

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	1) Power Supply voltage redundancy; 2) Abnormal supply voltage signaling; 3) Cumulative module fault signaling.

Supported TRICON CX I/O Card:

I/O Card Type	I/O Card Model	Channels per I/O Card	I/O Cards per board	Channels per board	Supported GM Modules (*)
Digital In	3506X	32	1/2	16	D5031S, D5032S, D5037S, D5038SA, D5039SA, D5093S, D6001S, D6031S, D6032S, D6037S, D6038SA, D6039SA
			1	32	D5031D, D5032D, D5037D, D5038DA, D5039DA, D5039XA, D5093D, D6001D, D6031D, D6032D, D6037D, D6038DA, D6038XA, D6039DA, D6039XA

Features:

- Tricon CX DI Cards board interfaces.
- 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-TRI-012

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:

Two ELCO 8016, 56 poles receptacle connectors (require male 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:

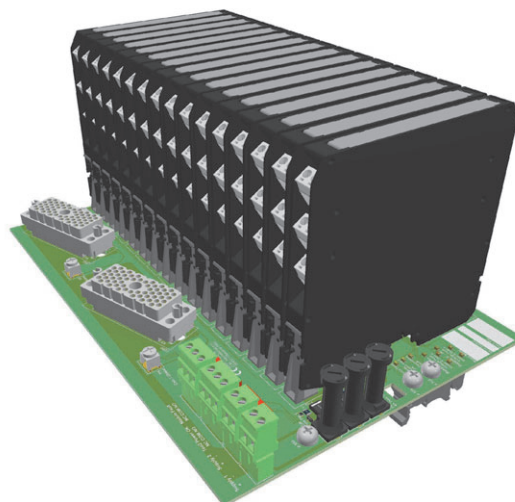
Hardware included for mounting on wall and single DIN rail.

Weight: about 400 g (excluding modules and mounting options).

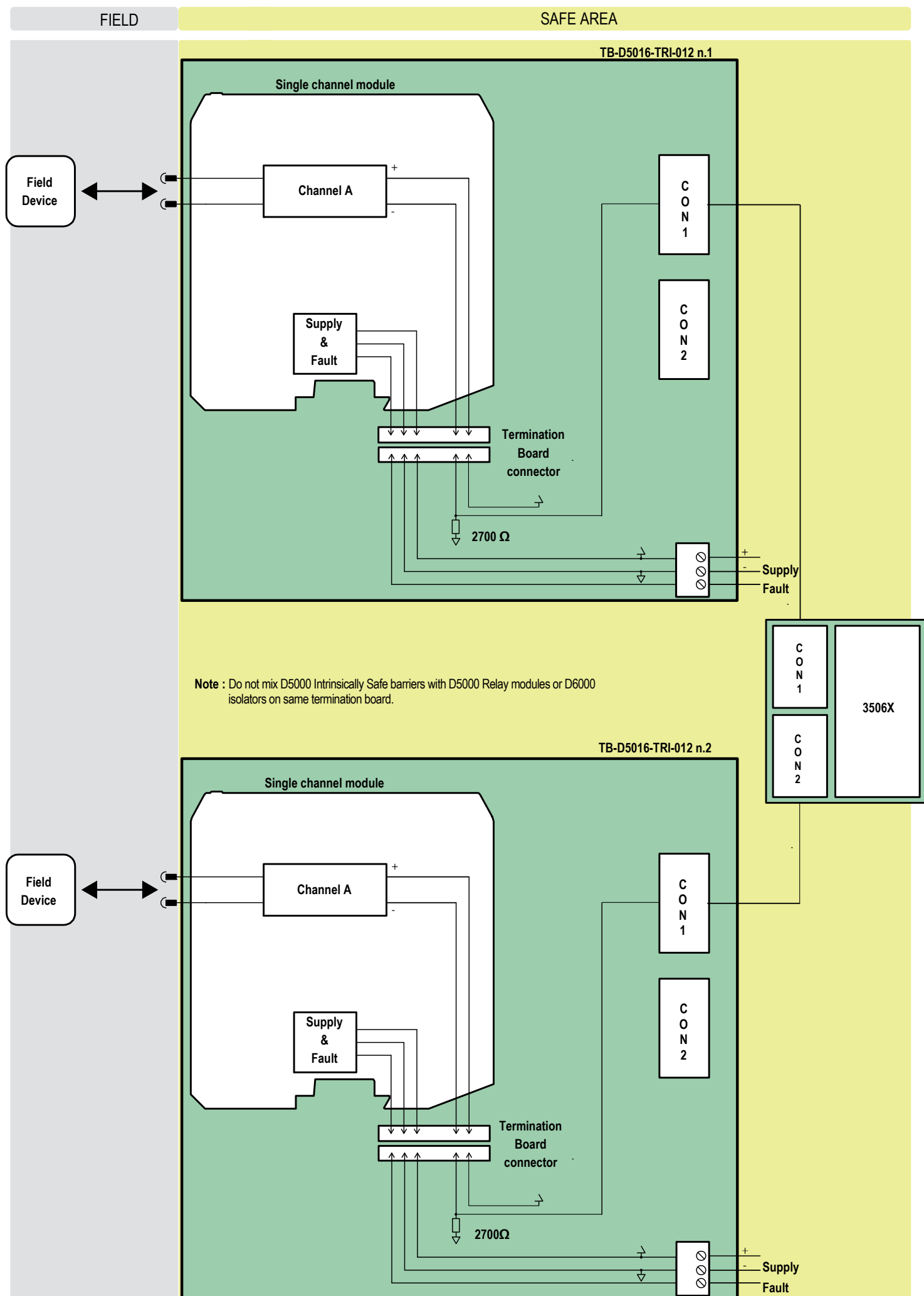
Location: Safe Area / Ordinary locations.

Dimensions: Width 267 mm, Depth 176 mm, Height 125 mm.

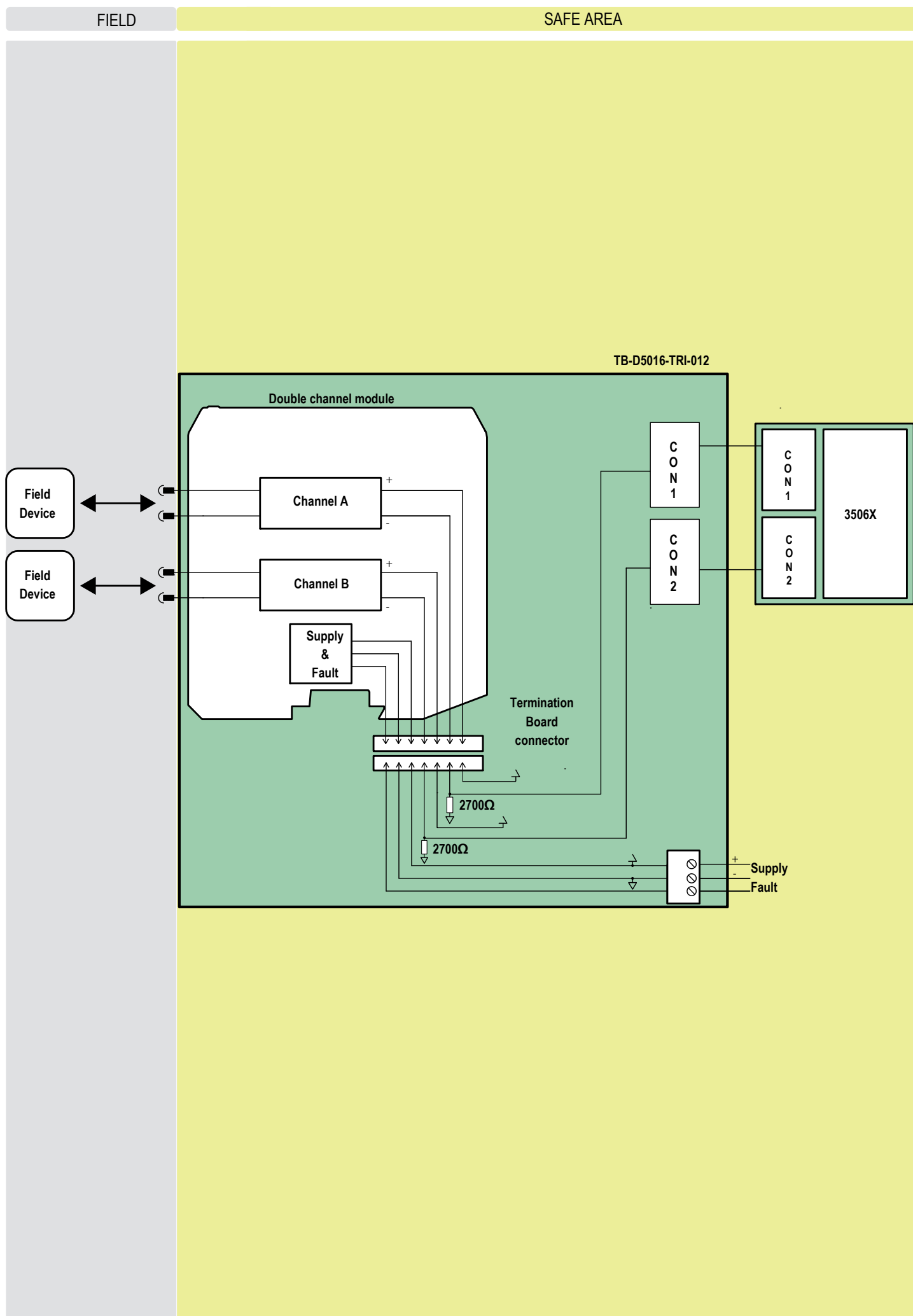
Image:



Loop Diagram for 3506X (32DI) Interface Card:



Loop Diagram for 3506X (32DI) Interface Card:

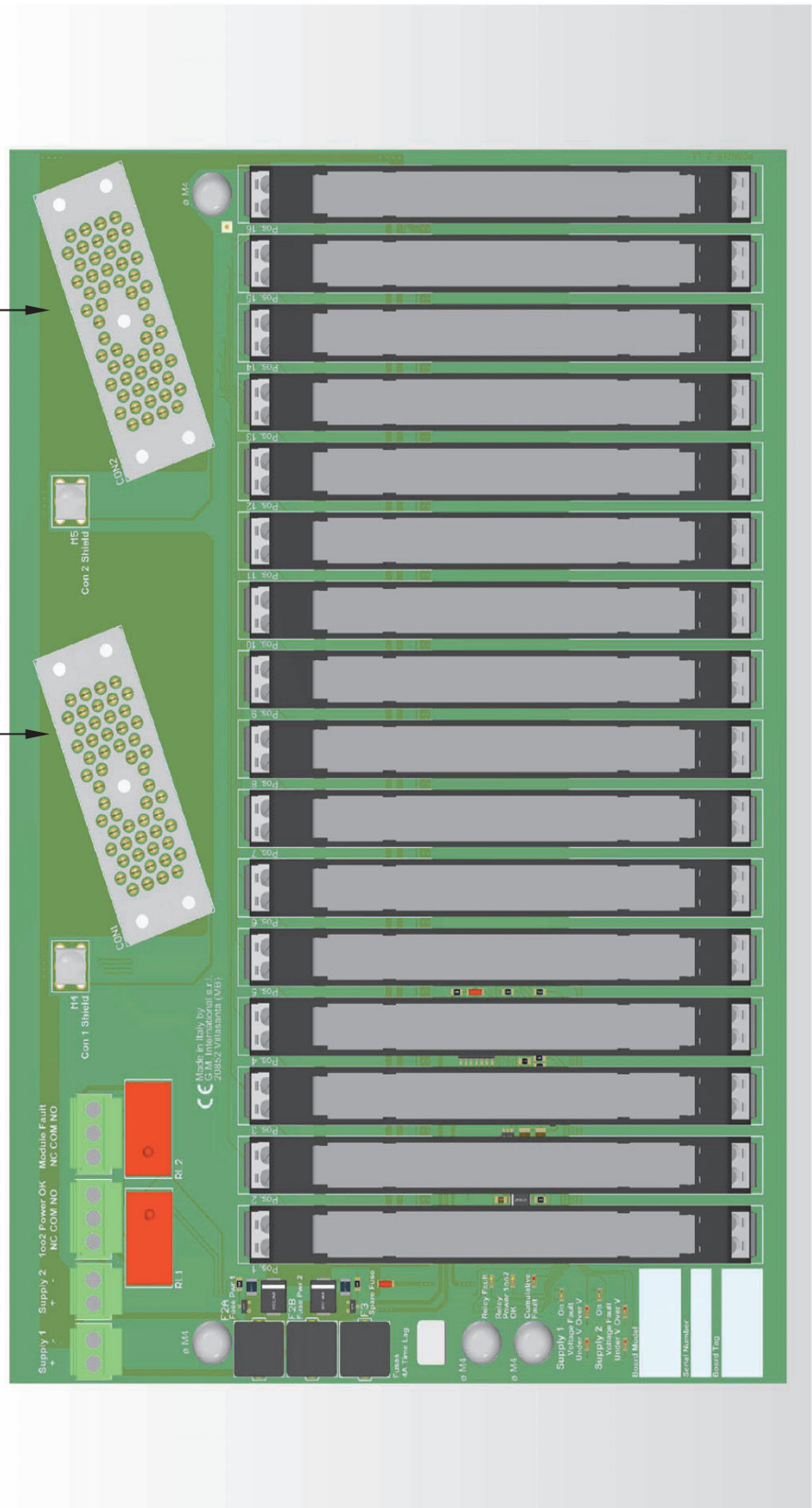


ELCO 8016, 56 poles
female connector
(CON2)

Small key Pos. 1
Large key Pos 3

ELCO 8016, 56 poles
female connector
(CON1)

Small key Pos. 1
Large key Pos 3



1A 2A 3A 4A 5A 6A 7A 8A 9A 10A 11A 12A 13A 14A 15A 16A
1B 2B 3B 4B 5B 6B 7B 8B 9B 10B 11B 12B 13B 14B 15B 16B

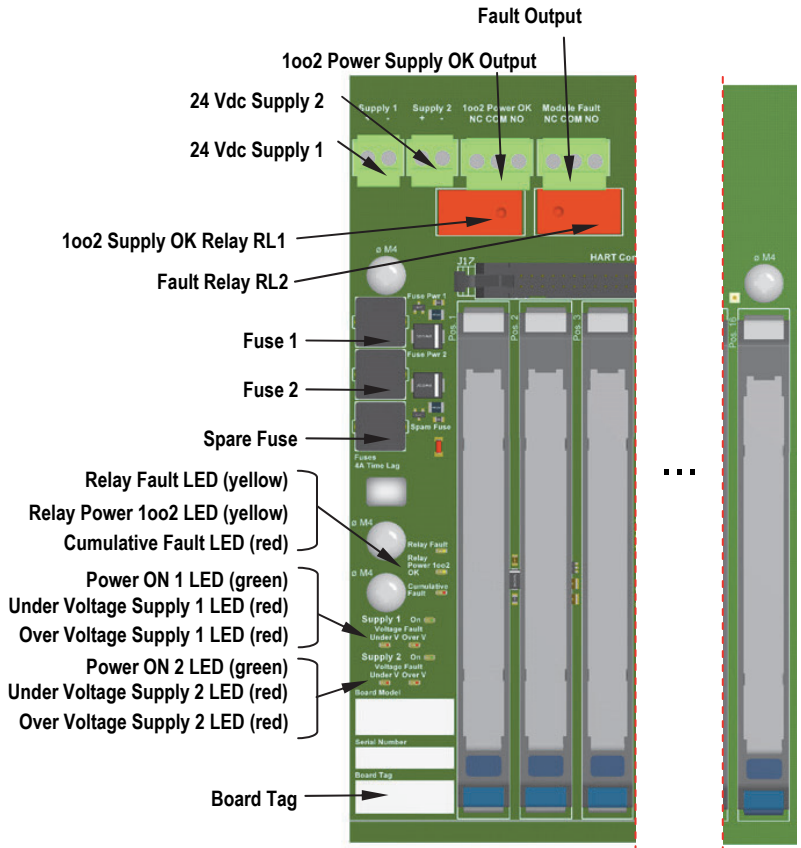
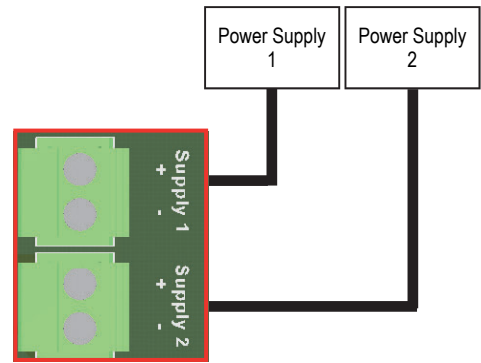
Connections table to Interface Cards:

MODULE POSITION	MODULE CHANNEL NUMBER	INTERFACE CARD(S) CHANNEL NUMBER	MODULE CHANNEL POSITIVE (+) CONNECTION	MODULE CHANNEL NEGATIVE (-) CONNECTION	NOTES
1	1A	1	24Vdc	AA (CON1)	CON1, CON2: • Chassis Ground provided on poles: T, H, w, FF. • Unconnected poles: KK, u, a, DD, k, R, E, A, NN, JJ, y, n, d, V, K, D • GND is connected to: LL, EE, v, l, b, S, F, B, MM, HH, x, m, c, U, J, C
	1B	17	24Vdc	AA (CON2)	
2	2A	2	24Vdc	z (CON1)	
	2B	18	24Vdc	z (CON2)	
3	3A	3	24Vdc	p (CON1)	
	3B	19	24Vdc	p (CON2)	
4	4A	4	24Vdc	h (CON1)	
	4B	20	24Vdc	h (CON2)	
5	5A	5	24Vdc	e (CON1)	
	5B	21	24Vdc	e (CON2)	
6	6A	6	24Vdc	W (CON1)	
	6B	22	24Vdc	W (CON2)	
7	7A	7	24Vdc	L (CON1)	
	7B	23	24Vdc	L (CON2)	
8	8A	8	24Vdc	M (CON1)	
	8B	24	24Vdc	M (CON2)	
9	9A	9	24Vdc	BB (CON1)	
	9B	25	24Vdc	BB (CON2)	
10	10A	10	24Vdc	CC (CON1)	
	10B	26	24Vdc	CC (CON2)	
11	11A	11	24Vdc	t (CON1)	
	11B	27	24Vdc	t (CON2)	
12	12A	12	24Vdc	j (CON1)	
	12B	28	24Vdc	j (CON2)	
13	13A	13	24Vdc	f (CON1)	
	13B	29	24Vdc	f (CON2)	
14	14A	14	24Vdc	Z (CON1)	
	14B	30	24Vdc	Z (CON2)	
15	15A	15	24Vdc	P (CON1)	
	15B	31	24Vdc	P (CON2)	
16	16A	16	24Vdc	N (CON1)	
	16B	32	24Vdc	N (CON2)	

Termination Board Description:

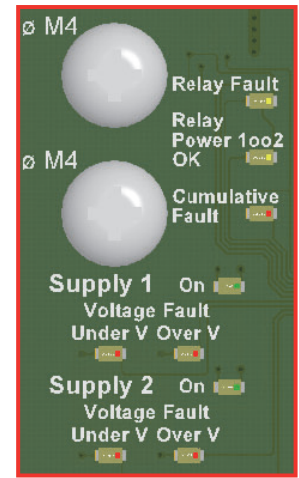
Note:
Relay contact is defined Normally Closed (NC) or Normally Open (NO) when RL1 or RL2 relays are de-energized (that is, coil status LED is turned off).
Relay is de-energized in fault status.

Power Supply redundancy:



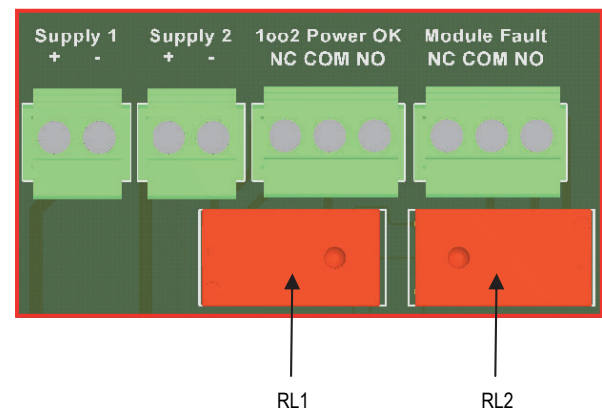
LED Signaling:
Meaning of LEDs on termination boards:

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

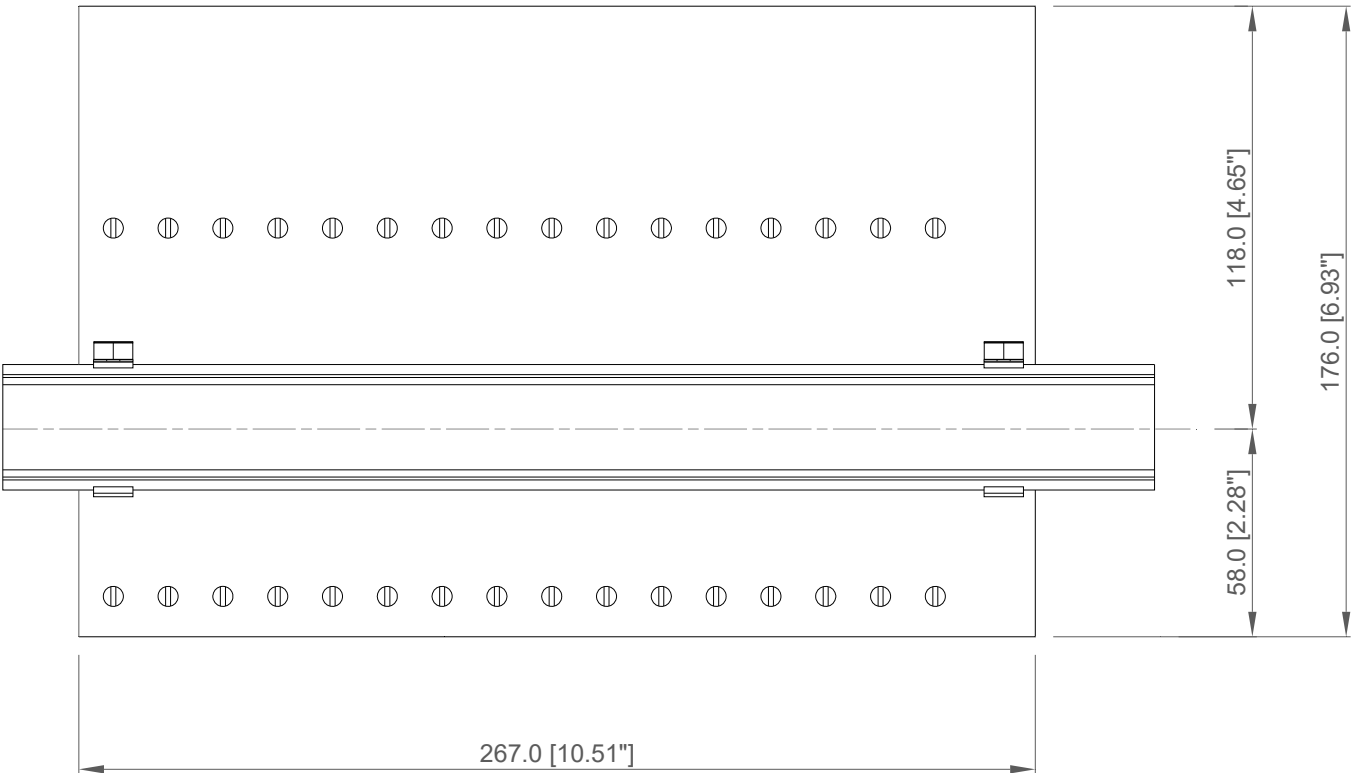


Relay Activation Conditions:
The two relays are activated according to the following rules:

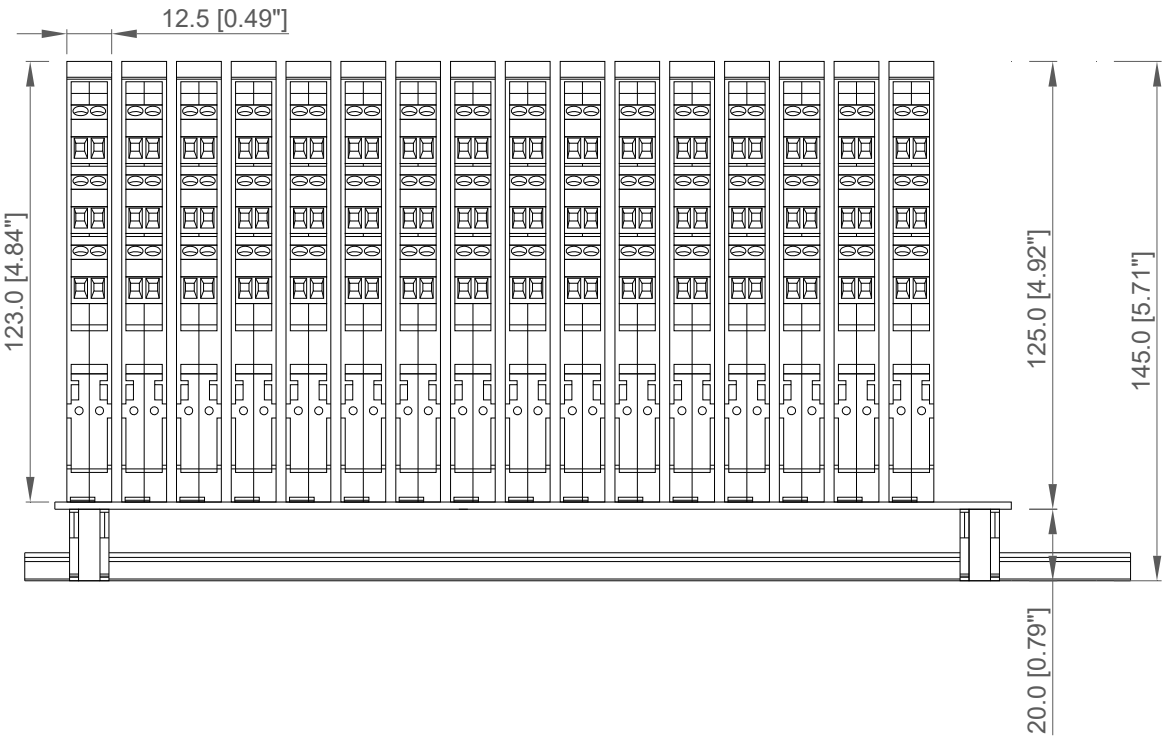
TAG	ACTIVATION
1002 Power OK (RL1)	The relay is energized when both supply voltages are within the regular range (>18 V and <30 V), i.e. when "Relay 1002 Power OK" yellow LED is on.
Module Fault (RL2)	The relay is energized when the following two conditions hold: 1. at least one voltage supply is within 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

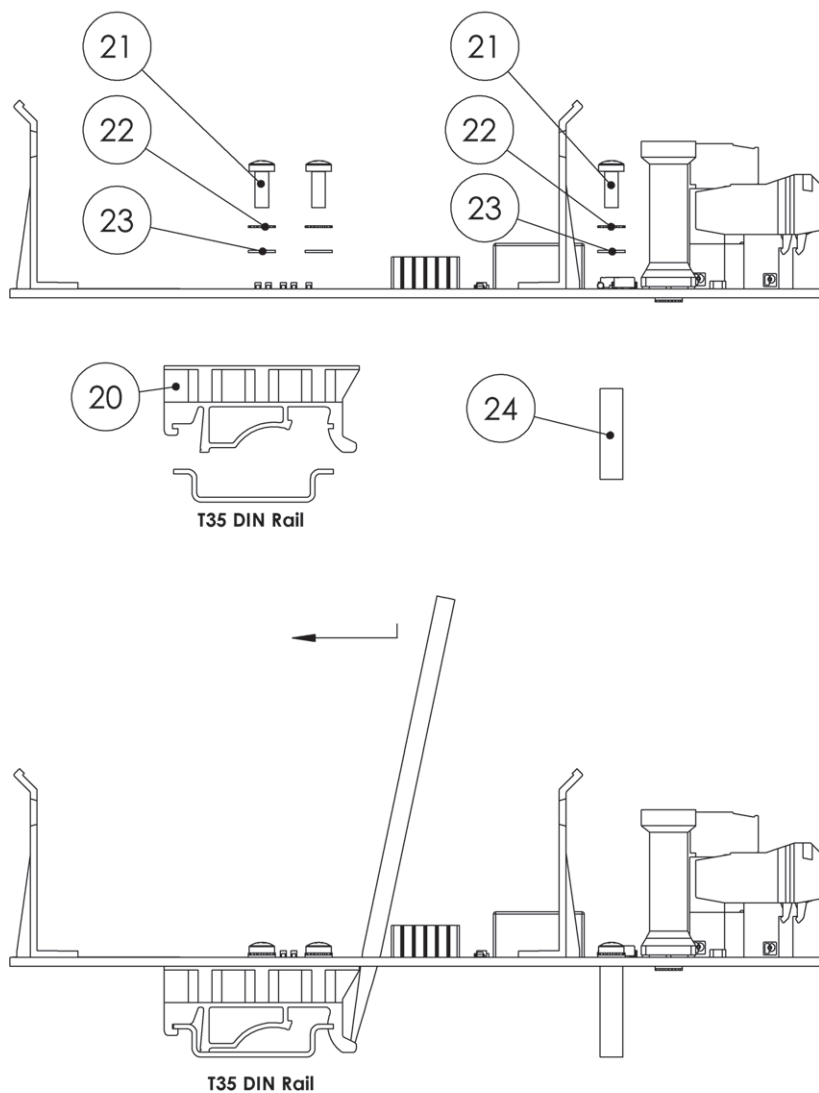


Side view



All dimensions are expressed in millimeters [inches]

16 POSITION TERMINAL BOARD D5000 SERIES MOUNTING FEATURES KIT TB-OPT-001

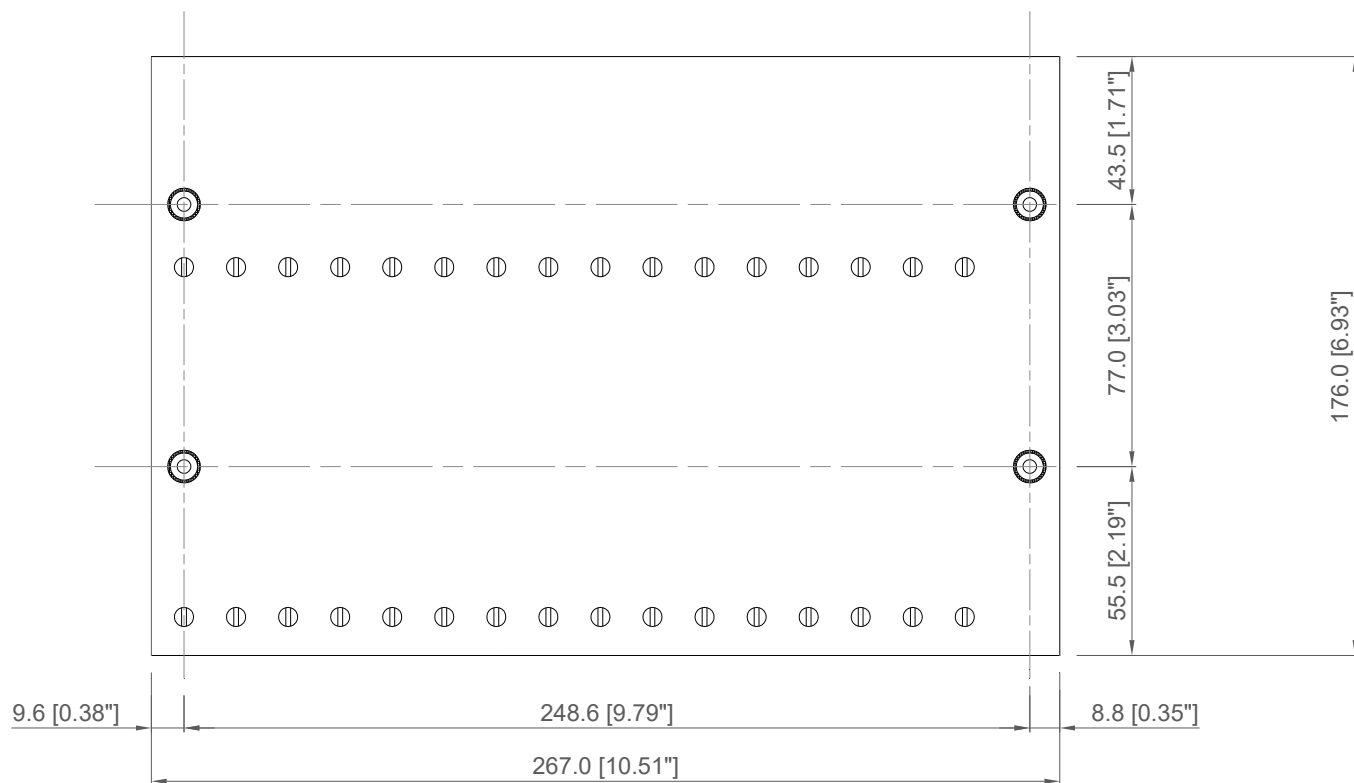


1. T35 DIN RAIL MOUNTING

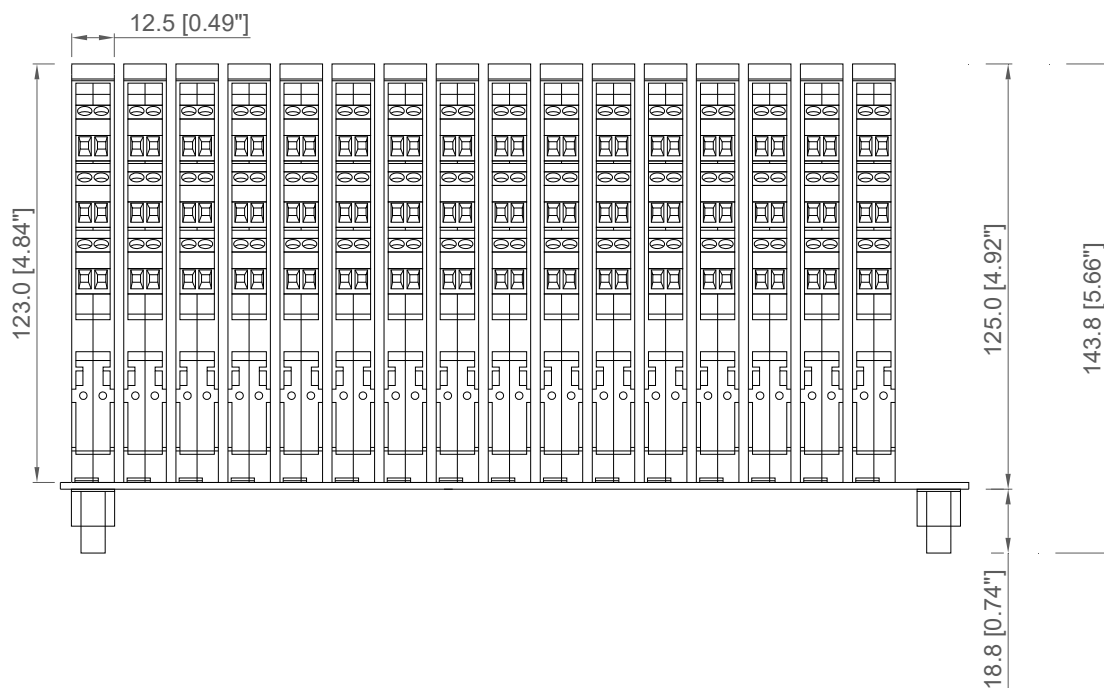
Item	Ref.Nr.	Q.ty	Description	Material
1	20	2	T35 Din Rail Adapter	PA
2	21	6	3.5x9.5 Self Tapping Screw	Stainless Steel
3	22	6	M3 External Tooth lock Washer	Stainless Steel
4	23	6	M3 Washer	Stainless Steel
5	24	2	6x20 Spacer	PA

Wall mounting overall dimensions for M4 self tapping screw:

Bottom view

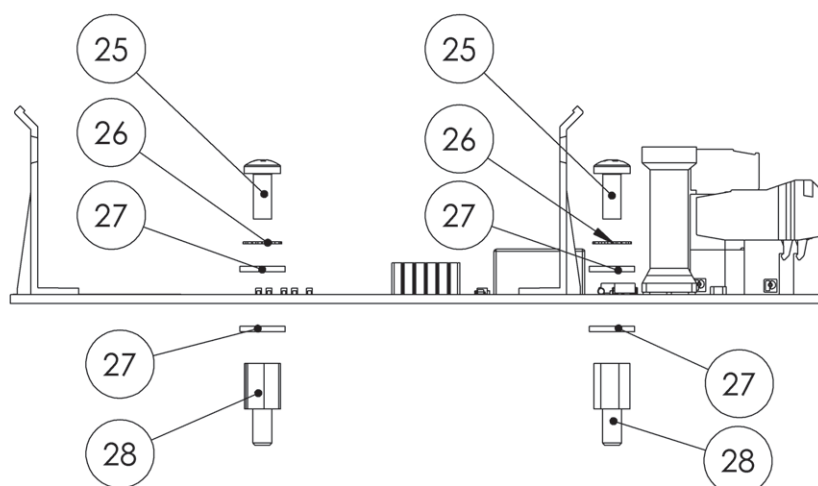
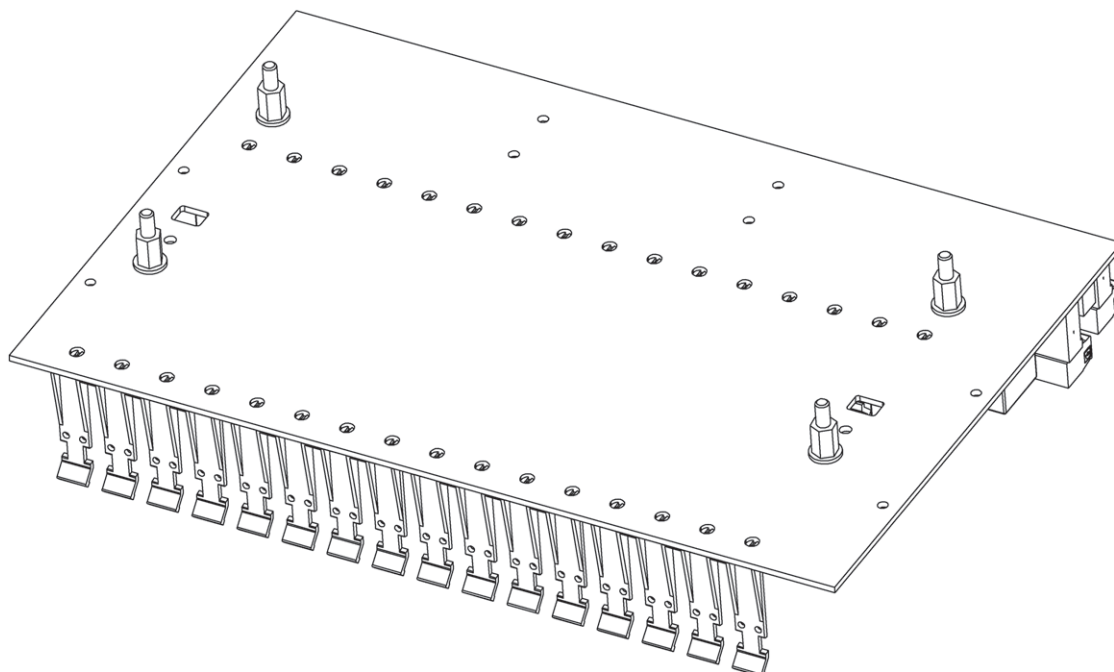


Side view



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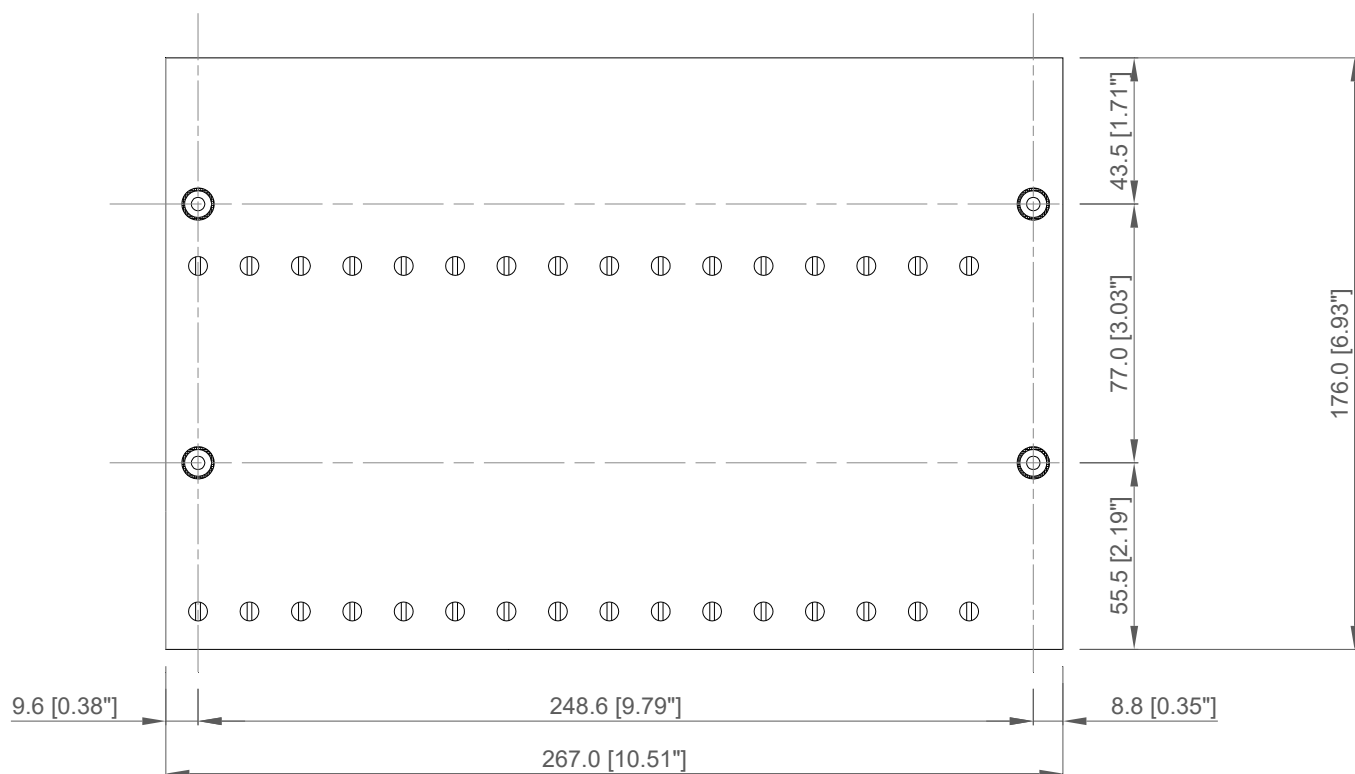


2. WALL MOUNTING WITH SELF TAPPING SCREW

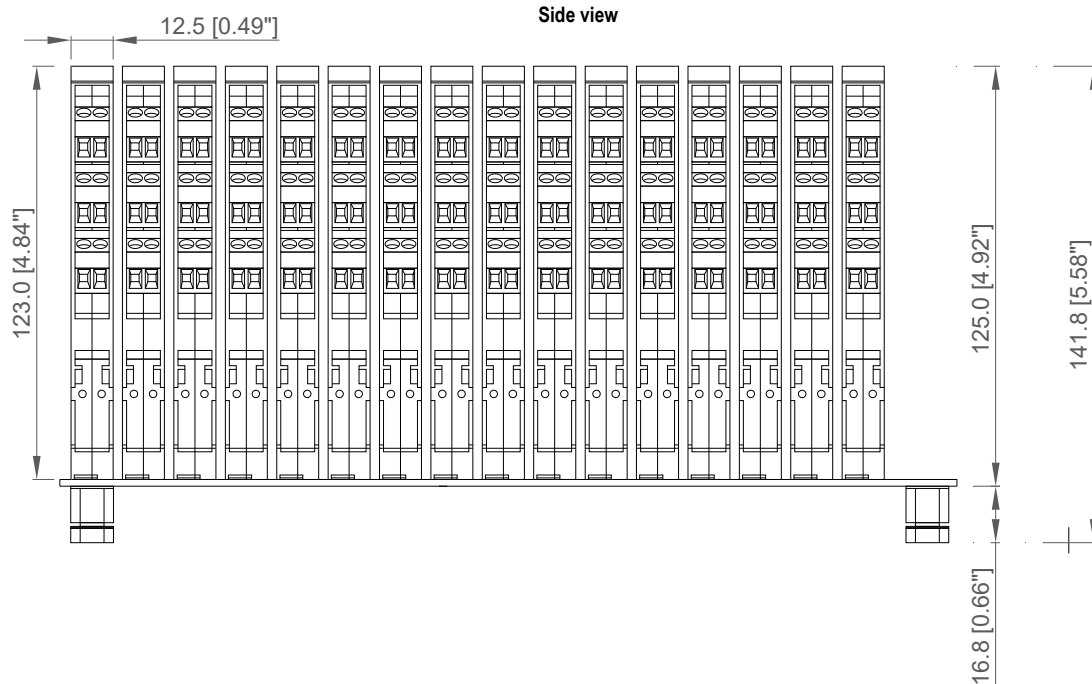
Item	Ref.Nr.	Q.ty	Description	Material
6	25	4	M4x8 Screw	Stainless Steel
7	26	4	M4 External Tooth lock Washer	Stainless Steel
8	27	8	M4 Washer	Stainless Steel
9	28	4	Self Tapping Spacer	Ni-Plated Brass

Wall mounting overall dimensions for M4 thread screw:

Bottom view

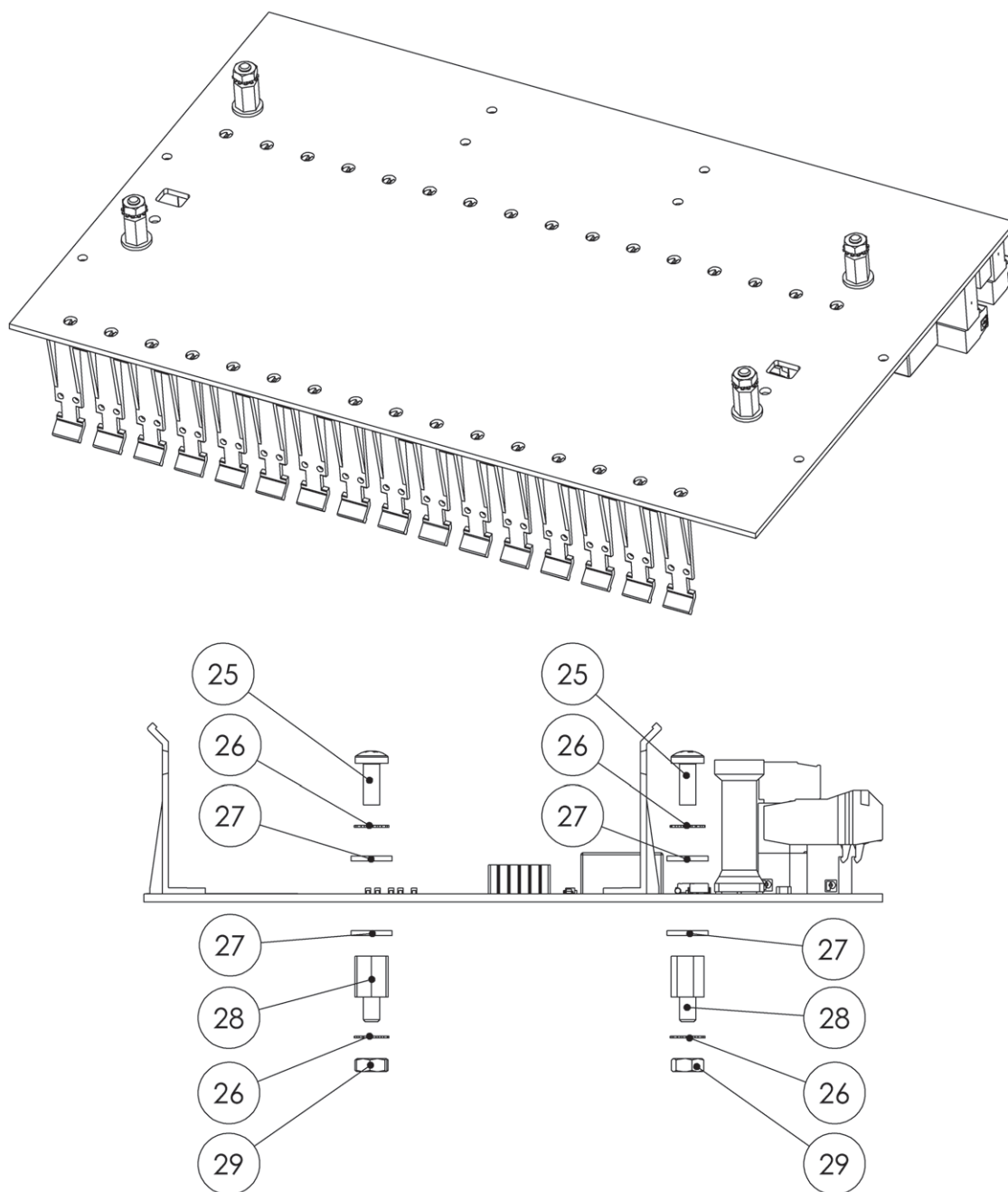


Side view



All dimensions are expressed in millimeters [inches]

16 POSITION TERMINAL BOARD D5000 SERIES MOUNTING FEATURES KIT TB-OPT-001



3. WALL MOUNTING WITH M4 SCREWS

Item	Ref.Nr.	Q.ty	Description	Material
10	25	4	M4x8 Screw	Stainless Steel
11	26	8	M4 External Tooth lock Washer	Stainless Steel
12	27	8	M4 Washer	Stainless Steel
13	28	4	Threaded Spacer	Ni-Plated Brass
14	29	4	M4 Nut	Stainless Steel