

Characteristics:

General description:

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

Termination Board general characteristics:

Termination Board Model	Number of positions	Features
TB-D5008-GMI-002	8	1) I/O signal redundancy; 2) Power Supply voltage redundancy; 3) HART multiplexing; 4) Abnormal supply voltage signaling; 5) Cumulative module fault signaling.

Supported GM Modules:

I/O signal Type	Number of channels per board	Supported GM Modules*
Analog Out	8	D5020S D6020S

* Do not mix D5000 Inherently Safe barriers with D5000 Relay modules or D6000 Isolators on same termination board.

In redundant mode, a solid-state switch forwards the master or the slave input to the barrier / isolator independently channel by channel. If a voltage is present at the master input, this is selected, otherwise the slave is forwarded.

Features:

- 8 channels Analog Output board interfaces.
- 8 positions Terminal Board for up to 8 channels.
- (0)4-20 mA signals.
- 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-D5008-GMI-002

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: 2 A slow blow (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 signals interface:

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

HART Multiplexing:

Connection: one 34 poles male connectors (requires female mating connector).

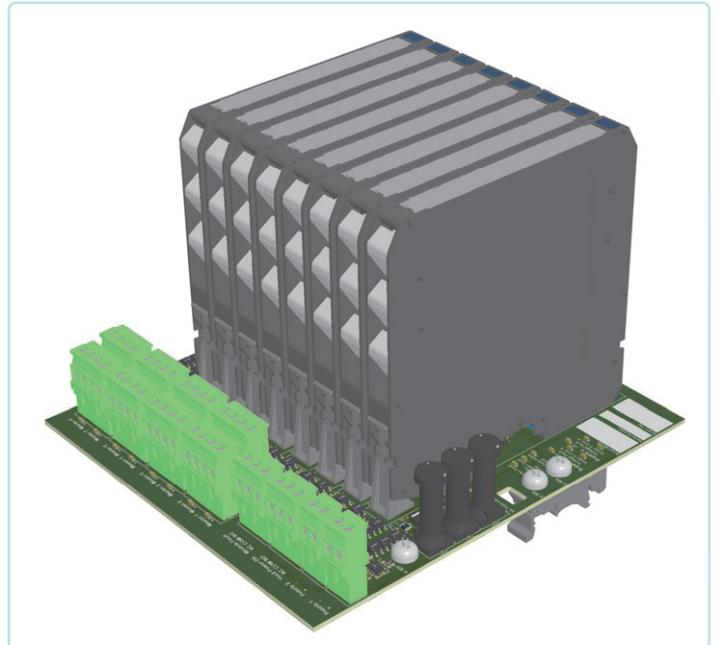
Environmental conditions:

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.
Weight: about 400 g (excluding modules and mounting options).
Location: Safe Area / Ordinary locations.
Dimensions: Width 166 mm, Depth 176 mm, Height 125 mm.

Image:



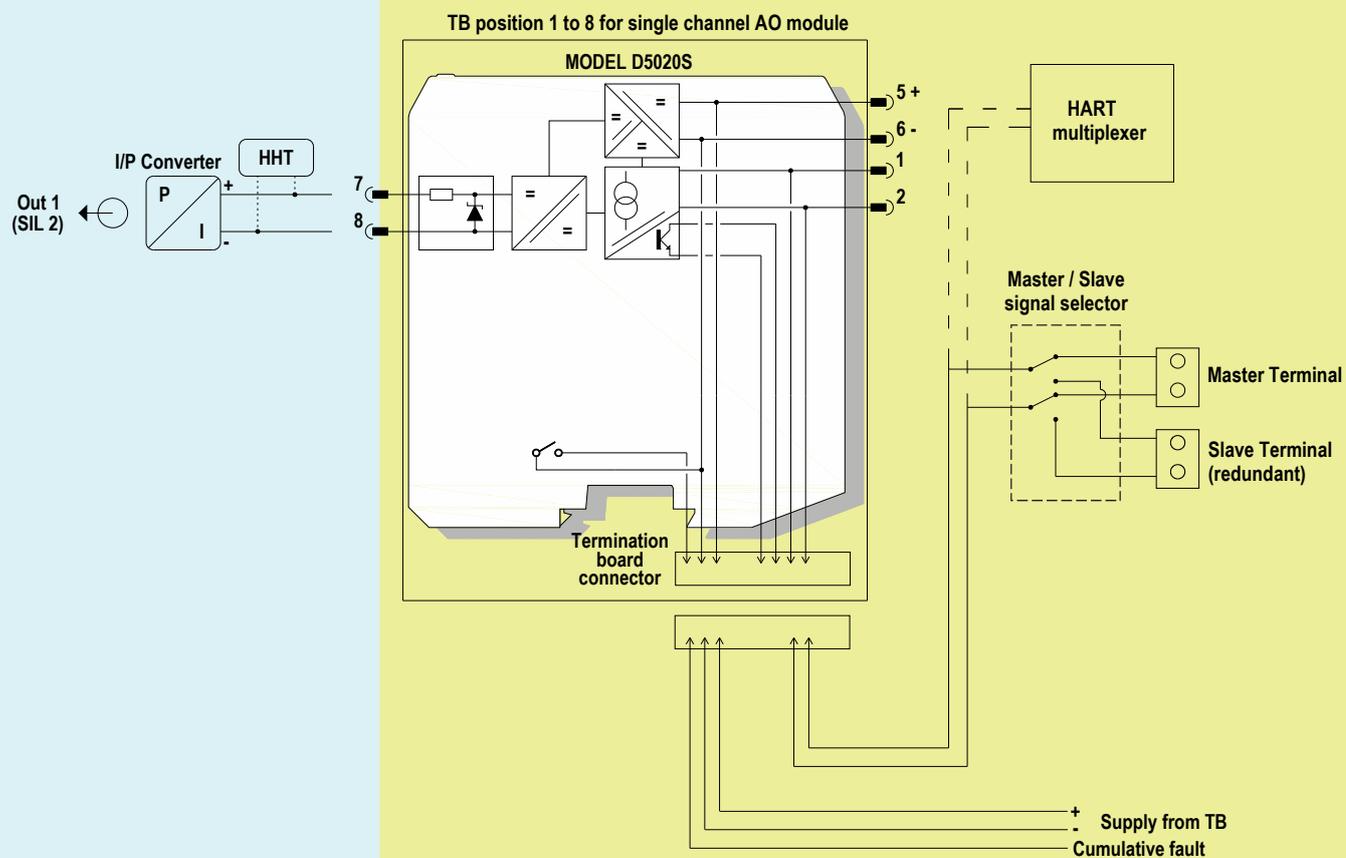
Loop Diagrams for 8 AO Interface Cards:

HAZARDOUS AREA

SAFE AREA

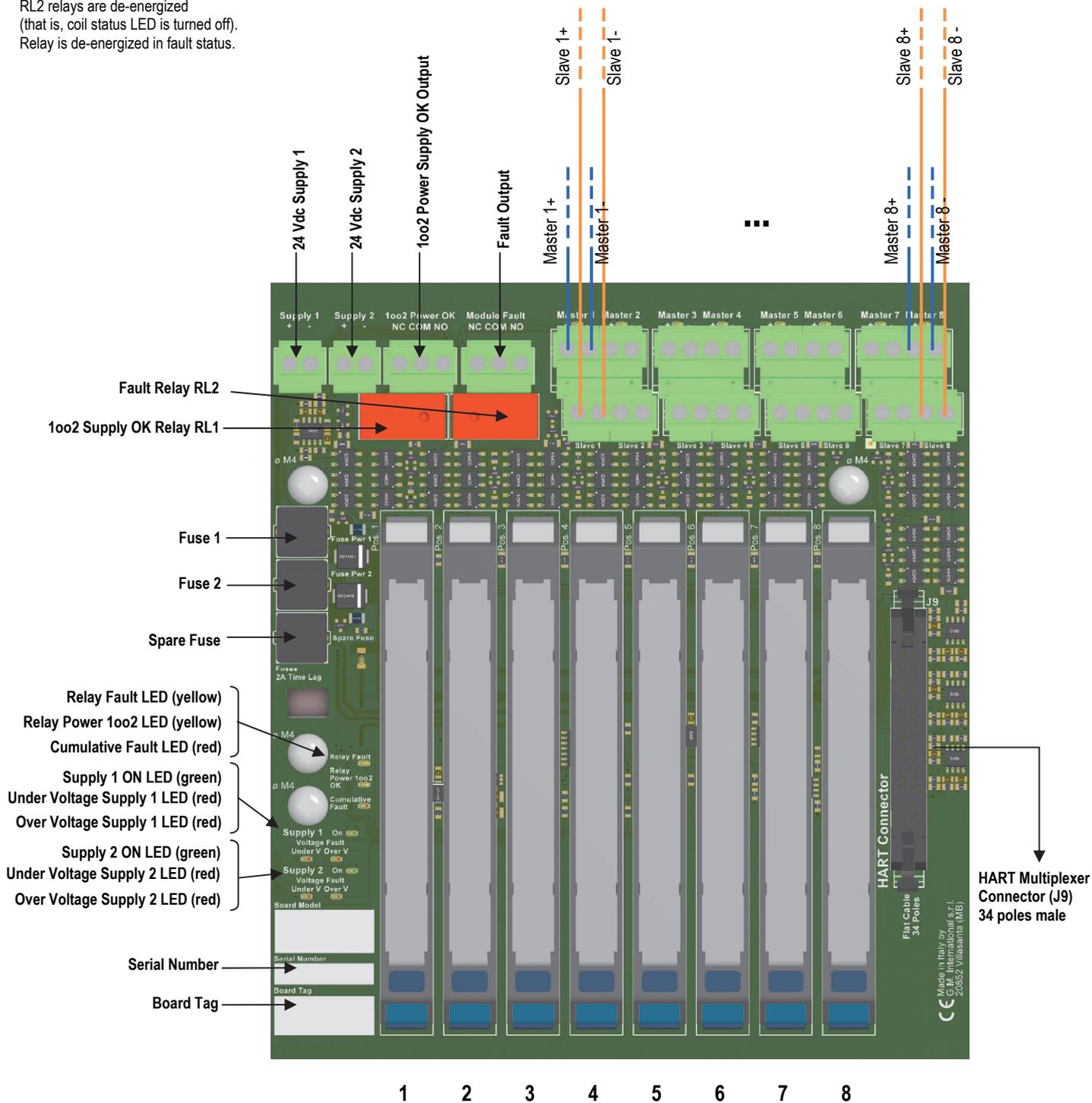
Note:

The D6000 isolators have the same function diagrams as the corresponding D5000 barriers, but they cannot be connected to the Hazardous Area



SAFE AREA / ORDINARY LOCATION

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.



HAZARDOUS AREA / LOCATION

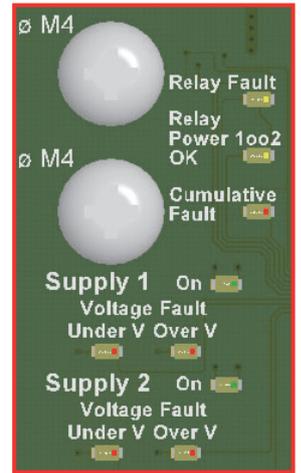
Connections table to Interface Cards:

MODULE POSITION	MODULE CHANNEL NUMBER	HART MULTIPLEXING CONNECTOR POSITIVE (+) PIN NUMBER	HART MULTIPLEXING CONNECTOR NEGATIVE (-) PIN NUMBER	NOTES
1	1A	1 (J9)	2 (J9)	J9: • Poles 17 to 34 are not connected.
2	2A	3 (J9)	4 (J9)	
3	3A	5 (J9)	6 (J9)	
4	4A	7 (J9)	8 (J9)	
5	5A	9 (J9)	10 (J9)	
6	6A	11 (J9)	12 (J9)	
7	7A	13 (J9)	14 (J9)	
8	8A	15 (J9)	16 (J9)	

LED Signaling:

Meaning of LEDs on termination boards:

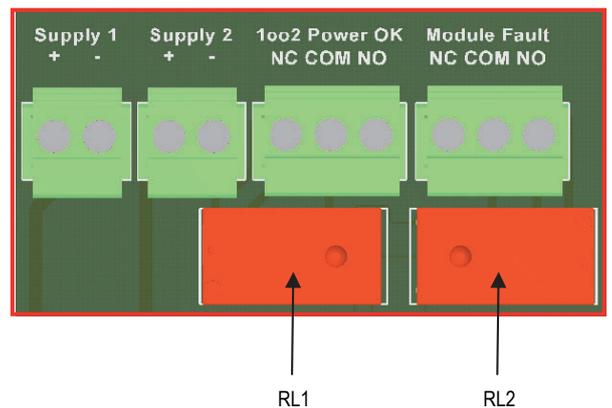
TAG	LED COLOR	MEANING
Supply 1 On	GREEN	The LED is on when the Supply 1 is present, regardless of its voltage
Supply 1 Under V	RED	The LED is on when the Supply 1 is under-voltage (<18 V)
Supply 1 Over V	RED	The LED is on when the Supply 1 is over-voltage (>30 V)
Supply 2 On	GREEN	The LED is on when 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 1oo2 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:

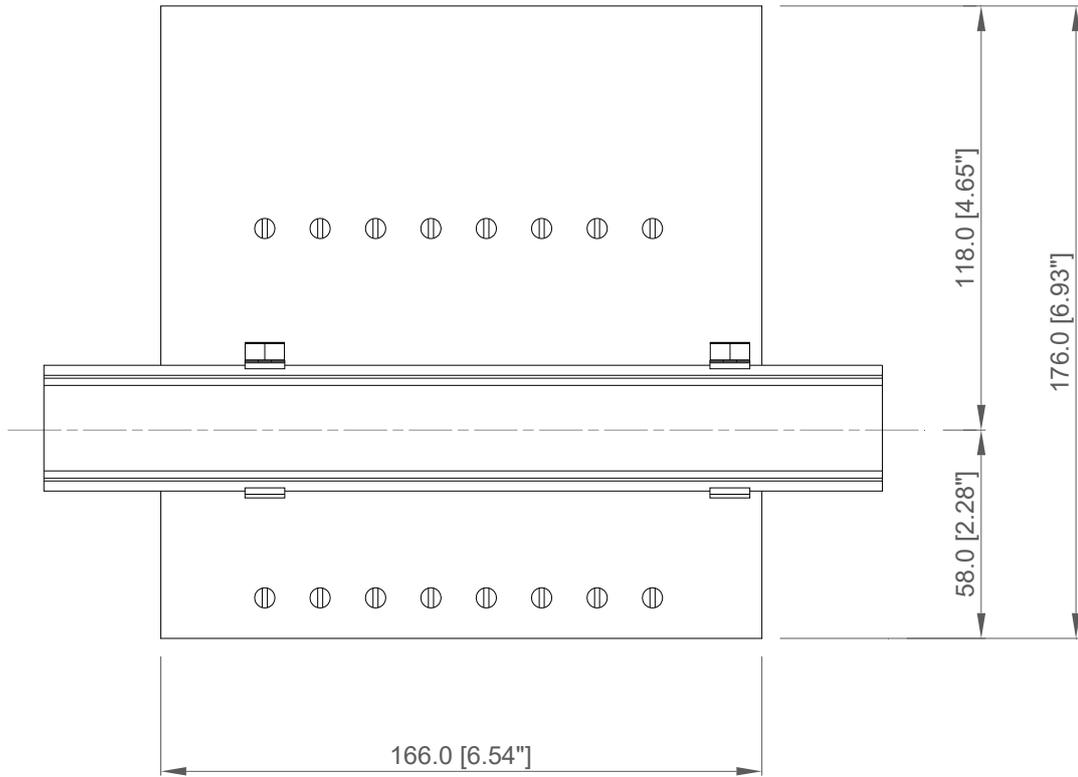
The two relays are activated according to the following rules:

TAG	ACTIVATION
1oo2 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 1oo2 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.

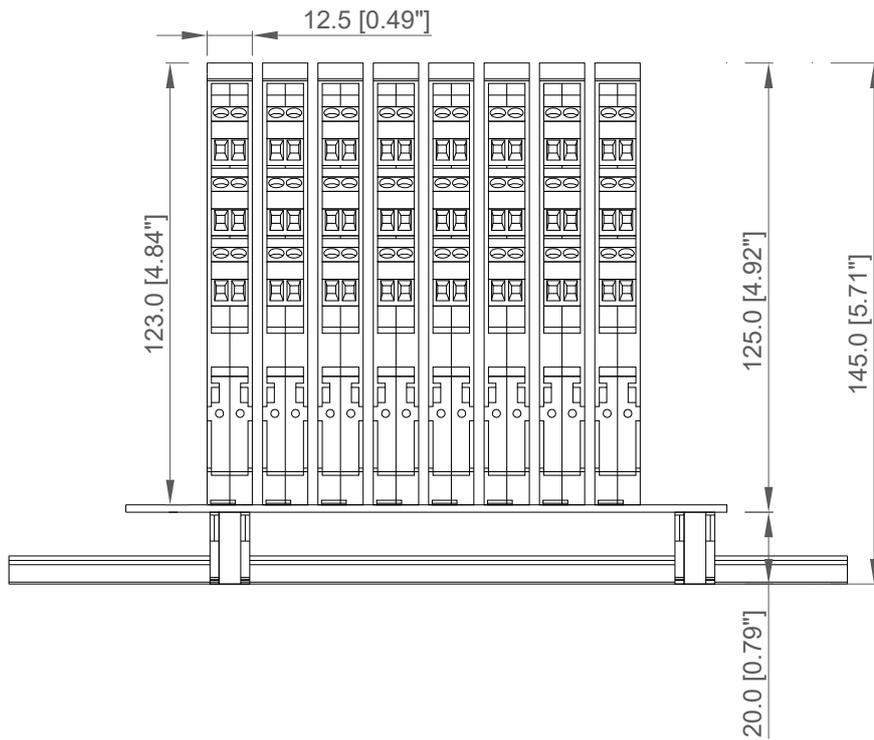


Termination Board Single DIN Rail mounting and overall dimensions:

Bottom view

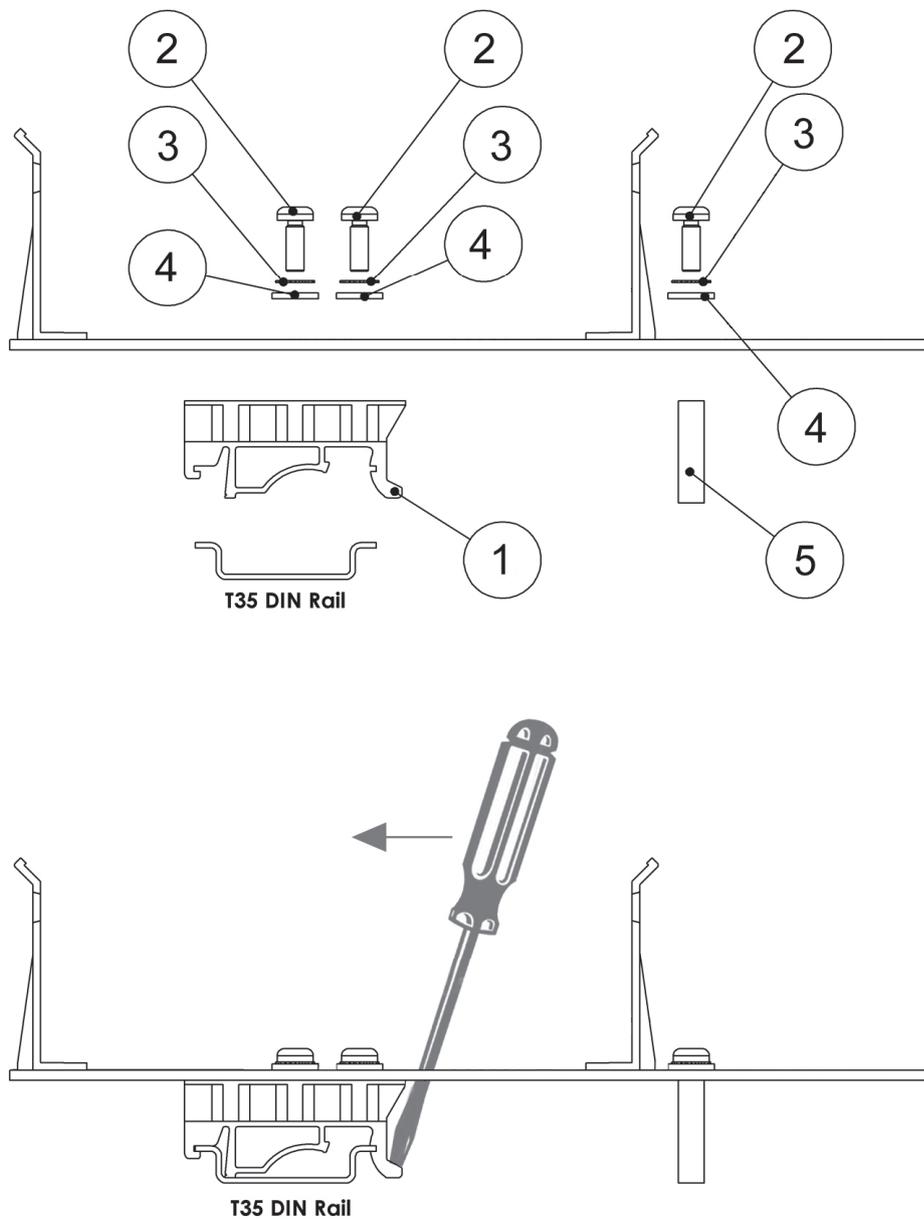


Side view



All dimensions are expressed in millimeters [inches]

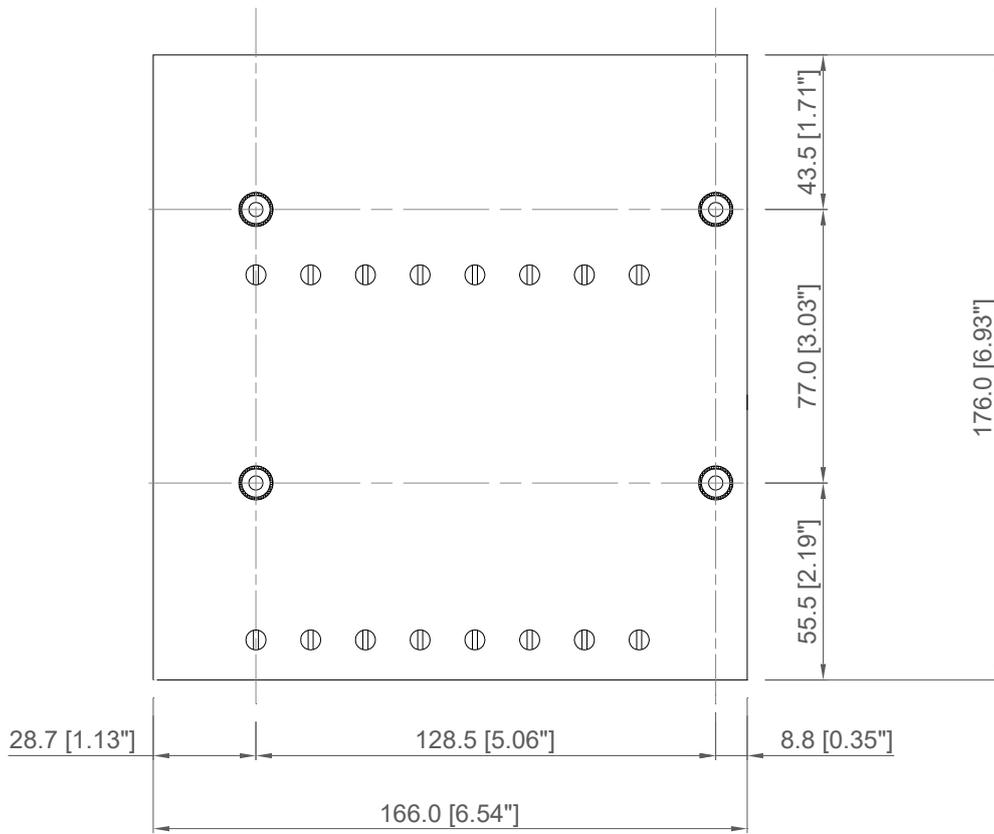
Mounting features kit TB-OPT-001



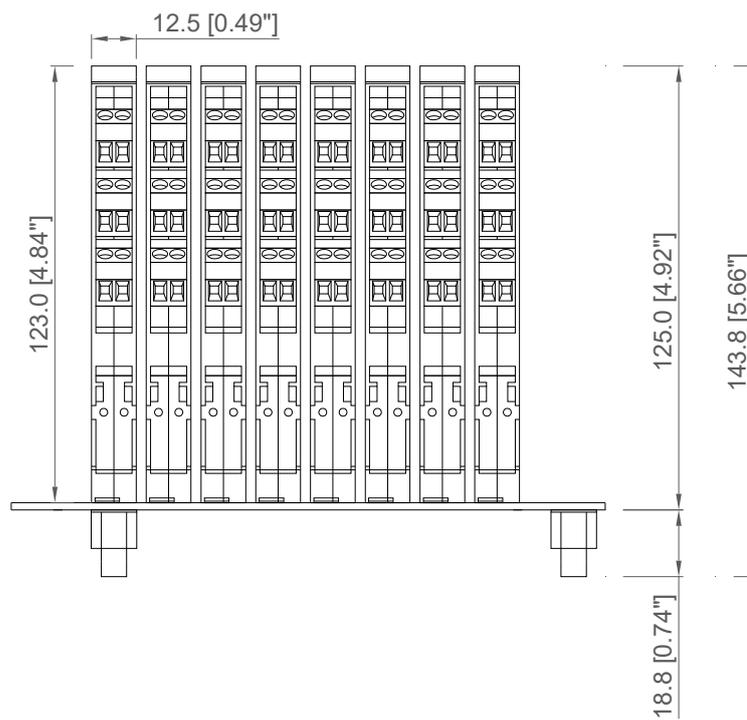
Ref. Nr	Q.ty	Description	Material
1	2	T35 Din Rail Adapter	PA
2	6	3.5 x 9.5 Self tapping screw	Stainless Steel
3	6	M3 External Tooth lock Washer	Stainless Steel
4	6	M3 Washer	Stainless Steel
5	2	6 c 20 Spacer	PA

Wall mounting overall dimensions for M4 self tapping screw:

Bottom view

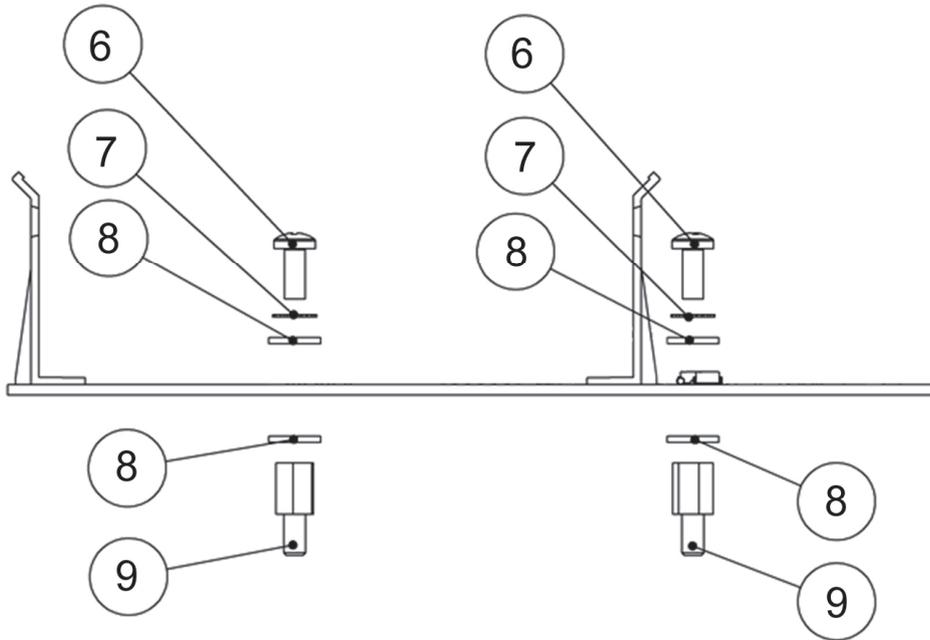
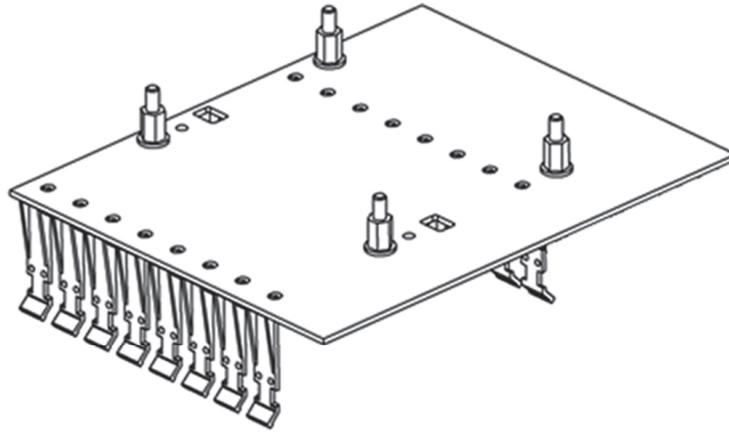


Side view



All dimensions are expressed in millimeters [inches]

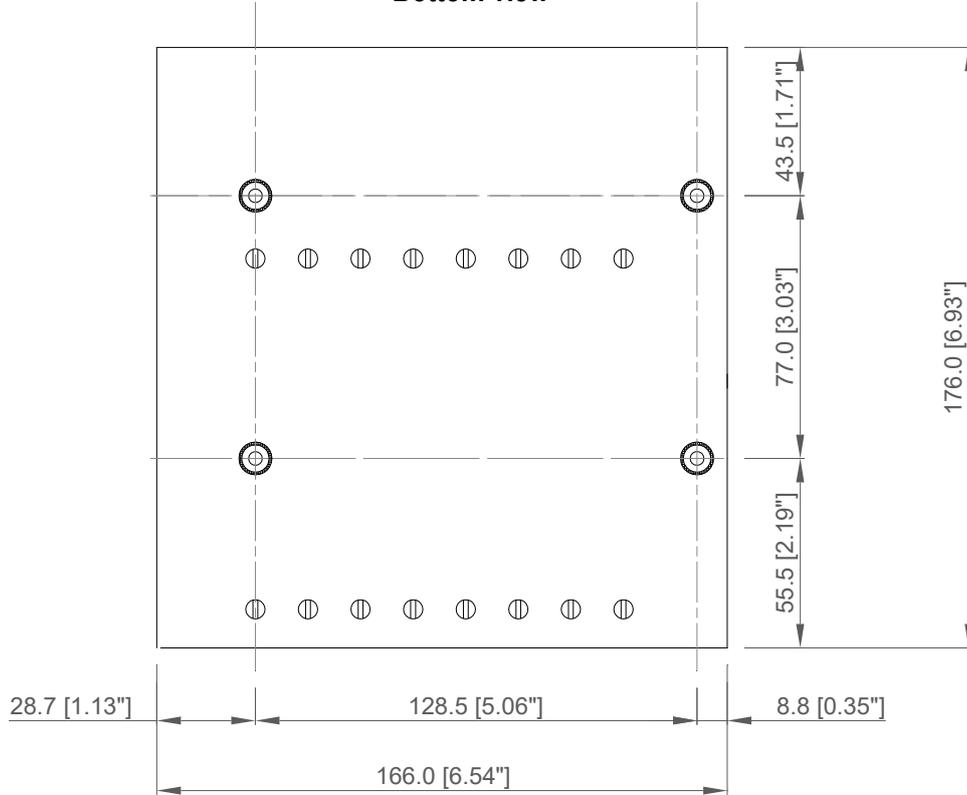
Mounting features kit TB-OPT-001



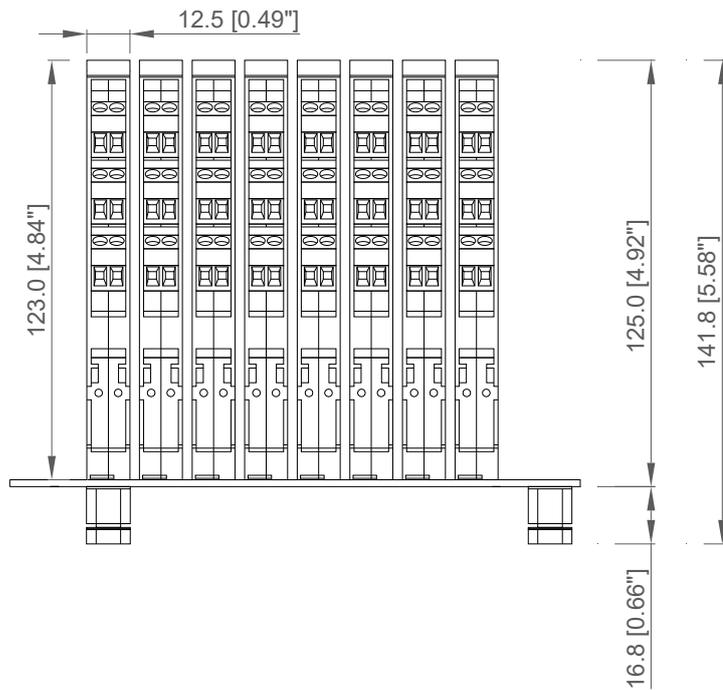
Ref. Nr	Q.ty	Description	Material
6	4	M4 x 8 Screw	Stainless Steel
7	4	M4 External Tooth lock Washer	Stainless Steel
8	8	M4 Washer	Stainless Steel
9	4	Self Tapping Spacer	NI - Plated Brass

Wall mounting overall dimensions for M4 thread screw:

Bottom view



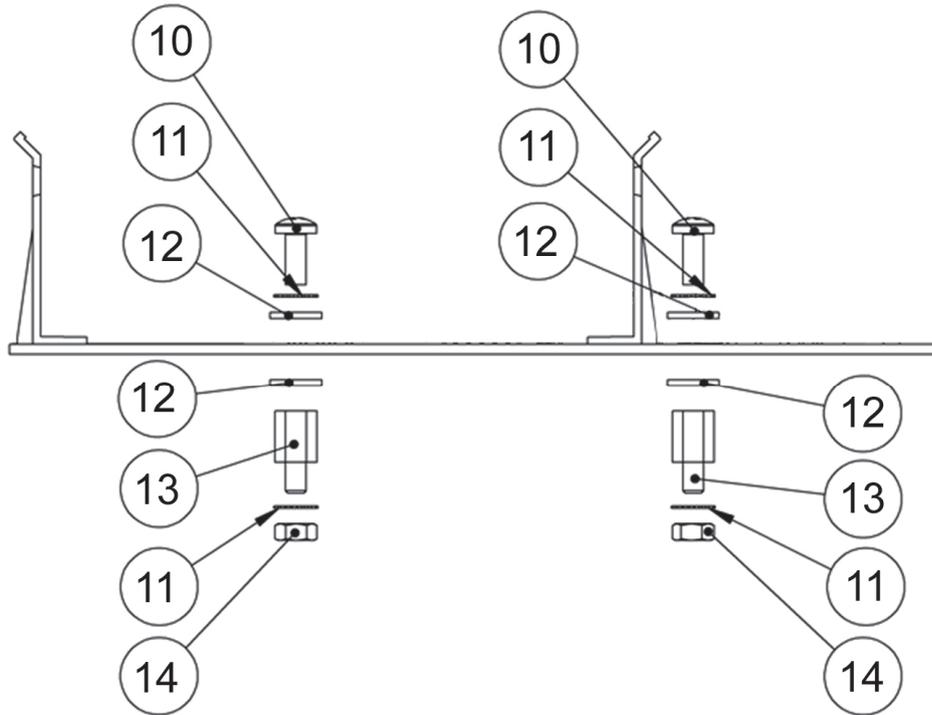
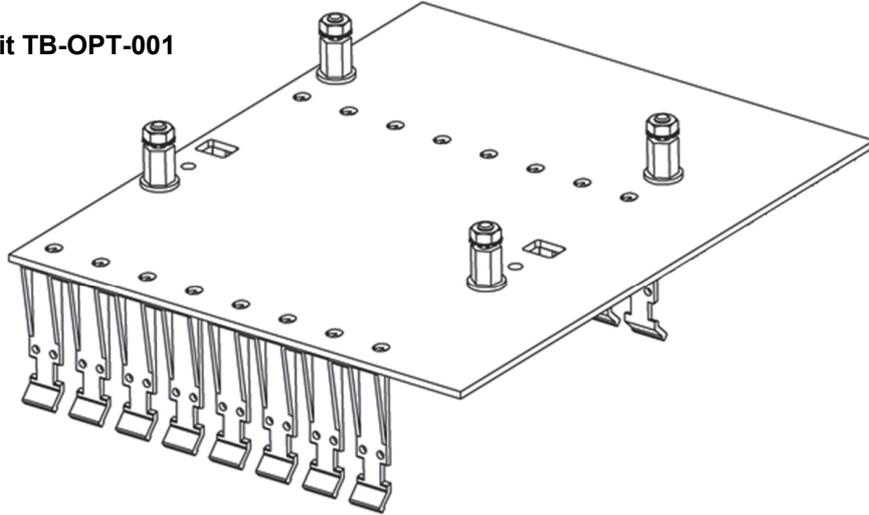
Side view



All dimensions are expressed in millimeters [inches]

Wall mounting features for M4 thread screw:

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

Termination Board supply connection details:

