

Characteristics:

General Description:

The single and dual channel Switch/Proximity Detector Repeater, D6030S and D6030D module is a unit suitable for applications requiring SIL 3 level (according to IEC 61508) in safety related systems for high risk industries.

The unit can be configured for switch or proximity detector (EN60947-5-6, NAMUR), NO or NC and for NE or ND SPST (D6030D) or SPDT (D6030S) relay output contact. Each channel enables a Safe Area load to be controlled by a switch, or a proximity detector, located in Hazardous Area.

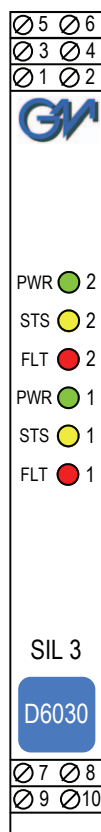
Fault detection circuit (DIP switch configurable) is available for both proximity sensor and switch equipped with end of line resistors. In case of fault, when enabled it de-energizes the corresponding output relay and turns the fault LED on; when disabled the corresponding output relay repeats the input line open or closed status as configured.

D6030D is programmable via dip switches as single input and two independent outputs. Out 2 can be programmed for output duplicating Out 1 or Fault detection Out.

In case of duplication, relay actuation can be independently configured for each output. In case of fault output, relay actuation can be programmed as normally energized or normally de-energized.

Mounting on standard DIN-Rail, with or without Power Bus, in Safe Area.

Front Panel and Features:



- SIL 3 according to IEC 61508 for $T_{proof} = 2 / 4$ years (10 / 20 % of total SIF), considering 100 mA max contact current.
- SIL 2 according to IEC 61508 for $T_{proof} = 5 / 10$ years (10 / 20 % of total SIF), considering 4 A max contact current.
- PFDavg (1 year) 4.87×10^{-5} , SFF 96.49 %, considering 100 mA max contact current.
- PFDavg (1 year) 1.71×10^{-4} , SFF 89.88 %, considering 4 A max contact current.
- 2 fully independent channels.
- NO/NC switch/proximity Detector Input, NE/ND relay actuation mode.
- Field open and short circuit detection.
- Three port isolation, Input/Output/Supply.
- In-field programmability by DIP Switch.
- High Density, two channels per unit.
- Simplified installation using standard DIN-Rail and plug-in terminal blocks, with or without Power Bus.

Technical Data:

Supply:

24 Vdc nom (18 to 30 Vdc) reverse polarity protected, ripple within voltage limits ≤ 5 Vpp, 2 A time lag fuse internally protected.

Current consumption @ 24 V: 35 mA for 2 channels D6030D,

18 mA for 1 channel D6030S with short circuit input and relay energized, typical.

Power dissipation: 0.85 W for 2 channels D6030D, 0.45 W for 1 channel D6030S with 24 V supply voltage, short circuit input and relay energized, typical.

Isolation (Test Voltage):

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

Out/Supply 2.5 KV; Out/Out 2.5 KV.

Input switching current levels:

ON ≥ 2.1 mA (1.9 to 6.2 mA range), OFF ≤ 1.2 mA (0.4 to 1.3 mA range), 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 single channel unit D6030S or de-energize channel relay with D6030D used as dual channel unit or actuate the fault relay out with D6030D used as fault signaling unit).

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

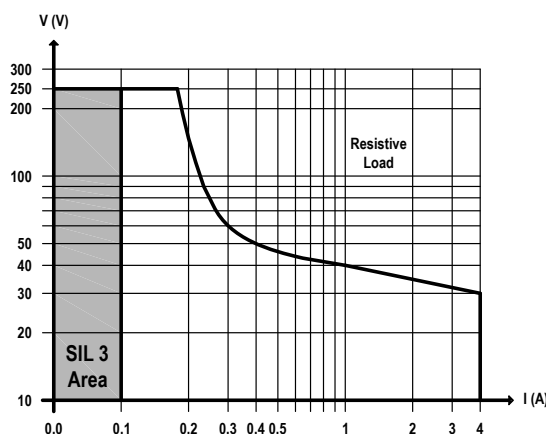
Output:

voltage free SPST (D6030D) or SPDT (D6030S) relay contact.

Contact material: Ag Alloy (Cd free).

Contact rating: 4 A 250 Vac 1000 VA, 4 A 250 Vdc 120 W (resistive load).

DC Load breaking capacity:



Mechanical / Electrical life: $5 \times 10^6 / 3 \times 10^4$ operation, typical.

Operate / Release time: 8 / 4 ms typical.

Bounce time NO / NC contact: 3 / 8 ms typical.

Frequency response: 10 Hz maximum.

Compatibility:

CE mark compliant, conforms to 2004/108/CE EMC Directive.

Environmental conditions:

Operating: temperature limits -40 to $+70$ °C, relative humidity 95 %, up to 55 °C.

Storage: temperature limits -45 to $+80$ °C.

Safety Description:



TUV Certificate No. C-IS-204194-01, SIL 2 / SIL 3 conforms to IEC61508.

Mounting:

T35 DIN-Rail according to EN50022, with or without Power Bus.

Weight: about 145 g D6030D, 120 g D6030S.

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

Location: Safe Area/Non Hazardous Location installation.

Protection class: IP 20.

Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

Ordering Information:

Model:	D6030	
1 channel		S
2 channels		D

Power Bus and DIN-Rail accessories:

Connector JDFT049

Cover and fix MCHP196

Terminal block male MOR017

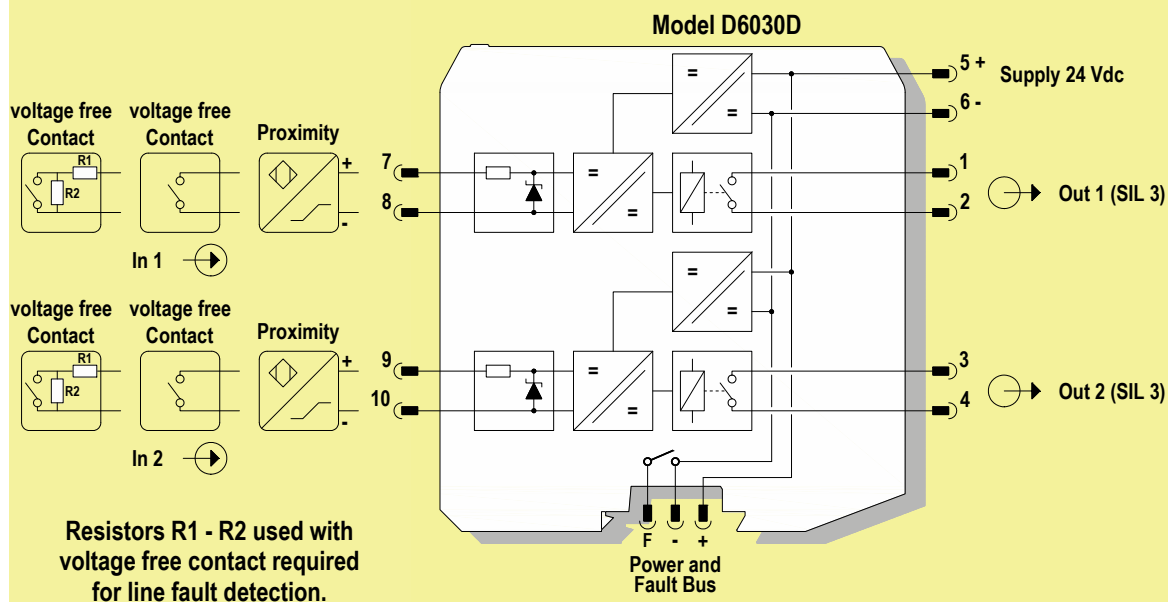
Terminal block female MOR022

Image:



Function Diagram:

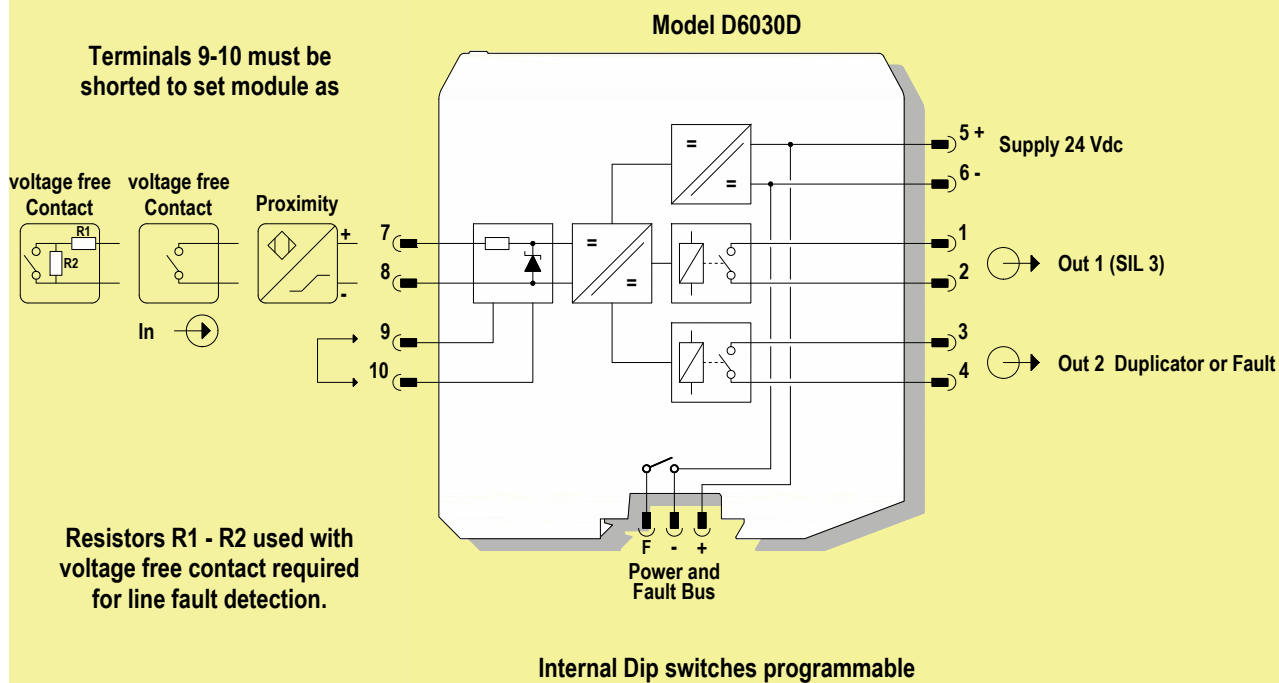
SAFE AREA, ZONE 2 GROUP IIC T4



Relay contact shown in de-energized position.
Terminals 1-2 and 3-4 open.

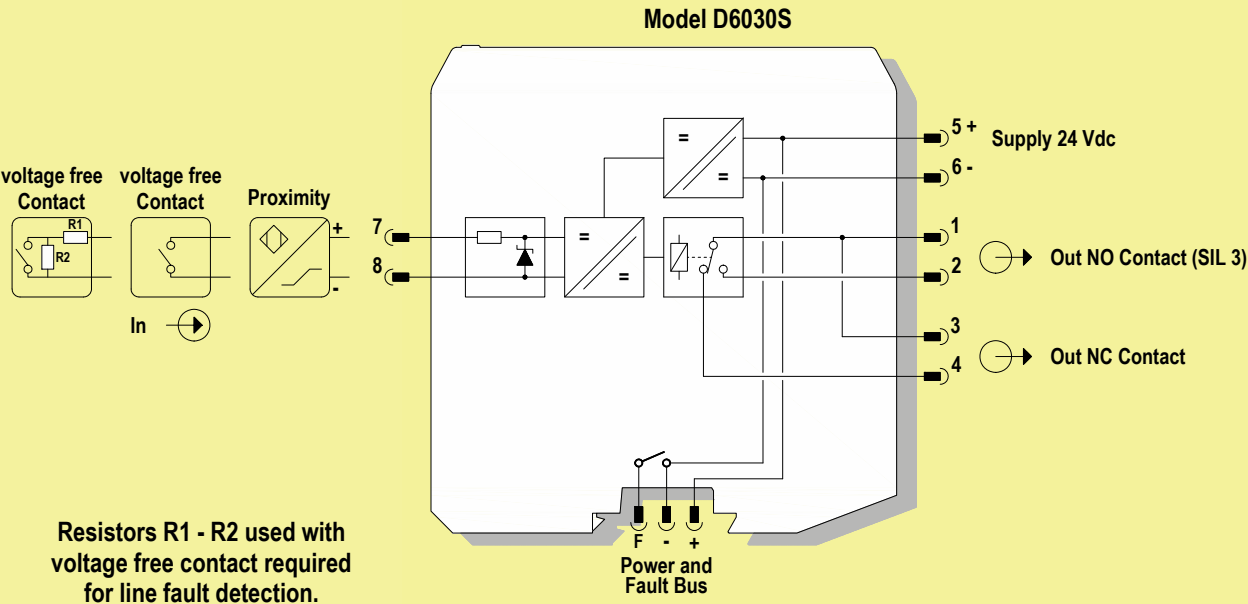
Function Diagram:

SAFE AREA, ZONE 2 GROUP IIC T4



Relay contact shown in de-energized position.
Terminals 1-2 and 3-4 open.

SAFE AREA, ZONE 2 GROUP IIC T4



Relay contact shown in de-energized position.
Terminals 1-2 open, terminals 3-4 close.