

Characteristics:

General description:

This Termination Board (TB) provides direct connection between the I/O Card of the system and D5000 Series modules. Intrinsically 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. The power supply for modules is given by TB power bus.

Termination Board general characteristics:

Termination Board Model	Number of positions	Features
TB-D5016-TRI-005	16 (1st TB) + 16 (2nd TB)	1)Power Supply voltage redundancy; 2)Abnormal supply voltage signaling; 3)Cumulative module fault signaling.

Supported TMR 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
3504E 3564	Digital In	64	1(*)	32	D5031S D5032S D5093S

(*) TB-D5016-TRI-005 is composed of two 16 positions boards connected together providing 32 channels each. Two TB-D5016-TRI-005 are necessary to reach 64 channels.

Features:

- 3504E, 3564 DI Cards, 64 ch. board interfaces.
- 32 positions Termination Board for up to 32 channels, to be used in pairs to obtain 64 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-005

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 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 ELCO 8016, 56 poles receptacle connector (requires plug mating connector).

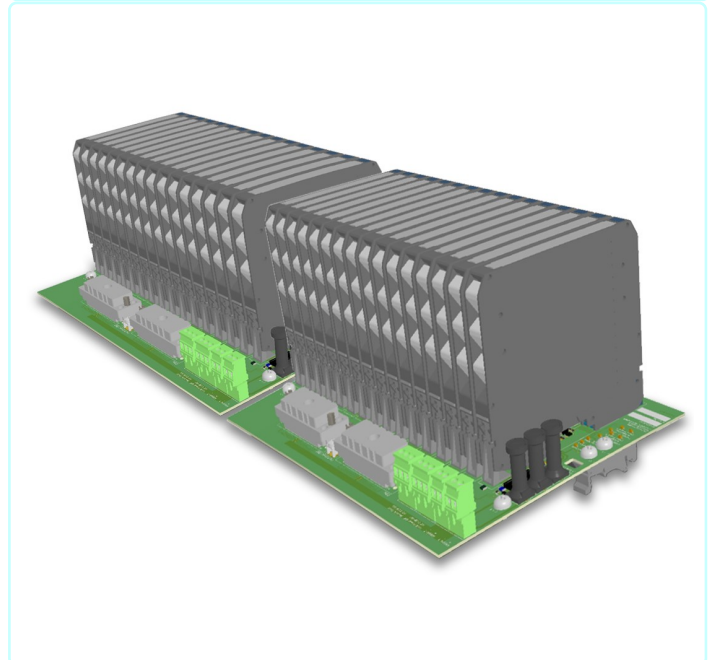
Environmental conditions:

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 800 g (excluding modules and mounting options).
Location: Safe Area / Ordinary locations.
Dimensions: Width 534 mm, Depth 176 mm, Height 125 mm.

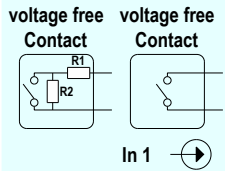
Image:



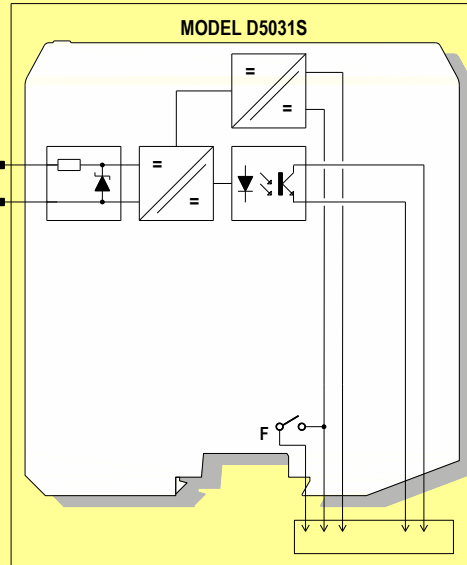
Loop Diagrams for 3504E, 3564 (64 DI) Interface Cards:

HAZARDOUS AREA

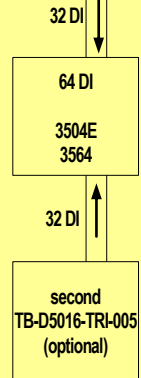
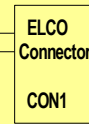
SAFE AREA



Position 1 to 32 for single channel DI module

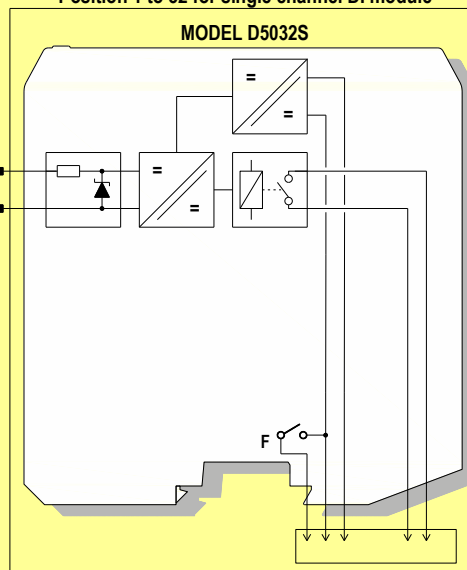


Termination board connector

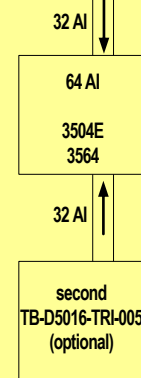
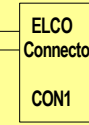


+ Supply from TB
- Cumulative Fault

Position 1 to 32 for single channel DI module



Termination board connector

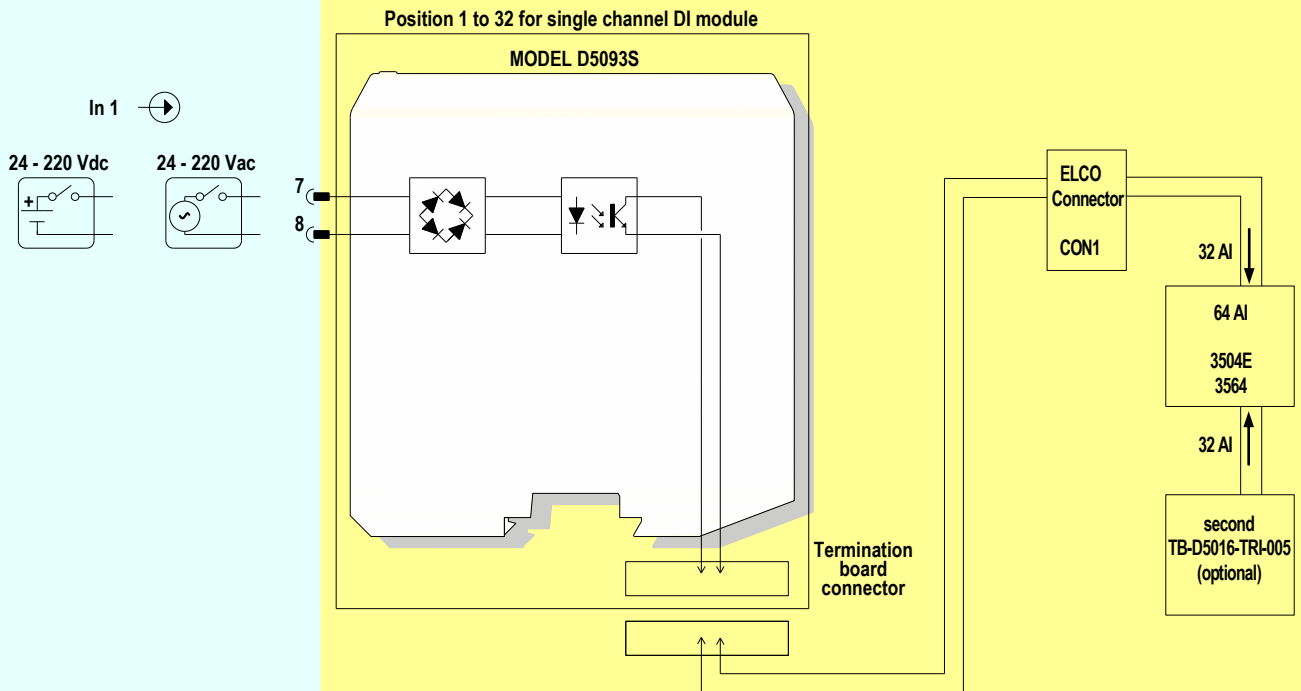


+ Supply from TB
- Cumulative Fault

Loop Diagrams for 3504E, 3564 (64 DI) Interface Cards:

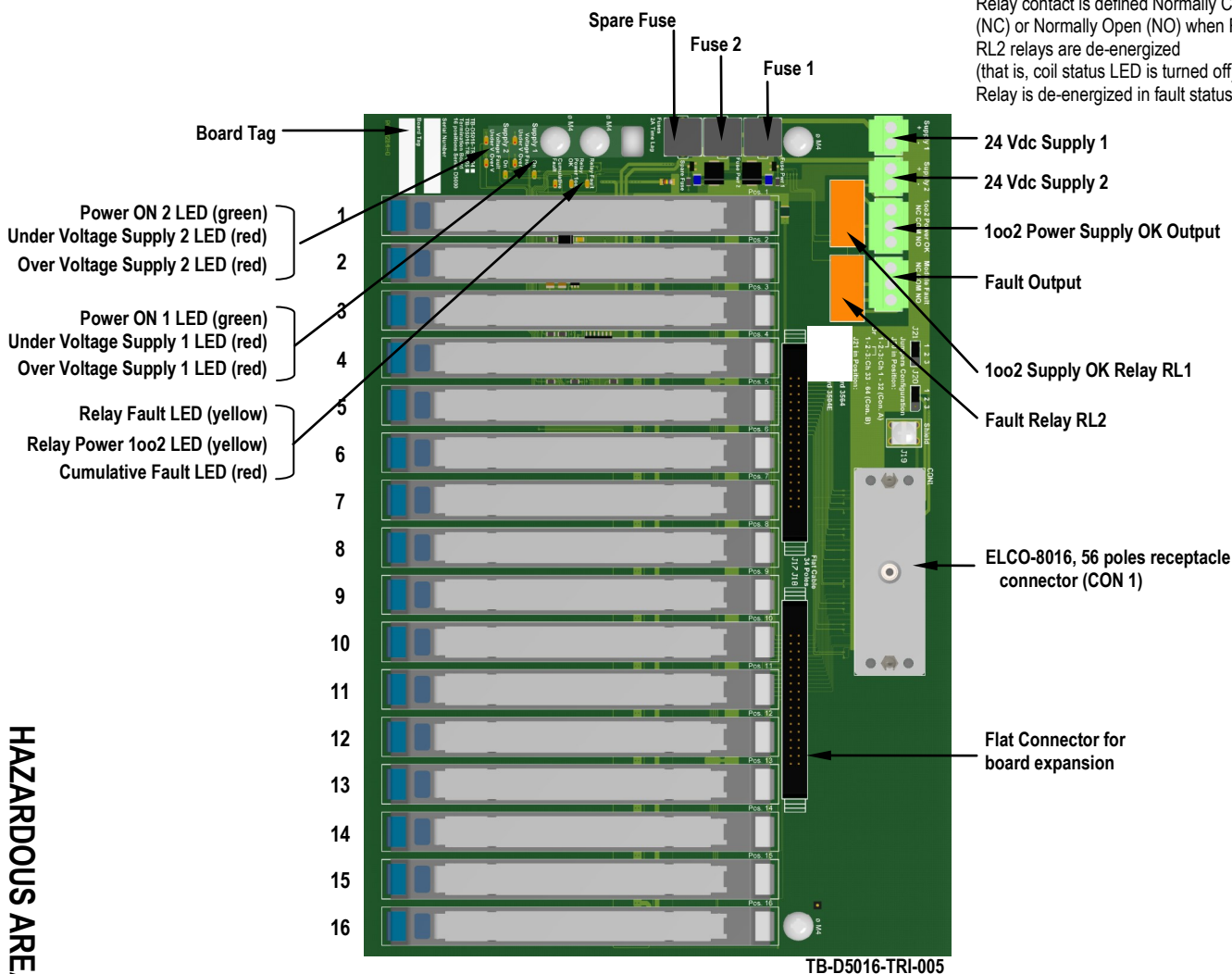
HAZARDOUS AREA

SAFE AREA



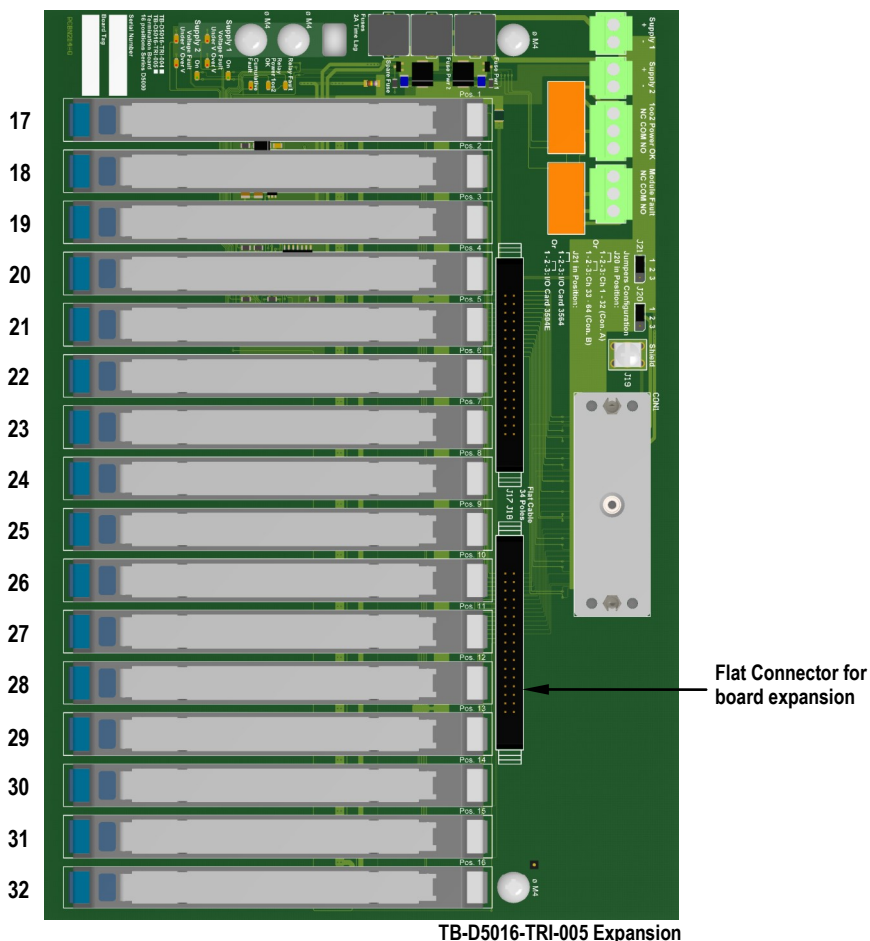
Termination Board Description:

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.



HAZARDOUS AREA / LOCATION

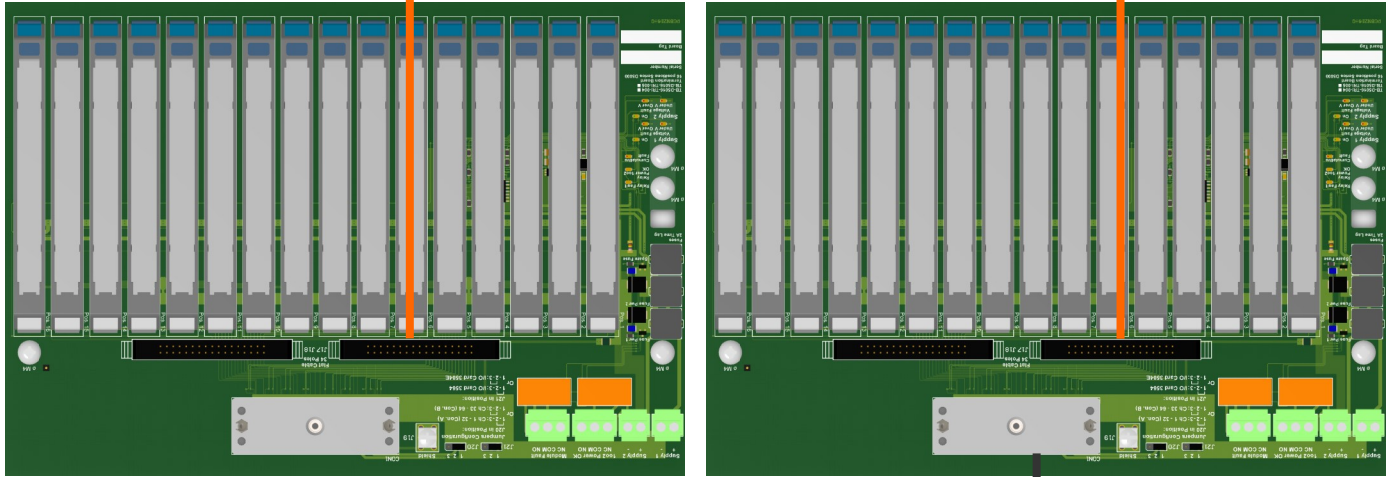
SAFE AREA / ORDINARY LOCATION



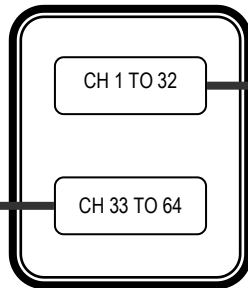
Termination Board Connections:

Interconnection cable

First TB-D5016-TRI-005
for channels 1 to 32

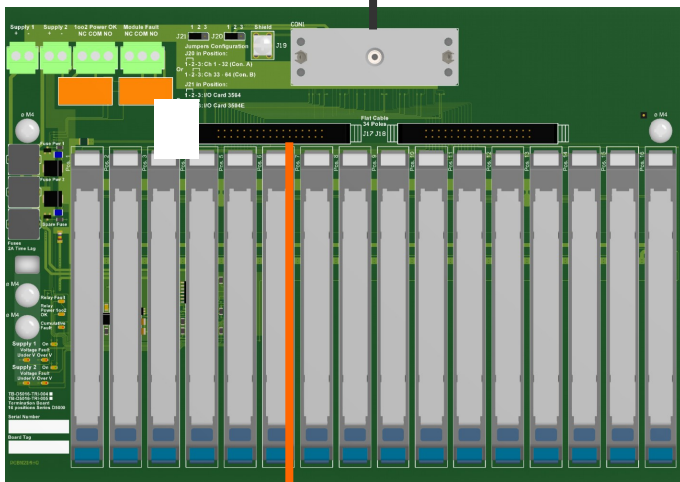


3504E, 3564
64 DI CARD



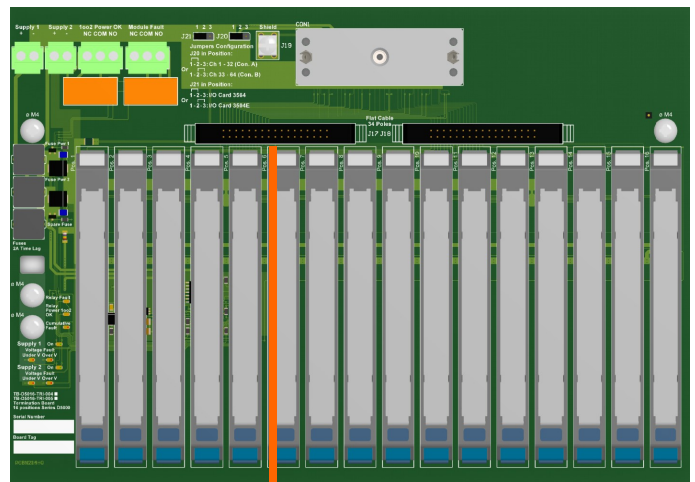
System cable

System cable



Second TB-D5016-TRI-005
for channels 33 to 64

Interconnection cable



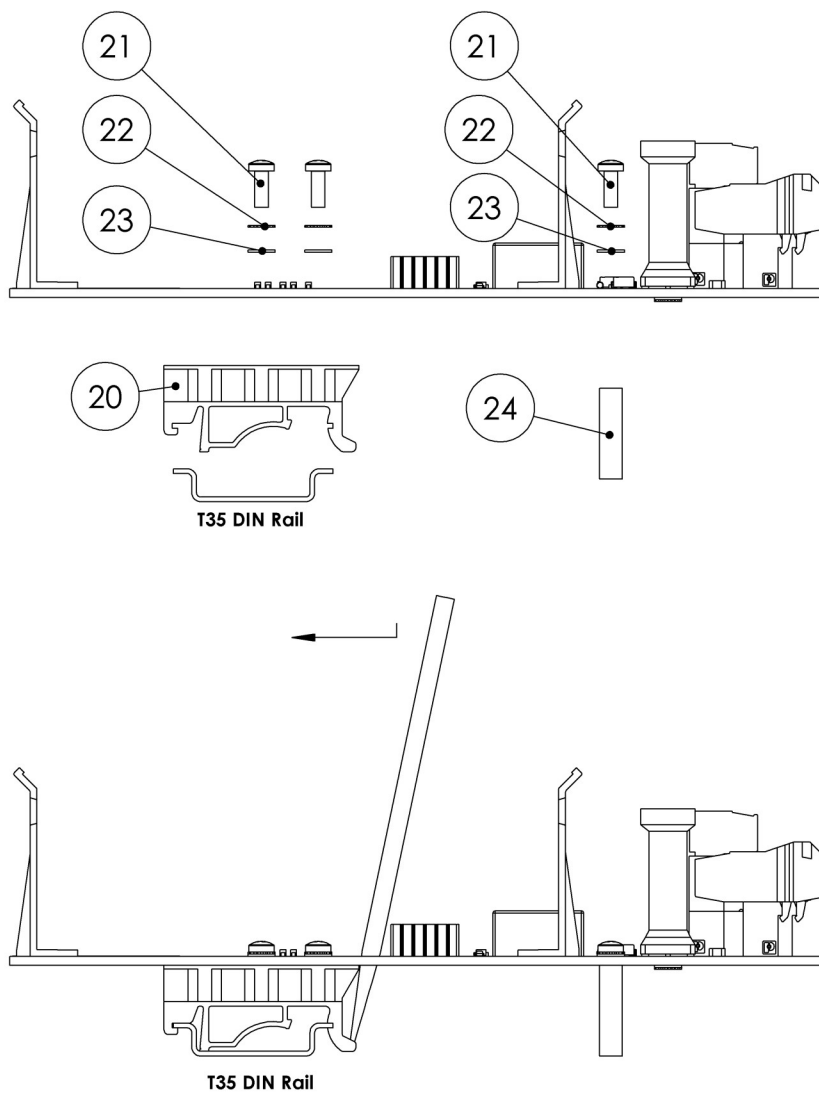
ELCO Configuration:

Board	I/O Card Ch	ELCO
First	1-32	Small key Pos. 1 Large key Pos 3
Second	33-64	Small key Pos. 1 Large key Pos 3

CARD Configuration:

Card	J19 Jumper
3504E	
3564	

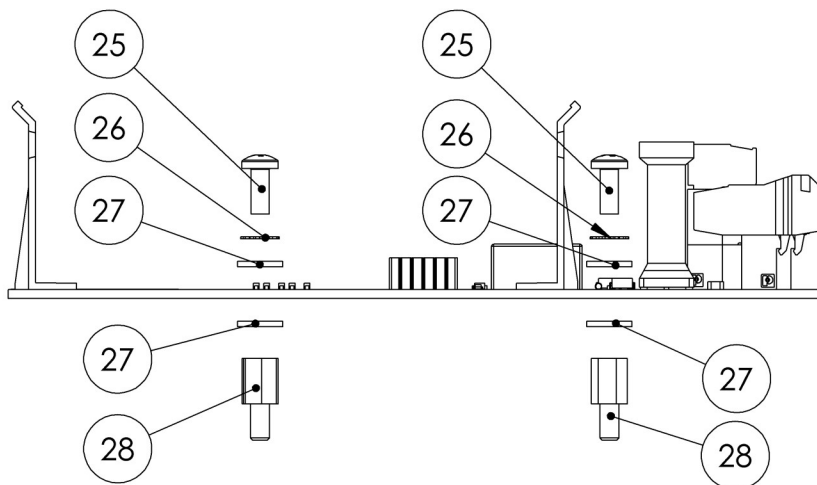
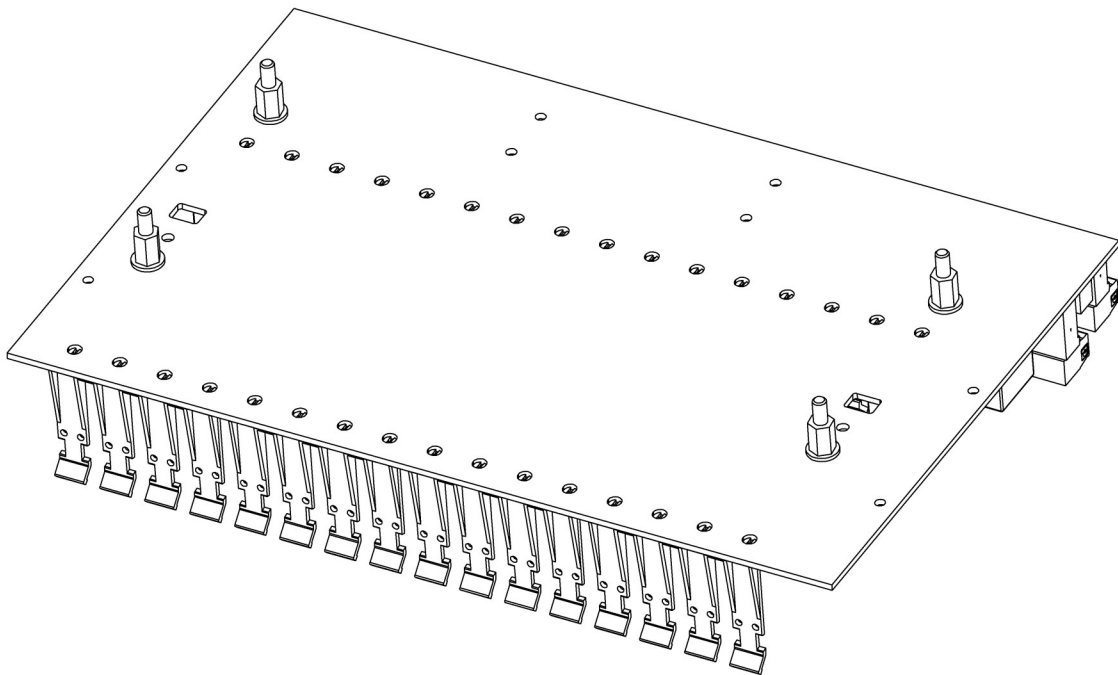
16 POSITION TERMINAL BOARD D5000 SERIES MOUNTING FEATURES KIT TB-OPT-001



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

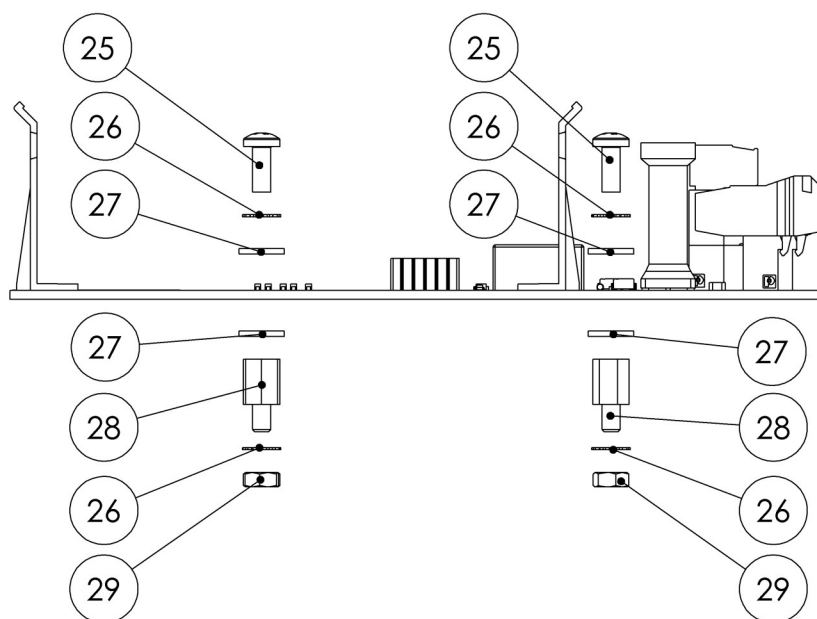
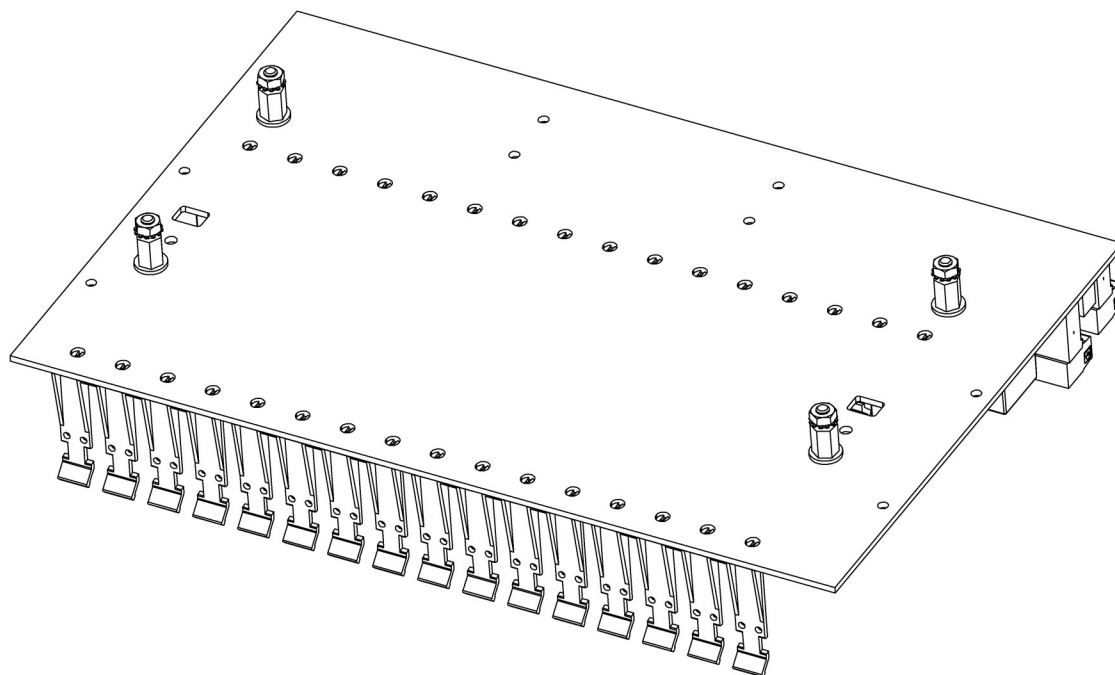
16 POSITION TERMINAL BOARD D5000 SERIES MOUNTING FEATURES KIT TB-OPT-001



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

Connections table to 3504E, 3564 (64 ch) DI Interface Cards:

FIELD DEVICE	MODULE TYPE	MODULE FUNCTION	MODULE POSITION		MODULE CHANNEL NUMBER		INTERFACE CARD CH. NUMBER		INTERFACE CARD CONNECTOR PIN NUMBER	NOTE
			board 1	board 2	board 1	board 2	board 1	board 2		
	D5031S D5032S D5093S	Digital IN	1	33	1	33	1	33	(+) AA	<ul style="list-style-type: none"> • Interface Card Connector CON1: ELCO 816 56 poles receptacle connector. • Ground available on poles: E, A, NN, JJ, y, n, d, V, K, D. • Chassis Ground provided on poles: T, H, w, FF. • Configure jumper J19 for correct card type following instruction at section "Termination Board connections".
			2	34	2	34	2	34	(+) LL	
			3	35	3	35	3	35	(+) z	
			4	36	4	36	4	36	(+) EE	
			5	37	5	37	5	37	(+) p	
			6	38	6	38	6	38	(+) v	
			7	39	7	39	7	39	(+) h	
			8	40	8	40	8	40	(+) l	
			9	41	9	41	9	41	(+) e	
			10	42	10	42	10	42	(+) b	
			11	43	11	43	11	43	(+) W	
			12	44	12	44	12	44	(+) S	
			13	45	13	45	13	45	(+) L	
			14	46	14	46	14	46	(+) F	
			15	47	15	47	15	47	(+) M	
			16	48	16	48	16	48	(+) B	
			17	49	17	49	17	49	(+) BB	
			18	50	18	50	18	50	(+) MM	
			19	51	19	51	19	51	(+) CC	
			20	52	20	52	20	52	(+) HH	
			21	53	21	53	21	53	(+) t	
			22	54	22	54	22	54	(+) x	
			23	55	23	55	23	55	(+) j	
			24	56	24	56	24	56	(+) m	
			25	57	25	57	25	57	(+) f	
			26	58	26	58	26	58	(+) c	
			27	59	27	59	27	59	(+) Z	
			28	60	28	60	28	60	(+) U	
			29	61	29	61	29	61	(+) P	
			30	62	30	62	30	62	(+) J	
			31	63	31	63	31	63	(+) N	
			32	64	32	64	32	64	(+) C	