X1-NIS-DI-01

SIL3 Switch/Proximity Transistor-Out Repeater

The Switch/Proximity Detector Repeater X1-NIS-DI-01 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, 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. When selected, the fault drives the common line and forces the output open. Input to output function can be inverted. To ease maintenance operations, field devices can be disconnected through a two-position insertion/extraction mechanism. This product requires a dedicated Termination Board.

FEATURES

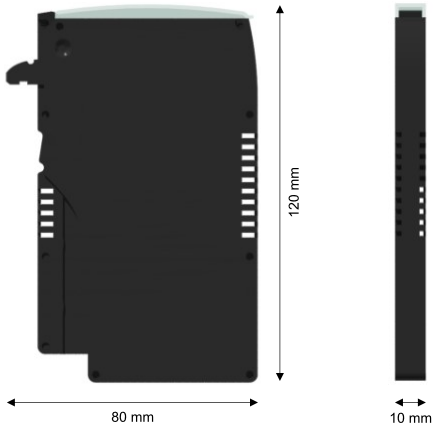
- SIL 3 / SC 3
- Installation in Zone 2 / Division 2
- Loop disconnection to ease maintenance operations
- Mechanical polarization key to prevent destructive mismatches
- High frequency transistor output
- Field open and short circuit detection (DIP switch programmable)
- Inverted output available (DIP switch programmable)
- Three port isolation, Input/Output/Supply

ORDERING INFORMATION

Ordering codes

X1-NIS-DI-01-S: 1 channel

OVERALL DIMENSIONS



TECHNICAL DATA

General

Power dissipation: 0.46 W @ 24 Vdc with short circuit input and 50 mA output current, typical.

System Supply

24 Vdc nom (18 to 28.8 Vdc).
Current consumption: 15 mA @ 24 Vdc with short circuit input and closed output, typical.

System Out

Voltage free SPST optocoupled open-collector transistor. When input diagnostics is active, System Out opens.
Max voltage: 35 Vdc.
Max current: 50 mA.
Max voltage drop: 1.5 V @ 50 mA.
Leakage current: ≤ 50 µA @ 35 Vdc.
Response time: ≤ 500 µs.
Frequency response: 1 kHz maximum.

Field In

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

Fault

Field sensor fault is available on the common fault line, when input diagnostics is active.

Isolation

Field In/System Out 2.5 kV; Field In/System Supply 2.5 kV; System Out/System Supply 500 V.

Environmental conditions

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

Safety description

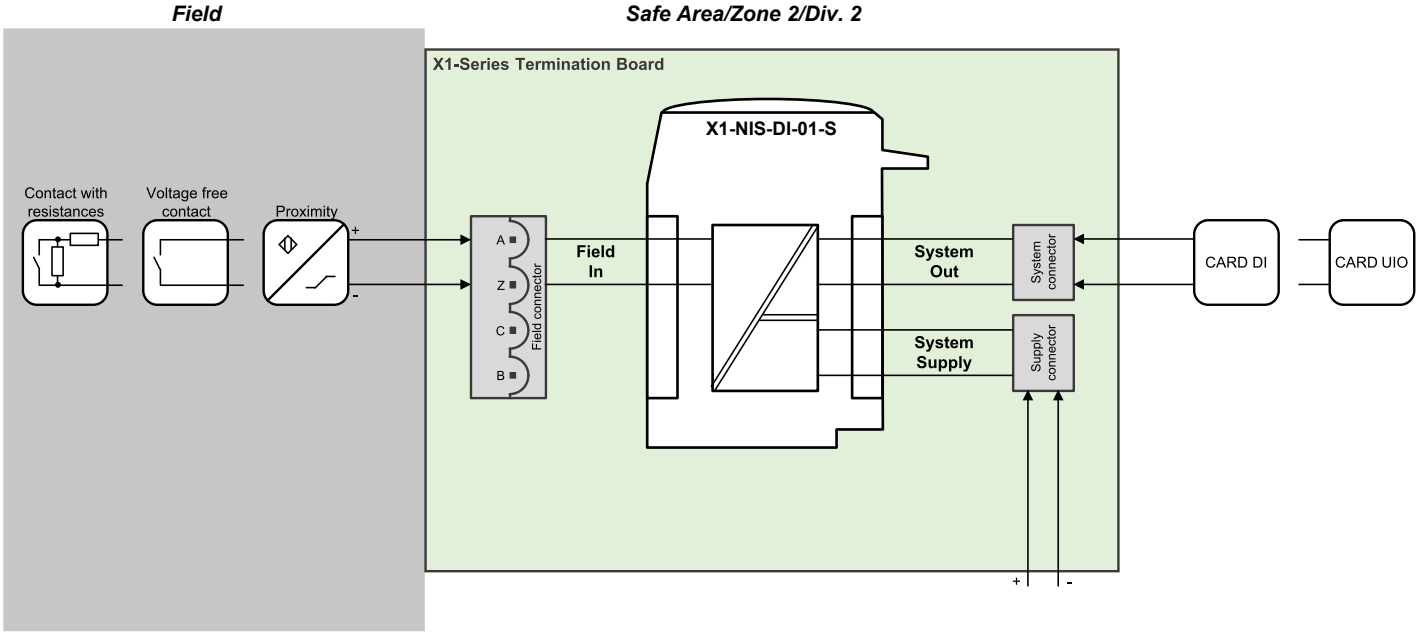
Associated apparatus and non-sparking electrical equipment.
Uo = 10.5 V, Io = 11 mA, Po = 29 mW at terminals A-Z
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

On custom Termination Board.
Weight: about 55 g.
Dimensions: Width 10 mm, Depth 80 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.

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