

Safety Relays

02

Any time a relay is required and must be used in a **SIF**, it must conform and adhere to **IEC 61508** and to the relevant industry standard (i.e. 61511).

Typical cases :

- Controller cannot meet power requirement (V or A)
- Multiplication of contacts is required
- Controller Safety Function must be inverted

SIL certified relays are not used exclusively in Oil & Gas or Petrochemical industries; they are also **a must in many other industries**:

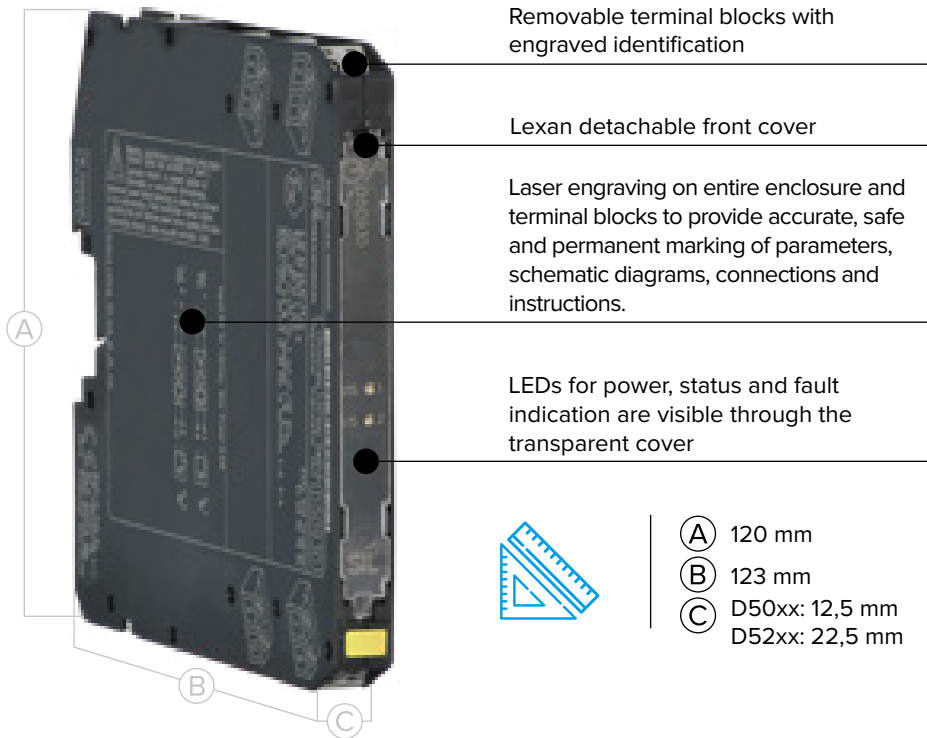
- Railways
- Cars and Lift
- Power Distribution
- Any time a failure of the relay can cause a serious accident



STRENGTHS

- **Reduced Foot Print:** High Density: 12,5/22,5 mm per Ch.
- **Full 3rd Party Certification:** Coil-to-Contact SIL2/3 TÜV certified
- **True Reliability:** Compatible to DO Card LM Pulses
- **Reduced Space/Eng. Costs:** Smart Line/Load Monitoring with transparent Fault Indication (no additional contacts)
- **Lower Ownership/Maintenance Cost:** T-proof Times: 10/20 years
- **Reduced Spare Inventory:** Universal Mounting: DIN-Rail and Termination Boards
- **Higher Reliability In & Outdoor:** Certified -40° to +70° C
- **Totally Independent Dual Ch.:** Dual circuits
- **Full Application Coverage:** Modules available with 5 & 10 Amps Contact, NE/ND application
- **Harsh environment resistance:** G3 conformal coating
- **Reliable switching operations:** gold-plated relay contacts

Structure



ENCLOSURE CHARACTERISTICS

- High channel density resulting from innovative circuit design using advanced surface mount components
- Single, dual or quad channel models
- Plug-in screw terminal blocks to secure wires up to 2.5 mm²
- Configuration components are easily accessed by removing the side cover or via connector front panel

Line & Load Monitoring



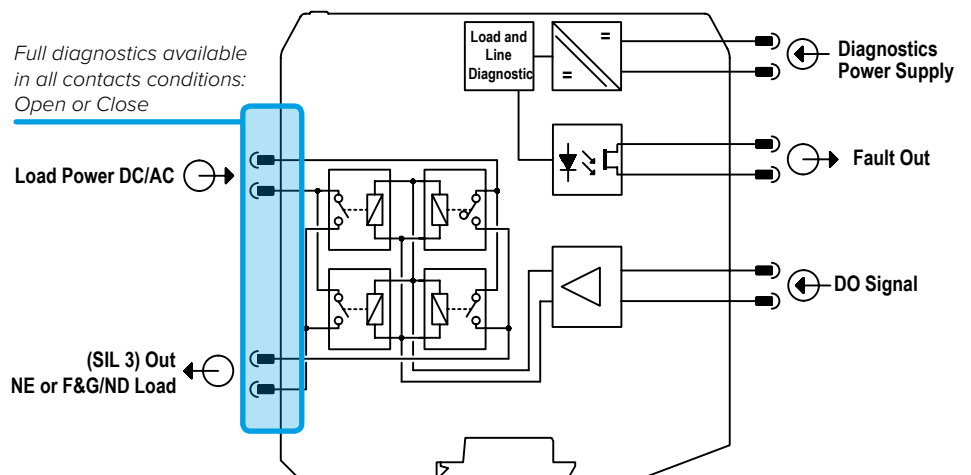
GM INTERNATIONAL PATENTED DIAGNOSTICS FEATURES

- Works in all load conditions: ON/OFF
- Operates with OPEN/CLOSE Relay
- Some units are software configurable
- Suitable for **NE/ND**, AC/DC Loads
- **Transparent** fault indication to compatible system
- **Monitors:**
 - Load Supply Voltage
 - Load Current
 - Load resistance
 - Earth leakage
 - Internal Relay coils

SIL Certified Relays are used for critical loops where careful consideration should be given to **Line and Load Monitoring**. In a De-energize to Safety application a wire/coil failure leads to a safety status. In an Energize to Safety application line failures leads to a dangerous status. In both cases **failure detection is important**, if not essential.

Other diagnostics applications are monitoring the Load status to prevent spurious trips or to verify the condition of the individual coil in a redundant coil SOV. In **F&G system** line **diagnostics is a must** and regulated by NFPA 72 code.

Control system diagnostic capabilities are designed to work when no device is interposed between the control system and the load. If a relay is placed in the loop, **the diagnostic function stops at the relay input circuit** (coil). To perform line monitoring from field device to controller, a SIL relay with built-in diagnostic circuit is required. GM International relays will **perform diagnostics** of the load, wire, power supply and internal coils **in all operating conditions**; providing an independent alarm contact as well as transparently transferring the fault indication to compatible DO cards.



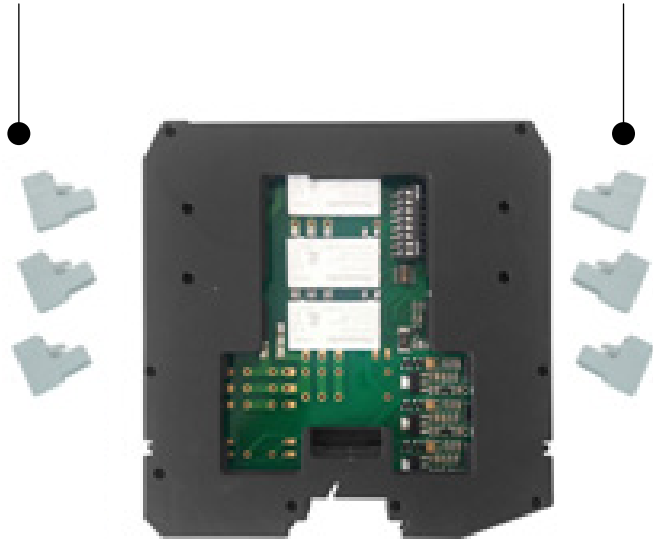
Universal Mounting units

The **same device** can be used in **all applications** to reduce spare inventory.

- DIN-rail stand-alone devices
- Standard and customized termination boards
- Power bus using standard TS 35 DIN-rail

Terminal Blocks
for Field connections

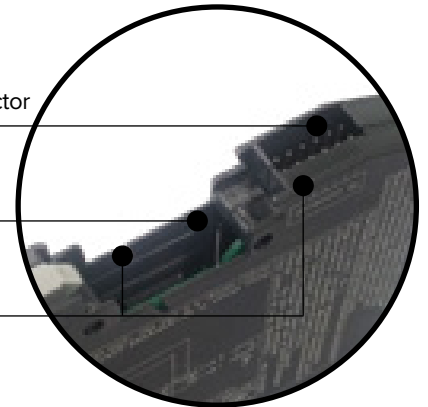
Terminal Blocks
for control room connection



Termination Board connector

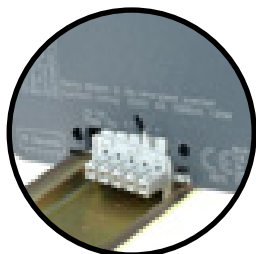
Power Bus connector

DIN Rail mounting

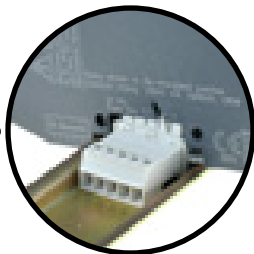


Enhanced Power Bus Mounting

24 Vdc Power Supply Voltage **can be applied** to the module by directly connecting to the plug-in Terminal Block of each module, or **via the Power Bus System**. The system consists of standard DIN-Rail modules mounted on DIN-Rail Bus connectors. The maximum allowed powering capacity per trunk is **8 A**. It is always possible to remove modules, without disconnecting the bus connector which remains attached to the DIN-Rail. Communication bus is provided, on suitable models, to transmit via Modbus to DCS PLC logic solver. Cumulative Fault Alarm indication is provided on the Bus connection.



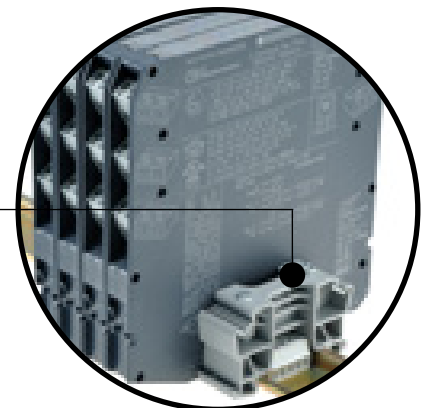
Bus plug-in connector



Bus connector terminal



DIN Rail stopper



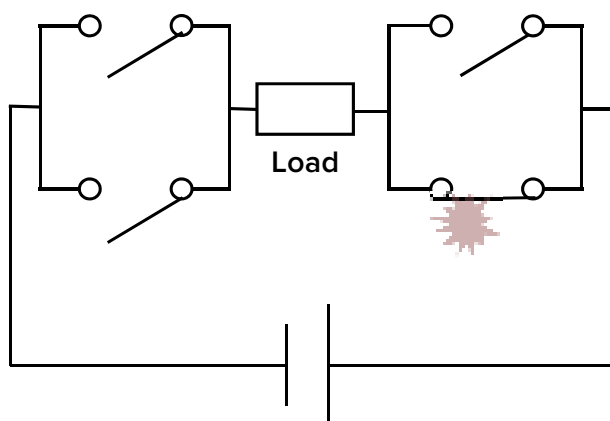
High Availability

Thanks to **specific contact arrangement**, GM International relay modules maintain higher level of safety while **improving process availability**.

- **SIL 3**: a single fault is not sufficient for a dangerous failure
- **Availability**: a single fault is not sufficient for a spurious trip of the load

Safety
and
Availability
combined

2x2 Safety Relay contact matrix

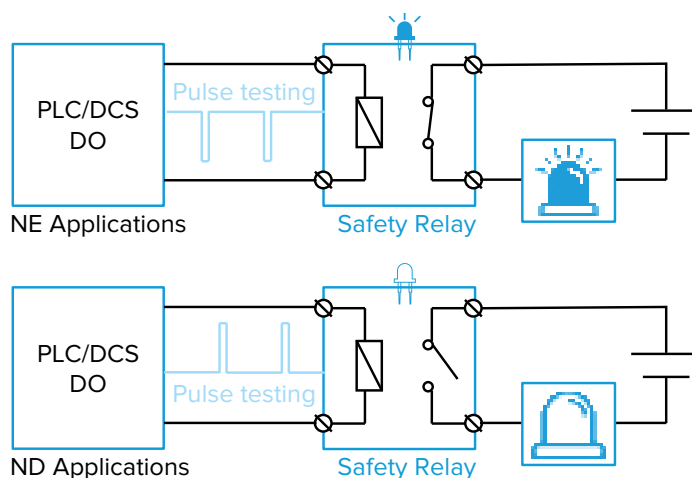


Line Monitoring Pulses Compatibility

Line Monitoring Pulses are generated by DO cards to verify the integrity of the Line and Load, in either Energized or De-Energized State. GM International Relays are compatible to any Line Monitored Pulses and are **designed to prevent**:

- Contact chattering
- Spurious load activation/deactivation
- Premature damage of the Relay unit.

Compatible
to any Line
Monitored
DO card



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