

Characteristics:

General Description:

The single channel Relay Output, D5290S/SA is a relay module suitable for the switching of safety related circuits, up to SIL 3 level according to IEC 61508:2010 Ed.2 for high risk industries.

It provides isolation between input and output contacts.

D5290S/SA provides two NO contacts for normally energized load and a NC contact for service purpose, in order to switch the NE load on both supply lines.

See the following pages for Functional Safety applications with related SIL value.

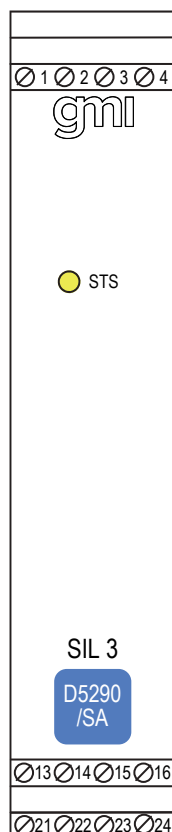
Mounting on standard DIN-Rail, in Safe Area / Non Hazardous Location.

Functional Safety Management Certification:

G.M. International is certified by TUV to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3.



Front Panel and Features:



- SIL 3 according to IEC 61508:2010 Ed. 2 for Tproof = 14 / 20 yrs ($\leq 10\%$ / $> 10\%$ of total SIF).
- PFDavg (1 year) 7.01 E-06, SFF 98.38 % for NE Load.
- Systematic capability SIL 3
- 10 A SIL 3 contact for NE load and contact for service purpose.
- 16 A inrush current at 24 Vdc / 250 Vac.
- Input/Output isolation.
- EMC Compatibility to EN61000-6-2, EN61000-6-4, EN61326-1, EN61326-3-1 for safety system.
- UL & C-UL, TÜV Certifications.
- TÜV Functional Safety Certification.
- Type Approval Certificate DNV and KR for maritime applications.
- Simplified installation using standard DIN-Rail and plug-in terminal blocks or customized Termination Boards.

Technical Data:

Input: 24 Vdc nom (21.6 to 27.6 Vdc) reverse polarity protected, ripple within voltage limits ≤ 5 Vpp.

Current consumption @ 24 V: 40 mA with relay energized, typical.

Power dissipation: 1 W with 24 V input voltage, relay energized, typical.

Isolation (Test Voltage): Input / All Outputs 2.5 kV ; Out 1 / Out 2: 500 V.

Output: 1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 13-21 and Service Load Out (NC contact) terminals 13-15;

1 voltage free SPST relay contact identified with output Out 2 (NO contact) terminals 14-22.

Terminals 13-21 (Out 1) and 14-22 (Out 2) are open when relay is de-energized, closed in energized relay condition.

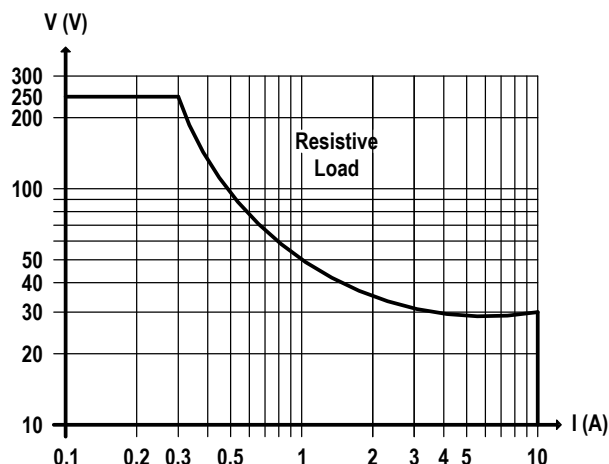
Service load output (not SIL) at terminals 13-15 is normally close when relay is de-energized, open in energized relay condition.

Contact material: Ag Alloy (Cd free) or AgSnO₂.

Contact rating: 10 A 250 Vac 2500 VA, 10 A 250 Vdc 300 W (resistive load).

Contact inrush current: 16 A at 24 Vdc, 250 Vac.

DC Load breaking capacity:



Mechanical / Electrical life: 10^6 / 5×10^4 operation, typical.

Operate / Release time: 8 / 4 ms typical.

Bounce time NO / NC contact: 4 / 6 ms, typical.

Frequency response: 10 Hz maximum.

Compatibility:

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

Environmental conditions:

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

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



Approvals:

UL & C-UL E477485 conforms to ANSI/UL508

TÜV Certificate No. C-IS-236198-04, SIL 3 conforms to IEC61508:2010 Ed.2.

TÜV Certificate No. C-IS-236198-09, SIL 3 Functional Safety Certificate conforms to IEC61508:2010 Ed.2, for Management of Functional Safety.

DNV No.A-13625 and KR No. MIL20769-EL002 Certificates for maritime applications.

Mounting:

T35 DIN-Rail according to EN50022 or on customized Termination Board.

Weight: about 150 g.

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

Location: installation in Safe Area/Non Hazardous Locations.

Protection class: IP 20.

Dimensions: Width 22.5 mm, Depth 123 mm, Height 120 mm.

Ordering Information:

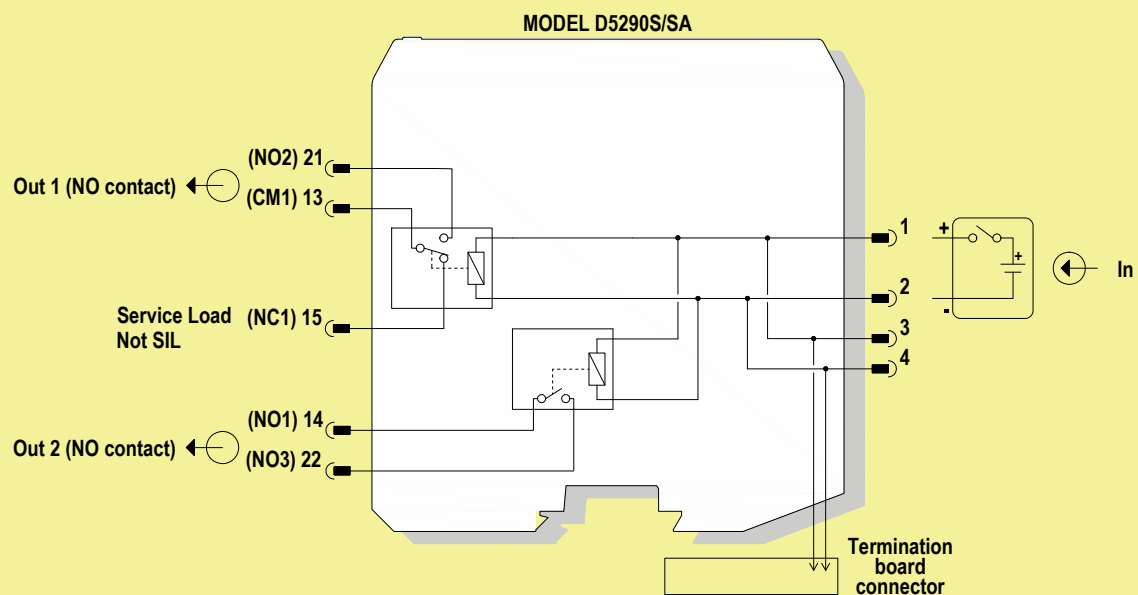
Model: D5290S/SA

Image:



Function Diagram:

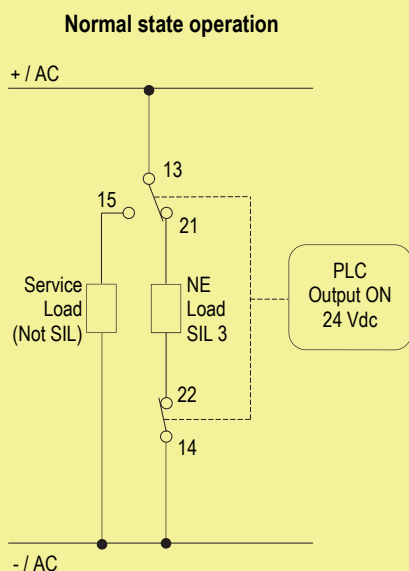
SAFE AREA / NON HAZARDOUS LOCATION



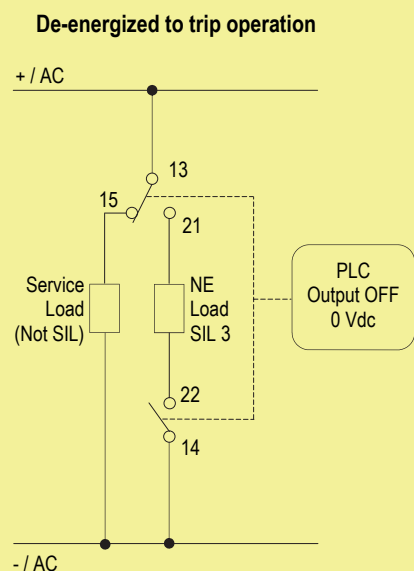
See the following pages for Functional Safety applications with related SIL value.

Relay contact shown in de-energized position.
Terminals 13-21 and 14-22 are open; terminal 13-15 is closed.

Application D5290S/SA - SIL 3 Load Normally Energized Condition (NE) and Normally Energized Relay, with interruption of both load supply lines

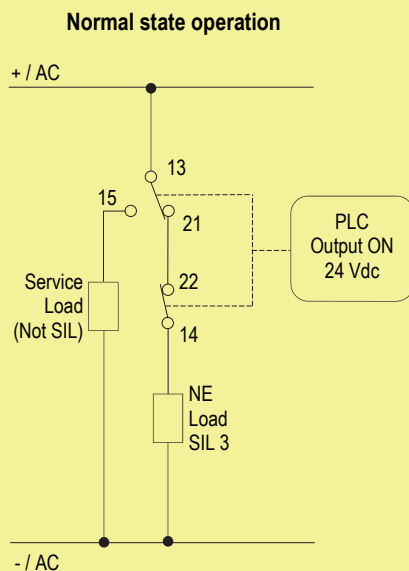


Contacts 13-21 and 14-22: in normal operation relays are energized, contacts are closed, NE load is energized.
Contact 13-15: in normal operation relay is energized, contact is open, service load for NE load is de-energized.



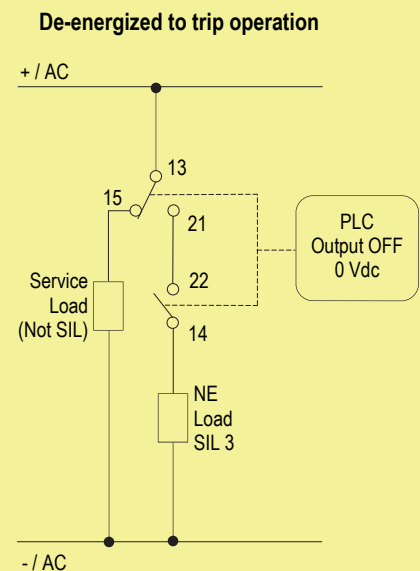
Contacts 13-21 and 14-22: the SIL 3 Safety Function is met when the relays are de-energized, contacts are open, NE load is de-energized.
Contact 13-15: in safe state the relay is de-energized, contact is closed, service load for NE load is energized.

Application D5290S/SA - SIL 3 Load Normally Energized Condition (NE) and Normally Energized Relay, with interruption of only one load supply line



Contacts 13-21 and 14-22: in normal operation relays are energized, contacts are closed, NE load is energized.

Contact 13-15: in normal operation relay is energized, contact is open, service load for NE load is de-energized.



Contacts 13-21 and 14-22: the SIL 3 Safety Function is met when the relays are de-energized, contacts are open, NE load is de-energized.

Contact 13-15: in safe state the relay is de-energized, contact is closed, service load for NE load is energized.