D5000-5200 series
Datasheets

technology for safety

Our products, Our commitment

www.gminternational.com

technology for safety

OVER 40 YEARS IN INTRINSIC SAFETY AND INDUSTRIAL ELECTRONICS

Glisente Landrini
President

In 1970 Glisente Landrini founded Elcon Instruments, which has been acknowledged as an international leader in the design and manufacturing of intrinsically safe products and systems. Mr. Landrini started GM International to provide state of the art SIL rated products and services to support Intrinsically safe applications in Oil & Gas, petrochemical and pharmaceutical industries.

The company was founded in 1993, but the core management's experience remarkably exceeds over 40 years of qualified activity in hazardous locations and industrial electronics. GM International's products have been successfully installed in plants all over the world, including Europe, Russia, North America, Middle and Far East and China.

GM International products interface all wiring between safe and hazardous areas and represent a fundamental, yet often under-estimated, layer of the instrumentation package.

Intrinsically safe isolators provide energy limitation to protect from risks of explosion while providing the highest grade of availability to guarantee both continuous operation and maximum safety effectiveness.

Safety, performance, and reliability

OUR PRODUCTS, OUR COMMITMENT

GM International designs, engineers and manufactures a complete range of intrinsically safe and SIL 3 certified devices that meet the stringest quality requirements, ensuring the highest production standards in intrinsically safe applications. Our products are used in automation packages such as DCS - ESD - FGS - BMS - HIPPS - PLC - SCADA, in several industrial sectors: Oil & Gas, petrochemical, pharmaceutical, fertilizer, mining, food & beverages, marine.

SOCIAL RESPONSIBILITY

We design intrinsically safe instruments and SIL certified devices in order to prevent accidents and understand, manage and reduce risks for people and environment.
Customer satisfaction is the manner in which we demonstrate our social responsibility to contribute to sustainable development, minimizing climate impact and creating a safe and healthy working environment.

GM International has obtained **SIL 3** Functional Safety Management approval by TUV according to IEC 61508:2010 standard.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV Italia

FUNCTIONAL SAFETY CERTIFICATE

according to IEC EN 61508:2010

Certificate No.: C – IS – 236198 – 09 Rev.1

CERTIFICATE OWNER: G.M. International s.r.l.
Via G. Mameli, 53-55
I-20852 Villasanta (MB) – ITALY

WE HEREWITH CONFIRM THAT G.M. INTERNATIONAL S.R.L. MEET THE REQUIREMENTS OF IEC EN 61508:2010 PART 1 CLAUSES 5 – 6:
The Management of Functional Safety results to be in compliance to the above mentioned Clauses of IEC 61508: 2010, for safety related systems up to and included SIL 3.

Examination result:	G.M. International s.r.l. was found to meet the standard defined requirements according to IEC EN 61508:2010 part 1 clause 5 - 6, under fulfillment of the conditions listed in the related Reports, in their currently valid version, on which this Certificate is based
Examination parameters:	Documentation and Management of the Functional Safety
Applicable lifecycle phases:	Phase 10 – Realisation of safety-related system (IEC EN 61508-1 Clause 7)
Official Report No.:	R-IS-236198-05 Rev.1
Reference Standard	IEC EN 61508:2010 Part 1

Sesto San Giovanni, June, 08th 2016

TÜV ITALIA Srl — TÜV ITALIA Srl Industry Service Division Director — Paolo Marconi

TÜV Italia • Gruppo TÜV SÜD • Via Carducci 125, Pal. 23 • 20099 Sesto San Giovanni (MI) • Italia • www.tuv.it

CERTIFIED INTRINSICALLY SAFE PRODUCTS

Highest levels of safety

INTRINSICALLY SAFE PRODUCTS AND IEC61508:2010 SIL CERTIFICATIONS

GM International products have been granted I.S. certificates from the most credited notified bodies in the world. Certificates are available for ATEX (Europe), IECEx (International), UL/FM (USA and Canada), EAC-EX (Russia TR CU), CCC (China), PESO (India), TIIS (Japan), INMETRO (Brazil), ECAS-Ex (UAE)
All certificates are available for download from our website.

GM International offers a wide range of products that have been proved to comply with the most severe quality and safety requirements. IEC61508 and IEC61511 standards represent a milestone in the progress of industry in the achievement of highest levels of safety through the entire instrumented system lifecycle. The majority of our products are SIL certified as well as our design, manufacturing and administrative facilities (FSM); reports and certificates from TÜV are also available for download.

Product List

I.S. Barriers

D5000 SERIES

ANALOG INPUT

Models	N. Ch.	L.M.	Input		Output		Duplicator	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
D5011	1 / 2	-	●	-	●	-	-	-	3	12,5 mm	HART - Line Fault Trasparent
D5014	1 / 2	-	●	●	●	●	●	-	3	12,5 mm	HART - Line Fault Trasparent
D5015S	1	-	●	●	●	●	●	-	2	12,5 mm	HART - Line Fault Trasparent
D5016	1 / 2	-	-	●	●	●	●	-	3	12,5 mm	HART - Line Fault Trasparent
D5212Q	4	●	●	●	●	-	●	●	2	22,5 mm	Modbus
D5254S	1	●	●	●	●	●	-	●	2	22,5 mm	Modbus

ANALOG OUTPUT

Models	N. Ch.	L.M.	Input	Output	Duplicator	Alarm	SIL	Size	Note
D5020	1 / 2	●	4-20 mA	4-20 mA	●	●	2	12,5 mm	HART

DIGITAL INPUT

Models	N. Ch.	L.M.	Input	Output	Duplicator	Alarm	SIL	Size	Note
D5030	1 / 2	●	Dry contact/Namur	Relay	●	●	3	12,5 mm	
D5031	1 / 2	●	Dry contact/Namur	Voltage free contact	●	●	3	12,5 mm	
D5032	1 / 2	●	Dry contact/Namur	Relay	●	●	3	12,5 mm	Only for TB
D5034	1 / 2	●	Namur	Namur	-	-	3	12,5 mm	Transparent for Namur
D5036	1 / 2	●	Dry contact/Namur	Relay	-	●	2	12,5 mm	No G3 Coating
D5037	1 / 2	●	Dry contact/Namur	Voltage free contact	-	●	2	12,5 mm	No G3 Coating
D5038	1 / 2	●	Dry contact/Namur	Solid state Relay with Resistence	●	●	3	12,5 mm	Line Fault Trasparent
D5039	1 / 2	●	Dry contact/Namur	Solid state Relay with Resistence	●	●	2	12,5 mm	Line Fault Trasparent
D5231E	8	●	Dry contact/Namur	Solid State Relay	●	●	2	22,5 mm	Logical out func. + Modbus

DIGITAL OUTPUT

Models	N. Ch.	L.M.	Input	Output	Power supply	Alarm	SIL	Size	Note
D5040	1 / 2	-	24 Vdc	Solenoid valve / LED	Loop powered	-	3	12,5 mm	2..4 Field Selectable Out
D5048S	1	●	24 Vdc	Solenoid valve / LED	Loop powered	●	3	12,5 mm	1..3 Field Selectable Out
D5049S	1	●	24 Vdc	Solenoid valve / LED	Bus powered	●	3	12,5 mm	1..3 Field Selectable Out
D5240T	3	-	24 Vdc	Solenoid valve / LED	Bus powered	-	2	22,5 mm	3..9 Field Selectable Out
D5244	1 / 2	-	24 Vdc	Relay	Loop Powered	-	2/3	22,5 mm	Voltage Free Relay Out

TEMPERATURE

Models	N. Ch.	L.M.	Input		Output		Duplicator	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
D5072	1 / 2	●	TC, mV, RTD, Ω, Pot		●	●	●	●	2	12,5 mm	Modbus
D5072-087	1 / 2	●	2-3-4 wire RTD		2-3-4 wire RTD		●	●	2	12,5 mm	RTD to RTD
D5072-096	1 / 2	●	TC, mV		mV		●	●	2	12,5 mm	mV to mV
D5072-099	1 / 2	●	TC, mV, RTD, Ω, Pot		-	●	●	●	2	12,5 mm	Modbus
D5273S	1	●	TC, mV, RTD, Ω, Pot		●	●	-	●	2	22,5 mm	Modbus

OTHERS

Models	N. Ch.	L.M.	Input	Output	Power supply	Alarm	SIL	Size	Note
D5062S	1	-	Vibration sensor	0 to -20 V	Bus powered	-	2	12,5 mm	
D5263S	1	-	Load Cells/Strain gauges	Load Cells/Strain gauges	Bus powered	-	2	22,5 mm	
D5264S	1	●	Load Cells/Strain gauges	4-20 mA	Bus powered	●	2	22,5 mm	Modbus
D5202S	-	●	-	24 V, 4 A	Bus powered	●	3	22,5 mm	Power feed module
D5203S	-	-	-	-	Bus powered	●	-	22,5 mm	Diagnostic Module for DIN-rail

Safety Relays

SAFETY RELAY INPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D5093	1 / 2	NE	NE	NO	Configurable	50 mA	-	-	-	3	DIP Switch configurable IN

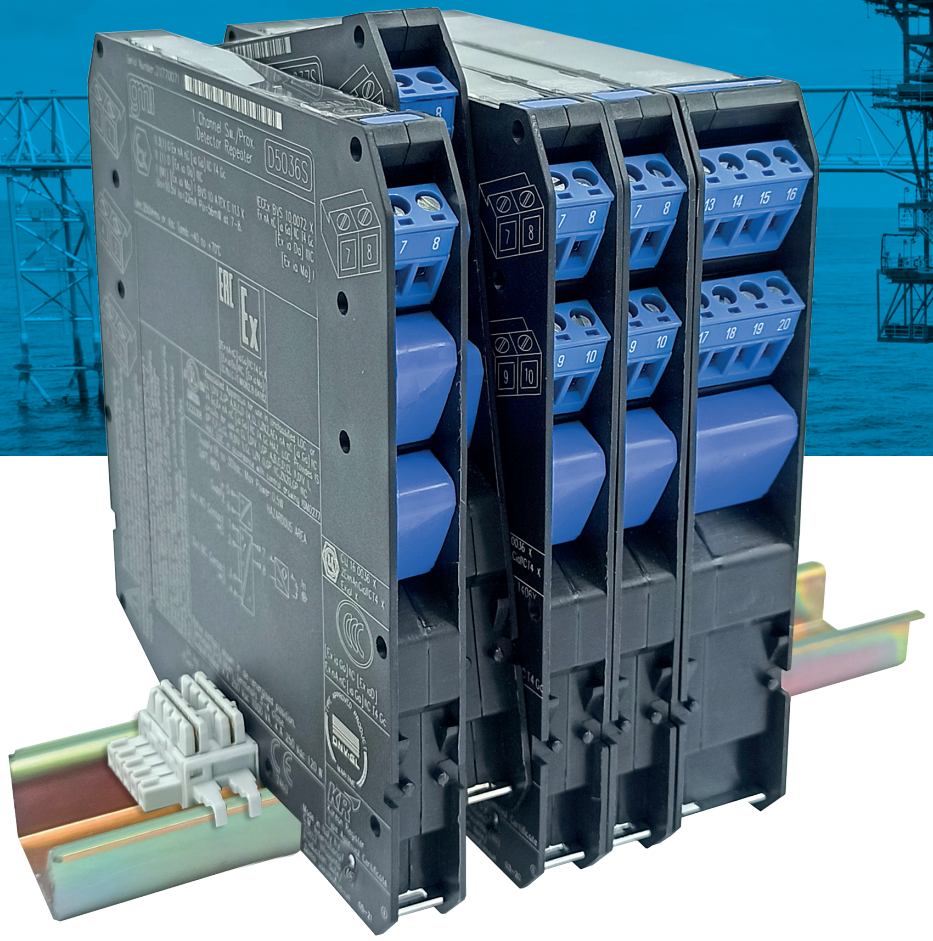
SAFETY RELAY OUTPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D5090S	1	NE	NE	NO	24 Vdc	5 A	-	●	-	3	
D5090S-086	1	ND	NE	NC	24 Vdc	5 A	-	●	-	3	
D5091S	1	ND/NE	ND	NO/NC	24 Vdc	5 A	-	●	-	3	
D5094S	1	NE/ND	NE/ND	NO	24 Vdc	5 A	●	●	-	3	
D5095S	1	NE/ND	NE/ND	NC	24 Vdc	5 A	●	●	-	3	
D5098	1 / 2	NE	NE	NO	24 Vdc	5 A	-	●	-	3	
D5290S	1	NE	NE	NO	24 Vdc	10 A	-	●	-	3	
D5290S/SA	1	NE	NE	NO	24 Vdc	10 A	-	-	-	3	For Safe area only
D5290S-078	1	NE/ND	NE/ND	NO/NC	24 Vdc	5 A	-	●	-	3	1, 2 or 4 Loads
D5290S-078/SA	1	NE	NE/ND	NO/NC	24 Vdc	5 A	-	-	-	3	1, 2 or 3 Loads / For safe area only
D5290S-079	1	NE	NE/ND	NO/NC	115 Vac	5 A	-	-	-	3	1, 2 or 4 Loads
D5290S-080	1	NE	NE	NO	115 Vac	10 A	-	-	-	3	
D5290S-084	1	NE	NE/ND	NO/NC	110 Vdc	5 A	-	-	-	3	1, 2 or 4 Loads
D5290S-091	1	NE	NE	NO	230 Vac	10 A	-	-	-	3	
D5290S-092	1	NE	NE	NO	48 Vdc	10 A	-	-	-	3	
D5291S	1	NE/ND	ND	NO/NC	24 Vdc	10 A	-	●	-	3	
D5291S-097	1	NE	ND	NC	48 Vdc	10 A	-	-	-	3	

SMART RELAY

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D5096S	1	NE/ND	NE/ND	NO	24 Vdc	5 A	●	●	●	3	Full diagnostics
D5096S-100	1	NE/ND	NE/ND	NO	24 Vdc	5 A	●	●	●	2/3	Universal Fault Mirror
D5097S	1	NE/ND	NE/ND	NC	24 Vdc	5 A	●	●	●	3	Full diagnostics
D5293S	1	NE	NE	NO	24 Vdc	5 A	-	●	●	3	Programmable, Modbus
D5294S	1	NE/ND	NE/ND	NO	24 Vdc	5 A	●	●	●	3	Programmable, Modbus
D5295S	1	NE/ND	NE/ND	NC	24 Vdc	5 A	●	●	●	3	Programmable, Modbus

Intrinsically Safe Isolators



ANALOG INPUT

D5011

I.S. SIL3 2-Wire HART® Transmitter Power Supply

The Repeater Power Supply D5011 module is a high integrity analog input interface suitable for applications requiring SIL 3 level in safety related systems for high risk industries. It provides a fully floating dc supply for energizing conventional 2 wires 4-20 mA transmitters located in Hazardous Area, and repeats the current in floating circuit to drive a Safe Area load. The circuit allows bi-directional communication signals, for HART® devices.

FEATURES

- SIL 3 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 4-20 mA Passive Input, Source Output
- HART® compatible
- Input and Output short circuit proof
- High Accuracy
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

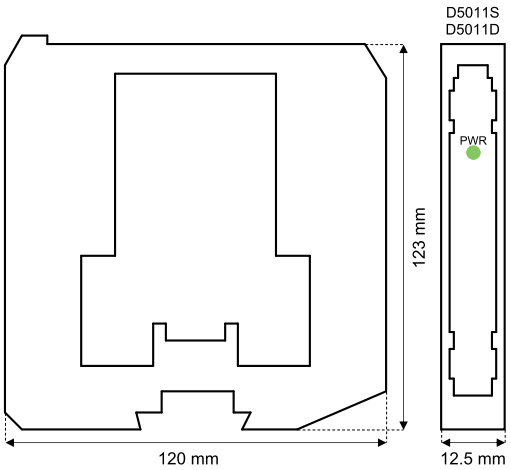
Ordering codes

D5011S: 1 channel
D5011D: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 90 mA (D5011D), 45 mA (D5011S), @ 24 Vdc with 20 mA output, typical.
Power dissipation: 1.35 W (D5011D), 0.675 W (D5011S), @ 24 Vdc with 20 mA output, typical.

Input

4 to 20 mA (2 wires Tx current limited ≈ 25 mA), reading range 0 to 24 mA.
Transmitter line voltage: 15.0 V typical, 14.5 V minimum, @ 20 mA.

Output

4 to 20 mA, on max. 550 Ω load in source mode (typical 12 V compliance).
Response time: 5 ms (0 to 100 % step change).

Performance

Ref. Conditions: 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature.
Calibration accuracy: ≤ ± 0.1 % FSR.
Linearity accuracy: ≤ ± 0.05 % FSR.
Temp. influence: ≤ ± 0.01 % FSR on zero/span for a 1 °C change.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 25.9 V, Io = 92 mA, Po = 594 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 140 g (D5011D), 125 g (D5011S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

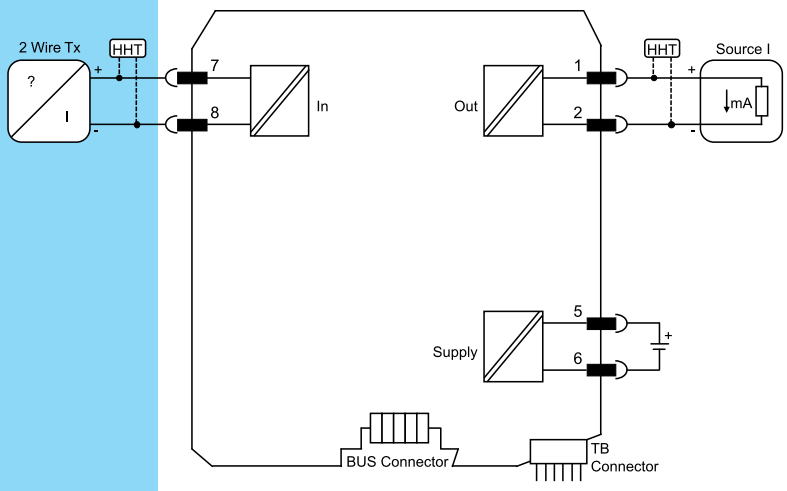
Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

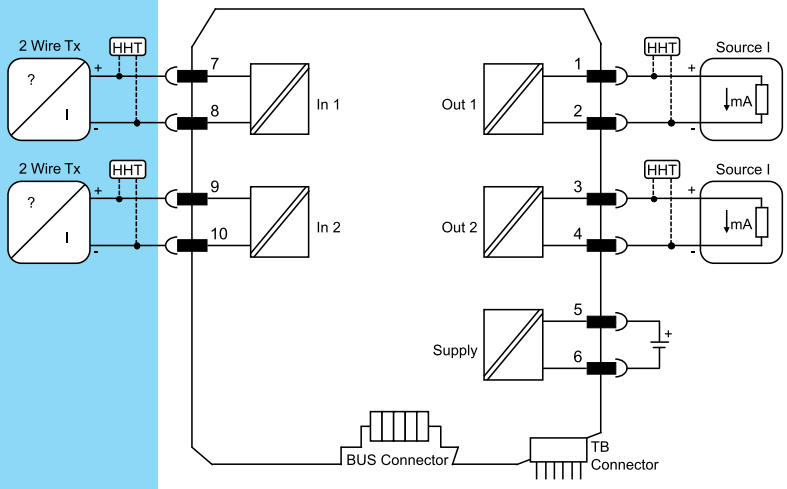
Additional installation diagrams may be found in Instruction Manual.

Hazardous Area ***Safe Area/Zone 2/Div. 2***

D5011S



D5011D



D5014

I.S. SIL3 2/4-Wire HART® Transmitter Power Supply

The Repeater Power Supply D5014 module is a high integrity analog input interface suitable for applications requiring SIL 3 level in safety related systems for high risk industries. It provides a fully floating dc supply for energizing conventional 2 wires 4-20 mA, active or passive, transmitters located in Hazardous Area, and repeats the current in floating circuit to drive a Safe Area load. The module supports output current duplication and it allows bi-directional communication signals, for HART® devices.

FEATURES

- SIL 3 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- 4-20 mA Active-Passive Input, Source-Sink Output
- Output current duplication available
- HART® compatible
- Input and Output short circuit proof
- In-field programmability by DIP Switch
- High Accuracy
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

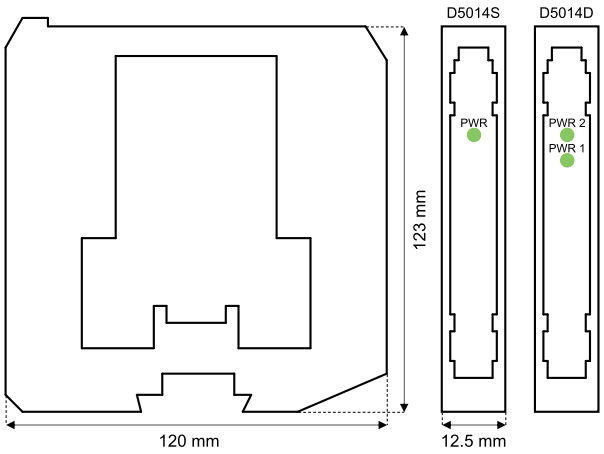
Ordering codes

D5014S: 1 channel
D5014D: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 90 mA (D5014D), 45 mA (D5014S), @ 24 Vdc with 20 mA output, typical.
Power dissipation: 1.35 W (D5014D), 0.68 W (D5014S), @ 24 Vdc with 20 mA output, typical.

Input

4 to 20 mA (separately powered input, voltage drop ≤ 0.5 V) or 4 to 20 mA (2 wires Tx current limited ≈ 25 mA), reading range 0 to 24 mA.
Transmitter line voltage: 15.0 V typical, 14.5 V minimum, @ 20 mA.

Output

4 to 20 mA, on max. 550 Ω load in source mode (typical 12 V compliance); V min. 8 V @ 0 Ω load V max. 30 V in sink mode, current limited ≈ 25 mA or 1 to 5 V on internal 250 Ω shunt (or 2 to 10 V on internal 500 Ω shunt on request). Output current duplication available (D5014D).
Response time: 5 ms (0 to 100 % step change).

Performance

Ref. Conditions: 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature.
Calibration accuracy: ≤ ± 0.1 % FSR.
Linearity accuracy: ≤ ± 0.05 % FSR.
Temp. influence: ≤ ± 0.01 % FSR on zero/span for a 1 °C change.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 25.9 V, Io = 92 mA, Po = 594 mW at terminals 7-8, 9-10.
Uo = 1.1 V, Io = 56 mA, Po = 16 mW at terminals 8-11, 10-12.
Ui = 30 V, Ii = 128 mA, Ci = 0 nF, Li = 0 nH at terminals 8-11, 10-12.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

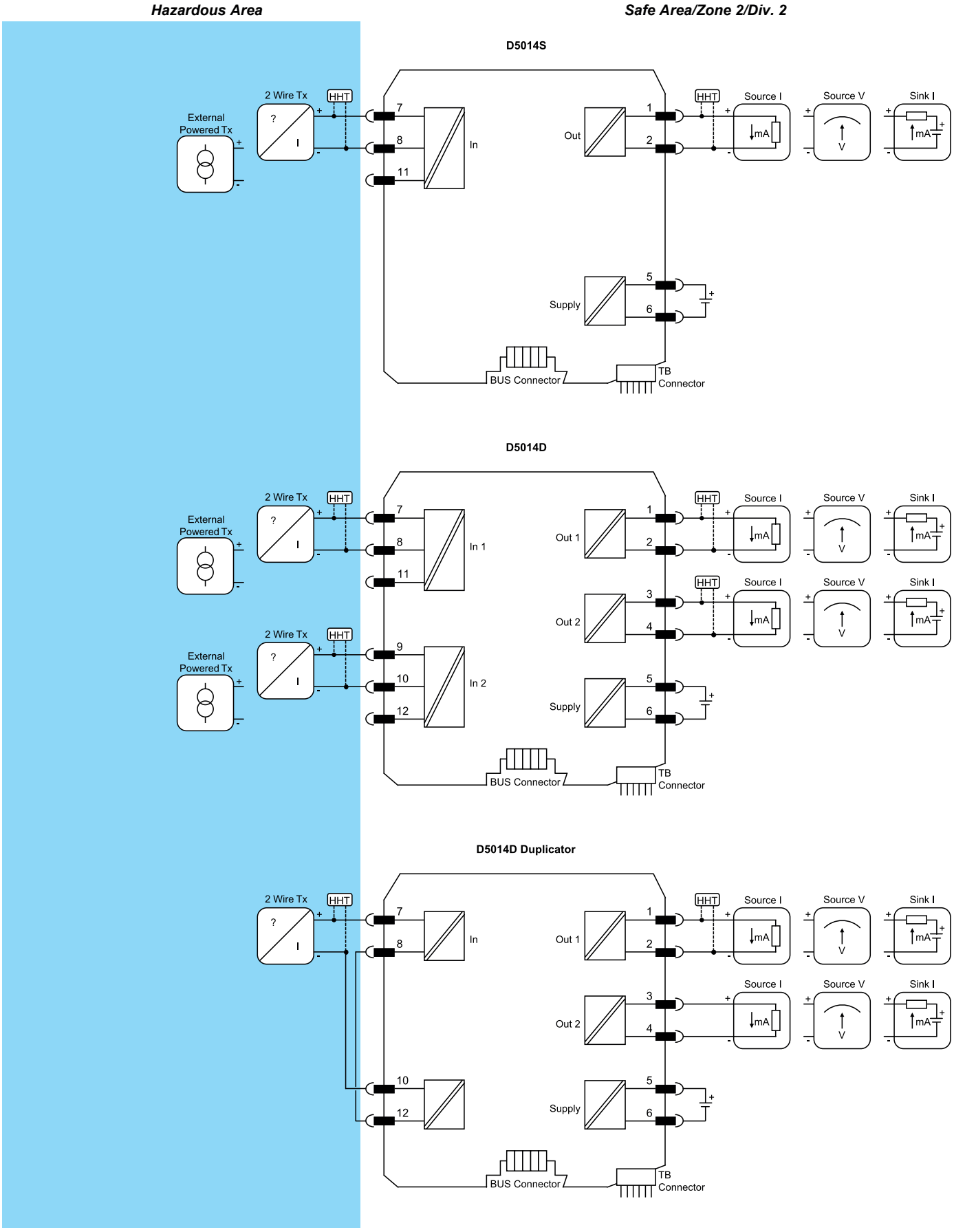
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 155 g (D5014D), 130 g (D5014S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
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D5015

I.S. SIL2 2/4-Wire HART® Transmitter Power Supply

The Repeater Power Supply D5015 module is a high integrity analog input interface suitable for applications requiring SIL 2 level in safety related systems for high risk industries. It provides a fully floating dc supply for energizing conventional 2 wires 4-20 mA, active or passive, transmitters located in Hazardous Area, and repeats the current in floating circuit to drive a Safe Area load. The circuit allows bi-directional communication signals, for HART® devices.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0 / Division 1
- Installation in Zone 2 / Division 2
- 4-20 mA Active-Passive Input, Source-Sink Output
- HART® compatible
- Input and Output short circuit proof
- High Accuracy
- Three port isolation, Input/Output/Supply

ORDERING INFORMATION

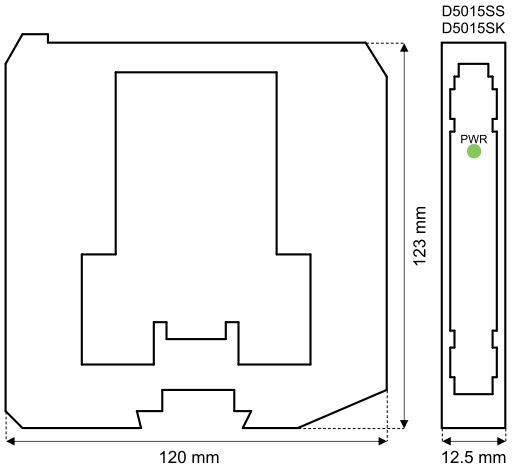
Ordering codes

D5015SS: 1 channel source output
D5015SK: 1 channel sink output

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 50 mA (D5015SS), 40 mA (D5015SK), @ 24 Vdc with 20 mA output, typical.
Power dissipation: 0.8 W (D5015SS), 1.0 W (D5015SK), @ 24 Vdc with 20 mA output, typical.

Input

4 to 20 mA (separately powered input, voltage drop ≤ 0.5 V) or 4 to 20 mA (2 wires Tx current limited ≈ 25 mA), reading range 0 to 24 mA.
Transmitter line voltage: 16.5 V minimum @ 20 mA.

Output

4 to 20 mA, on max. 600 Ω load in source mode; V min. 2 V @ 0 Ω load V max. 30 V in sink mode (max. load resistance 600 Ω), current limited @ ≈ 25 mA.
Response time: 5 ms.

Performance

Ref. Conditions: 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature.
Calibration accuracy: ≤ ± 20 µA.
Linearity accuracy: ≤ ± 10 µA.
Temp. influence: ≤ ± 2 µA/°C.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; Out/Supply 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 26.8 V, Io = 92 mA, Po = 614 mW at terminals 7-8.
Uo = 1.1 V, Io = 56 mA, Po = 16 mW at terminals 8-11.
Ui = 30 V, Ii = 128 mA, Ci = 0 nF, Li = 0 nH at terminals 8-11.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

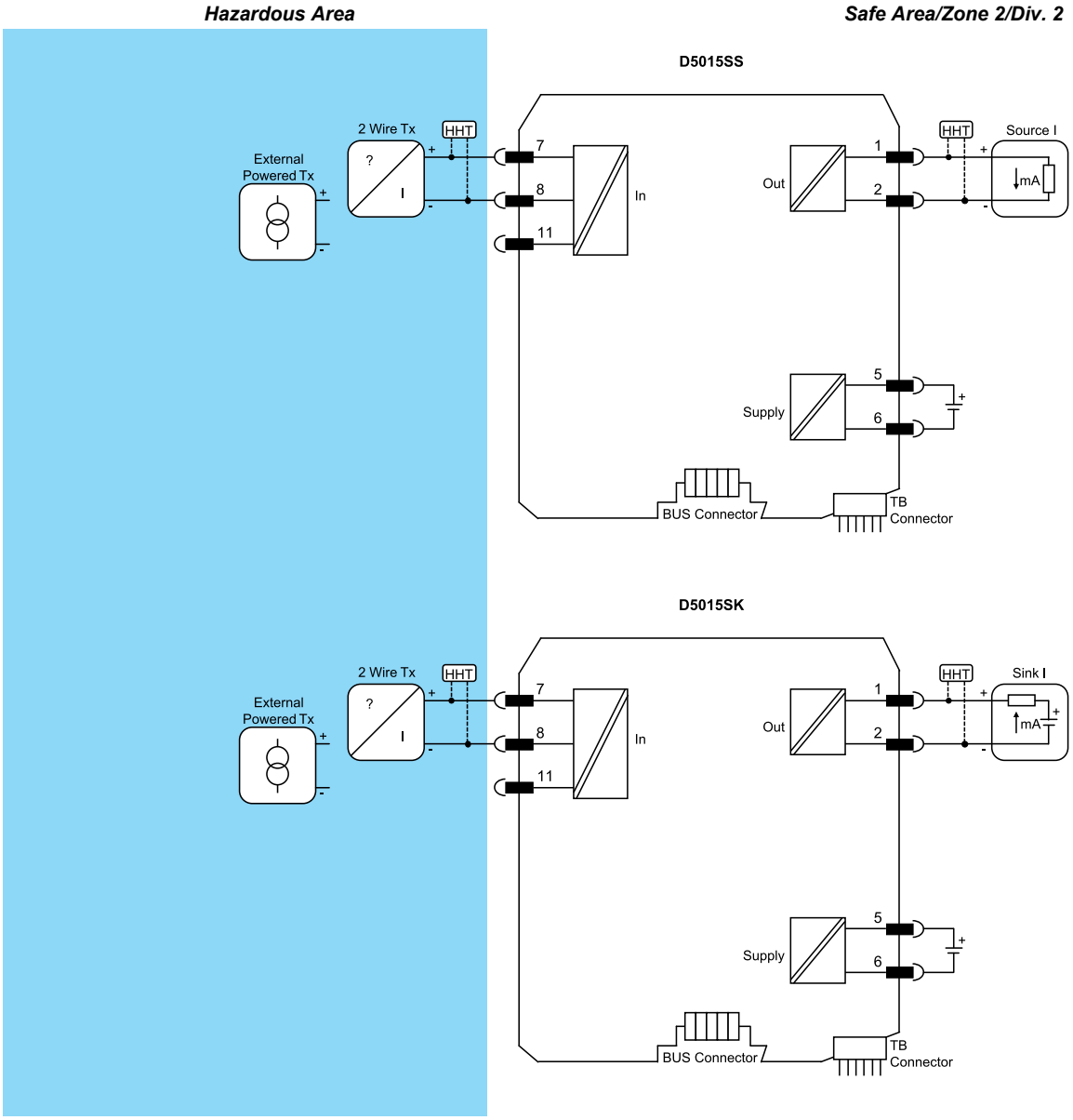
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 130 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5016

I.S. SIL3 2-Wire Active HART® Tx Current Repeater

The Current Repeater D5016 module is a high integrity analog input interface suitable for applications requiring SIL 3 level in safety related systems for high risk industries. It repeats a 2-wire active 4-20 mA current signal input in floating circuit to drive a Safe Area load. The module allows bi-directional communication signals, for HART® devices.

FEATURES

- SIL 3 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- 4-20 mA Source-Sink Output
- HART® compatible
- High Accuracy
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

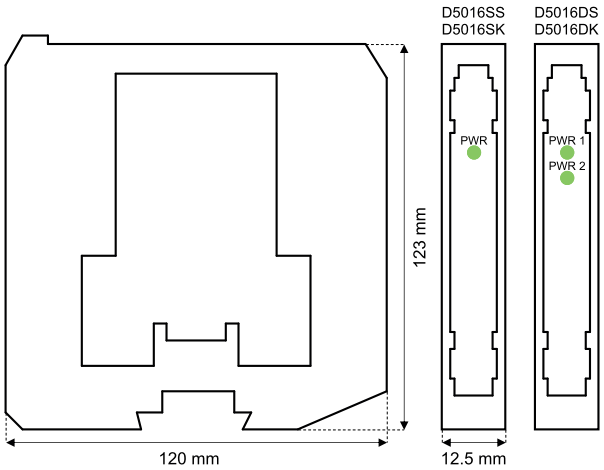
Ordering codes

D5016xy
x: S → 1 channel; D → 2 channels
y: S → source current output; K → sink current output

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 33 mA (D5016SS), 20 mA (D5016SK), 57 mA (D5016DS), 31 mA (D5016DK) @ 24 Vdc with 20 mA output, typical.
Power dissipation: 0.90 W (D5016SS), 1.00 W (D5016SK), 1.50 W (D5016DS), 1.80 W (D5016DK) @ 24 Vdc with 20 mA output on 250 Ω load and 24 Vdc output supply for sink models, typical.

Input

4 to 20 mA (separately powered input, voltage drop ≤ 7 V), reading range 0 to 22 mA.
HART Impedance: 225 Ω, typical.

Output

4 to 20 mA.
Sink out voltage range: 2 to 30 V.
Load range: 0 to 500 Ω, with conventional Tx input
250 Ω nom (160 to 500 Ω), with smart Tx input.
Current limitation: 24 mA (up to 450 Ω load) ≤ max current ≤ 26 mA.
Response time: 20 ms (10 to 90 % step change).

Performance

Ref. Conditions: 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature.
Calibration accuracy: ≤ ± 20 µA.
Linearity accuracy: ≤ ± 20 µA.
Temp. influence: ≤ ± 2 µA/°C.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 8.8 V at terminals 7-8, 9-10.
Ui = 30 V, Ii = 100 mA, Ci = 0 nF, Li = 0 nH at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

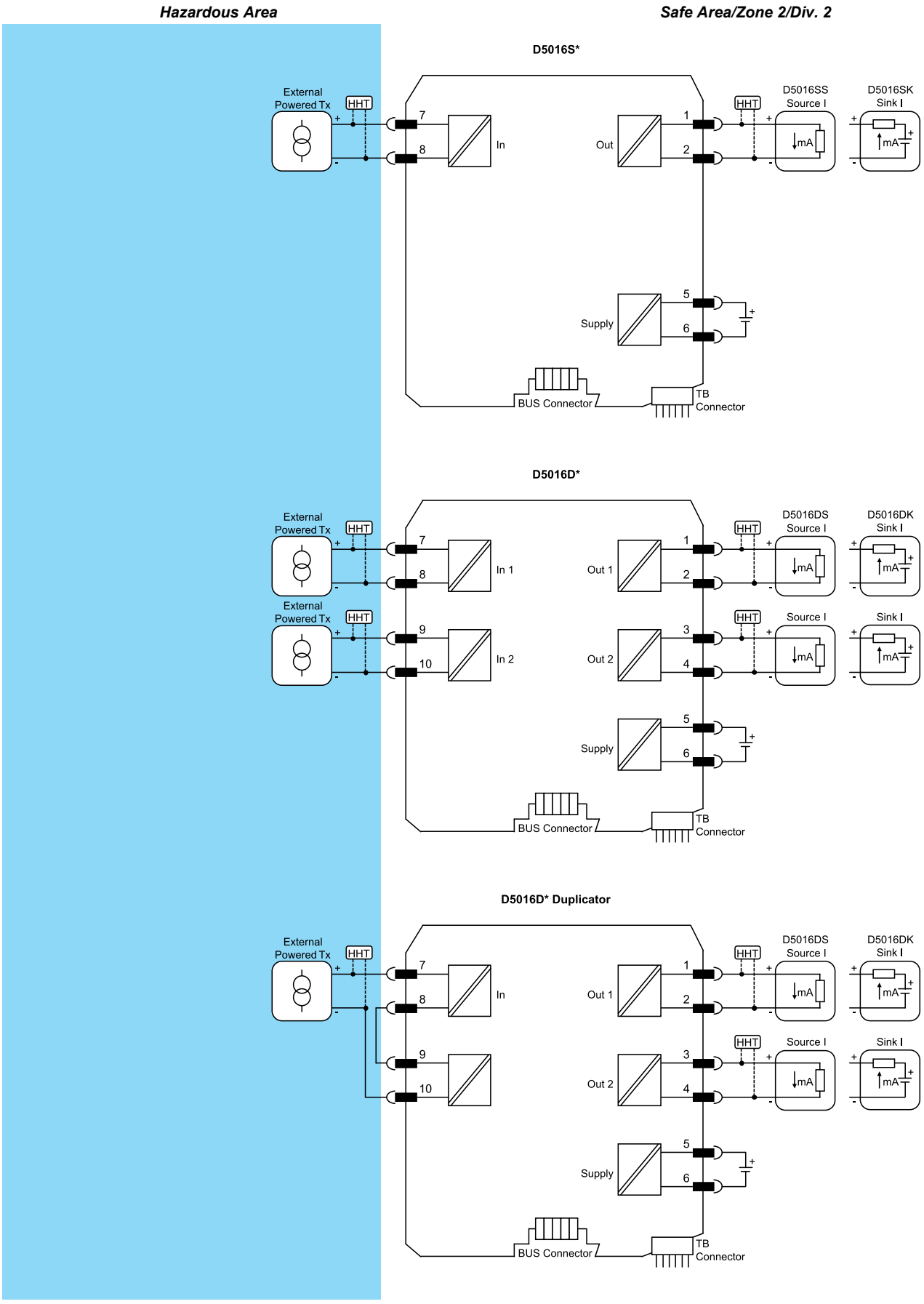
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 135 g (D5016DS and D5016DK), 115 g (D5016SS and D5016SK).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



FSM SIL 3

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D5212

I.S. SIL2 2/4-Wire Transmitter Power Supply

The Repeater Power Supply D5212 module is a high integrity analog input interface suitable for applications requiring SIL 2 level in safety related systems for high risk industries. It provides a fully floating dc supply for energizing conventional 2 wires 0/4-20 mA, active or passive, transmitters located in Hazardous Area, and repeats the current in floating circuit to drive Safe Area loads. The module is fully configurable to achieve input/output multiplexing, scaling, duplication, inversion, and input elaboration (addition, subtraction, low/high selection). An additional alarm contact can be (de-)activated on programmable input trip points, including hysteresis and delays. Configuration and diagnostic parameters are programmable and can also be monitored/set through Modbus.

FEATURES

- SIL 2 / SC 3 (pending)
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 0/4-20 mA Active-Passive Input, Source Output
- Duplication/inversion/scaling output
- Input operations (sum, dif, max, min) available
- Input and Output short circuit proof
- Out of range fault detection
- Alarm output with user-settable trip points
- Modbus RTU RS-485 for monitor & configuration
- Fully programmable operating parameters
- High Accuracy, µP controlled A/D converter
- Three port isolation, Input / Output / Supply
- High Density, four channels per unit

ORDERING INFORMATION

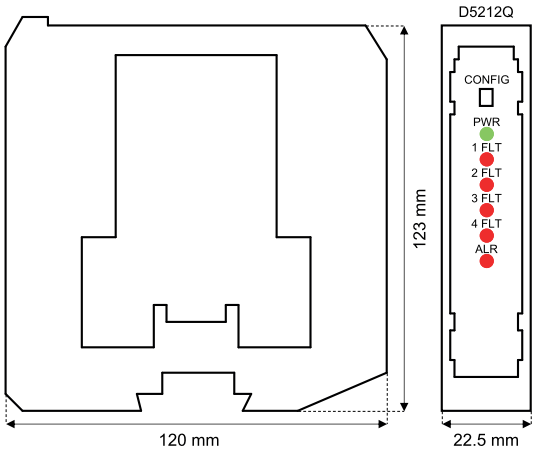
Ordering codes

D5212Q: 4 channels

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (21.5 to 30 Vdc), reverse polarity protected.
Current consumption: 200 mA @ 24 Vdc with 20 mA in/out, typical.
Power dissipation: 2.75 W @ 24 Vdc with 20 mA in/out, typical.

Input

0/4 to 20 mA (2 wire Tx current limited ≈ 25 mA) or separately powered inputs (only for channels 1 and 2).
Transmitter line voltage: 14.5 V typical, 14.0 V minimum, @ 20 mA.
Integration time: 500 ms.

Output

0/4 to 20 mA, on max. 300 Ω load source mode, current limited ≈ 25 mA.
Response time: 100 ms (10 to 90 % step change).

Alarm

Trip point range: within rated limits of the input sensor.
ON-OFF delay time: 0 to 1000 s, 100 ms step.
Hysteresis: within rated limits of input sensor.
Output: voltage free SPST photoMOS: 100 mA, 60 Vdc (≤ 1 V voltage drop).

Modbus interface

Modbus RTU RS-485 up to 57.6 kbps for monitor/configuration/control.

Performance

Ref. Conditions: 24 V supply, 250 Ω loads, 23 ± 1 °C ambient temperature.
Input:
Calibration accuracy: ≤ ± 0.05 % FSR.
Linearity accuracy: ≤ ± 0.05 % FSR.
Temp. influence: ≤ ± 0.01% of input FSR for a 1 °C change.
Analog output:
Calibration accuracy: ≤ ± 0.05 % FSR.
Linearity accuracy: ≤ ± 0.05 % FSR.
Temp. influence: ≤ ± 0.005 % of output FSR for a 1 °C change.

Isolation

I.S. In/Out 1.5 kV; I.S. In/Supply 1.5 kV; Out/Supply 500 V; I.S. In/Alarm 1.5 kV; Supply/Alarm 500 V; Out/Alarm 500 V.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 24.1 V, Io = 86 mA, Po = 516 mW at terminals 13-14, 15-16, 17-18, 19-20.
Uo = 1.1 V, Io = 56 mA, Po = 16 mW at terminals 21-22, 23-24.
Ui = 30 V at terminals 21-22, 23-24.
Ii = 128 mA at terminals 21-22, 23-24.
Ci = 2.1 nF, Li = 0 nH at terminals 21-22, 23-24.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

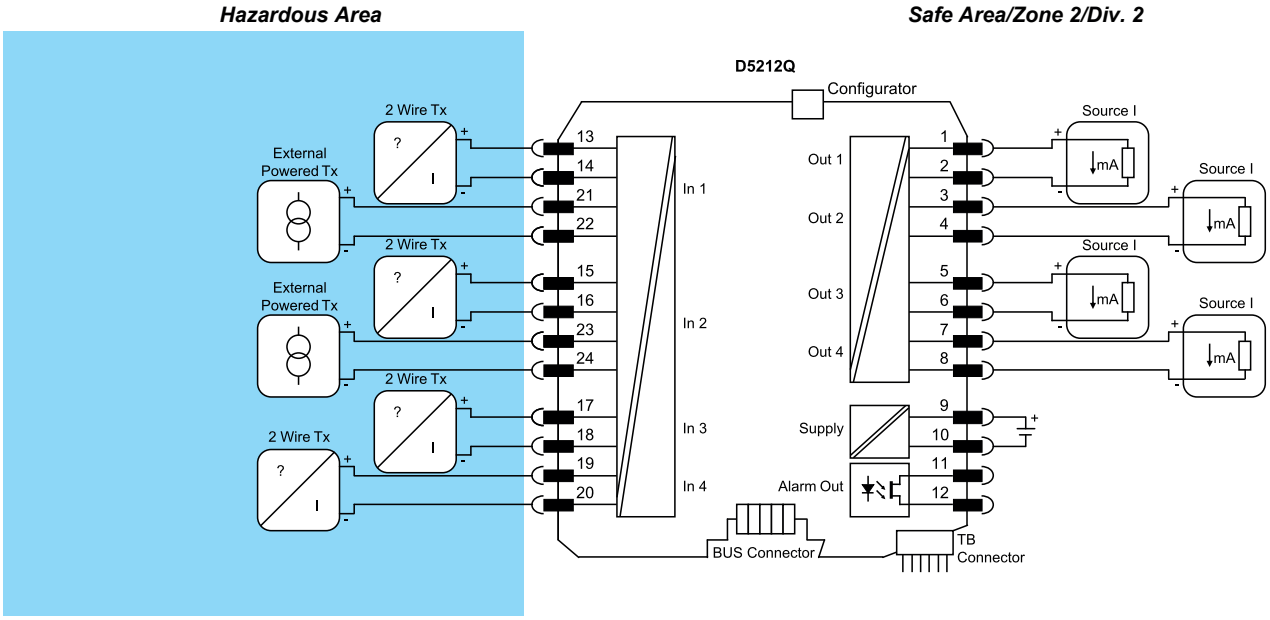
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 120 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
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D5254

I.S. SIL2 2/4-Wire Transmitter Trip Amplifier

The 2/4-Wire Transmitter Trip Amplifier D5254 provides a fully floating dc supply to energize conventional 2 wires 4-20 mA transmitters located in Hazardous Area; it also accepts 0/4-20 mA current input signals, as well as ±12 V voltage inputs from Hazardous Area. The module repeats/converts the input as on current signal, in a floating circuit to drive a Safe Area load, suitable for applications requiring SIL 2 in safety related systems for high risk industries. The output signal can be in direct or reverse form. Two independent Alarm Trip Amplifiers are also provided.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- ±12 V Voltage Input
- 0/4-20 mA Active-Passive Input, Source-Sink Output
- Input and Output short circuit proof
- Modbus RTU RS-485 for monitor & configuration
- Out-of-range fault detection
- Optional alarm acknowledgement input
- Fully programmable operating parameters
- High Accuracy, µP controlled A/D converter
- Three port isolation, Input/Output/Supply

ORDERING INFORMATION

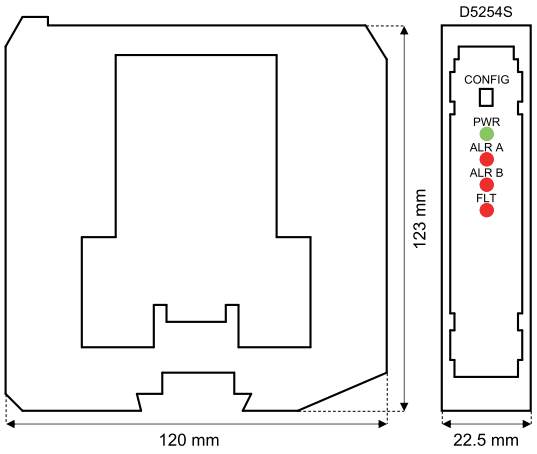
Ordering codes

D5254S: 1 channel

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (21.5 to 30 Vdc), reverse polarity protected.
Current consumption: 110 mA @ 24 Vdc with 20 mA input/output and alarm relays energized, typical.
Power dissipation: 2.3 W @ 24 Vdc with 20 mA input/output and alarm relays energized, typical.

Input

0/4 to 20 mA (separately powered input, voltage drop ≤ 0.5 V) or 4 to 20 mA (2 wires Tx current limited ≈ 25 mA), or voltage input ±12 V.
Integration time: 100 ms.
Input range: 0 / +25 mA for current, ± 12 V for voltage.
Transmitter line voltage: 15.5 V typical, 15.0 V minimum, @ 20 mA.

Acknowledgement input

Logic level reverse polarity protected.
Voltage range: 0 V ≤ OFF ≤ 5 V, 18 V ≤ ON ≤ 30 V.
Current consumption: 10 mA @ 24 Vdc, typical.

Output

Fully customizable 0/4 to 20 mA, on max. 300 Ω load source mode, current limited @ 25 mA.
Transfer characteristic: linear, direct or reverse, square root.
Response time: ≤ 100 ms (10 to 90% step change).

Alarm

Trip point range: within rated limits of input sensor.
Output: two voltage free SPDT relay contacts.
Contact rating: 4 A 250 Vac 1000 VA, 4 A 250 Vdc 120 W (resistive load).
DC and AC load breaking capacity: refer to Instruction Manual.

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Isolation

I.S. In/Other 1.5 kV; Alarms/Other 1.5 kV; Alarm/Alarm 1.5 kV; Out/Supply 500 V; Out/Ack 500 V; Ack/Supply 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 26 V, Io = 91 mA, Po = 588 mW at terminals 13-14 Uo = 1.1 V, Io = 56 mA, Po = 16 mW at terminals 14-16 Uo = 1.1 V, Io = 0.012 mA, Po = 0.004 mW at terminals 15-16 Ui = 30 V at terminals 14-16 or 15-16, Ii = 128 mA at terminals 14-16, Ci = 2.1 nF, Li = 0 nH at terminals 13-14-15-16. Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

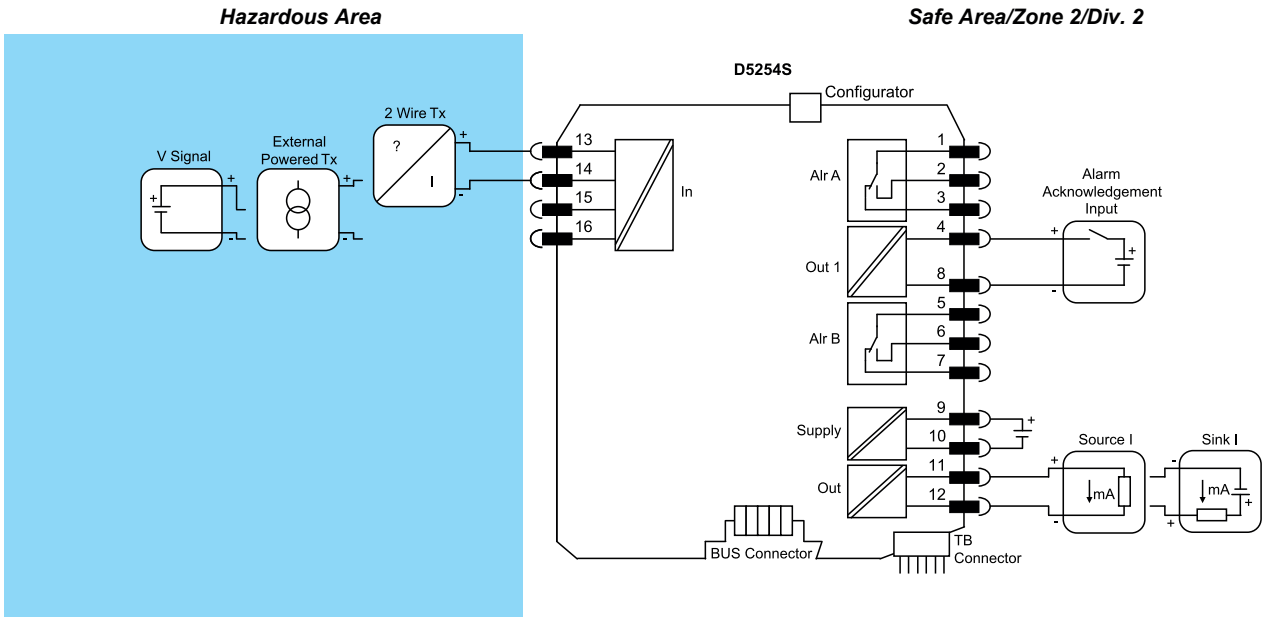
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 120 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



ANALOG OUTPUT

D5020

I.S. SIL2 HART® Isolating Driver

The Isolating Driver D5020 module is a high integrity analog output interface suitable for applications requiring SIL 2 level in safety related systems for high risk industries. It isolates and transfers a 4-20 mA signal from a controller located in Safe Area to a load in Hazardous Area. It has a high output capacity combined with a low drop across its input terminals. The circuit allows bi-directional communication signals, for HART® smart positioners. Line and load open/short circuit detection is provided: the fault in the field is directly mirrored to the PLC AO and it is also reported by opening the fault output.

FEATURES

- SIL 2 / SC 3
- Output to Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- 4-20 mA Input, Output Signal
- HART® compatible
- Line & Load short/open circuit detection
- Field fault mirroring to the PLC AO
- In-field programmability by DIP Switch
- High Accuracy
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

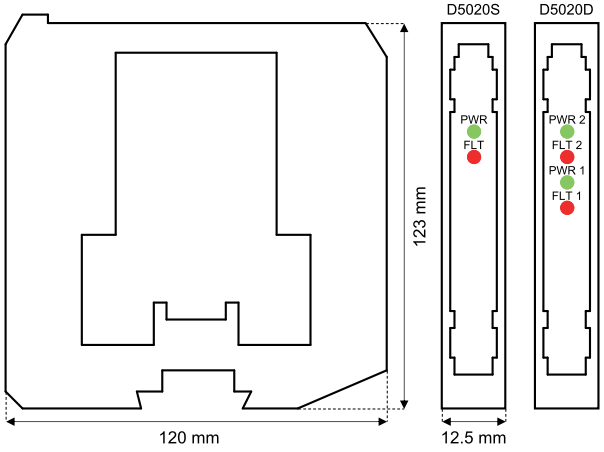
Ordering codes

D5020S: 1 channel
D5020D: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 70 mA (D5020D), 35 mA (D5020S), @ 24 Vdc with 20 mA output on 500 Ω load, typical.
Power dissipation: 1.3 W (D5020D), 0.65 W (D5020S), @ 24 Vdc with 20 mA output on 500 Ω load, typical.

Input

4 to 20 mA with ≤ 2.5 V voltage drop, reverse polarity protected in normal operation, ≥ 5 kΩ impedance (≈ 2 mA sinking from 10 to 30 Vdc) when fault condition detected.

Output

4 to 20 mA, on max. 700 Ω load.
Response time: 25 ms (0 to 100 % step change).

Fault

Field device and wiring open circuit or short circuit detection; short circuit detection can be disabled via dip-switch.
Short output: load resistance < 50 Ω or < 100 Ω dip-switch selectable (≈ 2 mA forcing to detect fault).
Open output: load resistance > (21 V / Loop current) -300 Ω (for example, if Loop current = 20 mA: load resistance > (21 V / 20 mA) -300 Ω = 750 Ω).
Fault signaling: voltage free NE SPST optocoupled open-collector transistor (output de-energized in fault condition).
Open-collector/drain rating: 100 mA @ 35 Vdc (≤ 1.5 V voltage drop).
Leakage current: ≤ 50 µA @ 35 Vdc.
Response time: ≤ 30 ms.

Performance

Ref. Conditions: 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature.
Calibration accuracy: ≤ ± 0.1 % FSR.
Linearity accuracy: ≤ ± 0.1 % FSR.
Temp. influence: ≤ ± 0.01 % FSR on zero/span for a 1 °C change.

Isolation

I.S. Out/In 2.5 kV; I.S. Out/Supply 2.5 kV; I.S. Out/Fault 2.5 kV; I.S. Out/I.S. Out 500 V; In/Supply 500 V; In/In 500 V; Fault/In 500 V; Fault/Supply 500 V; Fault/Fault 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 25.9 V, Io = 93 mA, Po = 595 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 145 g (D5020D), 130 g (D5020S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
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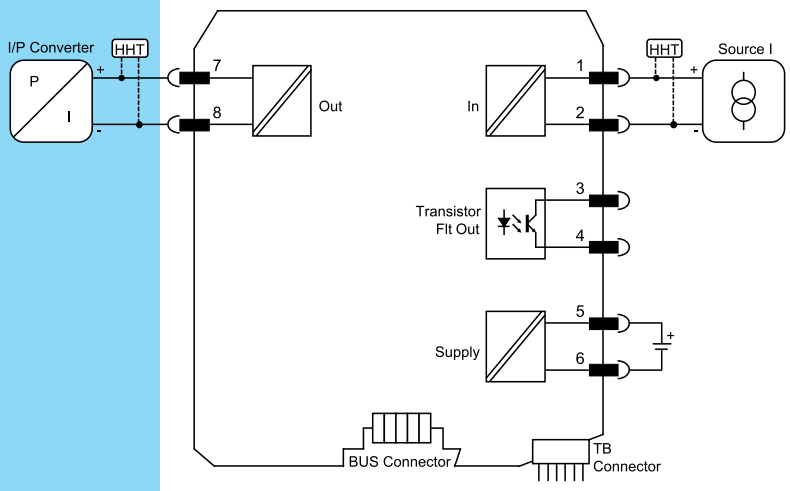
FUNCTION DIAGRAM

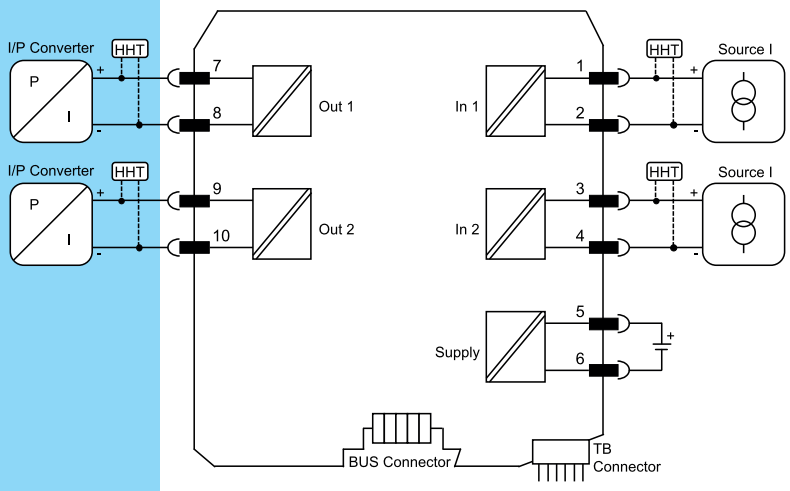
Additional installation diagrams may be found in Instruction Manual.

Hazardous Area ***Safe Area/Zone 2/Div. 2***

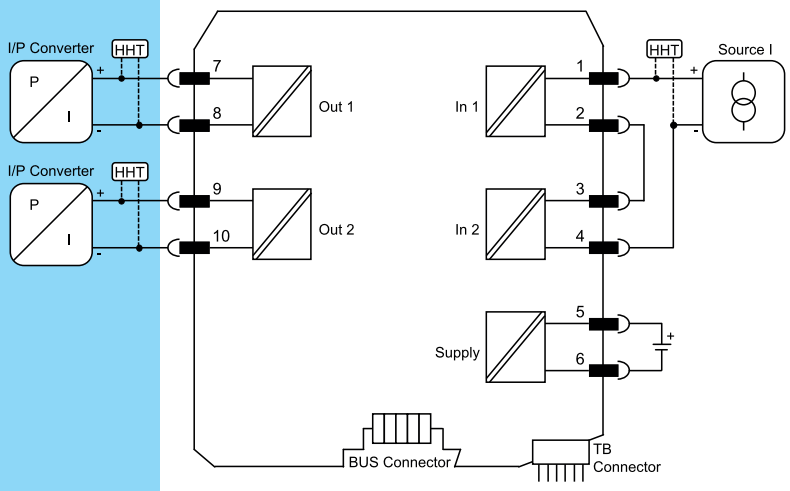
D5020S



D5020D



D5020D Duplicator



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DIGITAL INPUT

D5030

I.S. SIL3 Switch/Proximity Relay-Out Repeater

The Switch/Proximity Detector Repeater D5030 is a module suitable for applications requiring SIL 3 level in safety related systems for high risk industries. The unit can be configured for switches or proximity detectors, located in Hazardous Area, and repeats the input state to a relay contact in Safe Area. The selectable fault detection circuit is available for proximity sensors or switches equipped with end of line resistors. In the double-channel model, the second output can be configured to repeat the second input, to duplicate the first input or to report the first input fault. If needed, the output can also be inverted.

FEATURES

- SIL 3 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- High voltage/current rating relay output
- Field open and short circuit detection
- In-field programmability by DIP Switch
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

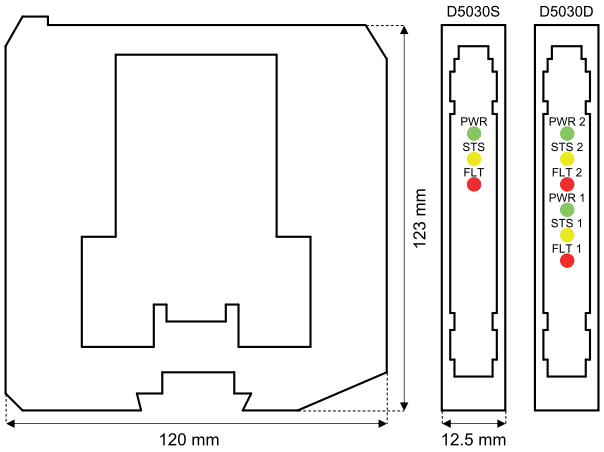
Ordering codes

D5030S: 1 channel
D5030D: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 35 mA (D5030D), 18 mA (D5030S), @ 24 Vdc with short circuit input and relay energized, typical.
Power dissipation: 0.85 W (D5030D), 0.45 W (D5030S), @ 24 Vdc with short circuit input and relay energized, typical.

Input

Input switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA.
Fault current levels: open fault ≤ 0.2 mA, short fault ≥ 6.8 mA.
Input equivalent source: 8 V 1 kΩ typical (8 V no load, 8 mA short).

Output

Voltage free SPST (D5030D) or SPDT (D5030S) relay contact.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 4 A 250 Vac 1000 VA, 4 A 250 Vdc 120 W (resistive load).
Contact min. switching current: 1 mA.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 3 * 10^4 operation, typical.
Operate / release time: 8 / 4 ms, typical.
Frequency response: 10 Hz maximum.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/ I.S In 500 V; Out/Supply 2.5 kV; Out/Out 2.5 kV.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 10.5 V, Io = 22 mA, Po = 56 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

DIN-Rail 35 mm, with or without Power Bus.
Weight: about 140 g (D5030D), 120 g (D5030S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
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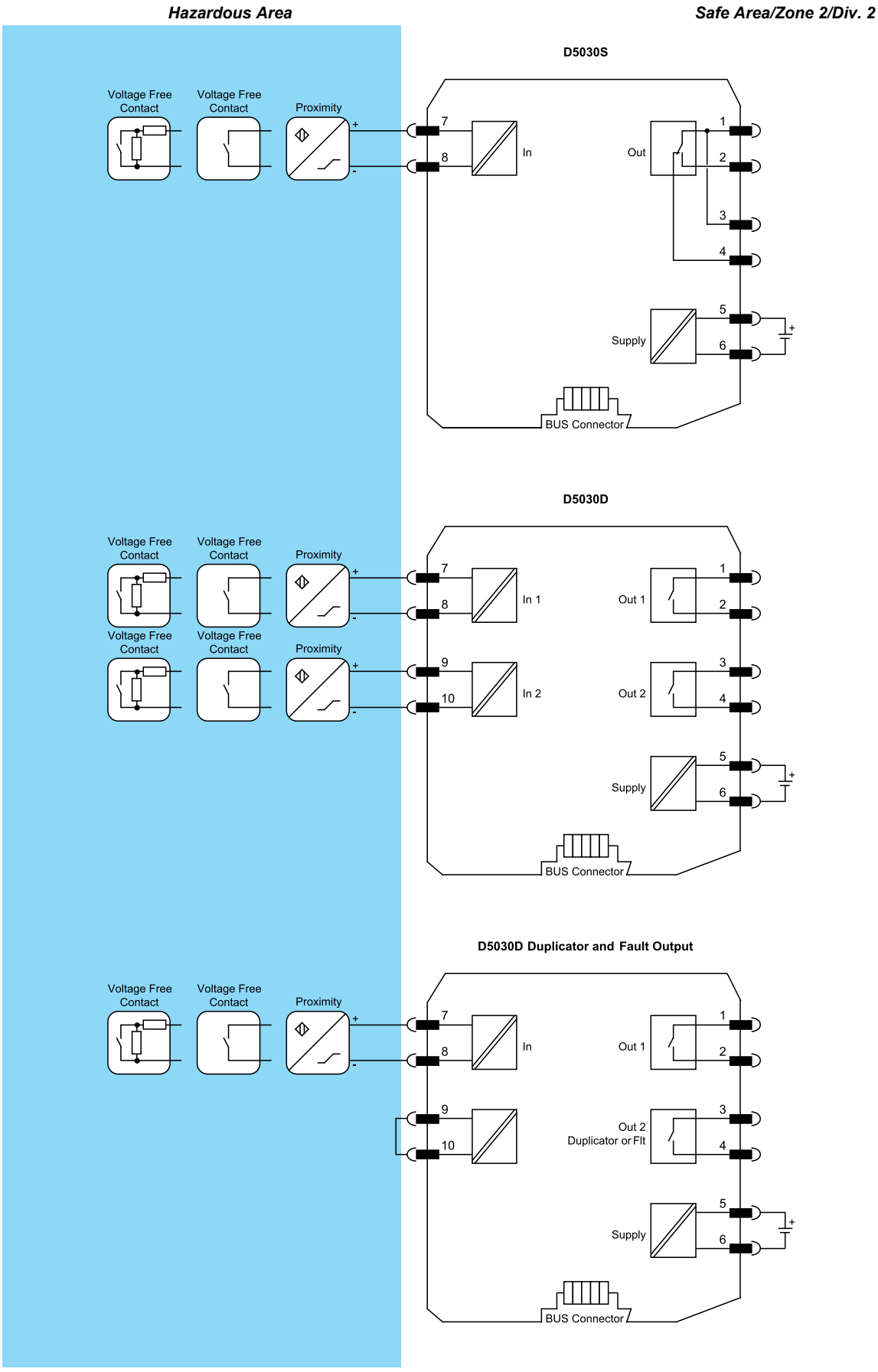
FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5031

I.S. SIL3 Switch/Proximity Transistor-Out Repeater

The Switch/Proximity Detector Repeater D5031 is a module suitable for applications requiring SIL 3 level in safety related systems for high risk industries. The unit can be configured for switches or proximity detectors, located in Hazardous Area, and repeats the input state to an open-collector transistor in Safe Area. The selectable fault detection circuit is available for proximity sensors or switches equipped with end of line resistors. In the double-channel model, the second output can be configured to repeat the second input, to duplicate the first input or to report the first input fault. If needed, the output can also be inverted.

FEATURES

- SIL 3 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- High frequency transistor output
- Field open and short circuit detection
- In-field programmability by DIP Switch
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

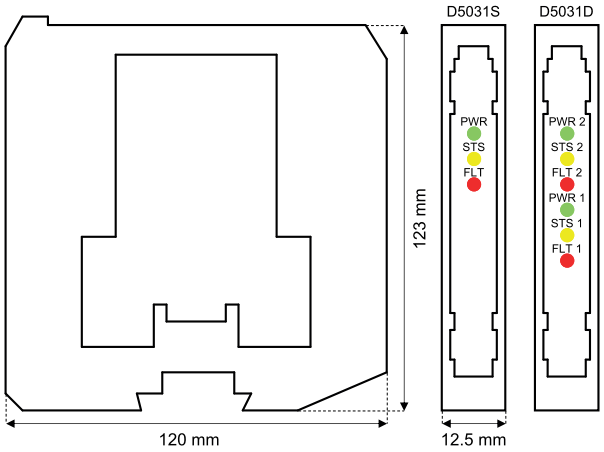
Ordering codes

D5031S: 1 channel
D5031D: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 22 mA (D5031D), 12 mA (D5031S), @ 24 Vdc with short circuit input and transistor closed, typical.
Power dissipation: 0.53 W (D5031D), 0.30 W (D5031S), @ 24 Vdc with short circuit input and transistor closed, typical.

Input

Input switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA.
Fault current levels: open fault ≤ 0.2 mA, short fault ≥ 6.8 mA.
Input equivalent source: 8 V 1 kΩ typical (8 V no load, 8 mA short).

Output

Voltage free SPST optocoupled open-collector transistor.
Open-collector/drain rating: 100 mA @ 35 Vdc (≤ 1.5 V voltage drop).
Leakage current: ≤ 50 µA @ 35 Vdc.
Response time: ≤ 100 µs.
Frequency response: 5 kHz maximum.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/ I.S In 500 V; Out/Supply 500 V; Out /Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 10.5 V, Io = 22 mA, Po = 56 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

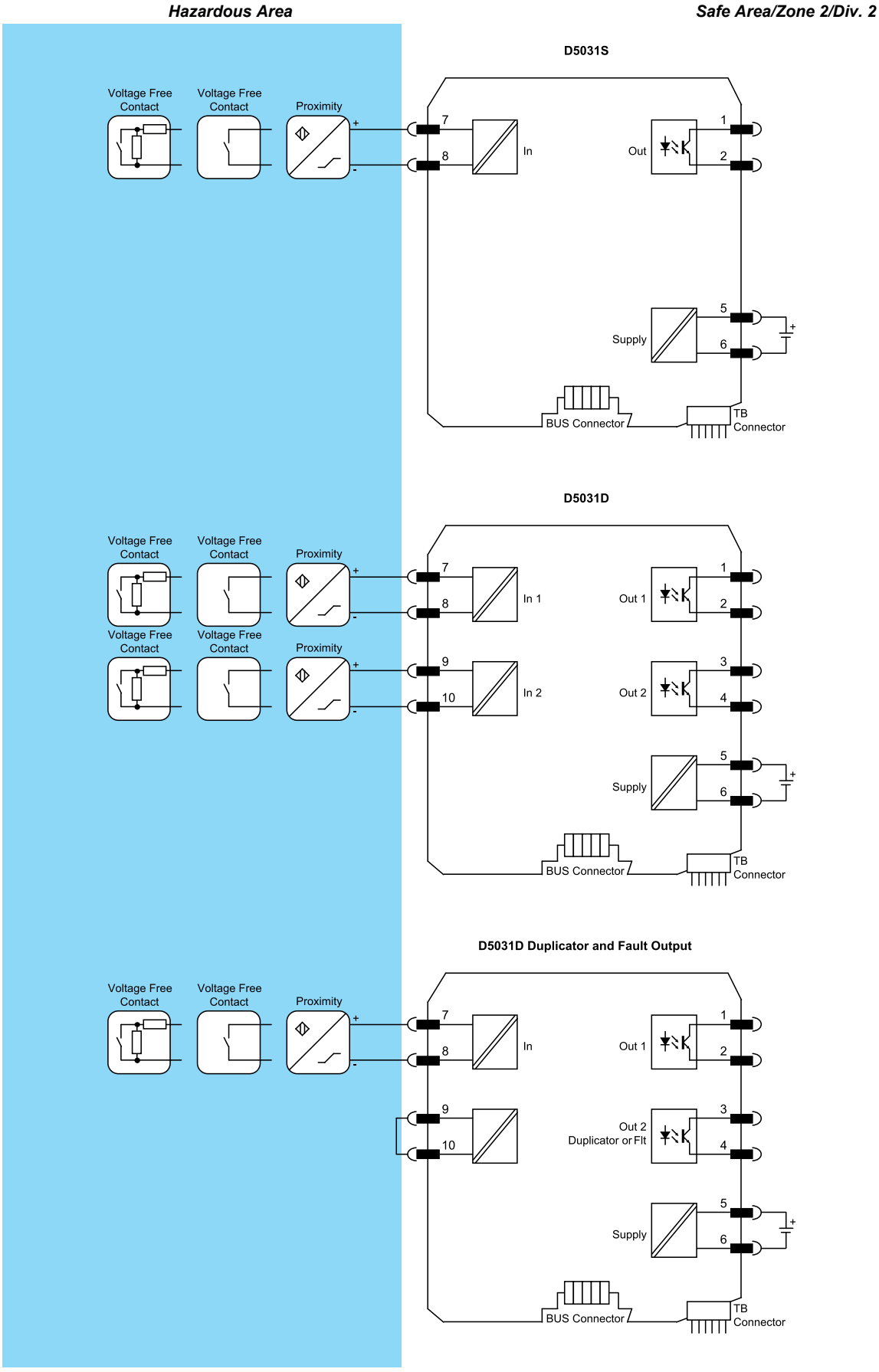
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 130 g (D5031D), 110 g (D5031S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5032

I.S. SIL3 Switch/Proximity Relay-Out Repeater

The Switch/Proximity Detector Repeater D5032 is a module suitable for applications requiring SIL 3 level in safety related systems for high risk industries. The unit can be configured for switches or proximity detectors, located in Hazardous Area, and repeats the input state to a relay contact in Safe Area. The selectable fault detection circuit is available for proximity sensors or switches equipped with end of line resistors. In the double-channel model, the second output can be configured to repeat the second input, to duplicate the first input or to report the first input fault. If needed, the output can also be inverted.

FEATURES

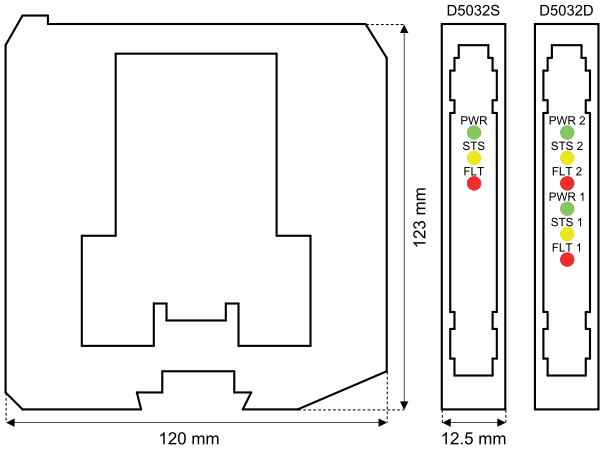
- SIL 3 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- Field open and short circuit detection
- In-field programmability by DIP Switch
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

Ordering codes

D5032S: 1 channel
D5032D: 2 channels

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 35 mA (D5032D), 18 mA (D5032S), @ 24 Vdc with short circuit input and relay energized, typical.
Power dissipation: 0.85 W (D5032D), 0.45 W (D5032S), @ 24 Vdc with short circuit input and relay energized, typical.

Input

Input switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA.
Fault current levels: open fault ≤ 0.2 mA, short fault ≥ 6.8 mA.
Input equivalent source: 8 V 1 kΩ typical (8 V no load, 8 mA short).

Output

Voltage free SPST relay contact.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 100 mA 50 Vac 5 VA, 100 mA 50 Vdc 5 W (resistive load).
Contact min. switching current: 1 mA.
Mechanical / electrical life: 5 * 10^6 / 1 * 10^5 operation, typical.
Operate / release time: 8 / 4 ms, typical.
Frequency response: 10 Hz maximum.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/ I.S In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 10.5 V, Io = 22 mA, Po = 56 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

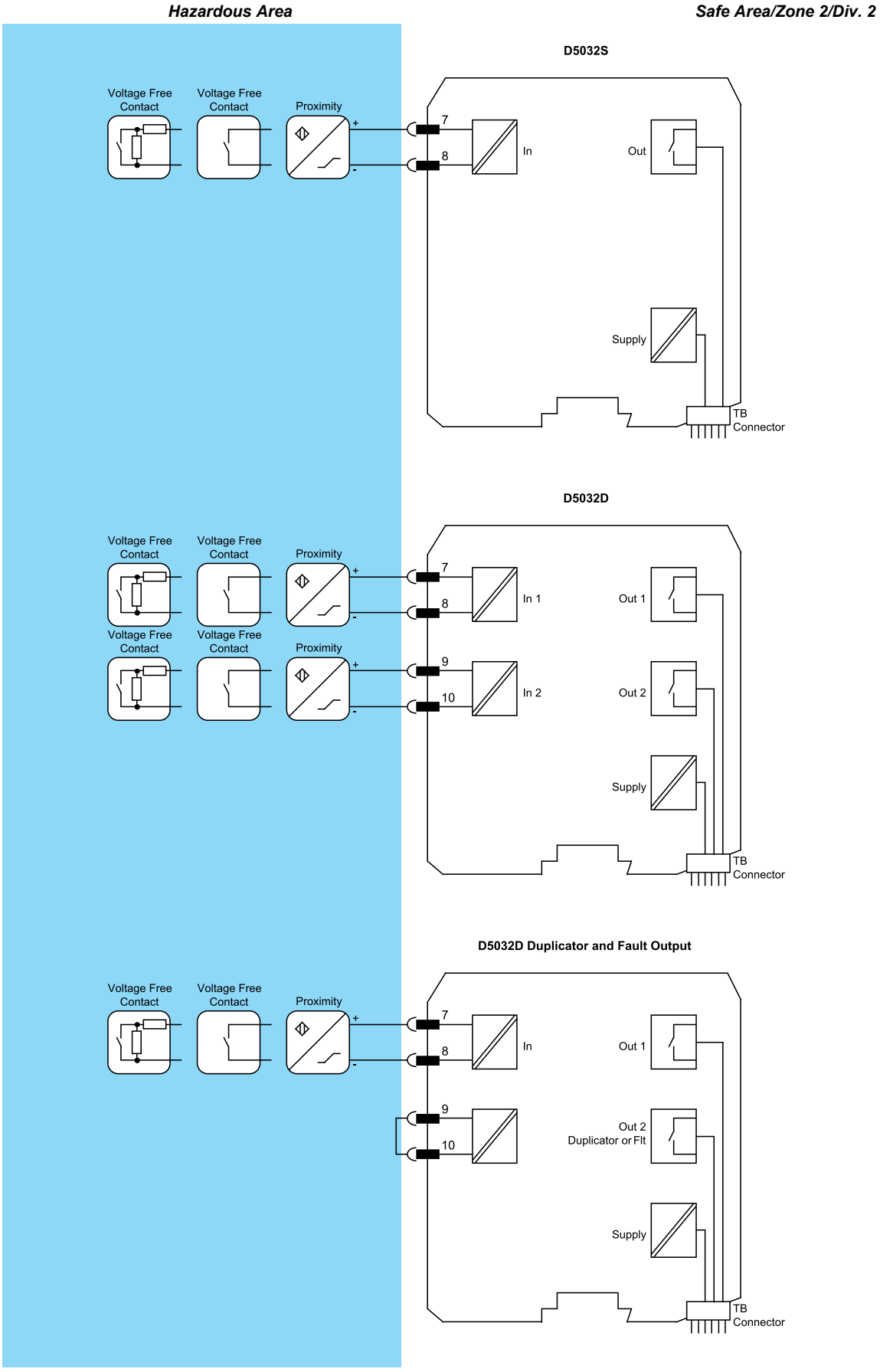
On custom Term. Board.
Weight: about 125 g (D5032D), 115 g (D5032S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

D5034

I.S. SIL3 Line-Fault Transp. Switch/Prox. Repeater

The Switch/Proximity Detector Repeater D5034 is a module suitable for applications requiring SIL 3 level in safety related systems for high risk industries. The unit can be connected to switches or proximity detectors, located in Hazardous Area, and repeats the input current to the output in Safe Area. DCS/PLC Digital Input cards compatible with NAMUR devices can detect the status/fault of proximity sensors or switches equipped with end of line resistors, in transparent mode, through the module.

FEATURES

- SIL 3 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- Field fault mirroring to PLC NAMUR DI
- High Accuracy
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

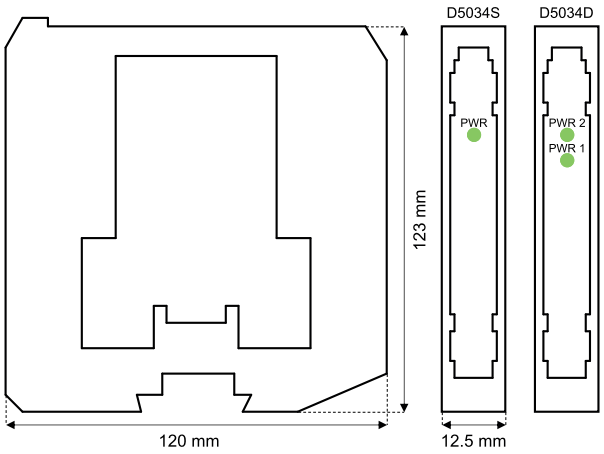
Ordering codes

D5034S: 1 channel
D5034D: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 30 mA (D5034D), 15 mA (D5034S), @ 24 Vdc with short circuit input, typical.
Power dissipation: 0.72 W (D5034D), 0.36 W (D5034S), @ 24 Vdc with short circuit input, typical.

Input

Current range: ≥ 0.1 mA to ≤ 8.0 mA.
Input equivalent source: 8 V 1 kΩ typical (8 V no load, 8 mA short).

Output

0.1 to 8.0 mA in sink mode, V max. 30 V, current limited ≈ 8 mA, repeats input current level.
Response time: 1 ms (0 to 100 % step change).
Power dissipation: 0.4 W (D5034D), 0.2 W (D5034S), @ 24 Vdc with short circuit input, typical.

Performance

Ref. Conditions: 24 V supply, 23 ± 1 °C ambient temperature.
Calibration accuracy: ≤ ± 0.25 % FSR.
Linearity accuracy: ≤ ± 0.25 % FSR.
Temp. influence: ≤ ± 0.03 % FSR on zero/span for a 1 °C change.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 10.5 V, Io = 15 mA, Po = 39 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

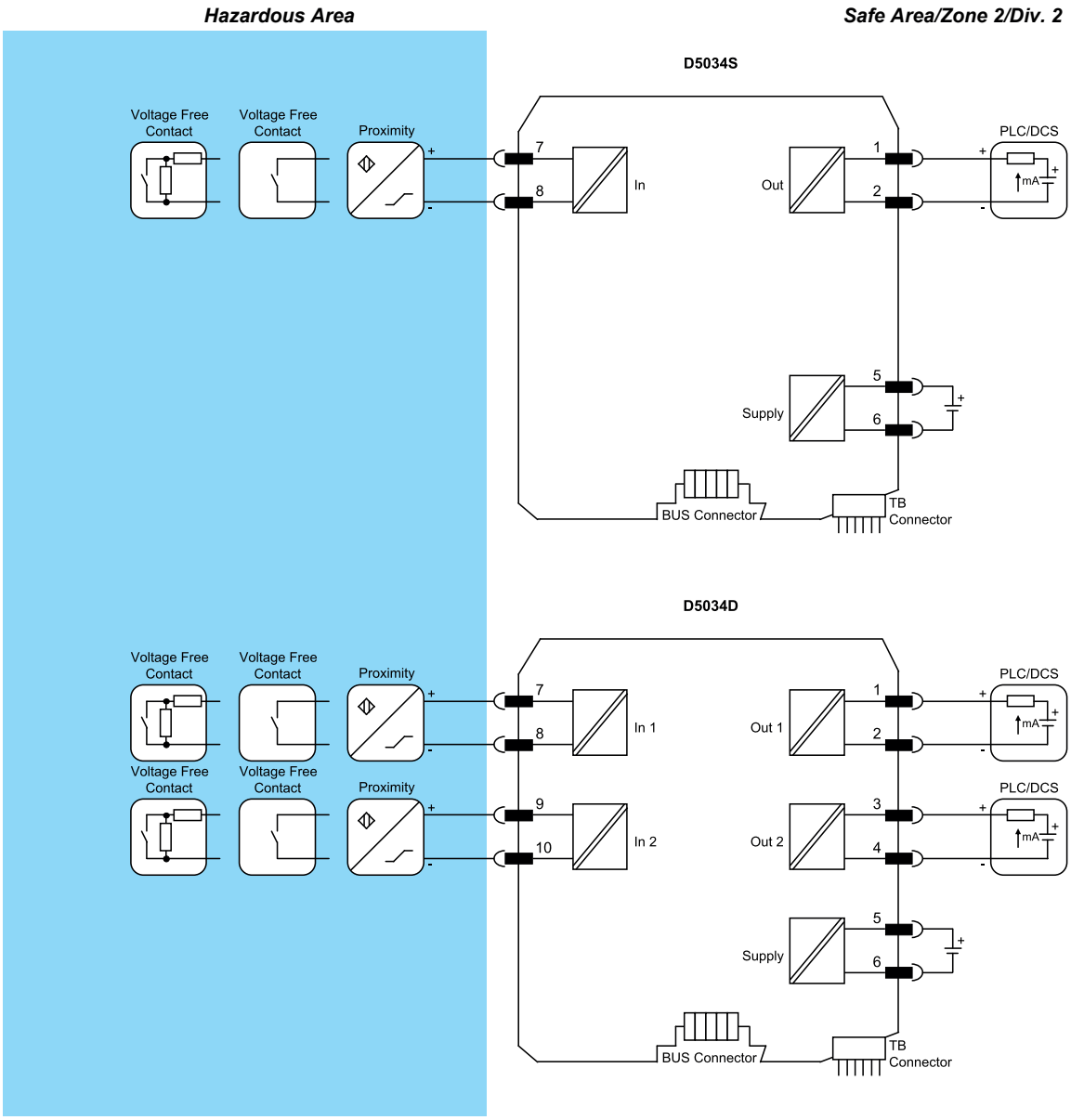
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 140 g (D5034D), 115 g (D5034S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
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D5036

I.S. SIL2 Switch/Proximity Relay-Out Repeater

The Switch/Proximity Detector Repeater D5036 is a module suitable for applications requiring SIL 2 level in safety related systems for high risk industries. The unit can be configured for switches or proximity detectors, located in Hazardous Area, and repeats the input state to a relay contact in Safe Area. The selectable fault detection circuit is available for proximity sensors or switches equipped with end of line resistors. If needed, the output can also be inverted.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- High voltage/current rating relay output
- Field open and short circuit detection
- In-field programmability by DIP Switch
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

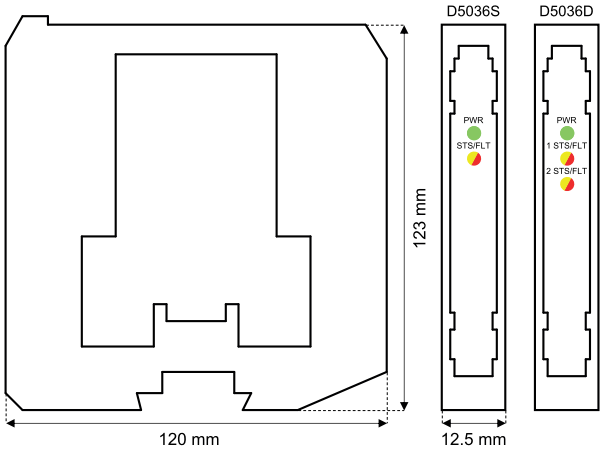
Ordering codes

D5036S: 1 channel
D5036D: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 35 mA (D5036D), 18 mA (D5036S), @ 24 Vdc with short circuit input and relay energized, typical.
Power dissipation: 0.85 W (D5036D), 0.45 W (D5036S), @ 24 Vdc with short circuit input and relay energized, typical.

Input

Input switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA.
Fault current levels: open fault ≤ 0.2 mA, short fault ≥ 6.8 mA.
Input equivalent source: 8 V 1 kΩ typical (8 V no load, 8 mA short).

Output

Voltage free SPST (D5036D) or SPDT (D5036S) relay contact.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 4 A 250 Vac 1000 VA, 4 A 250 Vdc 120 W (resistive load).
Contact min. switching current: 1 mA.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 3 * 10^4 operation, typical.
Operate / release time: 8 / 4 ms, typical.
Frequency response: 10 Hz maximum.

Isolation

I.S. In/Out 1.5 kV; I.S. In/Supply 1.5 kV; I.S. In/ I.S In 500 V; Out/Supply 1.5 kV; Out/Out 1.5 kV.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 10.5 V, Io = 22 mA, Po = 56 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

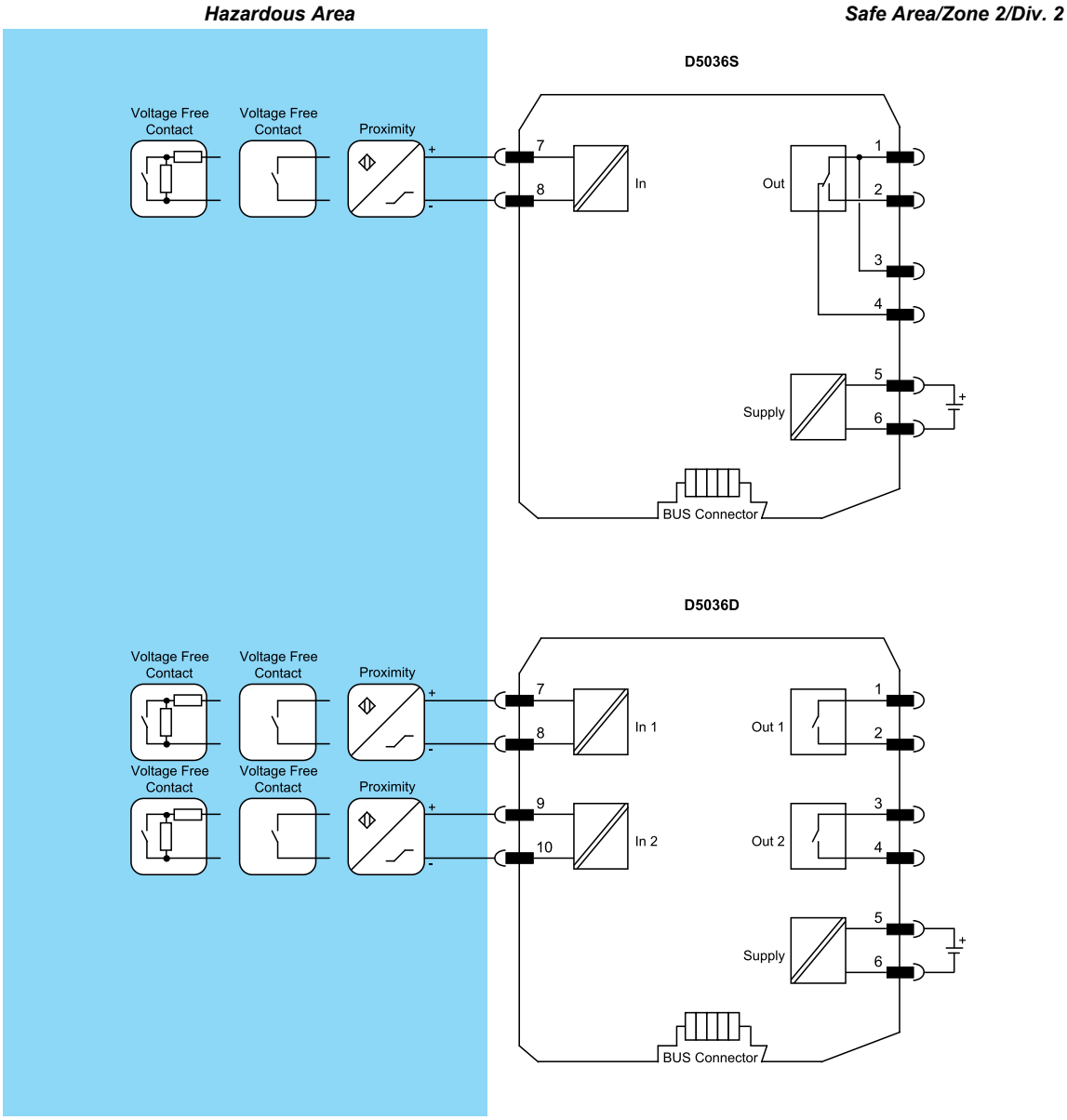
DIN-Rail 35 mm, with or without Power Bus.
Weight: about 135 g (D5036D), 120 g (D5036S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5037

I.S. SIL2 Switch/Proximity Transistor-Out Repeater

The Switch/Proximity Detector Repeater D5037 is a module suitable for applications requiring SIL 2 level in safety related systems for high risk industries. The unit can be configured for switches or proximity detectors, located in Hazardous Area, and repeats the input state to an open-collector transistor in Safe Area. The selectable fault detection circuit is available for proximity sensors or switches equipped with end of line resistors. If needed, the output can also be inverted.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- High frequency transistor output
- Field open and short circuit detection
- In-field programmability by DIP Switch
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

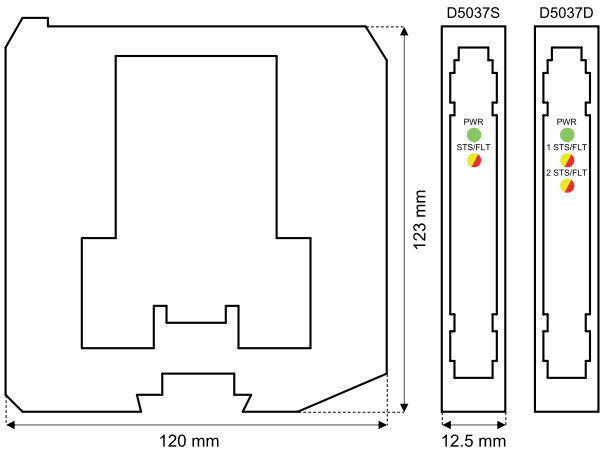
Ordering codes

D5037S: 1 channel
D5037D: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 22 mA (D5037D), 12 mA (D5037S), @ 24 Vdc with short circuit input and transistor closed, typical.
Power dissipation: 0.53 W (D5037D), 0.30 W (D5037S), @ 24 Vdc with short circuit input and transistor closed, typical.

Input

Input switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA.
Fault current levels: open fault ≤ 0.2 mA, short fault ≥ 6.8 mA.
Input equivalent source: 8 V 1 kΩ typical (8 V no load, 8 mA short).

Output

Voltage free SPST optocoupled open-collector transistor.
Open-collector/drain rating: 100 mA @ 35 Vdc (≤ 1.5 V voltage drop).
Leakage current: ≤ 50 µA @ 35 Vdc.
Response time: ≤ 100 µs.
Frequency response: 5 kHz maximum.

Isolation

I.S. In/Out 1.5 kV; I.S. In/Supply 1.5 kV; I.S. In/ I.S In 500 V; Out/Supply 500 V; Out /Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 10.5 V, Io = 22 mA, Po = 56 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 125 g (D5037D), 110 g (D5037S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
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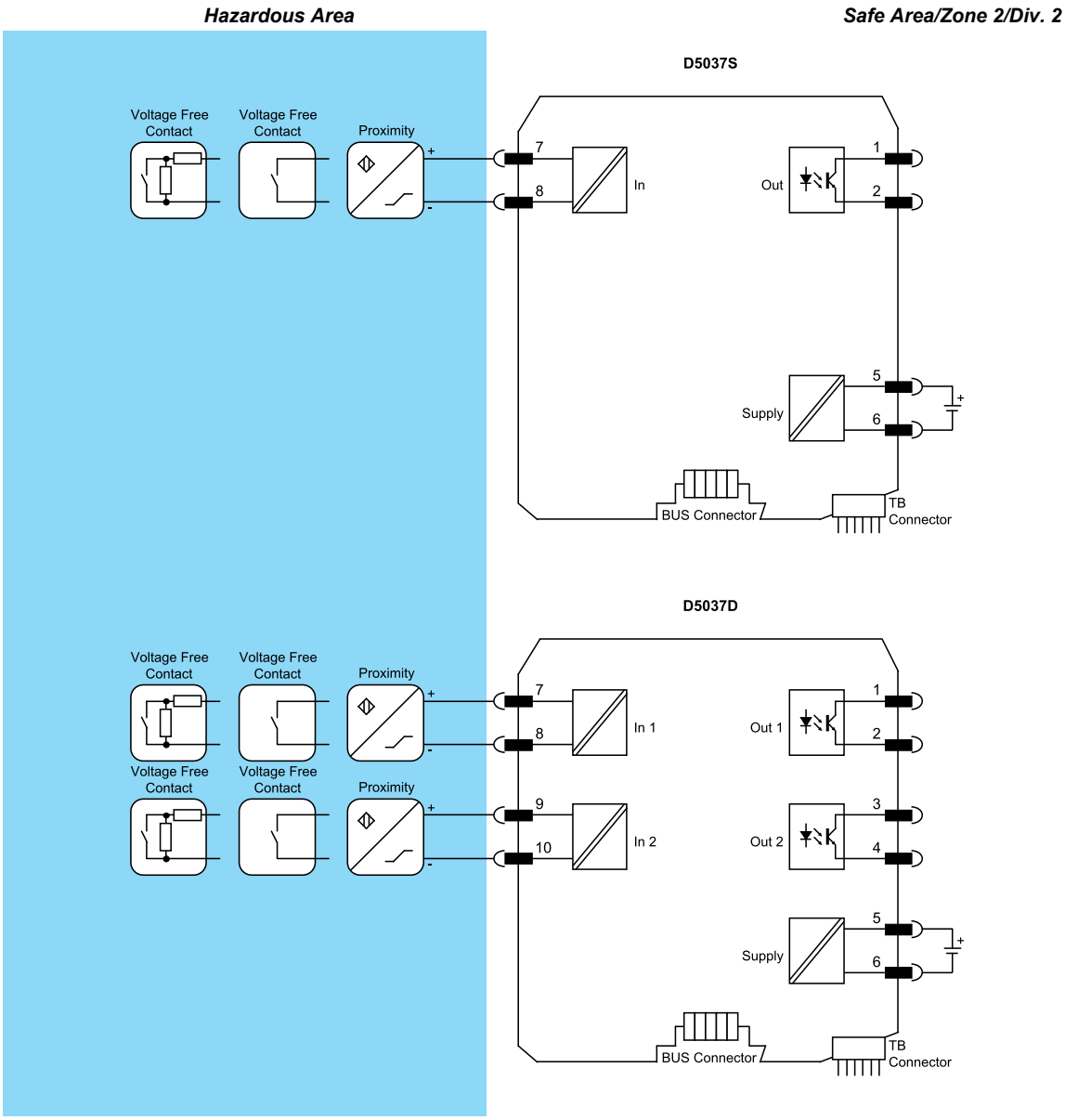
FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



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D5038

I.S. SIL3 Line-Fault Transp. Switch/Prox. Repeater

The Switch/Proximity Detector Repeater D5038 is a module suitable for applications requiring SIL 3 level in safety related systems for high risk industries. The unit can be configured for switches or proximity detectors, located in Hazardous Area, and repeats the input state to the output in Safe Area. The output port can assume two different impedance values (RL or RH) or it can open completely. The module output repeats the input state according to the following correspondence: low input state -> RL, high input state -> RH. Alternatively, the output can be configured to invert the input state. In both cases, the output opens if any fault (open or short circuit) occurs at the corresponding input.

FEATURES

- SIL 3 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- Field open and short circuit detection
- Field fault universal mirroring to PLC DI
- Line monitoring transparency
- In-field programmability by DIP Switch
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

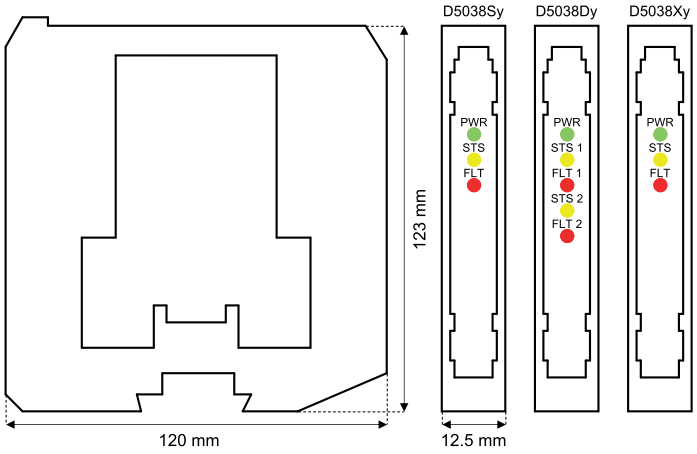
Ordering codes

D5038xy
x: S → 1 channel; D → 2 channels; X → duplicator
y: A → RL = 2.2 kΩ, RH = 14.3 kΩ; B → RL = 476 Ω, RH = 1.38 kΩ
C → RL = 5 kΩ, RH = 15 kΩ; D → RL = 0 Ω, RH = 33.2 kΩ

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 30 mA (D5038D), 25 mA (D5038X), 15 mA (D5038S), @ 24 Vdc, typical.
Power dissipation: 1.0 W (D5038D), 1.0 W (D5038X), 0.4 W (D5038S), @ 24 Vdc, typical.

Input

Input switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA.
Open fault: current ≤ 0.05 mA.
Short fault: resistance ≤ 100 Ω.
No fault: current ≥ 0.35 mA and resistance ≥ 360 Ω.
Input equivalent source: 8 V 1 kΩ typical (8 V no load, 8 mA short).

Output

Voltage free SPST solid-state relays, with series (RL) and parallel (RH-RL) resistances, ±5% tolerance.
Fault impedance: > 1 MΩ.
Max voltage: 30 Vdc.
Max current: 15 mA.
Response time: 500 µs.
Frequency response: 1 kHz maximum.

Isolation

I.S. In/Out 1.5 kV; I.S. In/Supply 1.5 kV; I.S. In/ I.S In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 10.5 V, Io = 22 mA, Po = 56 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

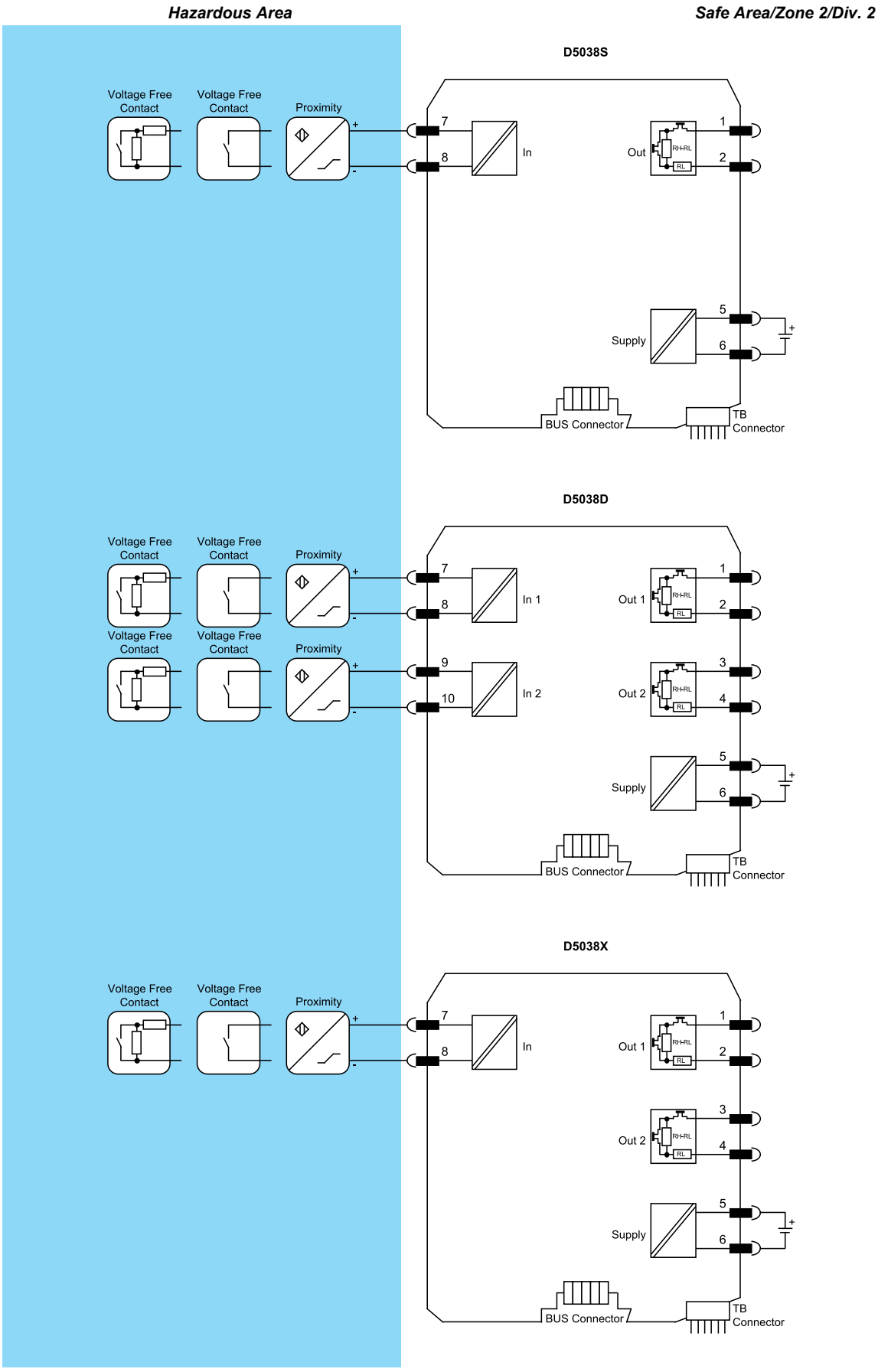
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 135 g (D5038D and D5038X), 120 g (D5038S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



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D5039

I.S. SIL2 Line-Fault Transp. Switch/Prox. Repeater

The Switch/Proximity Detector Repeater D5039 is a module suitable for applications requiring SIL 2 level in safety related systems for high risk industries. The unit can be configured for switches or proximity detectors, located in Hazardous Area, and repeats the input state to the output in Safe Area. The output port can assume two different impedance values (RL or RH) or it can open completely. The module output repeats the input state according to the following correspondence: low input state -> RL, high input state -> RH. Alternatively, the output can be configured to invert the input state. In both cases, the output opens if any fault (open or short circuit) occurs at the corresponding input.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- Field open and short circuit detection
- Field fault universal mirroring to PLC DI
- Line monitoring transparency
- In-field programmability by DIP Switch
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

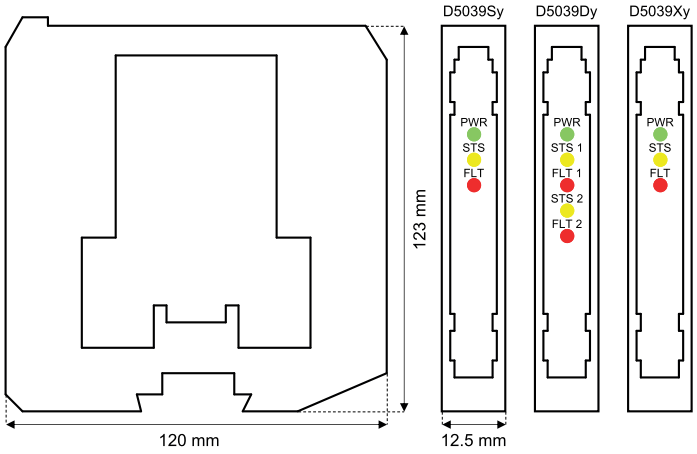
Ordering codes

D5039xy
x: S → 1 channel; D → 2 channels; X → duplicator
y: A → RL = 2.2 kΩ, RH = 14.3 kΩ; B → RL = 476 Ω, RH = 1.38 kΩ
C → RL = 5 kΩ, RH = 15 kΩ; D → RL = 0 Ω, RH = 33.2 kΩ

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 30 mA (D5039D), 25 mA (D5039X), 15 mA (D5039S), @ 24 Vdc, typical.
Power dissipation: 1.0 W (D5039D), 1.0 W (D5039X), 0.4 W (D5039S), @ 24 Vdc, typical.

Input

Input switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA.
Open fault: current ≤ 0.05 mA.
Short fault: resistance ≤ 100 Ω.
No fault: current ≥ 0.35 mA and resistance ≥ 360 Ω.
Input equivalent source: 8 V 1 kΩ typical (8 V no load, 8 mA short).

Output

Voltage free SPST solid-state relays, with series (RL) and parallel (RH-RL) resistances, ±5% tolerance.
Fault impedance: > 1 MΩ.
Max voltage: 30 Vdc.
Max current: 15 mA.
Response time: 500 µs.
Frequency response: 1 kHz maximum.

Isolation

I.S. In/Out 1.5 kV; I.S. In/Supply 1.5 kV; I.S. In/ I.S In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety Description

Associated apparatus and non-sparking electrical equipment.
Uo = 10.5 V, Io = 22 mA, Po = 56 mW at terminals 7-8, 9-10.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 135 g (D5039D and D5039X), 120 g (D5039S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
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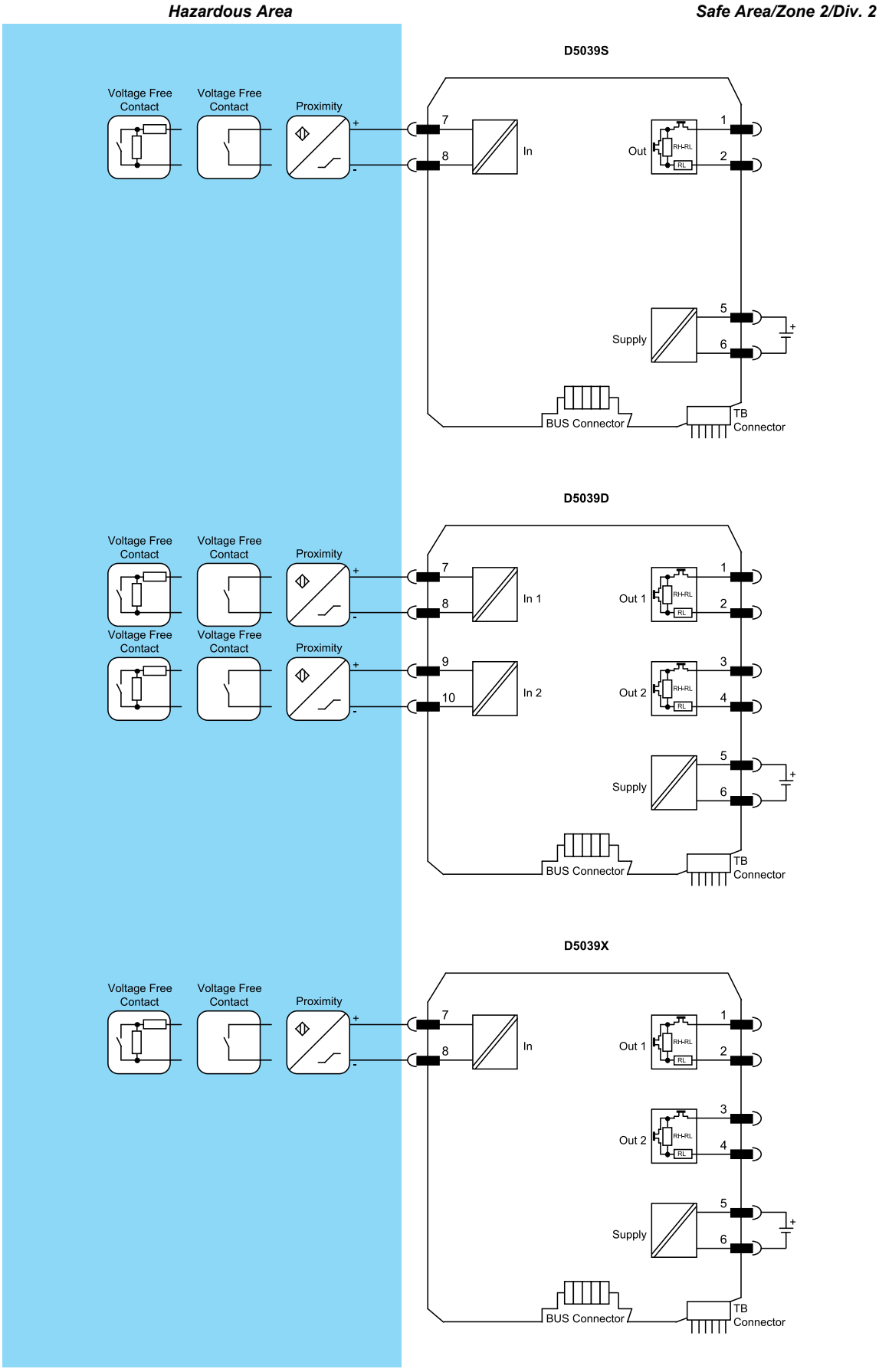
FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
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D5231

I.S. SIL2 Switch/Proximity O.C.-Out Repeater

The Switch/Proximity Detector Repeater D5231 is a module suitable for applications requiring SIL 2 level in safety related systems for high risk industries. The unit can be configured for switches or proximity detectors, located in Hazardous Area, and repeats the input state to a solid-state relay contact in Safe Area. The selectable fault detection circuit is available for proximity sensors or switches equipped with end of line resistors. The module is fully configurable to achieve input/output multiplexing, duplication, inversion, and input logical elaboration (AND, OR). Each output can also be configured to report the cumulative fault of any input subset. Configuration and diagnostic parameters are programmable and can also be monitored/set through Modbus.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- Field open and short circuit detection
- Input muxing/duplication/inversion/operations available
- Modbus RTU RS-485 for monitor & configuration
- Fully programmable operating parameters
- Three port isolation, Input/Output/Supply
- High Density, eight channels per unit

ORDERING INFORMATION

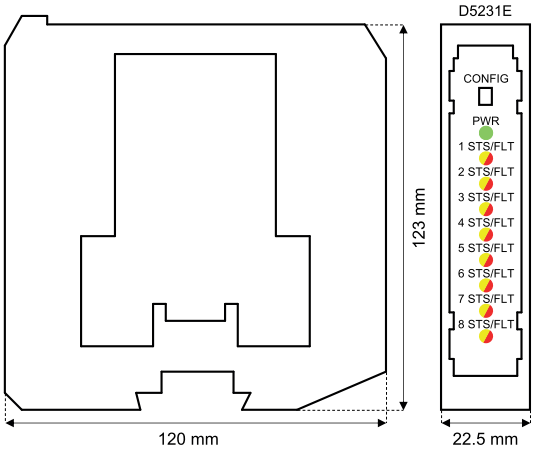
Ordering codes

D5231E: 8 channels

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 84 mA @ 24 Vdc with short circuit input and output closed, typical.
Power dissipation: 2.1 W @ 24 Vdc with short circuit input and output closed, typical.

Input

NAMUR standard according to IEC 60947-5-6
Input switching current levels: ON ≥ 2.1 mA, OFF ≤ 1.2 mA.
Open fault: current ≤ 0.05 mA.
Short fault: resistance ≤ 100 Ω.
No fault: current ≥ 0.35 mA and resistance ≥ 360 Ω.
Input equivalent source: 8 V 1 kΩ typical (8 V no load, 8 mA short).

Output

Voltage free SPST optocoupled open-collector transistor (solid-state relay, photo-MOS).
Open-collector/drain rating: 100 mA @ 35 V (≤ 1.0 V voltage drop).
Leakage current: ≤ 10 µA @ 35 V.
Response time: 2 ms.
Frequency response: 500 Hz maximum.

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Isolation

I.S. In/Out 1.5 kV; I.S. In/Supply 1.5 kV; Out/Supply 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 11.2 V, Io = 12 mA, Po = 34 mW at terminals 21-13, 21-14, 22-15, 22-16, 23-17, 23-18, 24-19, 24-20.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

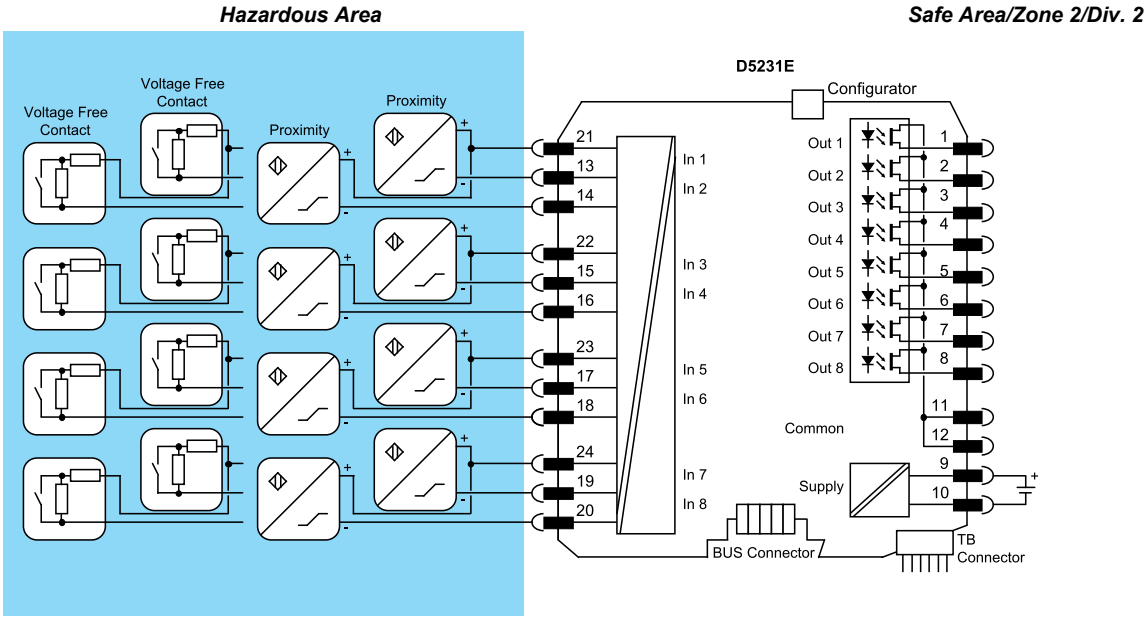
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 175 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



DIGITAL OUTPUT

D5040

I.S. SIL3 Loop-Powered Digital Output Driver

The Loop-Powered Digital Output Driver D5040 is a module suitable for applications requiring SIL 3 level in safety related systems for high risk industries. It can drive solenoid valves, visual or audible alarms to alert a plant operator, or other process control devices in Hazardous Area from control signals located in Safe Area. They can also be used as switchable supplies to power measuring or process control equipments. For each channel two basic output circuits are selectable, with different safety parameters, to interface the majority of devices on the market.

FEATURES

- SIL 3 / SC 3
- Output to Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- Loop powered for NE loads
- Output short circuit proof
- Two port isolation, Input/Output
- High Density, two channels per unit

ORDERING INFORMATION

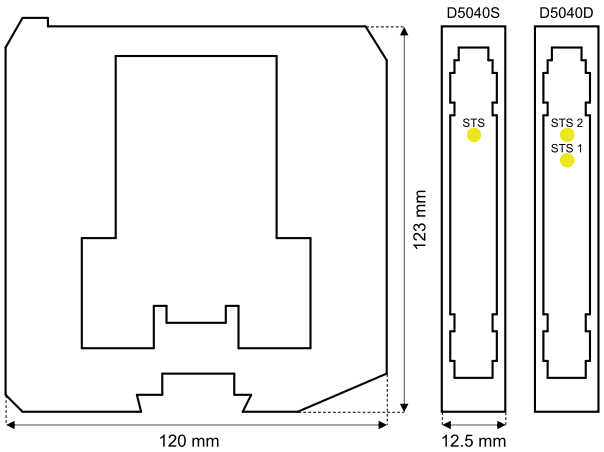
Ordering codes

D5040S: 1 channel
D5040D: 2 channels

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

Loop powered control signal.
Voltage range: 24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 45 mA (D5040D) @ 24 Vdc with 30 mA outputs, 55 mA (D5040S) @ 24 Vdc with 40 mA output, typical.
Power dissipation: 0.75 W (D5040D) @ 24 Vdc with 35 mA outputs, 0.85 W (D5040S) @ 24 Vdc with 45 mA output, typical.

Output

Short circuit current: ≥ 45 mA (D5040S); ≥ 35 mA/channel (D5040D); ≥ 70 mA two outputs in parallel (D5040D).
Response time: ≤ 75 ms.
Output diagram: refer to Instruction Manual.

Isolation

I.S. Out/In 1.5 kV; Out/Out 500 V; In/In 500 V.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 25.2 V, Io = 146 mA, Po = 916 mW at terminals 7-8, 10-11.
Uo = 25.2 V, Io = 108 mA, Po = 676 mW at terminals 7-9, 10-12.
Refer to Instruction Manual for more details.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

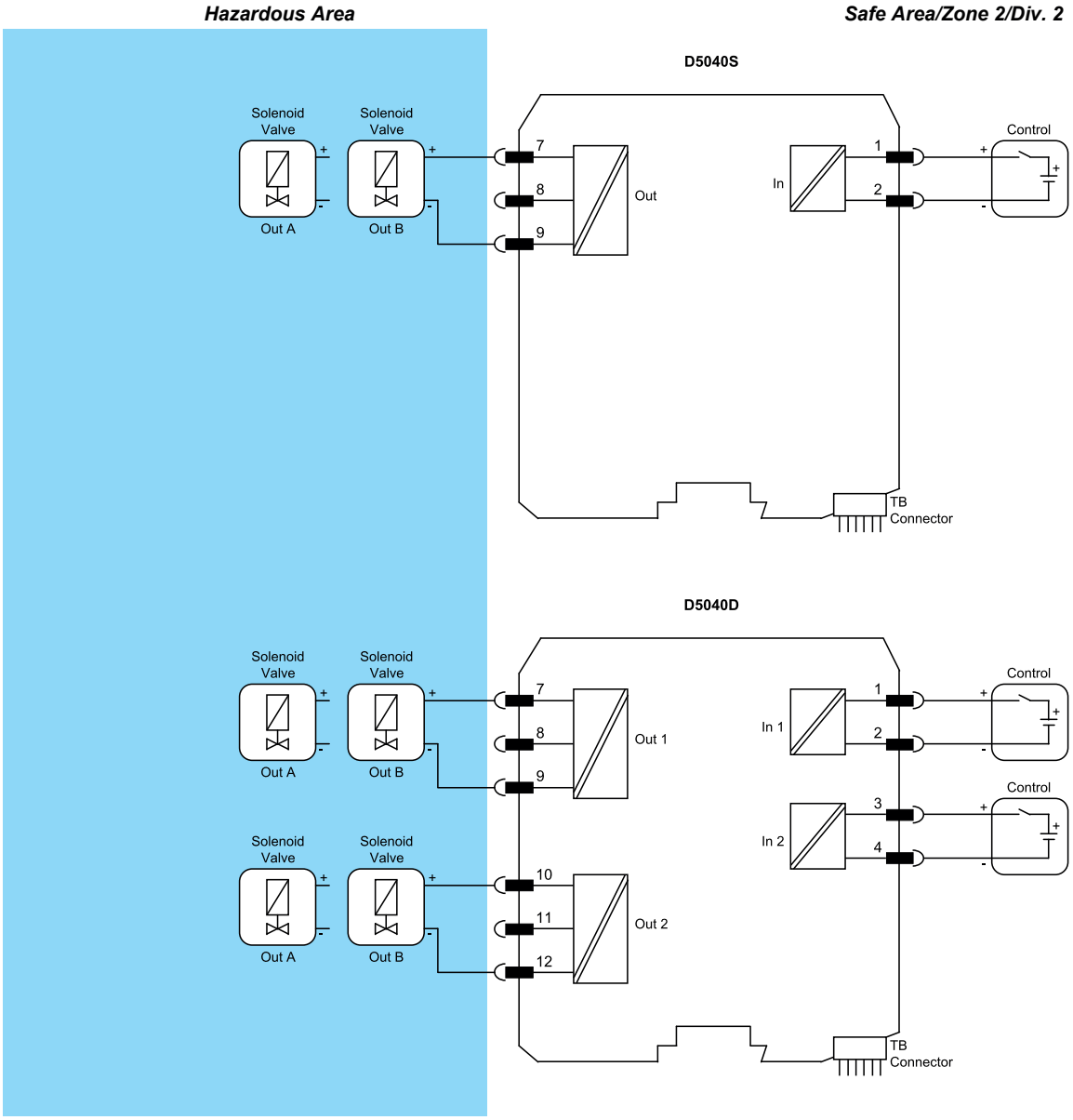
Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 110 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5048

I.S. SIL3 Loop-Powered Digital Output Driver

The Loop-Powered Digital Output Driver D5048 is a module suitable for applications requiring SIL 3 level in safety related systems for high risk industries. It can drive solenoid valves, visual or audible alarms to alert a plant operator, or other process control devices in Hazardous Area from control signals located in Safe Area. They can also be used as switchable supplies to power measuring or process control equipments. Line and load open/short circuit detection is provided, when the load is on: the fault in the field is directly mirrored to the PLC DO and it is also reported by opening the fault output. If required, the override input can switch off the output regardless of the input status. For each channel three basic output circuits are selectable, with different safety parameters, to interface the majority of devices on the market.

FEATURES

- SIL 3 / SC 3
- Output to Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- Loop powered for NE loads
- Line & Load short/open circuit detection
- Output short circuit proof
- In-field programmability by DIP Switch
- Three port isolation, Input/Output/Fault

ORDERING INFORMATION

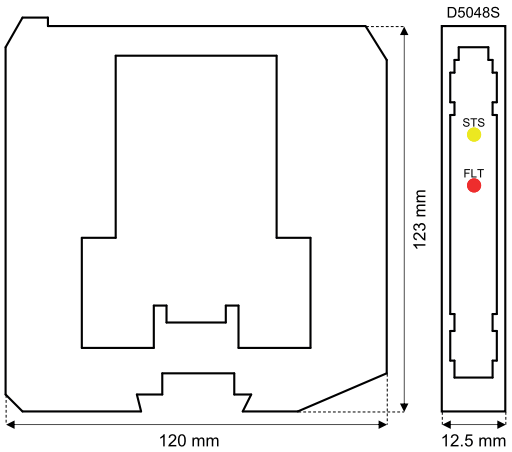
Ordering codes

D5048S: 1 channel

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

Loop powered control signal.
Voltage range: 24 Vdc nom (20 to 30 Vdc), reverse polarity protected.
Current consumption: 65 mA @ 24 Vdc with 45 mA output, typical, ≤ 10 mA when fault circuit enabled and fault condition detected.
Power dissipation: 1.1 W @ 24 Vdc with 45 mA output, typical.

Override input

Override control signal de-energizes output when enabled by dip-switch.
Voltage range: 0 V ≤ OFF ≤ 5 V, 20 V ≤ ON ≤ 30 V, reverse polarity protected.
Current consumption: 15 mA @ 24 Vdc, typical.

Output

45 mA @ 13.0 V (21.0 V no load, 174 Ω series resistance) at terminals 7-10 Out A. 45 mA @ 10.2 V (21.0 V no load, 236 Ω series resistance) at terminals 8-10 Out B. 45 mA @ 8.5 V (21.0 V no load, 275 Ω series resistance) at terminals 9-10 Out C.
Short circuit current: ≥ 50 mA, 55 mA typical.
Output diagram : refer to Instruction Manual.
Response time: ≤ 75 ms.

Fault

Field device and wiring open circuit or short circuit detection dip-switch selectable. When fault is detected, output is de-energized until normal condition is restored.
Short output: load resistance ≤ 50 Ω (≈ 2 mA forcing to detect fault).
Open output: load resistance > 10 kΩ.
Fault signalling: voltage free NE SPST optocoupled open-collector transistor (output de-energized in fault condition).
Open-collector/drain rating: 100 mA @ 35 Vdc (≤ 1.5 V voltage drop).
Leakage current: ≤ 50 µA @ 35 Vdc.
Response time: ≤ 75 ms.

Isolation

I.S. Out/In 2.5kV; I.S. Out/Fault 2.5kV; I.S. Out/Override 2.5kV; In/Fault 500 V; In/Override 500 V; Fault/Override 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

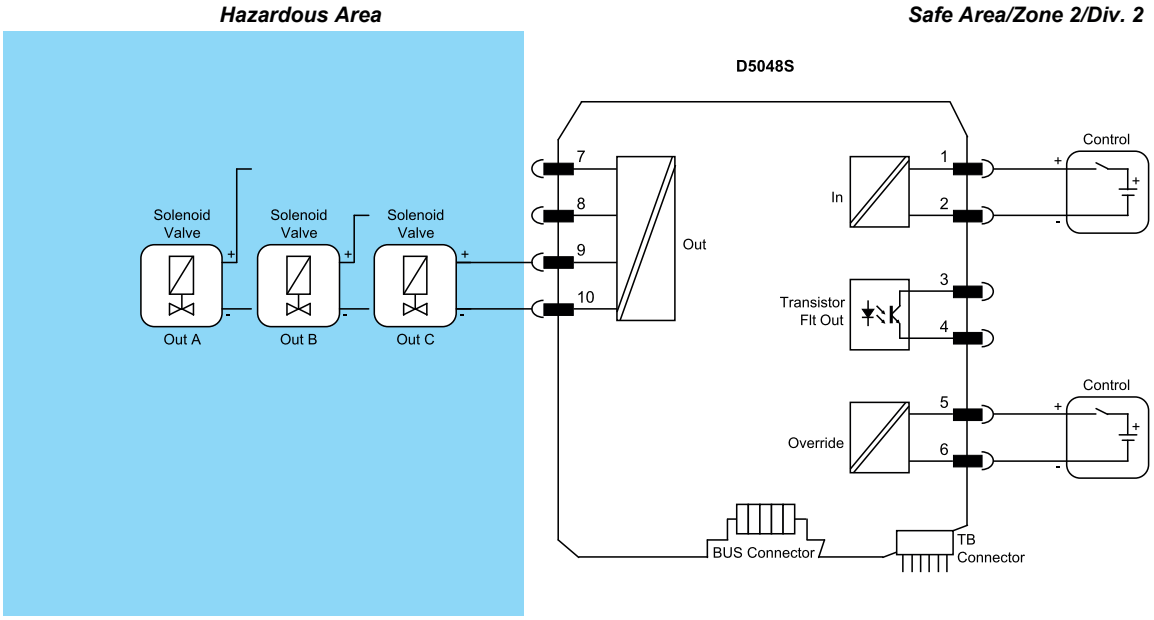
Associated apparatus and non-sparking electrical equipment.
Uo = 24.8 V, Io = 147 mA, Po = 907 mW at terminals 7-10 Out A.
Uo = 24.8 V, Io = 108 mA, Po = 667 mW at terminals 8-10 Out B.
Uo = 24.8 V, Io = 93 mA, Po = 571 mW at terminals 9-10 Out C.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 130 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5049

I.S. SIL3 Bus-Powered Digital Output Driver

The Bus-Powered Digital Output Driver D5049 is a module suitable for applications requiring SIL 3 level in safety related systems for high risk industries. It can drive solenoid valves, visual or audible alarms to alert a plant operator, or other process control devices in Hazardous Area from control signals located in Safe Area. They can also be used as switchable supplies to power measuring or process control equipments. Line and load open/short circuit detection is provided, both when the load is and when the load is off: the fault in the field is directly mirrored to the PLC DO and it is also reported by opening the fault output. If required, the override input can switch off the output regardless of the input status. For each channel three basic output circuits are selectable, with different safety parameters, to interface the majority of devices on the market.

FEATURES

- SIL 3 / SC 3
- Output to Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- Bus powered for NE loads
- Line & Load short/open circuit detection
- Output short circuit proof
- In-field programmability by DIP Switch
- Three port isolation, Input/Output/Supply

ORDERING INFORMATION

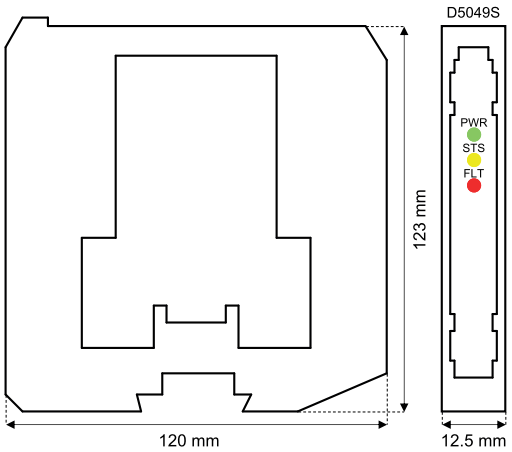
Ordering codes

D5049S: 1 channel

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (20 to 30 Vdc), reverse polarity protected.
Current consumption: 65 mA @ 24 Vdc with 45 mA output, typical.
Power dissipation: 1.1 W @ 24 Vdc with 45 mA output, typical.

Input

Switch contact, logic level reverse polarity protected.
Voltage range: 0 V ≤ OFF ≤ 5 V, 20 V ≤ ON ≤ 30 V.
Current consumption: 15 mA @ 24 Vdc, typical.

Override input

Override control signal de-energizes output when enabled by dip-switch.
Voltage range: 0 V ≤ OFF ≤ 5 V, 20 V ≤ ON ≤ 30 V, reverse polarity protected.
Current consumption: 15 mA @ 24 Vdc, typical.

Output

45 mA @ 13.0 V (21.0 V no load, 174 Ω series resistance) at terminals 7-10 Out A. 45 mA @ 10.2 V (21.0 V no load, 236 Ω series resistance) at terminals 8-10 Out B. 45 mA @ 8.5 V (21.0 V no load, 275 Ω series resistance) at terminals 9-10 Out C.
Short circuit current: ≥ 50 mA, 55 mA typical.
Output diagram: refer to Instruction Manual.

Fault

Field device and wiring open circuit or short circuit detection dip-switch selectable. When fault is detected output is de-energized until normal condition is restored.
Short output: load resistance ≤ 50 Ω (≈ 2 mA forcing to detect fault).
Open output: load resistance > 10 kΩ.
Fault signalling: voltage free NE SPST optocoupled open-collector transistor (output de-energized in fault condition).
Open-collector/drain rating: 100 mA @ 35 Vdc (≤ 1.5 V voltage drop).

Isolation

I.S. Out/In 2.5 kV; I.S. Out/Supply 2.5 kV; I.S. Out/Fault-Override 2.5 kV; In/Supply 500 V; In/Fault-Override 500 V; Supply/Fault-Override 500V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 24.8 V, Io = 147 mA, Po = 907 mW at terminals 7-10 Out A.
Uo = 24.8 V, Io = 108 mA, Po = 667 mW at terminals 8-10 Out B.
Uo = 24.8 V, Io = 93 mA, Po = 571 mW at terminals 9-10 Out C.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

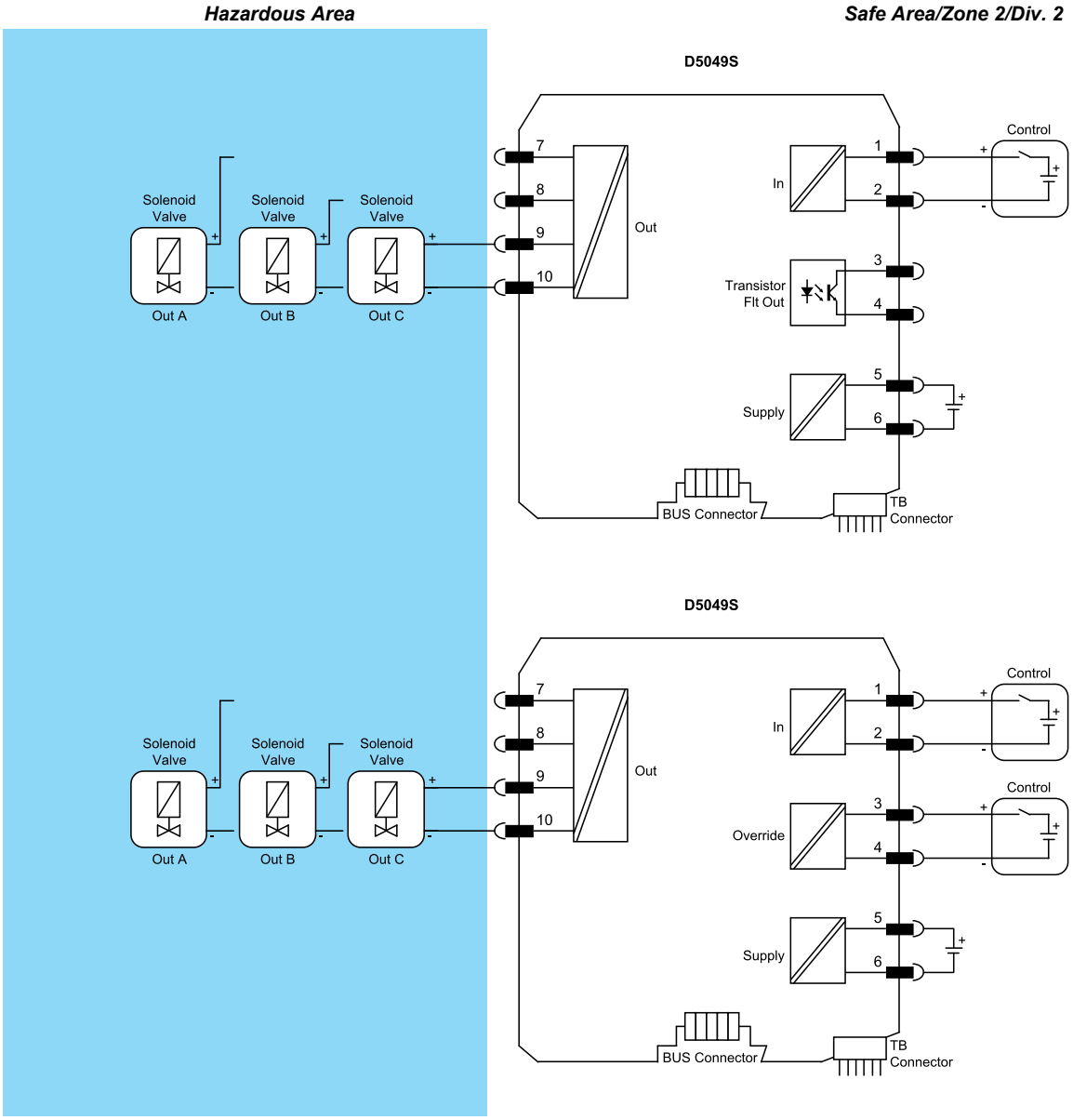
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 135 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5240

I.S. SIL2 Bus-Powered Digital Output Driver

The Bus-Powered Digital Output Isolator D5240 is a module suitable for applications requiring SIL 2 level in safety related systems for high risk industries. It can drive solenoid valves, visual or audible alarms to alert a plant operator, or other process control devices in Hazardous Area from control signals located in Safe Area. They can also be used as switchable supplies to power measuring or process control equipments. For each channel three basic output circuits are selectable, with different safety parameters, to interface the majority of devices on the market. Output remote (de-)activation is possible through Modbus.

FEATURES

- SIL 2 / SC 3
- Output to Zone 0
- Installation in Zone 2
- Bus powered for NE loads
- Output short circuit proof
- Modbus RTU RS-485 for monitor & configuration
- Fully programmable operating parameters
- Three port isolation, Input/Output/Supply
- High Density, three channels per unit

ORDERING INFORMATION

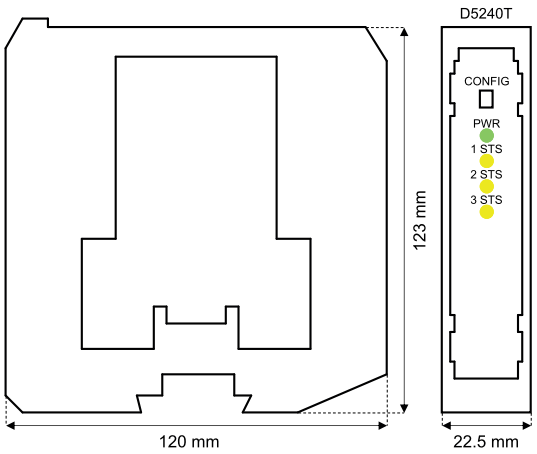
Ordering codes

D5240T: 3 channels

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (21.5 to 30 Vdc), reverse polarity protected.
Current consumption: 175 mA @ 24 Vdc with 35 mA output (all three outputs active), typical.
Power dissipation: 2.7 W @ 24 Vdc with 35 mA output C (all three outputs active), typical.

Input

Logic level reverse polarity protected.
Voltage range: 0 V ≤ OFF ≤ 5 V, 18 V ≤ ON ≤ 30 V.
Current consumption: 13.45 mA @ 24 Vdc, typical.

Output diagram

refer to Instruction Manual.
Short circuit current: ≥ 35 mA/channel.
Response time: ≤ 15 ms.

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Isolation

I.S. Out/In 1.5 kV; I.S. Out/Supply 1.5 kV; Out/Modbus 1.5 kV; In/Supply 500 V; In/In 500 V; In/Modbus 500V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 25.2 V, Io = 146 mA, Po = 916 mW at terminals 13-14, 17-18, 21-22.
Uo = 25.2 V, Io = 108 mA, Po = 676 mW at terminals 13-15, 17-19, 21-23.
Uo = 25.2 V, Io = 93 mA, Po = 580 mW at terminals 13-16, 17-20, 21-24.
Refer to Instruction Manual for more details.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

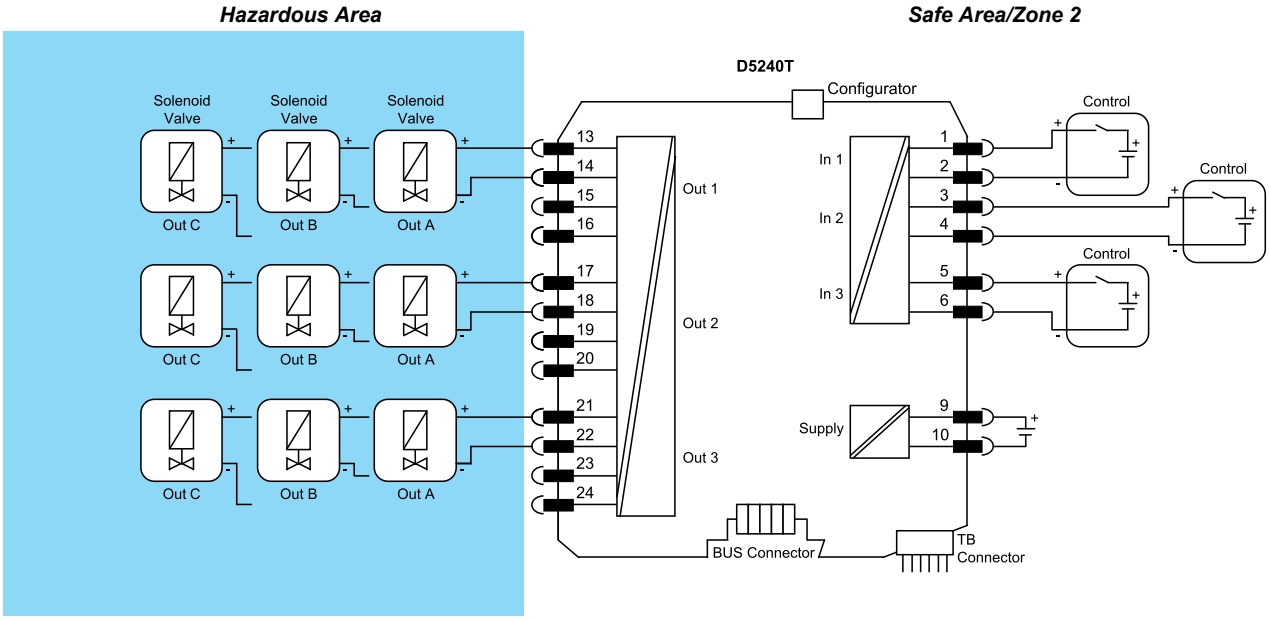
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 175 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5244

I.S. SIL2/3 Loop-Powered Digital Relay Output

The Loop-Powered Digital Relay Output D5244 is a loop powered digital output module enabling a Safe Area loop voltage signal, to control a device in Hazardous Area, providing 2 port isolation (input/output). Outputs are galvanically isolated. Typical applications include switching of Hazardous Area circuits, changing of polarities and sounder tones, calibrating of strain gauge bridges, resetting of field devices, testing of fire detectors. Each output channel provides a SPDT relay, with two contacts defined NO (Normally Open) and NC (Normally Close) when the output relay is de-energized. Considering each channel NE (Normally Energized), the output relay is energized,so that NO contact is closed (useful for NE loads or Hazardous Area circuits) and NC contact is open (useful for ND loads or Hazardous Area circuits). The safe state is reached when the channel and the output relay are de-energized, so that NO contact is open (de-energizing loads or Hazardous Area circuits) and NC contact is closed (energizing loads or Hazardous Area circuits).

FEATURES

- SIL 2 / SC 3
- Output to Zone 0
- Installation in Zone 2
- 2 fully independent channels
- Voltage level input
- Two SPDT Relay Output Signals
- Two port isolation, Input/Output/Supply
- High Reliability, SMD components
- High Density, two channels per unit

ORDERING INFORMATION

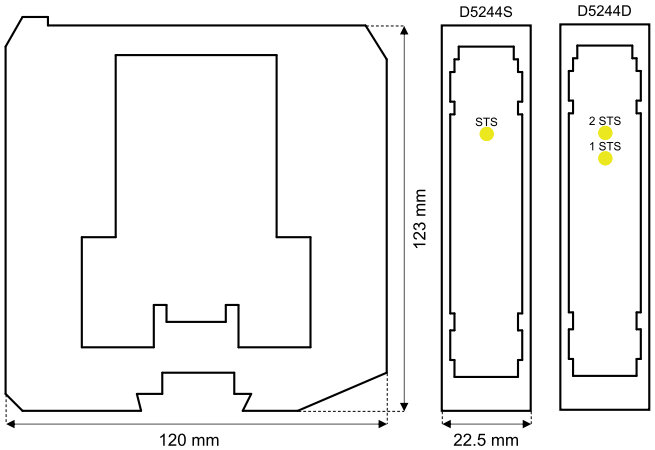
Ordering codes

D5244S: 1 channel
D5244D: 2 channels

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 20 mA/channel @ 24 Vdc with relay energized, typical.
Power dissipation: 0.4 W/channel @ 24 Vdc with loop voltage and relays energized, typical.
Voltage range: 0 V ≤ OFF ≤ 5 V, 18 V ≤ ON ≤ 30 V.

Output

Voltage free SPDT relay contact.
Contact material: AgNi90/10.
Contact rating: 40 Vdc, 2 A for use in Intrinsic Safety applications, 2 A 250 Vac 500 VA, 2 A 250 Vdc 80 W (resistive load) for non Intrinsic Safety applications.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 15 * 10^6 / 10 * 10^4 operations, typical.
Operate / release time: 50 ms, typical.

Isolation

I.S. Out/In 1.5 kV; I.S. Out/I.S. Out 1.5 kV; In/In 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 0 V, Io = 0 mA, Po = 0 mW at terminals 13-14-15/16, 17-18-19/20 (Uo, Io, Po equal to the connected Intrinsic Safety circuit).
Ui = 40 V, Ii = 2 A, Ci = 0 nF, Li = 0 nH at term. 13-14-15/16, 17-18-19/20.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 175 g (D5244D), 165 g (D5244S).
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

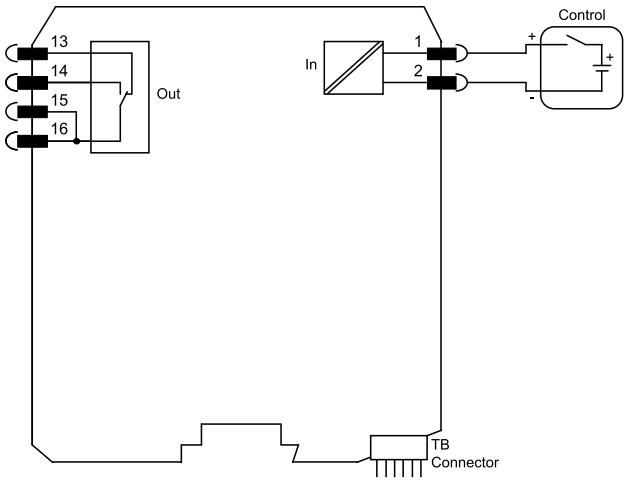
Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

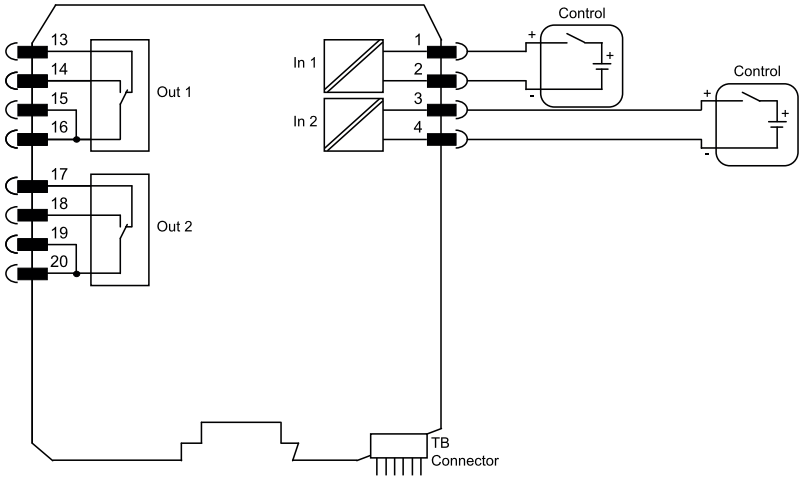
Additional installation diagrams may be found in Instruction Manual.

Hazardous Area ***Safe Area/Zone 2***

D5244S



D5244D



TEMPERATURE

D5072

I.S. SIL2 Multifunction Temperature Converter

The Multifunction Temperature Converter D5072 accepts a low level dc signal from millivolt, thermocouple or 2-3-4 wire resistance/RTD or transmitting potentiometer sensor, located in Hazardous Area, and converts, with isolation, the signal to drive a Safe Area load, suitable for applications requiring SIL 2 level in safety related systems for high risk industries. Output signal can be direct or reverse. Modbus RTU RS-485 output is available on Bus connector. Cold junction compensation can be programmed as Internal: provided by an internal temperature sensor; Fixed: to a user-customizable temperature value; Remote: (only D5072D) connecting compensation RTD to one of the two ch. For D5072D module: duplicator function provides two independent outputs from one single input. Output function can be configured as: Adder, subtractor, low/high selector. Modules are provided with alarm function, which is available via photoMOS output.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- mV, TC, 2/3/4wire res./RTD or potentiometer input
- Duplication/inversion/scaling/custom output
- Selectable CJC: internal PT1000, external RTD or fixed
- Fastest integration time: 50 ms
- Burnout/internal/cjc/in sensor fault monitor
- Alarm output with user-settable trip points
- Modbus RTU RS-485 for monitor & configuration
- Fully programmable operating parameters
- High Accuracy, µP controlled A/D converter
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

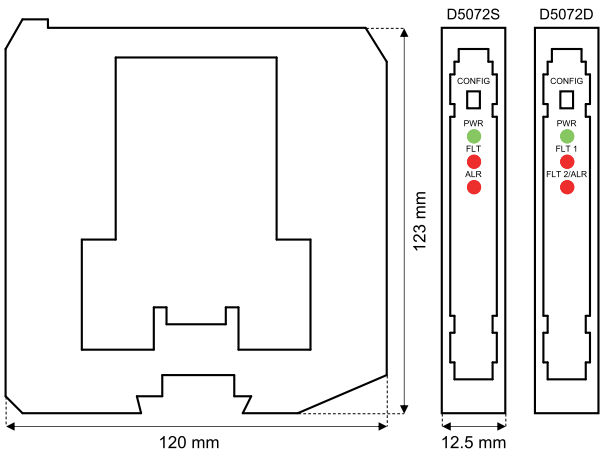
Ordering codes

D5072S: 1 channel
D5072D: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 50 mA (D5072D), 42 mA (D5072S), @ 24 Vdc with 20 mA out, typical.
Power dissipation: 1.0 W (D5072D), 0.9 W (D5072S), @ 24 Vdc with 20 mA out, typical.

Input

Millivolt, thermocouple, 2-3-4 wire RTD or 3 wire transmitting potentiometer. Refer to Instruction Manual for more details.
Integration time: from 50 ms to 500 ms.
Input range: ±500 mV (TC/mV), 0-4 kΩ (RTD/res), up to 10 kΩ (pot).
Thermocouple reference junction compensation: programmable: internal Pt1000, fixed, external, or remote.

Output

Fully customizable 0/4 to 20 mA, on max. 300 Ω load source mode, current limited @ 24 mA. Refer to Instruction Manual for more details.
Transfer characteristic: linear, direct or reverse on all input sensors.

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Performance

Ref. Conditions: 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature, slow integration mode, 3/4 wires configuration for RTD.
Input:
Calibration & linearity accuracy: refer to Instruction Manual.
Temp. influence: refer to Instruction Manual.
Ref. junction compensation accuracy: ≤ ± 1 °C.
Out:
Calibration accuracy: ≤ ± 10 µA.
Linearity error: ≤ ± 10 µA.
Temp. influence: ≤ ± 2 µA/°C.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
D5072S: Uo = 7.2 V, Io = 23 mA, Po = 40 mW, Ui = 12.8 V, Ci = 0 nF, Li = 0 nH at terminals 7-8-9-10.
D5072D: Uo = 7.2 V, Io = 16 mA, Po = 27 mW, Ui = 12.8 V, Ci = 0 nF, Li = 0 nH at terminals 7-8-9, 10-11-12.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

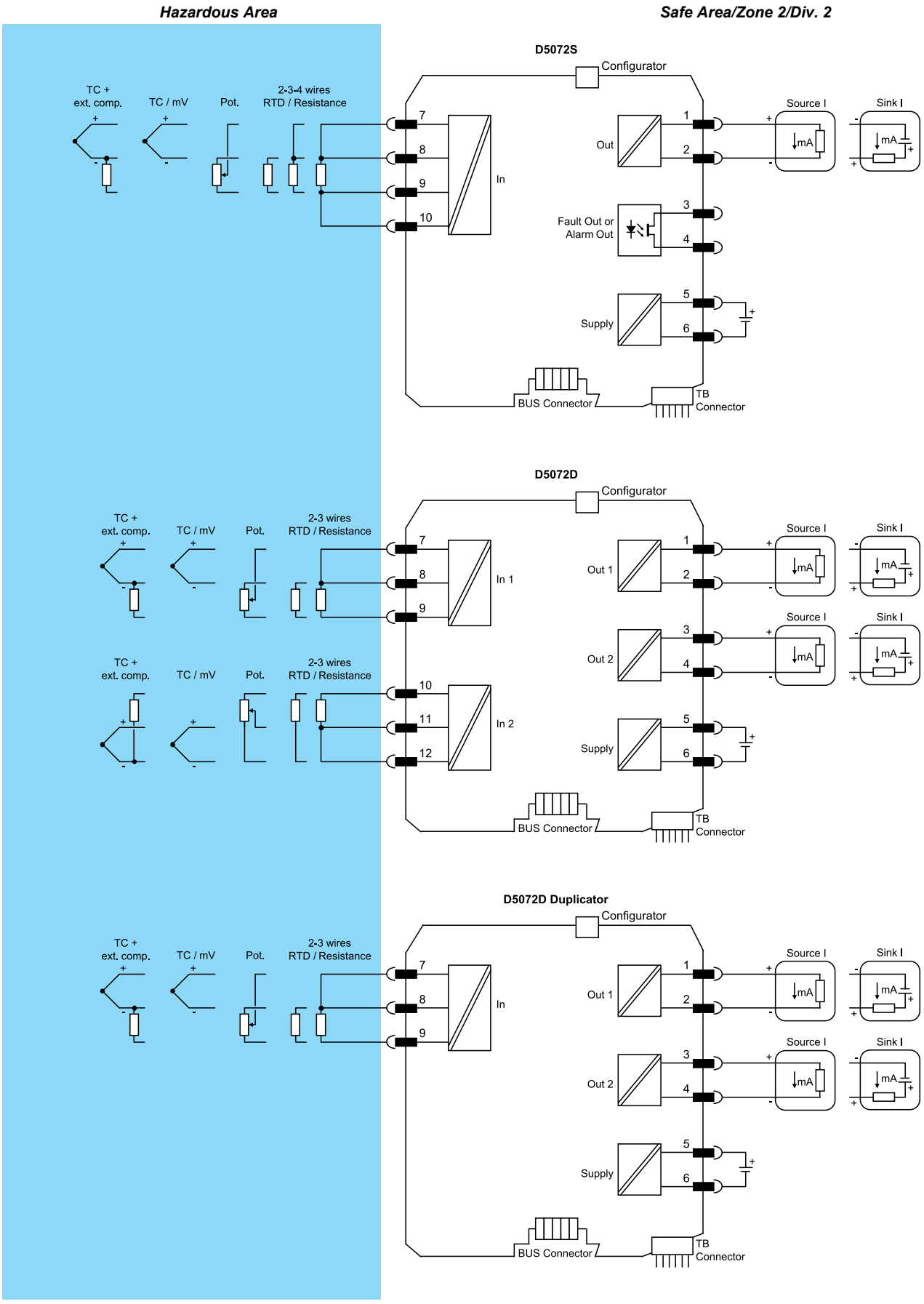
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 135 g (D5072D), 130 g (D5072S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5072-087

I.S. SIL2 Resistance Repeater

The Resistance Repeater D5072-087 accepts a resistance/RTD or transmitting potentiometer sensor, located in Hazardous Area, and repeats the resistance, with isolation, to Safe Area, suitable for applications requiring SIL 2 level in safety related systems for high risk industries.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 2/3/4wire res./RTD or potentiometer input
- Burnout Fault detection
- Fully programmable operating parameters
- High Accuracy
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

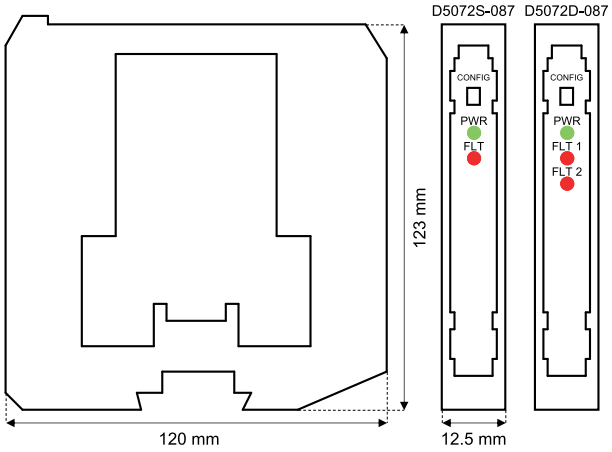
Ordering codes

D5072S-087: 1 channel
D5072D-087: 2 channels

Accessories

Bus Connector JDFT049 (mandatory for D5072D-087, optional for D5072S-087), Bus Mounting Kit OPT5096 (mandatory for D5072D-087, optional for D5072S-087).
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 35 mA (D5072S-087), 37 mA (D5072D-087), @ 24 Vdc with 1 mA exitation current, typical.
Power dissipation: 0.85 W (D5072S-087), 0.9 W (D5072D-087), @ 24 Vdc with 1 mA excitation current, typical.

Input

2-3-4 wire (4 wire only for D5072S-087) Resistance or 2 transmitting pot.
Integration time: from 50 ms to 500 ms.
Input range: 0 to 4 kΩ.
Measuring RTD current: ≤ 0.15 mA.

Output

2-3-4 wire (4 wire only for D5072S-087) resistance.
Transfer characteristic: linear, scaled or custom.
Response time: 10 to 90 % step: ≤ 10.0 ms (slow), ≤ 1.2 ms (fast).
Output range: 0 to 400 Ω.
Excitation current: 0.1 to 10 mA.

Fault

Burnout / Internal fault. Output reflects fault condition via highscale (450 Ω) value forcing. Fault condition is also signaled via BUS and red LED on front panel.

Performance

Ref. Conditions: 24 V supply, 23 ± 1 °C ambient temperature, slow integration mode, 4 wires (for D5072S-087) or 3 wires (for D5072D-087) configuration for RTD, input/output range 10 to 400 Ω.
Input to out:
Calibration & linearity accuracy: ≤ 200 mΩ typical (Excitation Current ≥ 1 mA); ≤ 300 mΩ typical (0.5 mA ≤ Excitation Current < 1 mA).
Temp. influence: ± 20 mΩ/°C, typical (Excitation Current ≥ 1 mA).

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
D5072S-087: Uo = 7.2 V, Io = 23 mA, Po = 40 mW, Ui = 12.8 V, Ci = 0 nF, Li = 0 nH at terminals 7-8-9-10.
D5072D-087: Uo = 7.2 V, Io = 16 mA, Po = 27 mW, Ui = 12.8 V, Ci = 0 nF, Li = 0 nH at terminals 7-8-9, 10-11-12.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

DIN-Rail 35 mm, with or without Power Bus.
Weight: about 135 g (D5072D-087), 130 g (D5072S-087).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

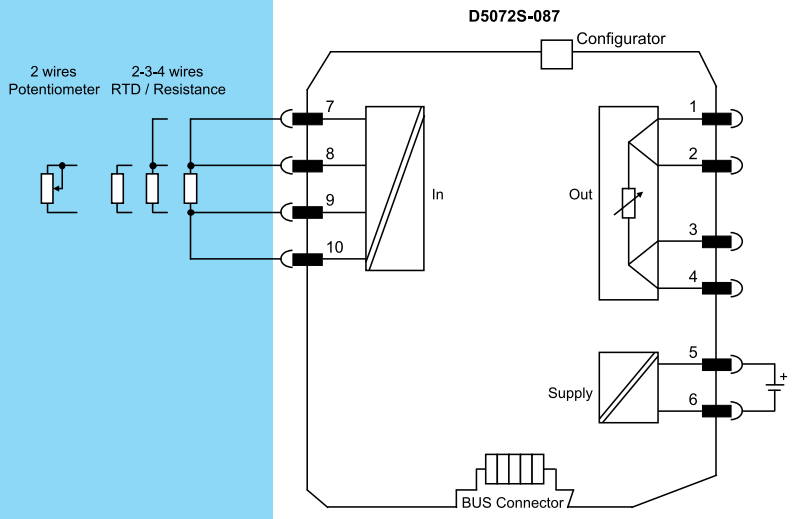
FSM SIL 3

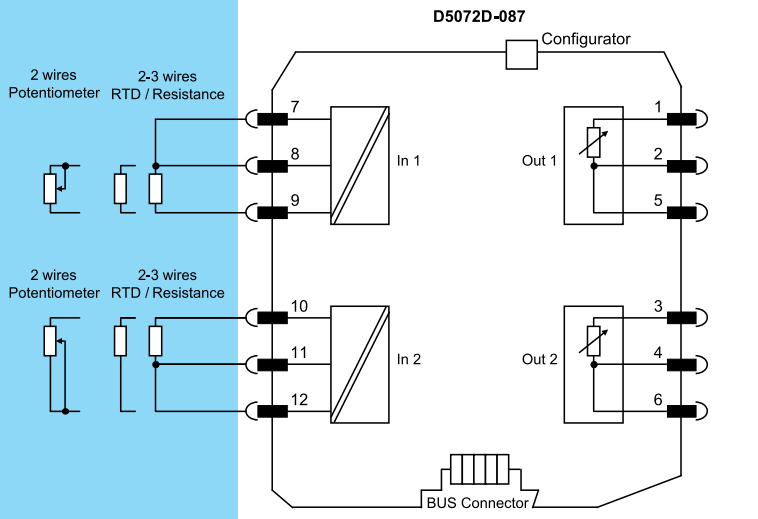
Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

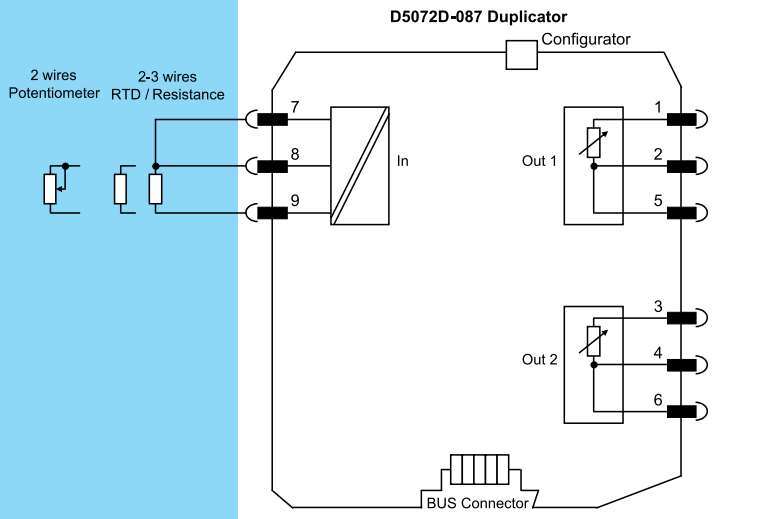
FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.

Hazardous Area ***Safe Area/Zone 2/Div. 2***







Functional Safety Management Certification:
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D5072-096

I.S. SIL2 Thermocouple/mV Repeater

The Thermocouple/mV Repeater D5072-096 accepts a low level dc signal from millivolt or thermocouple sensor, located in Hazardous Area, and repeats, with isolation, the signal to Safe Area, suitable for applications requiring SIL 2 level in safety related systems for high risk industries. For D5072D-096 module: duplicator function provides two independent outputs from one single input.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- mV or thermocouple input
- Output duplication
- Fully programmable operating parameters
- High Accuracy, µP controlled A/D converter
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

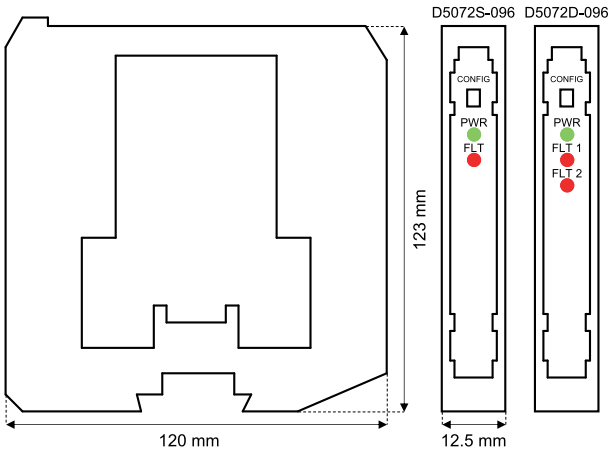
Ordering codes

D5072S-096: 1 channel
D5072D-096: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 35 mA (D5072D-096), 30 mA (D5072S-096), @ 24 Vdc, typical.
Power dissipation: 0.85 W (D5072D-096), 0.6 W (D5072S-096), @ 24 Vdc, typical.

Input

Millivolt or any type of thermocouple within Input Range.
Integration time: 75 ms (fast), 375 ms (slow), user selectable.
Input range: -10 to +100 mV.
Thermocouple burnout current: ≤ 50 µA.

Output

Millivolt.
Transfer characteristic: linear.
Response time: ≤ 20 ms (10 to 90 % step).
Output range: -10 to +100 mV.

Fault

Output reflects burnout/internal fault condition via highscale (+110 mV) value forcing. Fault condition is also signaled via BUS and red LED on front panel.

Performance

Ref. Conditions: 24 V supply, 23 ± 1 °C ambient temperature, slow integration mode.
Input:
Calibration & linearity accuracy: ≤ ± 10 µV.
Temp. influence: ≤ ± 3 µV/°C, typical.
Output:
Calibration & linearity accuracy: ≤ ± 10 µV.
Temp. influence: ≤ ± 3 µV/°C, typical.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

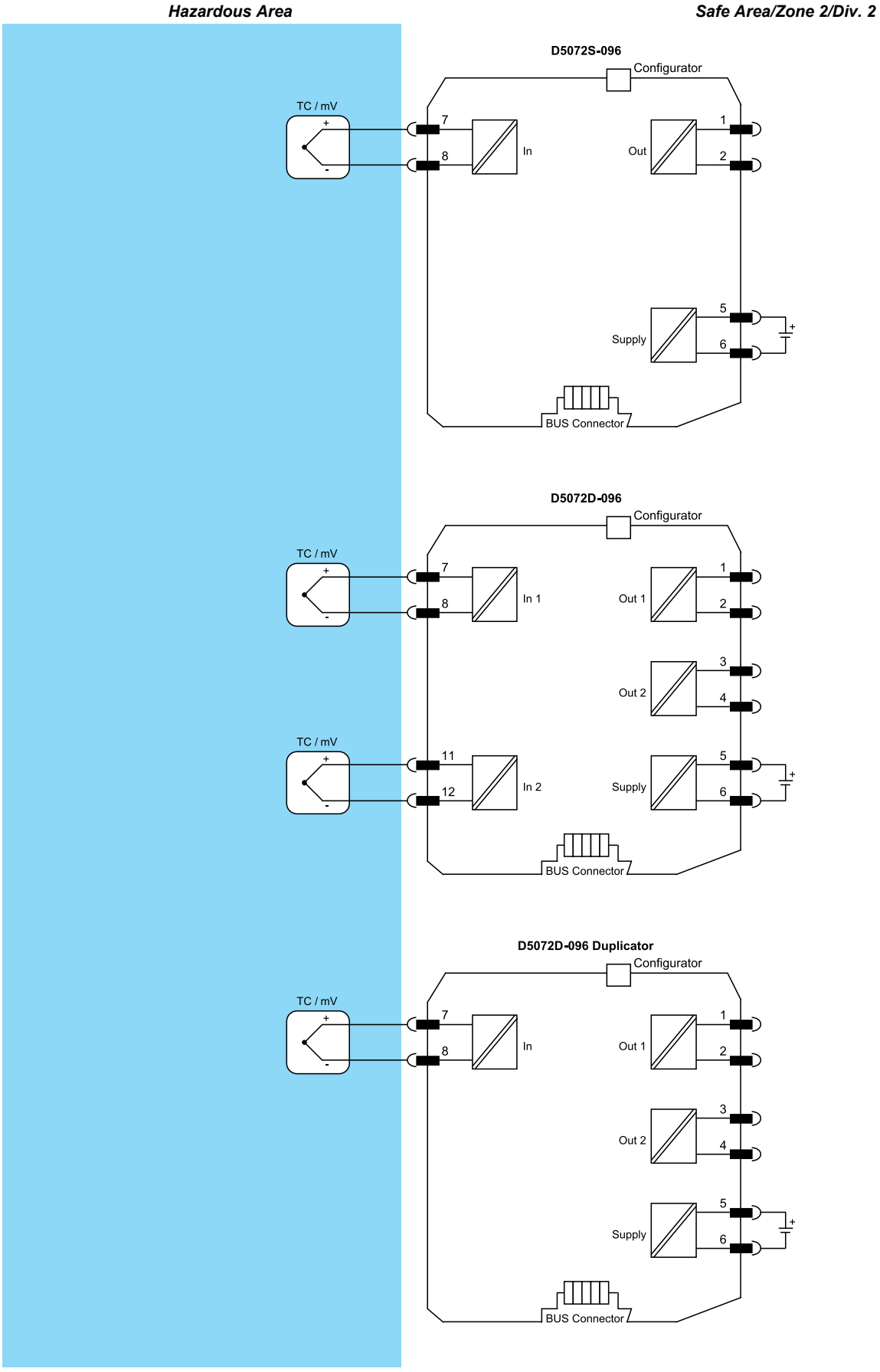
Associated apparatus and non-sparking electrical equipment.
D5072S-096: Uo = 7.2 V, Io = 23 mA, Po = 40 mW, Ui = 12.8 V, Ci = 0 nF, Li = 0 nH at terminals 7-8.
D5072D-096: Uo = 7.2 V, Io = 16 mA, Po = 27 mW, Ui = 12.8 V, Ci = 0 nF, Li = 0 nH at terminals 7-8, 11-12.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

DIN-Rail 35 mm, with or without Power Bus.
Weight: about 135 g (D5072D-096), 130 g (D5072S-096).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

D5072-099

I.S. SIL2 Sink-Out Temperature Converter

The Sink-Out Temperature Converter D5072-099 accepts a low level dc signal from millivolt, thermocouple or resistance/RTD or transmitting potentiometer sensor, located in Hazardous Area, and converts, with isolation, the signal to drive a Safe Area load, suitable for applications requiring SIL 2 level in safety related systems for high risk industries. Output signal can be direct or reverse. Modbus RTU RS-485 output is available on Bus connector. Cold junction compensation can be programmed as: Automatic: provided by an internal temperature sensor; Fixed: to a user-customizable temperature value; External: making use of an external RTD; Remote: (only D5072D-099) connecting compensation RTD to one of the two channels. For D5072D-099 module: duplicator function provides two independent outputs from one single input. Output function can be configured as: average, subtractor, low/high or redundancy selector. Modules are provided with alarm function, which is available via solid state contact output.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- mV, TC, 2/3/4wire res./RTD or potentiometer input
- Duplication/inversion/scaling/custom output
- Selectable CJC: internal PT1000, external RTD or fixed
- Fastest integration time: 50 ms
- Burnout/internal/cjc/in sensor fault monitor
- Alarm output with user-settable trip points
- Modbus RTU RS-485 for monitor & configuration
- Fully programmable operating parameters
- High Accuracy, µP controlled A/D converter
- Three port isolation, Input/Output/Supply
- High Density, two channels per unit

ORDERING INFORMATION

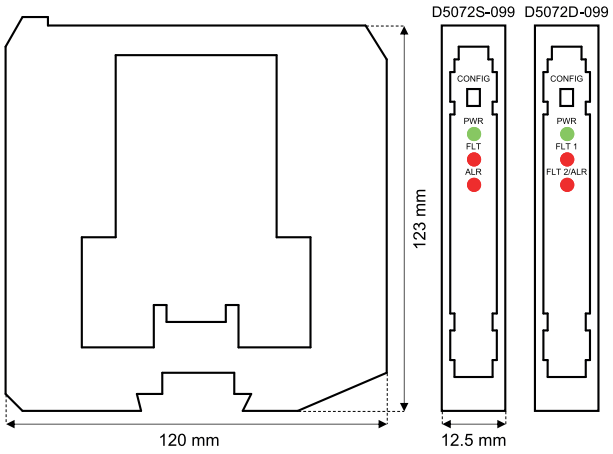
Ordering codes

D5072S-099: 1 channel
D5072D-099: 2 channels

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 50 mA (D5072D-099), 42 mA (D5072S-099), @ 24 Vdc with 20 mA output, typical.
Power dissipation: 1.0 W (D5072D-099), 0.9 W (D5072S-099), @ 24 Vdc with 20 mA output, typical.

Input

Millivolt, thermocouple, 2-3-4 wire RTD or 3 wire transmitting potentiometer. Refer to Instruction Manual for more details.
Integration time: from 50 ms to 500 ms.
Input range: ±500 mV (TC/mV), 0-4 kΩ (RTD/res), up to 10 kΩ (pot).
Thermocouple reference junction compensation: programmable: internal Pt1000, fixed, external, or remote.

Output

Fully customizable 0/4 to 20 mA (sink mode), current limited @ 24 mA. External voltage generator range is V min. 3.5V @ 0Ω load and V max. 30V. Refer to Instruction Manual for more details.

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Performance

Ref. Conditions: 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature, slow integration mode, 3/4-wires RTD.
Input:
Calibration & linearity accuracy: refer to Instruction Manual.
Temp. influence: refer to Instruction Manual.
Ref. junction compensation accuracy: ≤ ± 1 °C.
Out:
Calibration accuracy: ≤ ± 10 µA.
Linearity accuracy: ≤ ± 10 µA.
Temp. influence: ≤ ± 2 µA/°C.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
D5072S-099: Uo = 7.2 V, Io = 23 mA, Po = 40 mW, Ui = 12.8 V, Ci = 0 nF, Li = 0 nH at terminals 7-8-9-10.
D5072D-099: Uo = 7.2 V, Io = 16 mA, Po = 27 mW, Ui = 12.8 V, Ci = 0 nF, Li = 0 nH at terminals 7-8-9, 10-11-12.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

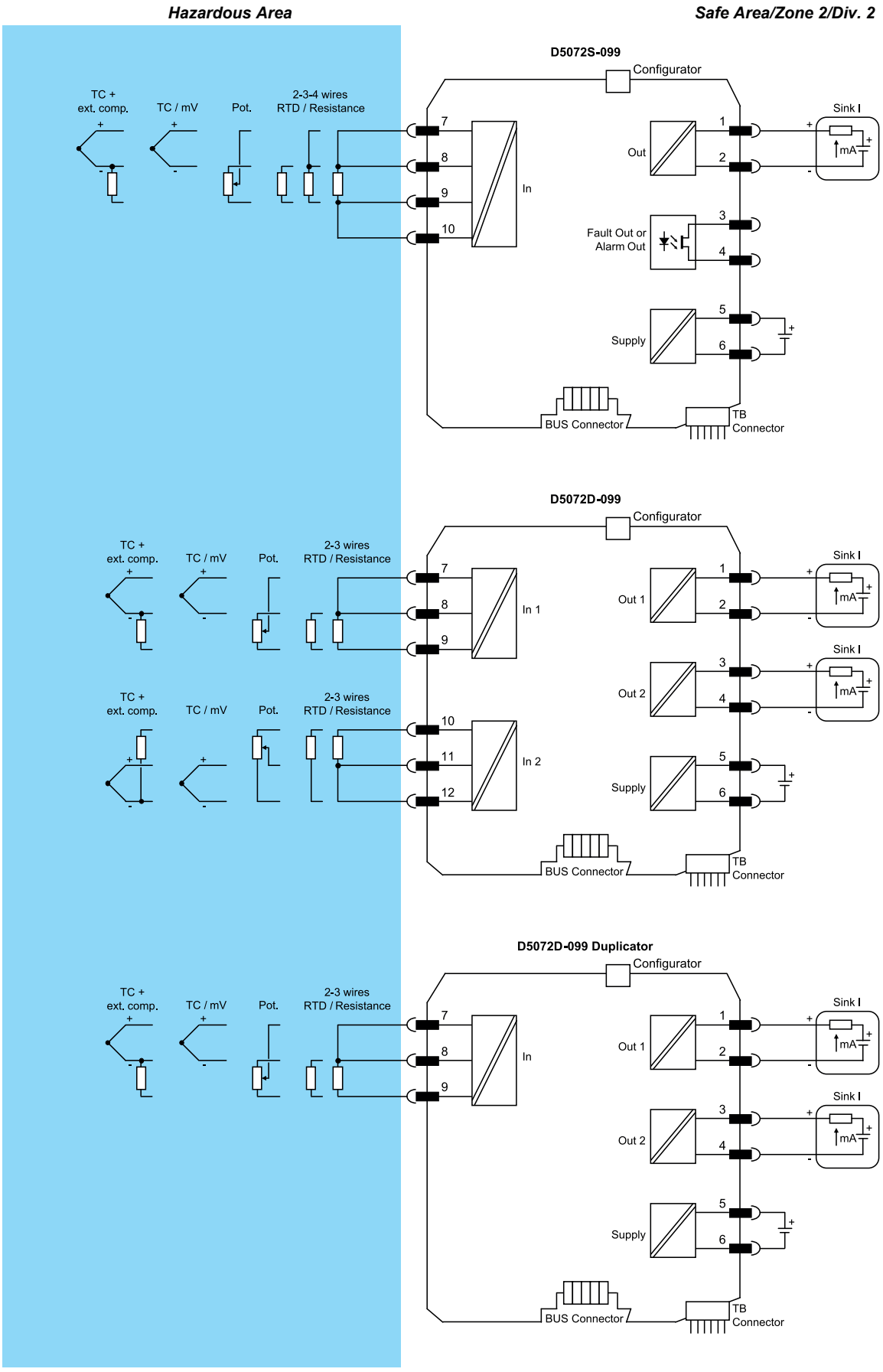
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 135 g (D5072D-099), 130 g (D5072S-099).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5273

I.S. SIL2 Temperature Converter & Trip Amplifier

The Temperature Converter & Trip Amplifier D5273 accepts a low level dc signal from millivolt, thermocouple or 2-3-4 wire RTD or transmitting potentiometer sensors, located in Hazardous Area, and converts, with isolation, the signal to drive a Safe Area load, suitable for applications requiring SIL 2 level in safety related systems for high risk industries. Output signal can be direct or reverse. Modbus RTU RS-485 output is available on Bus connector. Cold junction compensation can be programmed as automatic, using an internal temperature sensor or fixed to a user-customizable temperature value. D5273S offers two independent trip amplifiers via two SPDT output relays.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- mV, TC, 2/3/4wire res./RTD or potentiometer input
- Two independent Trip Amplifiers (SPDT relay contacts)
- Inversion/scaling/custom output
- Selectable CJC: internal PT1000, external RTD or fixed
- Fastest integration time: 50 ms
- Burnout/internal/cjc/in sensor fault monitor
- Alarm output with user-settable trip points
- Modbus RTU RS-485 for monitor & configuration
- Fully programmable operating parameters
- High Accuracy, µP controlled A/D converter
- Three port isolation, Input/Output/Supply

ORDERING INFORMATION

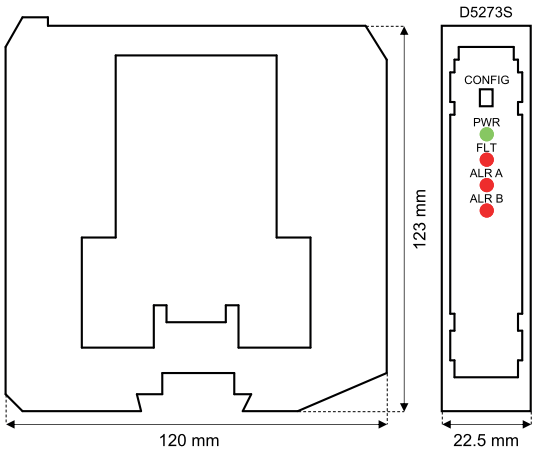
Ordering codes

D5273S: 1 channel

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 72 mA @ 24 Vdc with 20 mA output and relays energized, typical.
Power dissipation: 1.7 W @ 24 Vdc with 20 mA output and relays energized, typical.

Input

Millivolt, thermocouple, 2-3-4 wire RTD or 3 wire transmitting potentiometer. Refer to Instruction Manual for more details.
Integration time: from 50 ms to 500 ms.
Input range: -500 to +500 mV for TC/mV, 0-4 kΩ for resistance.

Output

0/4 to 20 mA, on max. 300 Ω load, current limited @ 24 mA.
Transfer characteristic: linear, direct or reverse on all input sensors.

Alarm

Trip point range: within rated limits of input sensor.
Output: two voltage free SPDT relay contacts.
Contact rating: 4 A 250 Vac 1000 VA, 4 A 250 Vdc 120 W (resistive load).

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Performance

Ref. Conditions: 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature, slow integration speed, 4 wires configuration for RTD.
Input:
Calibration & linearity accuracy: refer to Instruction Manual.
Temp. influence: ≤ ± 2 µV on mV/Tc, ± 20 mΩ on RTD (≤ 300 Ω @ 0°C) or ± 200 mΩ on RTD (> 300 Ω @ 0°C), ± 0.02 % on pot. for a 1 °C change.
Out:
Calibration accuracy: ≤ ± 10 µA.
Linearity accuracy: ≤ ± 10 µA.
Temp. influence: ≤ ± 2 µA/°C.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; I.S. In/Alarms 2.5 kV; Out/Supply 500V; Out/Alarms 1.5 kV; Alarms/Supply 1.5 kV; Alarms/Alarms 1.5 kV.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 7.2 V, Io = 23 mA, Po = 40 mW at terminals 13-14-15-16.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

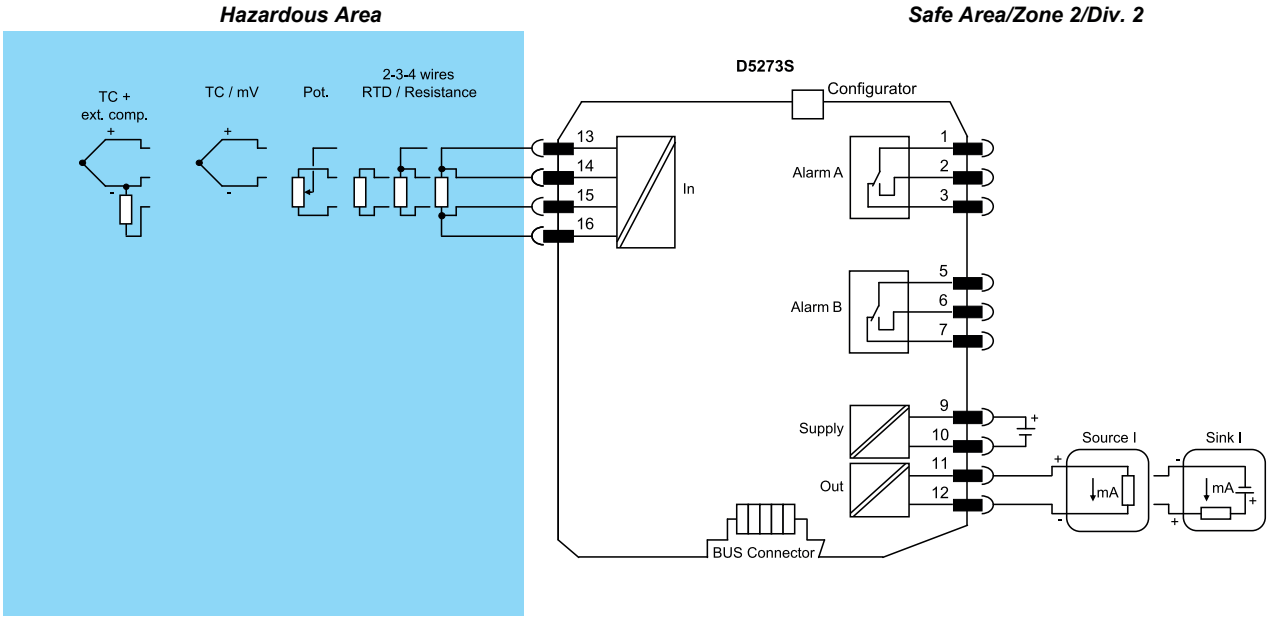
DIN-Rail 35 mm, with or without Power Bus.
Weight: about 195 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



OTHERS

D5062

I.S. SIL2 Vibration Transducer Interface

The Vibration Transducer Interface D5062S is a high integrity analog input interface suitable for applications requiring SIL 2 level in safety related systems for high risk industries. It provides a fully floating dc supply for energizing vibration transducers, accelerometers or 2-3 wires sensors located in Hazardous Area, and repeats the sensor input voltage in a totally isolated circuit located in Safe Area to drive vibration monitors or analyzers for rotating machinery control and supervision purposes.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0/Div. 1
- Installation in Zone 2/Div. 2
- 0 to –20 V Input/Output Signal
- Wide band signal transfer
- Input and Output short circuit proof
- In-field programmability by DIP Switch
- High Accuracy
- Three port isolation, Input/Output/Supply

ORDERING INFORMATION

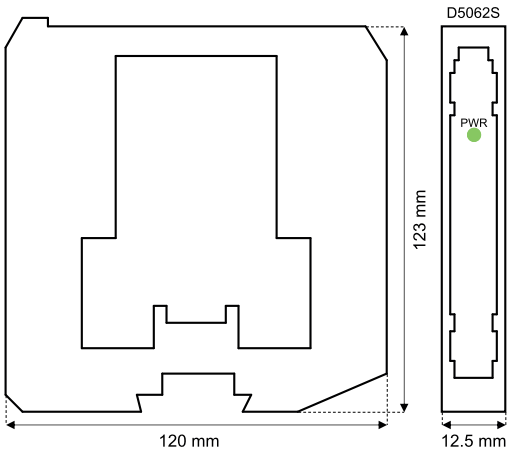
Ordering codes

D5062S: 1 channel

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 90 mA @ 24 Vdc with 20 mA transducer consumption and 2 mA output load, typical.
Power dissipation: 2.0 W @ 24 Vdc with 20 mA transducer consumption and 2 mA output load, typical.

Input

0 V to -20 V (10 kΩ impedance at terminals 7-8 or 8-9).
3 wires sensor supply voltage: more than -22 V @ 0 mA supply, more than -17 V @ 15 mA supply (current limited @ ≈ 23 mA).
2 wires sensor supply voltage: more than -17 V with constant current supply.
2 wires sensor supply current: selectable @ 4 mA, 6 mA or 10 mA via internal DIP–Switch.

Output

0 to -20 V on 10 kΩ load, with 10 Ω output resistance.
Response time: ≤ 10 µs (10 to 90 % step change).
Frequency response: DC to 20 kHz within 1 dB maximum.

Performance

Ref. Conditions: 24 V supply, 10 kΩ load, 23 ± 1 °C ambient temperature.
Calibration accuracy: ≤ ± 0.1 % FSR.
Linearity accuracy: ≤ ± 0.05 % FSR.
Temp. influence: ≤ ± 0.005 % on zero/span for a 1 °C change.

Isolation

I.S. In/Out 1.5 kV; I.S. In/Supply 1.5 kV; Out/Supply 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 27 V, Io = 90 mA, Po = 576 mW at terminals 7-8-9-10.
Ui = 30 V, Ci = 0 nF, Li = 0 nH at terminals 7-8-9.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

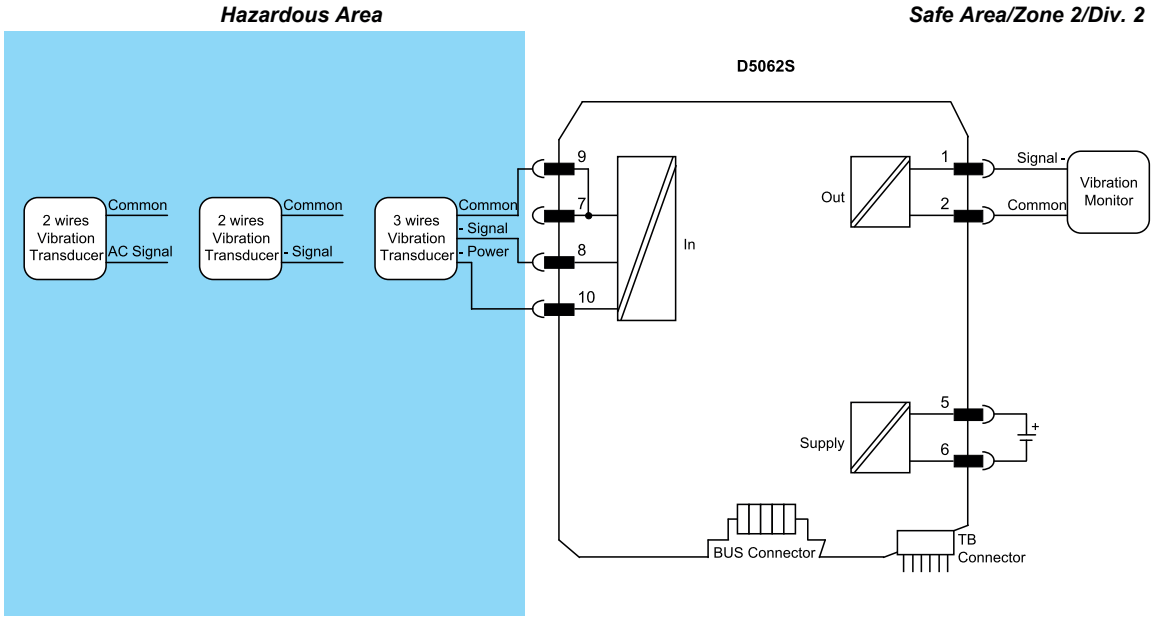
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 125 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5263

I.S. SIL2 Load Cell/Strain Gauge Bridge Repeater

The Load Cell/Strain Gauge Bridge Repeater D5263 module is a unit suitable for applications requiring SIL 2 level in safety related systems for high risk industries. The unit acts as a transparent galvanic isolated interface installed between a weighing indicator in Safe Area and a load cell (or group of load cells) in Hazardous Area; it appears at the terminals of the indicator as a single load cell equivalent to the one in the field. It provides a fully floating power supply voltage with remote sensing capability to load cell located in Hazardous Area and repeats, while isolating, the mV signal output to drive a load in Safe Area depending on the host system reference voltage. Up to four 350 Ω load cells, or five 450 Ω load cells, or ten 1000 Ω load cells can be connected in parallel. The Voltage reference (Safe Area side) is set as an external supply.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0
- Installation in Zone 2
- Strain Gauge Bridge Transparent Repeater
- Up to four 350 Ω load cells in parallel
- High Accuracy
- Three port isolation, Input/Output/Supply

ORDERING INFORMATION

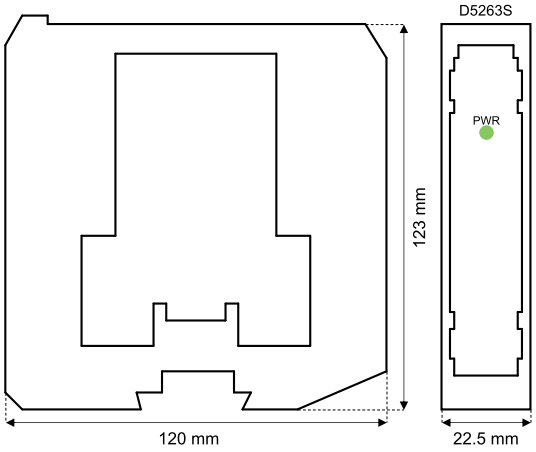
Ordering codes

D5263S: 1 channel

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 75 mA @ 24 Vdc with four 350 Ω load cells connected, typical.
Power dissipation: 1.8 W @ 24 Vdc with four 350 Ω load cells connected, typical.

Input

Up to four 350 Ω load cells in parallel or up to five 450 Ω load cells in parallel or up to ten 1000 Ω load cells in parallel.
Integration time: 12.5 ms.
Bridge supply voltage: 4.0 Vdc nominal.
Bridge output signal: 1 to 4 mV/V.

Output

Same as the input signal.
Output impedance: 500 Ω, typical.
Excitation voltage: externally applied between 4 V and 15 V.
Transfer characteristic: linear.
Response time: ≤ 20 ms (10 to 90 % step change).

Performance

Ref. Conditions: 24 V supply, 23 ± 1 °C ambient temperature.
Calibration accuracy: ≤ ± 0.003 % input FSR, after system calibration.
Linearity accuracy: ≤ ± 0.002 % input FSR.
Temp. influence: ≤ ± 0.002 % input FSR for a 1 °C change.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Supply 2.5 kV; Out/Supply 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety Description

Associated apparatus and non-sparking electrical equipment.
Uo = 7.2 V, Io = 177 mA, Po = 471 mW at terminals 13-14-15-16-17-18.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70°C.

Mounting

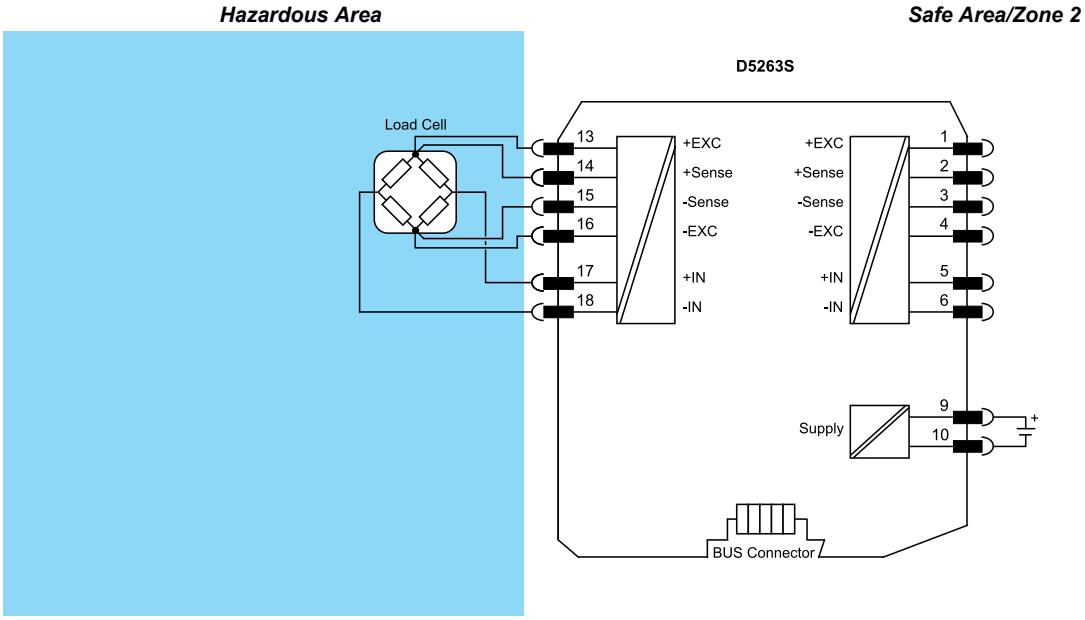
DIN-Rail 35 mm, with or without Power Bus.
Weight: about 165 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
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D5264

I.S. SIL2 Load Cell/Strain Gauge Bridge Converter

The Load Cell/Strain Gauge Bridge Converter D5264 module is a unit suitable for applications requiring SIL 2 level in safety related systems for high risk industries. The unit acts as a galvanically isolated interface installed between a PLC/DCS in Safe Area and a load cell (or a group of load cells) in Hazardous Area. Up to four 350 Ω load cells, or five 450 Ω load cells, or ten 1000 Ω load cells can be connected in parallel. It provides a fully floating power supply voltage with remote sensing capabilities to load cells located in Hazardous Area and converts the mV signal from the load cell into a 0/4-20 mA, providing both current source and sink capabilities. The module is also provided with PhotoMOS alarm output. A modbus output is also provided to interface the PLC/DCS using digital communication.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0
- Installation in Zone 2
- Strain Gauge Bridge Isolated Converter
- Up to four 350 Ω load cells in parallel
- 0/4-20 mA sink/source output current
- Modbus RTU RS-485 for monitor & configuration
- Field Automatic Calibration
- Fully programmable operating parameters
- High Accuracy, µP controlled A/D converter
- Three port isolation, Input/Output/Supply

ORDERING INFORMATION

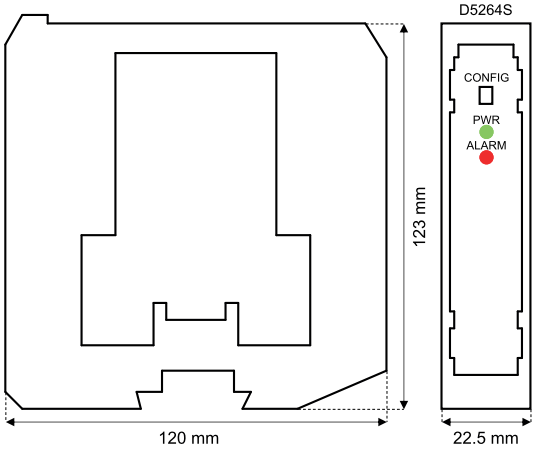
Ordering codes

D5264S: 1 channel

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 90 mA @ 24 Vdc with four 350 Ω load cells connected and 20 mA output, typical.
Power dissipation: 2.1 W @ 24 Vdc with four 350 Ω load cells connected and 20 mA output, typical.

Input

Up to four 350 Ω load cells (parallel connection). up to five 450 Ω load cells (parallel connection). up to ten 1000 Ω load cells (parallel connection).
Integration time: 100 ms (slow) or 12.5 ms (fast).
Bridge supply voltage: 4.0 Vdc nominal.
Bridge output signal: 1 to 4 mV/V.

Output

0/4 to 20 mA, on max. 400 Ω load, current limited @ 24 mA.
Response time: ≤ 20 ms (10 to 90 % step).

Alarm

Trip point range: within rated limits of the input sensor.
ON-OFF delay time: 0 to 1000 s, 100 ms step.
Hysteresis: within rated limits of input sensor.
Output: voltage free SPST photoMOS: 100 mA, 60 Vdc (≤ 1 V drop).

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Performance

Ref. Conditions: 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature.
Input:
Calibration accuracy: ≤ ± 0.05 % FSR.
Linearity accuracy: ≤ ± 0.02 % FSR.
Temp. influence: ≤ ± 0.002 % FSR for a 1 °C change.
Out:
Calibration accuracy: ≤ ± 0.05 % FS.
Linearity accuracy: ≤ ± 0.05 % FS.
Temp. influence: ≤ ± 0.01 % FS on zero/span for a 1 °C change.

Isolation

I.S. In/Out 2.5 kV; I.S. In/Modbus Out 2.5 kV; I.S. In/Supply 2.5 kV; Out/Supply 500 V; Modbus Out/Supply 500 V; Out/Modbus Out 500 V; Out/Alarm Out 500 V; Alarm Out/Modbus Out 500 V; Supply/Alarm Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

Associated apparatus and non-sparking electrical equipment.
Uo = 7.2 V, Io = 177 mA, Po = 471 mW at terminals 13-14-15-16-17-18.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70°C.

Mounting

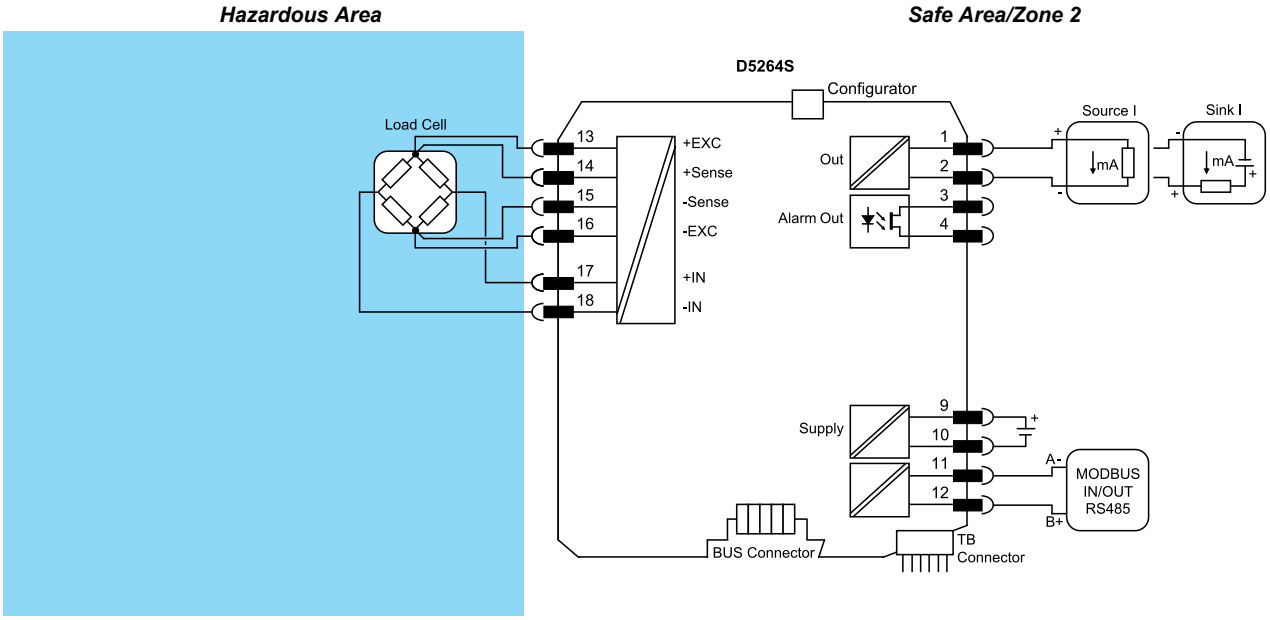
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 160 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



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D5202

SIL3 24 Vdc 4 A Power Distribution with Diagnostics

The D5202 is used to protect the power system by limiting the maximum supply current for a set of D5000 modules connected via Power Bus. This is particularly useful when the source Power supply provides currents that are higher than the ones required from the modules. It is also capable of repeating the common fault signal from the Power Bus via a SPDT relay. For single power supply, 3 LEDs are present to monitor line presence, supply fault (supply voltage out of 25% variation), common bus fault and a replaceable 5x20, 6 A fuse. For redundant power supply, 5 LEDs are present to monitor line presence, supply fault (supply voltage out of 25% variation for each supply source), common bus fault and 2 replaceable 5x20, 6 A fuses. 2 SPDT relay contacts provide remote alarming for the above mentioned failures. In case of fault of one supply source the D5202S exchanges to the working one using a circuit (ideal diodes) with just a few mW dissipation, thus increasing reliability and greatly reducing internal power dissipation.

FEATURES

- SIL 3 / SC 3
- Installation in Zone 2
- Separate single or redundant 24 Vdc supply
- Supply current to approx. 40-50 D5000 modules
- Replaceable fuses
- Very low internal dissipation (ideal diode circuits)

ORDERING INFORMATION

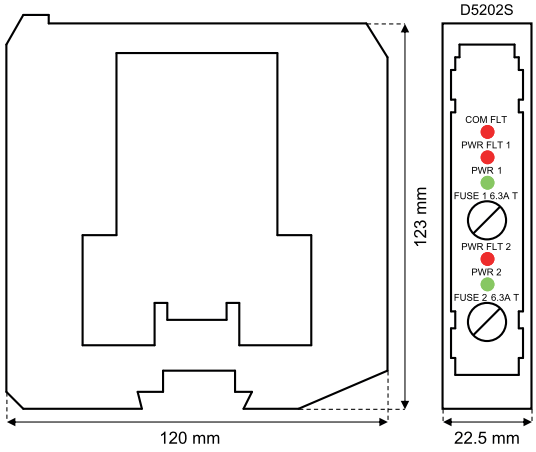
Ordering codes

D5202S: 1 channel

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

From power Inputs 24 Vdc nom (18 to 30 Vdc), reverse polarity protected, double terminal blocks for redundant power supply, with OR ideal diodes to mix supply voltages.
Current consumption: 40 mA @ 24 Vdc with both relays energized, typical.
Power dissipation: 1.0 W @ 24 Vdc with both relays energized, typical.
LEDs: common fault (red), fault supply 1 and 2 (red), power supply 1 and 2 (green).
Protection fuse: 5x20 6.3 A time lag (slow blow).

Fault

Supply 1 or supply 2 is < 18 Vdc (Under Voltage, UV) or > 30 Vdc (Over Voltage, OV).
Preventive - abnormal supply voltage: supply 1 or supply 2 is < 18 Vdc (Under Voltage, UV) or > 30 Vdc (Over Voltage, OV).
Cumulative fault: cumulative fault indication (about presence of short or open field circuit for any module on the Bus).
Fault signaling: two voltage free NE SPDT relay contacts (de-energized in fault condition).
Contact material: Ag Alloy (Cd free).
Contact rating: 4 A 250 Vac 1000 VA, 4 A 250 Vdc 120 W (resistive load).
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 3 * 10^4 operations, typical.
Operate / release time: 8 / 4 ms, typical.

Isolation

Relay contact groups/Inputs 1.5 kV.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Mounting

DIN-Rail 35 mm with Power Bus.
Weight: about 170 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
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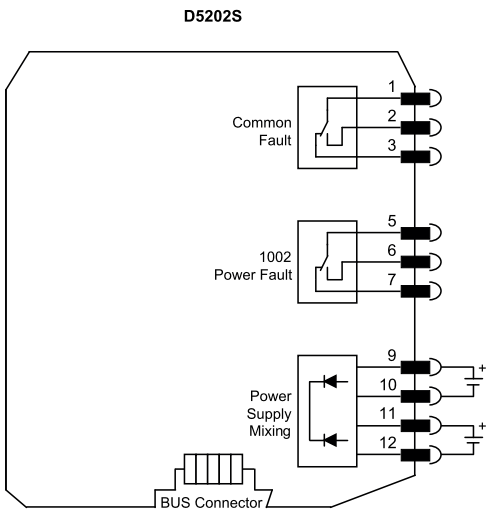
FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.

Field ***Safe Area/Zone 2/Div. 2***



D5203

Diagnostic Module for DIN-Rail

The D5203 is used to repeat the common fault signal from the Power Bus via a SPDT relay.

FEATURES

- Simplified bus fault acquisition

ORDERING INFORMATION

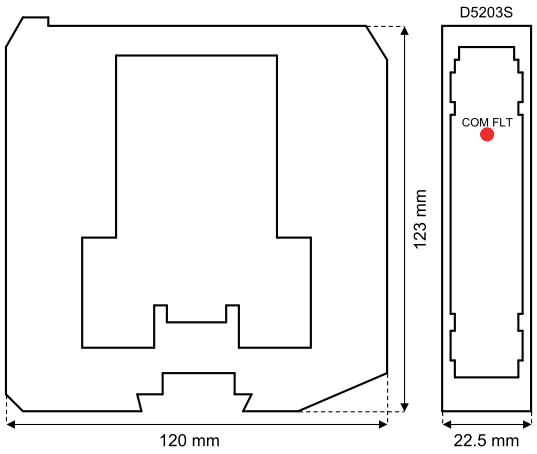
Ordering codes

D5203S: 1 channel

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 10 mA @ 24 Vdc with relay energized, typical.
Power dissipation: 0.25 W @ 24 Vdc with relay energized, typical.
Connection: through Power Bus.
LEDs: common fault (red).

Fault

Cumulative fault: cumulative fault indication (about presence of short or open field circuit for any module on the Bus).
Fault signaling: one voltage free NE SPDT relay contact (de-energized in fault condition).
Contact material: Ag Alloy (Cd free).
Contact rating: 4 A 250 Vac 1000 VA, 4 A 250 Vdc 120 W (resistive load).
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 3 * 10^4 operations, typical.
Operate / release time: 8 / 4 ms, typical.

Isolation

Relay contact groups/Supply 1.5 kV.

Environmental conditions

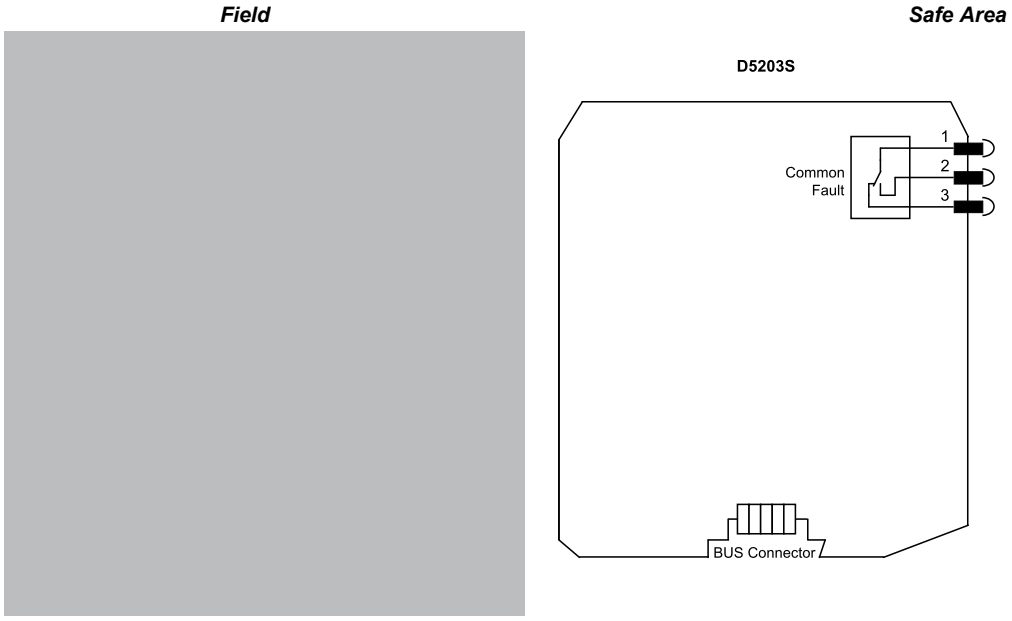
Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Mounting

DIN-Rail 35 mm with Power Bus.
Weight: about 170 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm^2 (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
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Safety Relays
D5000 Series

SAFETY RELAY INPUT

D5093

SIL3 24/220Vdc/Vac Transistor-Out Detector

The 24/220Vdc/Vac Transistor-Out Detector D5093 module is a unit suitable for applications requiring SIL 3 level in safety related systems for high risk industries. Each channel is able to reflect the presence of a 24 to 220 Vac/Vdc input signal to the output by closing an optically coupled NO open-drain transistor (solid-state relay, MOSFET output). The presence of the 24 to 220 Vac/Vdc input signal is also indicated by a yellow LED on the front panel. The input switching voltage levels are selected, according to the applied input signal, by means of an internal dip-switch (overload protected).

FEATURES

- SIL 3 / SC 3
- Installation in Zone 2/Div. 2
- 2 fully independent channels
- Two port isolation, Input/Output
- High Density, two channels per unit

ORDERING INFORMATION

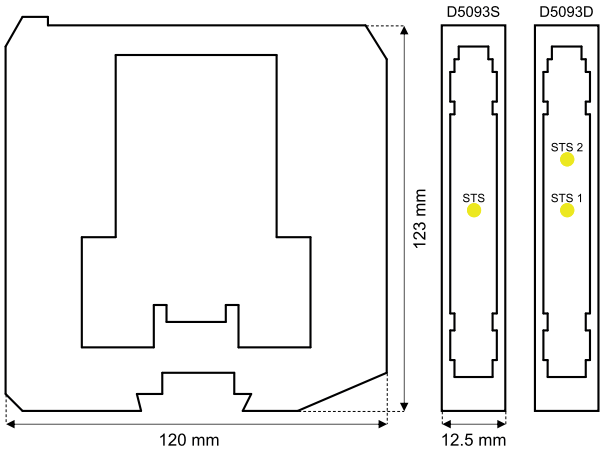
Ordering codes

D5093S: 1 channel
D5093D: 2 channels

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

Loop powered control signal.
Input switching voltage levels:
ON ≥ 21 Vac/Vdc, OFF ≤ 15 Vac/Vdc for 24 Vac/Vdc, typical
ON ≥ 40 Vac/Vdc, OFF ≤ 30 Vac/Vdc for 48 Vac/Vdc, typical
ON ≥ 50 Vac/Vdc, OFF ≤ 35 Vac/Vdc for 60 Vac/Vdc, typical
ON ≥ 100 Vac/Vdc, OFF ≤ 75 Vac/Vdc for 120 Vac/Vdc, typical
ON ≥ 200 Vac/Vdc, OFF ≤ 160 Vac/Vdc for 220 Vac/Vdc, typical
Threshold level selection by means of internal dip-switch (overload protected).
Voltage range: 24 to 220 Vac/Vdc nominal (15 to 250 Vac/Vdc).
Input current protection: 100 mA fuse internally protected.
Current consumption: 4.5 mA/channel @ 250 Vac/Vdc nominal input, typical.
Power dissipation: 1.13 VA or W/channel with 250 Vac or Vdc, typical.

Output

Voltage free SPST optocoupled open-drain transistor (solid-state relay, MOSFET output).
Open-collector/drain rating: 50 mA @ 35 Vdc (≤ 0.5 Vdc voltage drop).
Leakage current: ≤ 10 µA @ 35 Vdc.
Response time: ≤ 120 ms.

Isolation

In/Out 2.5 kV; In/In 1.5 kV; Out /Out 500 V.

Environmental conditions

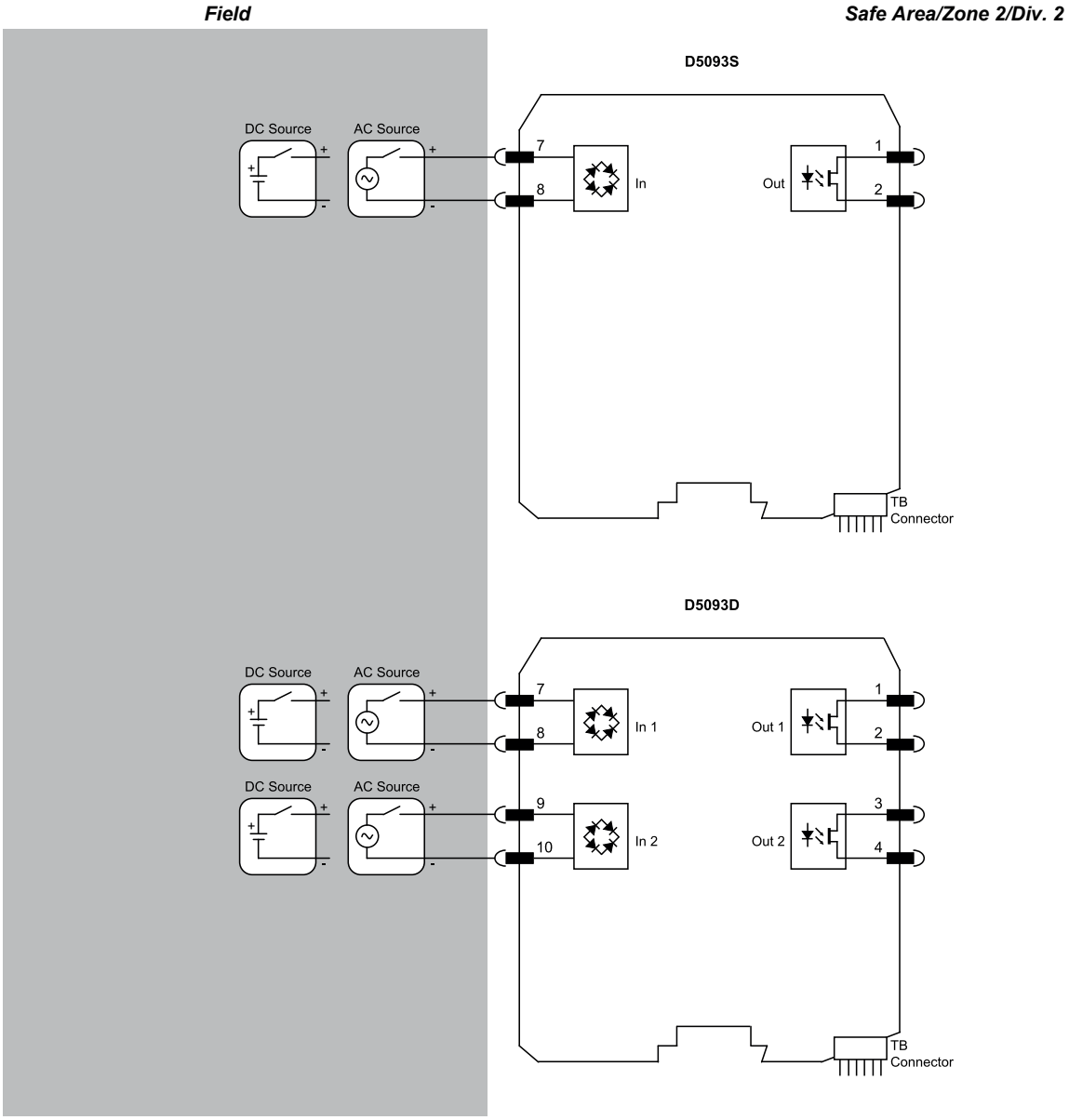
Operating teperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 115 g (D5093D), 105 g (D5093S).
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



SAFETY RELAY OUTPUT

D5090

SIL3 Relay Out Module for 5 A NE Loads

The D5090 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available two NO contacts for Normally Energized (NE) loads, in order to disconnect the load on both supply lines, and a NC contact for service purpose. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering.

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- Installation in Zone 2/Div. 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- Compatible with DCS/PLC pulse testing
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

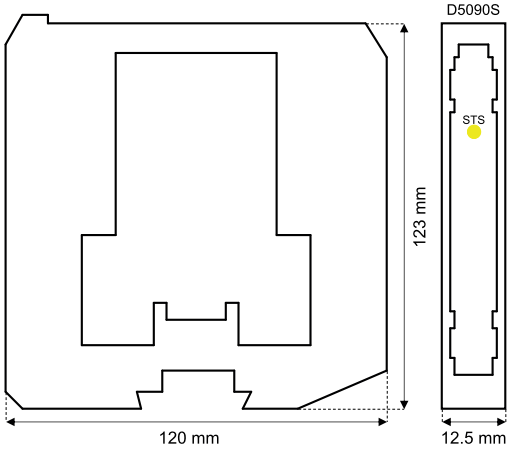
Ordering codes

D5090S: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 45 mA @ 24 Vdc, typical.
Power dissipation: 1.1 W @ 24 Vdc, typical.

Output

1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 7-11 and Service Load Out (NC contact) terminals 9-10; 1 voltage free SPST relay contact identified with output Out 2 (NO contact) terminals 8-12. Terminals 7-11 (Out 1) and 8-12 (Out 2) are open when relay is de-energized, closed in energized relay condition. Service load output (not SIL) at terminals 9-10 is normally close when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: $5 * 10^6$ / $3 * 10^4$ operation, typical.
Operate / release time: 55 / 30 ms, typical.

Isolation

Input / All Outs 2.5 kV; Out 1/Out 2 500V.

Environmental conditions

Operating temperature: temperature limits -40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

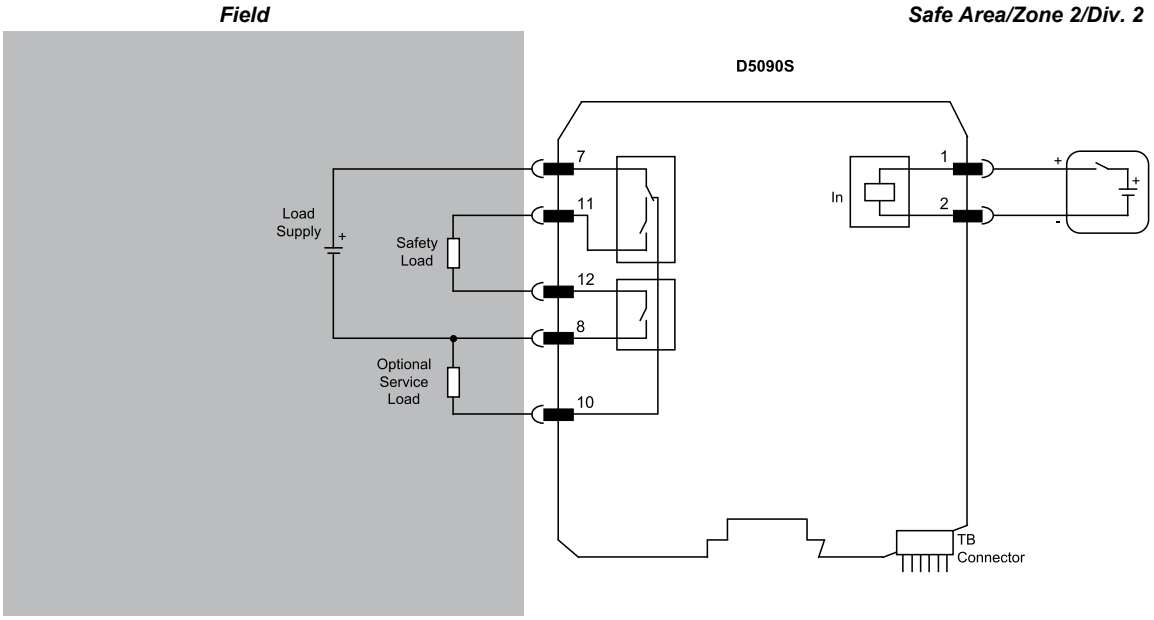
DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 125 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5090-086

SIL3 Relay Out Module for 5 A NE Loads

The D5090-086 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available two NC contacts for Normally Energized (NE) loads, in order to disconnect the load on both supply lines, and a NO contact for service purpose. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering.

FEATURES

- SIL 3 / SC 3 for NE loads with ND driver
- Installation in Zone 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- Compatible with DCS/PLC pulse testing
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

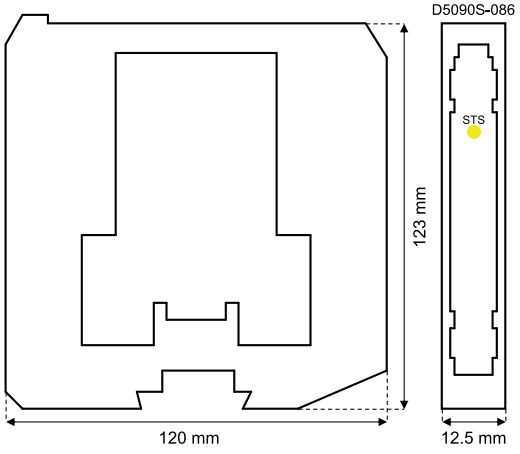
Ordering codes

D5090S-086: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 45 mA @ 24 Vdc, typical.
Power dissipation: 1.1 W @ 24 Vdc, typical.

Output

1 voltage free SPDT relay contact identified with outputs: Out 1 (NC contact) terminals 7-11 and Service Load Out (NO contact) terminals 9-10; 1 voltage free SPST relay contact identified with output Out 2 (NC contact) terminals 8-12. Terminals 7-11 (Out 1) and 8-12 (Out 2) are closed when relay is de-energized, open in energized relay condition. Service load output (not SIL) at terminals 9-10 is normally open when relay is de-energized, closed in energized relay condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 3 * 10^4 operation, typical.
Operate / release time: 50 / 40 ms typical.

Isolation

Input / All Outputs 2.5 kV; Out 1 / Out 2 500V.

Environmental conditions

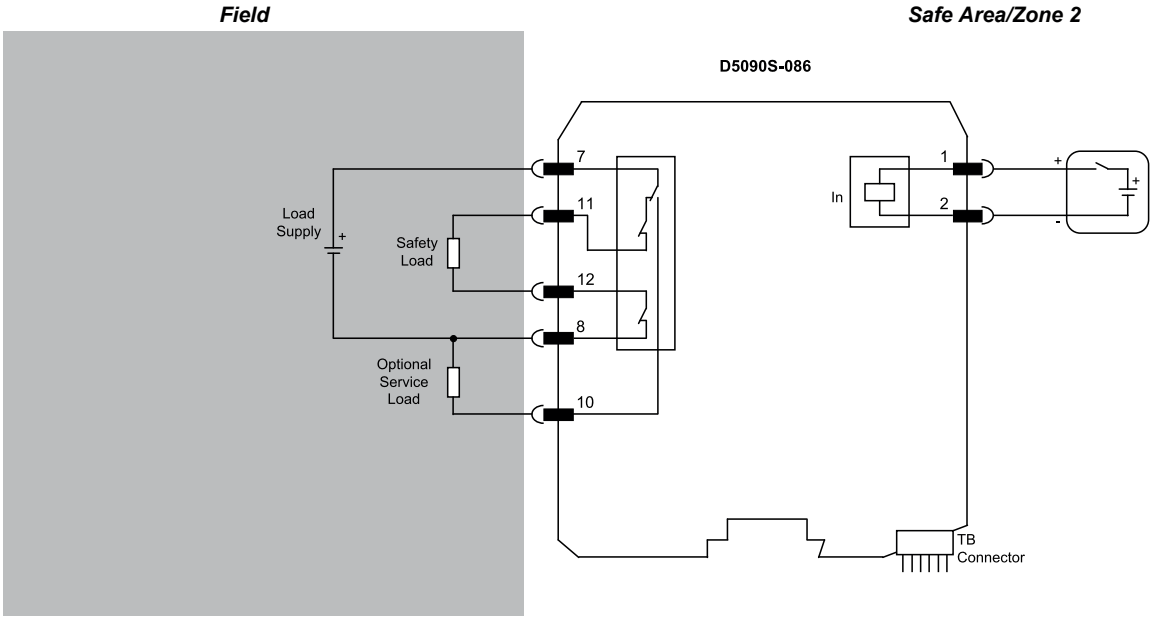
Operating temperature: temperature limits -40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 125 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5091

SIL3 Relay Out Module for 5 A ND Loads

The D5091 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available a NO and a NC contact for Normally De-energized (ND) loads, with either Normally De-energized or Normally Energized coil, and a contact for service purpose. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering.

FEATURES

- SIL 3 / SC 3 for ND/F&G loads with ND/NE driver
- Installation in Zone 2/Div. 2
- Up to 5 A functional / 6 A inrush current
- Compatible with DCS/PLC pulse testing
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

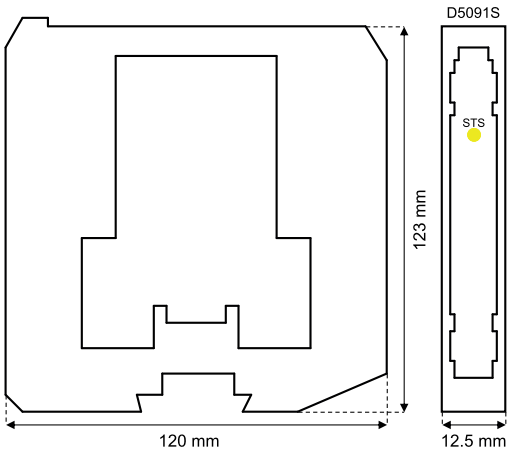
Ordering codes

D5091S: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 45 mA @ 24 Vdc, typical.
Power dissipation: 1.1 W @ 24 Vdc, typical.

Output

Voltage free SPDT relay contact. Terminals 7-8, open when relay de-energized, close in energized condition. Terminals 9-10, close when relay de-energized, open in energized condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 3 * 10^4 operation, typical.
Operate / release time: 55 / 30 ms, typical.

Isolation

Input/Output 2.5 kV.

Environmental conditions

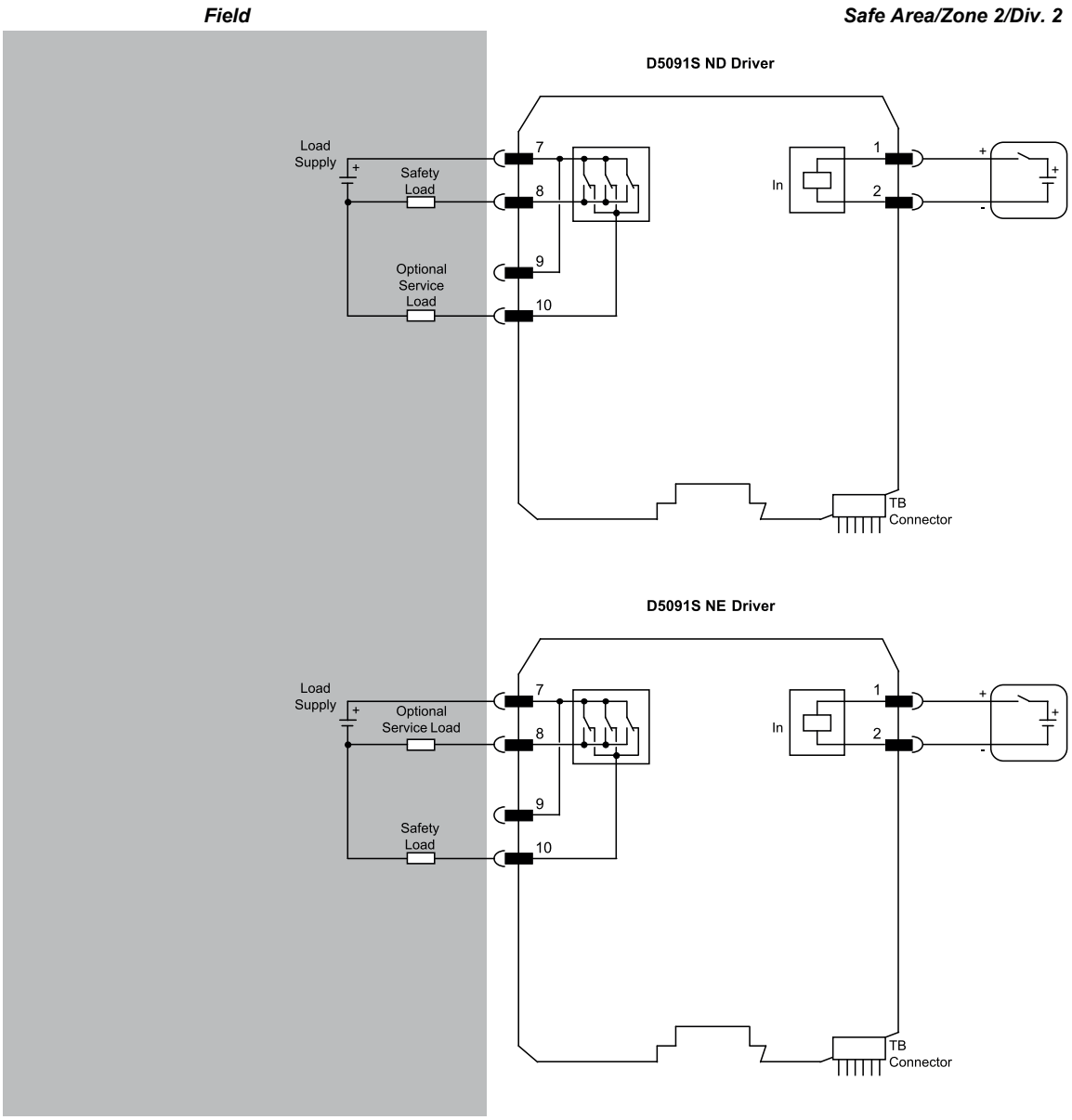
Operating temperature: temperature limits -40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 125 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5094

SIL3 Relay Out Module for 5 A NE/ND Loads

The D5094 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available 2+2 NO relay contacts connected in parallel and then in series to avoid spurious trip and to increase process availability. High process availability SIL 3 Safety Function for both Normally Energized (NE) and Normally De-energized (ND) / F&G loads is available. Load can be isolated from supply on both polarities. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering.

FEATURES

- SIL 3 / SC 3 for NE/ND loads with NE/ND driver
- Installation in Zone 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- High process availability to avoid spurious trips
- Compatible with DCS/PLC pulse testing
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

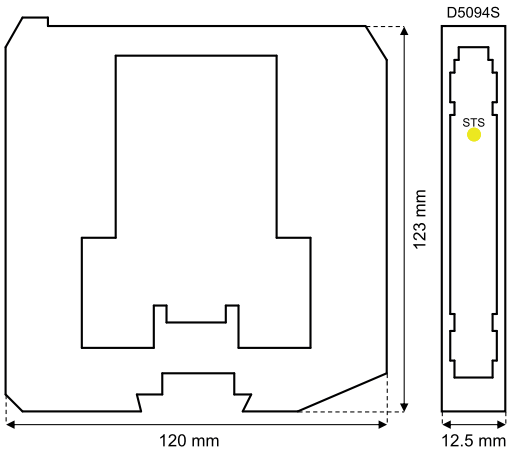
Ordering codes

D5094S: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 45 mA @ 24 Vdc, typical.
Power dissipation: 1.1 W @ 24 Vdc, typical.

Output

Voltage free 2+2 SPST relay contact (2 paralleled contacts in series) at terminals 7-11 and 8-12, close when relay energized, open in de-energized condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: $5 * 10^6$ / $3 * 10^4$ operation, typical.
Operate / release time: 30 ms / 30 ms, typical.

Isolation

Output/Input 2.5 kV.

Environmental conditions

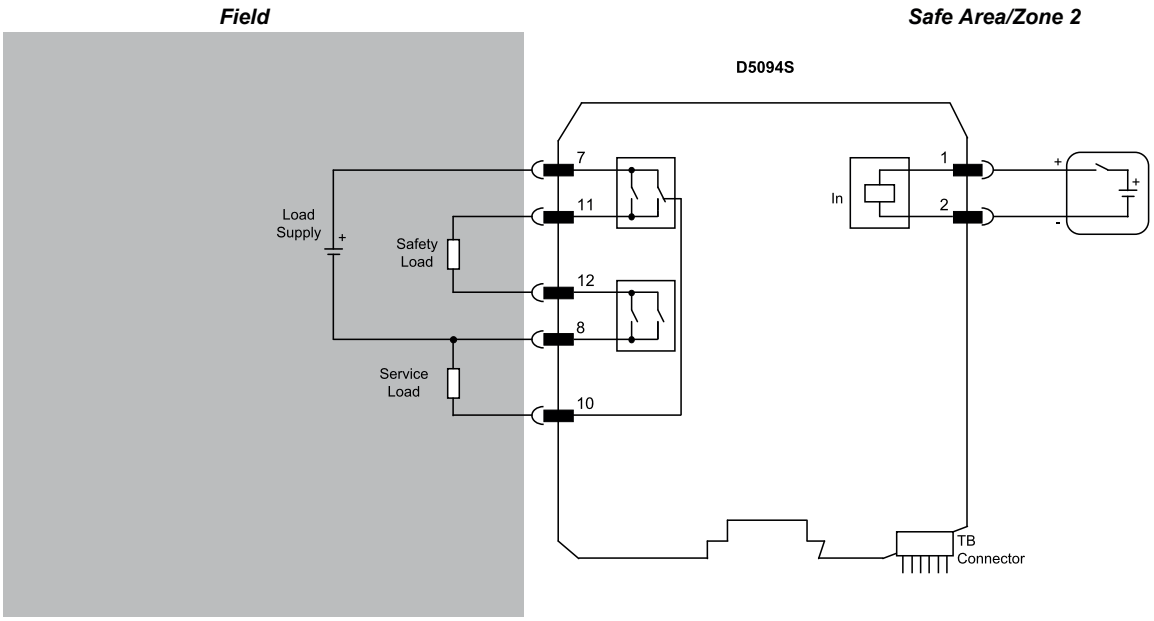
Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 125 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5095

SIL3 Relay Out Module for 5 A NE/ND Loads

The D5095 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available 2+2 NC relay contacts connected in parallel and then in series to avoid spurious trip and to increase process availability. High process availability SIL 3 Safety Function for both Normally Energized (NE) and Normally De-energized (ND) / F&G loads is available. Load can be isolated from supply on both polarities. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering.

FEATURES

- SIL 3 / SC 3 for NE/ND loads with ND/NE driver
- Installation in Zone 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- High process availability to avoid spurious trips
- Compatible with DCS/PLC pulse testing
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

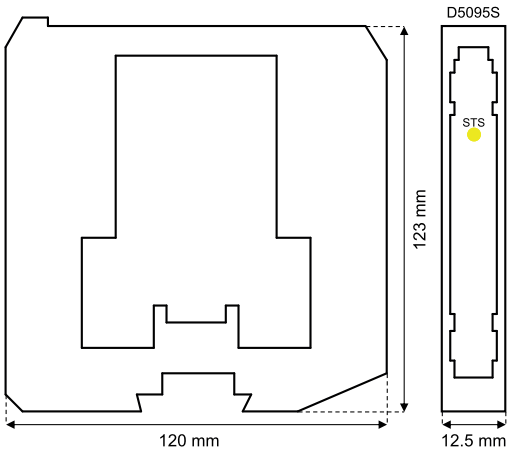
Ordering codes

D5095S: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 45 mA @ 24 Vdc, typical.
Power dissipation: 1.1 W @ 24 Vdc, typical.

Output

Voltage free 2+2 SPST relay contact (2 paralleled contacts in series) at terminals 7-11 and 8-12, close when relay de-energized, open in energized condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 3 * 10^4 operation, typical.
Operate / release time: 30 ms / 30 ms, typical.

Isolation

Output/Input 2.5 kV.

Environmental conditions

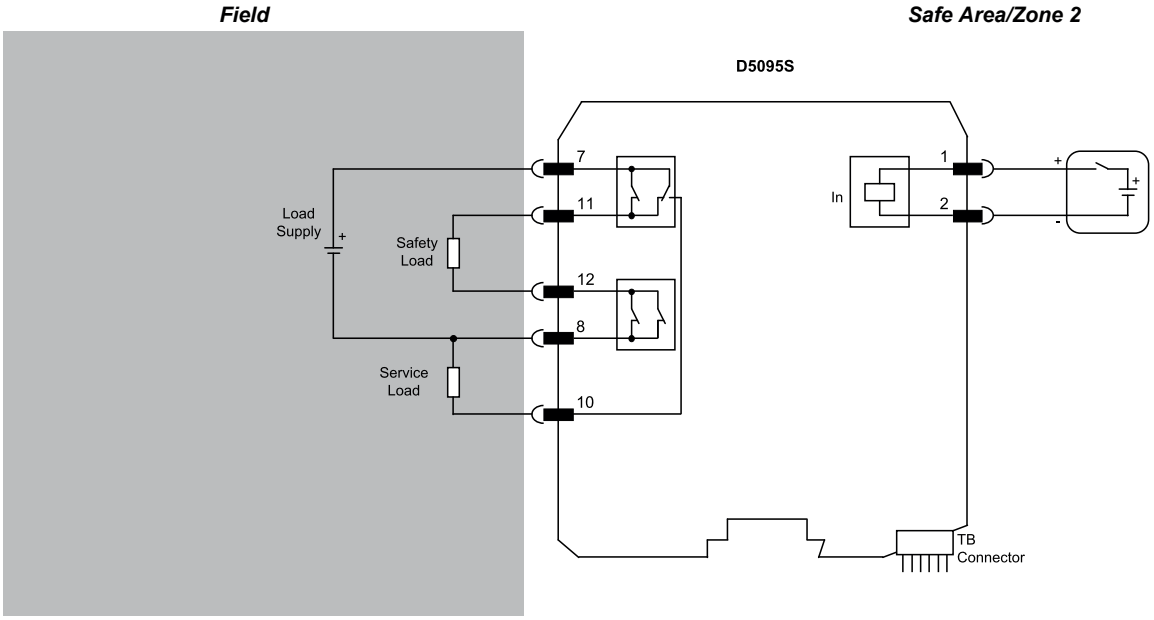
Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 125 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5098

SIL3 Relay Out Module for 5 A NE Loads

The D5098 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available NO contacts for up to two Normally Energized (NE) loads and NC contacts for service purpose. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering.

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- Installation in Zone 2
- Up to 5 A functional / 6 A inrush current
- Compatible with DCS/PLC pulse testing
- Service contact available
- Input/Output isolation
- High Density, two channels per unit

ORDERING INFORMATION

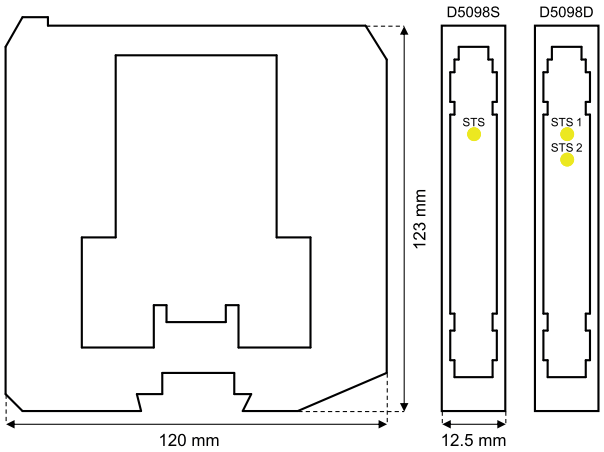
Ordering codes

D5098S: 1 channel
D5098D: 2 channels

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 45 mA @ 24 Vdc (D5098S), typical; 25 mA/channel @ 24 Vdc (D5098D), typical.
Power dissipation: 1.1 W (D5098S), 0.6 W/channel (D5098D), @ 24 Vdc, typical.

Output

1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 7-8 and Service Load Out 1 (NC contact) terminals 7-11; 1 voltage free SPDT relay contact identified with outputs Out 2 (NO contact) terminals 9-10 and Service Load Out 2 (NC contact) terminals 9-12 (only for D5098D). Terminals 7-8 (Out 1) and 9-10 (Out 2, only for D5098D) are open when relay is de-energized, closed in energized relay condition. Service load outputs (not SIL) at terminals 7-11 and 9-12 (only for D5098D) are normally closed when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Contact current derating: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 3 * 10^4 operation, typical.
Operate / release time: 30 ms / 20 ms, typical.

Isolation

Output/Input 1.5 kV; Input/Input 500 V; Output/Output 1.5 kV.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

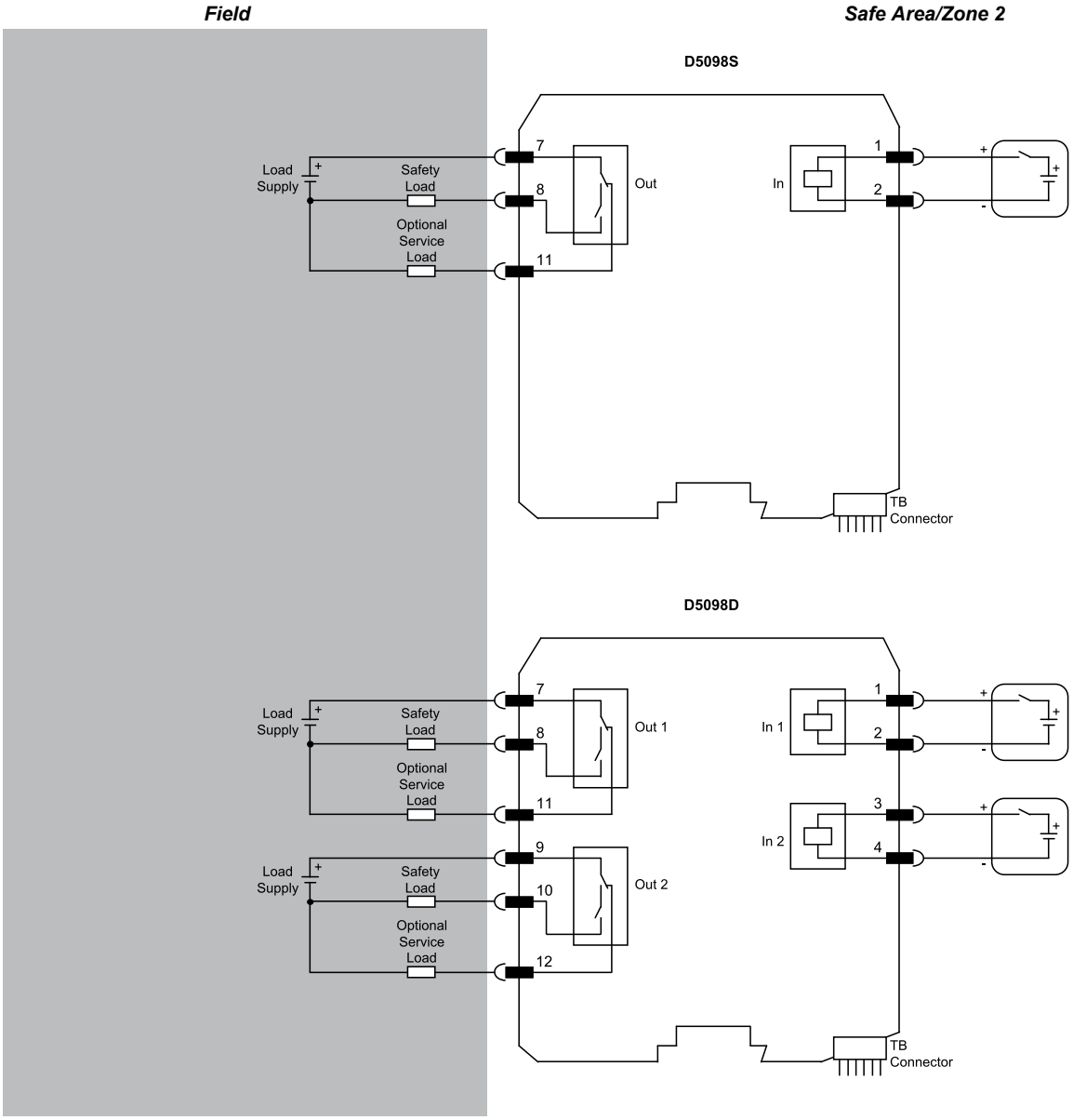
DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 150 g (D5098D), about 110 g (D5098S).
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5290

SIL3 Relay Out Module for 10 A NE Loads

The D5290 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available two NO contacts for Normally Energized (NE) loads, in order to disconnect the load on both supply lines, and a NC contact for service purpose. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- Installation in Zone 2/Div. 2
- Up to 10 A functional / 16 A inrush current
- Load disconnection on both supply lines available
- Compatible with DCS/PLC pulse testing
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

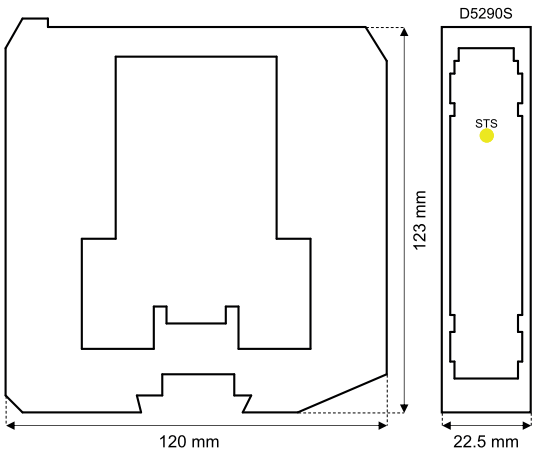
Ordering codes

D5290S: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 60 mA @ 24 Vdc, typical.
Power dissipation: 1.5 W @ 24 Vdc, typical.

Output

1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 13-21 and Service Load Out (NC contact) terminals 13-15; 1 voltage free SPST relay contact identified with output Out 2 (NO contact) terminals 14-22. Terminals 13-21 (Out 1) and 14-22 (Out 2) are open when relay is de-energized, closed in energized relay condition. Service load output (not SIL) at terminals 13-15 is normally close when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free) or AgSnO2.
Contact rating: 10 A 250 Vac 2500 VA, 10 A 250 Vdc 300 W (resistive load).
Contact inrush current: 16 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: $10 * 10^6$ / $5 * 10^4$ operation, typical.
Operate / release time: 50 / 15 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out 1/Out 2 500V.

Environmental conditions

Operating temperature: temperature limits –40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

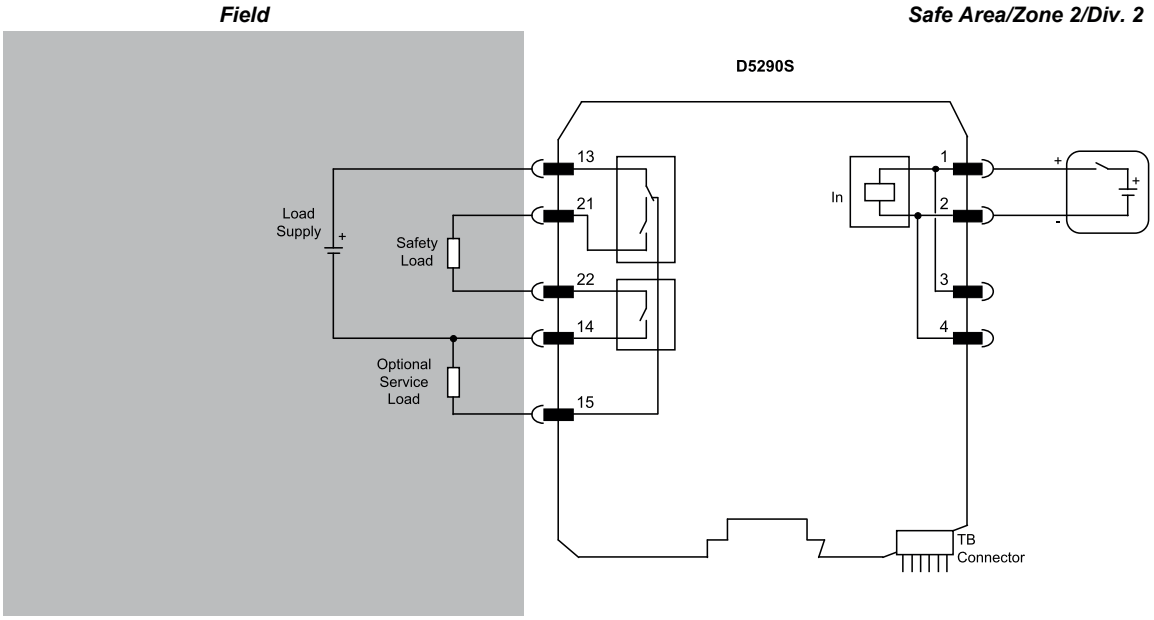
DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 165 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5290/SA

SIL3 Relay Out Module for 10 A NE Loads

The D5290/SA is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available two NO contacts for Normally Energized (NE) loads, in order to disconnect the load on both supply lines, and a NC contact for service purpose. Compatibility with specific DO cards with pulse testing needs to be verified. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- Up to 10 A functional / 16 A inrush current
- Load disconnection on both supply lines available
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

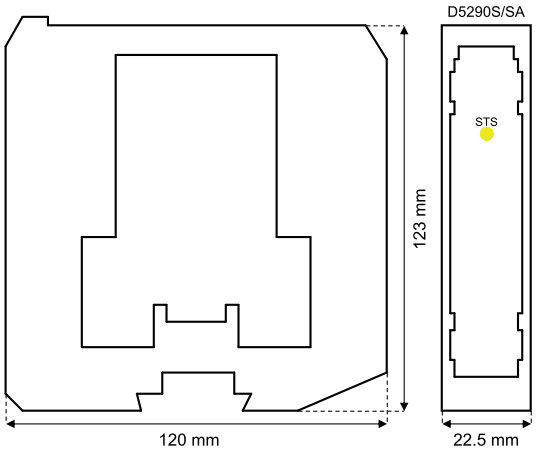
Ordering codes

D5290S/SA: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 40 mA @ 24 Vdc, typical.
Power dissipation: 1.0 W @ 24 Vdc, typical.

Output

1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 13-21 and Service Load Out (NC contact) terminals 13-15; 1 voltage free SPST relay contact identified with output Out 2 (NO contact) terminals 14-22. Terminals 13-21 (Out 1) and 14-22 (Out 2) are open when relay is de-energized, closed in energized relay condition. Service load output (not SIL) at terminals 13-15 is normally close when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free) or AgSnO2.
Contact rating: 10 A 250 Vac 2500 VA, 10 A 250 Vdc 300 W (resistive load).
Contact inrush current: 16 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: $10 * 10^6$ / $5 * 10^4$ operation, typical.
Operate / release time: 8 ms / 8 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out 1/Out 2 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

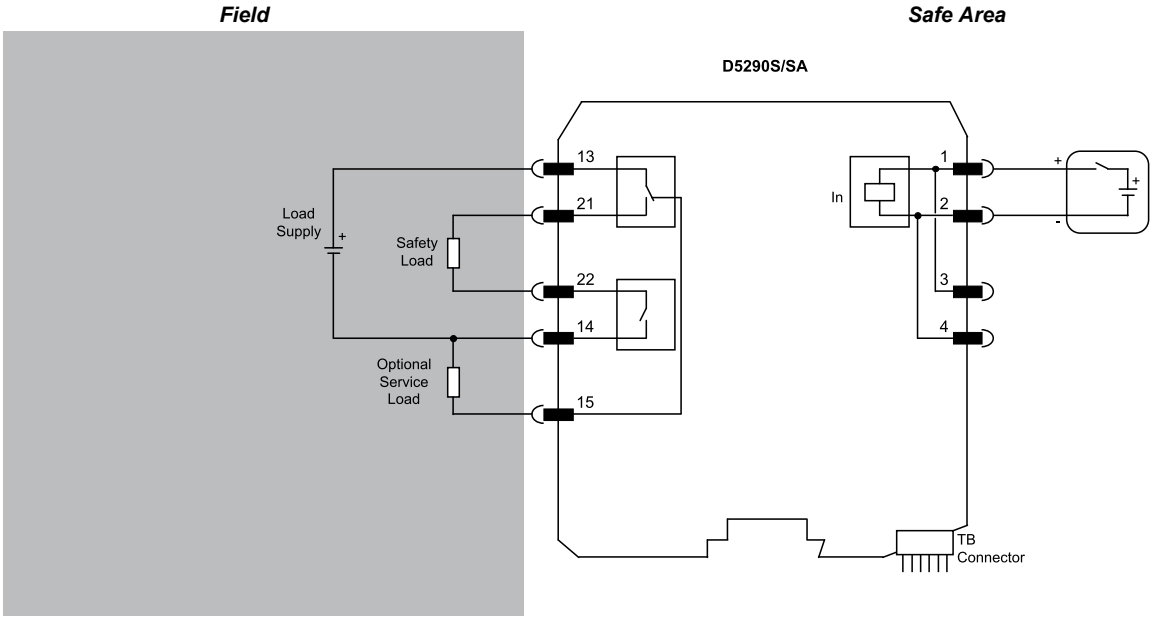
DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 150 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

D5290-078

SIL3 Relay Out Module for 5 A NE/ND Loads

The D5290-078 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available up to four NO contacts and two NC contacts, which can be externally connected for multiple Normally Energized (NE) or Normally De-energized (ND) loads, with single or both supply lines disconnection, and additional service loads. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE/ND loads with NE/ND driver
- Installation in Zone 2/Div. 2
- Up to 5 A functional / 8 A inrush current
- Load disconnection on both supply lines available
- Compatible with DCS/PLC pulse testing
- Service contact available
- Multiple contacts (up to 4 NE or 2 ND loads)
- Input/Output isolation

ORDERING INFORMATION

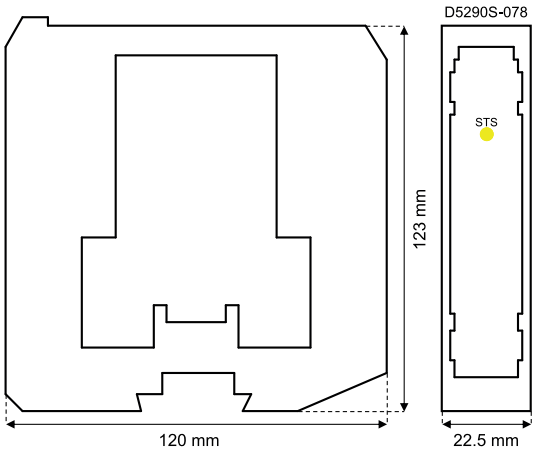
Ordering codes

D5290S-078: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 60 mA @ 24 Vdc, typical.
Power dissipation: 1.5 W @ 24 Vdc, typical.

Output

2 voltage free SPDT (= NO contact + parallel of 2 NC contacts) relay contacts identified with outputs: Out S_1 & Out P_1 and Out S_3 & Out P_2; 2 voltage free SPST (NO) relay contacts identified with: Out S_2 and Out S_4. Terminals 13-14 (Out S_1), 15-16 (Out S_2), 21-22 (Out S_4) and 23-24 (Out S_3) are: open when relay is de-energized, closed in energized relay condition. Terminals 17-18 (Out P_1) and 19-20 (Out P_2) are: closed when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free) or AgSnO2.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 175 W (resistive load).
Contact inrush current: 8 A @ 30 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: $10 * 10^6$ / $5 * 10^4$ operation, typical.
Operate / release time: 55 ms / 25 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out S_1 & Out P_1/Out S_3 & Out P_2, Out S_2, Out S_4 500 V; Out S_3 & Out P_2/Out S_2, Out S_4 500 V; Out S_2/Out S_4 500 V.

Environmental conditions

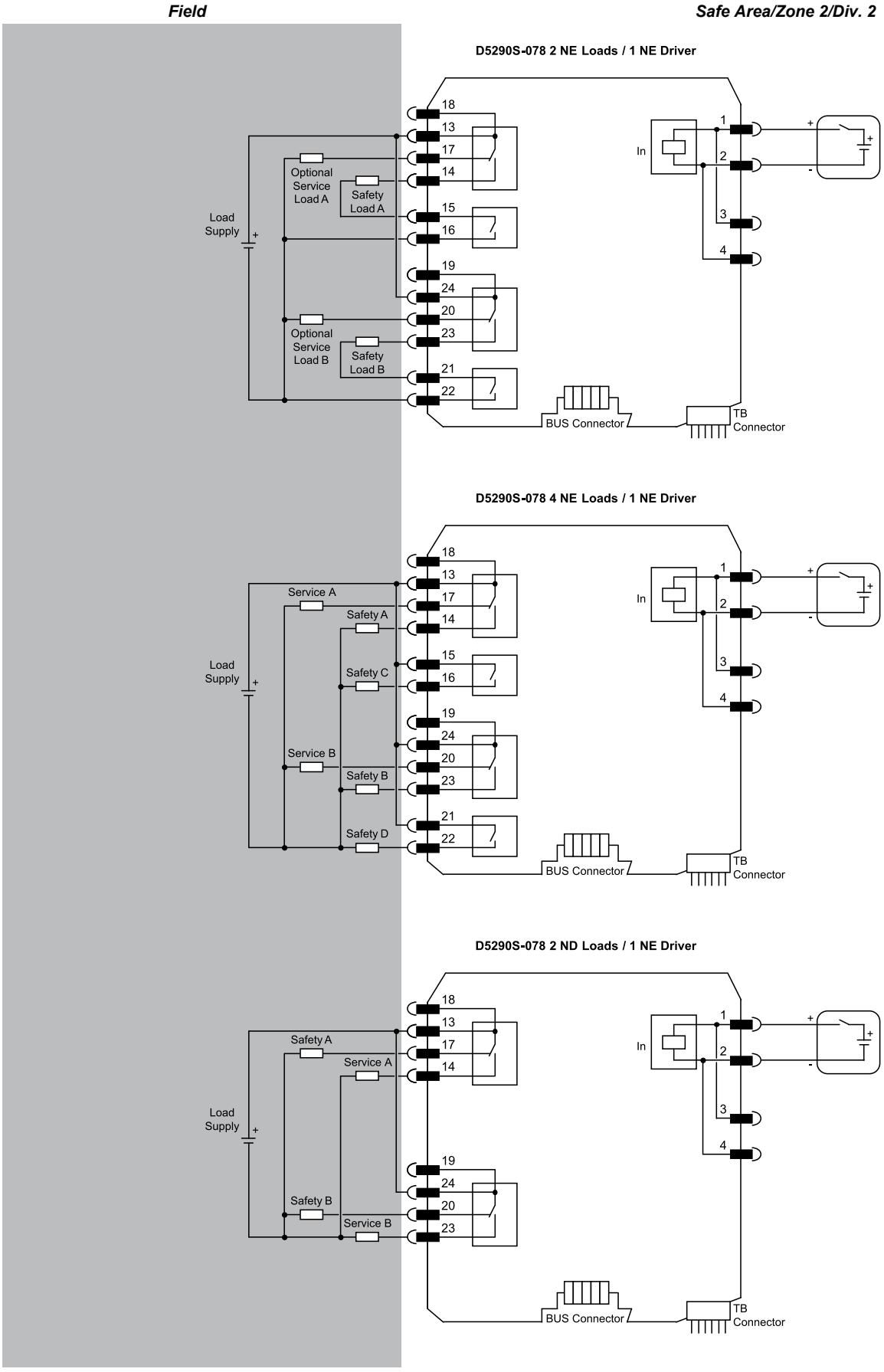
Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 145 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

D5290-078/SA

SIL3 Relay Out Module for 5 A NE/ND Loads

The D5290-078/SA is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available up to four NO contacts and two NC contacts, which can be externally connected for multiple Normally Energized (NE) or Normally De-energized (ND) loads, with single or both supply lines disconnection, and additional service loads. Compatibility with specific DO cards with pulse testing needs to be verified. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE/ND loads with NE driver
- Up to 5 A functional / 8 A inrush current
- Load disconnection on both supply lines available
- Service contact available
- Multiple contacts (up to 3 NE loads)
- Input/Output isolation

ORDERING INFORMATION

Ordering codes

D5290S-078/SA: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS

TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 40 mA @ 24 Vdc, typical.
Power dissipation: 1.0 W @ 24 Vdc, typical.

Output

2 voltage free SPDT (= NO contact + 1 or 2 parallel NC contacts) relay contacts identified with outputs: Out S_1 & Out P_1 (1NC) and Out S_3 & Out P_2 (2 NC); 1 voltage free SPST (NO) relay contacts identified with: Out S_2. Terminals 13-14 (Out S_1), 15-16 (Out S_2) and 23-24 (Out S_3) are: open when relay is de-energized, closed in energized relay condition. Terminals 17-18 (Out P_1) and 19-20 (Out P_2) are: closed when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free).
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 175 W (resistive load).
Contact inrush current: 8 A @ 30 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: $10 * 10^6$ / $5 * 10^4$ operation, typical.
Operate / release time: 7 ms / 8 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out S_1 & Out P_1/Out S_3 & Out P_2, Out S_2 500 V; Out S_3 & Out P_2/Out S_2 500 V.

Environmental conditions

Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm.
Weight: about 145 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

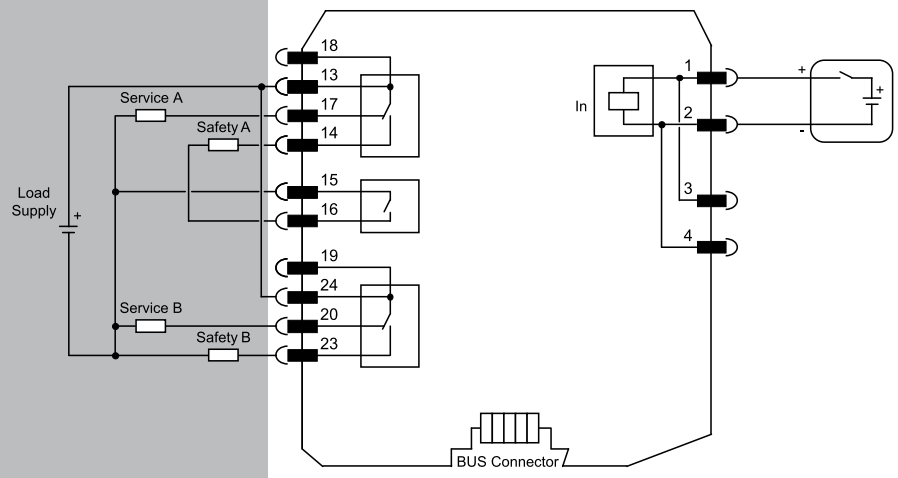
Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

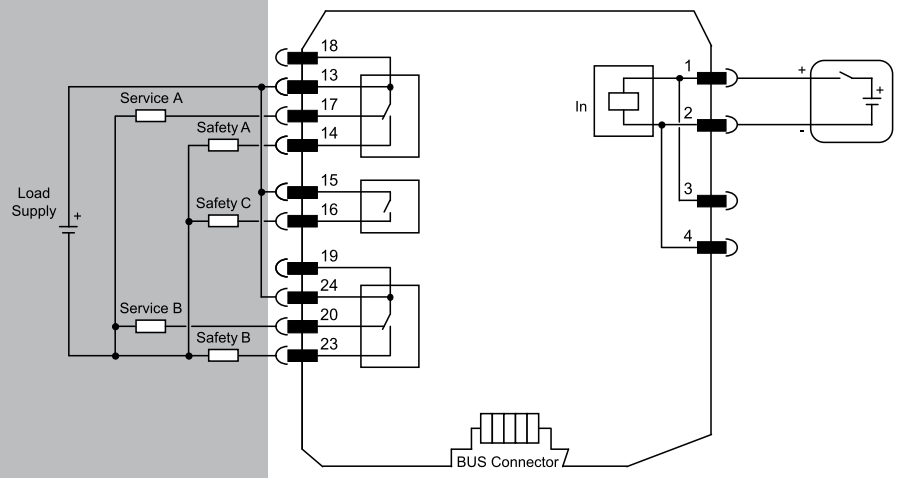
Additional installation diagrams may be found in Instruction Manual.

Field ***Safe Area***

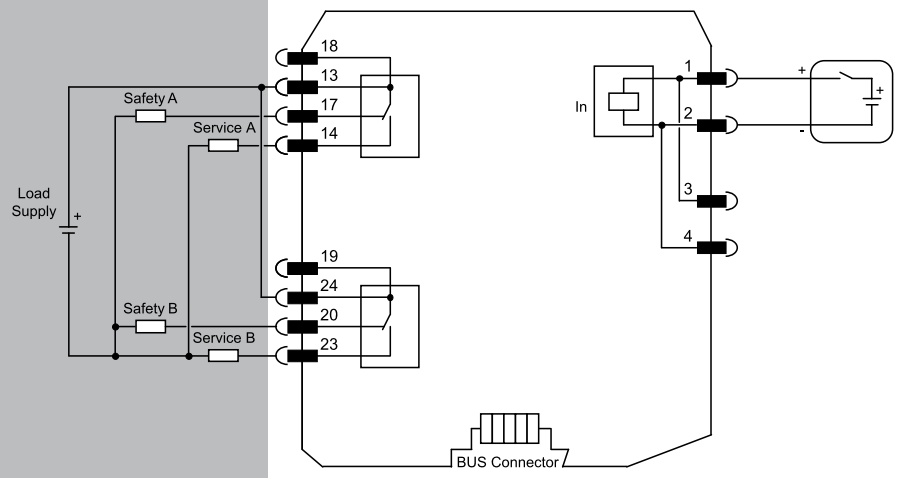
D5290S-078/SA 2 NE Loads / 1 NE Driver



D5290S-078/SA 3 NE Loads / 1 NE Driver



D5290S-078/SA 2 ND Loads / 1 NE Driver



FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

D5290-079

SIL3 115 Vac Relay Out Module for 5 A NE/ND Loads

The D5290-079 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available up to four NO contacts and two NC contacts, which can be externally connected for multiple Normally Energized (NE) or Normally De-energized (ND) loads, with single or both supply lines disconnection, and additional service loads. Compatibility with specific DO cards with pulse testing needs to be verified. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE/ND loads with NE driver
- Up to 5 A functional / 8 A inrush current
- Load disconnection on both supply lines available
- Service contact available
- Multiple contacts (up to 4 NE or 2 ND loads)
- Input/Output isolation

ORDERING INFORMATION

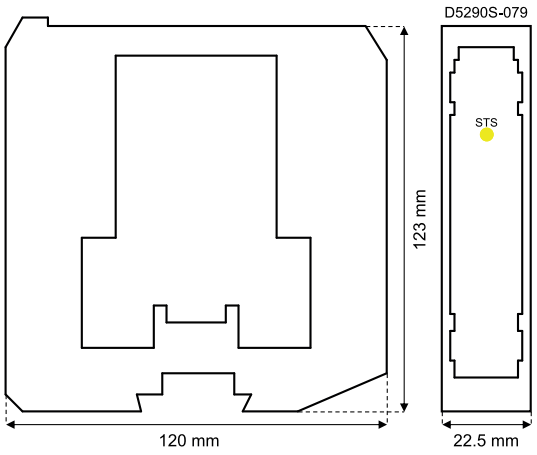
Ordering codes

D5290S-079: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

115 Vac nom (95 to 130 Vac).
Current consumption: 25 mA @ 115 Vac, typical.
Power dissipation: 2.5 W @ 115 Vac, typical.

Output

2 voltage free SPDT (= NO contact + parallel of 2 NC contacts) relay contacts identified with outputs: Out S_1 & Out P_1 and Out S_3 & Out P_2; 2 voltage free SPST (NO) relay contacts identified with: Out S_2 and Out S_4. Terminals 13-14 (Out S_1), 15-16 (Out S_2), 21-22 (Out S_4) and 23-24 (Out S_3) are: open when relay is de-energized, closed in energized relay condition. Terminals 17-18 (Out P_1) and 19-20 (Out P_2) are: closed when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free).
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 175 W (resistive load).
Contact inrush current: 8 A @ 30 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 10 * 10^6 / 5 * 10^4 operation, typical.
Operate / release time: 12 ms / 4 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out S_1 & Out P_1/Out S_3 & Out P_2, Out S_2, Out S_4 500 V; Out S_3 & Out P_2/Out S_2, Out S_4 500 V; Out S_2/Out S_4 500 V.

Environmental conditions

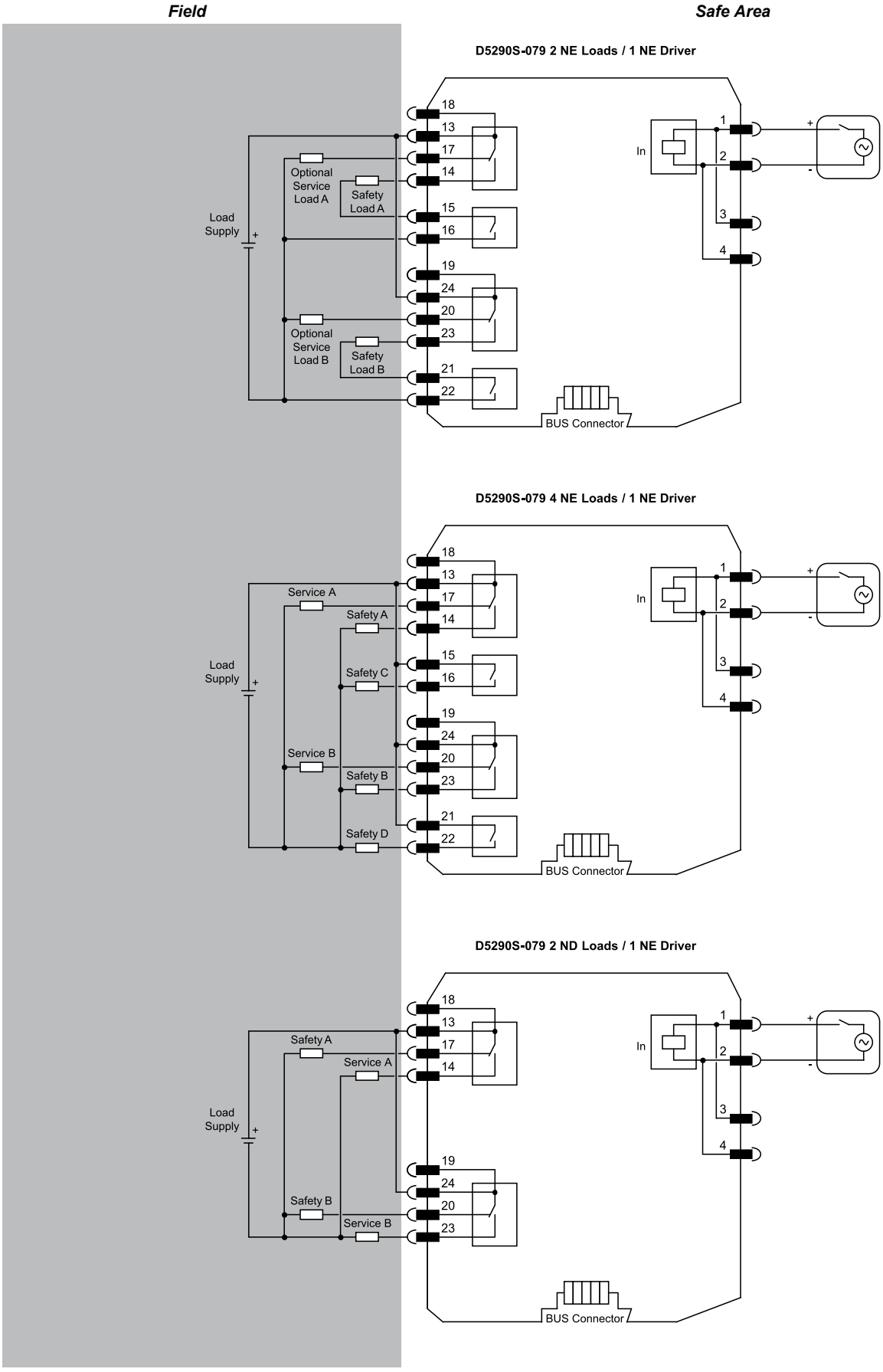
Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm.
Weight: about 170 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

D5290-080

SIL3 115 Vac Relay Out Module for 10 A NE Loads

The D5290-080 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available two NO contacts for Normally Energized (NE) loads, in order to disconnect the load on both supply lines, and a NC contact for service purpose. Compatibility with specific DO cards with pulse testing needs to be verified. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- Up to 10 A functional / 16 A inrush current
- Load disconnection on both supply lines available
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

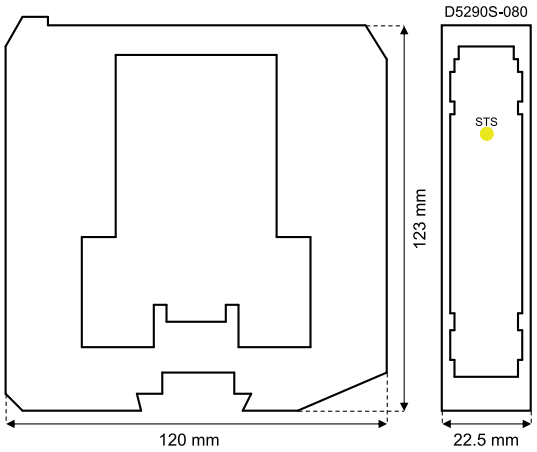
Ordering codes

D5290S-080: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

115 Vac nom (95 to 130 Vac).
Current consumption: 25 mA @ 115 Vac, typical.
Power dissipation: 2.5 W @ 115 Vac, typical.

Output

1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 13-21 and Service Load Out (NC contact) terminals 13-15; 1 voltage free SPST relay contact identified with output Out 2 (NO contact) terminals 14-22. Terminals 13-21 (Out 1) and 14-22 (Out 2) are open when relay is de-energized, closed in energized relay condition. Service load output (not SIL) at terminals 13-15 is normally close when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free).
Contact rating: 10 A 250 Vac 2500 VA, 10 A 250 Vdc 300 W (resistive load).
Contact inrush current: 16 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 5 * 10^4 operation, typical.
Operate / release time: 12 ms / 4 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out 1/Out 2 500 V.

Environmental conditions

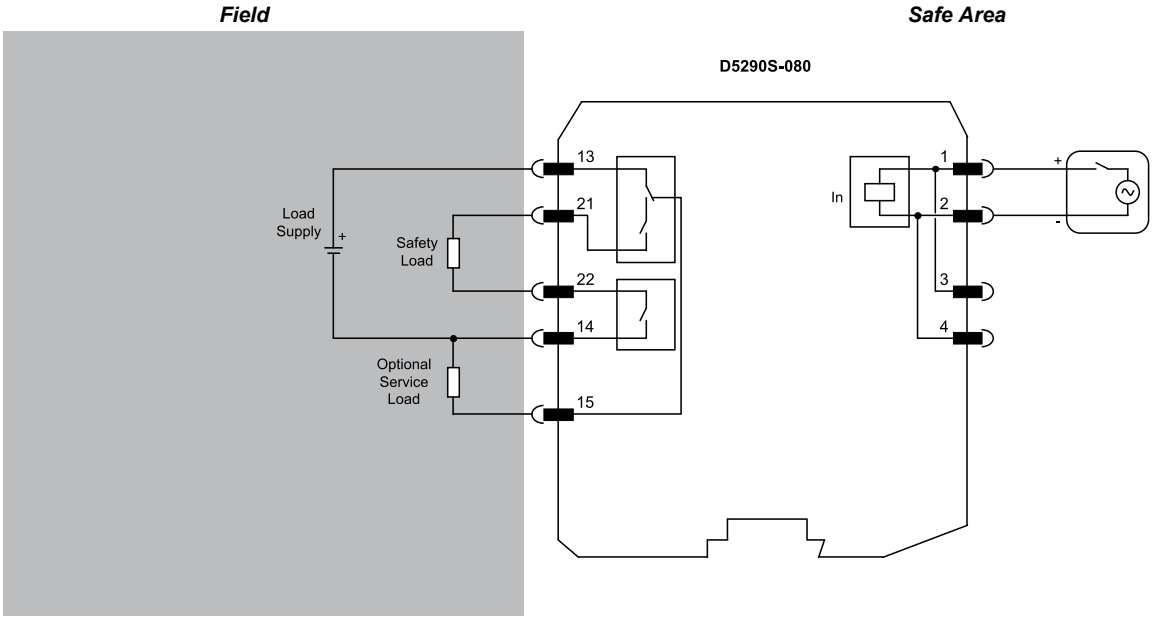
Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm.
Weight: about 165 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5290-081

SIL3 110 Vdc Relay Out Module for 10 A NE Loads

The D5290-081 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available two NO contacts for Normally Energized (NE) loads, in order to disconnect the load on both supply lines, and a NC contact for service purpose. Compatibility with specific DO cards with pulse testing needs to be verified. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- Up to 10 A functional / 16 A inrush current
- Load disconnection on both supply lines available
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

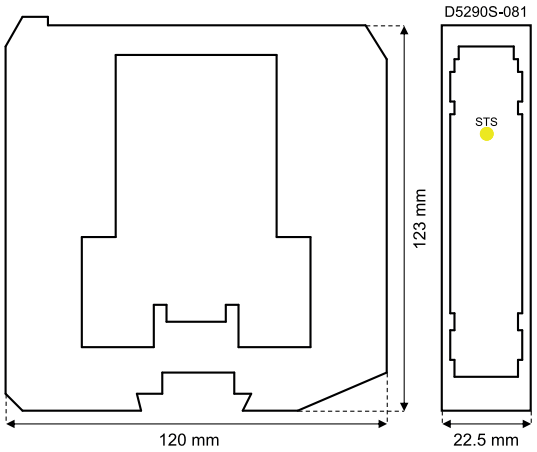
Ordering codes

D5290S-081: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

110 Vdc nom (100 to 125 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 16 mA @ 110 Vdc, typical.
Power dissipation: 1.8 W @ 110 Vdc, typical.

Output

1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 13-21 and Service Load Out (NC contact) terminals 13-15; 1 voltage free SPST relay contact identified with output Out 2 (NO contact) terminals 14-22. Terminals 13-21 (Out 1) and 14-22 (Out 2) are open when relay is de-energized, closed in energized relay condition. Service load output (not SIL) at terminals 13-15 is normally close when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free).
Contact rating: 10 A 250 Vac 2500 VA, 10 A 250 Vdc 300 W (resistive load).
Contact inrush current: 16 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 5 * 10^4 operation, typical.
Operate / release time: 12 ms / 4 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out 1/Out 2 500 V.

Environmental conditions

Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

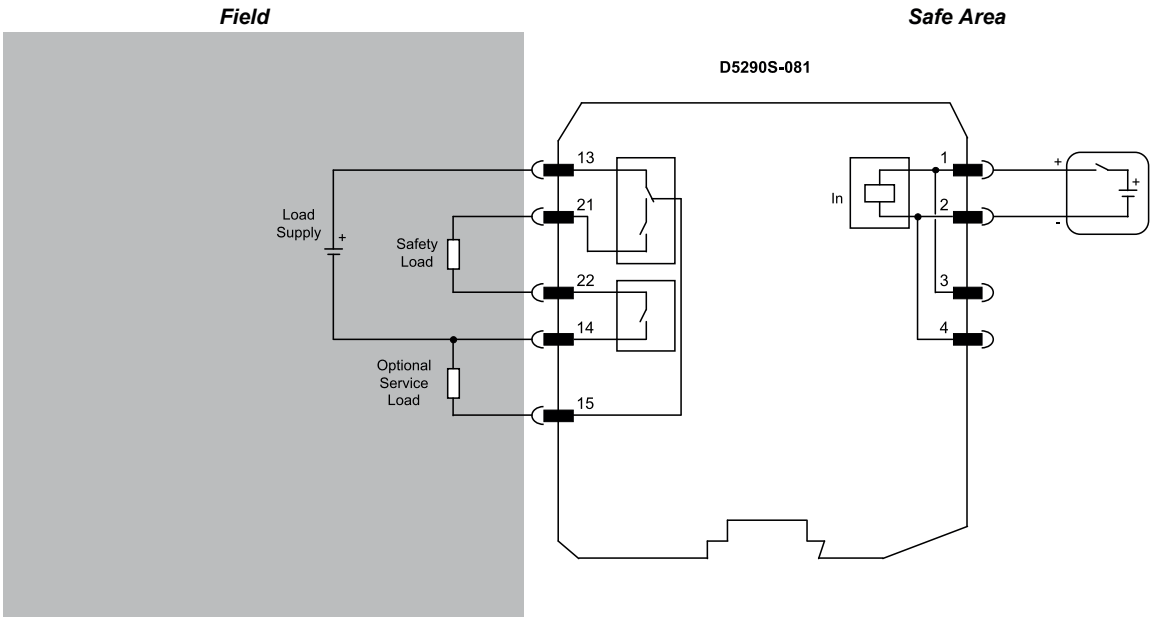
DIN-Rail 35 mm.
Weight: about 165 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5290-084

SIL3 110 Vdc Relay Out Module for 5 A NE/ND Loads

The D5290-084 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available up to four NO contacts and two NC contacts, which can be externally connected for multiple Normally Energized (NE) or Normally De-energized (ND) loads, with single or both supply lines disconnection, and additional service loads. Compatibility with specific DO cards with pulse testing needs to be verified. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE/ND loads with NE driver
- Up to 5 A functional / 8 A inrush current
- Load disconnection on both supply lines available
- Service contact available
- Multiple contacts (up to 4 NE or 2 ND loads)
- Input/Output isolation

ORDERING INFORMATION

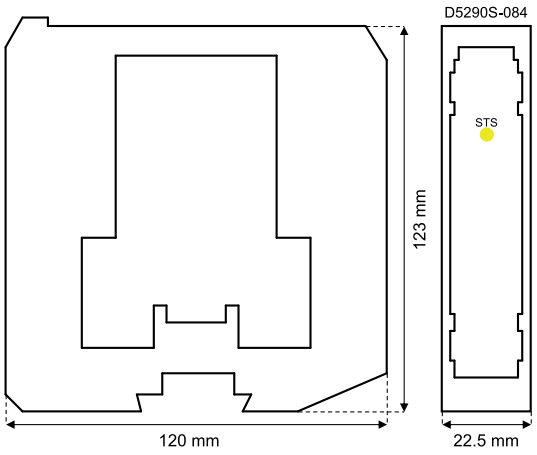
Ordering codes

D5290S-084: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

110 Vdc nom (100 to 125 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 15 mA @ 110 Vdc, typical.
Power dissipation: 1.7 W @ 110 Vdc, typical.

Output

2 voltage free SPDT (= NO contact + parallel of 2 NC contacts) relay contacts identified with outputs: Out S_1 & Out P_1 and Out S_3 & Out P_2; 2 voltage free SPST (NO) relay contacts identified with: Out S_2 and Out S_4. Terminals 13-14 (Out S_1), 15-16 (Out S_2), 21-22 (Out S_4) and 23-24 (Out S_3) are: open when relay is de-energized, closed in energized relay condition. Terminals 17-18 (Out P_1) and 19-20 (Out P_2) are: closed when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free).
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 175 W (resistive load).
Contact inrush current: 8 A @ 30 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: $10 * 10^6$ / $5 * 10^4$ operation, typical.
Operate / release time: 12 ms / 8 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out S_1 & Out P_1/Out S_3 & Out P_2, Out S_2, Out S_4 500 V; Out S_3 & Out P_2/Out S_2, Out S_4 500 V; Out S_2/Out S_4 500 V.

Environmental conditions

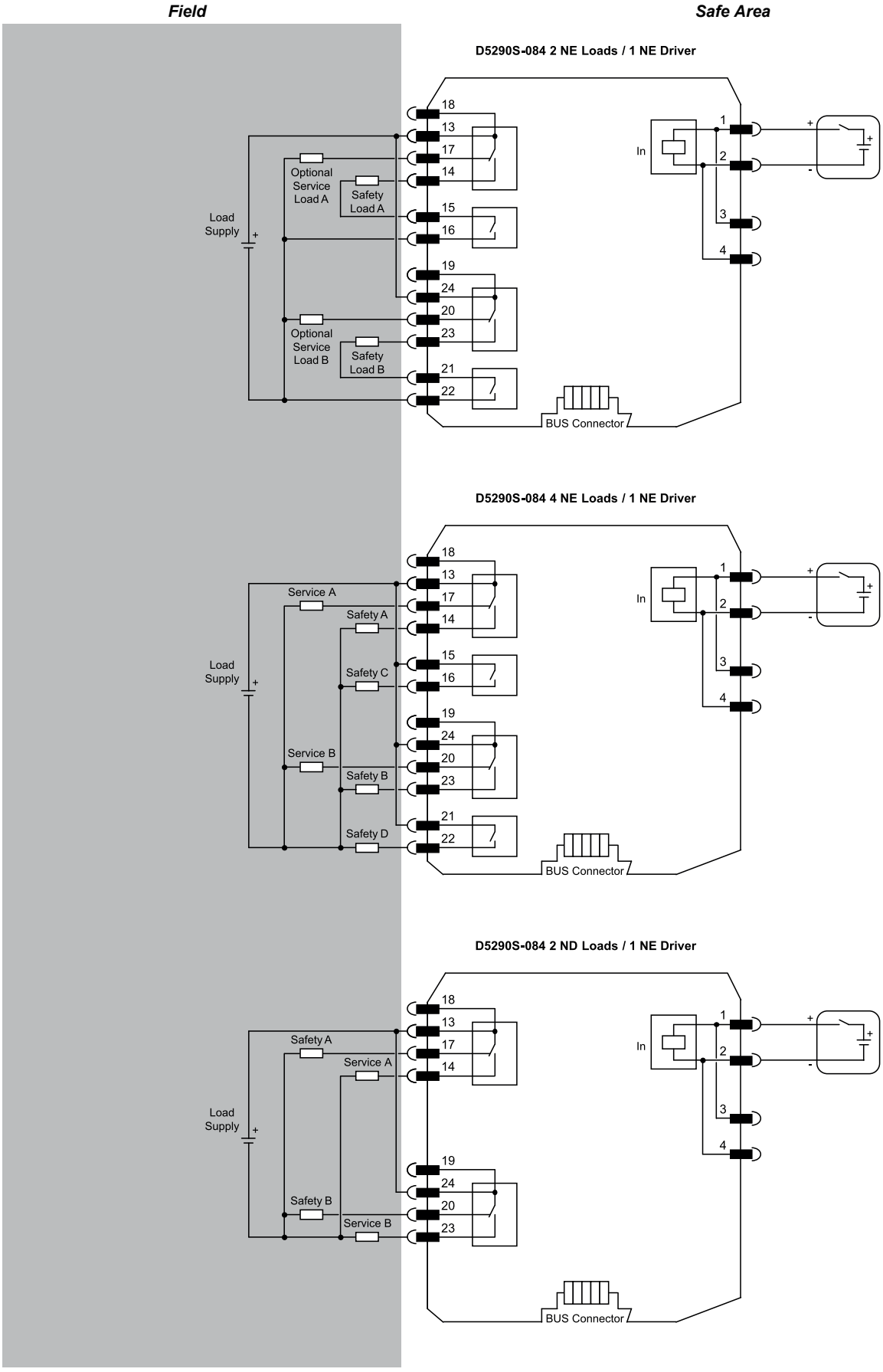
Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm.
Weight: about 145 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5290-091

SIL3 230 Vac Relay Out Module for 10 A NE Loads

The D5290-091 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available two NO contacts for Normally Energized (NE) loads, in order to disconnect the load on both supply lines, and a NC contact for service purpose. Compatibility with specific DO cards with pulse testing needs to be verified. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- Up to 10 A functional / 16 A inrush current
- Load disconnection on both supply lines available
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

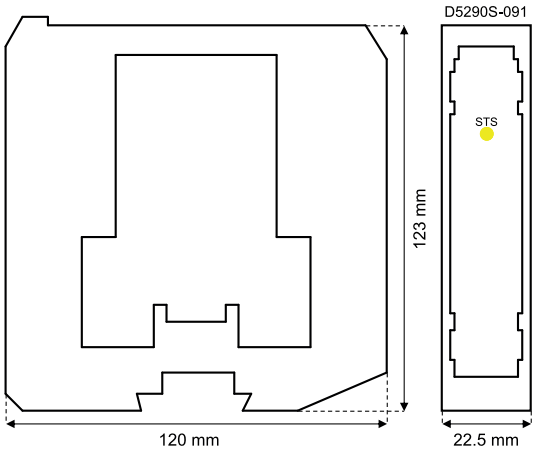
Ordering codes

D5290S-091: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

230 Vac nom (195 to 250 Vac).
Current consumption: 14 mA @ 230 Vac, typical.
Power dissipation: 2.5 W @ 230 Vac, typical.

Output

1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 13-21 and Service Load Out (NC contact) terminals 13-15; 1 voltage free SPST relay contact identified with output Out 2 (NO contact) terminals 14-22. Terminals 13-21 (Out 1) and 14-22 (Out 2) are open when relay is de-energized, closed in energized relay condition. Service load output (not SIL) at terminals 13-15 is normally close when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free).
Contact rating: 10 A 250 Vac 2500 VA, 10 A 250 Vdc 300 W (resistive load).
Contact inrush current: 16 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 5 * 10^6 / 5 * 10^4 operation, typical.
Operate / release time: 8 ms / 4 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out 1/Out 2 500 V.

Environmental conditions

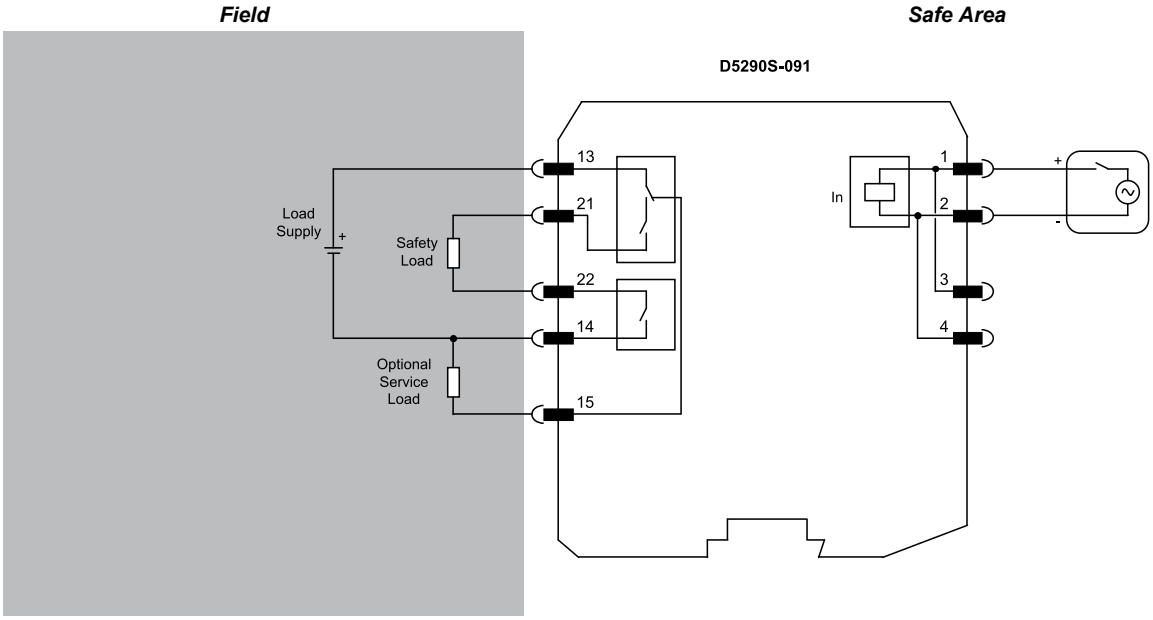
Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm.
Weight: about 165 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5290-092

SIL3 48 Vdc Relay Out Module for 10 A NE Loads

The D5290-092 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available two NO contacts for Normally Energized (NE) loads, in order to disconnect the load on both supply lines, and a NC contact for service purpose. Compatibility with specific DO cards with pulse testing needs to be verified. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- Up to 10 A functional / 16 A inrush current
- Load disconnection on both supply lines available
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

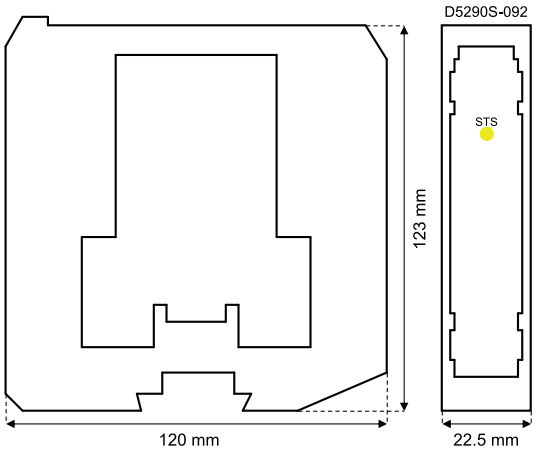
Ordering codes

D5290S-092: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

48 Vdc nom (42 to 54 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 30 mA @ 48 Vdc, typical.
Power dissipation: 1.5 W @ 48 Vdc, typical.

Output

1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 13-21 and Service Load Out (NC contact) terminals 13-15; 1 voltage free SPST relay contact identified with output Out 2 (NO contact) terminals 14-22. Terminals 13-21 (Out 1) and 14-22 (Out 2) are open when relay is de-energized, closed in energized relay condition. Service load output (not SIL) at terminals 13-15 is normally close when relay is de-energized, open in energized relay condition.
Contact material: Ag Alloy (Cd free) or AgSnO2.
Contact rating: 10 A 250 Vac 2500 VA, 10 A 250 Vdc 300 W (resistive load).
Contact inrush current: 16 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 10 * 10^6 / 5 * 10^4 operation, typical.
Operate / release time: 10 ms / 10 ms, typical.

Isolation

Input/All Outs 2.5 kV; Out 1/Out 2 500 V.

Environmental conditions

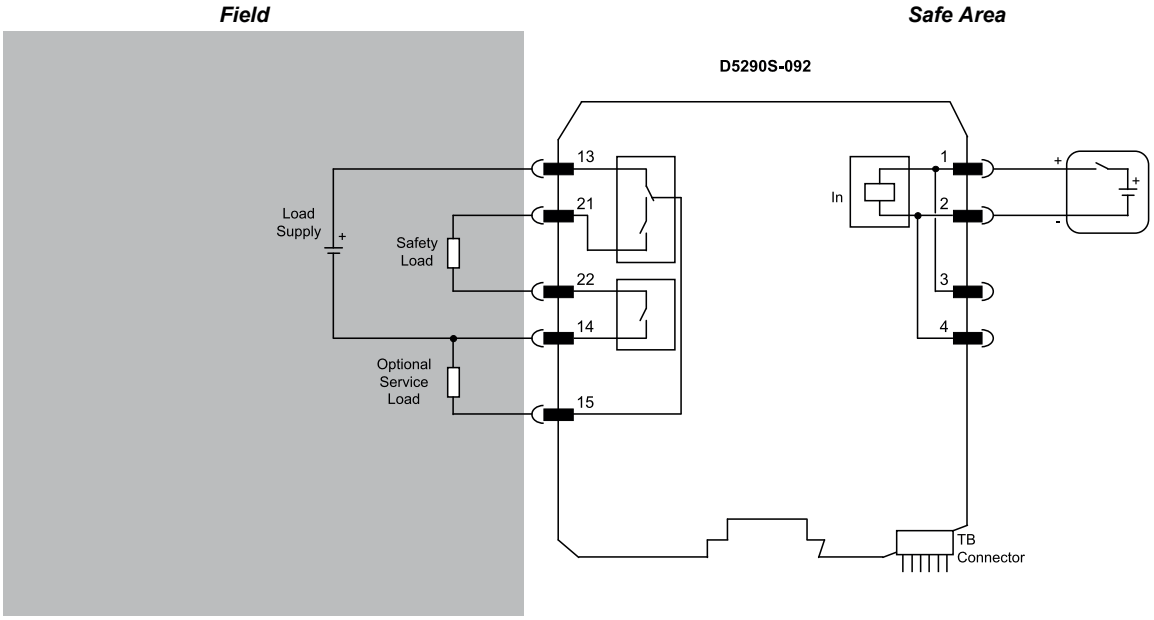
Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 165 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5291

SIL3 Relay Out Module for 10 A ND Loads

The D5291 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available a NO and a NC contact for Normally De-energized (ND) loads, with either Normally De-energized or Normally Energized coil, and a contact for service purpose. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for ND loads with ND/NE driver
- Installation in Zone 2/Div. 2
- Up to 10 A functional / 16 A inrush current
- Compatible with DCS/PLC pulse testing
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

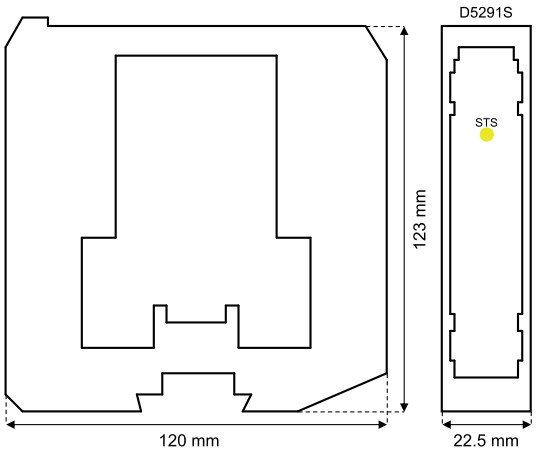
Ordering codes

D5291S: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 60 mA @ 24 Vdc, typical.
Power dissipation: 1.5 W @ 24 Vdc, typical.

Output

Voltage free SPDT relay contact. Terminals 13-14, open when relay de-energized, close in energized condition. Terminals 13-15, close when relay de-energized, open in energized condition.
Contact material: Ag Alloy (Cd free) or AgSnO2.
Contact rating: 10 A 250 Vac 2500 VA, 10 A 250 Vdc 300 W (resistive load).
Contact inrush current: 16 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: $10 * 10^6$ / $5 * 10^4$ operation, typical.
Operate / release time: 40 / 25 ms, typical.

Isolation

In/Out 2.5 kV.

Environmental conditions

Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

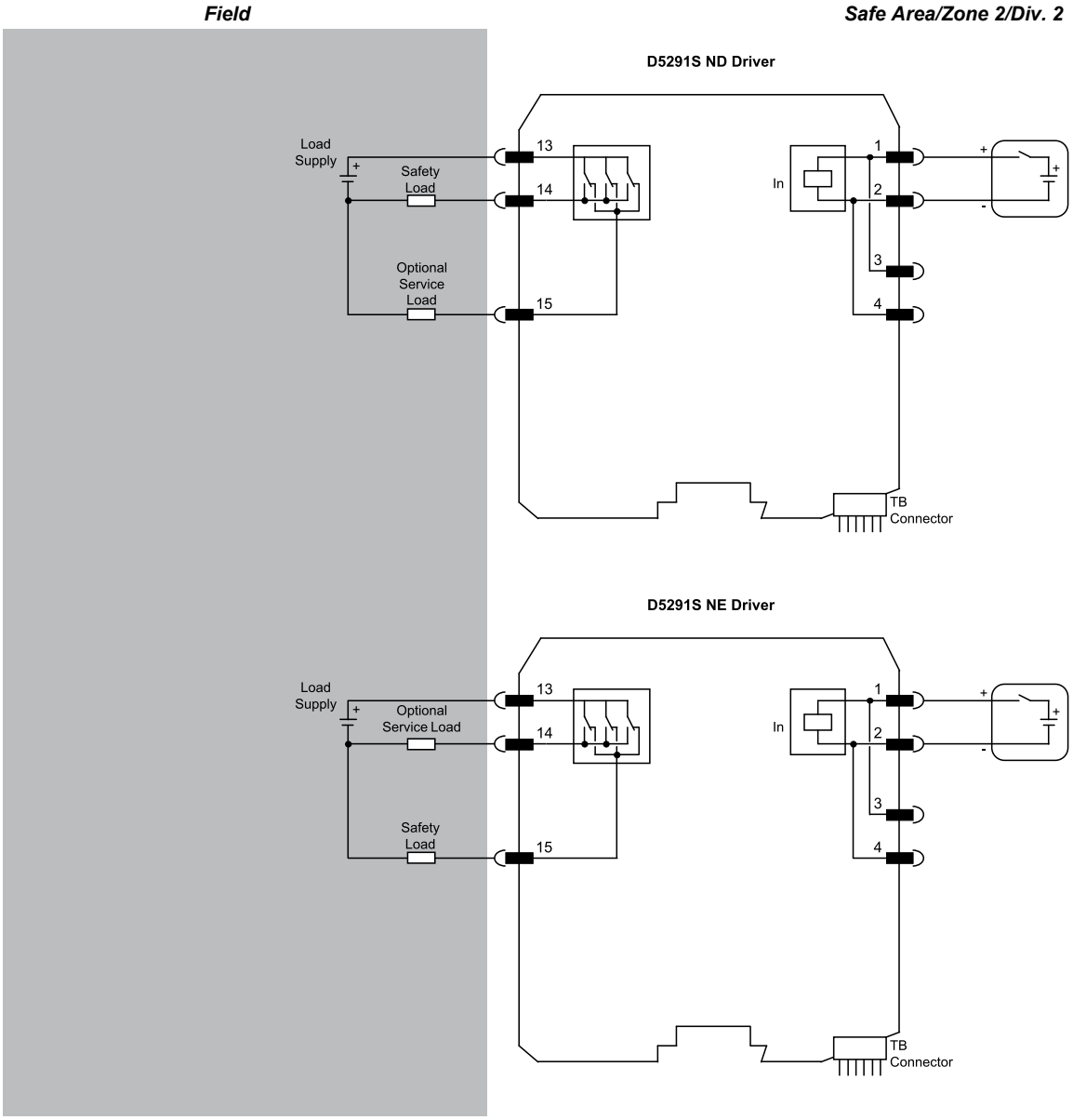
DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 165 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5291-097

SIL3 48 Vdc Relay Out Module for 10 A ND Loads

The D5291-097 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available a NO and a NC contact for Normally De-energized (ND) loads, with Normally Energized coil, and a contact for service purpose. Compatibility with specific DO cards with pulse testing needs to be verified. This relay module is not suitable for low-current consumption applications (system-to-system signalling, driving LEDs, etc.).

FEATURES

- SIL 3 / SC 3 for ND loads with NE driver
- Up to 10 A functional / 16 A inrush current
- Service contact available
- Input/Output isolation

ORDERING INFORMATION

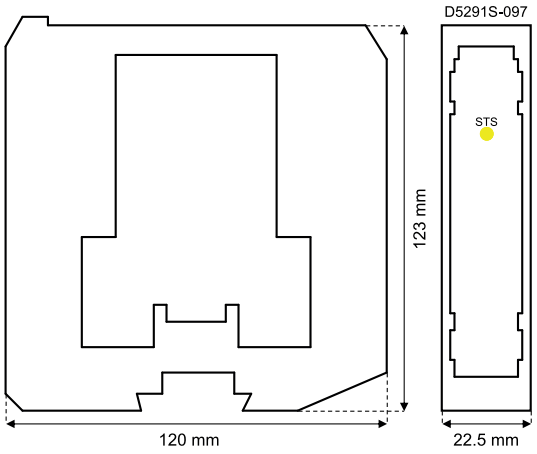
Ordering codes

D5291S-097: 1 channel

Accessories

DIN-Rail stopper MCHP196.

OVERALL DIMENSIONS



TECHNICAL DATA

Input

48 Vdc nom (42 to 54 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 30 mA @ 48 Vdc, typical.
Power dissipation: 1.5 W @ 48 Vdc, typical.

Output

Voltage free SPDT relay contact. Terminals 13-15, open in normally energized condition, closed when relay is de-energized (safe state). Service load output (not SIL) at terminals 13-14 is normally open when relay is de-energized, closed in energized relay condition.
Contact material: Ag Alloy (Cd free) or AgSnO2.
Contact rating: 10 A 250 Vac 2500 VA, 10 A 250 Vdc 300 W (resistive load).
Contact inrush current: 16 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Mechanical / electrical life: 10 * 10^6 / 5 * 10^4 operation, typical.
Operate / release time: 15 ms / 5 ms, typical.

Isolation

In/Out 2.5 kV.

Environmental conditions

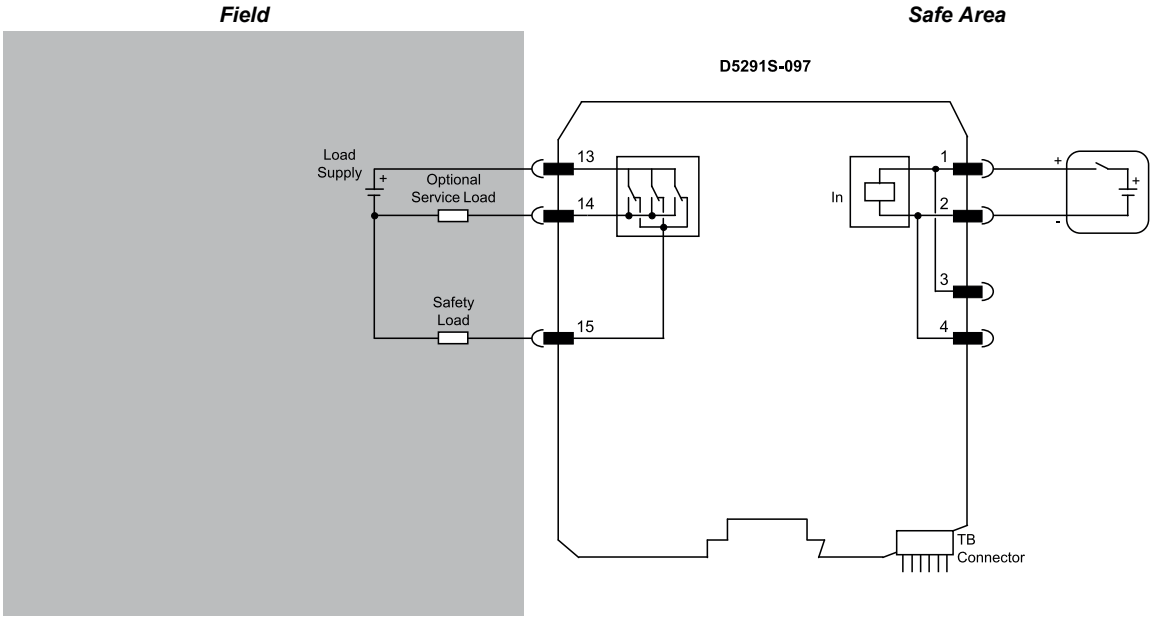
Operating temperature: temperature limits -40 to +60 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

DIN-Rail 35 mm, or on custom Term. Board.
Weight: about 165 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



SMART RELAY

D5096

SIL3 Relay Out Module for 5 A NE/ND Loads with LFD

The D5096 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available 2+2 NO relay contacts connected in parallel and then in series to avoid spurious trip and to increase process availability. High process availability SIL 3 Safety Function for both Normally Energized (NE) and Normally De-energized (ND) / F&G loads is available. Load can be isolated from supply on both polarities. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering. Line and load short/open circuit detection and load voltage monitoring are provided, both when the load is off and when the load is on. The fault in the field is directly mirrored to the PLC DO and it is also reported by opening the fault output.

FEATURES

- SIL 3 / SC 3 for NE/ND loads with NE/ND driver
- Installation in Zone 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- High process availability to avoid spurious trips
- Compatible with DCS/PLC pulse testing
- Line & Load short/open circuit detection
- Load voltage monitoring
- Field fault mirroring to the PLC DO
- Service contact available
- Input/Output/Supply isolation

ORDERING INFORMATION

Ordering codes

D5096S: 1 channel

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS

TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 15 mA @ 24 Vdc, typical.
Power dissipation: 0.35 W @ 24 Vdc, typical.

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 45 mA @ 24 Vdc, typical.
Power dissipation: 1.1 W @ 24 Vdc, typical.

Output

Voltage free 2+2 SPST relay contact (2 paralleled contacts in series) at terminals 7-11 and 8-12, close when relay energized, open in de-energized condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Contact current derating: refer to Instruction Manual.
Mechanical / electrical life: : $5 * 10^6$ / $3 * 10^4$ operation, typical.
Operate / release time: 30 ms / 30 ms, typical.

Fault

Load & line short/open circuit, supply voltage monitoring.
Line/load off ok: 25 Ω ≤ resistance ≤ 19 kΩ, typical.
Line/load off fault: resistance ≤ 15 Ω or ≥ 21 kΩ, typical.
Line/load on ok: 15 mA rms ≤ current ≤ 5 A rms, typical.
Line/load on fault: current ≤ 5 mA rms or ≥ 6 A rms, typical.
Load supply voltage ok: ≥ 20 Vdc/Vac, typical.
Load supply voltage fault: ≤ 5 Vdc/Vac, typical.
Fault signalling: voltage free NE SPST optocoupled open-collector transistor (output de-energized in fault condition).
Fault rating: 100 mA @ 35 Vdc.
Fault output voltage drop: < 1 V.
Response time: 0.5 s, typical.

Isolation

Output/Input 1.5 kV; Output/Supply 1.5 kV; Output/Fault Output 1.5 kV; Input/Supply 500 V; Input/Fault Output 500 V; Supply/Fault Output 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

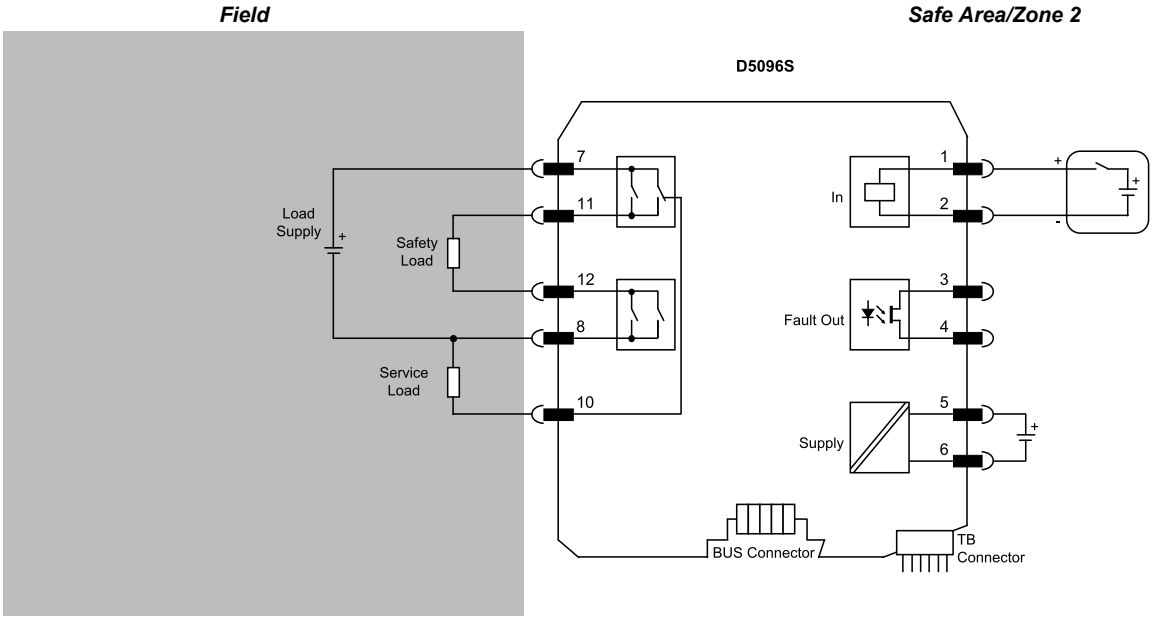
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 125 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5096-100

SIL3/2 5 A Relay with LFD & Universal Fault Mirror

The D5096-100 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available 2+2 NO relay contacts connected in parallel and then in series to avoid spurious trip and to increase process availability. High process availability SIL 3 Safety Function for Normally Energized (NE) and SIL 2 for Normally De-energized (ND) / F&G loads is available. Load can be isolated from supply on both polarities. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering. Line and load short/open circuit detection and load voltage monitoring are provided, both when the load is off and when the load is on. The fault in the field is directly mirrored to the PLC DO by opening the input and it is also reported by opening the fault output. The fault mirroring technique guarantees a wide compatibility to PLC DO cards.

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- SIL 2 / SC 3 for ND loads with ND driver
- Installation in Zone 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- High process availability to avoid spurious trips
- Compatible with DCS/PLC pulse testing
- Line & Load short/open circuit detection
- Load voltage monitoring
- Universal field fault mirroring to the PLC DO
- Service contact available
- Input/Output/Supply isolation

ORDERING INFORMATION

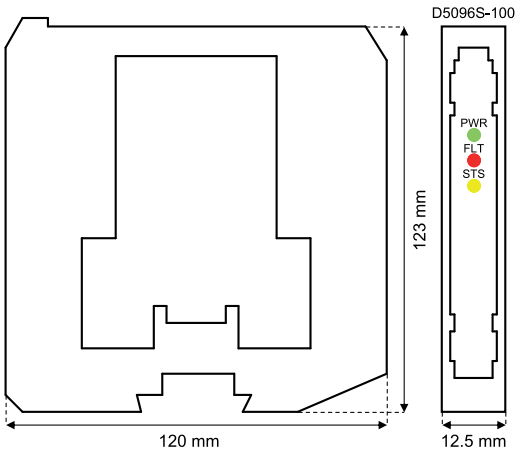
Ordering codes

D5096S-100: 1 channel

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 15 mA @ 24 Vdc, typical.
Power dissipation: 0.35 W @ 24 Vdc, typical.

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 45 mA @ 24 Vdc, typical.
Power dissipation: 1.1 W @ 24 Vdc, typical.

Output

Voltage free 2+2 SPST relay contact (2 paralleled contacts in series) at terminals 7-11 and 8-12, close when relay energized, open in de-energized condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Contact current derating: refer to Instruction Manual.
Mechanical / electrical life: : $5 * 10^6$ / $3 * 10^4$ operation, typical.
Operate / release time: 30 ms / 30 ms, typical.

Fault

Load & line short/open circuit, supply voltage monitoring.
Line/load off ok: 25 Ω ≤ resistance ≤ 19 kΩ, typical.
Line/load off fault: resistance ≤ 15 Ω or ≥ 21 kΩ, typical.
Line/load on ok: 15 mA rms ≤ current ≤ 5 A rms, typical.
Line/load on fault: current ≤ 5 mA rms or ≥ 6 A rms, typical.
Load supply voltage ok: ≥ 20 Vdc/Vac, typical.
Load supply voltage fault: ≤ 5 Vdc/Vac, typical.
Fault signalling: voltage free NE SPST optocoupled open-collector transistor (output de-energized in fault condition).
Fault mirroring: input opening (impedance > 1 MΩ).
Fault rating: 100 mA @ 35 Vdc.
Fault output voltage drop: < 1 V.
Response time: 0.5 s, typical.

Isolation

Out/In 1.5 kV; Out/Supply 1.5 kV; Out/Fault Out 1.5 kV; In/Supply 500 V; In/Fault Out 500 V; Supply/Fault Out 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

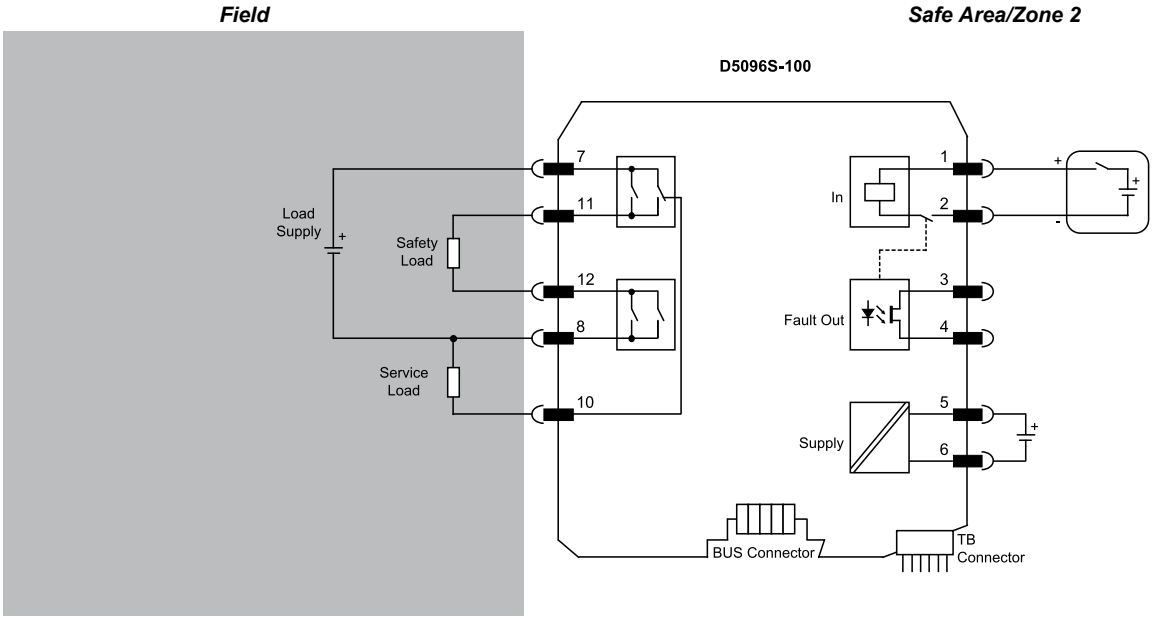
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 125 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5097

SIL3 Relay Out Module for 5 A NE/ND Loads with LFD

The D5097 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available 2+2 NC relay contacts connected in parallel and then in series to avoid spurious trip and to increase process availability. High process availability SIL 3 Safety Function for both Normally Energized (NE) and Normally De-energized (ND) / F&G loads is available. Load can be isolated from supply on both polarities. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering. Line and load short/open circuit detection and load voltage monitoring are provided, both when the load is off and when the load is on. The fault in the field is directly mirrored to the PLC DO and it is also reported by opening the fault output.

FEATURES

- SIL 3 / SC 3 for NE/ND loads with ND/NE driver
- Installation in Zone 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- High process availability to avoid spurious trips
- Compatible with DCS/PLC pulse testing
- Line & Load short/open circuit detection
- Load voltage monitoring
- Field fault mirroring to the PLC DO
- Service contact available
- Input/Output/Supply isolation

ORDERING INFORMATION

Ordering codes

D5097S: 1 channel

Accessories

Bus Connector JDFT049, Bus Mounting Kit OPT5096.

OVERALL DIMENSIONS

TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 15 mA @ 24 V, typical.
Power dissipation: 0.35 W @ 24 V, typical.

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 45 mA @ 24 Vdc, typical.
Power dissipation: 1.1 W @ 24 Vdc, typical.

Output

Voltage free 2+2 SPST relay contact (2 paralleled contacts in series) at terminals 7-11 and 8-12, close when relay de-energized, open in energized condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Contact current derating: refer to Instruction Manual.
Mechanical / electrical life: $5 * 10^6$ / $3 * 10^4$ operation, typical.
Operate / release time: 30 ms / 30 ms, typical.

Fault

load & line short/open circuit, supply voltage monitoring.
Line/load off ok: 25 Ω ≤ resistance ≤ 19 kΩ, typical.
Line/load off fault: resistance ≤ 15 Ω or ≥ 21 kΩ, typical.
Line/load on ok: 15 mA rms ≤ current ≤ 5 A rms, typical.
Line/load on fault: current ≤ 5 mA rms or ≥ 6 A rms, typical.
Load supply voltage ok: ≥ 20 Vdc/Vac, typical.
Load supply voltage fault: ≤ 5 Vdc/Vac, typical.
Fault signalling: voltage free NE SPST optocoupled open-collector transistor (output de-energized in fault condition).
Fault rating: 100 mA @ 35 Vdc.
Fault output voltage drop: < 1 V.
Response time: 0.5 s, typical.

Isolation

Output/Input 2.5 kV; Output/Supply 2.5 kV; Output/Fault Output 2.5 kV; Input/Supply 500 V; Input/Fault Output 500 V; Supply/Fault Output 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

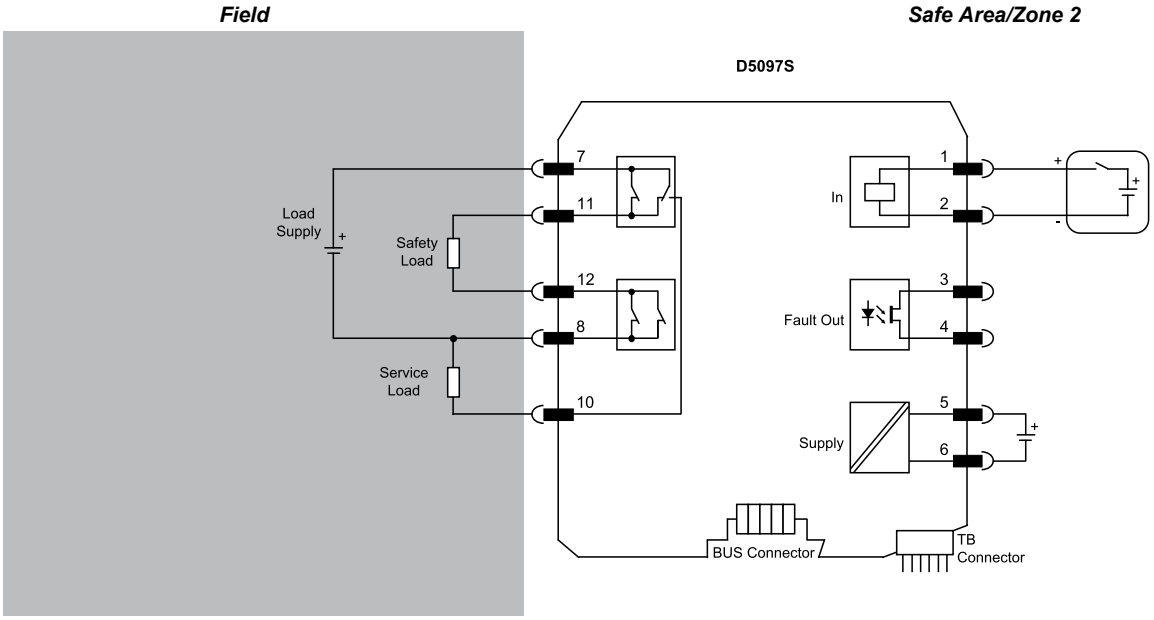
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 125 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm^2 (13 AWG).
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5293

SIL3 Relay Out Module for 5 A NE Loads with LFD

The D5293 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available two NO contacts for Normally Energized (NE) loads, in order to disconnect the load on both supply lines, and a NC contact for service purpose. Load can be isolated from supply on both polarities. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering. Line and load short/open circuit detection and load voltage monitoring are provided, both when the load is off and when the load is on. The fault in the field is directly mirrored to the PLC DO and it is also reported by opening the fault output. Diagnostic parameters are programmable and can also be monitored/configured through Modbus.

FEATURES

- SIL 3 / SC 3 for NE loads with NE driver
- SIL 2 / SC 3 for FAULT OUTPUTS
- Installation in Zone 2/Div. 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- Compatible with DCS/PLC pulse testing
- Line & Load short/open circuit detection
- Load voltage monitoring
- Field fault mirroring to the PLC DO
- Modbus RTU RS-485 for monitor & configuration
- Service contact available
- Input/Output/Supply isolation

ORDERING INFORMATION

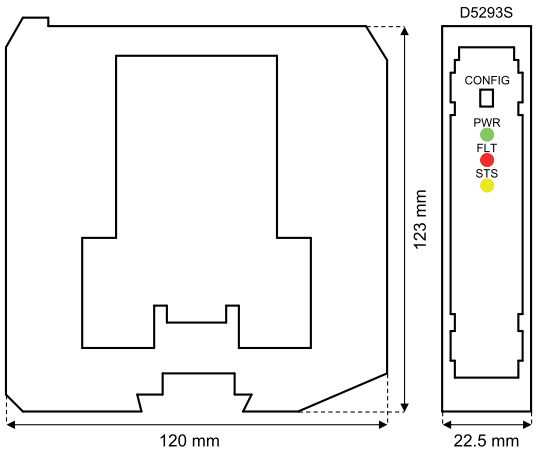
Ordering codes

D5293S: 1 channel

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 40 mA @ 24 V (no fault), typical.
Power dissipation: 1.0 W @ 24 V (no fault), typical.

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 40 mA @ 24 Vdc (no fault), typical.
Power dissipation: 1.0 W @ 24 Vdc (no fault), typical.

Output

Voltage free 1 + 1 SPST relay contact at terminals 13-15 and 14-16, opens when relay is de-energized (fail safe state), close in energized condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Contact current derating: refer to Instruction Manual.
Mechanical / electrical life: $5 * 10^6$ / $3 * 10^4$ operation, typical.
Operate / release time: 30 ms / 30 ms, typical.

Fault

Load & line short/open circuit, supply voltage monitoring.
Line + load resistance: programmable up to 50 kΩ.
Load current: programmable up to 5 A.
Load supply voltage: programmable up to 250 Vdc/Vac.
Fault signaling: voltage free DPST contact.
Fault 1 rating: 0.5 A 30 Vac 15 VA, 0.5 A 50 Vdc 25 W (resistive load).
Fault 2 rating: 3 A 250 Vac 750 VA, 3 A 125 Vdc 120 W (resistive load).
Response time: 4 s, typical.

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Isolation

Out/In 2.5 kV; Out/Supply 2.5 kV; Out/Fault Outs 2.5 kV; Out/RS485 Modbus 2.5 kV; In/Supply 500 V; In/Fault Out 1 500 V; In/Fault Out 2 2.5 kV; In/RS485 Modbus 500 V; Supply/Fault Out 1 500 V; Supply/Fault Out 2 2.5 kV; Supply/RS485 Modbus 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

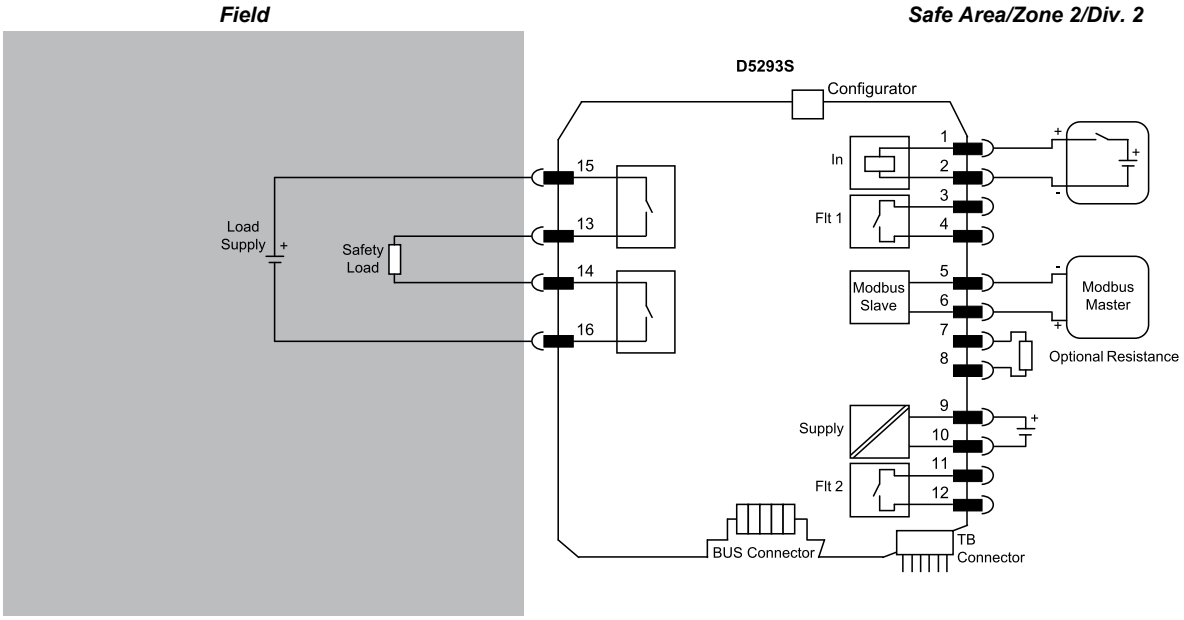
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 230 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5294

SIL3 Relay Out Module for 5 A NE/ND Loads with LFD

The D5294 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available 2+2 NO relay contacts connected in parallel and then in series to avoid spurious trip and to increase process availability. High process availability SIL 3 Safety Function for both Normally Energized (NE) and Normally De-energized (ND) / F&G loads is available. Load can be isolated from supply on both polarities. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering. Line and load short/open circuit detection and load voltage monitoring are provided, both when the load is off and when the load is on. The fault in the field is directly mirrored to the PLC DO and it is also reported by opening the fault output. Diagnostic parameters are programmable and can also be monitored/configured through Modbus.

FEATURES

- SIL 3 / SC 3 for NE/ND loads with NE/ND driver
- SIL 2 / SC 3 for FAULT OUTPUTS
- Installation in Zone 2/Div. 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- High process availability to avoid spurious trips
- Compatible with DCS/PLC pulse testing
- Line and Load short/open circuit detection
- Load voltage monitoring
- Earth leakage monitoring
- Internal coil integrity monitoring
- Field fault mirroring to the PLC DO
- Modbus RTU RS-485 for monitor & configuration
- Service contact available
- Input/Output/Supply isolation

ORDERING INFORMATION

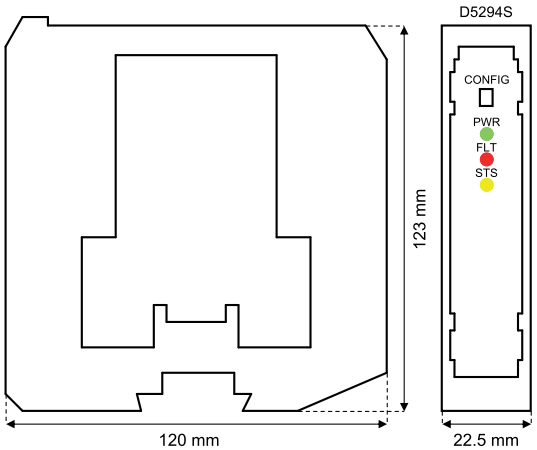
Ordering codes

D5294S: 1 channel

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 45 mA @ 24 Vdc (no fault), typical.
Power dissipation: 1.1 W @ 24 Vdc (no fault), typical.

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 40 mA @ 24 Vdc (no fault), typical.
Power dissipation: 1.0 W @ 24 Vdc (no fault), typical.

Output

Voltage free 2+2 SPST relay contact (2 paralleled contacts in series) at terminals 13-15 and 14-16, close when relay energized, open in de-energized condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Contact current derating: refer to Instruction Manual.
Mechanical / electrical life: $5 * 10^6$ / $3 * 10^4$ operation, typical.
Operate / release time: 30 ms / 30 ms, typical.

Fault

Load & line short/open circuit, supply voltage and earth leakage monitor.
Diagnostics equivalent source: when the load is off, the diagnostic circuit forces a sensing signal: 5.5 V open circuit, 10 mA short circuit, typical.
Line + load resistance: programmable up to 50 kΩ.
Load current: programmable up to 5 A.
Load supply voltage: programmable up to 250 Vdc/Vac.
Load earth leakage: programmable up to 3 MΩ.
Fault signalling: voltage free DPST contact.
Fault 1 rating: 0.5 A 30 Vac 15 VA, 0.5 A 50 Vdc 25 W (resistive load).
Fault 2 rating: 3 A 250 Vac 750 VA, 3 A 125 Vdc 120 W (resistive load).
Response time: 4 s, typical.

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Isolation

Output/Input 2.5 kV; Output/Supply 2.5 kV; Output/Fault Outputs 2.5 kV; Output/RS485 Modbus 2.5 kV; Input/Supply 500 V; Input/Fault Output 1 500 V; Input/Fault Output 2 2.5 kV; Input/RS485 Modbus 500 V; Supply/Fault Output 1 500 V; Supply/Fault Output 2 2.5 kV; Supply/RS485 Modbus 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

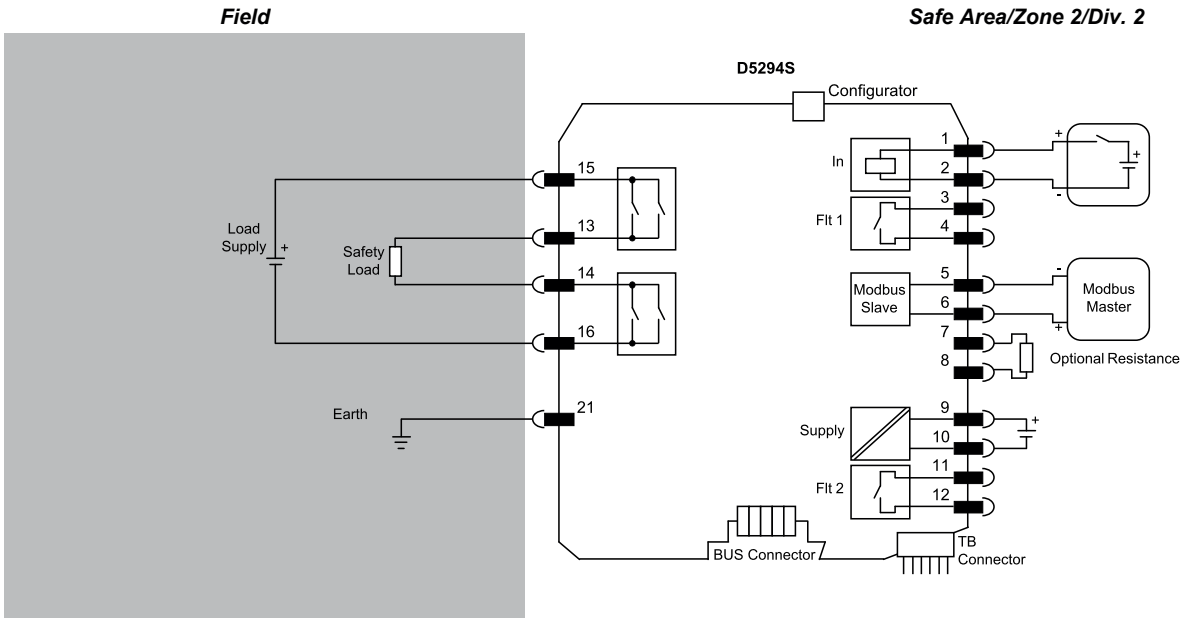
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 195 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



D5295

SIL3 Relay Out Module for 5 A NE/ND Loads with LFD

The D5295 is a relay module suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input and output contacts. It makes available 2+2 NC relay contacts connected in parallel and then in series to avoid spurious trip and to increase process availability. High process availability SIL 3 Safety Function for both Normally Energized (NE) and Normally De-energized (ND) / F&G loads is available. Load can be isolated from supply on both polarities. A wide compatibility towards different DCS/PLC is guaranteed: driving pulse testing is permitted by a dedicated internal circuit, which prevents contact and LED flickering. Line and load short/open circuit detection and load voltage monitoring are provided, both when the load is off and when the load is on. The fault in the field is directly mirrored to the PLC DO and it is also reported by opening the fault output. Diagnostic parameters are programmable and can also be monitored/configured through Modbus.

FEATURES

- SIL 3 / SC 3 for NE/ND loads with ND/NE driver
- SIL 2 / SC 3 for FAULT OUTPUTS
- Installation in Zone 2
- Up to 5 A functional / 6 A inrush current
- Load disconnection on both supply lines available
- High process availability to avoid spurious trips
- Compatible with DCS/PLC pulse testing
- Line & Load short/open circuit detection
- Load voltage monitoring
- Earth leakage monitoring
- Internal coil integrity monitoring
- Field fault mirroring to the PLC DO
- Modbus RTU RS-485 for monitor & configuration
- Service contact available
- Input/Output/Supply isolation

ORDERING INFORMATION

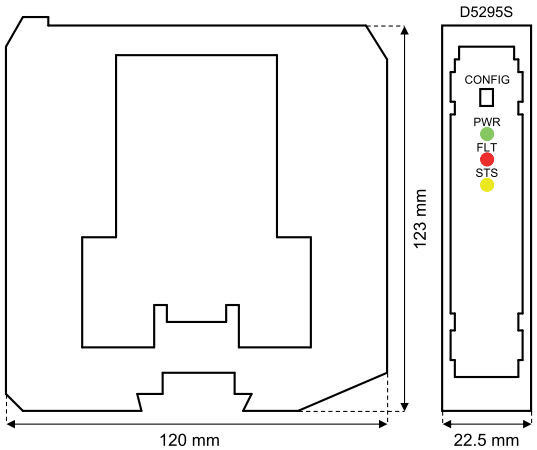
Ordering codes

D5295S: 1 channel

Accessories

Bus Connector JDFT050, Bus Mounting Kit OPT5096.
Programmable USB serial line Kit PPC5092 + SWC5090.

OVERALL DIMENSIONS



TECHNICAL DATA

Supply

24 Vdc nom (18 to 30 Vdc), reverse polarity protected.
Current consumption: 45 mA @ 24 V (no fault), typical.
Power dissipation: 1.1 W @ 24 V (no fault), typical.

Input

24 Vdc nom (21.6 to 27.6 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.
Current consumption: 40 mA @ 24 Vdc (no fault), typical.
Power dissipation: 1.0 W @ 24 Vdc (no fault), typical.

Output

Voltage free 2+2 SPST relay contact (2 paralleled contacts in series) at terminals 13-15 and 14-16, open when relay energized, close in de-energized condition.
Contact material: Ag Alloy (Cd free), gold plated.
Contact rating: 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load).
Contact min. switching current: 1 mA.
Contact inrush current: 6 A @ 24 Vdc, 250 Vac.
DC and AC load breaking capacity: refer to Instruction Manual.
Contact current derating: refer to Instruction Manual.
Mechanical / electrical life: $5 * 10^6$ / $3 * 10^4$ operation, typical.
Operate / release time: 30 ms / 30 ms, typical.

Fault

Load & line short/open circuit, supply voltage and earth leakage monitor.
Diagnostics equivalent source: when the load is off, the diagnostic circuit forces a sensing signal: 5.5 V open circuit, 10 mA short circuit, typical.
Line + load resistance: programmable up to 50 kΩ.
Load current: programmable up to 5 A.
Load supply voltage: programmable up to 250 Vdc/Vac.
Load earth leakage: programmable up to 3 MΩ.
Fault signalling: voltage free DPST contact.
Fault 1 rating: 0.5 A 30 Vac 15 VA, 0.5 A 50 Vdc 25 W (resistive load).
Fault 2 rating: 3 A 250 Vac 750 VA, 3 A 125 Vdc 120 W (resistive load).
Response time: 4 s, typical.

Modbus interface

Modbus RTU RS-485 up to 115.2 kbps for monitor/configuration/control.

Isolation

Output/Input 2.5 kV; Output/Supply 2.5 kV; Output/Fault Outputs 2.5 kV; Output/RS485 Modbus 2.5 kV; Input/Supply 500 V; Input/Fault Output 1 500 V; Input/Fault Output 2 2.5 kV; Input/RS485 Modbus 500 V; Supply/Fault Output 1 500 V; Supply/Fault Output 2 2.5 kV; Supply/RS485 Modbus 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits -45 to +80 °C.

Mounting

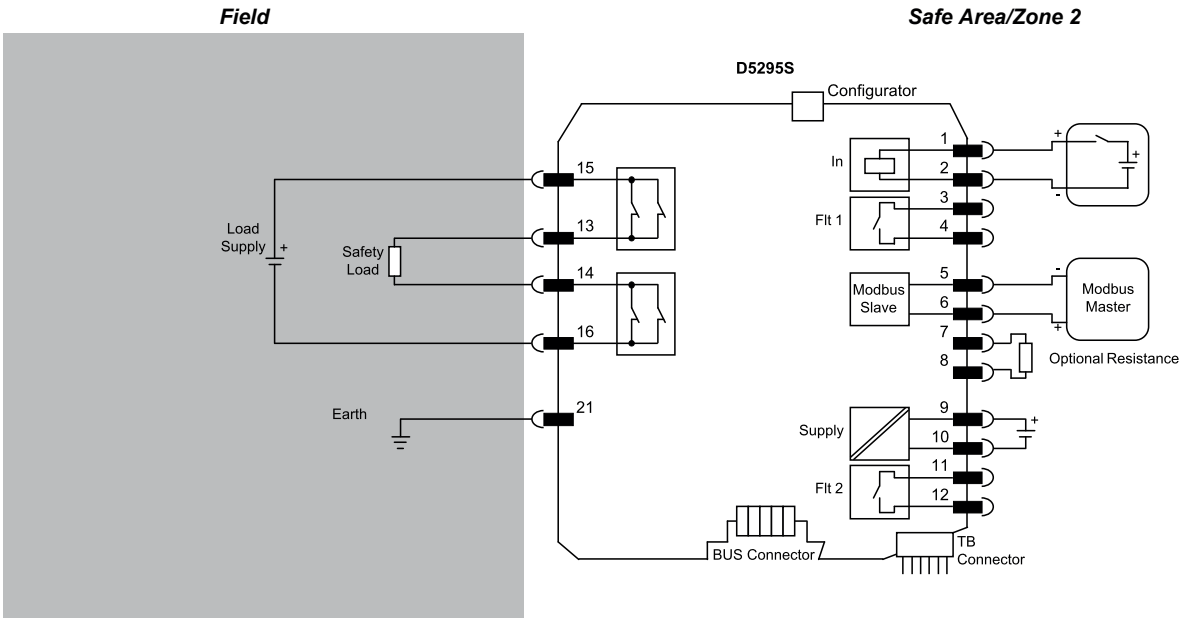
DIN-Rail 35 mm, with or without Power Bus or on custom Term. Board.
Weight: about 235 g.
Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm² (13 AWG).
Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

FSM SIL 3

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM

Additional installation diagrams may be found in Instruction Manual.



INSTRUCTION MANUAL

D5000 - D5200 Series

DIN-Rail, Power Bus, Termination Board mounting

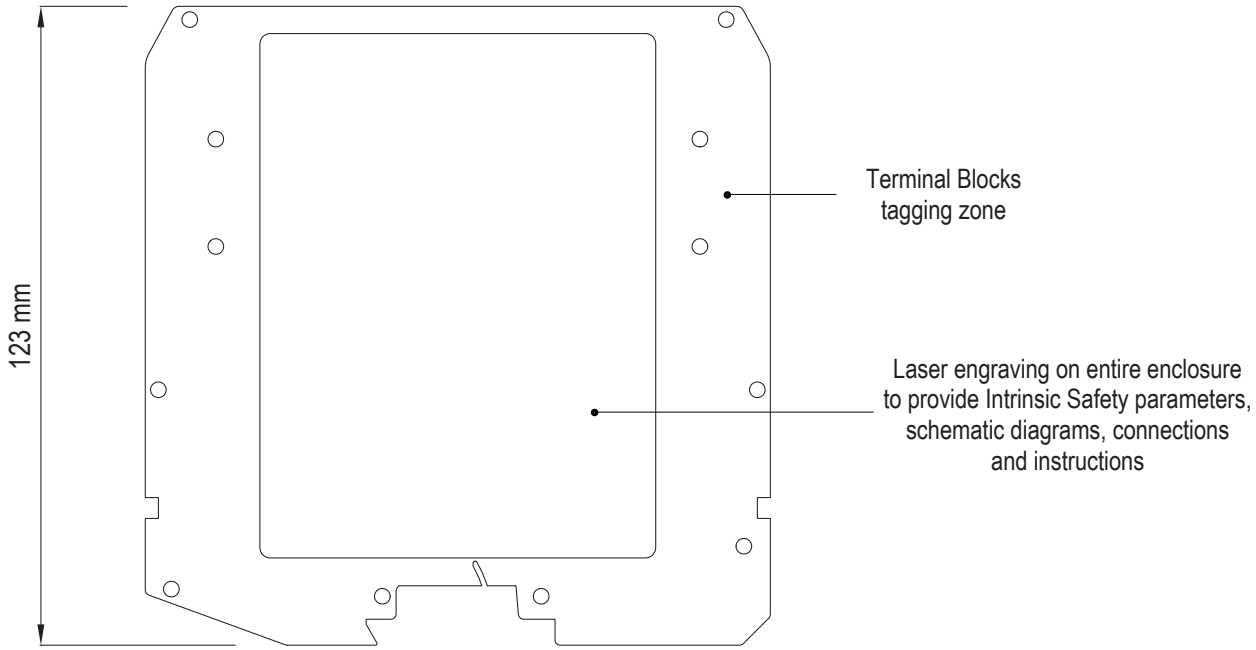
Intrinsically Safe Isolators and Safety Relays

gmi technology for safety

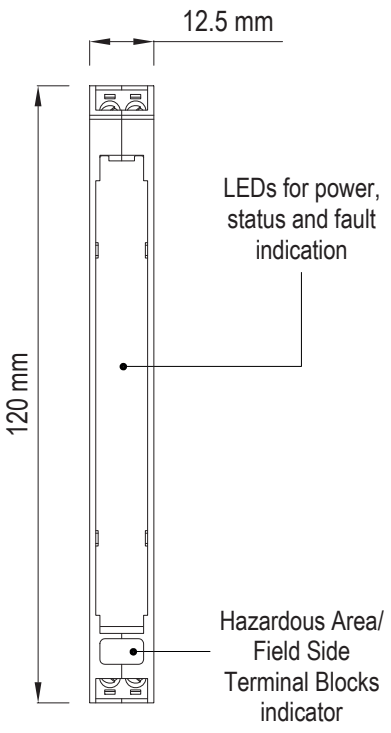
D5000 - D5200 Intrinsically Safe Isolators and Safety Relays

Mounting	Dimensions (D5000)	Dimensions (D5200)
T35 DIN-Rail according to EN50022 with or without Power Bus connector or on Termination Board	Width 12.5 mm Depth 123.0 mm Height 120.0 mm	Width 22.5 mm Depth 123.0 mm Height 120.0 mm
Case material	**Blister packing size (D5000)**	**Blister packing size (D5200)**
PA66 - Polyamide (Nylon) 66	Width 24.0 mm Depth 132.0 mm Height 138.0 mm	Width 34.0 mm Depth 132.0 mm Height 138.0 mm

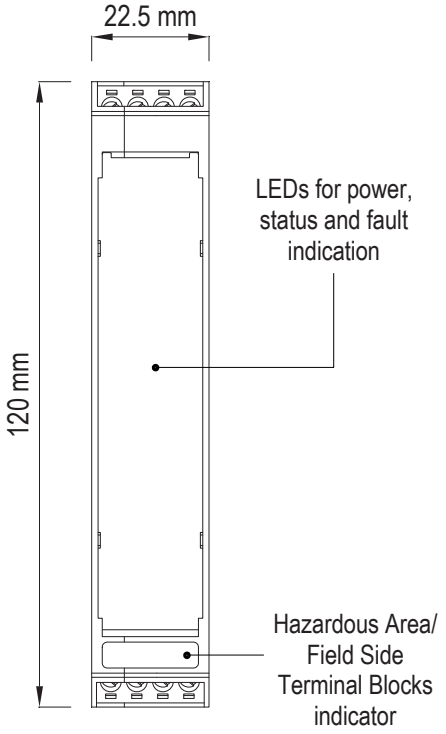
Side D5000 - D5200



Front D5000



Front D5200



Enclosure Characteristics

- High channel density results from innovative circuit design using advanced surface mount components.
- Plug-in screw terminal blocks to secure terminations up to 2.5 mm^2.
- Configuration components are easily accessed by removing side cover.

High packing density

- 35 mm (Top Hat) DIN-Rail.
- Ultra slim 2 channels 12 mm wide DIN-Rail and Termination Board mounting modules.
- Power and fault on bus connectors.
- 6 mm per channel means 50% space reduction.

Mounting

Fig. 1

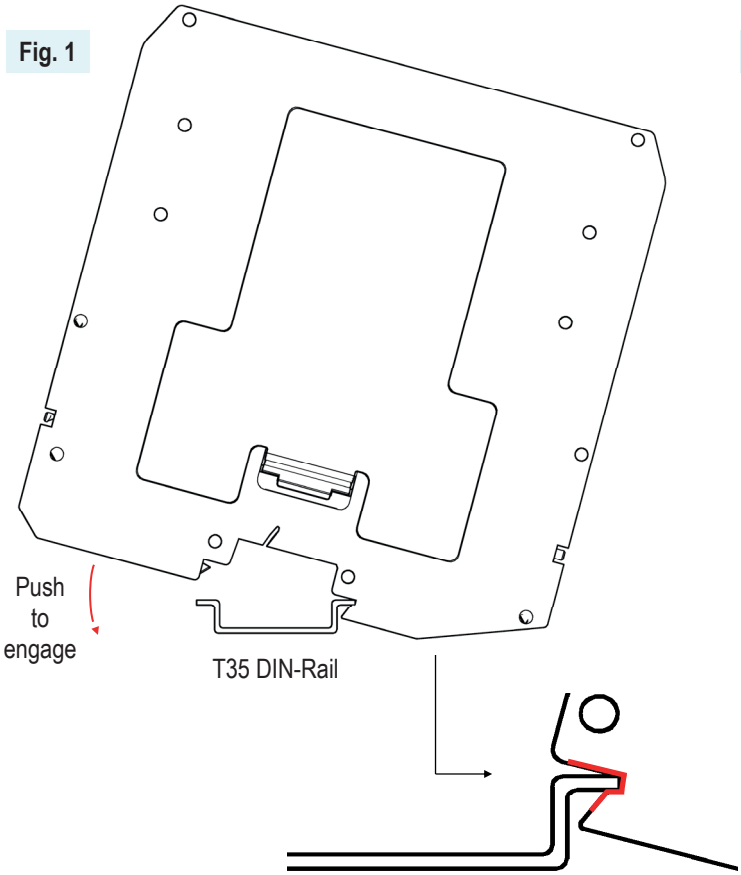
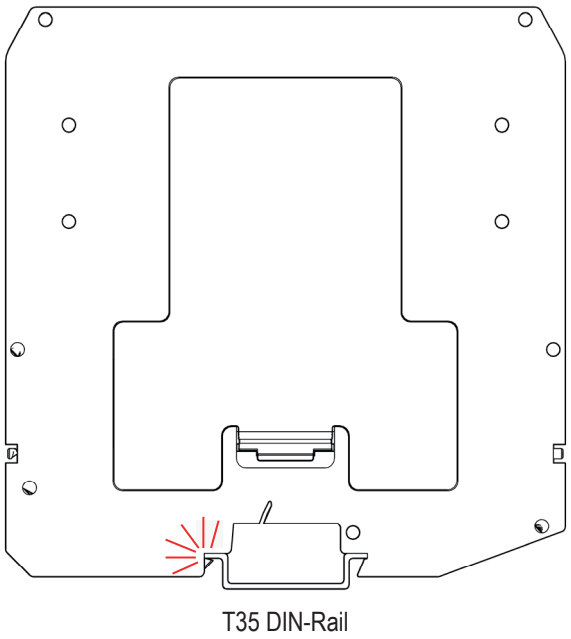


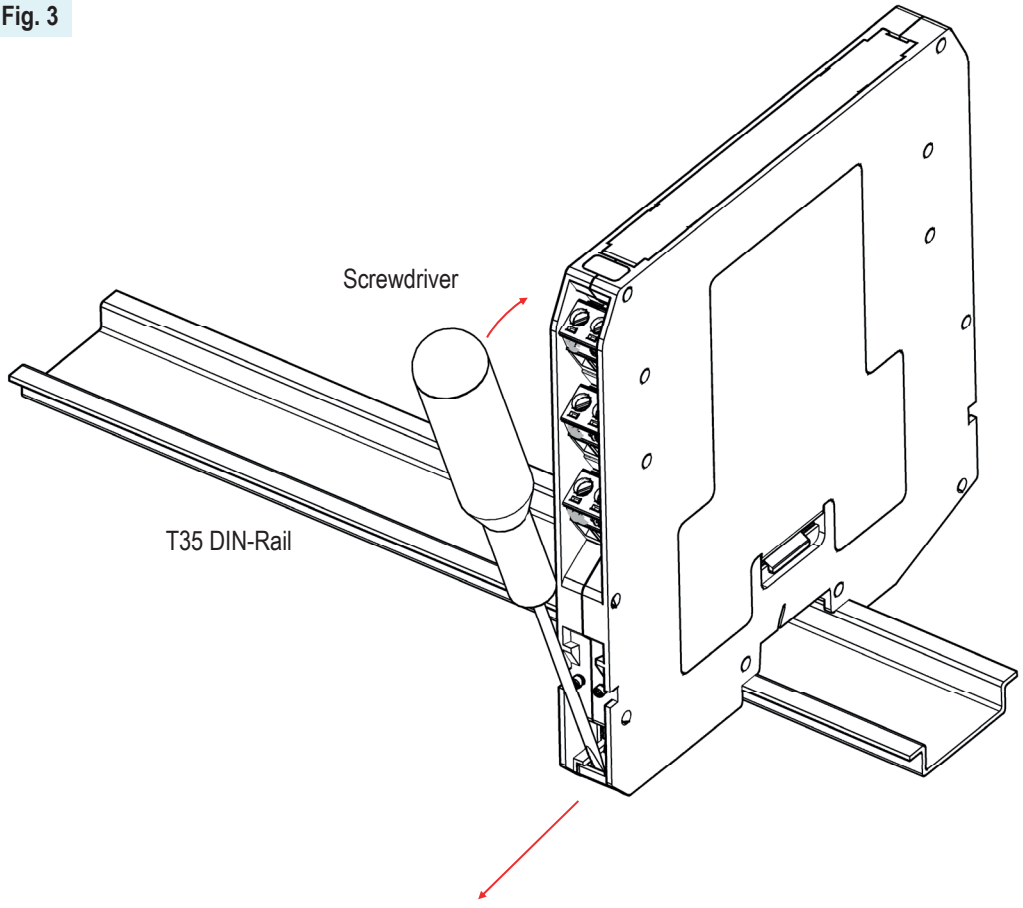
Fig. 2



To mount Series D5000-D5200 on 35 mm DIN-Rail, hook one side of the mounting foot over the rail's lip and press the barrier down firmly until fixed (see Fig.1 and Fig.2).

Removing

Fig. 3



To remove a barrier from the mounting rail, insert a blade screwdriver in the mounting foot and lever against the side of the barrier casing (see Fig.3 and Fig.4).

Fig. 4

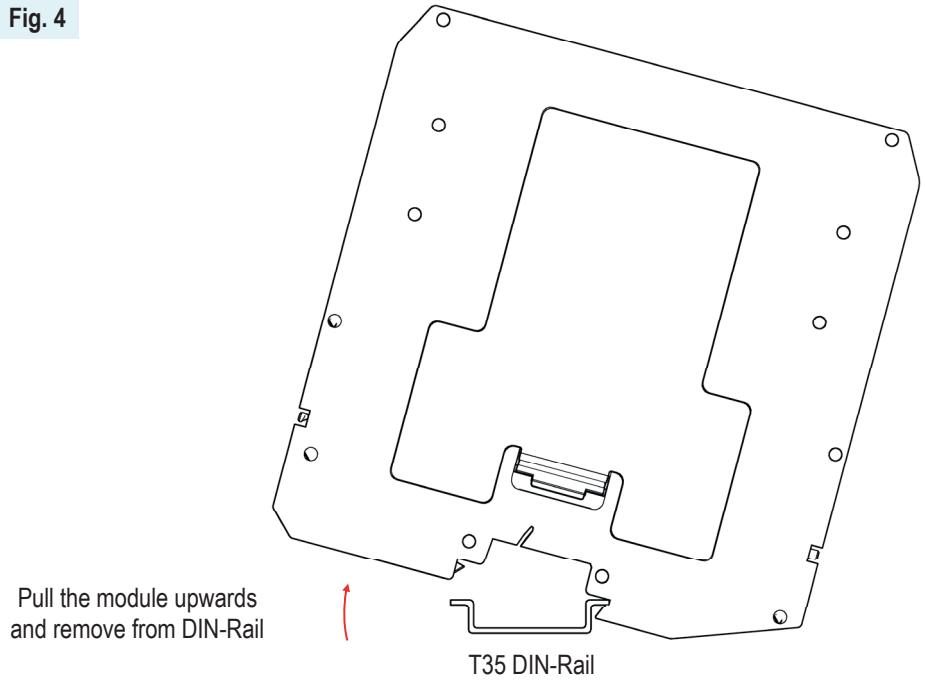


Fig. 5 T35 DIN-Rail

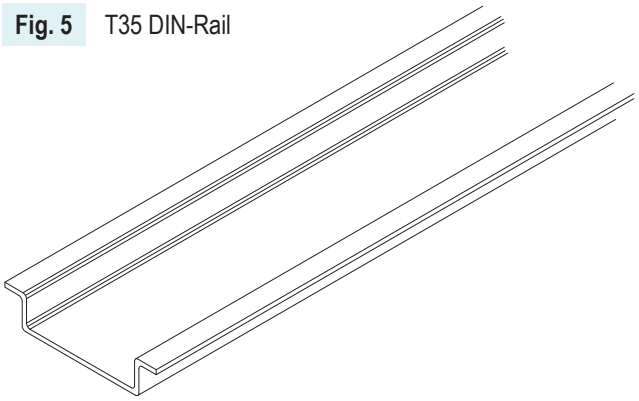
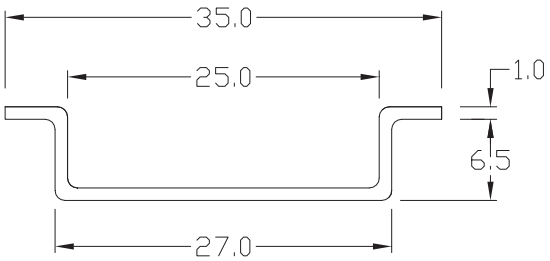


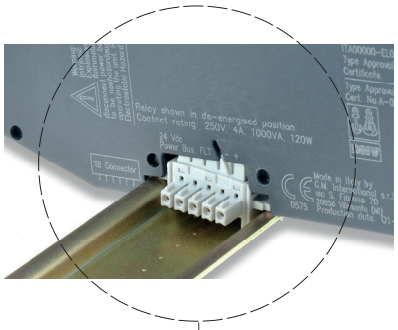
Fig. 6 T35 DIN-Rail Dimensions (millimeters)

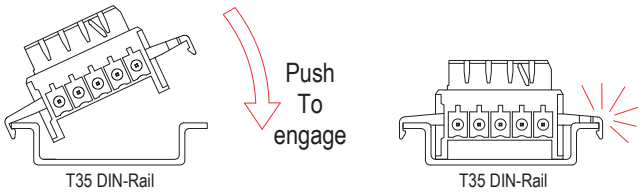


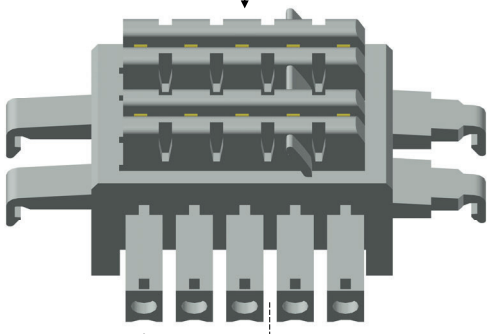
Power Bus connector

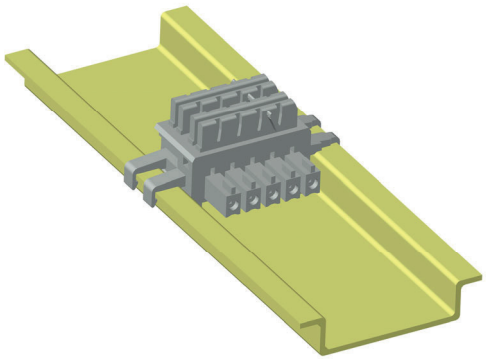
Power Supply Voltage 24 Vdc can be applied to the module, by connecting directly the voltage to the plug-in Terminal Block of each module, or via the Power Bus System. The system consists of standard DIN-Rail modules mounted on optional DIN-Rail Power Bus connectors.
The maximum allowed powering capacity is 8 A. It is always possible to remove modules, without disconnecting the bus connector which remains attached to the DIN-Rail.
Cumulative Fault Alarm indication is provided on the Power Bus connection.
Power Bus system need the accessories shown below, in order to be operative:

JDFT049: D5000 Power Bus Connector (12mm)

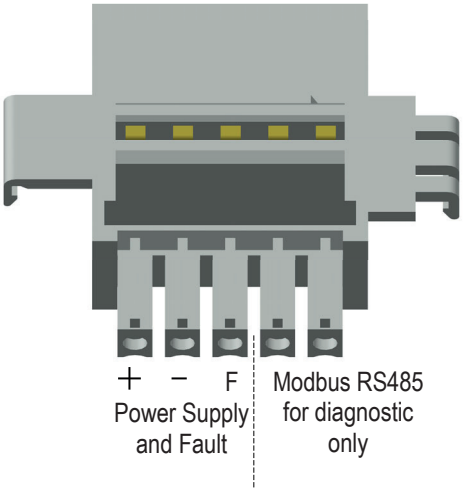


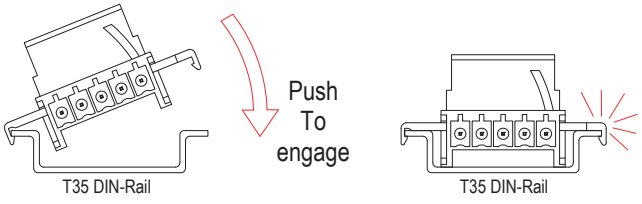


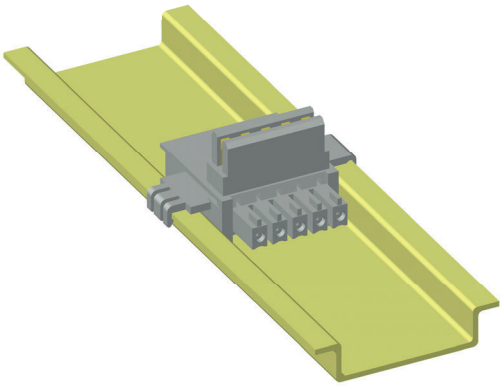




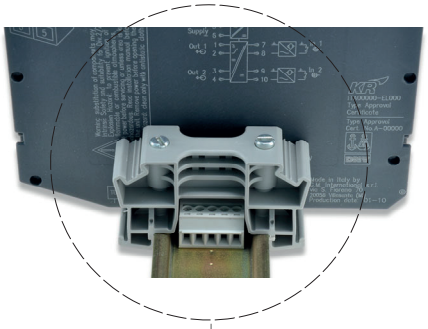
JDFT050: D5200 Power Bus Connector (22mm)

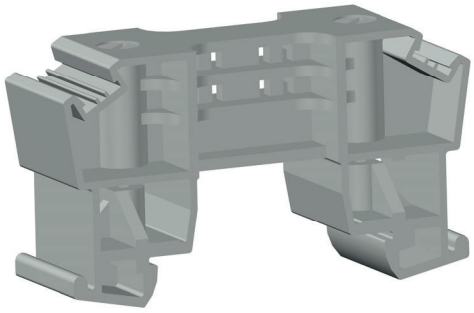




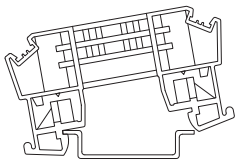


MCHP196: DIN-Rail Stopper

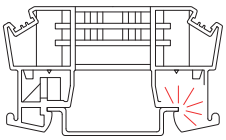


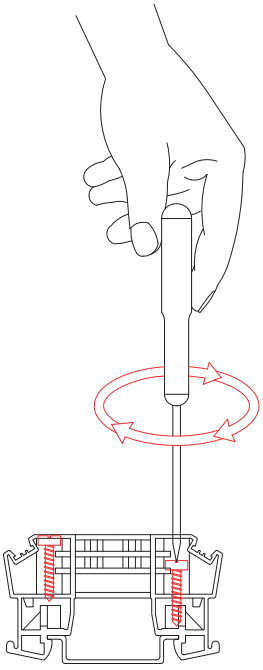


DIN-Rail Stopper (MCHP196)

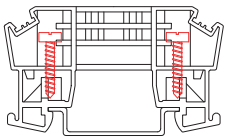


Push
To
engage



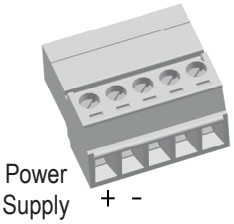


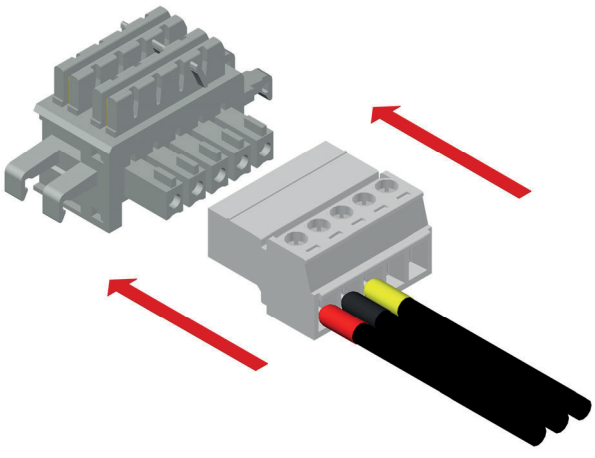
Secure the stopper to the rail by completely rotating both screws clockwise.



MOR022, MOR017: Plug-in terminal blocks

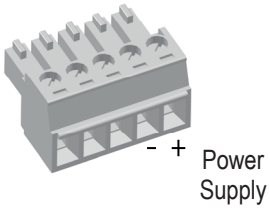
Plug-in terminal block male, horizontal out, for Power Bus (MOR022)

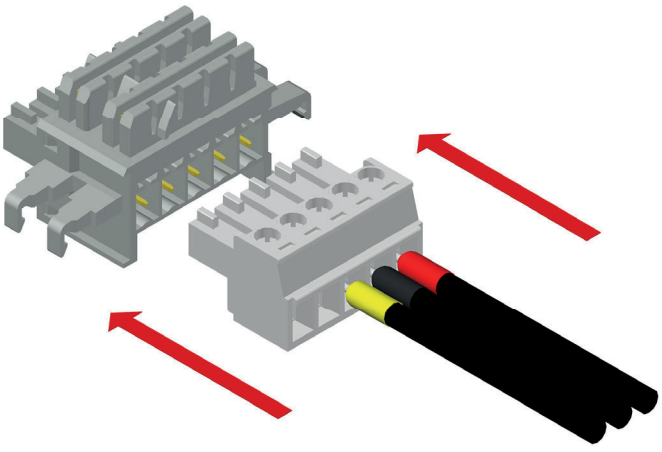




Mounting a plug-in terminal block male onto a connector Power Bus

Plug-in terminal block female, horizontal out, for Power Bus (MOR017)



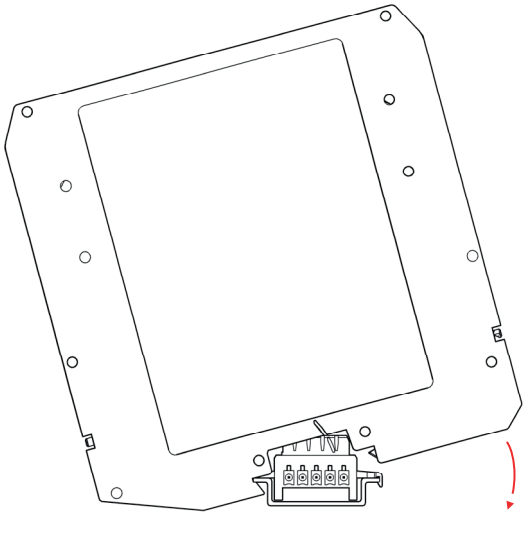


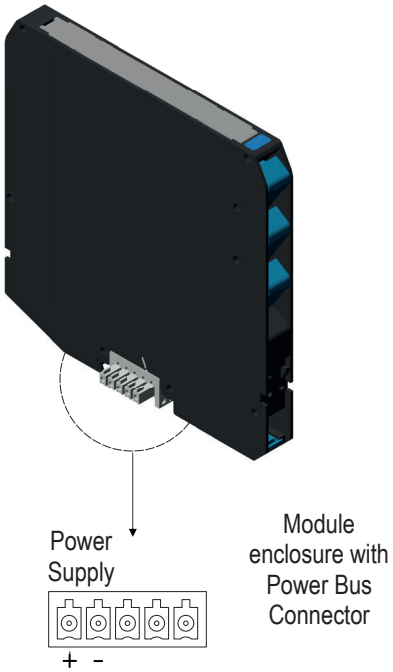
Mounting a plug-in terminal block female into a connector Power Bus

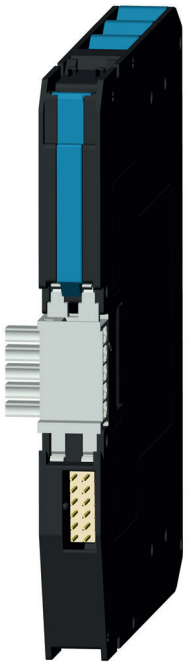
Mounting modules on Power Bus connector

D5000 Series

Mounting a module onto 12 mm Power Bus connector and T35 DIN-Rail (JDFT049)

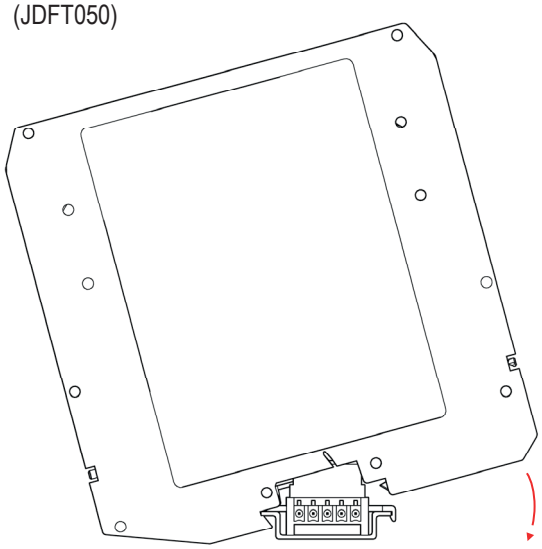


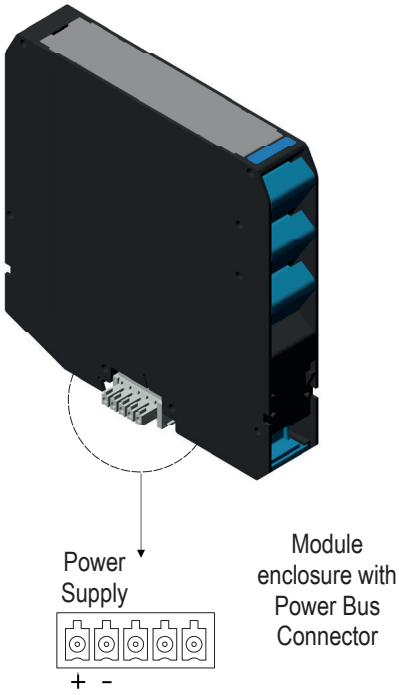


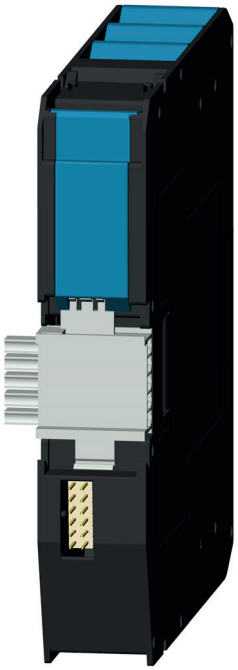


D5200 Series

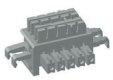
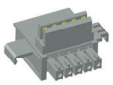
Mounting a module onto 22 mm Power Bus connector and T35 DIN-Rail (JDFT050)





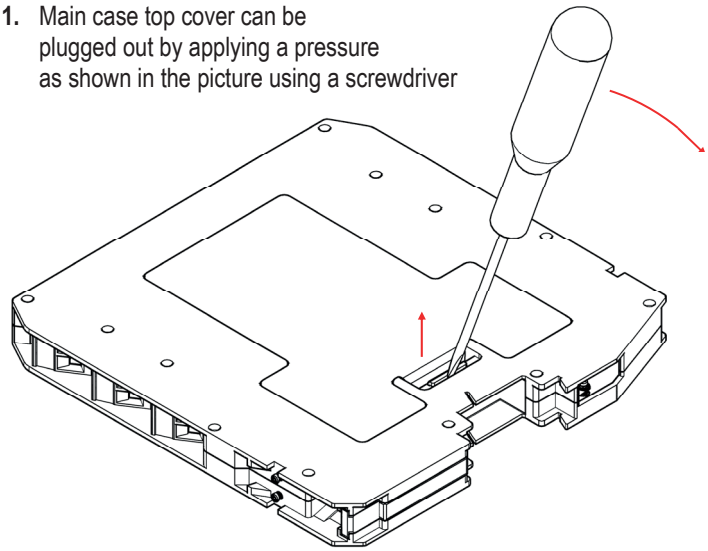


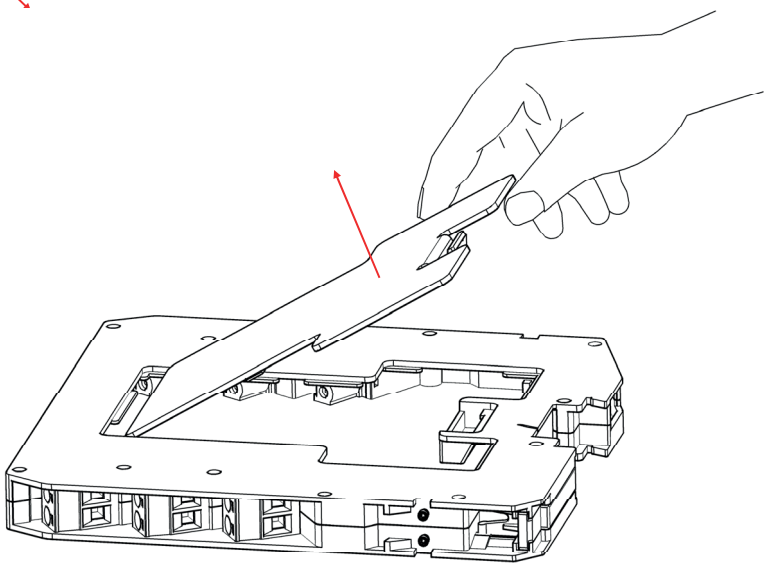
Ordering information

Image	Code	Description
	MCHP196	DIN-Rail Stopper
	MOR017	Plug-in terminal block female, horizontal out, for Power Bus
	MOR022	Plug-in terminal block male, horizontal out, for Power Bus
	JDFT049	Connector 5 pin Power Bus 12mm DIN-Rail
	JDFT050	Connector 5 pin Power Bus 22mm DIN-Rail

Removing

1. Main case top cover can be plugged out by applying a pressure as shown in the picture using a screwdriver

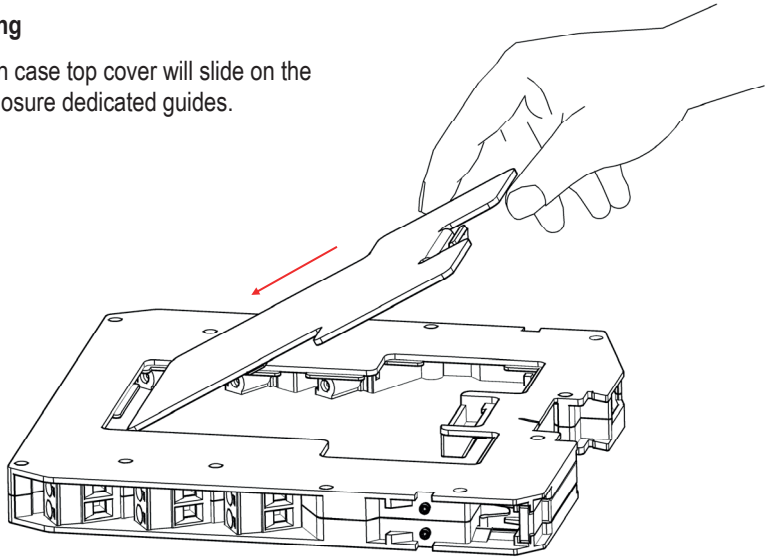




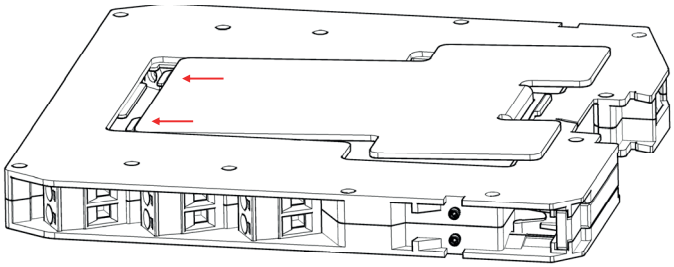
2. Pull firmly main case top cover as shown in the picture.

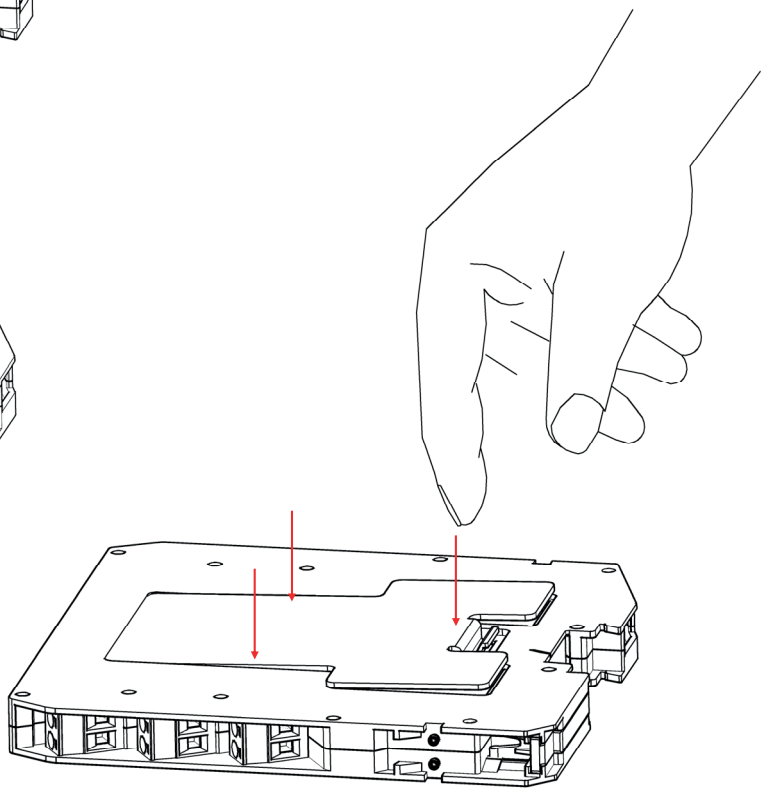
Mounting

1. Main case top cover will slide on the enclosure dedicated guides.

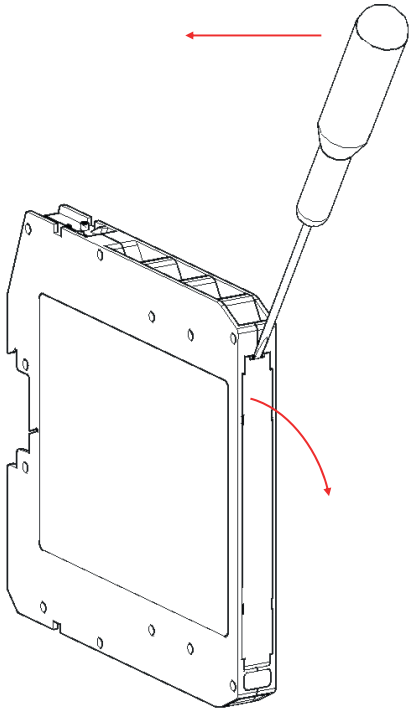


2. Completely slide main case top cover to the enclosure guides.



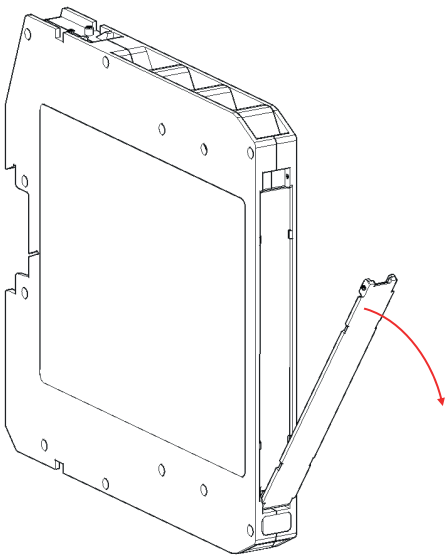


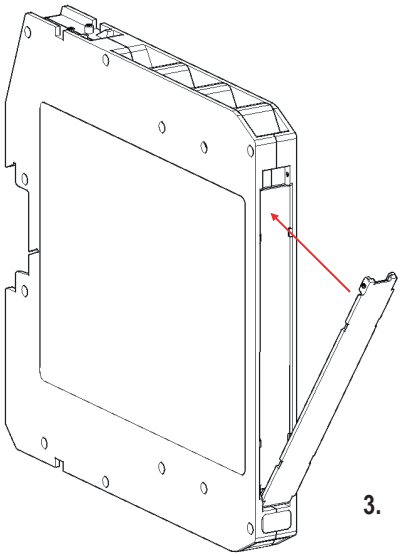
3. Press firmly main case top cover as shown by arrows in the picture.



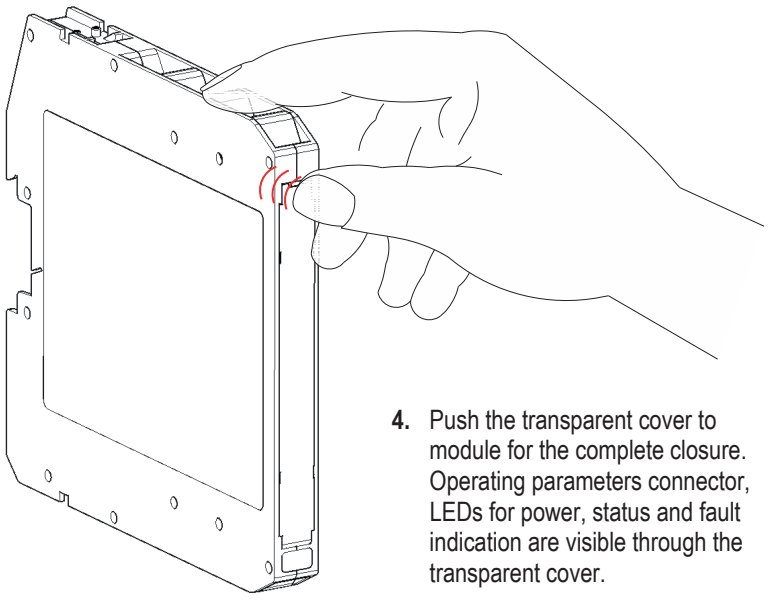
1. Open the transparent cover using a screwdriver as shown by arrows in the picture.

2. Open the transparent cover up to 90 degrees. For fully programmable modules, a dedicated connector is accessible and operating parameters are programmable by the GM Configurator PPC5092 via SWC5090 Configurator software.

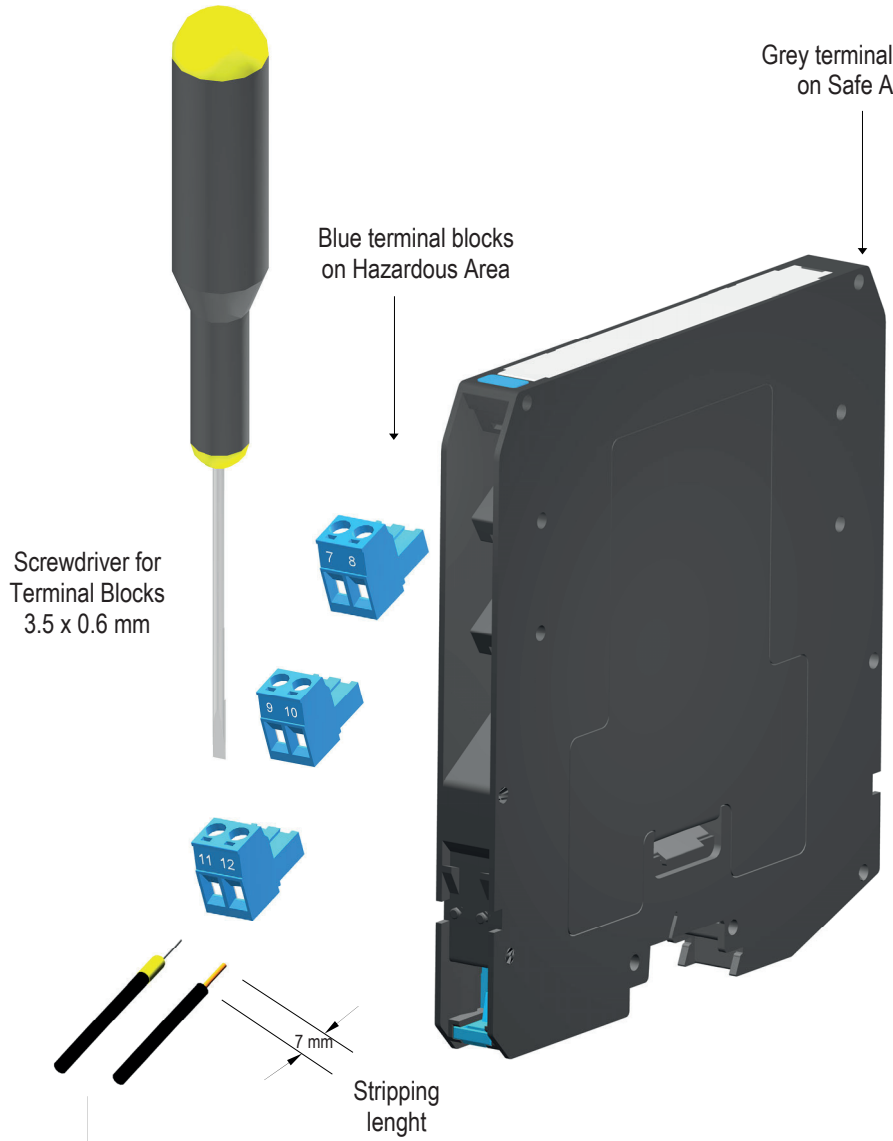




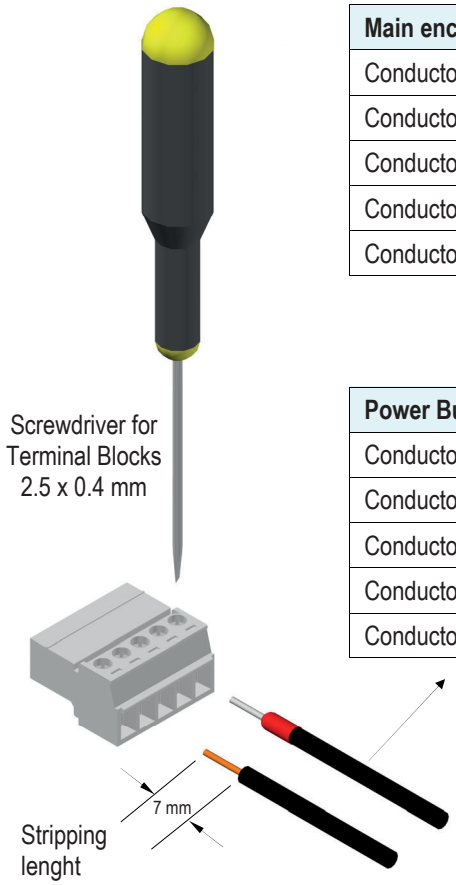
3. Close the transparent cover as shown in the picture.



4. Push the transparent cover to module for the complete closure. Operating parameters connector, LEDs for power, status and fault indication are visible through the transparent cover.

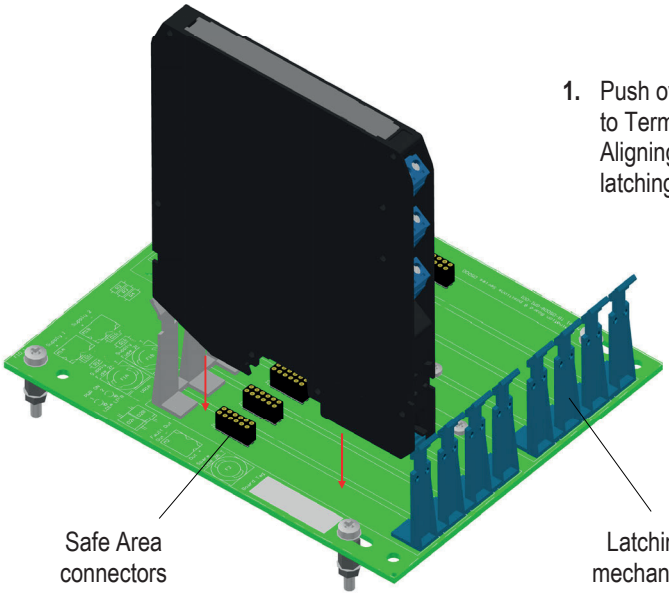


Main enclosure terminal block connection data	
Conductor cross section solid	From 0.2 mm² to 2.5 mm²
Conductor cross section stranded	From 0.2 mm² to 2.5 mm²
Conductor cross section stranded, with ferrule without plastic sleeve	From 0.25 mm² to 2.5 mm²
Conductor cross section stranded, with ferrule with plastic sleeve	From 0.25 mm² to 2.5 mm²
Conductor cross section AWG	From 24 to 12 AWG

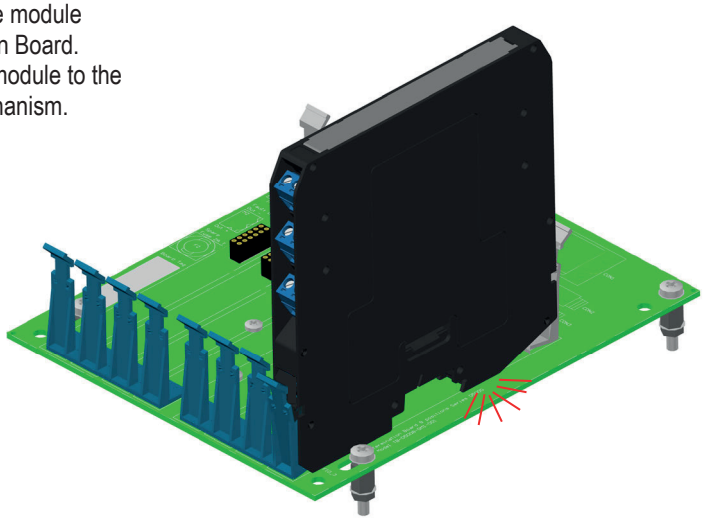


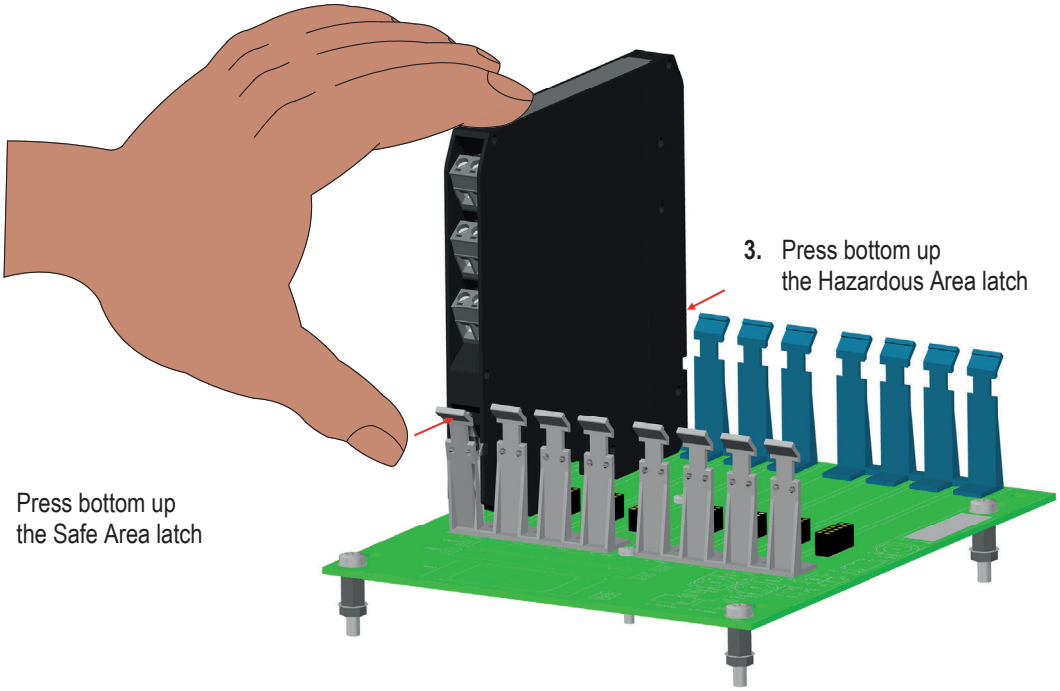
Power Bus terminal block connection data	
Conductor cross section solid	From 0.14 mm² to 1.5 mm²
Conductor cross section stranded	From 0.14 mm² to 1.5 mm²
Conductor cross section stranded, with ferrule without plastic sleeve	From 0.25 mm² to 1.5 mm²
Conductor cross section stranded, with ferrule with plastic sleeve	From 0.25 mm² to 0.5 mm²
Conductor cross section AWG	From 28 to 16 AWG

Mounting a module onto a Termination Board



1. Push over the module to Termination Board. Aligning the module to the latching mechanism.

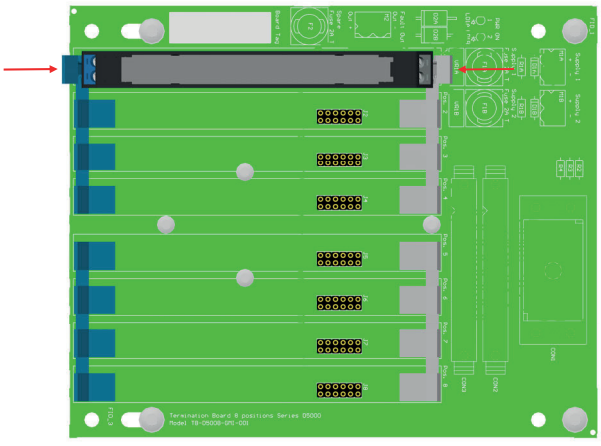




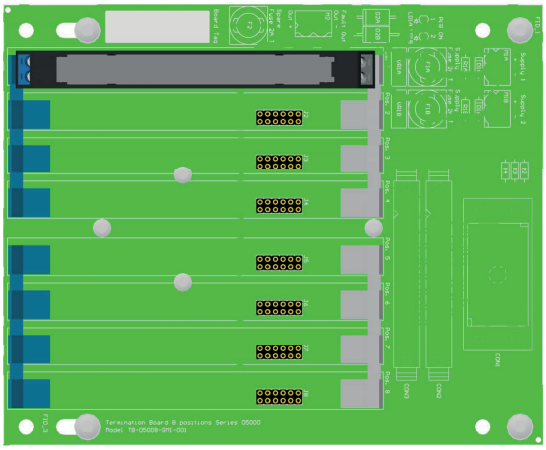
2. Press bottom up the Safe Area latch

3. Press bottom up the Hazardous Area latch

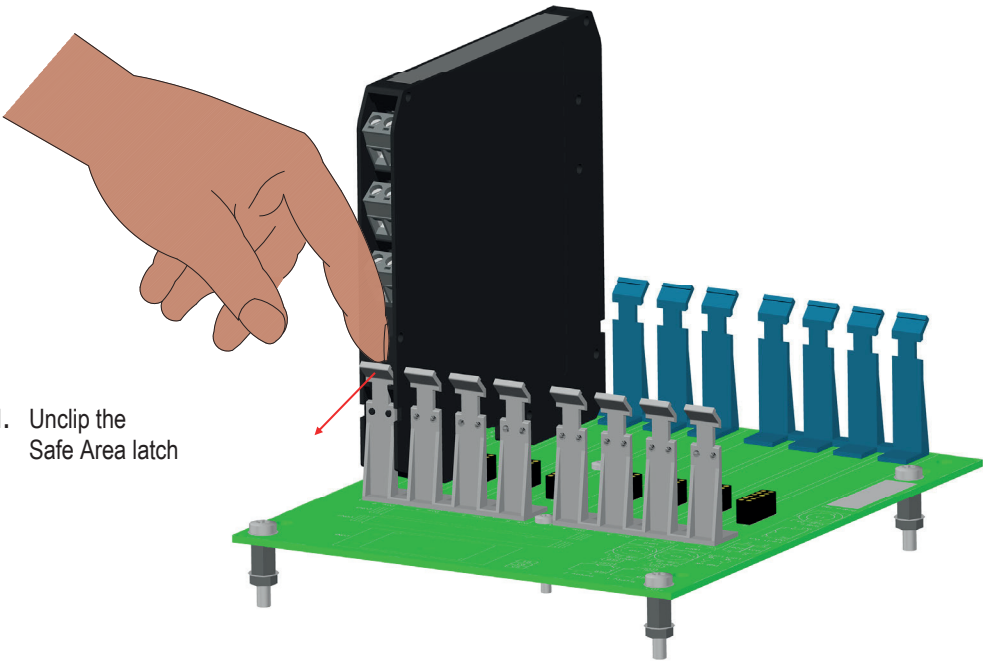
Latches position before pressure



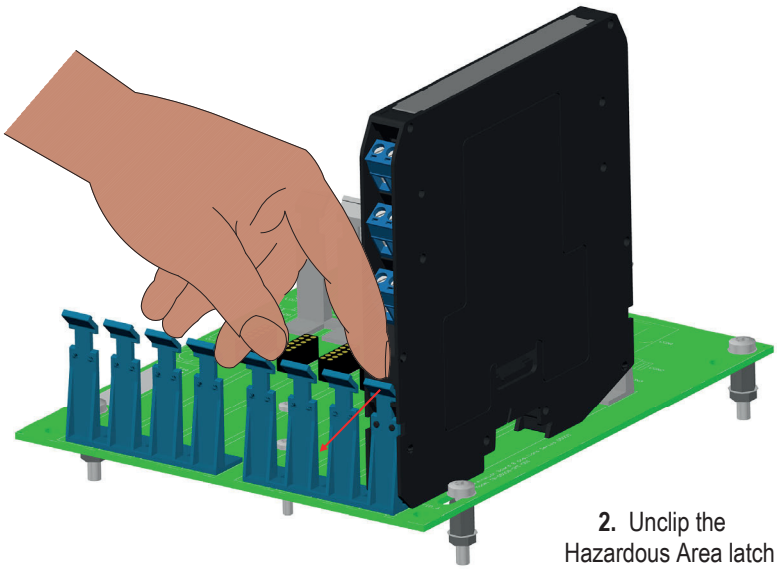
Latches position after pressure



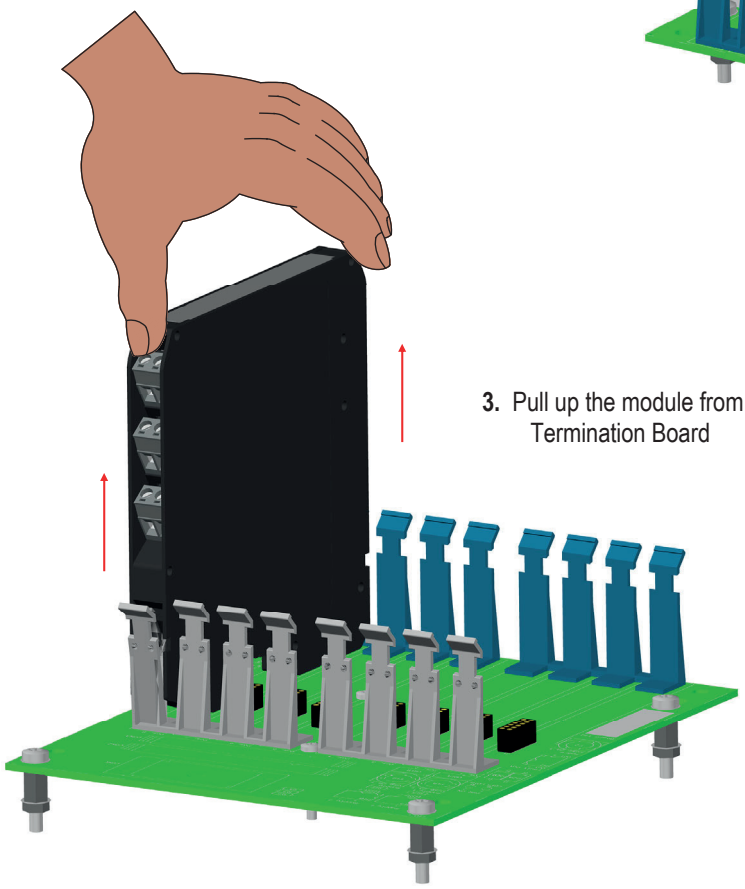
Removing a module from Termination Board



1. Unclip the Safe Area latch

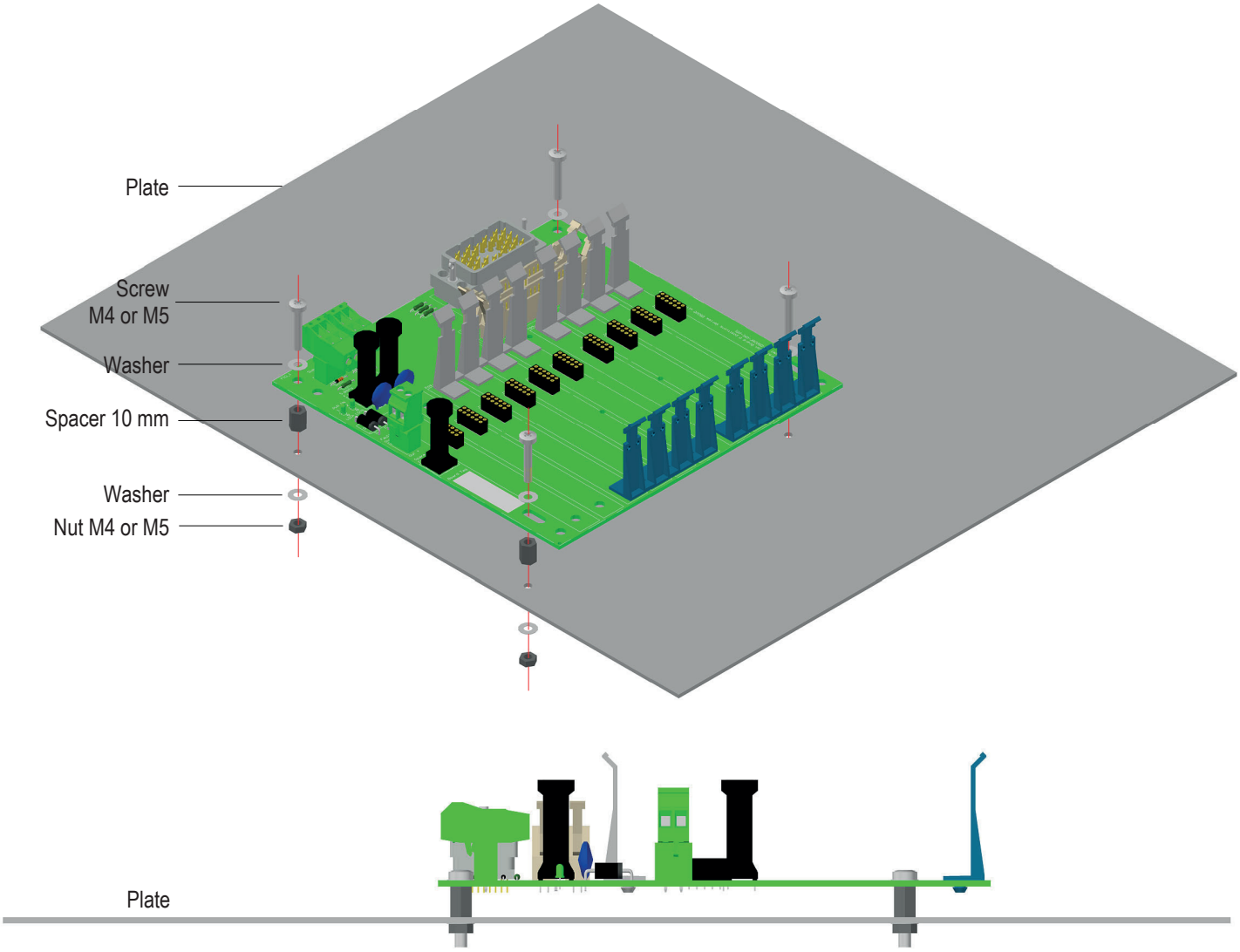


2. Unclip the Hazardous Area latch



3. Pull up the module from Termination Board

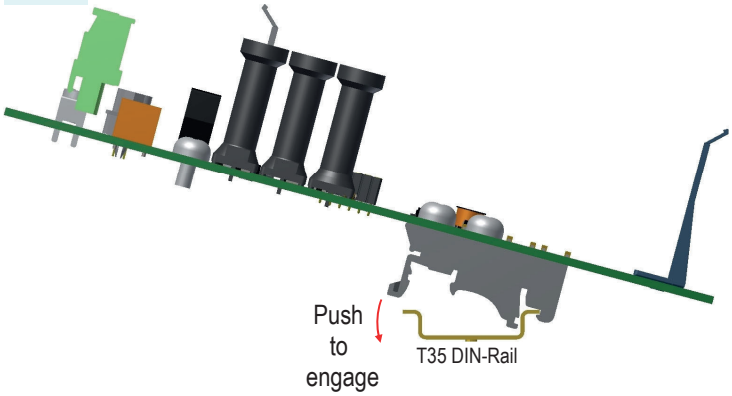
Mounting Termination Board



Mounting and removing Termination Board onto DIN-Rail

Mounting

Fig. 1



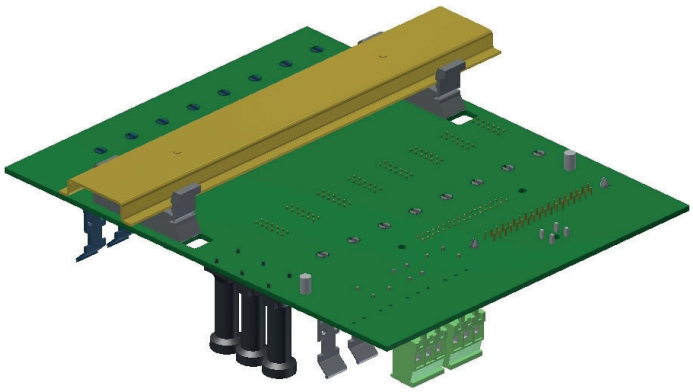
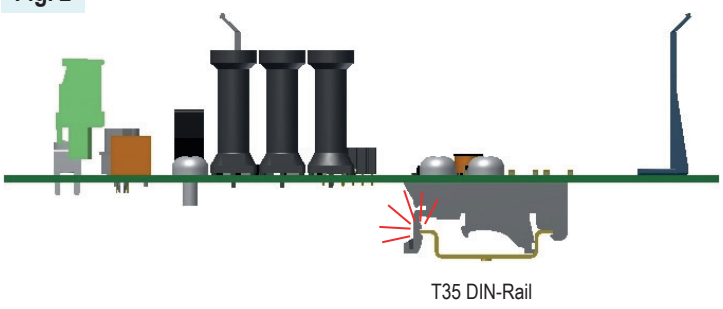


Fig. 2



To mount Termination Board on 35 mm DIN-Rail,
hook one side of the mounting foot over the rail's lip and press
the Termination Board down firmly until fixed (see Fig.1 and Fig.2).

Removing

To remove a Termination Board from the mounting rail, insert a blade screwdriver in the mounting foot and lever as shown in Fig.3.

Fig. 3

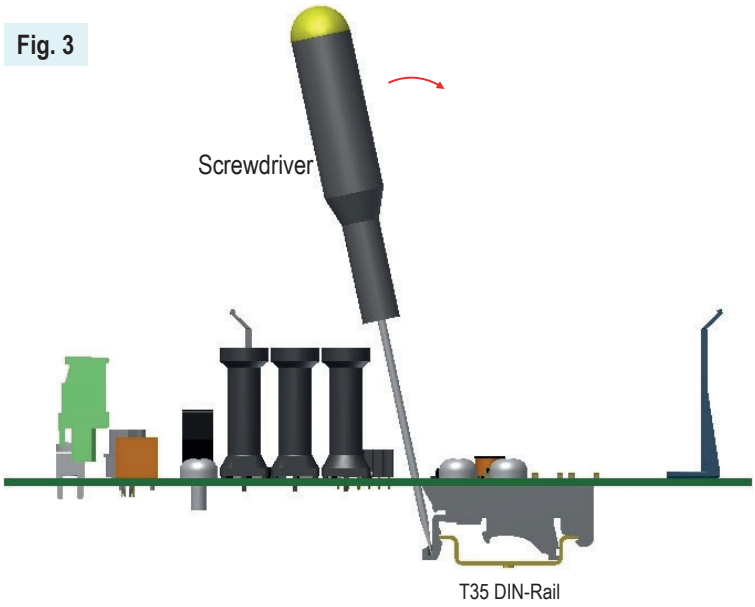
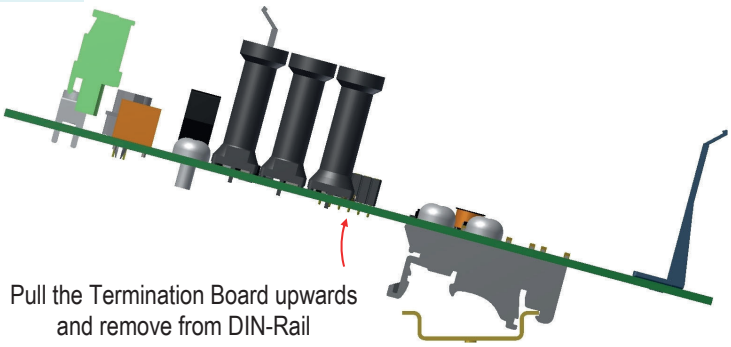
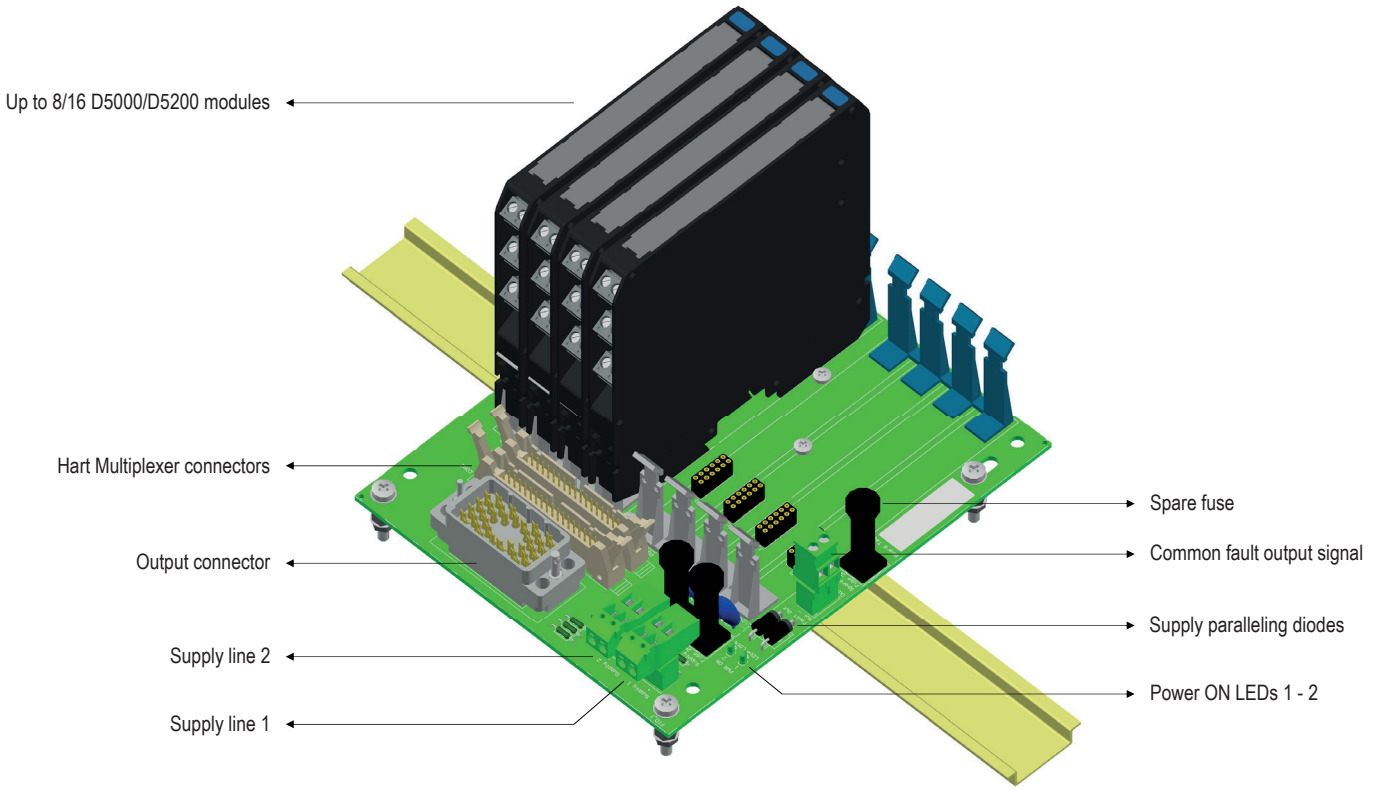


Fig. 4



Termination Boards characteristic

- Suitable to accept up to 8/16 D5000 or D5200 modules 12mm/22mm wide.
- 24 Vdc Power supply terminal blocks can be disconnected from the board without disconnecting the power to other boards connected in series.
- Boards are available with custom connectors for any system / PLC / DCS.



Approvals and Certifications

Intrinsically Safe products

G.M. International has obtained IS certificates from the most credited Notified Bodies in the world for its D5000 Series.

SIL Certifications according IEC 61508 and IEC 61511

G.M. International offers a wide range of products that have been proved to comply with the most severe quality and safety requirements.
IEC 61508 and IEC 61511 standards represent a milestone in the progress of industry in the achievement of supreme levels of safety through the entire instrumented system lifecycle.

Maritime Type Approval

G.M. International offers Type Approval Certificates for its line of Intrinsically Safe Isolators D5000 Series and Power Supplies for use in Maritime and Offshore applications.

Certificates have been released both by Korean Register of Shipping and Det Norske Veritas.

Company Quality System

G.M. International's Production Quality System is certified by Det Norske Veritas (Norway) to be compliant with ATEX 94/9/EC Directive and ISO 9001/2008.

This means our production facilities are periodically re-assessed throughout the whole manufacturing process, to ensure that the highest quality standards are met.

Storage

If after an incoming inspection the unit is not installed directly on a system (parts for spare or expansion with long storage periods) it must be conveniently stocked. Stocking area characteristics must comply with the following parameters: Temperature: –40 to +60 / 70 °C, the –45 to +80 °C in the data sheet is meant for limited periods, mainly to arrange for air transport, -10 to +30 °C are preferred.
Humidity: 0 to 95 %, long period high humidity affects the package integrity, 0 to 60 % humidity is preferred.
Vibration: no prolonged vibration should be perceivable in the stocking area to avoid loosening of parts or fatigue ruptures of components terminals.
Pollution: presence of pollutant or corrosive gases or vapors must be avoided to prevent corrosion of conductors and degradation of insulating surfaces.

Disposal

The product should not be disposed with other wastes at the end of its working life. It may content hazardous substances for the health and the environment, to prevent possible harm from uncontrolled waste disposal, please separate this equipment from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. This product should not be mixed with other commercial wastes for disposal. In each case the product must be disposed in compliance with the applicable laws and guidelines of the respective country.

Maintenance and Repair

Series D5000 and D5200 modules do not require particular maintenance under normal operating conditions. They are designed to operate trouble free and with high stability for long time. If a unit is found not meeting specifications or in a failure condition then it requires recalibration or servicing. Any repair made by unauthorized personnel may completely invalidate the safety characteristics of the card. Repair not made by G.M. International is prohibited. If a barrier failure condition is actually found, replace the defective card with a good one and send it for repair to the nearest authorized representative of G.M. International.

All electronic equipment operate using electrical power and dissipate part of it into heat, which is generally removed by the surrounding ambient air and determines an increase in the operating temperature. High operating temperatures reduce their life and increase the probability of failures according to the Arrhenius criteria, for example an operating temperature increase from 25 to 50 °C can cause a failure rate ten times higher.
In a cabinet, air circulates and removes heat by convection (natural convection cooling) or, more effectively, by forced ventilation (fans) or even more effectively, by refrigerated forced ventilation (air conditioning). Installation of electronics in cabinets restricts free air movement and rises their internal temperature. These effects can be reduced in two concurring lines of action:

- by limiting the power dissipation and the heat produced inside the cabinet
- by encouraging air circulation (and exchange of heat) inside the cabinet

A simple way to improve air circulation is to provide space between the isolators, also installing isolators in horizontally oriented DIN-Rail rows with the enclosure main surfaces oriented vertically allows better air circulation inside the enclosure and significantly improves heat exchange.
What ultimately determines the operating temperature rise inside a cabinet is the total power dissipation and the provisions available for removing the heat with cool air (natural convection or forced cooling). The maximum power consumption of each type of isolator is specified, so by summing the power of each unit in the cabinet the total power **Pmax** can be easily found.
In normal operating conditions however, the power dissipated by the installed equipments is not likely to be the maximum value specified for all of them and at the same time, the value of the effective power **Peff** can therefore be considered smaller (typical 70 %) than the value **Pmax**:
Peff ≤ Σ Pmax * 70 %

1) Closed Cabinets with Natural Convection
Closed cabinets are preferred in dusty or harsh environments where they offer a better equipment protection, but their heat / power dissipation capability is modest. Heat is removed by air flowing internally and exchanged with the walls, the calculation of the maximum allowed power dissipation in this type is:

$$Pmax = \Delta t * S * K \quad \text{and} \quad \Delta t = \frac{Pmax}{S * K}$$

where:	**Pmax [W]**	maximum allowed power dissipation
	Δt [°C]	maximum allowed temperature rise
	S [m²]	free heat emitting surface of the cabinet
	K [W/m² * °C]	thermal conductivity coefficient (K=5.5 for painted steel sheets)

As an example a cabinet sized 600x600 mm and 2000 mm high has a temperature rise of 10 °C for an installed power of 250 W.

2) Open Cabinets with Natural Convection
Open cabinets must operate in clean environments, their heat / power dissipation capability is medium.
Heat is removed by air flowing through the equipment, circulating from bottom to top of cabinet (convection). Depending on the type of engineering (freedom of cool air to enter at the bottom, to circulate vertically around the equipment extracting heat and to exit at the top), the power dissipation improvement can be 50% better than case 1.
The cabinet must be equipped with inlet and outlet louvers in the lower and upper ends, vertical air flow inside and outside the cabinet must be kept free from obstacles to enhance the “chimney effect” air circulation.
As an example a cabinet sized 600x600 mm and 2000 mm high has a temperature rise of 10 °C for an installed power of 350 W.

3) Open Cabinets with Forced Ventilation
Open cabinets must operate in clean environments, their heat / power dissipation capability is high with forced ventilation.
Air is forced into the louvers on the bottom, flows through the equipments, and finally exits at the top, where generally is forced by one or more fans.
The calculation of the required airflow is:

$$Q = 3.1 * Peff / \Delta t$$

where:	**Q [m³/h]**	is the required air flow
	Peff [W]	is the dissipated power (typical 70 % of the maximum power dissipation)
	Δt [°C]	is the maximum allowed temperature rise in the cabinet

As an example a cabinet sized 600x600 mm and 2000 mm high has a temperature rise of 10 °C for an installed power of 500 W.

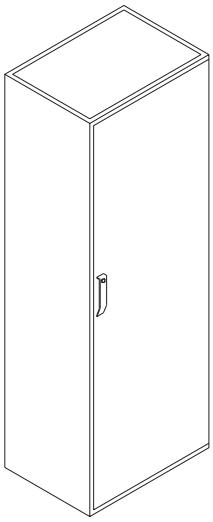
4) Closed Cabinets with Forced Ventilation and Heat Exchanger
Closed cabinets with forced ventilation are preferred in high dissipated power and harsh environment where natural convention cannot be used.
Hot air is extracted from the cabinet by a fan, cooled by a heat exchanger (using a cooling fan with ambient air) and forced back into the cabinet; depending on the type of engineering the improvement can reach a 5 times higher power dissipation than in case 1.
As an example a cabinet sized 600x600 mm and 2000 mm high has a temperature rise of 10 °C for an installed power of 1000 W.

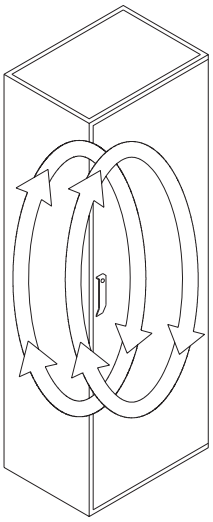
5) Air Conditioned Cabinets
Air conditioned cabinets are preferred in hot climates and / or harsh environments. Cabinet temperature can become equal or even lower than the ambient temperature. A specific refrigerating system or the existing air conditioning system can be used for cabinet conditioning.
As an example a cabinet sized 600x600 mm and 2000 mm high has a temperature rise of 10 °C for an installed power of 1000 W.

CLOSED VERSION

Example 1
Natural convection

~ 250 - 300 W



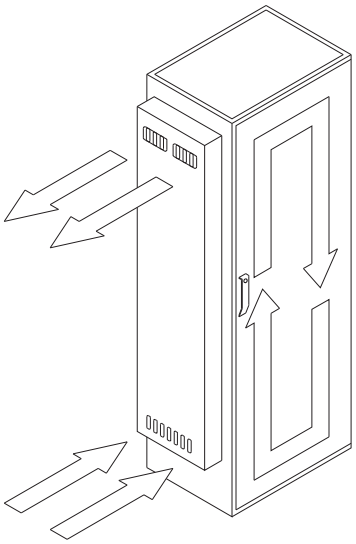


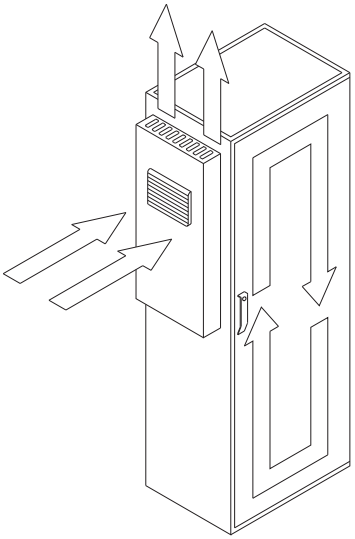
Forced convection by Internal fan (increasing In natural convention)

~ 250 - 300 W

Example 4
Forced air circulation via heat exchanger (air circulation by two separate flows internal and external)

~ 1000 W





Example 5
Heat dissipation via air conditioner (cooling by temperature lower than the ambient temperature

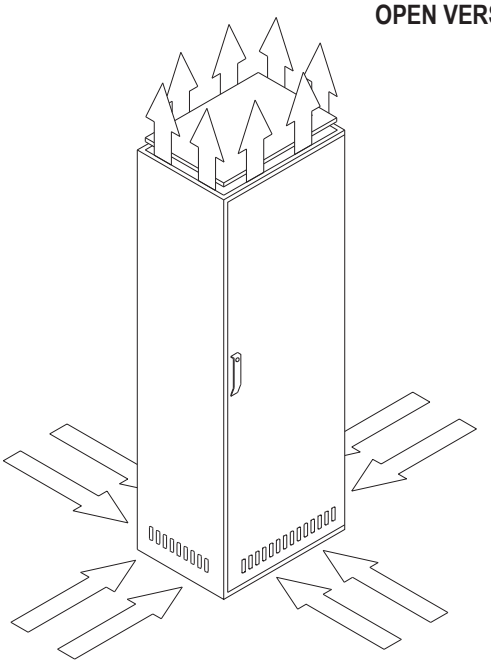
~ 1000 W

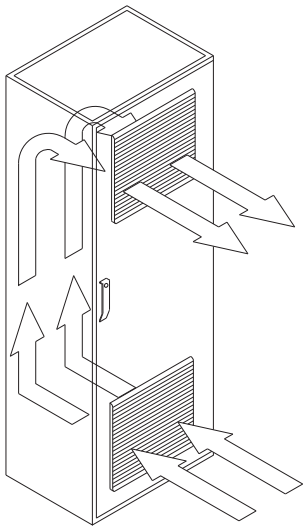
Power value dissipated per ΔT = 10°C (single cabinet)
For installation in a row of cabinets, power dissipated in the first two examples is decreased of about 15%

OPEN VERSION

Example 2
Air flow
(Natural convection)

~ 350 - 450 W



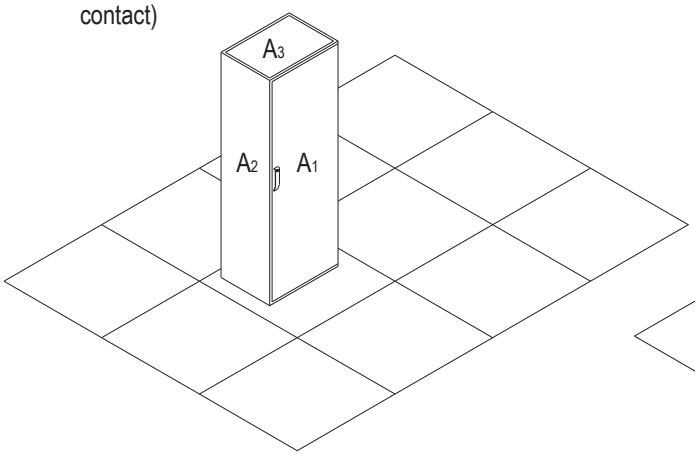


Example 3
Air flow
(filtered fans)

~ 500 - 750 W

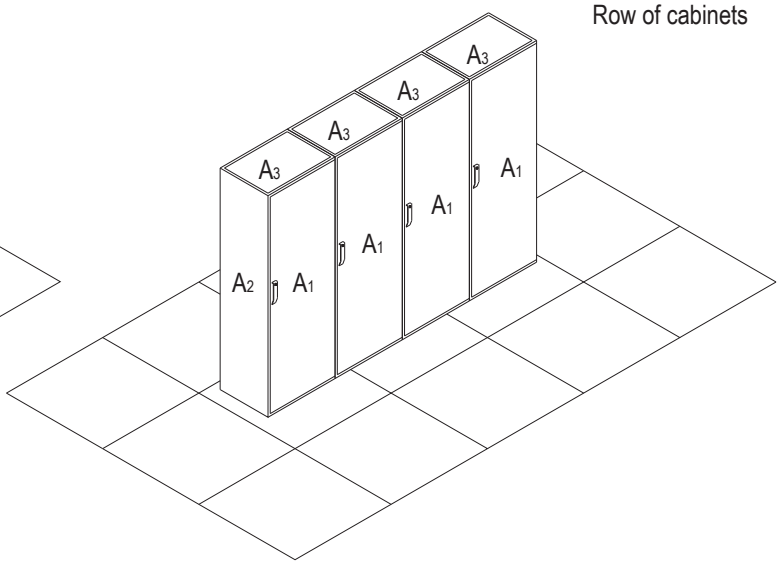
Power value dissipated per ΔT = 10°C (single cabinet)
For installation in a row of cabinets, power dissipated in the above two examples is decreased of about 5-10%

Single cabinet
(all surfaces free of contact)



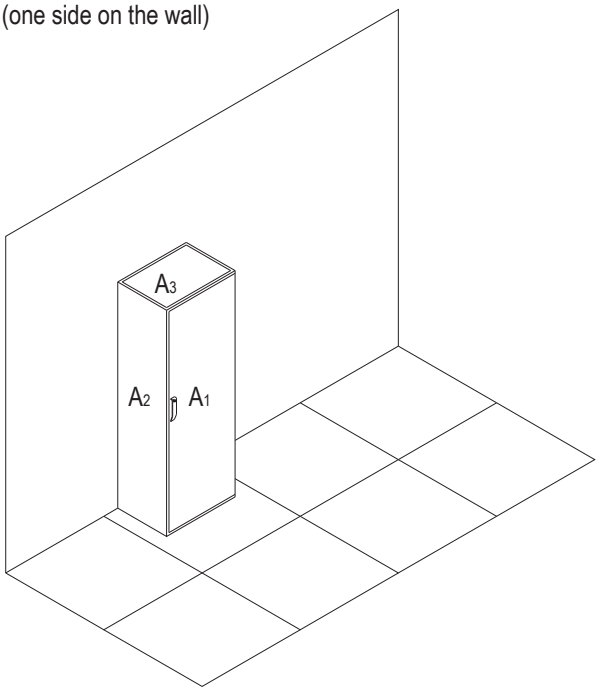
$A_{TOT} = 2 \times A_1 + 2 \times A_2 + A_3$
Formula for cabinet with no surfaces in contact with the wall

Row of cabinets



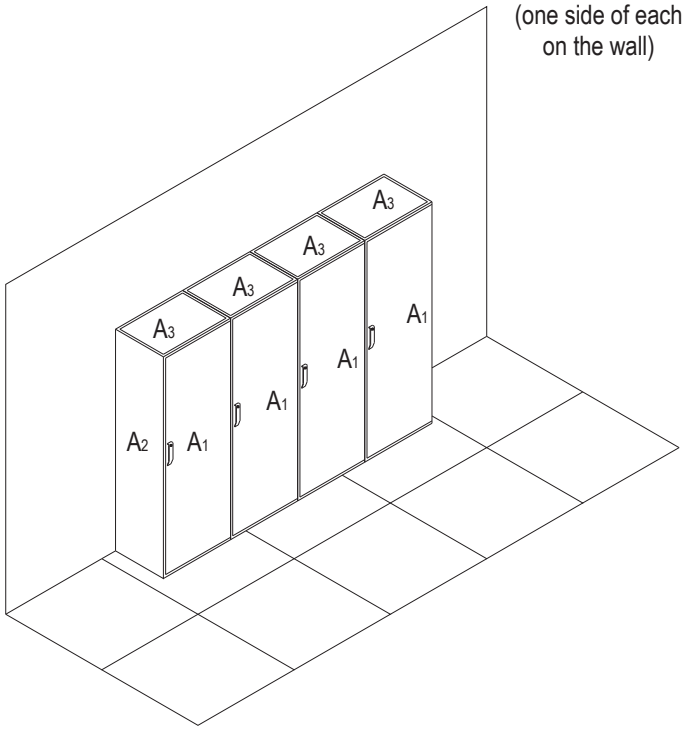
$A_{TOT} = 2 \times N \times A_1 + 2 \times A_2 + N \times A_3$
(N = Number of cabinets placed side by side)
Formula for row of cabinets with no surface in contact with the wall

Single cabinet
(one side on the wall)



$A_{TOT} = 1 \times A_1 + 2 \times A_2 + A_3$
Formula for cabinet with one side on the wall

Row of cabinets
(one side of each on the wall)



Row of cabinet (one side by the wall)
$A_{TOT} = N \times A_1 + 2 \times A_2 + N \times A_3$
(N = Number of cabinets placed side by side)
Formula for row of cabinets with one side on the wall

Placement of isolators in cabinet

The placement of the barriers in the cabinet has an important impact on the ambient temperature. The following points should be considered:

1. The sum of the individual dissipated power of the installed barriers plus other devices need to be below the calculated or given maximum dissipation power of the cabinet.
2. The D5000 and D5200 series could be installed in horizontal or vertical mounting position. The installation in horizontal position offers an improved heat transport.
3. Place the units with higher dissipation power in the upper part of the cabinet.
4. If you apply ventilation please consider the following:
   a) When applying temperature control you have to install the temperature sensor in the upper part of the cabinet.
   b) It is more effective to install a fan into the roof of the cabinet rather than in the lower part of the cabinet.
5. Take care about reasonable distance between D5000 and D5200 series and cable channels. We recommend a distance of 5 cm. (see figure 1 and 2). If the place in the cabinet does not allow to keep the distance we strongly recommend to place the DIN-Rail away from the back side of the cabinet by means of distance bolts.

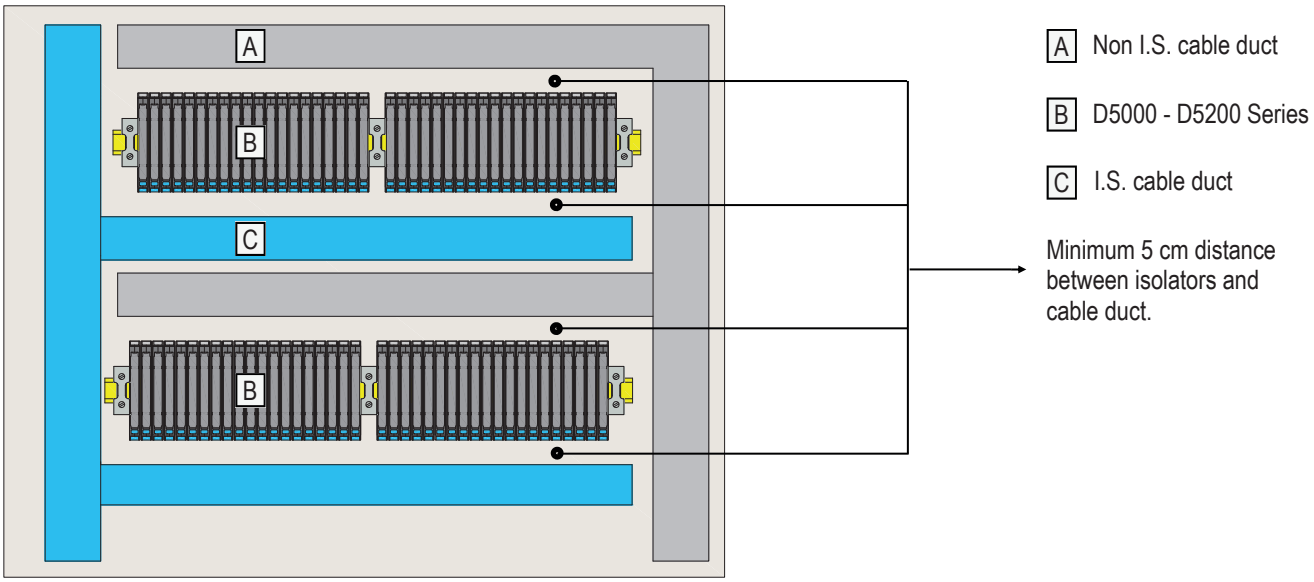


Fig. 1 Horizontal orientation in the cabinet

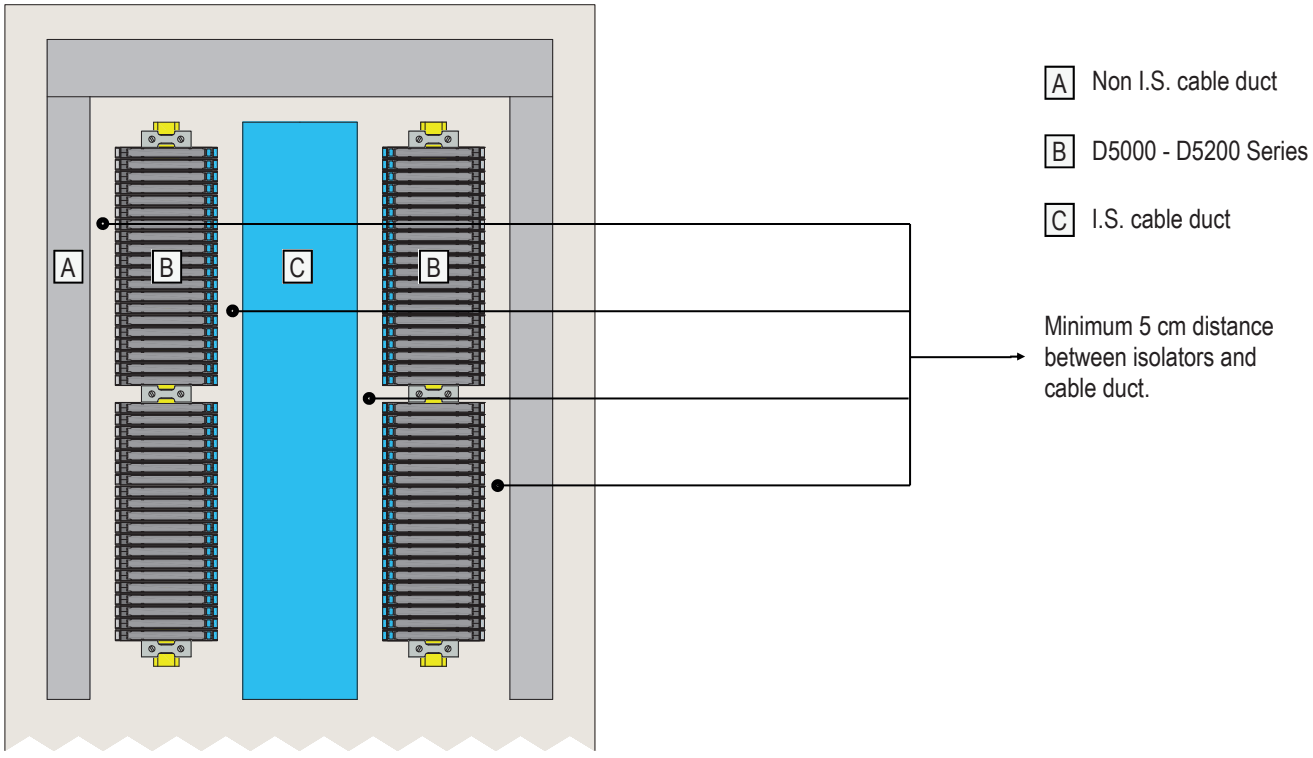


Fig. 2 Vertical orientation in the cabinet

Notes

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