D1130

SIL 2 Switch/Proximity Detector Repeater Relay Output DIN-Rail Models D1130S, D1130D

Characteristics:

General Description:

The Switch/Proximity Detector Repeater type D1130 is a DIN Rail unit with one or two independent channels. The unit can be configured for contact or proximity detector, NO or NC and for NE or ND SPDT relay output contact.

Each channel enables a Safe Area load to be controlled by a switch, or a proximity detector, located in Hazardous Area.

D1130D dual channel type has two independent input channels and actuates the corresponding output relay. Two actuation modes can be independently DIP switch configured on each input channel: NO input/NE relay or NO input/ND relay.

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 relay and turns the fault LED on) or disabled (in case of fault the corresponding output relay repeats the input line open or closed status as configured).

D1130S single channel type has one input channel and two output relays; the unit has two DIP switch configurable operating modes:

Mode A) input channel actuates in parallel the two output relays (DPDT contact). Relay actuation mode can be independently configured for each output in two modes: NO input/NE relay or NO input/ND relay.

Mode B) input channel actuates output relay A configurable in two modes as in mode A above. Output relay B operates as a fault output (in case of input fault, relay B actuates and the fault LED turns on while relay A repeats the input line as configured). Actuation can be DIP switch configured in two modes:

No input fault/energized relay (it de-energizes in case of fault) or

No input fault/de-energized relay (it energizes in case of fault).

Function:

1 or 2 channels I.S. switch repeater for contact or EN60947-5-6 proximity.

Provides 3 port isolation (input/output/supply).

Signalling LEDs:

Power supply indication (green), output status (yellow), line fault (red).

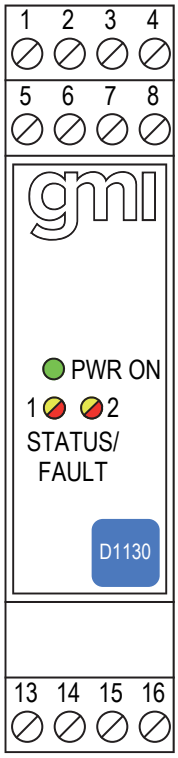
Field Configurability:

NO/NC input for contact/proximitor, NE/ND relay operation and fault detection enable/disable.

EMC:

Fully compliant with CE marking applicable requirements.

Front Panel and Features:



- SIL 2 according to IEC 61508:2010 (Route 2H) with Tproof = 5 / 10 years (≤10% / >10 % of total SIF).
- SC2: Systematic Capability SIL2.
- Input from Zone 0 (Zone 20), Division 1, installation in Zone 2, Division 2.
- Universal AC supply voltage (85 to 250 Vac, 48 to 400 Hz).
- NO/NC contact/proximity Detector Input.
- Two SPDT Relay Output Signals.
- SPDT Relay Output for fault detection on single channel version.
- Three port isolation, Input/Output/Supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4, EN61326-1.
- In-field programmability by DIP Switch.
- ATEX, IECEx, UL & C-UL, FM & FM-C, INMETRO, EAC-EX, UKR TR n. 898, TÜV Certifications.
- Type Approval Certificate DNV and KR for maritime applications.
- High Reliability, SMD components.
- High Density, two channels per unit.
- Simplified installation using standard DIN Rail and plug-in terminal blocks.
- 250 Vrms (Um) max. voltage allowed to the instruments associated with the barrier.

Ordering Information:

Model:	D1130	
1 channel		S
2 channels		D

DIN-Rail accessories:
DIN rail stopper MOR016

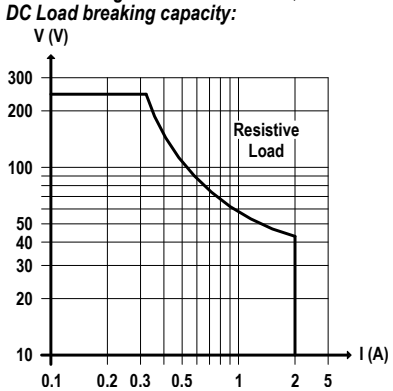
Technical Data:

Supply: 115-230 Vac, 50-60 Hz nom (85 to 250 Vac, 48 to 400 Hz), ripple within voltage limits ≤ 10 Vpp, 500 mA time lag fuse and 275 Vrms transient voltage surge suppressor protected.
Limit supply voltage to 250 Vrms for Instrinsic Safety applications.
Current consumption @ 115 Vac: 25 mA with short input and relays energized.
Current consumption @ 230 Vac: 15 mA with short input and relays energized.
Max. power consumption: at 264 Vac supply voltage, short circuit input and relays energized, 2.0 W for 2 channels D1130D, 1.9 W for 1 channel D1130S.

Isolation (Test Voltage):
I.S. In/Out 2.5 KV; I.S. In/Supply 2.5 KV; Out/Supply 2.5 KV; Out/Out 2.5 KV.

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 relay with dual channel unit D1130D or actuate fault relay with single channel unit D1130S).
Input equivalent source: 8 V 1 KΩ typical (8 V no load, 8 mA short circuit).

Output: voltage free SPDT relay contact.
Contact material: AgCdO.
Contact rating: 2 A 250 Vac 500 VA, 2 A 250 Vdc 80 W (resistive load).
DC Load breaking capacity:



Mechanical / Electrical life: 30 * 10^6 / 1 * 10^5 operation, typical.
Operate / Release time: 7 / 3 ms typical.
Bounce time NO / NC contact: 3 / 5 ms.
Response time: 20 ms.
Frequency response: 10 Hz maximum.

Compatibility:
CE mark compliant, conforms to Directive:
2014/34/EU ATEX, 2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

Environmental conditions:
Operating: temperature limits -20 to + 60 °C,
relative humidity max 90 % non condensing, up to 35 °C.
Storage: temperature limits – 45 to + 80 °C.

Safety Description:
ATEX: II (1)G [Ex ia Ga] IIC, II (1)D [Ex ia Da] IIIC, I (M1) [Ex ia Ma] I; II 3G Ex ec nC IIC T4 Gc
IECEx: [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I; Ex ec nC IIC T4 Gc
INMETRO: [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
UL: AIS / I, II, III / 1 / ABCDEFG, [AEx ia] IIC
C-UL: AIS / I, II, III / 1 / ABCDEFG, [Ex ia] IIC
FM: NI / I / 2 / ABCD / T4, NI / I / 2 / IIC / T4, AIS / I, II, III / 1 / ABCDEFG, AEx [ia] IIC
FMC: NI / I / 2 / ABCD / T4, NI / I / 2 / IIC / T4, AIS / I, II, III / 1 / ABCDEFG, Ex [ia] IIC
EAC-EX: 2Ex nA nC [ia Ga] IIC T4 X, [Ex ia Da] IIIC X, [Ex ia Ma] I X.
UKR TR n. 898: 2ExnAnCiaIICT4 X, Exial X
Uo/Voc = 10.7 V, Io/Isc = 15 mA, Po/Po = 39 mW at terminals 13-14, 15-16.
Um = 250 Vrms, -20 °C ≤ Ta ≤ 60 °C.
Approvals:
DMT 01 ATEX E 042 X conforms to EN60079-0, EN60079-11.
IECEx BVS 07.0027X conforms to IEC60079-0, IEC60079-11.
IMQ 09 ATEX 013 X conforms to EN60079-0, EN60079-7, EN60079-15.
IECEx IMQ 13.0011X conforms to IEC60079-0, IEC60079-7, IEC60079-15.
INMETRO DNV 13.0108 X conforms to ABNT NBR IEC60079-0, ABNT NBR IEC60079-11.
UL & C-UL E222308 conforms to UL913, UL 60079-0, UL60079-11 for UL and CSA-C22.2 No.157-92, CSA-E60079-0, CSA-E60079-11 for C-UL.
FM & FM-C No. 3024643, 3029921C, conforms to Class 3600, 3610, 3611, 3810 and C22.2 No.142, C22.2 No.157, C22.2 No.213, E60079-0, E60079-11, E60079-15.
EAЭC RU C-IT.HA67.B.00113/20 conforms to GOST 31610.0, GOST 31610.11, GOST 31610.15 .
СЦ 16.0034 X conforms to ДСТУ 7113, ГОСТ 22782.5-78, ДСТУ IEC 60079-15.
TÜV Declaration of Compliance No. C-IS-722238330, SIL 2 according to IEC 61508:2010 Ed.2. SIL 3 Functional Safety TÜV Certificate conforms to IEC61508:2010 Ed.2, for Management of Functional Safety.
DNV No. TAA00002BM and KR No.MIL20769-EL001 Cert. for maritime applications.

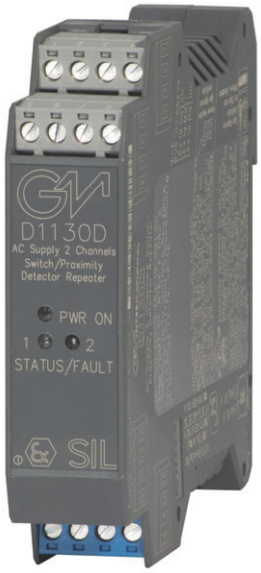
Mounting: EN/IEC60715 TH 35 DIN-Rail.
Weight: about 145 g D1130D, 140 g D1130S.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm^2.
Location: Safe Area/Non Hazardous Locations or Zone 2, Group IIC T4, Class I, Division 2, Groups A, B, C, D Temperature 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.

Parameters Table:

Safety Description	Maximum External Parameters			
	Group Cenelec	Co/Ca (µF)	Lo/La (mH)	Lo/Ro (µH/Ω)
Terminals 13-14, 15-16				
Uo/Voc = 10.7 V	IIC	2.23	172	930
Io/Isc = 15 mA	IIB	15.60	689	3720
Po/Po = 39 mW	IIA	69.00	1300	7440
	I	60	2263	12200
	IIIC	15.60	689	3720

NOTE for USA and Canada:
IIC equal to Gas Groups A, B, C, D, E, F and G
IIB equal to Gas Groups C, D, E, F and G
IIA equal to Gas Groups D, E, F and G

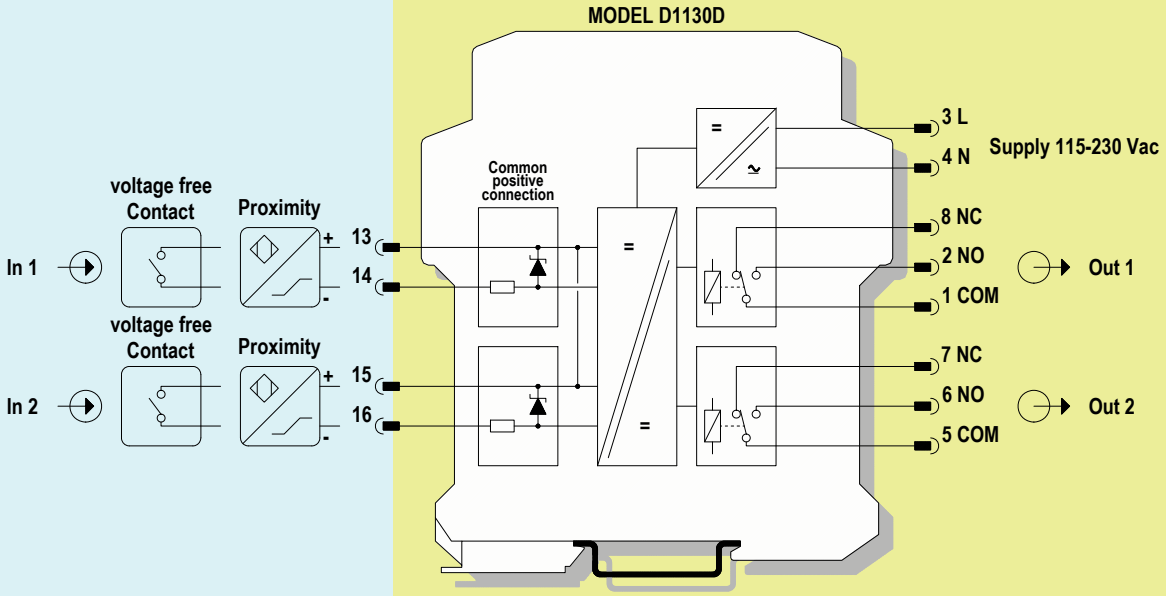
Image:

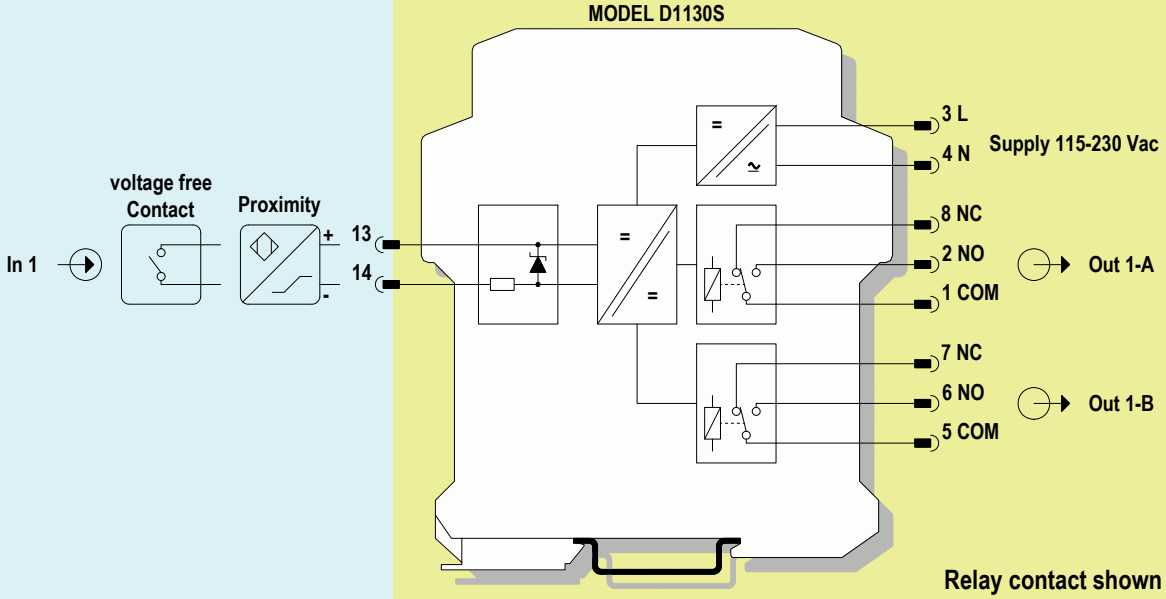


Function Diagram:

HAZARDOUS AREA ZONE 0 (ZONE 20) GROUP IIC,
HAZARDOUS LOCATIONS CLASS I, DIVISION 1, GROUPS A, B, C, D,
CLASS II, DIVISION 1, GROUPS E, F, G, CLASS III, DIVISION 1,
CLASS I, ZONE 0, GROUP IIC

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





Relay contact shown in de-energized position