X1-NIS-RLO/SS-04

SIL3 Solid-State Relay Out Module for 2A NE Loads with Diagnostics

The X1-NIS-RLO/SS-04 solid-state relay module is suitable for switching safety related circuits, up to SIL 3 level, for high risk industries. It provides isolation between input coils and output contacts, making available a safety NO contact for Normally Energized (NE) 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, while offering an acceptable resistance to the DO Card. Line and load short/open circuit detection with programmable limits 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 artificially increasing the input impedance without commuting the relay contacts, and it is also reported to the cumulative fault. 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
- Up to 2 A functional / 6 A inrush current
- Compatible with DCS/PLC pulse testing
- Load disconnection on both supply lines available
- Line & Load short/open circuit detection (programmable thresholds)
- Load voltage monitoring
- Field fault mirroring to the DCS/PLC DO Card
- SIL Automatic Proof Test available through X1-GW Gateway
- Three port isolation, Input/Output/Supply

GATEWAY

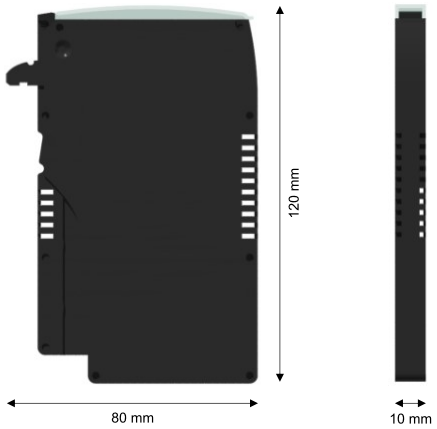
X1 Series Gateway family X1-GW makes optional features available. See Instruction Manual for the specific functions available in this model.

ORDERING INFORMATION

Ordering codes

X1-NIS-RLO/SS-04-S: 1 channel

OVERALL DIMENSIONS



TECHNICAL DATA

General

Power dissipation: 1.2 W @ 24 Vdc System Supply, with 2 A load current, typical.

System Supply

24 Vdc nom (18 to 28.8 Vdc).
Current consumption: 18 mA @ 24 Vdc and relay energized, typical.

System In

24 Vdc nom (18 to 28.8 Vdc).
Current consumption: 12 mA @ 24 Vdc, typical.
Input impedance: 2 kΩ @ 24 Vdc, typical.

Field Supply

DC voltage supply.
Voltage range: 0 to 60 Vdc.

Field Out

NE load.
Max ratings: 2 A 60 Vdc 120 W.
Max inrush current: 6 A.
Operate / release time: 30 / 30 ms, typical.

Fault

Load & line short/open circuit, supply voltage monitoring.
Line/load fault: programmable resistance (20 Ω to 20 kΩ) and current (20 mA to 2 A) limits.
Load supply voltage ok: ≥ 20 Vdc.
Load supply voltage fault: ≤ 5 Vdc.
Fault signalling: common fault & fault mirroring on DCS/PLC DO.
Response time: ≤ 1 s.

Isolation

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

Environmental conditions

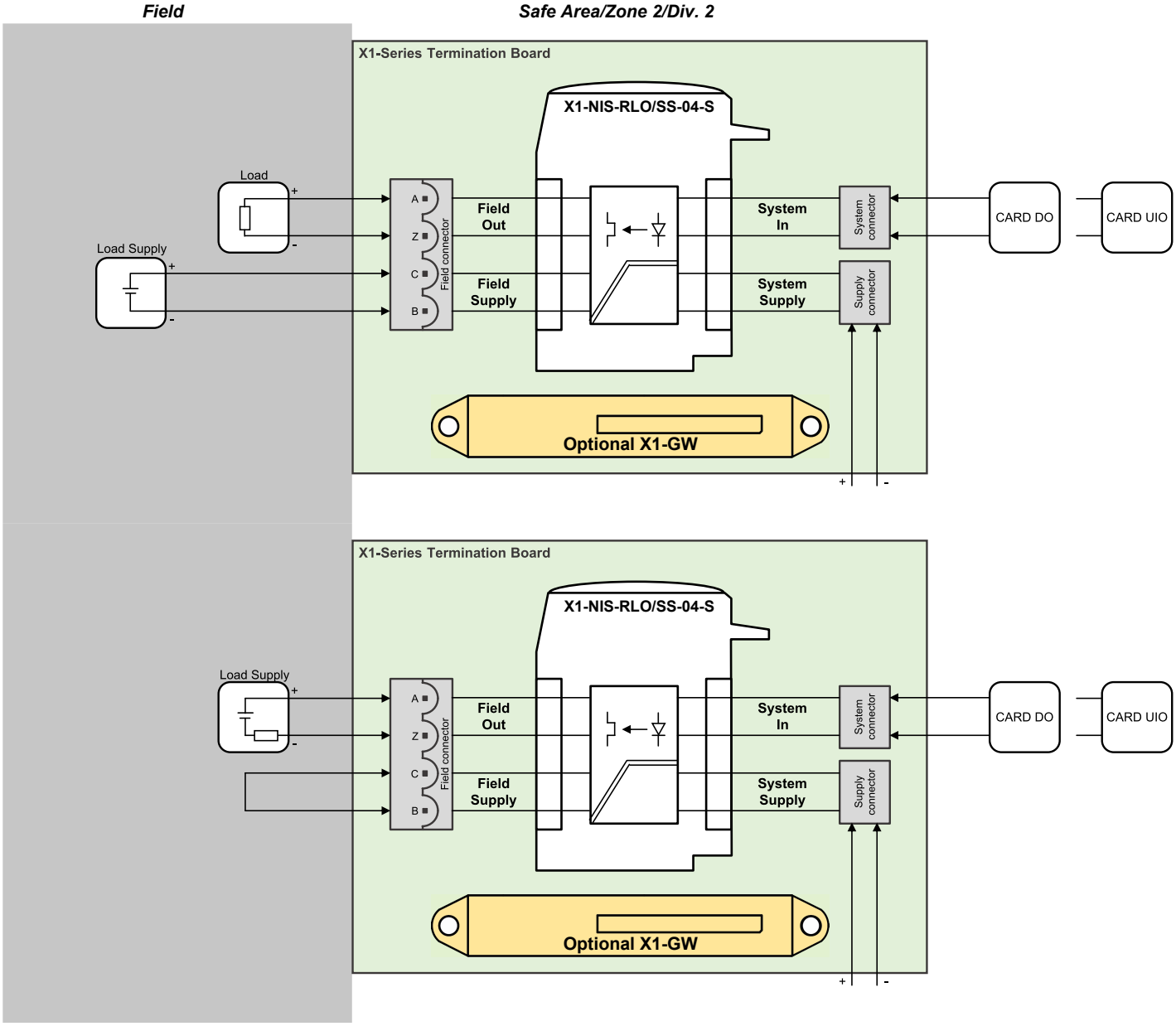
Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Mounting

On custom Termination Board.
Weight: about 60 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.

FSM SIL 3

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