

## Characteristics:

### General description:

This Termination Board (TB) provides direct connection between the I/O Card of the system and D5000 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:

Termination Board Model	Number of positions	Features
TB-D5008-YOK-001	8	1) I/O Card redundancy; 2) Power Supply voltage redundancy; 3) Abnormal supply voltage signaling; 4) Cumulative module fault signaling.

### Supported Yokogawa Prosafe RS I/O Cards:

I/O Card Model	I/O Card Type	Number of channels per I/O Card	Number of I/O Cards per board	Number of channels per board	Supported GM Modules
SDV531	Digital Out	8	1+(1)*	8	D5040S, D5048S, D5049S, D5090S, D5091S.

\* with possibility of I/O Card redundancy.

## Features:

- DO card type SDV 531 (8 channels) Digital Output board interface.
- 8 positions Terminal Board for up to 8 channels.
- Lower cables installation and maintenance costs.
- Power supplies fault monitoring.
- Spare fuse provided.
- Mounting hardware provided for:
  - Single Din Rail mounting kit.
  - Wall mounting, M4 self tapping screw;
  - Wall mounting, M4 thread screw;

## Ordering Information:

Model: TB-D5008-YOK-001

## 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 mm<sup>2</sup>.

**Protection fuse:** 2 A slow blow (spare fuse provided on Termination Board).

**Fault detection:** (for more information see Fault Logic section)

**Abnormal supply voltages or module cumulative fault:** PWR 1 or PWR 2 is in under (< 18 Vdc) or over (> 30 Vdc) voltage condition OR module cumulative fault indication.

**Relay fault signaling:** a voltage free NE SPST-1 Form A relay contact (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 \* 10<sup>6</sup> / 1 \* 10<sup>5</sup> operation, typical.

**Connection:** by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm<sup>2</sup>.

**LED fault signaling:** 1 green LED (PWR 1 OK); 1 green LED (PWR 2 OK);

1 red LED (UV or OV of PWR 1); 1 red LED (UV or OV of PWR 2);

a cumulative fault red LED.

### Prosafe RS I/O card interface:

**Connection:** two 50 poles male connectors (require female mating connectors).

### Field signal:

**Connection:** directly to module by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm<sup>2</sup>.

### 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:

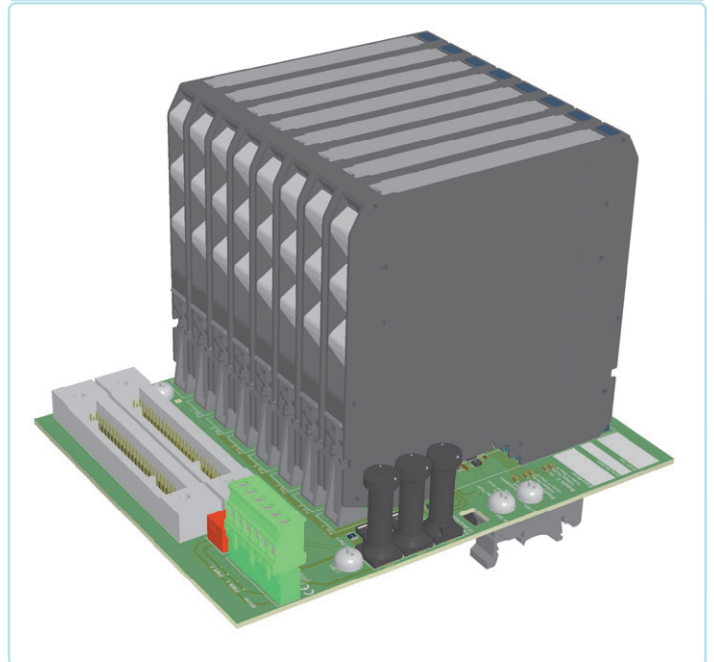
Hardware included for mounting on wall and single DIN rail.

**Weight:** about 200 g (excluding modules).

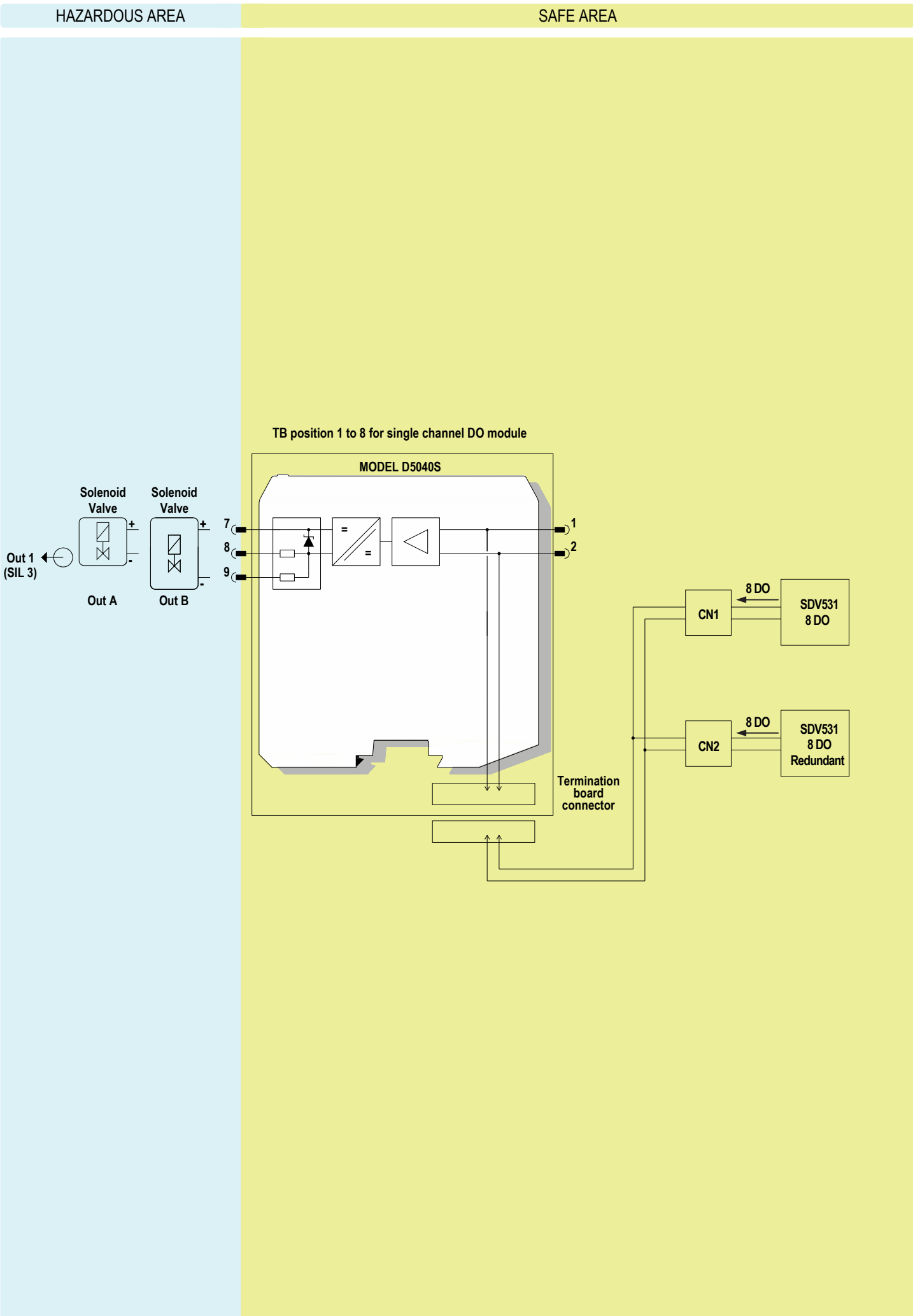
**Location:** Safe Area / Ordinary locations.

**Dimensions:** Width 165 mm, Depth 176 mm, Height 125 mm.

## Image:



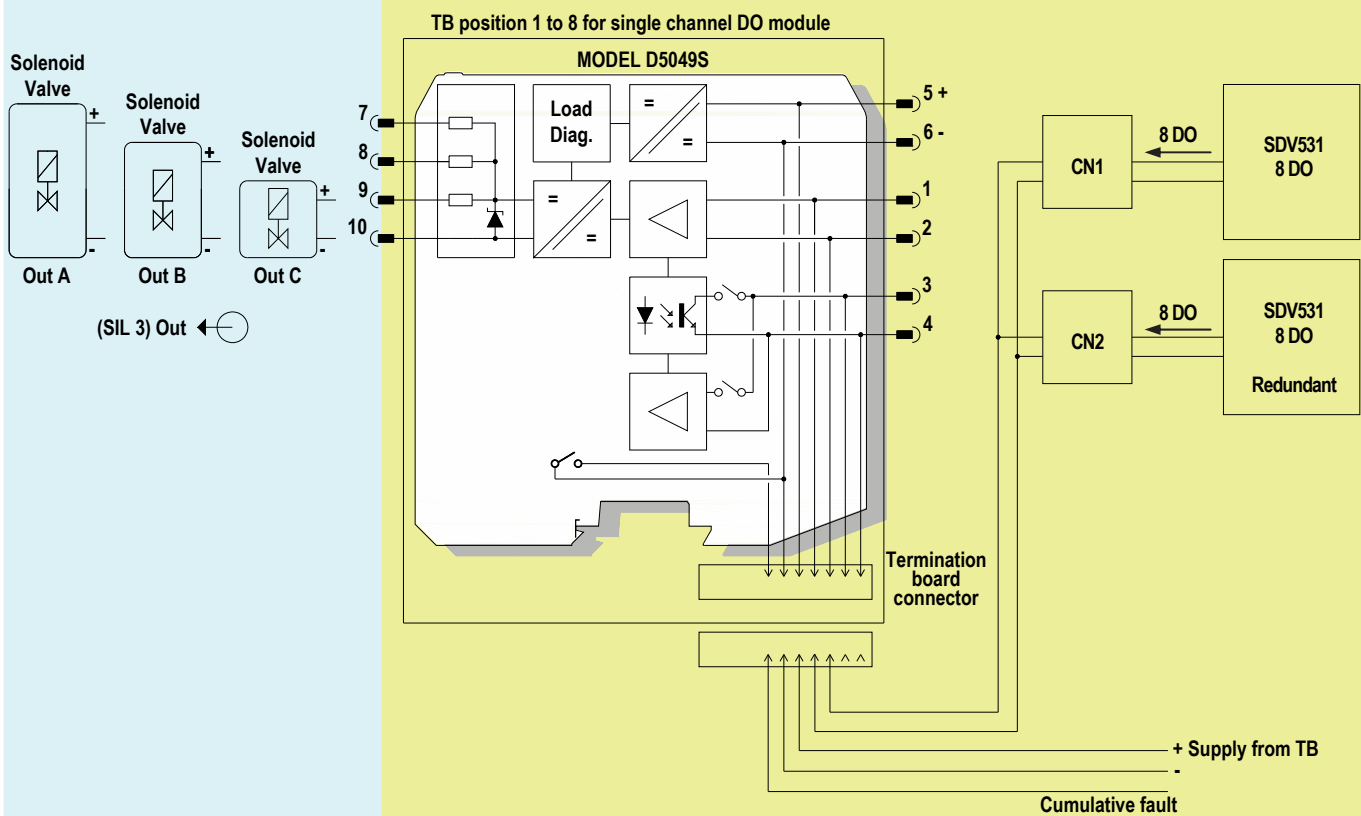
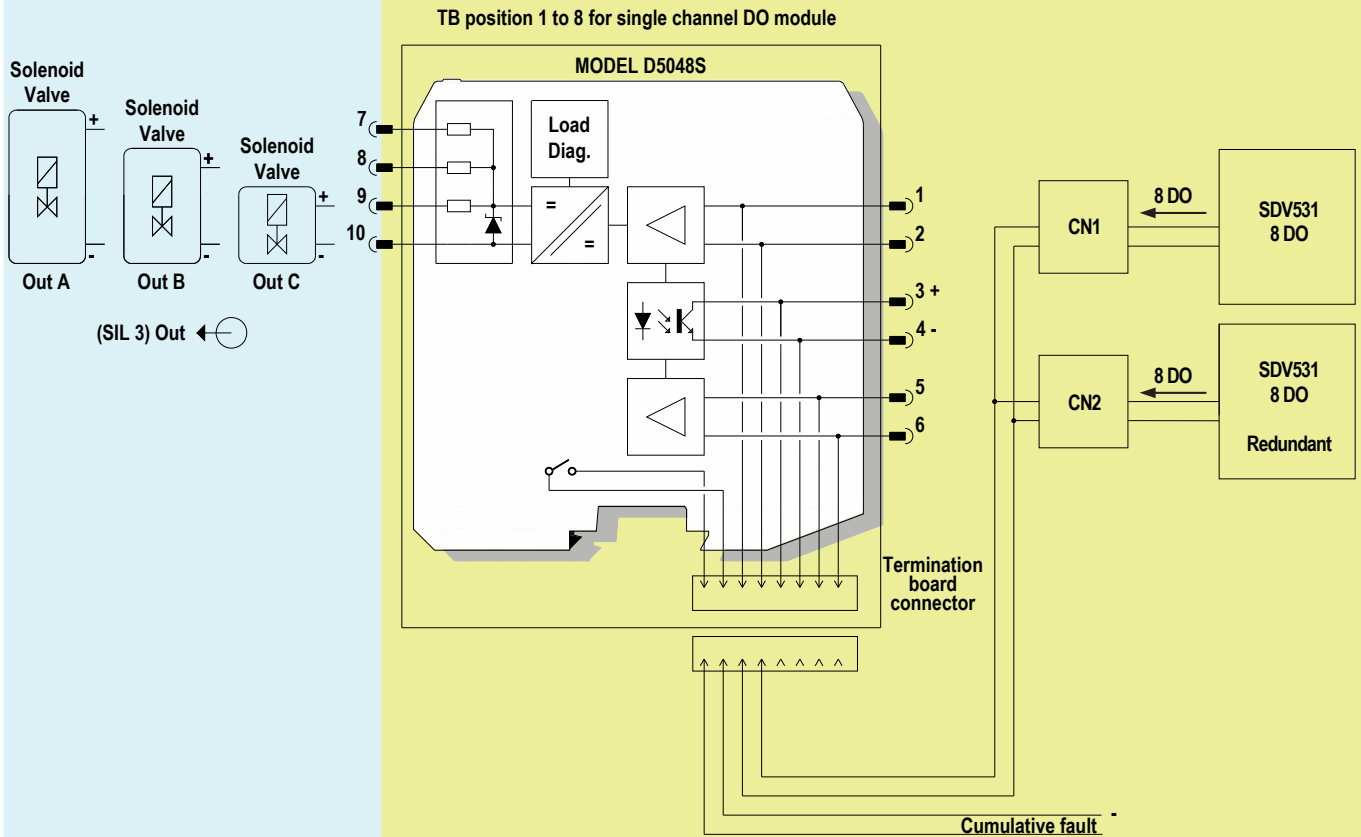
# Loop Diagrams for Prosafe RS SDV531 (8 DO) Interface Card:



# Loop Diagrams for Prosafe RS SDV531 (8 DO) Interface Card:

HAZARDOUS AREA

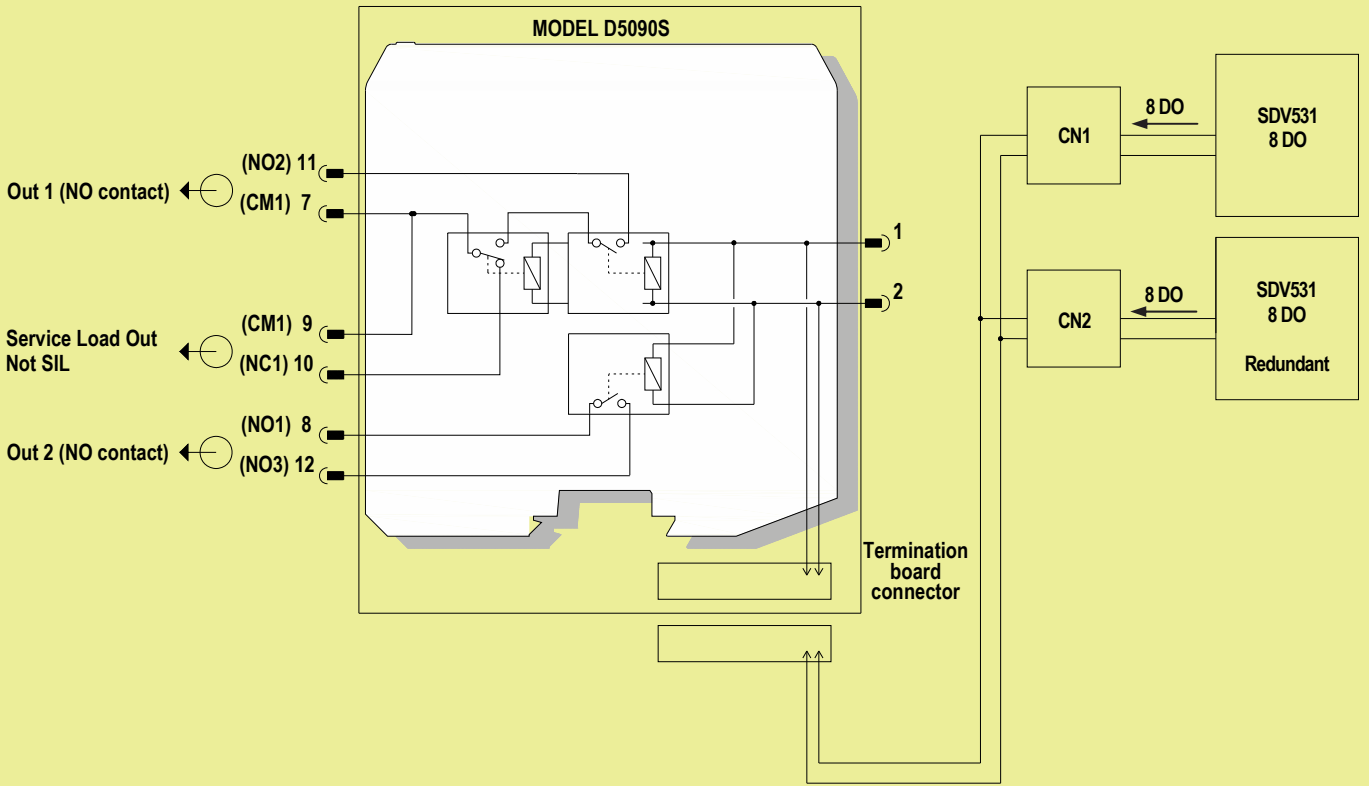
SAFE AREA



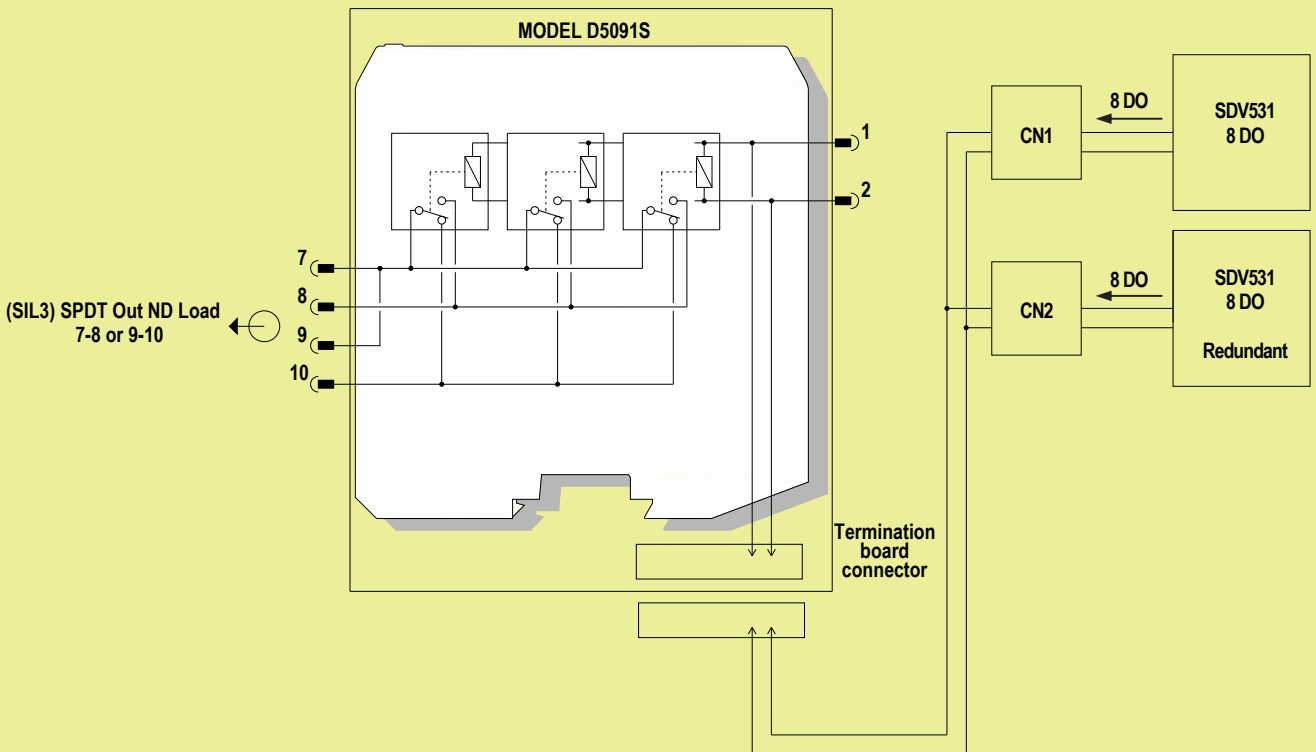
**Note:**

Model D5090S and D5091S SIL3 Relays do not have Intrinsically safe outputs and therefore must not be placed on same board with D5040S, D5048S and D5049S.

TB position 1 to 8 for single channel DO module

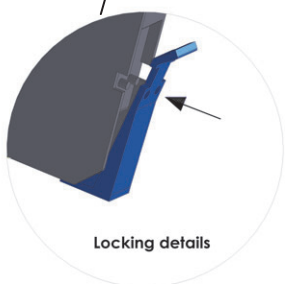
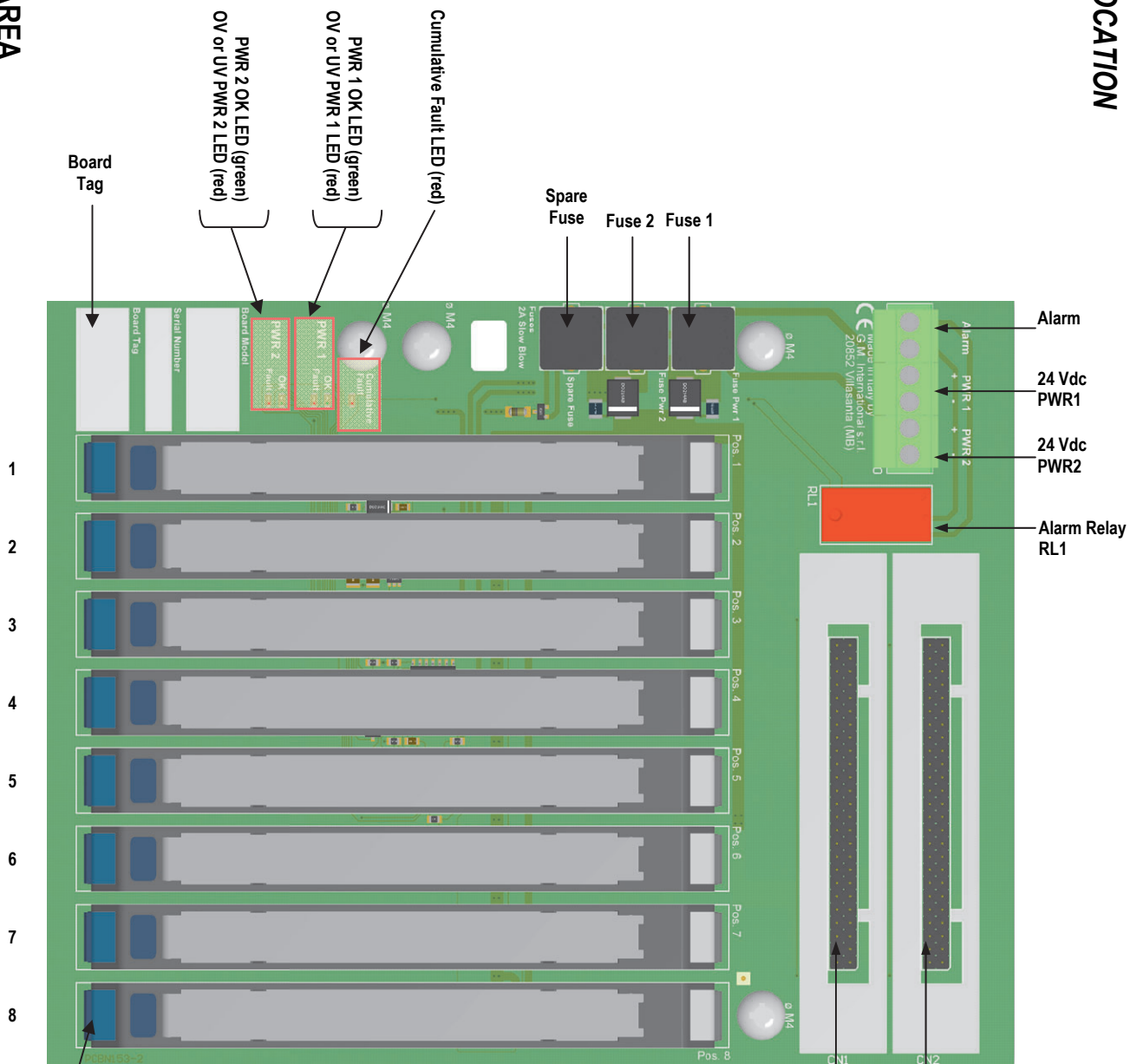


TB position 1 to 8 for single channel DO module



SAFE AREA  
ORDINARY LOCATION

HAZARDOUS AREA  
HAZARDOUS LOCATION

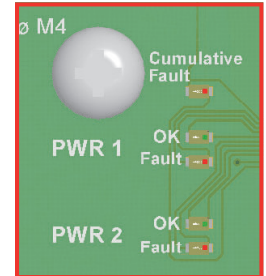


## Termination Board Fault Logic:

### LED Signaling:

Meaning of LEDs on termination boards:

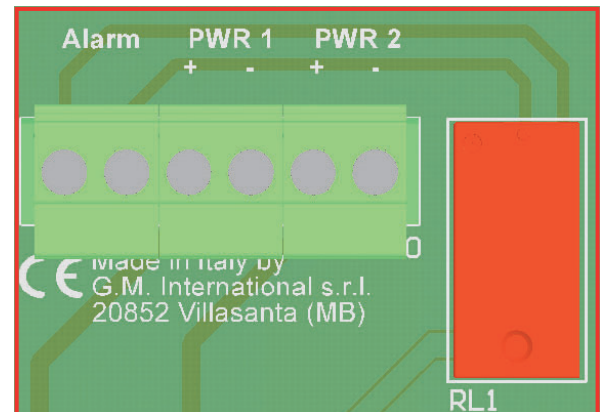
TAG	LED COLOR	MEANING
<b>PWR 1 OK</b>	GREEN	The LED is on when PWR 1 is within the regular range (>18 V and <30 V).
<b>PWR 1 Over or Under V</b>	RED	The LED is on when PWR 1 is in over-voltage (>30V) or under-voltage (<18 V).
<b>PWR 2 OK</b>	GREEN	The LED is on when PWR 2 is within the regular range (>18 V and <30 V).
<b>PWR 2 Over or Under V</b>	RED	The LED is on when PWR 2 is in over-voltage (>30V) or under-voltage (<18 V).
<b>Cumulative Fault</b>	RED	The LED is on when at least one module / barrier reported a fault.



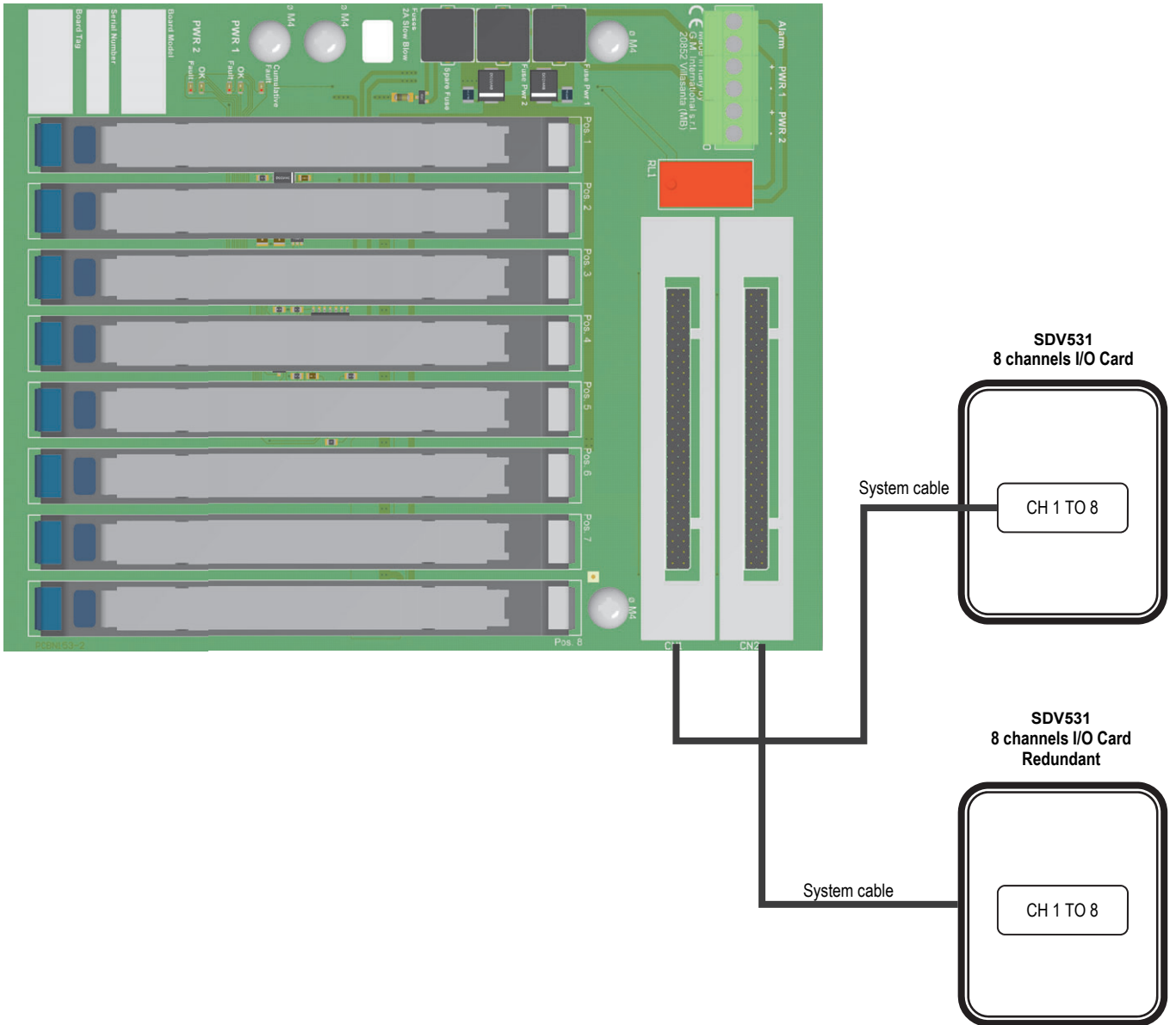
### Relay Activation Conditions:

The two relays are activated according to the following rules:

TAG	ACTIVATION
<b>ALARM</b>	The relay is energized when the following two conditions hold: <ol style="list-style-type: none"> <li>both supply voltages are within the regular range (&gt;18 V and &lt;30 V).</li> <li>No module / barrier fault is reported.</li> </ol>

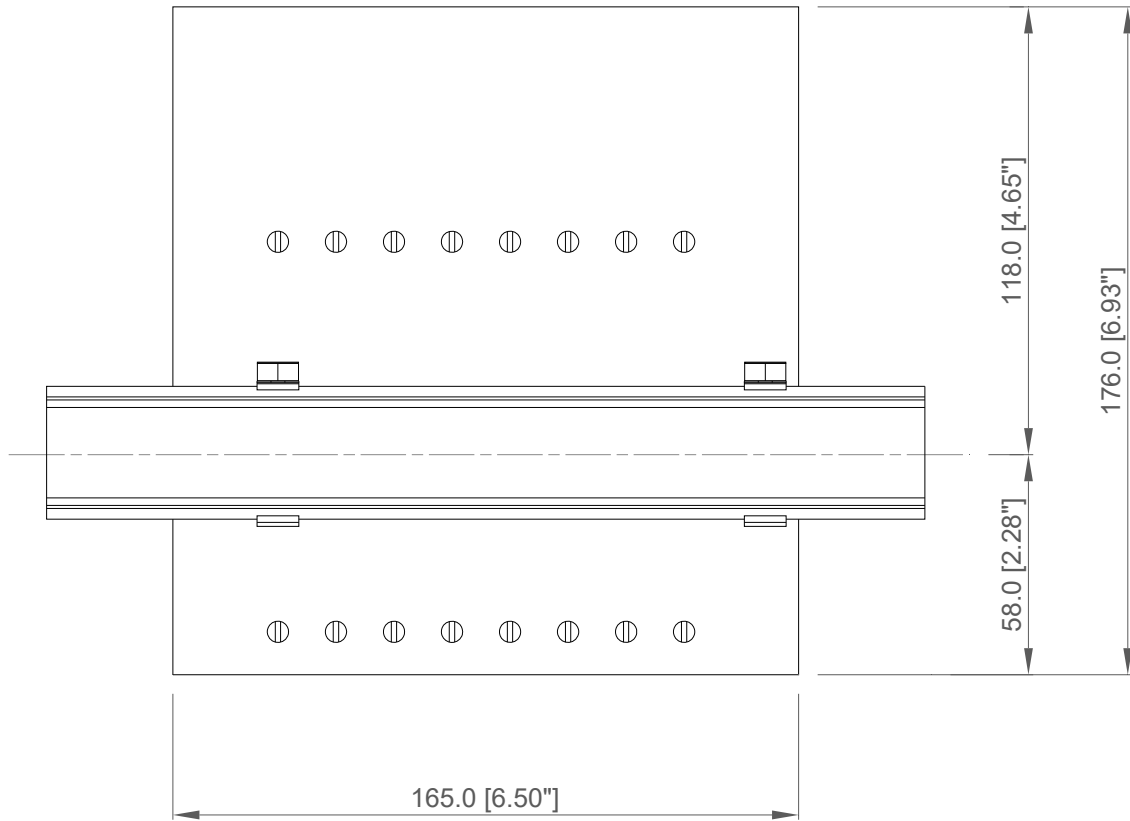


# Termination Board Connections:

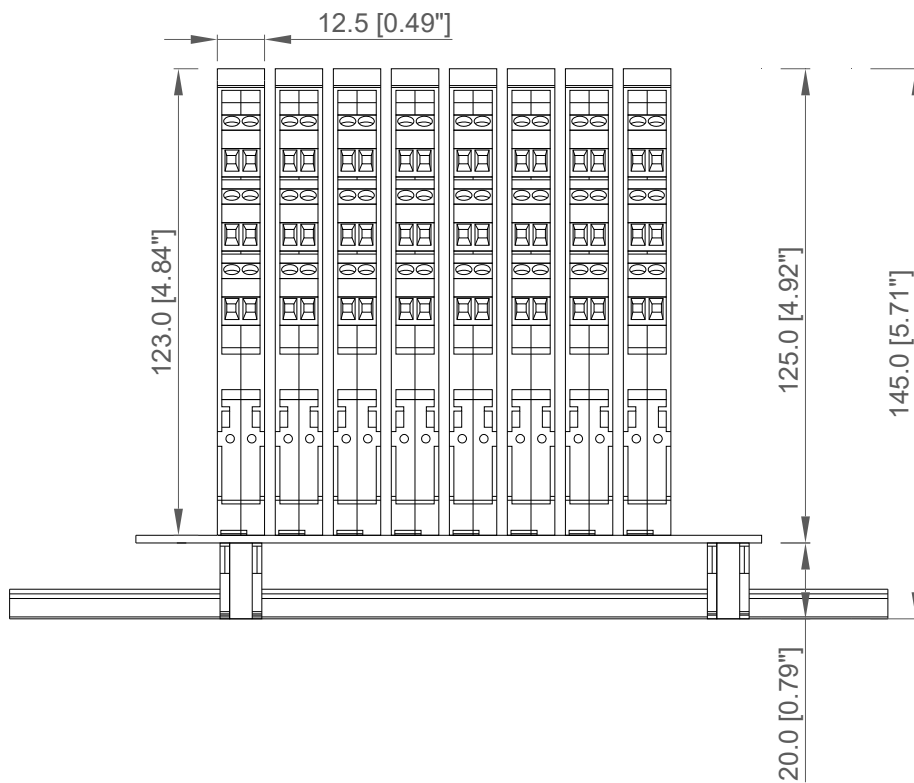


**DIN Rail mounting overall dimensions:**

**Bottom view**



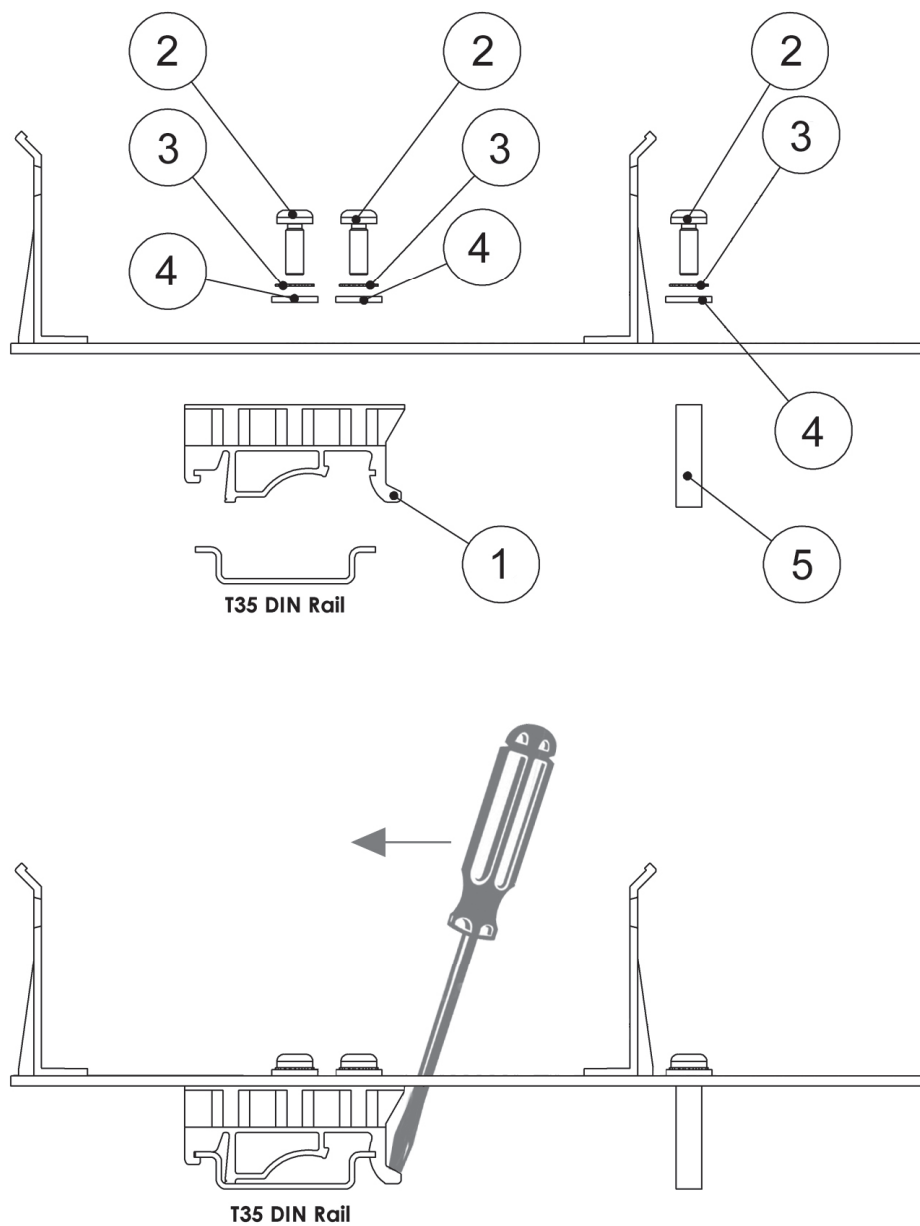
**Side view**



All dimensions are expressed in millimeters [inches]

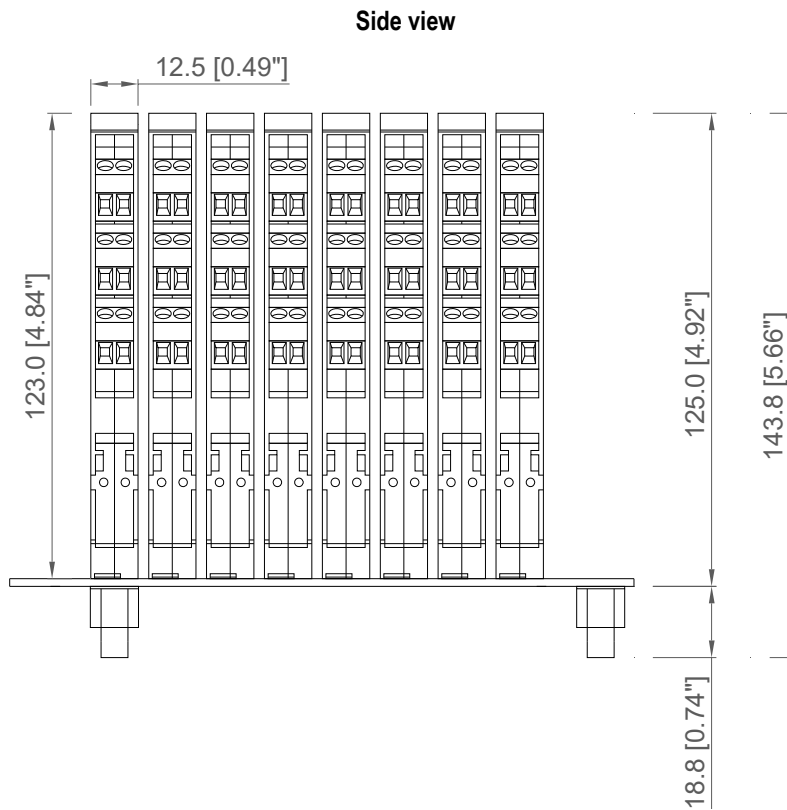
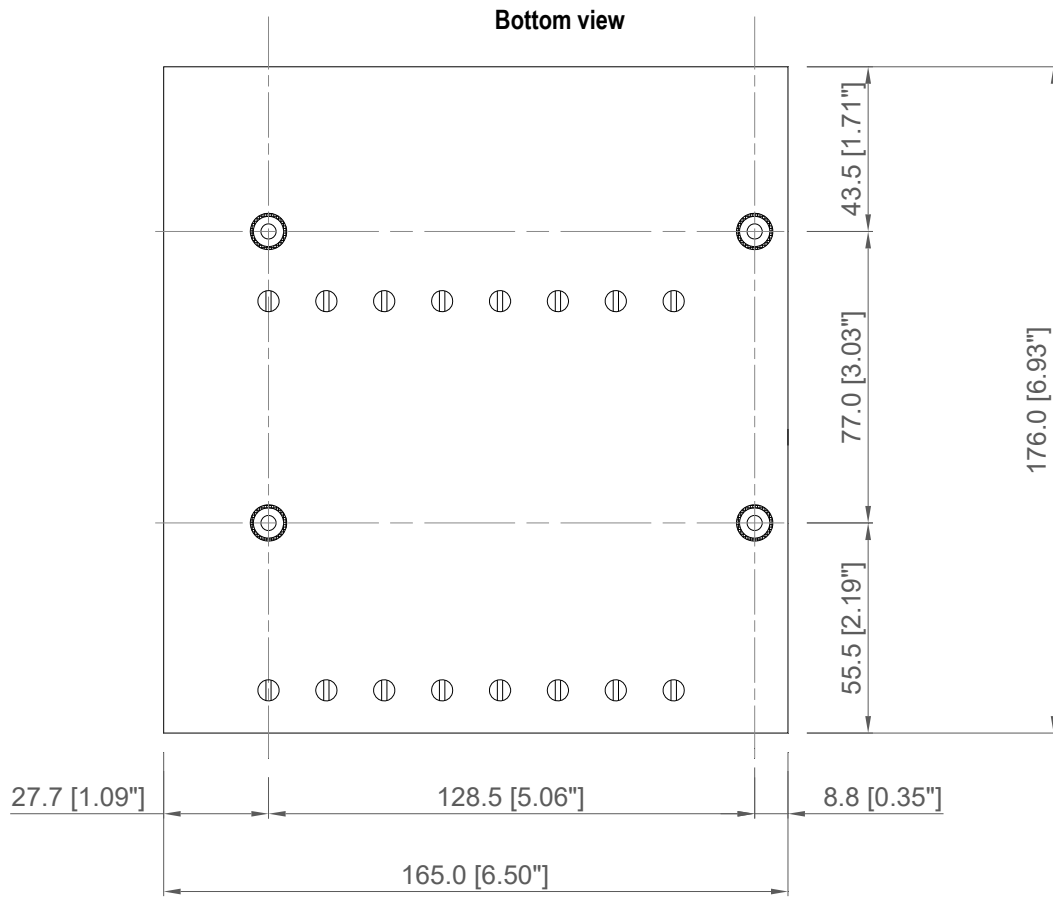


Mounting features kit TB-OPT-001



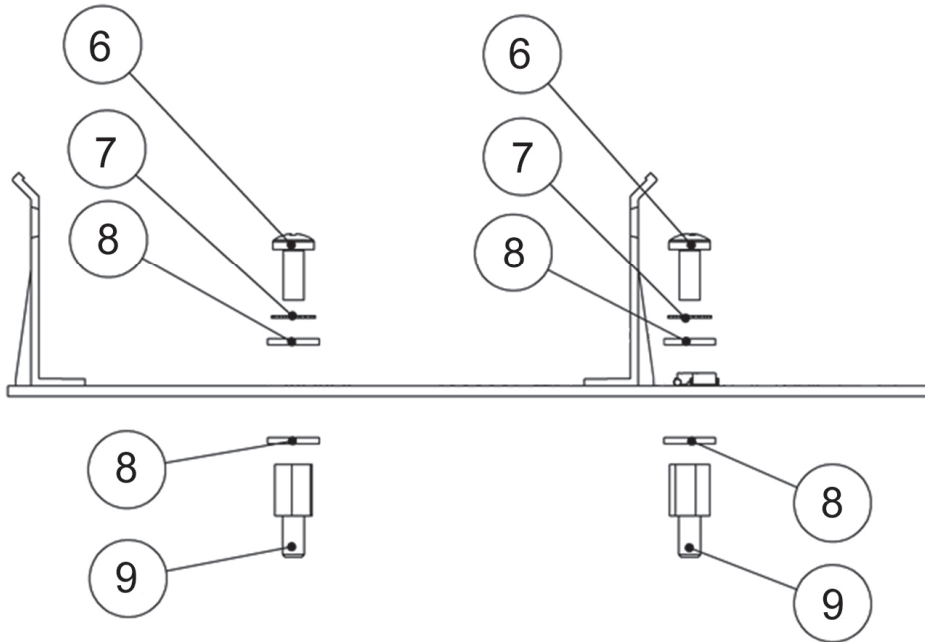
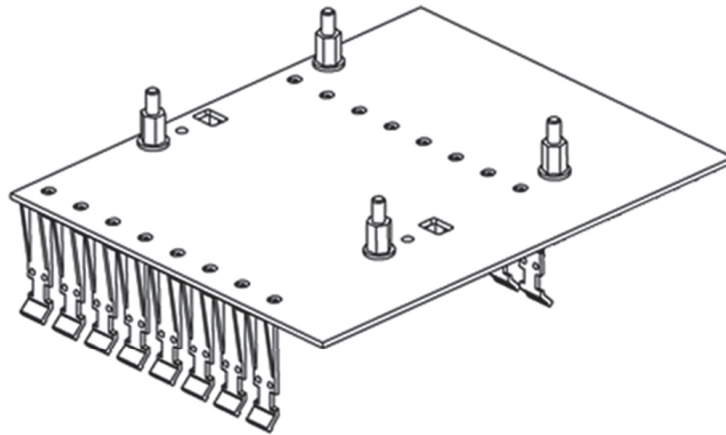
Ref. Nr	Q.ty	Description	Material
1	2	T35 Din Rail Adapter	PA
2	6	3.5 x 9.5 Self tapping screw	Stainless Steel
3	6	M3 External Tooth lock Washer	Stainless Steel
4	6	M3 Washer	Stainless Steel
5	2	6 c 20 Spacer	PA

Wall mounting overall dimensions for M4 self tapping screw:



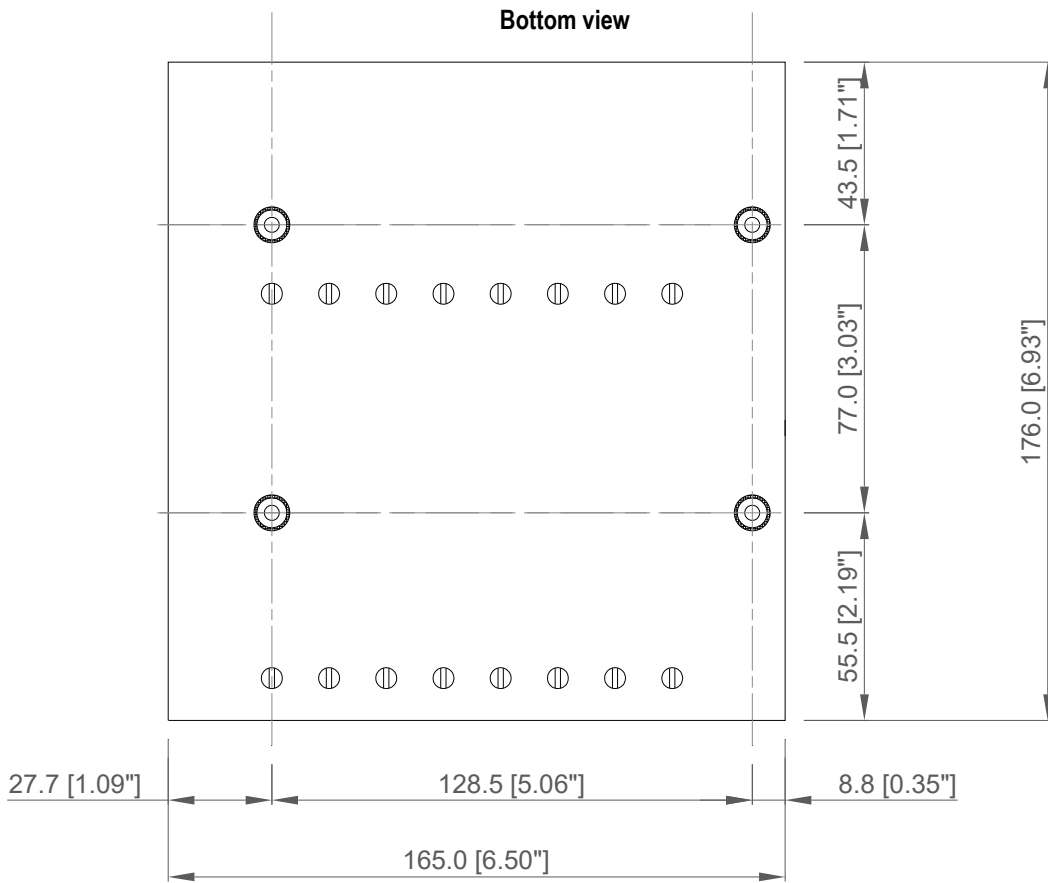
All dimensions are expressed in millimeters [inches]

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

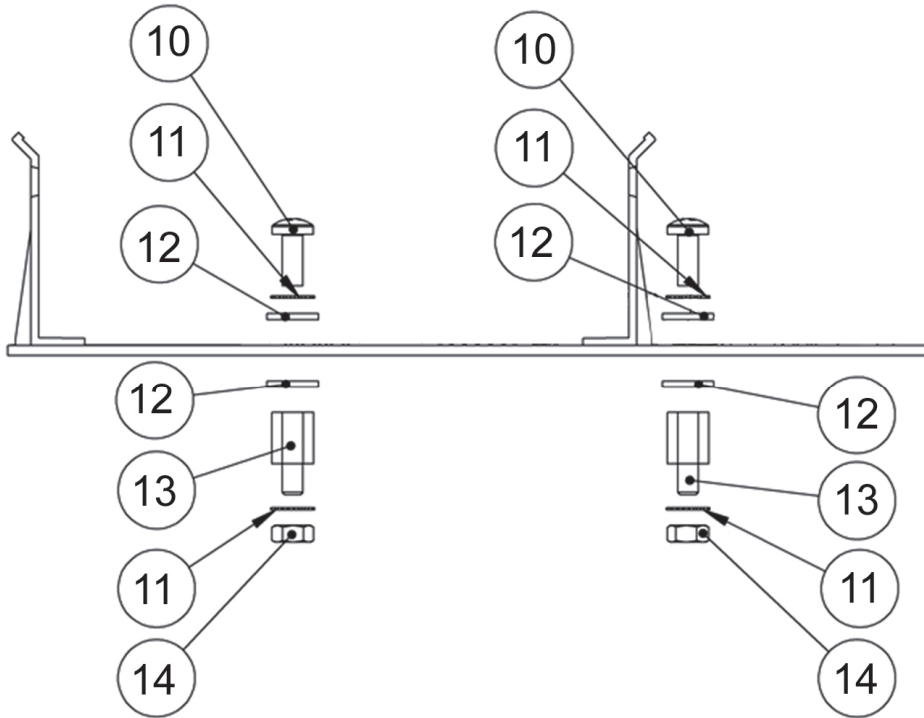
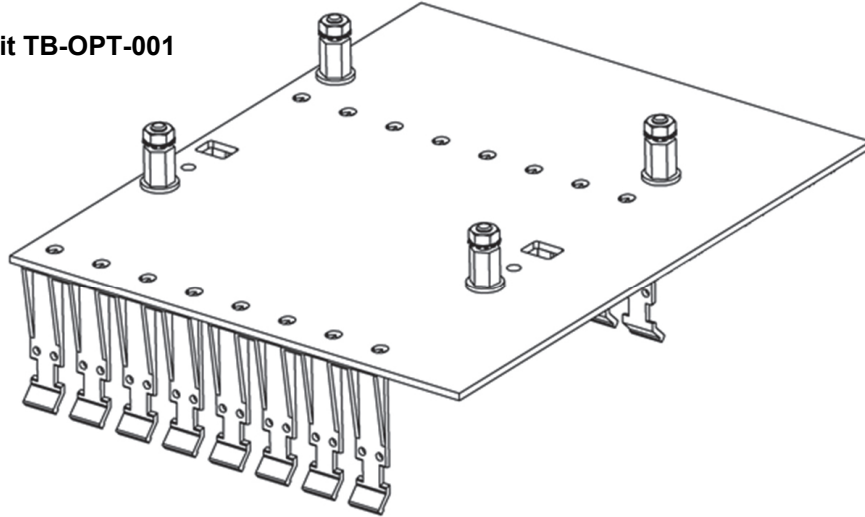
**Wall mounting overall dimensions for M4 thread screw:**



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

**Connections table to Interface Card:**

FIELD DEVICE	MODULE TYPE	MODULE FUNCTION	MODULE POSITION	INTERFACE CARD CHANNEL NUMBER	INTERFACE CARD CONNECTOR PIN NUMBER	INTERFACE CARD REDUNDANT CONNECTOR PIN NUMBER	NOTE
	D5040S, D5048S, D5049S D5090S, D5091S,	Digital Output	1	1	(+) 48 (CN1)	(+) 48 (CN2)	<ul style="list-style-type: none"> <li>Interface Card Connectors CN1, CN2: 50 poles male. The poles No. 2, 3, 4, 5, 6, 7, 8, 10 are connected to +24 Vdc supply of TB.</li> <li>The poles No. 9, 11, 12, 13, 14, 15, 16, 49 are connected to GND of TB.</li> <li>The poles No. 1 and No. 50 are connected together.</li> <li>The poles from No. 17 to No. 32 are not connected because not used.</li> </ul>
					(-) 47 (CN1)	(-) 47 (CN2)	
			2	2	(+) 46 (CN1)	(+) 46 (CN2)	
					(-) 45 (CN1)	(-) 45 (CN2)	
			3	3	(+) 44 (CN1)	(+) 44 (CN2)	
					(-) 43 (CN1)	(-) 43 (CN2)	
			4	4	(+) 42 (CN1)	(+) 42 (CN2)	
					(-) 41 (CN1)	(-) 41 (CN2)	
			5	5	(+) 40 (CN1)	(+) 40 (CN2)	
					(-) 39 (CN1)	(-) 39 (CN2)	
			6	6	(+) 38 (CN1)	(+) 38 (CN2)	
					(-) 37 (CN1)	(-) 37 (CN2)	
			7	7	(+) 36 (CN1)	(+) 36 (CN2)	
					(-) 35 (CN1)	(-) 35 (CN2)	
			8	8	(+) 34 (CN1)	(+) 34 (CN2)	
					(-) 33 (CN1)	(-) 33 (CN2)	

Termination Board supply connection details:

