

SIL 2 Switch/Proximity Detector Repeater Transistor Output DIN-Rail Models D1033D, D1033Q

Characteristics:

General Description:

The Switch/Proximity Detector Repeater type D1033 is a DIN Rail unit configurable with two or four independent channels. The unit can be configured for contact or proximity detector, NO or NC and for NO or NC optocoupled open collector transistor output. Each channel enables a Safe Area load to be controlled by a switch, or a proximity detector, located in Hazardous Area.

D1033Q quad channel type has four, independent and isolated, input channels and actuates the corresponding output transistor. Two actuation modes can be independently DIP switch configured on each input channel:

NO In/NC transistor or NO In/NO transistor. Contact or proximity sensor and its connection line short or open circuit fault detection is also DIP switch configurable: fault detection can be enabled (in case of fault it de-energizes the corresponding output transistor and turns the fault LED on) or disabled (in case of fault the corresponding output transistor repeats the input line open or closed status as configured).

D1033D dual channel type has two, independent and isolated, input channels and four output transistors; the unit has two DIP switch configurable operating modes:

Mode A) Input channel actuates in parallel the two output transistors. Transistor actuation mode can be independently configured for each output in two modes: NO In/NC transistor or NO In/NO transistor.

Mode B) Input channel actuates output transistor (A) configurable in two modes as in mode A above. Output transistor B operates as a fault output (in case of input fault, transistor B actuates and the fault LED turns on while transistor A repeats the input line as configured). Actuation can be DIP switch configured in two modes: No input fault/Energized transistor (it de-energizes in case of fault) or No input fault/De-energized transistor (it energizes in case of fault).

Function:

2 or 4 channels I.S. switch repeater for contact or EN60947-5-6 Proximity Provides 3 port isolation (input/output/supply). Line-fault detection, common to all input signals, available when using enclosures with Power bus.

Signalling LEDs:

Power supply indication (green), Output status (yellow), Line fault (red).

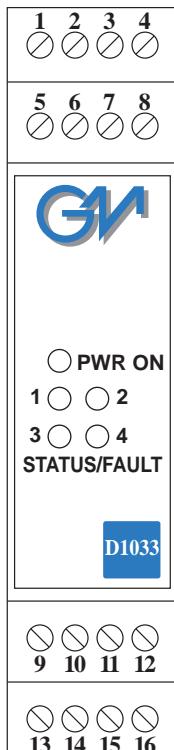
Field Configurability:

NO/NC input for Contact/Proximitator, NO/NC Transistor operation and Fault detection enable/disable.

EMC:

Fully compliant with CE marking applicable requirements.

Front Panel and Features:



- SIL 2 according to IEC 61508, IEC 61511 for $T_{proof} = 5$ years.
- NO/NC Contact/Proximity Detector Input.
- Four Opto Isolated Voltage free Transistor Output Signals.
- Common negative or positive output both accepted in standard version D1033.
- Transistor Output for fault detection on 2 channels version.
- Common fault-line detection available when using Power bus enclosure.
- Three port isolation, Input/Output/Supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- Field programmability by DIP Switch.
- ATEX, UL & C-UL, Russia and Ukraine Certifications.
- DNV Type Approval Certificate No. A-10169 for marine applications.
- Installation in Zone 2 / Div. 2
- High Density, four channels per unit.
- Simplified installation using standard DIN Rail plug-in terminal blocks.
- 250 Vrms (Um) max. voltage applied to the instruments associated with barrier.

Technical Data:

Supply:

24 V nom (20 to 30 V) reverse polarity protected ripple within voltage limits ≤ 5 Vpp.

Current consumption @ 24 V: 60 mA for 4 channels D1033Q, 45 mA for 2 channels D1033D with transistor energized.

Max. power consumption: 1.60 W for 4 channels, 1.30 W for 2 channels with 30 V supply voltage, short circuit input and transistor energized.

Isolation (Test Voltage):

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 1-3/Out 2-4 500 V.

Input switching current levels:

ON ≥ 2.1 mA, OFF ≤ 1.2 mA, Switch current ≈ 1.65 mA ± 0.2 mA hysteresis.

Fault current levels: Open fault ≤ 0.2 mA, Short fault ≥ 6.8 mA (when enabled both faults de-energize channel transistor with quad channel unit D1033Q or actuate fault transistor with dual channel unit D1033D).

Input equivalent source: 8 V 1 K Ω typical (8 V no load 8 mA short circuit).

Output:

Voltage free SPST optocoupled open-collector transistor.

Open-collector rating: 50 mA at 35 V or 100 mA at 12 V (≤ 2.0 V voltage drop or ≤ 1.0 V voltage drop for versions -052 and -058).

Leakage current: ≤ 50 μ A at 35 V.

Response time: 500 μ s.

Frequency response: 2 KHz maximum.

Compatibility:


 CE mark compliant, conforms to 94/9/EC Atex Directive and to 89/336/CEE EMC Directive.


Environmental conditions:

Operating: Temperature limits -20 to + 60 °C, relative humidity max 90 % non condensing, up to 35 °C.

Storage: Temperature limits - 40 to + 80 °C.

Safety Description:

 II (1) G D [EEx ia] IIC or I M2 [EEx ia] I, II 3 G EEx nA IIC T4 associated electrical apparatus.
Uo/Voc = 9.6 V, Io/Isc = 10 mA, Po/Po = 24 mW at terminals 13-14, 15-16, 9-10, 11-12.

 Um = 250 Vrms, -20 °C \leq Ta \leq 60°C.

Approvals: DMT 01 ATEX E 042 X conforms to EN50014, EN50020. UL & C-UL E222308 conforms to UL913 (Div.1), UL 60079-0 (General, All Zones), UL60079-11 (Intrinsic Safety "i" Zones 0 & 1), UL60079-15 ("n" Zone 2), UL 1604 (Div.2) for UL and CSA-C22.2 No.157-92 (Div.1), CSA-E60079-0 (General, All Zones), CSA-E60079-11 (Intrinsic Safety "i" Zones 0 & 1), CSA-C22.2 No. 213-M1987 (Div. 2) and CSA-E60079-15 ("n" Zone 2) for C-UL, TCCEXEE (Russia) Nr.665 according to GOST R 51330.0-99, 51330.10-99 [Exia]IIC X, TCCEXEE (Ukraine) Nr.665 according to GOST 12.2.007.0, 22782.0, 22782.5 ExiaIIC X, Gosgortekhnadzor of Russia Permit Nr. PPC 04-11284. EXIDA Report No. GM03/07-24 R001, SIL 2 according to IEC 61508, IEC 61511. Please refer to Functional Safety Manual for SIL applications.. DNV Type Approval Certificate No. A-10169 for marine applications.

Mounting:

T35 DIN Rail according to EN50022.

Weight: about 170 g D1033Q, 140 g D1033D.

Connection: By polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².

Location: Safe Area/Non Hazardous Locations or Zone 2, Group IIC T4, Class I, Division 2, Groups A, B, C, D Temperature Code T4 and Class I, Zone 2, Group IIC, IIB, IIA T4 installation.

Protection class: IP 20.

Dimensions: Width 22.5 mm, Depth 99 mm, Height 114.5 mm.

Ordering Information:

Model:	D1033		
2 channels		D	
4 channels		Q	
Common Negative and Positive			blank
Common Negative Only			-052
Common Positive Only			-058
Power Bus enclosure			/B

Parameters Table:

Safety Description	Maximum External Parameters			
	Group Cenelec	Co/Ca (μF)	Lo/La (mH)	Lo/Ro (μH/Ω)
Terminals 13-14, 15-16, 9-10, 11-12				
Uo/Voc = 9.6 V	II C	3.60	330	1530
Io/Isc = 10 mA	II B	26.00	1420	6120
Po/Po = 24 mW	II A	210.00	2840	12240

NOTE for USA and Canada:

II C equal to Gas Groups A, B, C, D, E, F and G.

II B equal to Gas Groups C, D, E, F and G.

II A equal to Gas Groups D, E, F and G.

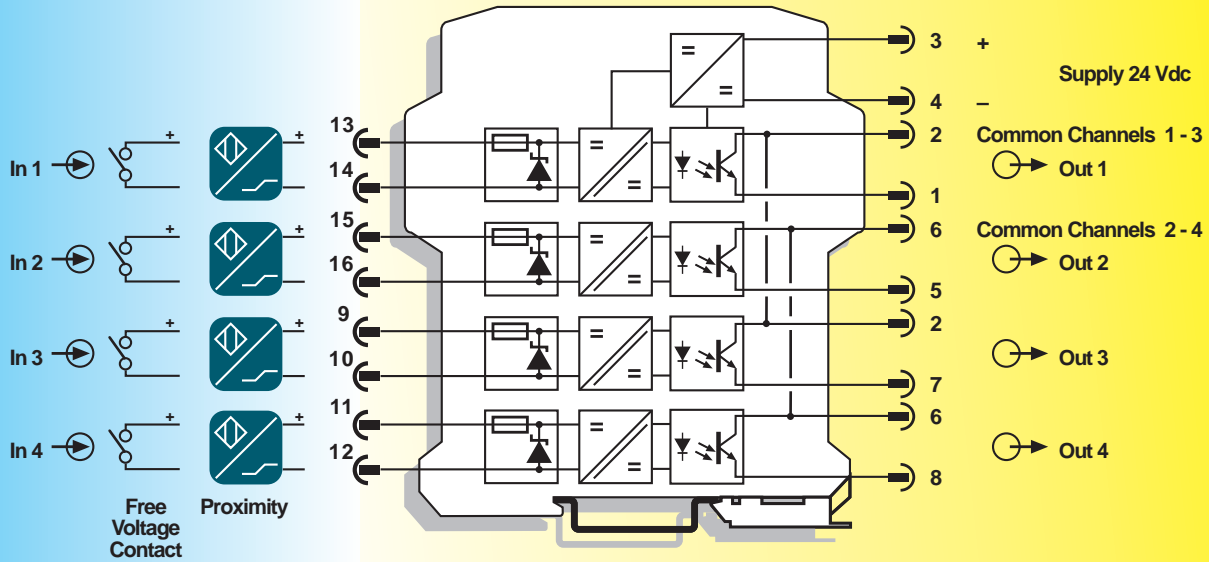


Function Diagram:

HAZARDOUS AREA / HAZARDOUS LOCATIONS
CLASS I, DIVISION 1, GROUPS A, B, C, D and
CLASS II, DIVISION 1, GROUPS E, F, G or CLASS I, Zone 0, GROUP IIC

SAFE AREA / NON HAZARDOUS LOCATIONS or
ZONE 2, GROUP IIC T4, CLASS I, DIVISION 2, GROUPS A, B, C, D T-Code T4,
CLASS I, ZONE 2, GROUP IIC T4

MODEL D1033Q



MODEL D1033D

