Клеммные платы серии TB-D5008/5016-GMI, TBE-D5016/5008-GMI. Технические характеристики

Characteristics:

General description:

This Termination Board (TB) provides direct connection between the I/O Card of the system and D5000 / D6000 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. 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 Intrinsically 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 mm^2.
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 <u>or</u> cumulative fault: both supplies are in under (< 18 Vdc) or over (> 30 Vdc) voltage condition <u>OR</u> 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 * 10^6 / 1 * 10^5 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 mm^2.

I/O signals interface:

Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm^2.

HART Multiplexing:

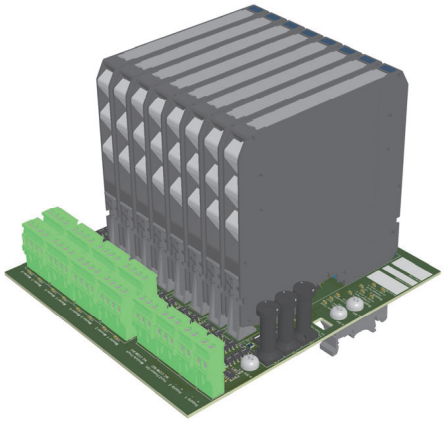
Connection: one 34 poles male connectors (requires female mating connector).

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:

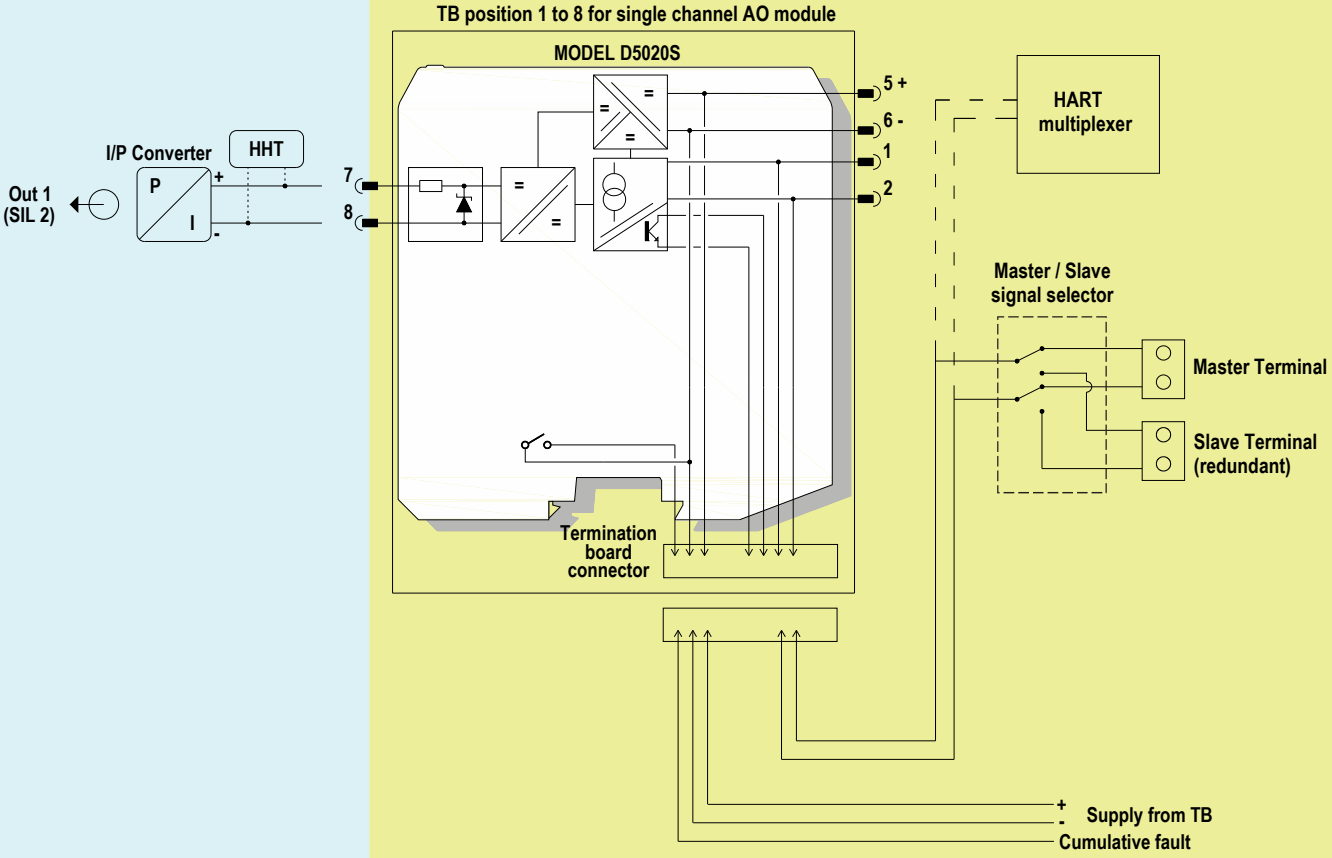
Hardware included for mounting on wall and single DIN rail.
Weight: about 400 g (excluding modules and mounting options).
Location: Safe Area / Ordinary locations.
Dimensions: Width 166 mm, Depth 176 mm, Height 125 mm.



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



Termination Board Description:

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

TBE-D5008-GMI-001

8-pos Term. Board for D5000/D6000 Series

This Termination Board with Enclosure (TBE) 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 TBE is connected to two plug-in terminal blocks, for a redundant power supply.

FEATURES

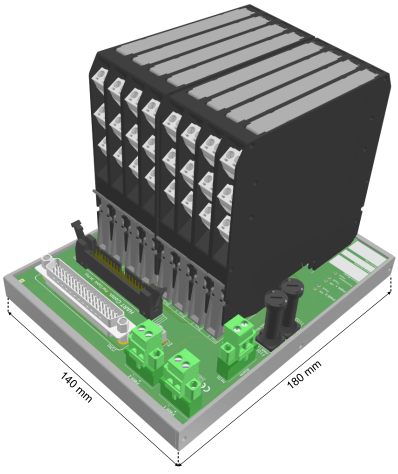
- Universal board interfaces
- Connection to external GMI HART Mux 5700
- 8 positions Termination Board for up to 16 channels
- Lower cables installation and maintenance costs
- Power supplies fault monitoring
- Mounting hardware provided for single DIN Rail mounting kit

SUPPORTED CARDS & MODULES

SYSTEM	I/O CARD	CARDS / BOARDS	MODULES
Any	AI 8 ch	1	D5011S, D5014S, D5015S*, D5016S*, D5072S, D6001S, D6011S, D6014S, D6015S*, D6016S*, D6017S*, D6072S
Any	AI 8 ch	2	D5011D, D5014D, D5016D*, D5072D, D6001D, D6011D, D6014D, D6016D*, D6072D
Any	AO 8 ch	1	D5020S, D6001S, D6020S
Any	AO 8 ch	2	D5020D, D6001D, D6020D
Any	DI 8 ch	1	D5031S, D5032S, D5034S, D5037S, D5038S*, D5039S*, D5093S, D6001S, D6031S, D6032S, D6034S, D6037S, D6038S*, D6039S*
Any	DI 8 ch	2	D5031D, D5032D, D5034D, D5037D, D5038D*, D5038X*, D5039D*, D5039X*, D5093D, D6001D, D6031D, D6032D, D6034D, D6037D, D6038D*, D6038X*, D6039D*, D6039X*
Any	DO 8 ch	1	D5040S, D5048S, D5049S, D5090S, D5091S, D5094S, D5095S, D5096S, D5097S, D5098S, D5099S, D6001S
Any	DO 8 ch	2	D5040D, D5098D, D5099D, D6001D

For more detailed information, refer to Instruction Manual.

TERMINATION BOARD IMAGE



TECHNICAL DATA

General

Number of positions: 8
Maximum number of channels: 16

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.
Max allowed current consumption: 1 (as total supply).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².
Protection fuse: 2 A time lag.

Fault detection

The on-board diagnostic monitors both power supplies integrity and the module cumulative fault. Any malfunction is reported by deactivating a solid-state relay and activating the corresponding LEDs.
Alarm is issued if:
1) Power supply 1 or 2 < 17 Vdc or
2) Power supply 1 or 2 > 33 Vdc or
3) Module cumulative fault ON.
Alarm is removed if:
1) 20 Vdc < Power supply 1 and 2 < 30 Vdc and
2) No module cumulative fault.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².
Ouptut rating: 100 mA 35 V (≤ 1 V voltage drop).

I/O Card Interface

Connection: 1 x SUB-D 37 poles male connector (requiring female mating connector).
Cable: CABF034/xx, where "xx" indicates the length expressed in meters (5, 10, 20, 30 available).

HART Mux Interface

Connection: 1 x 34-poles receptacle connector (require female mating connector).
Cable: flat cable CABF032.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Max altitude: 2000 m a.s.l.
Storage temperature: temperature limits –45 to +80 °C.

Mounting

Hardware included for mounting on single DIN-rail 35 mm.
Weight: about 450 g, excluding modules (+ 50 g plastic clips or 380 g metal clips).
Location: installation in Safe Area.
Dimensions: Width 140 mm, Depth 180 mm, Height 154 mm.

ORDERING INFORMATION

Ordering codes

TBE-D5008-GMI-001

Accessories

The Termination Board is already provided with plastic DIN-rail clips. Metal clips, replacement plastic clips as well as conformal coating must be ordered as a separate accessory according to the following items.

TBE-FIX-PL-001	Plastic DIN-rail clips
TBE-FIX-MT-001	Metal DIN-rail clips
TBE-MNT-001	Factory assembly of TBE-FIX-MT-001
TBE-CTG-001	Conformal coating

TBE-D5016-GMI-001

16-pos Term. Board for D5000/D6000 Series

This Termination Board with Enclosure (TBE) 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 TBE is connected to two plug-in terminal blocks, for a redundant power supply.

FEATURES

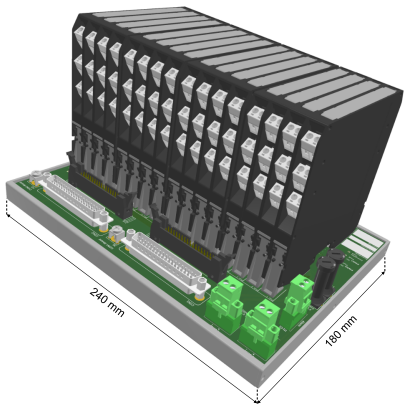
- Universal board interfaces
- Connection to external GMI HART Mux 5700
- 16 positions Termination Board for up to 32 channels
- Lower cables installation and maintenance costs
- Power supplies fault monitoring
- Mounting hardware provided for single DIN Rail mounting kit

SUPPORTED CARDS & MODULES

SYSTEM	I/O CARD	CARDS / BOARDS	MODULES
Any	AI 16 ch	1	D5011S, D5014S, D5015S*, D5016S*, D5072S, D6001S, D6011S, D6014S, D6015S*, D6016S*, D6017S*, D6072S
Any	AI 16 ch	2	D5011D, D5014D, D5016D*, D5072D, D6001D, D6011D, D6014D, D6016D*, D6072D
Any	AO 16 ch	1	D5020S, D6001S, D6020S
Any	AO 16 ch	2	D5020D, D6001D, D6020D
Any	DI 16 ch	1	D5031S, D5032S, D5034S, D5037S, D5038S*, D5039S*, D5093S, D6001S, D6031S, D6032S, D6034S, D6037S, D6038S*, D6039S*
Any	DI 16 ch	2	D5031D, D5032D, D5034D, D5037D, D5038D*, D5038X*, D5039D*, D5039X*, D5093D, D6001D, D6031D, D6032D, D6034D, D6037D, D6038D*, D6038X*, D6039D*, D6039X*
Any	DO 16 ch	1	D5040S, D5048S, D5049S, D5090S, D5091S, D5094S, D5095S, D5096S, D5097S, D5098S, D5099S, D6001S
Any	DO 16 ch	2	D5040D, D5098D, D5099D, D6001D

For more detailed information, refer to Instruction Manual.

TERMINATION BOARD IMAGE



TECHNICAL DATA

General

Number of positions: 16
Maximum number of channels: 32

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.
Max allowed current consumption: 1.5 A (as total supply).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².
Protection fuse: 4 A time lag.

Fault detection

The on-board diagnostic monitors both power supplies integrity and the module cumulative fault. Any malfunction is reported by deactivating a solid-state relay and activating the corresponding LEDs.
Alarm is issued if:
1) Power supply 1 or 2 < 17 Vdc or
2) Power supply 1 or 2 > 33 Vdc or
3) Module cumulative fault ON.
Alarm is removed if:
1) 20 Vdc < Power supply 1 and 2 < 30 Vdc and
2) No module cumulative fault.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².
Ouptut rating: 100 mA 35 V (≤ 1 V voltage drop).

I/O Card Interface

Connection: two SUB-D 37 poles male connectors (requiring female mating connectors).
Cable: CABF034/xx, where "xx" indicates the length expressed in meters (5, 10, 20, 30 available).

HART Mux Interface

Connection: 2 x 34-poles receptacle connector (require female mating connector).
Cable: flat cable CABF032.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Max altitude: 2000 m a.s.l.
Storage temperature: temperature limits –45 to +80 °C.

Mounting

Hardware included for mounting on single DIN-rail 35 mm.
Weight: about 1 kg, excluding modules (+ 50 g plastic clips or 380 g metal clips).
Location: installation in Safe Area.
Dimensions: Width 240 mm, Depth 180 mm, Height 154 mm.

ORDERING INFORMATION

Ordering codes

TBE-D5016-GMI-001

Accessories

The Termination Board is already provided with plastic DIN-rail clips. Metal clips, replacement plastic clips as well as conformal coating must be ordered as a separate accessory according to the following items.

TBE-FIX-PL-001(x2)	Plastic DIN-rail clips
TBE-FIX-MT-001(x2)	Metal DIN-rail clips
TBE-MNT-001(x2)	Factory assembly of TBE-FIX-MT-001
TBE-CTG-002	Conformal coating

TB-D5008 GMI-001

Universal Termination Board 8 positions for D5000 Series

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:

Termination Board Model	*Number of positions*	*Features*
TB-D5008-GMI-001	8	1) Power Supply voltage redundancy; 2) HART multiplexing; 3) Abnormal supply voltage signaling; 4) Cumulative module fault signaling.

Supported GM Modules:

I/O signal Type	*Number of ch per board*	*Supported GM Modules**
Analog Input	8	D5011S, D5014S, D5072S, D6011S, D6014S, D6072S
	16	D5011D, D5014D, D5072D, D6011D, D6014D, D6072D
Analog Out	8	D5020S, D6020S
	16	D5020D, D6020D
Digital Input	8	D5031S, D5032S, D5037S, D5093S, D6031S
	16	D5031D, D5032D, D5037D, D5093D, D6031D
Digital Out	8	D5040S, D5040D
	16	D5048S, D5049S, D5090S, D5091S

* 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, redundant terminal blocks, OR diodes to select higher supply source.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm^2.
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 250 Vac 500 VA, 2 A 250 Vdc 80 W (resistive load).
Mechanical / Electrical life: 30 * 10^6 / 1 * 10^5 operation, typical.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm^2.

I/O card interface:

Connection: one SUB D 37 poles male connector (requires female mating connector).

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.

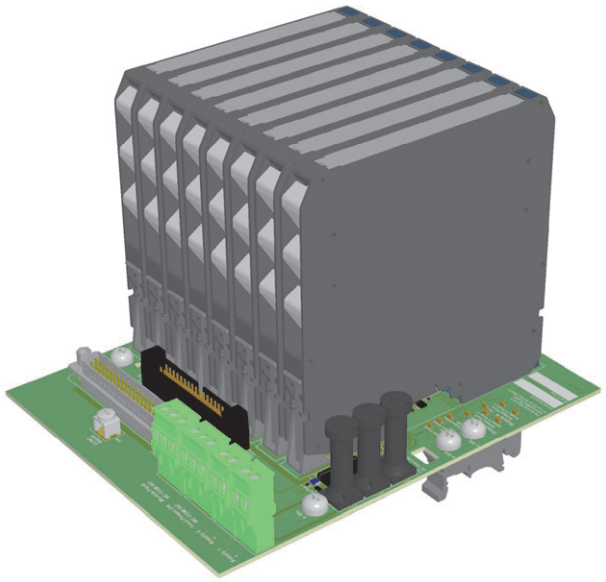
Mounting:

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 165 mm, Depth 185 mm, Height 125 mm.

Features:

- Universal I/O card interface.
- 8 positions Terminal Board for up to 16 channels.
- Lower cables installation and maintenance costs.
- Power supplies fault monitoring.
- Spare fuse provided.
- Includes hardware for Easy installation in three modes:
  Wall mounting, M4 Threads,
  Wall mounting, Self Threading,
  Din Rail mounting.

Image:



Ordering Information:

Model:	TB-D5008-GMI-001

TB-D5016 GMI-001

Universal Termination Board 16 positions for D5000 Series

Characteristics:

General description:

This Termination Board (TB) provides direct connection between the I/O Card of the system and D5000 / D6000 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. Modules are supplied via TB power bus.

Termination Board general characteristics:

Termination Board Model	*Number of positions*	*Features*
TB-D5016-GMI-001	16	1) Power Supply voltage redundancy; 2) HART multiplexing; 3) Abnormal supply voltage signaling; 4) Cumulative module fault signaling.

Supported GM Modules:

I/O signal Type	*Number of ch per board*	*Supported GM Modules**
Analog Input	16	D5011S, D5014S, D5072S, D6011S, D6014S, D6072S
	32	D5011D, D5014D, D5072D, D6011D, D6014D, D6072D
Analog Out	16	D5020S, D6020S
	32	D5020D, D6020D
Digital Input	16	D5031S, D5032S, D5034S, D5037S, D5093S, D6031S, D6032S, D6034S, D6037S
	32	D5031D, D5032D, D5034D, D5037D, D5093D, D6031D D6032D, D6034D, D6037D
Digital Out	16	D5040S, D5048S, D5049S, D5090S, D5091S D5094S, D5095S, D5096S, D5097S, D5098S,
	32	D5040D, D5098D

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

Features:

- Universal I/O card interface.
- 16 positions Terminal Board for up to 32 channels.
- Lower cables installation and maintenance costs.
- Power supplies fault monitoring.
- Spare fuse provided.
- Includes hardware for Easy installation in three modes:
  Wall mounting, M4 Threads,
  Wall mounting, Self Threading,
  Din Rail mounting.

Ordering Information:

Model:	TB-D5016-GMI-001

Technical Data:

Supply:
24 Vdc nom (20 to 30 Vdc) reverse polarity protected, redundant terminal blocks, OR diodes to select higher supply source.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm^2.
2 LEDs indication: green color, one for supply 1 and one for supply 2.
Protection fuse: 4 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: 4 A 250 Vac 500 VA, 2 A 250 Vdc 80 W (resistive load).
Mechanical / Electrical life: 30 * 10^6 / 1 * 10^5 operation, typical.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm^2.

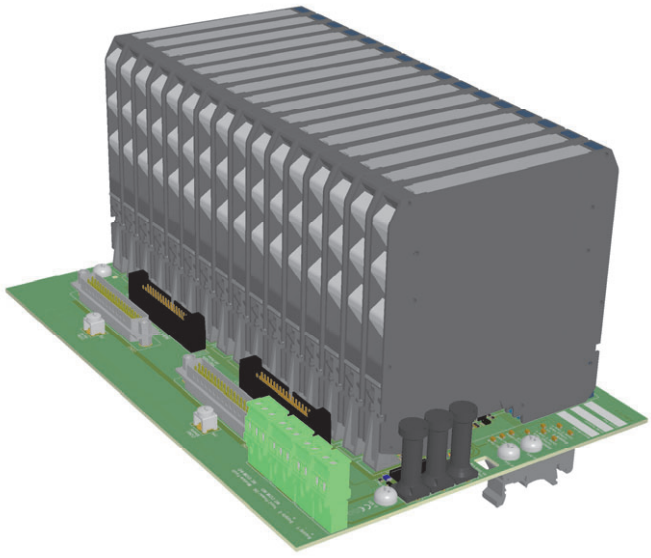
I/O card interface:
Connection: two SUB D 37 poles male connector (requires female mating connector).

HART Multiplexing:
Connection: two 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 267 mm, Depth 176 mm, Height 125 mm.

Image:



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)	