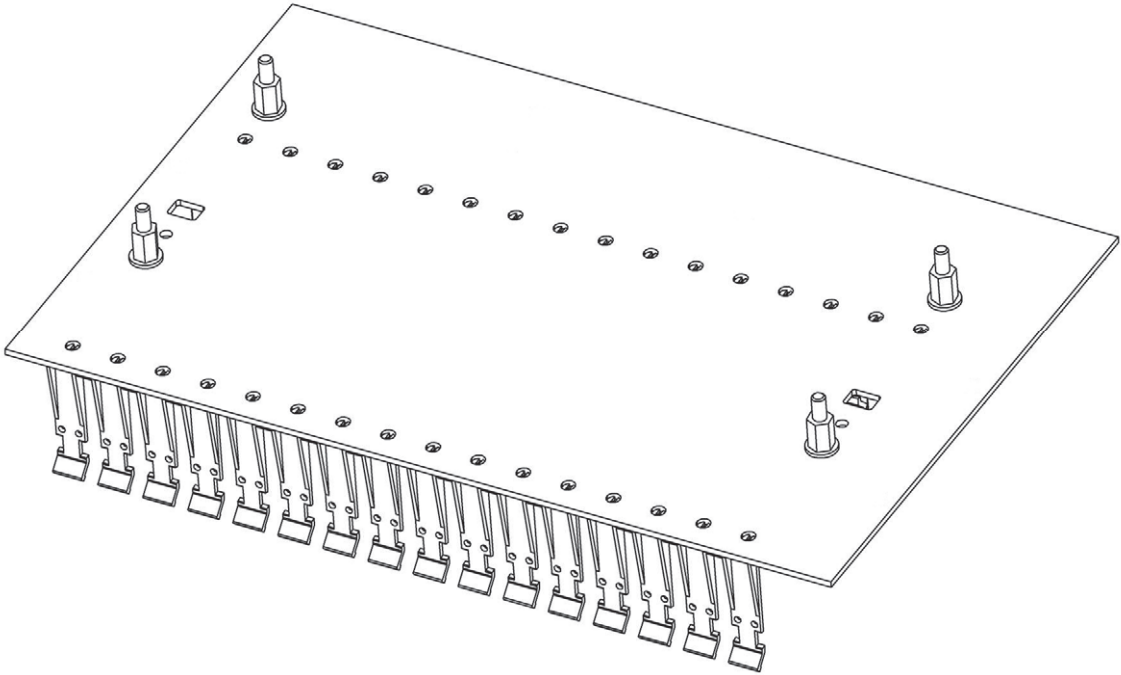


Side view

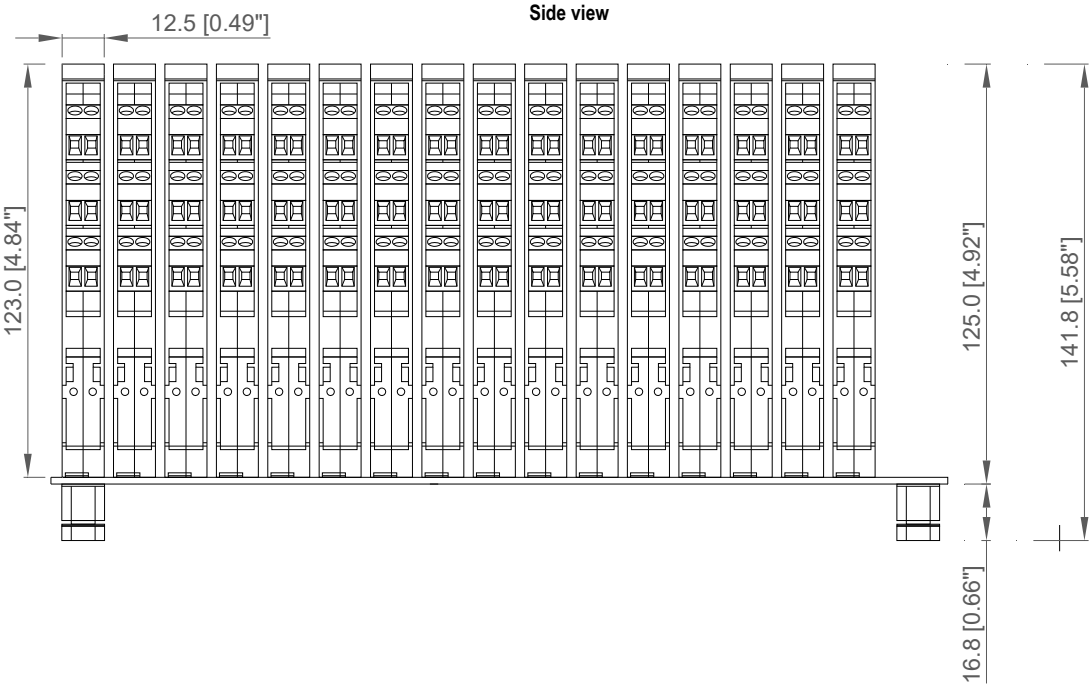
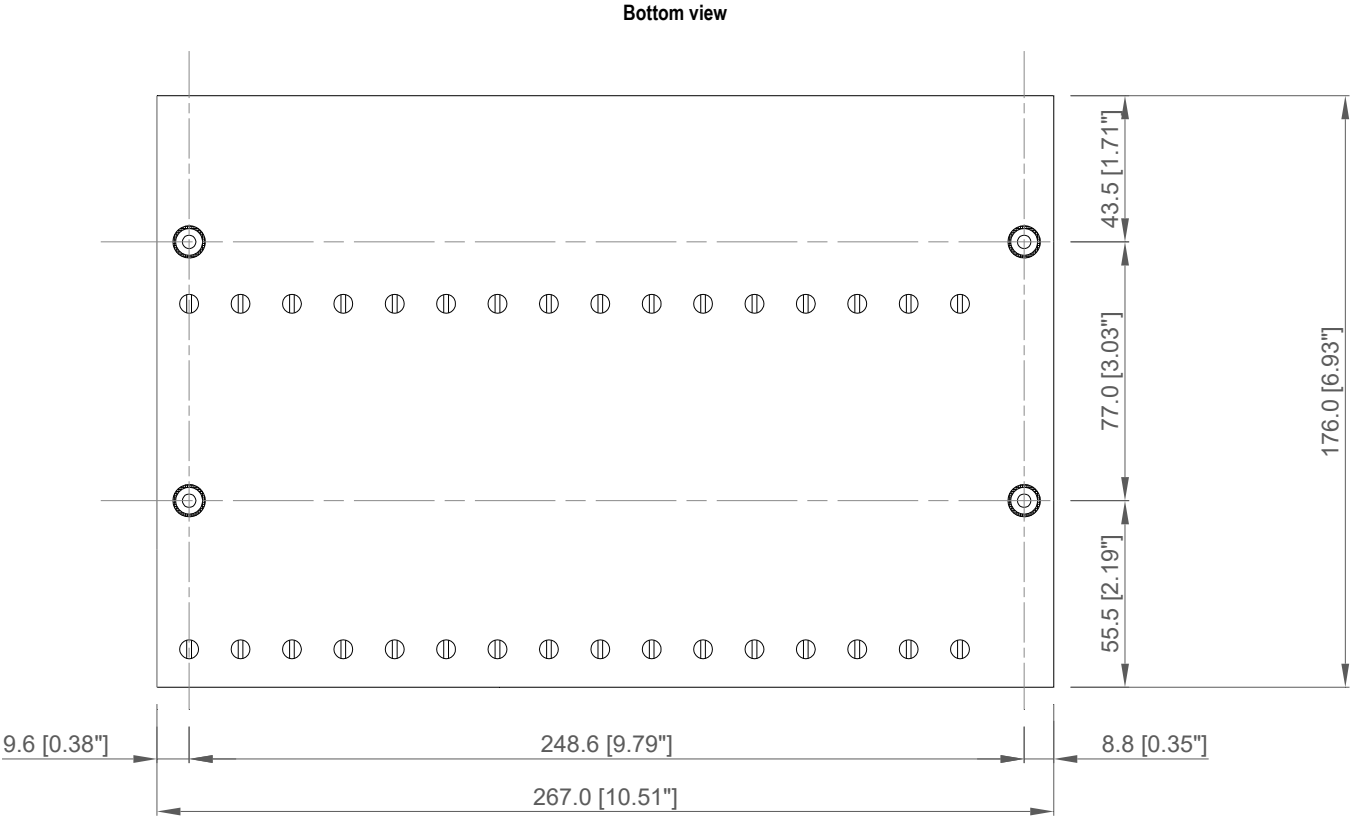


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Mounting features kit TB-OPT-001

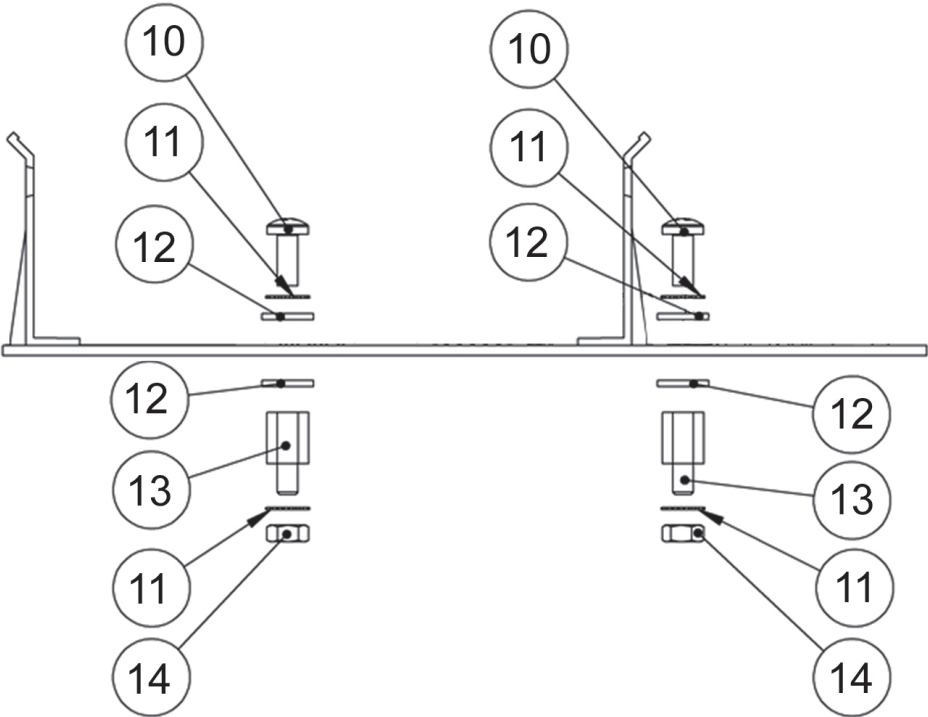
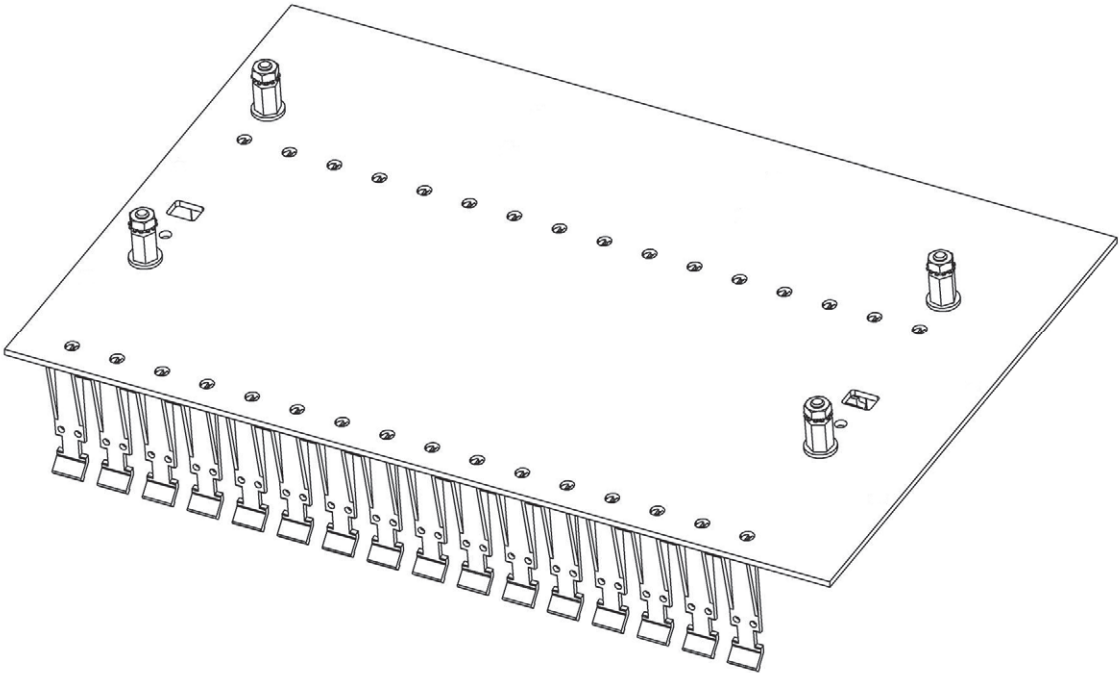


Ref. Nr	Q.ty	Description	Material
6	4	M4 x 8 Screw	Stainless Steel
7	4	M4 External Tooth lock Washer	Stainless Steel
8	8	M4 Washer	Stainless Steel
9	4	Self Tapping Spacer	NI - Plated Brass



All dimensions are expressed in millimeters [inches]

Mounting features kit TB-OPT-001



Ref. Nr	Q.ty	Description	Material
10	4	M4 x 8 Screw	Stainless Steel
11	8	M4 External Tooth lock Washer	Stainless Steel
12	8	M4 Washer	Stainless Steel
13	4	Threaded Spacer	NI - Plated Brass
14	4	M4 Nut	Stainless Steel