

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) HART multiplexing; 3) Abnormal supply voltage signaling; 4) 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(*)
Analog Input	X-CB 008 03, X-CB 008 04	X-AI 32 01	32	1	32	D5011S, D5014S, D5072S, D6011S, D6014S, D6072S

(*) 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 005.

HART Multiplexing:

Connection: 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.

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.

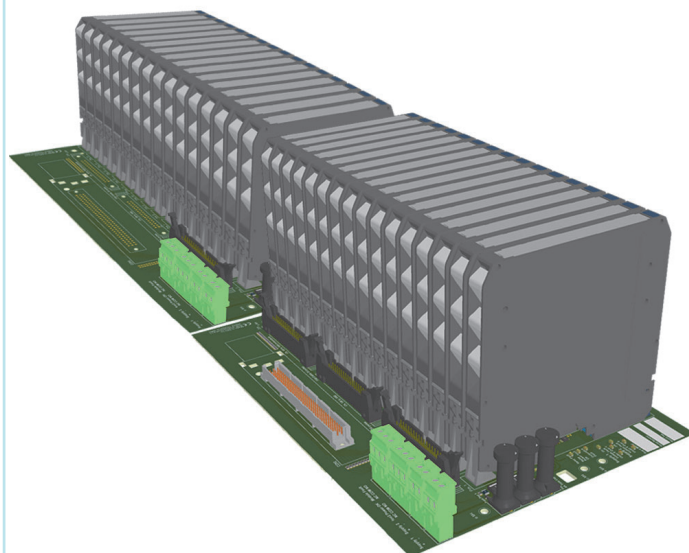
Features:

- HIMax AI 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.

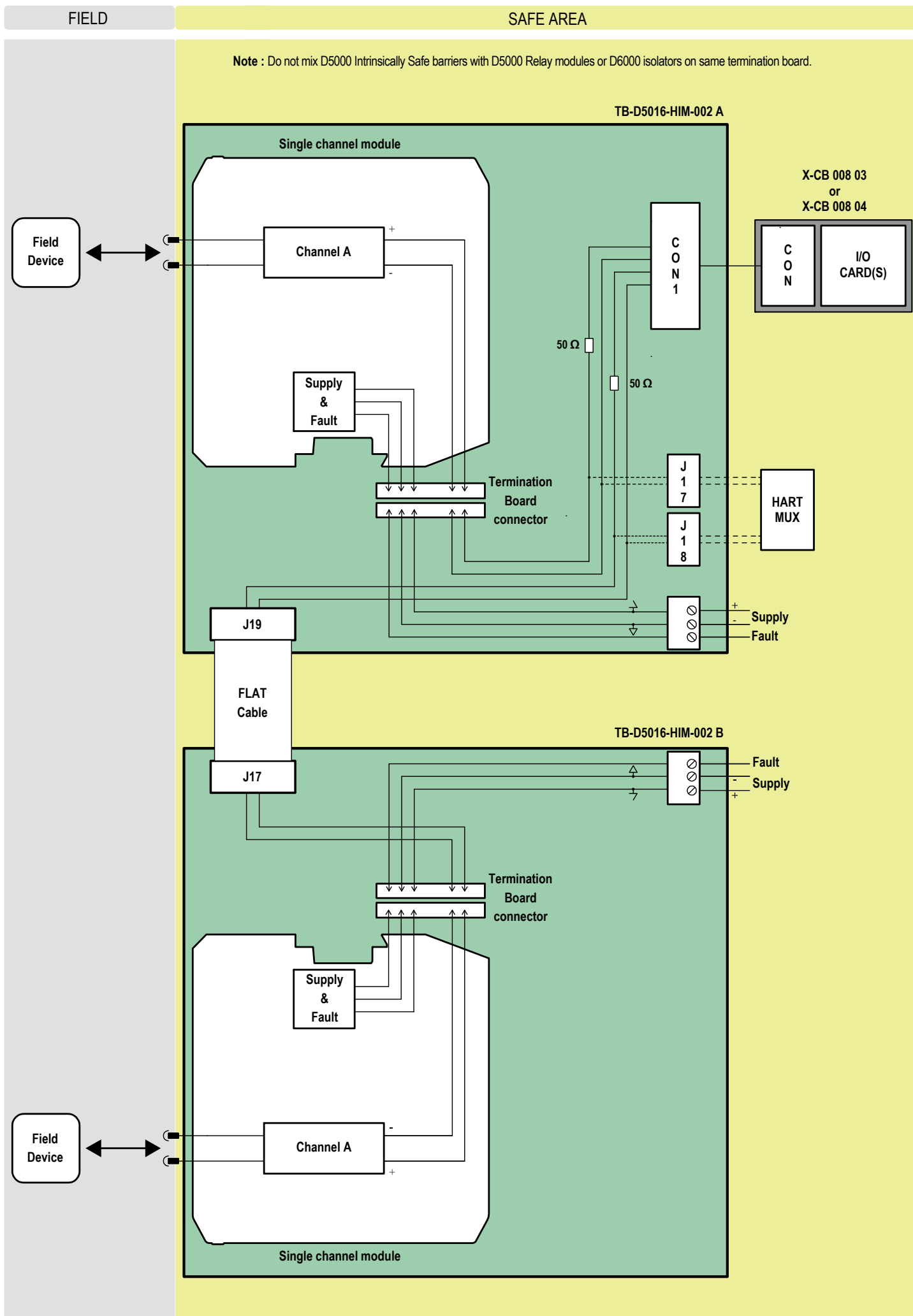
Ordering Information:

Model: TB-D5016-HIM-002

Image:



Loop Diagrams:



TB-D5016-HIM-002 B



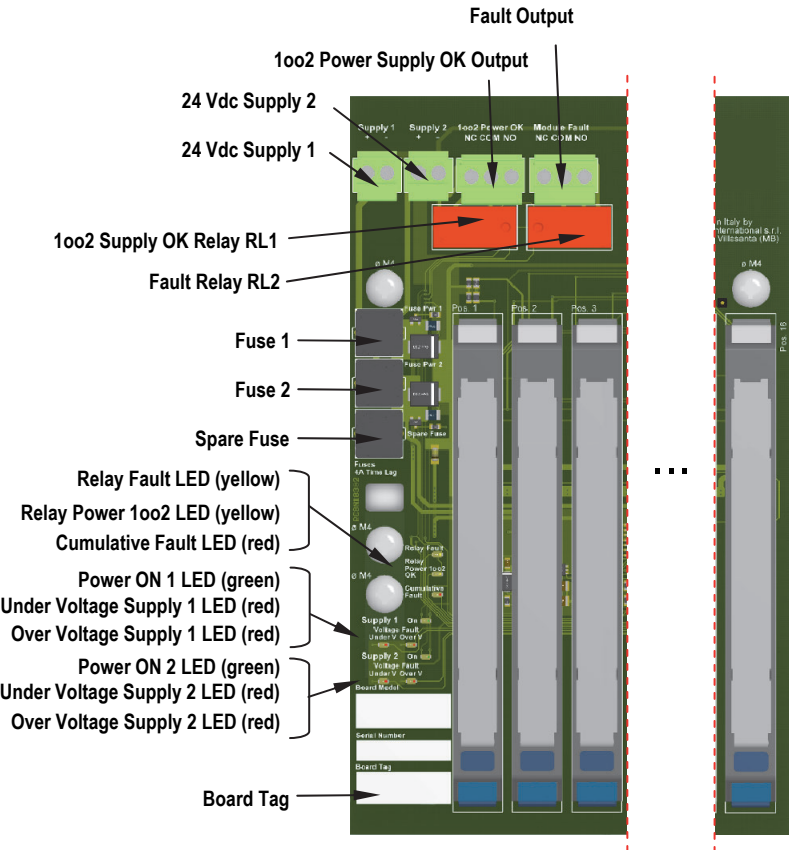
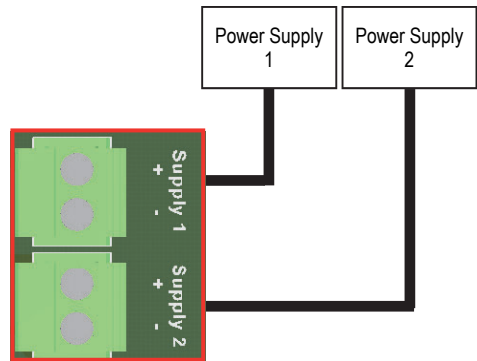
Connections table to Interface Cards:

MODULE POSITION	MODULE CHANNEL NUMBER	INTERFACE CARD(S) CHANNEL NUMBER	MODULE CHANNEL POSITIVE (+) CONNECTION (CON1)	MODULE CHANNEL NEGATIVE (-) CONNECTION (CON1)	HART MULTIPLEXING CONNECTOR POSITIVE (+) PIN NUMBER	HART MULTIPLEXING CONNECTOR NEGATIVE (-) PIN NUMBER	NOTES
1	1A	1	b1	a1-a28	1 (J17)	2 (J17)	CON1: • Poles a29-a32, c1-c32 are not connected. J17, J18: • Poles 33, 34 are not connected.
2	2A	2	b2	a1-a28	3 (J17)	4 (J17)	
3	3A	3	b3	a1-a28	5(J17)	6 (J17)	
4	4A	4	b4	a1-a28	7 (J17)	8 (J17)	
5	5A	5	b5	a1-a28	9 (J17)	10 (J17)	
6	6A	6	b6	a1-a28	11 (J17)	12 (J17)	
7	7A	7	b7	a1-a28	13 (J17)	14 (J17)	
8	8A	8	b8	a1-a28	15 (J17)	16 (J17)	
9	9A	9	b9	a1-a28	17 (J17)	18 (J17)	
10	10A	10	b10	a1-a28	19 (J17)	20 (J17)	
11	11A	11	b11	a1-a28	21 (J17)	22 (J17)	
12	12A	12	b12	a1-a28	23 (J17)	24 (J17)	
13	13A	13	b13	a1-a28	25 (J17)	26 (J17)	
14	14A	14	b14	a1-a28	27 (J17)	28 (J17)	
15	15A	15	b15	a1-a28	29 (J17)	30 (J17)	
16	16A	16	b16	a1-a28	31 (J17)	32 (J17)	
17	17A	17	b17	a1-a28	1 (J18)	2 (J18)	
18	18A	18	b18	a1-a28	3 (J18)	4 (J18)	
19	19A	19	b19	a1-a28	5(J18)	6 (J18)	
20	20A	20	b20	a1-a28	7 (J18)	8 (J18)	
21	21A	21	b21	a1-a28	9 (J18)	10 (J18)	
22	22A	22	b22	a1-a28	11 (J18)	12 (J18)	
23	23A	23	b23	a1-a28	13 (J18)	14 (J18)	
24	24A	24	b24	a1-a28	15 (J18)	16 (J18)	
25	25A	25	b25	a1-a28	17 (J18)	18 (J18)	
26	26A	26	b26	a1-a28	19 (J18)	20 (J18)	
27	27A	27	b27	a1-a28	21 (J18)	22 (J18)	
28	28A	28	b28	a1-a28	23 (J18)	24 (J18)	
29	29A	29	b29	a1-a28	25 (J18)	26 (J18)	
30	30A	30	b30	a1-a28	27 (J18)	28 (J18)	
31	31A	31	b31	a1-a28	29 (J18)	30 (J18)	
32	32A	32	b32	a1-a28	31 (J18)	32 (J18)	

Termination Board description:

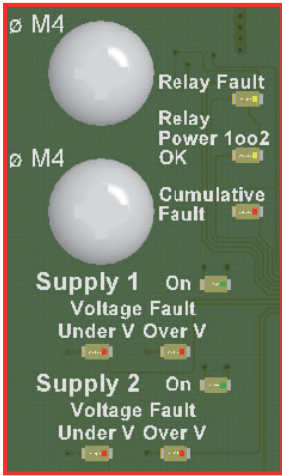
Note:
Relay contact is defined Normally Closed (NC) or Normally Open (NO) when RL1 or RL2 relays are de-energized (that is, coil status LED is turned off).
Relay is de-energized in fault status.

Power Supply redundancy:



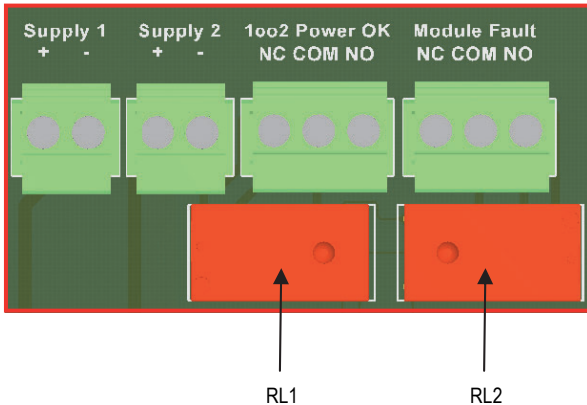
LED Signaling:
Meaning of LEDs on termination boards:

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

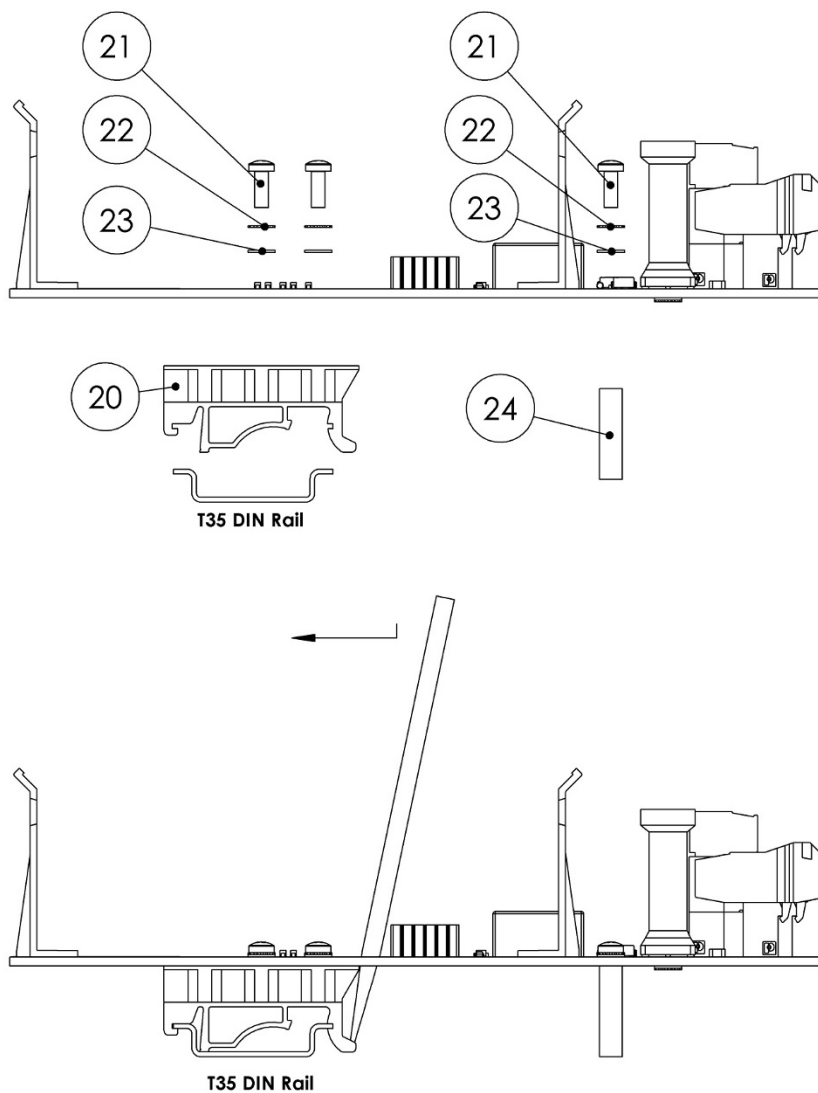


Relay Activation Conditions:
The two relays are activated according to the following rules:

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.



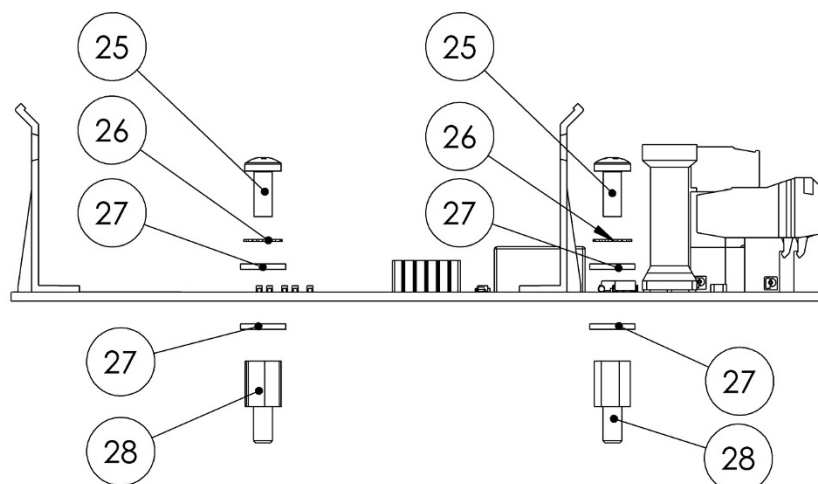
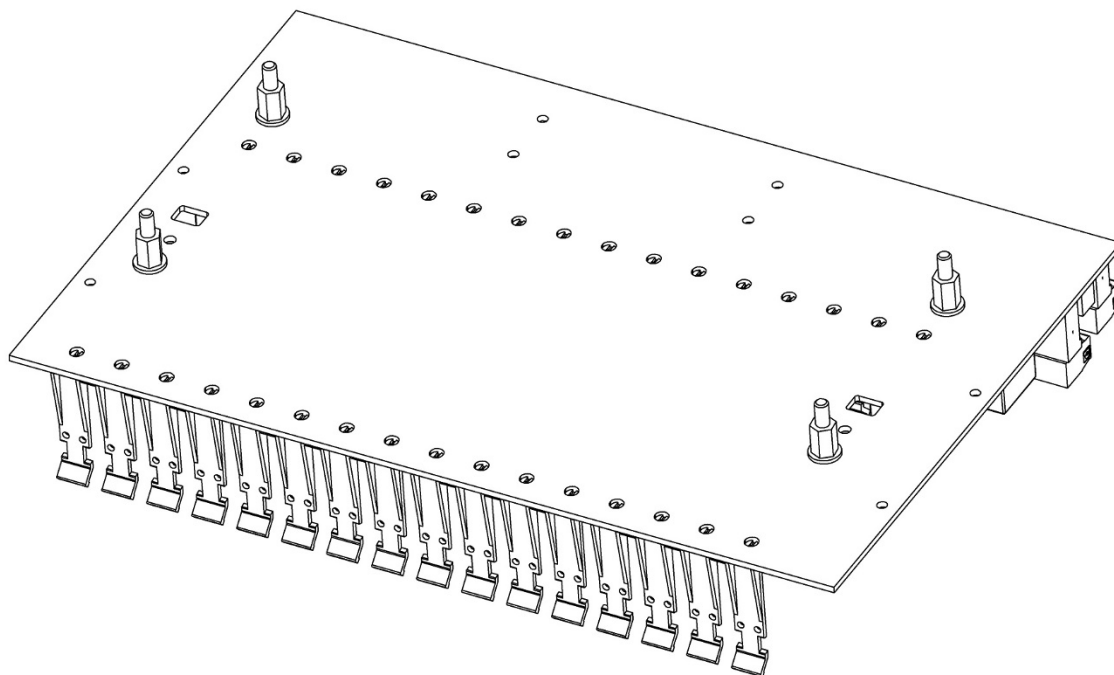
16 POSITION TERMINAL BOARD D5000 SERIES MOUNTING FEATURES KIT TB-OPT-001



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

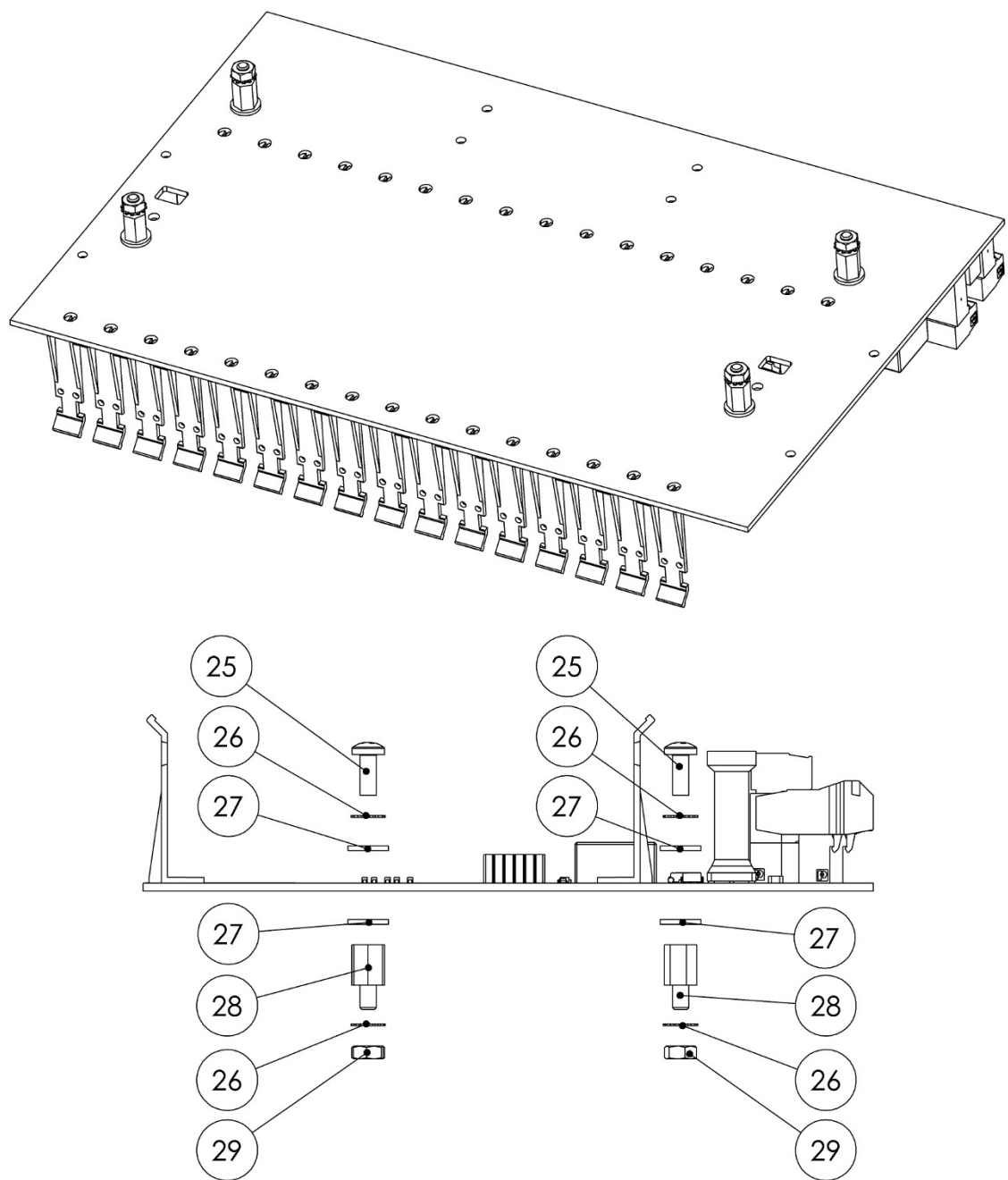
16 POSITION TERMINAL BOARD D5000 SERIES MOUNTING FEATURES KIT TB-OPT-001



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

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