



Product overview

Our products, Our commitment





OVER 40 YEARS IN INTRINSIC SAFETY AND INDUSTRIAL ELECTRONICS



*Glisente Landrini
President*

In 1970 Glisente Landrini founded Elcon Instruments, which has been acknowledged as an international leader in the design and manufacturing of intrinsically safe products and systems. Mr. Landrini started GM International to provide state of the art SIL rated products and services to support Intrinsically safe applications in Oil & Gas, petrochemical and pharmaceutical industries.

The company was founded in 1993, but the core management's experience remarkably exceeds over 40 years of qualified activity in hazardous locations and industrial electronics. GM International's products have been successfully installed in plants all over the world, including Europe, Russia, North America, Middle and Far East and China.

GM International products interface all wiring between safe and hazardous areas and represent a fundamental, yet often underestimated, layer of the instrumentation package.

Intrinsically safe isolators provide energy limitation to protect from risks of explosion while providing the highest grade of availability to guarantee both continuous operation and maximum safety effectiveness.



Safety, performance, and reliability

OUR PRODUCTS, OUR COMMITMENT

GM International designs, engineers and manufactures a complete range of intrinsically safe and SIL 3 certified devices that meet the stringent quality requirements, ensuring the highest production standards in intrinsically safe applications. Our products are used in automation packages such as DCS - ESD - FGS - BMS - HIPPS - PLC - SCADA, in several industrial sectors: Oil & Gas, petrochemical, pharmaceutical, fertilizer, mining, food & beverages, marine.

SOCIAL RESPONSIBILITY

We design intrinsically safe instruments and SIL certified devices in order to prevent accidents and understand, manage and reduce risks for people and environment.

Customer satisfaction is the manner in which we demonstrate our social responsibility to contribute to sustainable development, minimizing climate impact and creating a safe and healthy working environment.

GM International has obtained **SIL 3** Functional Safety Management approval by TUV according to IEC 61508:2010 standard.



CERTIFIED INTRINSICALLY SAFE PRODUCTS

Highest levels of safety

INTRINSICALLY SAFE PRODUCTS AND IEC61508:2010 SIL CERTIFICATIONS

GM International products have been granted I.S. certificates from the most credited notified bodies in the world. Certificates are available for ATEX (Europe), IECEx (International), UL/FM (USA and Canada), EAC-EX (Russia TR CU), CCC (China), PESO (India), TIIS (Japan), INMETRO (Brazil), ECAS-Ex (UAE). All certificates are available for download from our website.

GM International offers a wide range of products that have been proved to comply with the most severe quality and safety requirements. IEC61508 and IEC61511 standards represent a milestone in the progress of industry in the achievement of highest levels of safety through the entire instrumented system lifecycle. The majority of our products are SIL certified as well as our design, manufacturing and administrative facilities (FSM); reports and certificates from TÜV are also available for download.



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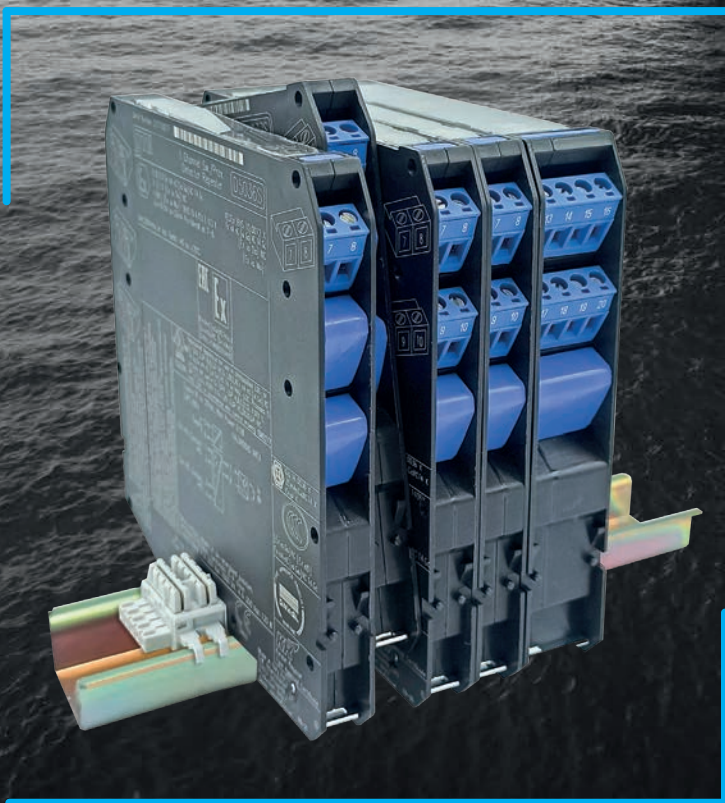
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Intrinsically Safe Isolators D5000 Series

01

GM International D5000 series uses state-of-the-art solutions to achieve the highest performance for Intrinsically Safe applications; guaranteed by over 15 certification bodies all over the world.

Intrinsically Safe Galvanic Isolators provide the most simple and cost effective means of implementing Intrinsic Safety into Hazardous Area applications.



STRENGTHS

- **Reduced foot print:** high density, 6 mm per channel
- **Reduced bulk power supply:** low power consumption
- **Reduced cooling needs:** low heat dissipation
- **Higher reliability in & outdoor:** certified -40° to + 70° c
- **Higher resilience to surges:** 2.5 Kv isolation
- **Data guaranteed by 3rd party:** SIL 3 (2) TÜV certification
- **Current & valid standard:** certified IEC 61508:2010, Ed.2
- **Harsh environment resistance:** G3 conformal coating
- **Lower ownership cost:** certified for 20 years operation
- **Reduced spare inventory:** universal mounting (stand alone DIN-rail, power bus system and termination boards)
- **Independent SIL certified dual ch.:** dual power supply

Structure



Removable terminal blocks with engraved identification

Lexan detachable front cover

Laser engraving on entire enclosure and terminal blocks to provide accurate, safe and permanent marking of Intrinsic Safety parameters, schematic diagrams, connections and instructions.

LEDs for power, status and fault indication are visible through the transparent cover



- (A) 120 mm
- (B) 123 mm
- (C) D50xx: 12,5 mm
D52xx: 22,5 mm



ENCLOSURE CHARACTERISTICS

- High channel density resulting from innovative circuit design using advanced surface mount components
- Single, dual, quad and eight 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

High Performance

Some of the factors that guarantee a product with an high signal transfer accuracy and repeatability, a very low heat dissipation, an high reliability and a SIL certified for 20 years useful life time are:

- Fully automated assembly line
- 100% complete individual testing
- Advance low dissipation circuitry
- Use of high temperature class components
- Absence of electrolytic capacitors
- G3 conformal coating
- Designed for vibration and high humidity



LONGER LIFETIME

Capability to withstand higher temperatures, improves the lifetime in normal conditions.

- Operating temperature certified from -40°C to +70°C
- Very high reliability in extreme environment applications
- G3 conformal coating
- Reduced cabinet dimensions, require less ventilation



WIDE FUNCTIONALITY

- More than 25 modules suitable for **SIL 2** and **SIL 3** applications according to IEC61508, IEC61511
- Three port galvanic isolation to eliminate noise, ground loop problems providing Intrinsic Safety without a high integrity safety earth connection
- Line fault alarm detects open or short circuit of field cables
- Optional power bus DIN-rail connector
- Standard termination board with custom connectors for integration into customized boards
- EMC Compatibility to EN61000-6-2, EN61000-6-4, EN61326-1, EN61326-3-1 for safety system
- Wide range DC power supply (18-30 Vdc)
- Certified for offshore and maritime applications

Operating temperature certified from -40°C to +70°C

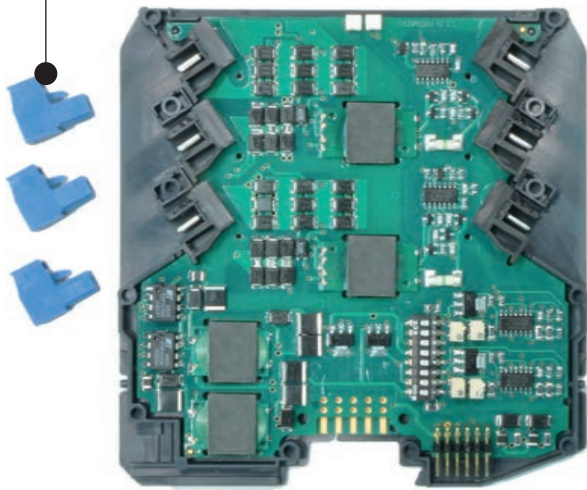
Universal Mounting Units

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

Blue terminal blocks on hazardous area

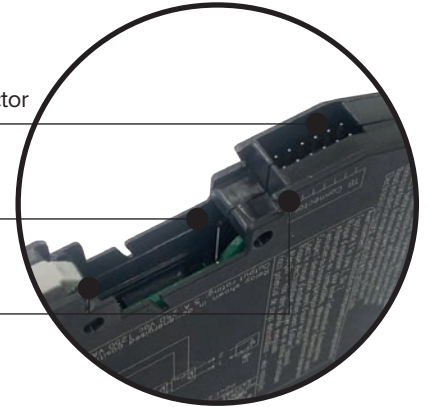
Grey terminal blocks on safe area



Termination board connector

Power bus connector

DIN-rail mounting

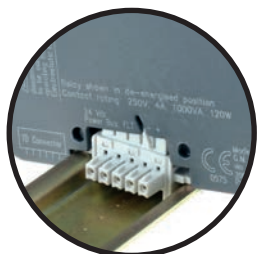


Enhanced Power Bus Mounting

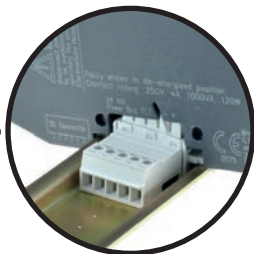
24 Vdc power supply voltage **can be applied** to the module by directly connecting to the plug-in terminal block of each module, or **via the power bus system**. The system consists of standard DIN-rail modules mounted on DIN-rail bus connectors. The maximum allowed powering capacity per trunk is **8 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.

D5202S redundant power supply feed module provides SPST relay contact for common and power supply faults; both supply voltages are **independently monitored**.

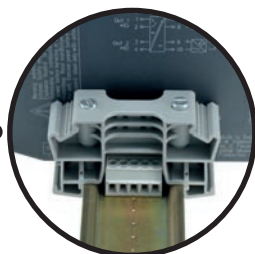
- Redundant 4 Amp power supply with alarm
- Remote alarm indication
- Modules can be combined for additional redundancy



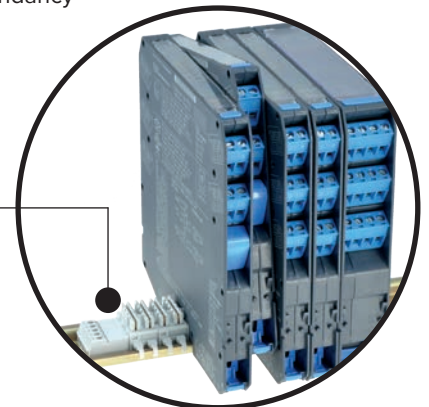
Bus plug-in connector



Bus connector terminal



DIN-rail stopper



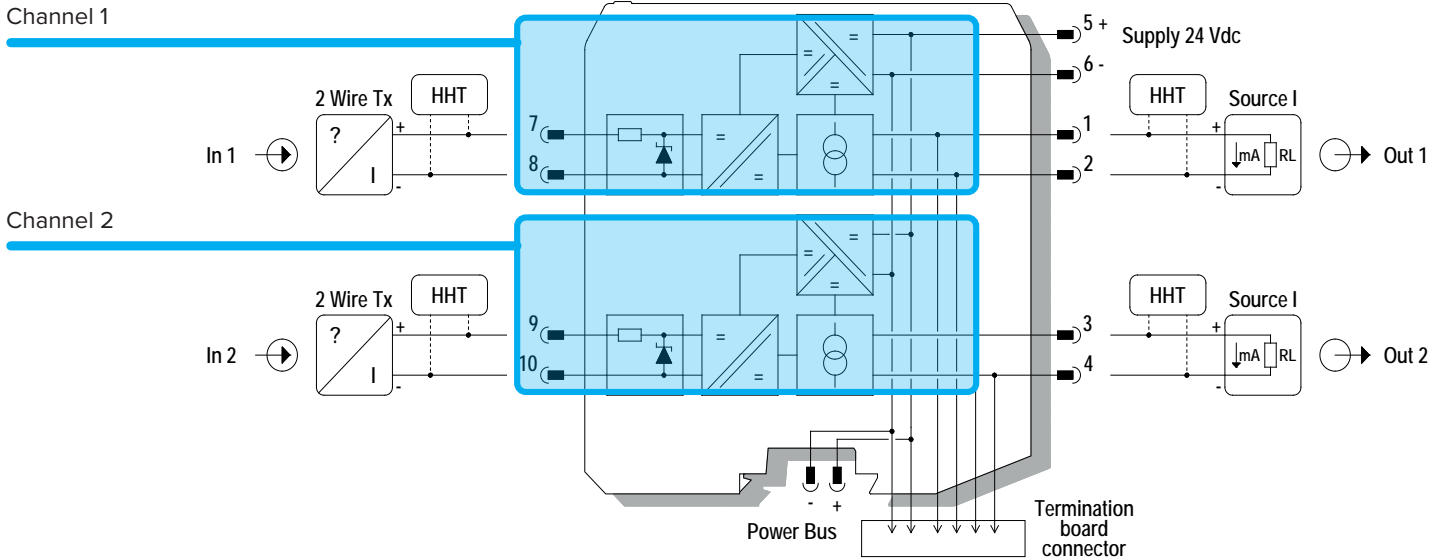
Customized Termination Boards for an easy integration with instrumentation of manufacturers are available:

- ABB
- Bailey
- Foxboro
- Hima
- Honeywell
- Invensys
- Schneider
- Siemens
- Triconex
- Yokogawa

Special Dual Channel Feature

By using two totally independent power supply circuits for each dual channel module, single channel integrity is maintained while drastically reducing space and installation cost. GM International SIL 3 modules offer the independence of two single channels achieving an unprecedented 6mm per channel density.

There are no common components hence both channels are SIL 3 certified and can be used without any architectural limitation.



Configuration Tools & Software

SWC5090 software is designed to provide a PC user interface to configure suitable D5000, D5200 modules, via PPC5092 adapter.

It allows the user to easily:

- Read and write configuration parameters to the unit
- Store and restore data to and from local hard drive for backup or archive
- Load factory default configurations
- Monitor real time Input values for debug or test
- Print a report sheet containing configuration parameters and additional information

SWC5090 is freely distributed on our website: www.gminternational.com



PPC5092 interface allows the configuration of D5000, D5200 modules via SWC5090 software.

Modules are supplied via USB and therefore do not need external power supply while being programmed.

PPC5092 comes with mini-USB cable and CD-Rom containing SWC5090 software.

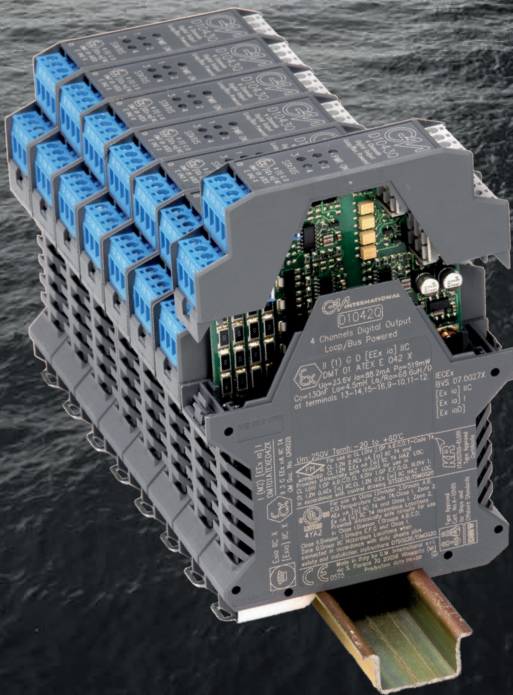
Intrinsically Safe Isolators

D1000 Series

01

Intrinsic Safety barriers interface with process measurement field devices situated in a hazardous area of a plant.

The GM International **D1000 series IS barrier** is yet unsurpassed in reliability and performance, providing the simplest and cost effective range of technology to implement intrinsic safety into hazardous areas and divisions. The complete line of D1000 series IS barriers is suitable for SIL 3 - SIL 2 applications according to **IEC 61508, IEC 61511**.



STRENGTHS

- **Reduced Foot Print:** High density, 4 Channels
- **Full Application Coverage:** All INs and OUTs available
- **Reduced Spare Inventory:** Available as universal IN/OUT
- **Reliable Indoor & Outdoor:** Certified -40° to + 60° C
- **Resilience to Surge:** 1.5 KV isolation
- **SIL 3 (2) TÜV certification:** Data guaranteed by 3rd Party
- **Easy Installation:** Din Rail & Power Bus mounting
- **Easy Maintenance:** Plug-in Enclosure
- **Current & Valid Standard:** Certified IEC 61508:2010, Ed.2
- **Independent SIL certified Dual Ch.:** Dual Power Supply

Structure



Removable terminal blocks with engraved identification

Terminal block identification

Intrinsic safety parameters, schematic diagrams, connections, instructions

LEDs for power, status and fault indication

Laser engraving on entire enclosure and terminal blocks to provide accurate, safe and permanent marking



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
- Plug-in PCB can be removed for configuration operations



- Ⓐ 99 mm
- Ⓑ 22,5 mm
- Ⓒ 114,5 mm

Innovated and cost effective design for easy installation

The **D1000 series** has some innovated designs to make installation and operation safe and simple. Some of the **key features** include removable blue & grey terminals for easy installation, a plug in PCB which can be removed for easy service and maintenance operations. Configuration is via DIP switches allowing an easy and simple field setup.



HIGH PERFORMANCE

- High signal transfer accuracy and repeatability
- Advanced circuitry provides low heat dissipation, ensuring modules run cool despite their high functionality
- Low power consumption.
- SMD manufacturing for a long and reliable life
- Wide operating temperature range (-20 / +60°C)
- 2 modules (D1130 - D1180) can be powered from 85 to 264 Vac, 48-400 Hz, or from 100 to 350 Vdc



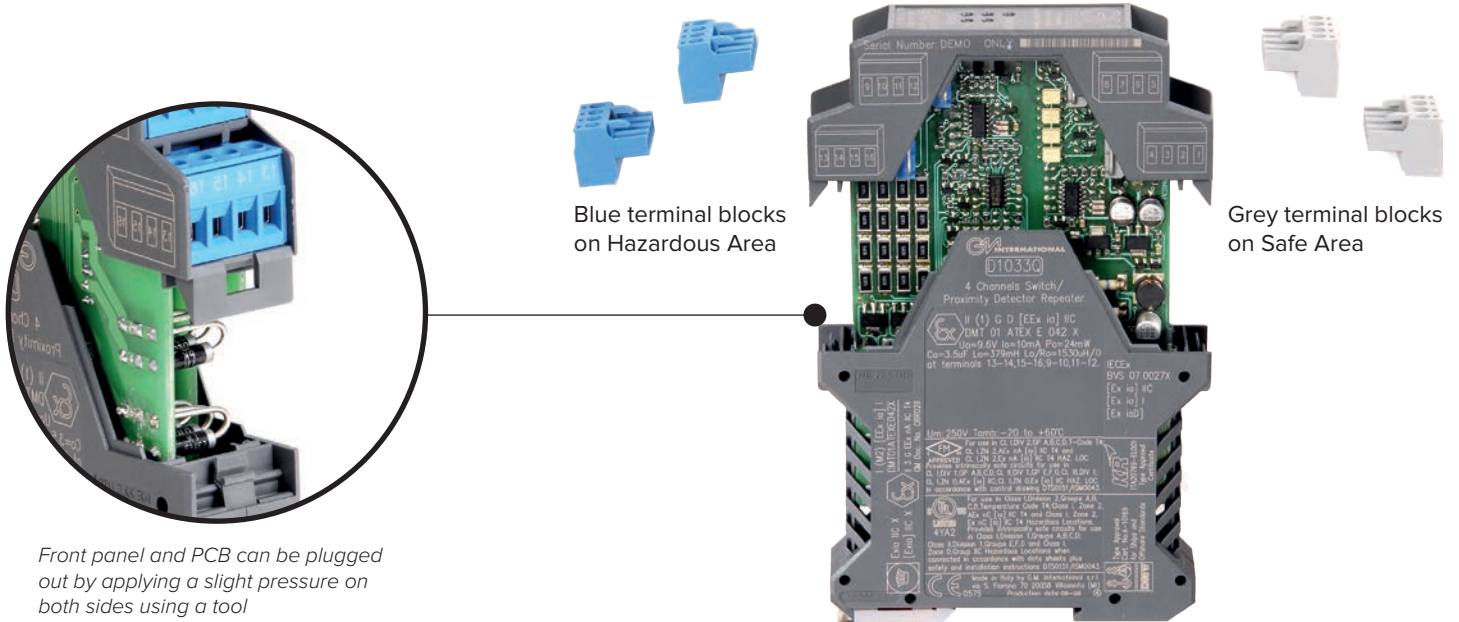
WIDE FUNCTIONALITY

- Wide range of Digital and Analog I/Os
- Relay contacts rated for 2 A to directly switch high loads
- Three port galvanic isolation to eliminate noise, ground loop problems and to provide Intrinsic Safety without a high integrity safety earth connection
- Line fault alarm detects open or short circuit of field cables
- Optional power bus enclosure



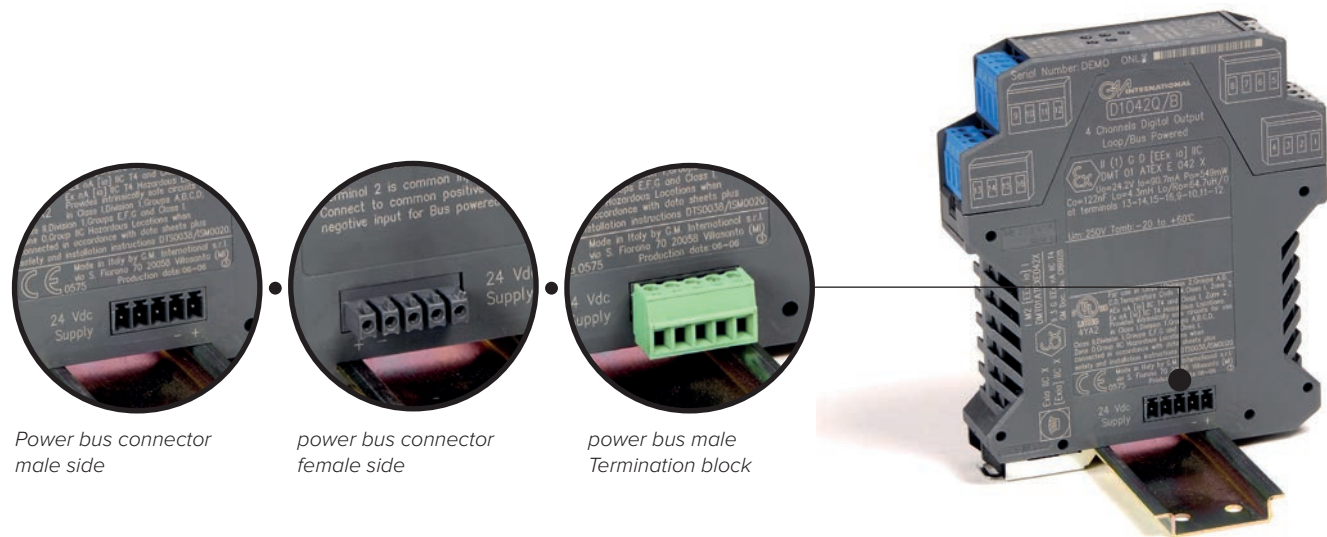
Packing

- Standard 35 mm (Top Hat) DIN-rail
- High density package up to 176 I/O channels per meter of DIN-rail
- Power bus enclosure allows a significant reduction in cables, costs and space



Enhanced Power Bus Mounting

24 Vdc power supply voltage can be applied to the module by connecting the voltage directly to the plug-in Terminal block of each module, or via **power bus system**. When using the optional D1000 power bus design, you can supply 12-24VDC directly to the power bus system which has a maximum allowed power capacity of **8 A**. When the power bus is used, supply contacts on the terminal blocks are omitted to avoid accidental short circuits. No need for a complicated energized rail system: the D1000 uses a simple enclosure change to allow the use of the power bus feature.



Customized Termination Boards for an easy integration with instrumentation of manufacturers are available:

- | | | | |
|-----------|-------------|---------------|------------|
| • ABB | • Foxboro | • ICS Triplex | • Siemens |
| • Bailey | • Hima | • Invensys | • Triconex |
| • Emerson | • Honeywell | • Schneider | • Yokogawa |

Configuration Tools & Software



PPC 1090

PPC 1092

PPC 1090 Pocket Portable Configurator

The PPC1090 is a small and handy pocket portable configurator suitable to program configuration parameters of D1000 series modules like: type of input Sensors, input and output ranges, burnout conditions, high/low alarm mode, relay NE/ND, alarm trip point, hysteresis value and ON/OFF alarm delays. The configurator is powered by the unit and can be plugged in without disconnecting the module.

PPC 1092 Serial Adapter

The PPC1092 adapter is needed to interface the PC with D1000 series modules for a complete configuration of Input, output and alarm parameters. The package includes necessary cables and a USB to RS-232 adapter; a CD-Rom with the SWC1090 software is also provided.

SWC1090 Software

The SWC1090 software is designed to provide a PC user interface to configure programmable D1000 modules. It easily allows the user to:

- Read and write configuration parameters to the units
- Store and restore data to and from local hard drive for backup or archive
- Load factory default configurations
- Monitor input values via USB/COM port
- Print a report sheet containing configuration parameters and additional information

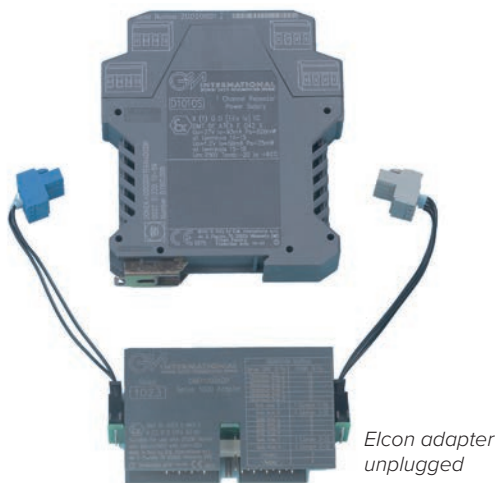
The SWC1090 is freely downloadable from our website.

EI1000ADP Series Elcon Adapters

GM International offers continuity in the service of Elcon Instruments 1000 series (no longer available from the manufacturer).

Features

- ATEX, FM, FM-C Certifications
- Interchangeability with all Elcon 1000 series modules
- Possibility to replace obsolete modules without modifying wiring or connections
- Designed to be installed on existing Elcon boards
- Identification using the same Elcon part-number



Elcon adapter unplugged



Elcon adapter plugged in



Visit www.gminternational.com to discover more about D1000 Series of our Intrinsically Safe Isolators.

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

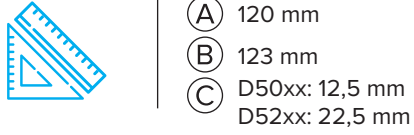
- **Reduced foot print:** high density, 12,5/22,5 mm per ch.
- **Full 3rd party certification:** Coil-to-Contact SIL2/3 TÜV certified
- **True reliability:** compatible to DO Card LM pulses
- **Reduced space/eng. Costs:** smart line/load monitoring with transparent fault indication (no additional contacts)
- **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 or dual 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



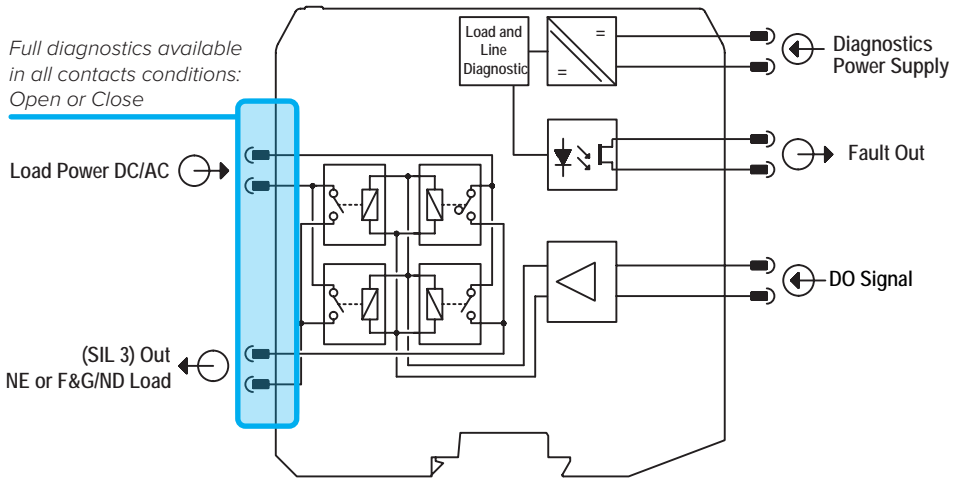
GM INTERNATIONAL PATENTED DIAGNOSTICS FEATURES

- 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.



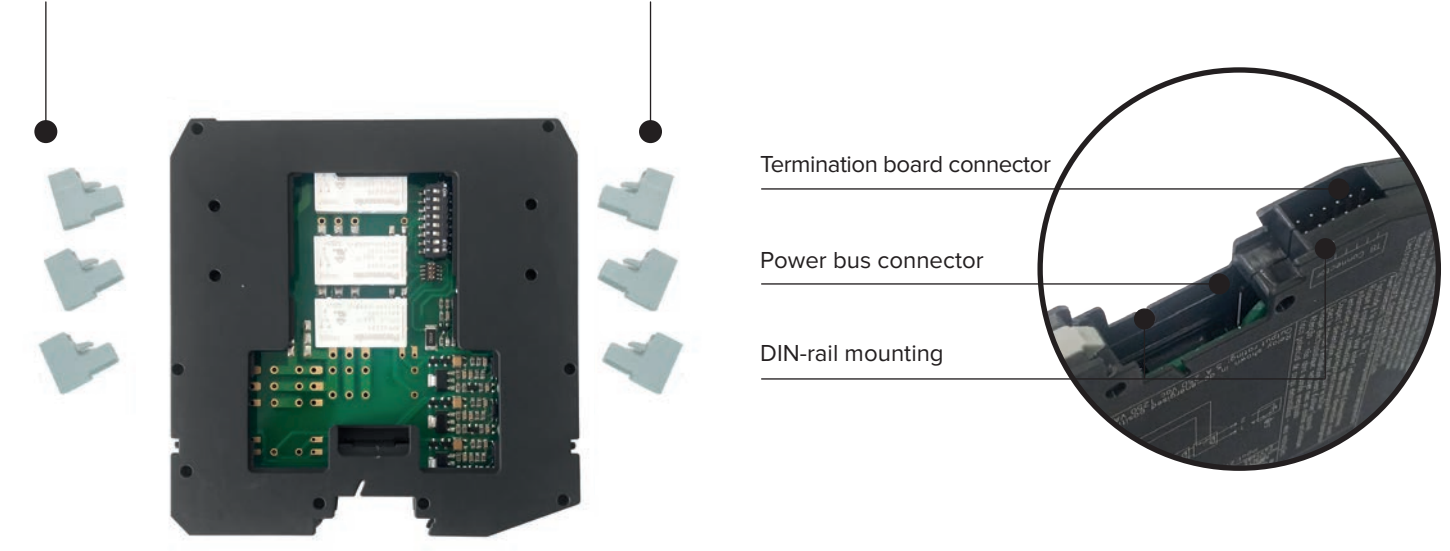
Universal Mounting units

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

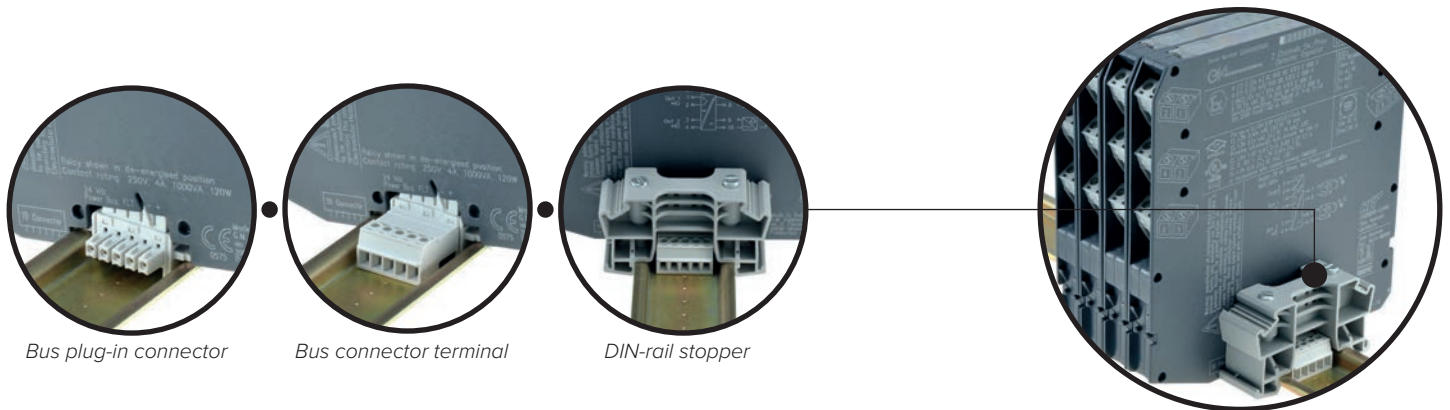
Terminal blocks for field connections

Terminal blocks for control room connection



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.



Customized Termination Boards for an easy integration with instrumentation of manufacturers are available:

- ABB
- Foxboro
- Honeywell
- Schneider
- Triconex
- Bailey
- Hima
- Invensys
- Siemens
- Yokogawa

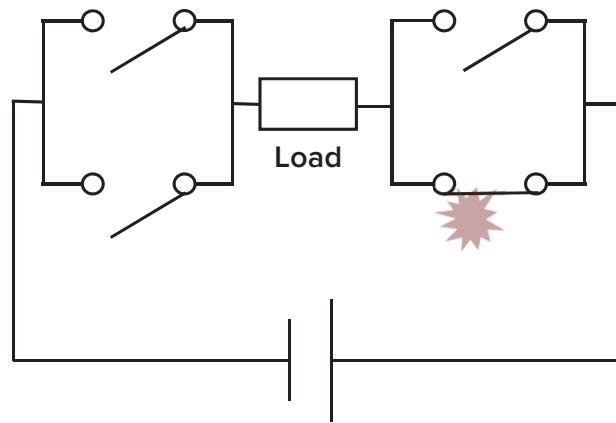
High Availability

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



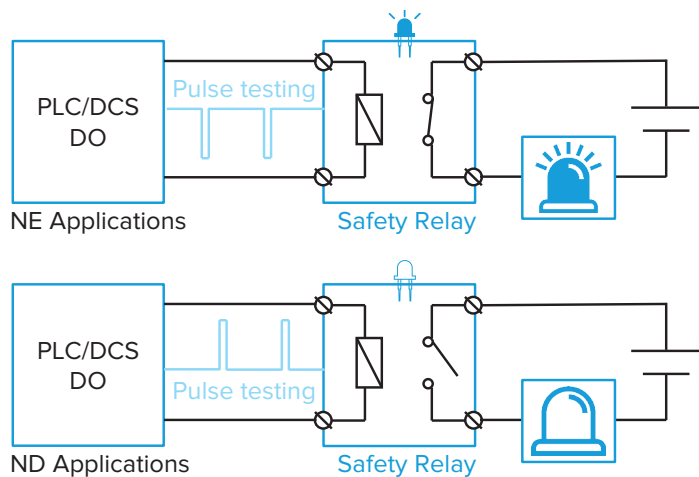
2x2 Safety Relay contact matrix



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:**

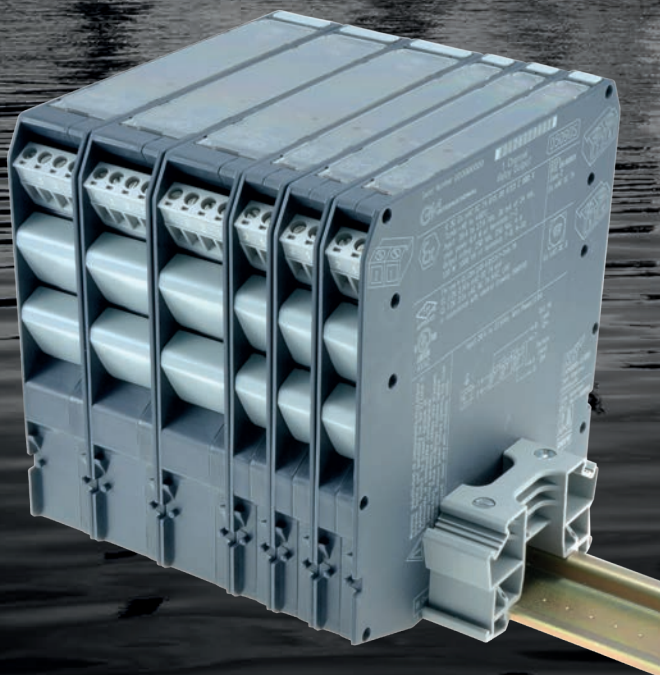
- Contact chattering
- Spurious load activation/deactivation
- Premature damage of the relay unit.



Galvanic Isolators D6000 Series

03

GM International universal mount galvanic isolators provide a simple and cost effective means of implementing isolation in non hazardous applications where SIL certification and/or high reliability are a requirement.



STRENGTHS

- **SIL 3:** TÜV certification; according IEC 61508:2010, Ed.2
- **Reduced foot print; high density:** 1, 2, 4 or 8 ch.s each
- **Simplified installation/config.:** DIP switch configurability
- **Faster reaction time; lower down time:** LED indication for power, signal status and line fault
- **Lower ownership cost:** certified for 20 years operation
- **Reduced spare inventory:** universal mounting (stand alone DIN-rail, power bus system and termination boards)
- **Improved reliability:** low power consumption and heat dissipation
- **Higher reliability in & outdoor:** certified -40° to +70° C
- **RS-485 Modbus** output version available

Structure



Removable terminal blocks with engraved identification

Lexan detachable front cover

Laser engraving on entire enclosure and terminal blocks to provide accurate, safe and permanent marking of parameters, schematic diagrams, connections and instructions.

LEDs for power, status and fault indication are visible through the transparent cover



- Ⓐ 120 mm
- Ⓑ 123 mm
- Ⓒ D60xx: 12,5 mm
D62xx: 22,5 mm



ENCLOSURE CHARACTERISTICS

- High channel density (3/6/12 mm per channel) resulting from innovative circuit design using advanced surface mount components
- Single, dual, quad or eight 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

Enhanced Galvanic Isolators

GM International SIL 2 certified isolators are suitable for applications in all industrial sectors and designed to achieve the highest possible reliability and availability through the use of high temperature class components and low dissipation circuitry. By avoiding the use of electrolytical capacitors, and with state-of-the-art assembly and testing facilities, 20 years useful life time is achieved.



LONGER LIFETIME

Capability to withstand higher temperatures, improves the lifetime in normal conditions.

- Operating temperature certified from -40°C to +70°C
- Very high reliability in extreme environment applications
- G3 conformal coating
- Reduced cabinet dimensions, require less ventilation



WIDE FUNCTIONALITY

- Modules suitable for **SIL 2** applications according to IEC61508, IEC61511
- Three port galvanic isolation to eliminate noise, ground loop problems
- Line fault alarm detects open or short circuit of field cables
- Optional power bus DIN-rail connector
- Standard termination board with custom connectors for integration into customized boards
- EMC compatibility to EN61000-6-2, EN61000-6-4, EN61326-1, EN61326-3-1 for safety system
- DIP switch configurability for easy field setup
- LED indication for power, signal status and line fault conditions
- Modules accept DC power supply over a wide range for 24 Vdc (18-30 Vdc) applications

Operating temperature certified

from -40°C to +70°C

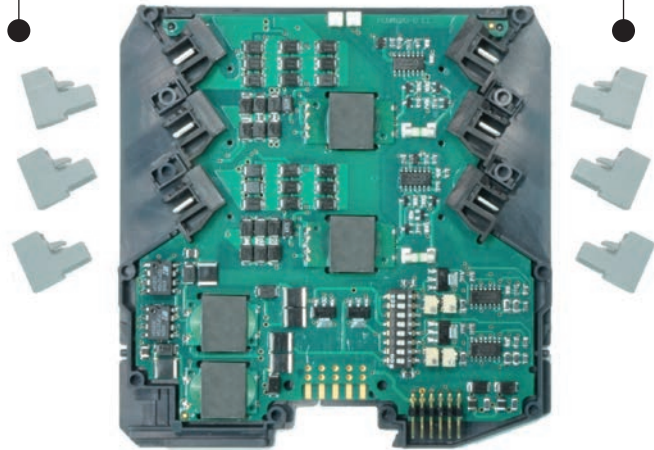
Universal Mounting units

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

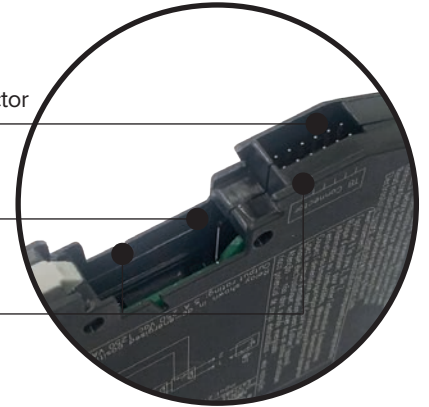
Terminal Blocks for control room connection



Termination board connector

Power bus connector

DIN-rail mounting

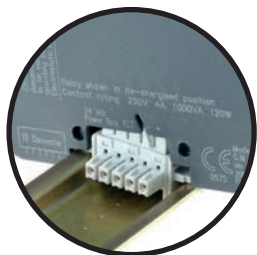


Enhanced Power Bus Mounting

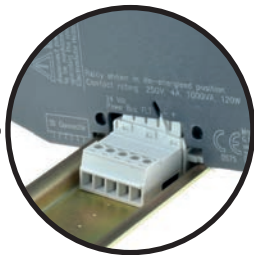
24 Vdc power supply voltage **can be applied** to the module by directly connecting to the plug-in terminal block of each module, or **via the power bus system**. The system consists of standard DIN-rail modules mounted on DIN-rail Bus connectors. The maximum allowed powering capacity per trunk is **8 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.

D5202S redundant power supply feed module provides SPST relay contact for common and power supply faults; both supply voltages are **independently monitored**.

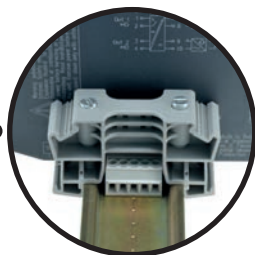
- Redundant 4 Amp power supply with alarm
- Remote alarm indication
- Modules can be combined for additional redundancy



Bus plug-in connector



Bus connector terminal



DIN-rail stopper



Customized Termination Boards for an easy integration with instrumentation of manufacturers are available:

- ABB
- Bailey
- Foxboro
- Hima
- Honeywell
- Invensys
- Schneider
- Siemens
- Triconex
- Yokogawa

SIL Certification

20 years
SIL
certification

GM International D6000 series is designed and certified **SIL 2** according to IEC 61508 ed.2 and 61511 ed.2 **latest standards**. GM International system capability SC3 allow the use of our isolators in 1oo2 or 2oo3 architecture for up to SIL 3 applications.

SIL data is guaranteed for a useful life time of **20 years** thanks to GM International's state-of-the-art solutions and manufacturing excellence. G3 conformal coating and vibration proof design guarantee problem free long operation life in standard and harsh conditions:

- High signal transfer accuracy and repeatability
- Advanced circuitry provides very low heat dissipation, ensuring modules run cool despite their high density and functionality
- SMD manufacturing for a long, reliable life
- Complete absence of electrolytic capacitors ensures minimum 20 years lifetime



SIL marking

Configuration Tools & Software

SWC5090 software is designed to provide a PC user interface to configure suitable D6000, D6200 modules, via PPC5092 adapter.

It allows the user to easily:

- Read and write configuration parameters to the unit
- Store and restore data to and from local hard drive for backup or archive
- Load factory default configurations
- Monitor real time Input values for debug or test
- Print a report sheet containing configuration parameters and additional information

SWC5090 is freely distributed on our website: www.gminternational.com



Easy
USB
configuration



PPC5092 interface allows the configuration of D6000, D6200 modules via SWC5090 software.

Modules are supplied via USB and therefore do not need external power supply while being programmed.

PPC5092 comes with mini-USB cable and CD-Rom containing SWC5090 software.



Termination Boards

Standard and customized

04

Termination boards provide direct connection via dedicated multicore cable between the I/O Card of the system (PLC/DCS/ESD) and electronic modules (barriers, isolators, relays).

GM International offers a wide range of standard or customized termination boards to easily interface to systems of all the main instrumentation vendors such as: Invensys Foxboro, ABB, Triconex, Yokogawa, Honeywell and many others.

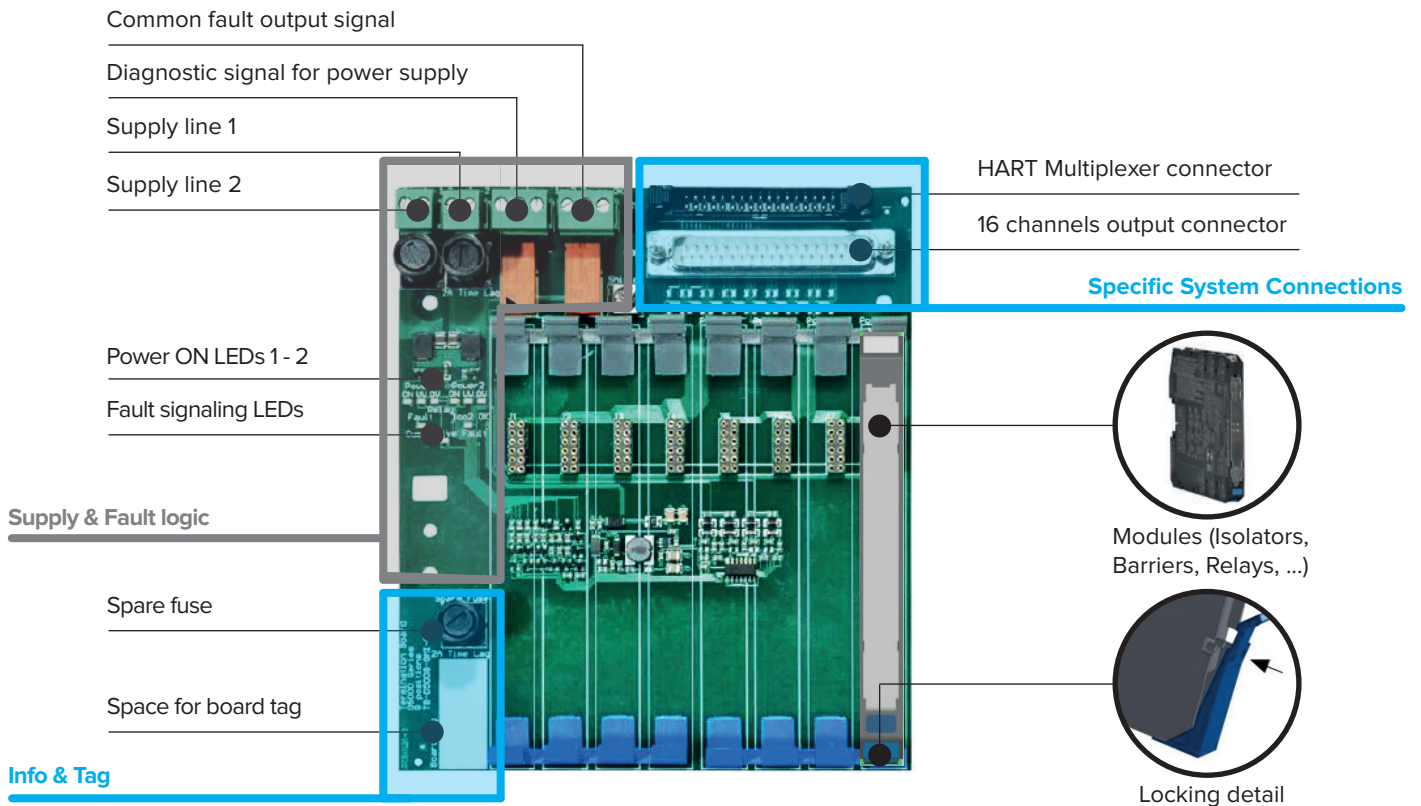
GM International termination boards are also available with the new HART Interface System that drastically reduces the number of multiplexer modules



STRENGTHS

- **Smaller foot print:** very compact design, up to 64 I/O channels in one board
- **Sturdy metal:** mounting hardware for DIN-rail or wall
- **High availability:** power supply and support of I/O redundancy
- **Easy maintenance and troubleshooting:** fault led Indication and common fault repeater
- Available with **customized connectors/cables** for direct interface to any PLC / DCS / ESD Systems
- Also available with **GMI HART interface system** that drastically reduces the number of multiplexer modules.
- **AI/AO/DI/DO universal:** any D5000 or D6000 series modules can be installed: IS barriers, isolators, safety relays

Typical structure



Universal Termination Boards

GMI termination boards are suitable for installation of any **AI/AO/DI/DO modules** of the D5000/D6000 and D1000 series: IS barriers, isolators and safety relay. Universal solutions are available using patch cables or can be customized to suit the growing number of **Universal I/O modules**. All Analog TBs support connection to **GMI innovative HART multiplexer solution** via flat or flat-to-round cable.



FEATURES

- Redundant power supply connection
- Line voltage monitoring and alarm
- Suitable to host 8/16/32 modules
- Up to 64 channels per TB
- Universal: AI/AO – DI/DO – TEMP./ CONVERTER
- Dedicated HART signals connector
- Wall or DIN-rail mounting
- G3 conformal coating and zone 2 Installation



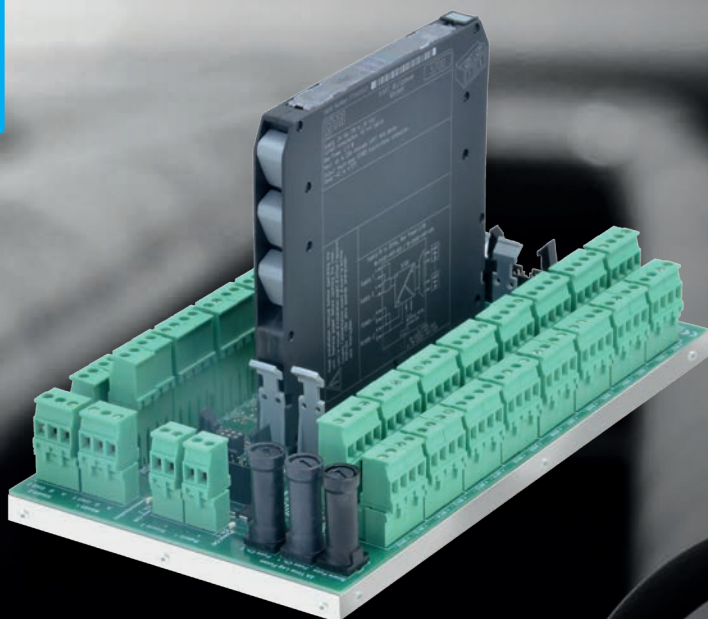
BENEFITS

- Simplified wiring and maintenance
- Reduces cabinet and installation costs
- Small overall foot print
- System dedicated and compatible plug-in solution
- Easy spare/extensions management

HART Multiplexer System

05

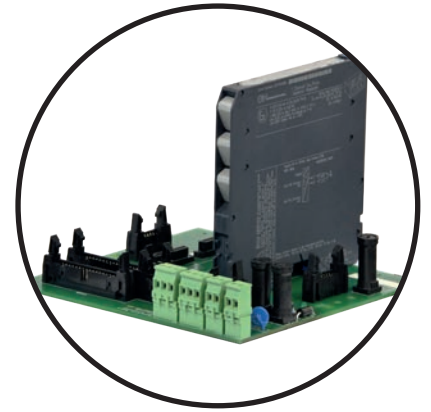
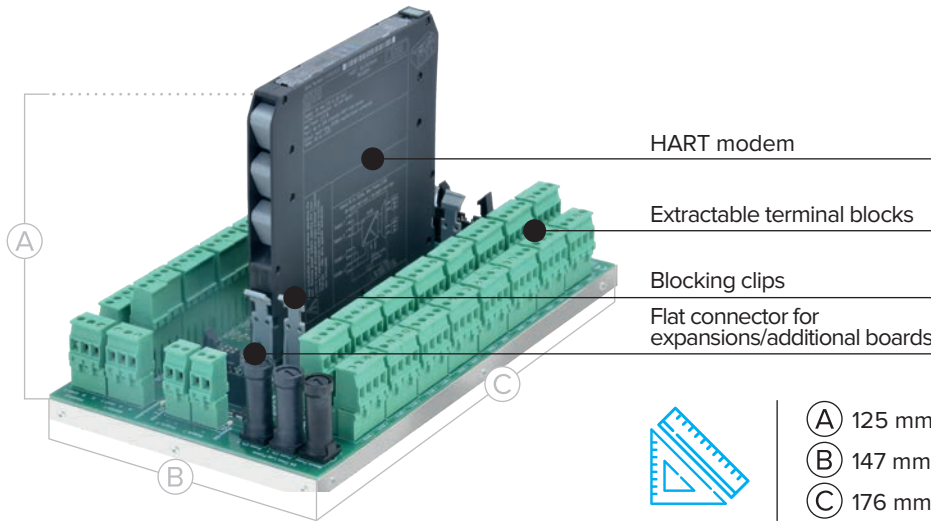
The new SIL 3 certified GM International HART interface system drastically reduces the complexity and cost of HMS installations; compared to the current state-of-the-art HART interface solutions on the market, GMI HART System significantly cuts the number of multiplexer modules required and increases the speed of communication to 115.200 bps



STRENGTHS

- **Reduced foot print:** high density, 256 channel
- **Increased architecture ability:** 63 configurable addresses
- **Faster data acquisition:** 115.200 Baud speed
- **Reduced wiring:** slaves are not required
- **High Reliability, critical environments:** certified -40° to +70° C
- **Higher resilience:** channel to channel isolation
- **Data guaranteed by 3rd party:** SIL 3 TÜV certification
- **Current & valid standard:** certified IEC 61508:2010, Ed.2
- **Lower ownership cost:** certified for 20 years operation

Structure



Custom Termination Board solution

GMI HART Mux Solution

By eliminating the need to use slaves the **GM International Hart multiplexer solution offers an innovative and low-cost solution for HART maintenance station projects.** Each 5700 HART Mux supports up to 256 HART signals with sufficient communication speed thanks to a baud rate increased to **115.200 bps**.



FEATURES

- Reduced number of components
- Reduced wirings and complexity
- Reduced spare parts inventory
- Increased performances
- Multidrop up to 16.128 Channels
- SIL 3 certification
- Hart 7 compatible



PLANT MANAGEMENT SW

- FDT Container compatible with Hart Maintenance Software
- Pactware 4.1, 5.0.4, PACTware Consortium
 - Field Mate (Yokogawa)
 - Asset Vision Basic DAT200 (ABB)
 - ABB Ability field information manager DCS Software "System 800xA" version 6.0.3.2. RU2, ABB
 - Hart Master (OPC Server), **FieldComm Group**
 - FieldCare (SFE500), Endress+Hauser
 - Further compatibility test can be performed on request
 - ValveLink DTM (Emerson)
 - Plant Resource Manager (PRM) R.405 (Yokogawa)
 - AMS (Emerson)
 - ValveLink SNAP-ON (for AMS) (Emerson)

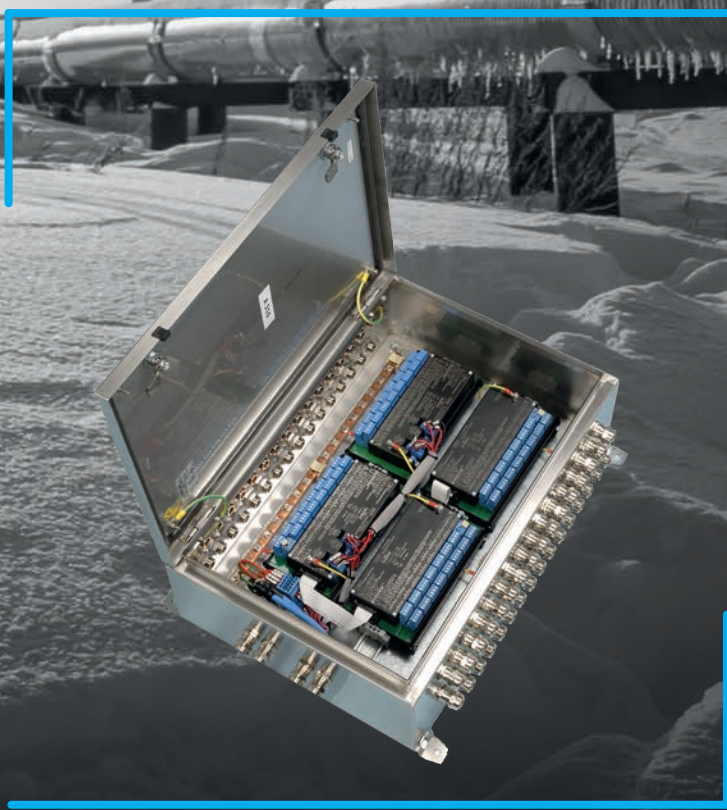


Multiplexer Systems

D2000 Series

06

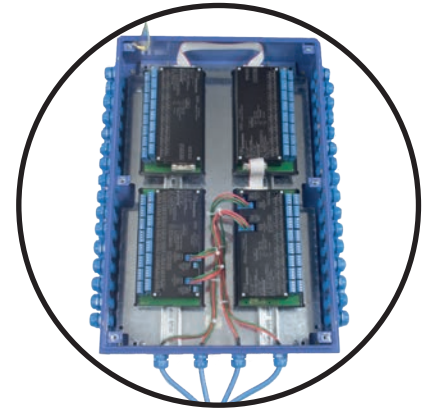
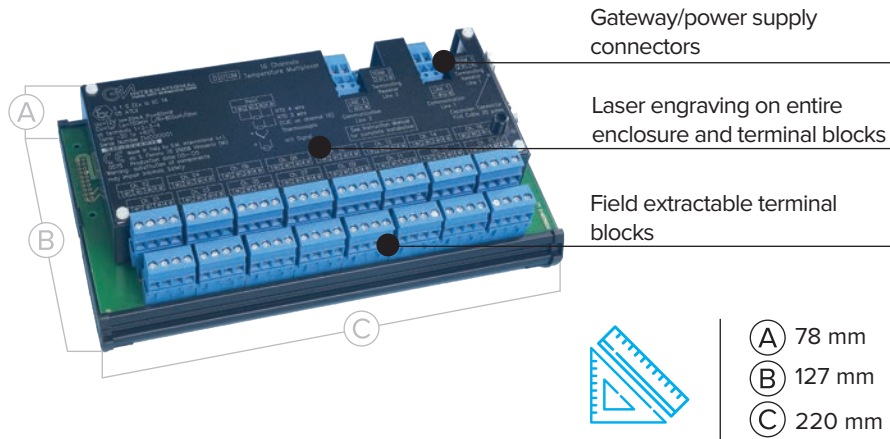
D2000 temperature multiplexer has been designed specifically for temperature measurements in hazardous location; taking full advantage of the low power requirements inherent of temperature measurement. Field units do not require separate power supply nor certified enclosure.



STRENGTHS

- **Reduced foot print:** high density, up to 256 channel
- **Longer distances:** up to 4/5 Km between sensor gateway.
- **Higher reliability:** certified -40° to + 60° C
- **Avoid fault propagation:** channel to channel isolation
- **Resilience to surges:** 500 V isolation
- **Faster reaction time:** from 0,4 sec for 64 Ch. to 1.6 sec for 256 Ch.
- **Faster data collection:** 112 KBaud communication speed
- **Harsh environment resistance:** G3 conformal coating
- **Easier troubleshooting:** status LED indication

Structure



Installation example

Multiplexer Advantages



When a consistent number of variables is to be collected from a remote location, a simpler solution is to **multiplex the signals** using master and slave units transferring multiple variables onto the same two wires; this solution eliminates the need for individual wiring, transmitters, IS barriers and analog Input channels. The data is then sent through a single, or redundant, communication line to the gateway placed in safe area.

Cable cost saving alone justifies the solution; additional savings are achieved given that 4-20 mA loop instrumentation is no longer required. The result is **reduced and simplified wiring, lesser cabinet space and clutter free installation.**

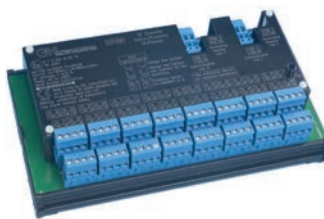
- Drastically reduces field wiring & installation costs
- Field units can be placed up to 5 km from gateway
- Eliminates the need of PLC - DCS AI cards
- Installation in Zone 1 without the need of external power source or certified enclosures
- Up to 256 signals per system; Maximum 7.936 ch.
- 18 Bits resolution and fast communication speed
- Easy, robust & field proven reliability
- Redundant communication lines to hazardous area (proprietary protocol)
- Redundant communication to PLC/DCS/PC via Modbus RTU



D2050M
Gateway/power supply multiplexer unit



D2010M - D2011M
Analog/temperature multiplexer unit



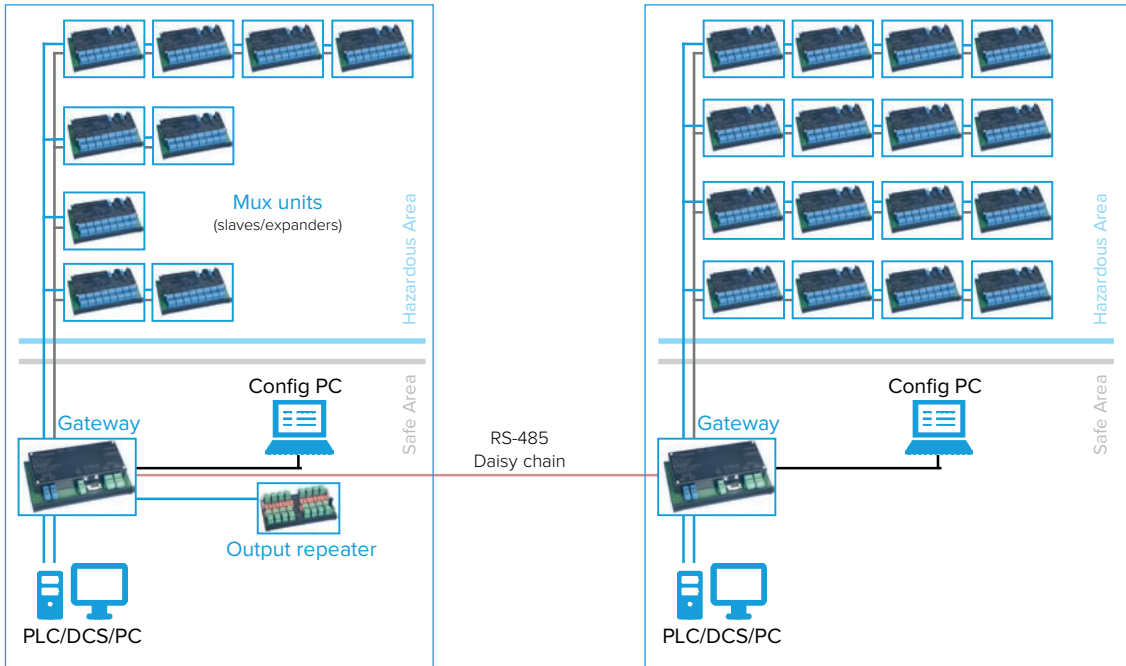
D2030M
Switch/proximity multiplexer unit



D2052M - D2053M
Contact/proximity output repeater

System Architecture

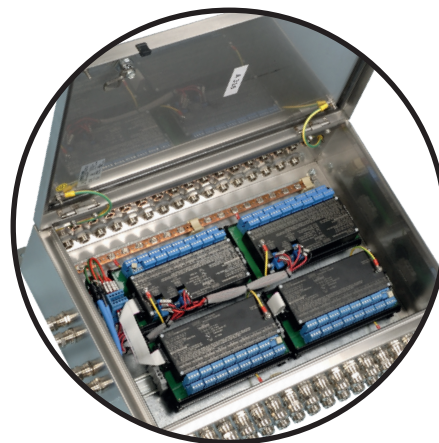
D2000 Multiplexer accepts both analog and digital inputs in the same system allowing for a variety of potential configurations to fit any application. Configurations with only digital signals or only analog signal or combination of both are possible to suit the **best solution in terms of cost and cabling**. Following are just some examples of system architecture.



Multiplexer: The Only Solution

When revamping or expansions in the plant are required, the space for adding cables may be limited or the existing spare cables may be the only ones that can be used. Wireless solutions have several limitations, high implementation costs, and susceptible to cyber security risk.

Multiplexing often becomes the only practical solution.

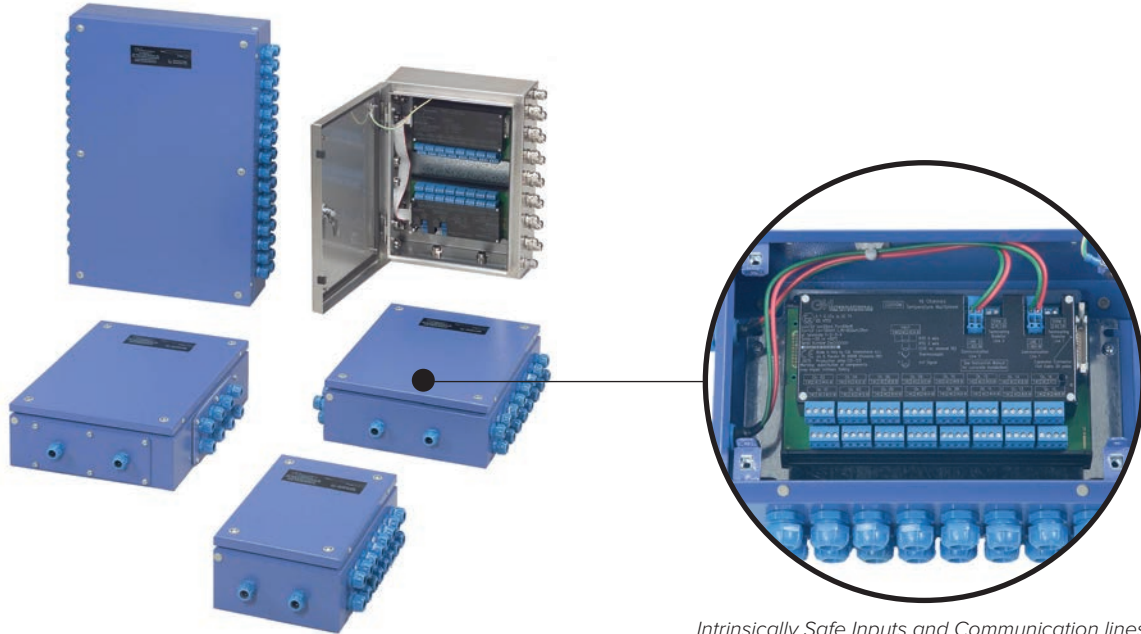


Pre-assembled, fully wired and custom engineered field enclosures are available in several configurations, size and materials. Special, custom designed, FISCO cable (CABF008) for connection between field units and gateway is also available.

Hazardous Area Multiplexing

For applications in classified **hazardous areas**, each signal must be protected from the risk of causing ignition of the present flammable mixtures: this requires a safety barrier for each input channel.

By using an intrinsically safe multiplexer solution, EX protection must be applied **only to the communication lines**, decreasing complexity, maintenance and costs.



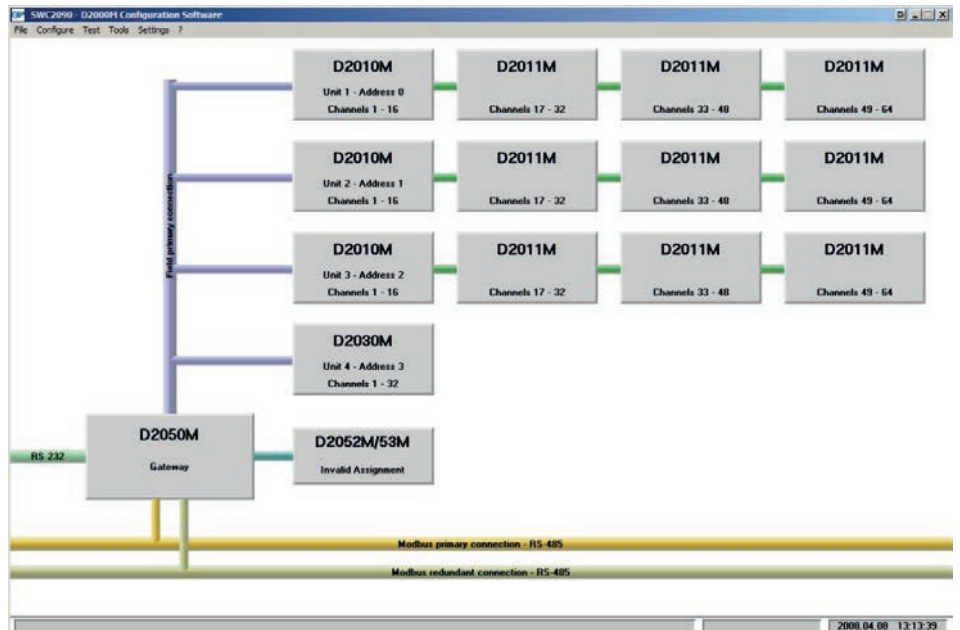
Intrinsically Safe Inputs and Communication lines.

Software Configuration

SWC2090 Software Configurator

It easily allows the user to:

- Configure and monitor the entire system with your PC / laptop via RS232 and/or RS485 connections
- Guided user interface
- Print complete report sheets
- Save configurations to file for backup
- Multilanguage



Power Supplies

PSx1200 Series

07

SIL 3 certified, 24 Vdc modular power supply suitable for installation in safe area and Zone/division 2. designed for 100% availability and high Integrity applications; built-in load sharing in both DIN-rail and rack mounted solutions



STRENGTHS

- **Smaller foot print:** very compact design
- **Flexibility:** wall/rack/DIN-rail types
- **Environmental condition:** extended temperature range (-40°C ÷ +70°C), G3 coating, tested for marine application (EMC, vibration, etc.)
- **Zone 2 installation:** reduced cable distance
- **Improved safety, integrity and reliability:** SIL 3 certified by third party
- **High efficiency - reduced bulk power & dissipation:** built-in intelligent load sharing
- **Easier Installation:** no external OR-ing diodes needed for redundancy
- **Zero Downtime:** built-in redundancy, operation under output short-circuit condition, automatic load sharing of 2 or more modules
- **Reduced maintenance cost:** hot swapping, also in zone 2 (PSS1250)
- **Guaranteed fault isolation:** short circuit protection
- **Easier troubleshooting:** local and remote (optional Modbus) diagnostic

Reasons for SIL 3 Power Supply



During normal operation, **output voltage is considered safe between 20 and 30 vdc** and safe state is typically when the output voltage is 0 vdc; or close to it. However, all power supplies can fail in conditions different from zero; leading to a dangerous state that can damage or put the load in an unstable/unsafe condition: fail high (above 30 vdc) or fail low (between 2 vdc and 20 vdc).

According to the 'normative section' of the IEC61508:2010 part 2 - Annex A - table A.9, the **global objective** is to detect or **tolerate both under-voltage and/or over-voltage** and maintain your **safety instrumented functions (SIF)** in the normal operating range. Both failures can potentially lead to a hazardous situation, either damaging the instruments by overvoltage or not providing the necessary voltage for normal functioning of the instrument/device.

The majority of the SIF are working on the de-energise to trip principle where the **main concern is availability** of the power and is solved with redundancy.

However, **redundancy is not the solution** for high or low voltage failures.

Special notice should be given to energized to trip sif where any failure of the power supply will put safety at risk.

GM International power supplies are designed and certified to guarantee an output voltage of 20-30 Vdc under normal and fault conditions.

Safety Function

- Keep the output power within the safe range from 20Vdc to 30Vdc.
- Prevent abnormal and dangerous conditions like:
 - $2Vdc < \text{Output Voltage} < 20Vdc$
 - $\text{Output Voltage} > 30Vdc$



SIL marking

Reasons for Ideal OR-ing Diode



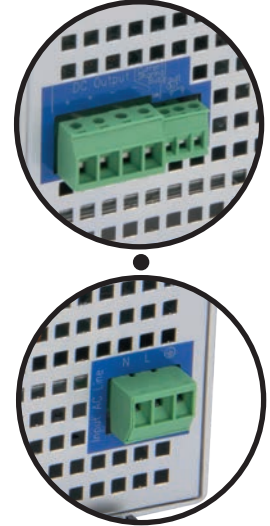
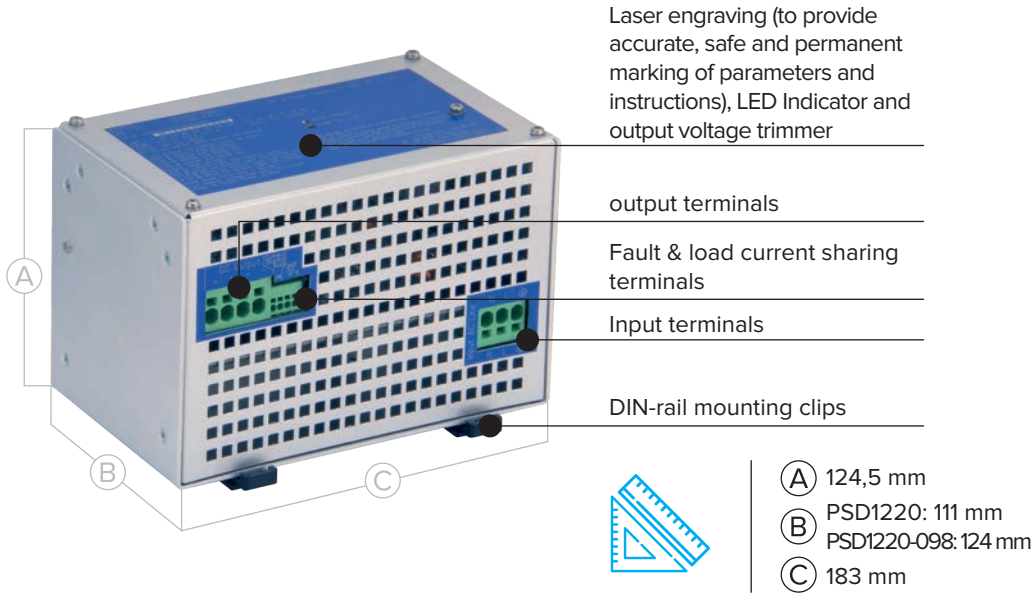
High availability systems employ power supply modules connected in parallel to achieve redundancy and enhance system reliability; typically using a **OR-ing Diode**.

OR-ing diodes introduce a significant voltage drop and will not equalize the load (load sharing). Because of the high dissipated heat, they are often the cause of failure.

GM International power supply system makes use of **Ideal diode technology** and **load sharing circuitry**.

Paralleling Diodes	Schottky Diode	Active Ideal Diode (AID)
Equivalent resistance	16 mΩ	1.2 mΩ
Voltage drop at 50 A	0.8 V	0.06 V
Power dissipation at 50 A	40 W	3 W
Efficiency at 1200 W	96.77 %	99.75 %
Heat sink	Large	None
Voltage switchovers	With oscillations	Smooth, no oscillations

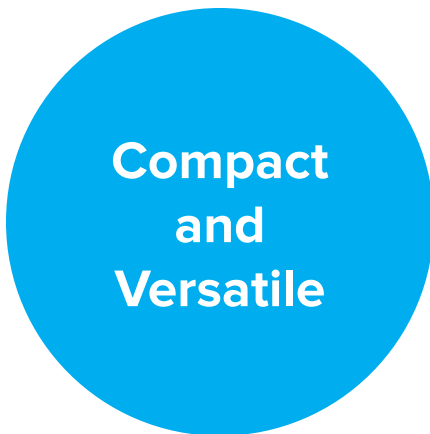
PSD1220 Structure



PSD1220-098 version with removable terminals, which are equivalent to predecessor

20 A, 24 V SIL 3 Power Supply

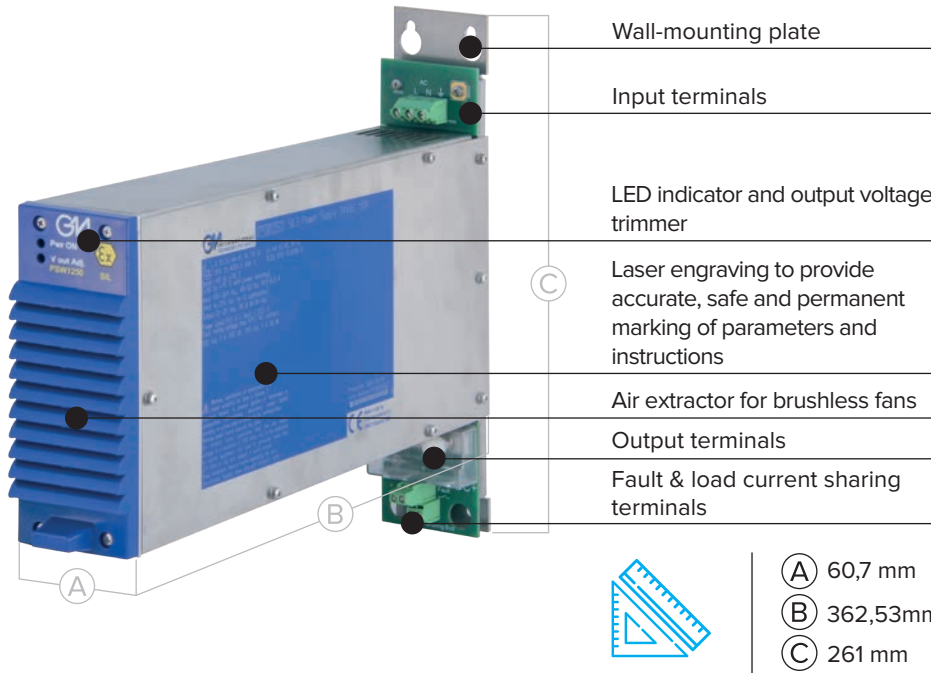
PSD1220 is the latest addition to the GM International power supply line, offering an innovative 20 Amps DIN-rail unit. It supersedes predecessor model PSD1210 doubling the output capacity, yet retaining the exact same dimensions, terminal blocks and mounting arrangements. Compact in size, yet fully featured: from SIL3 certification to automatic load sharing, high efficiency and suitable for installation in classified areas.



SPECIFICATIONS

- Nominal Input: 110 ÷ 240 Vac ±10% (48 ÷ 62 Hz)
- Adjustable output: 24 ÷ 26 Vdc
- Current output: 24 Vdc/20 A = 480W
- Efficiency (full load): ≥ 93% @230Vac, ≥ 91% @115Vac
- Under/over voltage alarm output
- Up to 10 modules with paralleled outputs
- Built-in over load protection and short circuit proof
- Extended temperature range (-40°C ÷ +60°C)
- SIL3 certification
- ATEX / IECEx: zone 2 installation
- G3 conformal coating

PSW1250 Structure



ENCLOSURE CHARACTERISTICS

- Wall or DIN-rail mounting compact housing
- Load sharing up to 10 modules
- Remote alarm contact
- Redundant fans

50 A, 24 V SIL 3 Power Supply

PSW1250 is the most powerful unit GM International can offer in a single wall or Din-rail mounted solution.

Innovative design and state-of-the-art circuitry have been used to provide 50 Amps in such a small package with efficiency higher than 89%.

All the features of the rack mounted series are made available in this compact solution with SIL 3 certification and installation in + 70°C ambient temperature.

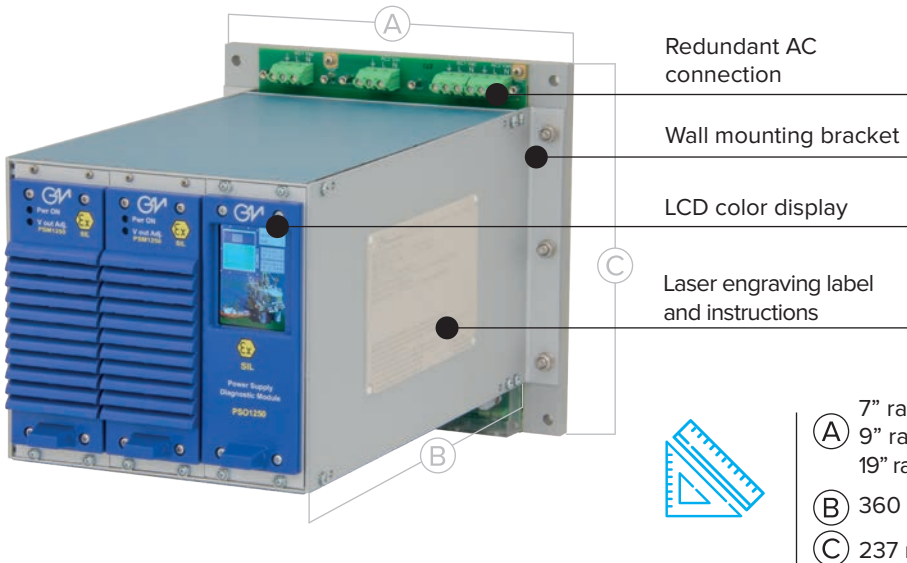


SPECIFICATIONS



- Nominal input: 110 ÷ 240 Vac ±10% (48 ÷ 62 Hz)
- Adjustable output: 21 ÷ 28 Vdc
- Current output: 24 Vdc/50 A = 1.200W
- Up to 10 modules with paralleled outputs
- Built-in over load protection and short circuit proof
- SIL3 certification
- Redundant fan with speed control: speed driven by temperature and output power
- ATEX / IECEx: zone 2 installation
- G3 conformal coating

PSS1250 Structure



ENCLOSURE CHARACTERISTICS

- Wall or rack mounting compact housing
- Field configurable copper bar outputs
- DNV marine type approval
- 2/4/6 modules configuration available
- Redundant AC supply connection

Short Circuit Proof & Diagnostics

Short circuit proof

In case of external short circuit, **PSS1250 system** delivers a very high peak current (800 A) for a duration of 0.5 ms to guarantee the instant opening of the protective fuse or circuit breaker to avoid power shut-down.

Other equipment connected to the load are not affected by the failure event and continue to operate without interruption.

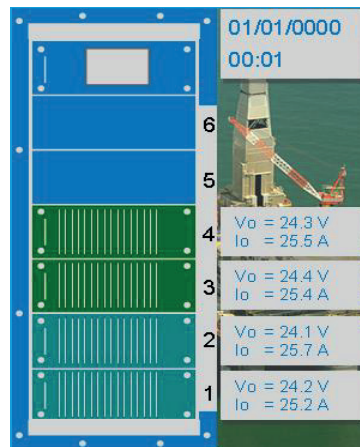
Local and Remote Diagnostics

PSO1250 Overview module with LCD color touchscreen display with Modbus RTU communication.



MONITORED PARAMETERS

- AC line voltage, current, power and frequency
- DC output voltage, current, power
- Current sharing % of each PSM1250
- Current sharing group identity for each PSM1250
- PSM1250 internal temperature
- Fault conditions of each PSM1250: under - or over voltage, AC off, PFC/PWM stage off, high temperature, fans malfunctioning
- Fault logging with date and time



PSO1250 diagnostic module display

Hot Swapping Feature

Hot swapping solution; also certified for Zone 2 installation

- Power supply is close to the load, in hazardous area
- Less cables, lower voltage drop, lower costs
- Connection and disconnection under power without interrupting operations (certified)



Redundant screw switch for hot swapping



Technical Specifications



PSS1250 - 19" RACK

- Nominal Input: 110 ÷ 240 Vac ±10% (48 ÷ 62 Hz)
- Adjustable output: 21 ÷ 28 Vdc
- Max peak: 300 Amps at 24Vdc
- Nominally 200 Amps per rack
- 24 Vdc/300 A = 7200W (3600W x2)
- Under/over voltage alarm output
- Built-in over load protection and Short circuit proof
- RS485 diagnostic: PSO1250 module
- SIL3 certification
- Redundant fan with speed control
- ATEX / IECEx: zone 2 installation
- G3 conformal coating



PSS1250 - 9" RACK

- Nominal Input: 110 ÷ 240 Vac ±10% (48 ÷ 62 Hz)
- Adjustable output: 21 ÷ 28 Vdc
- Max peak: 100 Amps at 24Vdc
- Nominally 50 Amps per Rack
- 24 Vdc/100 A = 2400W (1200W x2)
- Under/over voltage alarm output
- Built-in over load protection and Short circuit proof
- RS485 Diagnostic: PSO1250 Module
- SIL3 certification
- Redundant fan with speed control
- ATEX / IECEx: zone 2 installation
- G3 conformal coating



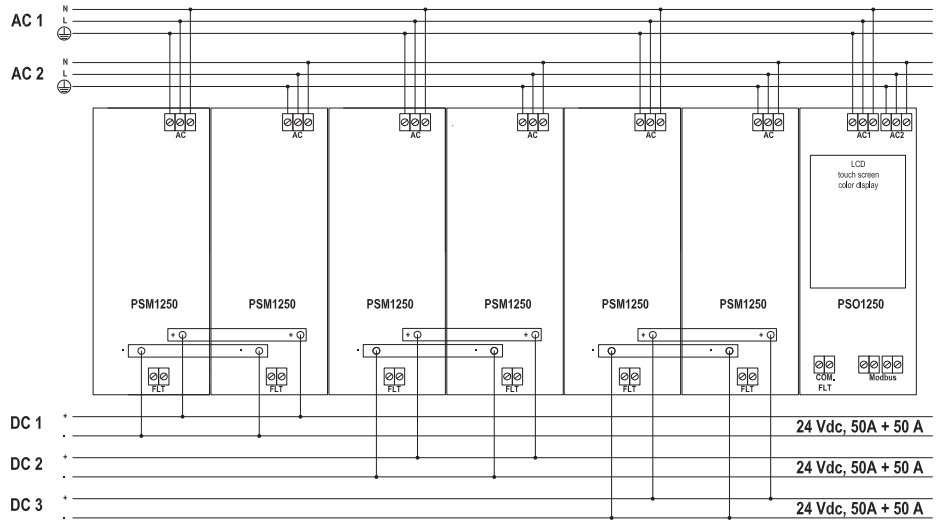
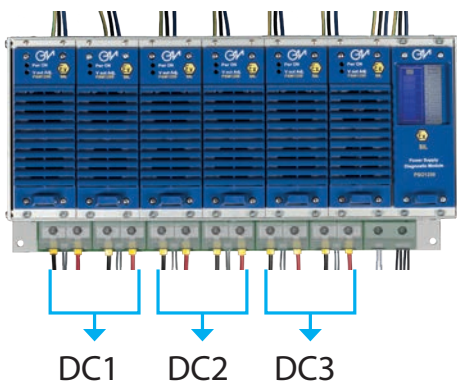
PSS1250 - 7" RACK

- Nominal input: 110 ÷ 240 Vac ±10% (48 ÷ 62 Hz)
- Adjustable output: 21 ÷ 28 Vdc
- Max peak: 100 Amps at 24Vdc
- Nominally 50 Amps per rack
- 24 Vdc/100 A = 2400W (1200W x2)
- Under/over voltage alarm output
- Built-in over load protection and Short circuit proof
- SIL3 certification
- Redundant fan with speed control
- ATEX / IECEx: zone 2 installation
- G3 conformal coating

PSS1250 Configuration Examples

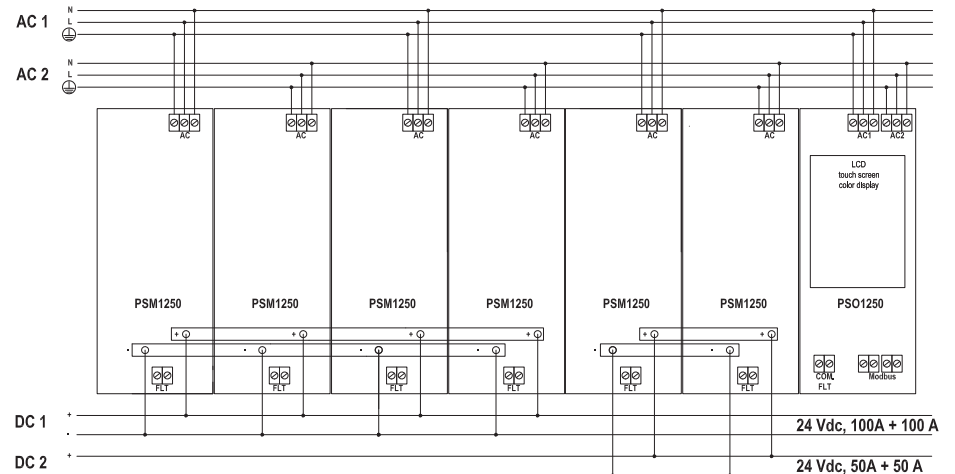
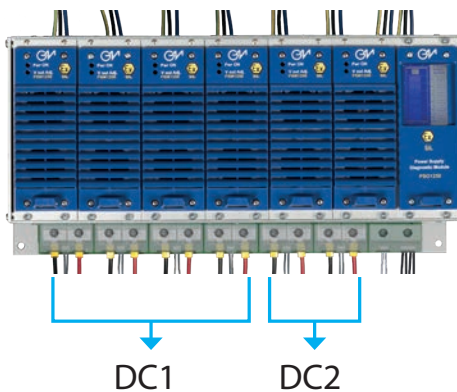
PSS1250-HS-7-3-D

Two AC supplies, three redundant 50 A Outputs, PSO1250 overview module. Three groups of two paralleled modules each.



PSS1250-HS-7-2-D

Two AC supplies, one redundant 100 A + one redundant 50 A Outputs, PSO1250 overview module. One group of four paralleled modules and one group of two paralleled modules.



NOTE
Different configurations are available, refer to www.gminternational.com

Other Power Supplies Types



PSD5201

SIL 3 intrinsically safe power supply

- Supply 24 Vdc
- 1 Output 14.5 V - 150 mA
- Output to zone 0 / Div. 1
- Zone 2 / Div. 2 installation



PSD1000

Universal input power supply for D1000 series isolators

- Supply 90 - 265 Vac
- Output 24 Vdc, 500 mA
- 2 Units can be paralleled for redundancy or additional power
- Remote indication for power failure for PSD1000F
- Simplified installation using standard DIN-rail and plug-in terminal blocks adjacent to D1000 series modules, without 50 mm safety distance
- Zone 2 / Div. 2 installation



PSD1001

SIL 2 / SIL 3 Intrinsically safe power supply

- Supply 24 Vdc
- 4 independent, parallelable outputs 15 V, 20 mA
- Output to zone 0 / Div. 1
- Output short circuit proof and current limited
- High reliability, SMD components
- High Density, four channels per unit
- Simplified installation using standard DIN-rail and plug-in terminal blocks
- Zone 2 / Div. 2 installation



PSD1001C

SIL 2 / SIL 3 intrinsically safe power supply

- Supply 24 Vdc
- Output 13.5 V - 100 mA
- Output to zone 0 / Div. 1
- Output short circuit proof and current limited
- High reliability, SMD components
- Simplified installation using standard DIN-rail and plug-in terminal blocks
- Zone 2 / Div. 2 installation

Surge Arresters D9000 Series

08

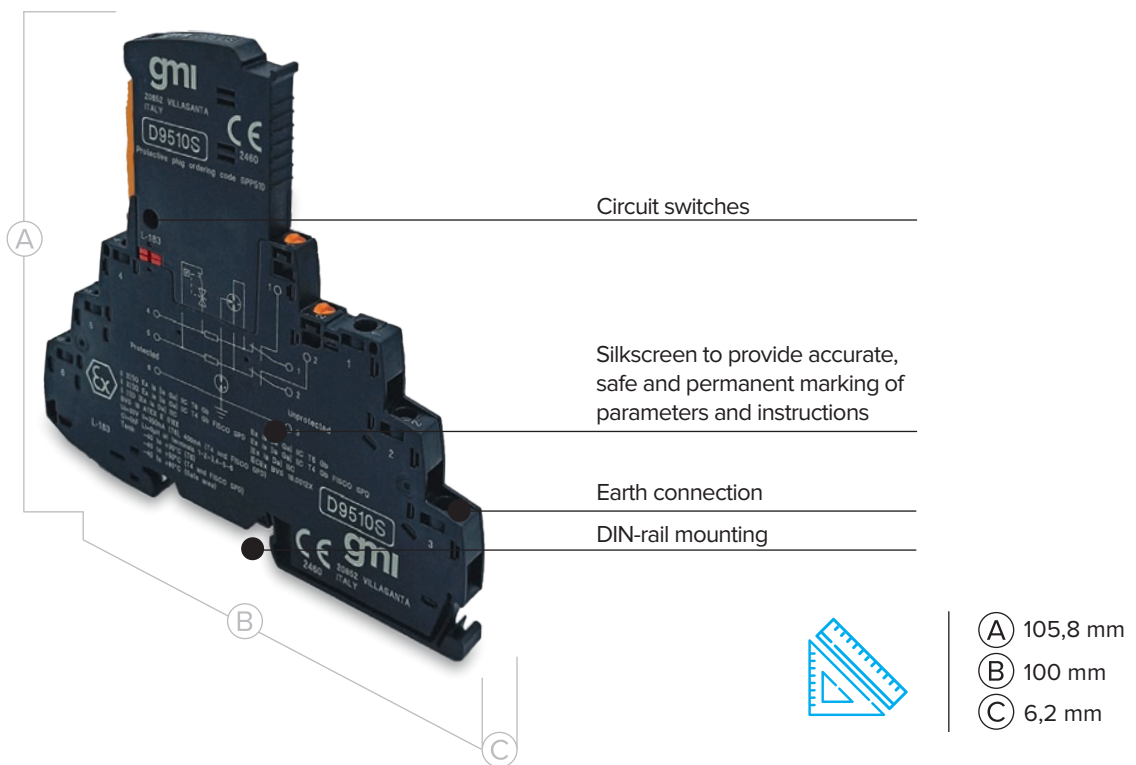
D9000 series provides surge protection for all kinds of applications in different industries such as Oil&Gas, Petrochemical, Steel etc. avoiding signal interruption and protecting control room equipment.



STRENGTHS

- **Easy maintenance:** integrated knife disconnection technology for each channel
- **Quick wiring:** grounding path via contact to DIN-rail
- **Reduced spare inventory:** surge protection for most I/O signals; AI, AO, DI, DO. Nominal 24V DC, maximum 30V (Both I.S. And N.I.S.)
- **Increase the discharge capacity and reduce the response time:** 2-stage protective circuit (diode, gas-discharge tube)
- **Unlimited IS applications:** input from zone 0 (zone 20), installation in zone 1 and 2
- **Fits in any SIL loop:** SIL3 certification
- **Protection level:** up to 20 KA
- **Simple testing and documentation, reduced downtime:** Hot swap plug module (I.E. D9510S, D9520S)
- Safe disconnection and signaling in case of overload

D9510S Structure



Universal DIN-rail Surge Arrester

D9510S modules provide two-stage, **SIL 3**, surge protection for floating I/O signals for measurement in control and safety systems.

Its slim width of **only 6 mm** allows for easy fitting into any marshalling or distribution cabinet saving space and installation costs.

Disconnect knife on both signal paths are featured for easy testing of the loop.

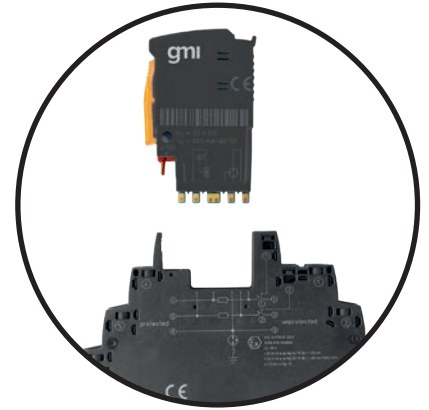
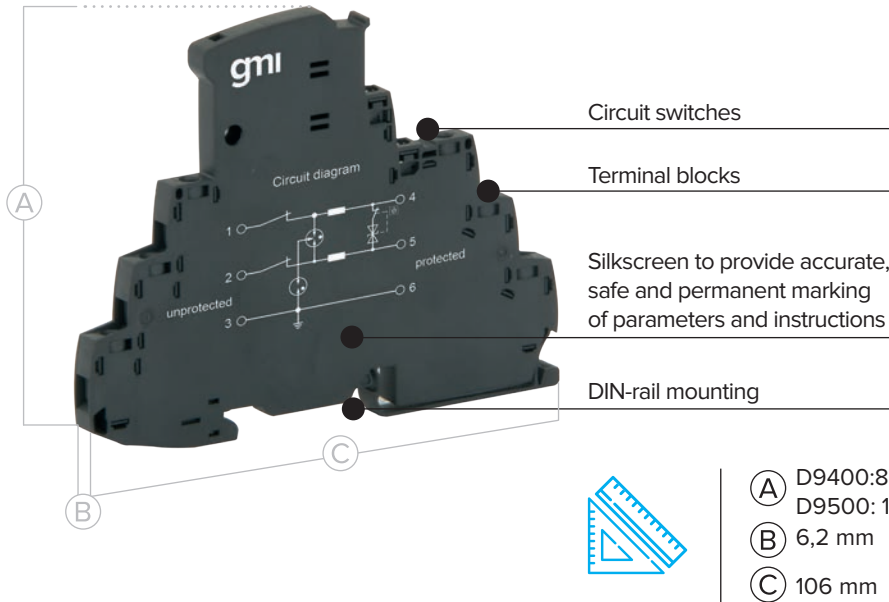


FEATURES

- **SIL 3** according to IEC 61508:2010 Ed.2
- Input from zone 0 (Zone 20), installation in zone 1 and 2
- Disconnection of signal circuit by disconnect knife
- Protection of a floating double wire in intrinsically safe circuits
- High density, 6.2 mm per channel
- HART compatible

Only 6,2 mm
wide:
asy fitting

D9400/D9500 Structure



D9510S (2 wires) / D9520S (3 wires) versions with unpluggable module

- Ⓐ D9400:84 mm
D9500: 103 mm
- Ⓑ 6,2 mm
- Ⓒ 106 mm

Cartridge & Fault Indication Surge Arrester

D9400/D9500 provides surge protection for floating I/O signal circuit in a SIL 3 compact package with or without **removable cartridge** configuration. The pluggable module and disconnect knife enable easy testing.

Also featured **local and remote module fault indications**.

In the event of an overload, a status indicator identifies the disconnection of the protective element without the need of auxiliary power supply; a remote indication set, for up to 40 modules at a time, is also available.

Intrinsically safe certified for use in IS loops and for hazardous area installation.



FEATURES

- **SIL 3** according to IEC 61508:2010 Ed.2
- Local and Remote fault indication
- Disconnection of signal circuit by disconnect knife
- **Hot** Removable plug module version available (D9500 version)
- EX-i Certified
- High Density 6.2 mm per channel
- Protection of a floating double wire in intrinsically circuits
- HART Compatible



Product List

I.S. Barriers

D5000 SERIES

ANALOG INPUT

Models	N. Ch.	L.M.	Input		Output		Duplicator	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
D5011	1/2	-	●	-	●	-	-	-	3	12,5 mm	HART - LFT*
D5014	1/2	-	●	●	●	●	●	-	3	12,5 mm	HART - LFT* - Voltage Output
D5015S	1	-	●	●	●	●	●	-	2	12,5 mm	HART - LFT*
D5016	1/2	-	-	●	●	●	●	-	3	12,5 mm	HART - LFT*
D5212Q	4	●	●	●	●	-	●	●	2	22,5 mm	Modbus
D5254S	1	●	●	●	●	●	-	●	2	22,5 mm	Modbus - Voltage Input

ANALOG OUTPUT

Models	N. Ch.	L.M.	Input	Output	Duplicator	Alarm	SIL	Size	Note
D5020	1/2	●	4-20 mA	4-20 mA	●	●	2	12,5 mm	HART

DIGITAL INPUT

Models	N. Ch.	L.M.	Input	Output	Duplicator	Alarm	SIL	Size	Note
D5030	1/2	●	Dry contact/Namur	Relay	●	●	3	12,5 mm	
D5031	1/2	●	Dry contact/Namur	Voltage free contact	●	●	3	12,5 mm	
D5032	1/2	●	Dry contact/Namur	Relay	●	●	3	12,5 mm	Only for TB
D5034	1/2	●	Namur	Namur	-	-	3	12,5 mm	Transparent for Namur
D5036	1/2	●	Dry contact/Namur	Relay	-	●	2	12,5 mm	No G3 Coating
D5037	1/2	●	Dry contact/Namur	Voltage free contact	-	●	2	12,5 mm	No G3 Coating
D5038	1/2	●	Dry contact/Namur	Solid state Relay with Resistance	●	●	3	12,5 mm	LFT*
D5039	1/2	●	Dry contact/Namur	Solid state Relay with Resistance	●	●	2	12,5 mm	LFT*
D5231E	8	●	Dry contact/Namur	Solid State Relay	●	●	2	22,5 mm	Logical out func. + Modbus

DIGITAL OUTPUT

Models	N. Ch.	L.M.	Input	Output	Power supply	Alarm	SIL	Size	Note
D5040	1/2	-	24 Vdc	Solenoid valve / LED	Loop powered	-	3	12,5 mm	2.4 Field Selectable Out
D5048S	1	●	24 Vdc	Solenoid valve / LED	Loop powered	●	3	12,5 mm	1.3 Field Selectable Out
D5049S	1	●	24 Vdc	Solenoid valve / LED	Bus powered	●	3	12,5 mm	1.3 Field Selectable Out
D5240T	3	-	24 Vdc	Solenoid valve / LED	Bus powered	-	2	22,5 mm	3.9 Field Selectable Out
D5244	1/2	-	24 Vdc	Relay	Loop Powered	-	2/3	22,5 mm	Voltage Free Relay Out

TEMPERATURE

Models	N. Ch.	L.M.	Input		Output		Duplicator	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
D5072	1/2	●	TC, mV, RTD, Ω, Pot		●	●	●	●	2	12,5 mm	Modbus
D5072-087	1/2	●	2-3-4 wire RTD		2-3-4 wire RTD		●	●	2	12,5 mm	RTD to RTD
D5072-096	1/2	●	TC, mV		mV		●	●	2	12,5 mm	mV to mV
D5072-099	1/2	●	TC, mV, RTD, Ω, Pot		-	●	●	●	2	12,5 mm	Modbus
D5273S	1	●	TC, mV, RTD, Ω, Pot		●	●	-	●	2	22,5 mm	Modbus

*LFT=Line Fault Transparency

OTHERS

Models	N. Ch.	L.M.	Input	Output	Power supply	Alarm	SIL	Size	Note
D5062S	1	-	Vibration sensor	0 to -20 V	Bus powered	-	2	12,5 mm	
D5263S	1	-	Load Cells/Strain gauges	Load Cells/Strain gauges	Bus powered	-	2	22,5 mm	
D5264S	1	●	Load Cells/Strain gauges	4-20 mA	Bus powered	●	2	22,5 mm	Modbus
D5202S	-	●	-	24 V, 4 A	Bus powered	●	3	22,5 mm	Power feed module
D5203S	-	-	-	-	Bus powered	●	-	22,5 mm	Diagnostic Module for DIN-rail

D1000 SERIES

ANALOG INPUT

Models	N. Ch.	L.M.	Input		Output		Duplicator	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
D1010	1/2	-	●	●	●	●	●	-	2	22,5 mm	HART - LFT* - Voltage Output
D1014	1/2	-	●	-	●	●	-	-	2	22,5 mm	HART - LFT* - Voltage Output
D1012Q	4	-	●	-	●	-	●	-	-	22,5 mm	LFT*
D1052	1/2	●	-	●	●	-	●	-	-	22,5 mm	High/Low voltage selector, adder/subtractor - Voltage In/Out
D1053S	1	●	-	●	●	-	-	●	2	22,5 mm	Voltage Input/Output
D1054S	1	●	●	●	●	-	-	●	2	22,5 mm	HART - Voltage Input/Output

ANALOG OUTPUT

Models	N. Ch.	L.M.	Input	Output	Duplicator	Alarm	SIL	Size	Note
D1020	1/2	●	4-20 mA	4-20 mA	●	●	2	22,5 mm	HART

DIGITAL INPUT

Models	N. Ch.	L.M.	Input	Output	Duplicator	Alarm	SIL	Size	Note
D1030	1/2	●	Dry contact/Namur	Relay	●	●	2	22,5 mm	
D1031	2/4	●	Dry contact/Namur	Transistor	●	●	2	22,5 mm	
D1032	2/4	●	Dry contact/Namur	Relay	●	●	2	22,5 mm	
D1033	2/4	●	Dry contact/Namur	Transistor	●	●	2	22,5 mm	
D1034	1/2	●	Namur	Namur	-	-	3	22,5 mm	Transparent for Namur
D1130	1/2	●	Dry contact/Namur	Relay	●	●	2	22,5 mm	AC Supply

DIGITAL OUTPUT

Models	N. Ch.	L.M.	Input	Output	Power supply	SIL	Size	Note
D1040Q	4	-	24 Vdc/Dry contact	Solenoid valve / LED	Bus / Loop powered	3	22,5 mm	1.4 Field SelectableOutputs
D1041Q	4	-	24 Vdc/Dry contact	LED	Bus / Loop powered	3	22,5 mm	1.4 Field SelectableOutputs
D1042Q	4	-	24 Vdc/Dry contact	Solenoid valve / LED	Bus / Loop powered	3	22,5 mm	1.4 Field SelectableOutputs
D1043Q	4	-	24 Vdc/Dry contact	Solenoid valve / LED	Bus / Loop powered	3	22,5 mm	1.4 Field SelectableOutputs
D1044	1/2	-	24 Vdc/Dry contact	Relay	Loop powered	2/3	22,5 mm	Voltage Free RelayOutput
D1045Y	1	-	24 Vdc/Dry contact	Solenoid valve	Bus / Loop powered	-	22,5 mm	for ATOS valve
D1046Y	1	-	24 Vdc/Dry contact	Solenoid valve	Bus / Loop powered	-	22,5 mm	for WANDFLUH valve
D1048S	1	●	24 Vdc/Dry contact	Solenoid valve / LED	Loop powered	3	22,5 mm	1.3 Field Selectable Out
D1049S	1	●	24 Vdc/Dry contact	Solenoid valve / LED	Bus powered	3	22,5 mm	1.3 Field Selectable Out

TEMPERATURE

Models	N. Ch.	L.M.	Input	Output	Duplicator	Alarm	SIL	Size	Note
D1072	1/2	●	TC, mV, RTD, Ω, Pot	● ●	●	●	2	22,5 mm	Voltage Output
D1073S	1	●	TC, mV, RTD, Ω, Pot	● ●	-	●	2	22,5 mm	Voltage Output

*LFT=Line Fault Transparency

OTHERS

Models	N. Ch.	L.M.	Input	Output	Power supply	Alarm	Size	Note
D1022	1 / 2	-	0-40 mA	0-40 mA	Loop powered	-	22,5 mm	FGS detector
D1035S	1	-	Frequency	Voltage free contact	Bus powered	-	22,5 mm	
D1060S	1	●	Frequency	4-20 mA / Voltage free contact	Bus powered	●	22,5 mm	
D1061S	1	-	RS422 / RS485	RS232 / RS422 / RS485	Bus powered	-	22,5 mm	Field Bus compatible
D1062S	1	-	Vibration sensor	0 to -20 V	Bus powered	-	22,5 mm	
D1063S	1	●	Strain gauges	Strain gauges	Bus powered	-	22,5 mm	
D1064S	1	●	Strain gauges	4-20 mA	Bus powered	●	22,5 mm	Modbus
D1080D	2	-	3 wire Sensor	Relay	Bus powered	-	22,5 mm	
D1081D	2	-	3 wire Sensor	Voltage free contact	Bus powered	-	22,5 mm	
D1180D	2	-	3 wire Sensor	Relay	Bus powered	-	22,5 mm	AC Supply

Safety Relays

D5000 SERIES
SAFETY RELAY INPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D5093	1 / 2	NE	NE	NO	Configurable	50 mA	-	-	-	3	DIP Switch configurable IN

SAFETY RELAY OUTPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D5090S	1	NE	NE	NO	24 Vdc	5 A	-	●	-	3	
D5090S-086	1	ND	NE	NC	24 Vdc	5 A	-	●	-	3	
D5091S	1	ND/NE	ND	NO/NC	24 Vdc	5 A	-	●	-	3	
D5094S	1	NE/ND	NE/ND	NO	24 Vdc	5 A	●	●	-	3	
D5095S	1	NE/ND	NE/ND	NC	24 Vdc	5 A	●	●	-	3	
D5098	1 / 2	NE	NE	NO	24 Vdc	5 A	-	●	-	3	
D5290S	1	NE	NE	NO	24 Vdc	10 A	-	●	-	3	
D5290S/SA	1	NE	NE	NO	24 Vdc	10 A	-	-	-	3	For Safe area only
D5290S-078	1	NE/ND	NE/ND	NO/NC	24 Vdc	5 A	-	●	-	3	1, 2 or 4 Loads
D5290S-078/SA	1	NE	NE/ND	NO/NC	24 Vdc	5 A	-	-	-	3	1, 2 or 3 Loads / For safe area only
D5290S-079	1	NE	NE/ND	NO/NC	115 Vac	5 A	-	-	-	3	1, 2 or 4 Loads
D5290S-080	1	NE	NE	NO	115 Vac	10 A	-	-	-	3	
D5290S-084	1	NE	NE/ND	NO/NC	110 Vdc	5 A	-	-	-	3	1, 2 or 4 Loads
D5290S-091	1	NE	NE	NO	230 Vac	10 A	-	-	-	3	
D5290S-092	1	NE	NE	NO	48 Vdc	10 A	-	-	-	3	
D5291S	1	NE/ND	ND	NO/NC	24 Vdc	10 A	-	●	-	3	
D5291S-097	1	NE	ND	NC	48 Vdc	10 A	-	-	-	3	

SMART RELAY

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D5096S	1	NE/ND	NE/ND	NO	24 Vdc	5 A	●	●	●	3	Full diagnostics
D5096S-100	1	NE/ND	NE/ND	NO	24 Vdc	5 A	●	●	●	2/3	Universal Fault Mirror
D5097S	1	NE/ND	NE/ND	NC	24 Vdc	5 A	●	●	●	3	Full diagnostics
D5293S	1	NE	NE	NO	24 Vdc	5 A	-	●	●	3	Programmable, Modbus
D5294S	1	NE/ND	NE/ND	NO	24 Vdc	5 A	●	●	●	3	Programmable, Modbus
D5295S	1	NE/ND	NE/ND	NC	24 Vdc	5 A	●	●	●	3	Programmable, Modbus

RELAY OUTPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D5099	1	NE/ND	NE/ND	NO/NC	24 Vdc	5 A	-	-	-	-	Only for TB
D5099-108	1/2	NE/ND	NE/ND	NO/NC	24 Vdc	5 A	-	-	-	-	

D1000 SERIES

SAFETY RELAY OUTPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D1092	1 / 2	NE/ND	NE/ND	NO	24 Vdc	3 A	-	-	-	3	
D1092-069	1 / 2	NE	NE/ND	NO/NC	24 Vdc	3 A	-	-	-	3	

SMART RELAY

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D1093S	1	NE/ND	NE/ND	NO	24 Vdc	3 A	-	-	●	3	Open circuit diagnostics

D6000 SERIES

RELAY OUTPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	High Availability	Pulse test	Diagnostics	SIL	Note
D6003S	1	NE/ND	NE/ND	NO/NC	24 Vdc	3 A	-	-	-	-	PS Load only for TB

Galvanic Isolators

D6000 SERIES

ANALOG INPUT

Models	N. Ch.	L.M.	Input		Output		Duplicator	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
D6011	1 / 2	-	●	-	●	-	-	-	3	12,5 mm	HART - LFT*
D6014	1 / 2	-	●	●	●	●	●	-	3	12,5 mm	HART - LFT* - Voltage Output
D6015S	1	-	●	●	●	●	-	-	2	12,5 mm	HART - LFT*
D6016	1 / 2	-	-	●	●	●	●	-	3	12,5 mm	HART - LFT*
D6017S	1	-	-	●	●	●	-	-	3	12,5 mm	HART - LFT*
D6212Q	4	●	●	●	●	-	●	●	2	22,5 mm	Modbus
D6254S	1	●	●	●	●	●	-	●	2	22,5 mm	Modbus - Voltage Input

ANALOG OUTPUT

Models	N. Ch.	L.M.	Input	Output	Duplicator	Alarm	SIL	Size	Note
D6020	1 / 2	●	4-20 mA	4-20 mA	●	●	2	12,5 mm	HART

DIGITAL INPUT

Models	N. Ch.	L.M.	Input	Output	Duplicator	Alarm	SIL	Size	Note
D6030	1 / 2	●	Dry contact/Namur	Relay	●	●	3	12,5 mm	
D6031	1 / 2	●	Dry contact/Namur	Voltage free contact	●	●	3	12,5 mm	
D6032	1 / 2	●	Dry contact/Namur	Relay	●	●	3	12,5 mm	Only for TB
D6034	1 / 2	●	Namur	Namur	-	-	3	12,5 mm	Transparent for Namur
D6036	1 / 2	●	Dry contact/Namur	Relay	-	●	2	12,5 mm	No G3 Coating
D6037	1 / 2	●	Dry contact/Namur	Voltage free contact	-	●	2	12,5 mm	No G3 Coating
D6038	1 / 2	●	Dry contact/Namur	Solid State Relay with Resistances	●	-	3	12,5 mm	LFT*
D6039	1 / 2	●	Dry contact/Namur	Solid State Relay with Resistances	●	-	2	12,5 mm	LFT*
D6231E	8	●	Dry contact/Namur	Solid State Relay	●	●	2	22,5 mm	Logical out func. + Modbus

*LFT=Line Fault Transparency

TEMPERATURE

Models	N.Ch.	L.M.	Input		Output		Duplicator	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
D6072	1 / 2	●	TC, mV, RTD, Ω, Pot		●	●	●	●	2	12,5 mm	Modbus
D6072-087	1 / 2	●	2-3-4 wire RTD		2-3-4 wire RTD		●	●	2	12,5 mm	RTD to RTD
D6072-096	1 / 2	●	TC, mV		mV		●	●	2	12,5 mm	mV to mV
D6273S	1	●	TC, mV, RTD, Ω, Pot		●	●	-	●	2	22,5 mm	Modbus

OTHERS

Models	N.Ch.	L.M.	Input	Output	Power supply	Alarm	SIL	Size	Note
D6062S	1	-	Vibration sensor	0 to -20 V	Bus powered	-	2	12,5 mm	
D6263S	1	-	Strain gauges	Strain gauges	Bus powered	-	2	22,5 mm	
D6264S	1	●	Strain gauges	4-20 mA	Bus powered	●	2	22,5 mm	Modbus

Pass-Through

Models	N.Ch.	L.M.	Field	SIL	Size	Note
D6000	1 / 2	-	Pass-Through	-	12,5 mm	For TB and DIN-rail mounting
D6001	1 / 2	-	Pass-Through	3	12,5 mm	Only for TB mounting with overcurrent and overvoltage protection
D6002S	1	-	Pass-Through	-	12,5 mm	Only for TB mounting
D6004	1 / 2	-	Pass-Through	3	12,5 mm	Suitable for 2/3/4 wire transmitters - Only for TB mounting

Surge Arresters

Models	N.Ch.	N. Wires	Signal Type	Removable cartridge	Fault Indication	Mounting	SIL	Size	Note
D9410S	1	2	24 Vdc AI, AO, DI, DO	-	●	DIN-Rail	3	6 mm	
D9420S	1	3	24 Vdc AI, AO, DI, DO	-	●	DIN-Rail	3	6 mm	
D9510S	1	2	24 Vdc AI, AO, DI, DO	●	●	DIN-Rail	3	6 mm	SPP510 Replacement cartridge for D9510S module
D9520S	1	3	24 Vdc AI, AO, DI, DO	●	●	DIN-Rail	3	6 mm	SPP520 Replacement cartridge for D9520S module
D9401S	1	-	-	-	●	DIN-Rail	3	6 mm	Remote Fault indicator Set

Multiplexer Systems

Models	N.Ch.	Input	Function	Line Monitoring	Installation Area	Size	Note
D2010M	16	Analog - temperature	Field multiplexer	●	Hazardous	220 mm	Ch. to Ch. isolation
D2011M	16	Analog - temperature	Extender module	●	Hazardous	220 mm	Ch. to Ch. isolation
D2030M	32	Digital - Namur	Field Multiplexer	●	Hazardous	220 mm	Ch. to Ch. isolation
D2050M	256	Signals from Field Units	Gateway	●	Safe	220 mm	Redundant communication
D2052M	32	DI Signals from D2050M	Repeater	-	Safe	220 mm	Relay Output
D2053M	32	DI Signals from D2050M	Repeater	-	Safe	220 mm	Voltage free contact Output
D1090Q	4	mA	Shunt Module	-	Hazardous	22,5 mm	Current Input Shunt
D1094Q	4	V	Divider Module	-	Hazardous	22,5 mm	Voltage Input Divider

Power Supplies

Models	Output	Mounting	Fault Indication	SIL	Installation Area	Size	Note
PSD1000	24 Vdc - 0,6 A	DIN-Rail	-	-	Safe or Zone 2	22,5 mm	
PSD1000F	24 Vdc - 0,6 A	DIN-Rail	●	-	Safe or Zone 2	22,5 mm	
PSD1001	15 Vdc - 20 mA	DIN-Rail	-	3	Safe or Zone 2	22,5 mm	I.S. Device
PSD1001C	13,5 Vdc - 100 mA	DIN-Rail	-	3	Safe or Zone 2	22,5 mm	I.S. Device
PSD5201	14,5 Vdc - 150 mA	DIN-Rail	-	3	Safe or Zone 2	22,5 mm	I.S. Device
PSD1220	24 Vdc - 20 A	DIN-Rail	●	3	Safe or Zone 2	183 mm	
PSD1220-098	24 Vdc - 20 A	DIN-Rail	●	3	Safe or Zone 2	183 mm	Replacement of PSD1210
PSW1250	24 Vdc - 50 A	Wall-Mount	●	3	Safe or Zone 2	61 mm	
PSM1250	24 Vdc - 50 A	Wall-Mount	●	3	Safe or Zone 2	61 mm	
PSO1250	-	Wall-Mount	●	-	Safe or Zone 2	61 mm	Diagnostics module
PSS1250-HS	24 V - 300 A 48 V - 150 A	Wall-Mount	●	3	Safe or Zone 2	178 / 238 / 482 mm	Hot Swap, Various size available
PSS1250	24 V - 300 A 48 V - 150 A	Wall-Mount	●	3	Safe or Zone 2	178 / 238 / 482 mm	Various size available

HART Multiplexer

Models	N. Ch.	Signal Type	Function	SIL	Size	Note
5700	256	HART Signals	Hart Mux Modem	3	12,5 mm	From 1 to 256 Channels
5700-110	256	HART Signals	Hart Mux Modem	3	12,5 mm	Supports Emerson AMS™
TBE-D5001-HRT-003 TB-D5001-HRT-003	64	HART Signals	Flat cable	3	235x135 x154 mm	For connection via GMI TB
TBE-D5001-HRT-004 TB-D5001-HRT-004	32	HART Signals	Terminals	3	235x135 x154 mm	For direct connection to HART signal
TBE-D5001-HRT-005 TB-D5001-HRT-005	32	HART Signals	Terminals	3	235x135 x154 mm	With 1/5 V conversion resistances on board
TBE-D5001-HRT-006 TB-D5001-HRT-006	32	HART Signals	Terminals	3	235x135 x154 mm	For interfacing AI card with input impedances included from 100Ω to 150Ω
TBE-D5001-HRT-007 TB-D5001-HRT-007	32	HART Signals	Terminals	3	235x135 x154 mm	For interfacing AI card with input impedances included from 0Ω to 50Ω

Termination Boards

GMI BOARDS

Models	N. Ch.	N. of Modules	Signal Type	System	Card Detail	Size	Note
TBE-D5008-GMI-001 TB-D5008-GMI-001	8 / 16	8	Universal	patch cables	any	156 mm	HART connector
TBE-D5008-GMI-002 TB-D5008-GMI-002	8 / 16	8	AO	patch cables	any	166 mm	HART connector
TBE-D5016-GMI-001 TB-D5016-GMI-001	16 / 32	16	Universal	patch cables	any	300 mm	HART connector

CUSTOM BOARDS

Customized Termination Boards for an easy integration with instrumentation of manufacturers are available:

- ABB
- Bailey
- Emerson
- Foxboro
- Hima
- Honeywell
- ICS Triplex
- Invensys
- Schneider
- Siemens
- Triconex
- Yokogawa

NOTE

Custom termination boards are in constant development. Please enquire if any desired termination board is missing.

TRAINING COURSES AND FUNCTIONAL SAFETY SERVICES

Training courses

CUSTOMER TRAINING

Specialty courses for engineering companies, end users and system integrators are held on topics such as **Intrinsic Safety (IS)** and **Safety Instrumented System (SIS)**.

GM International is a course promoter of the **TÜV Rheinland** Functional Safety Program for Safety Instrumented Systems (SIS) trainings; see our website for available dates.

Our **SIL MANUAL** has gained strong popularity with over 50.000 copies delivered.



SIL Manual 4th Edition



Functional Safety services

YOUR SAFETY EXPERTS

SIL VERIFICATION

We verify the capability of Safety Instrumented Functions in accordance with IEC 61508 and IEC 61511 by quantifying the effects of random hardware failures such as PFD or Frequency of Dangerous Failures (PFH), calculating the hardware safety integrity architectural constraints including Safe Failure Fraction (SFF), Hardware Fault Tolerance (HFT) and Common Cause Failure (CCF).

FUNCTION SAFETY ASSESSMENTS

Independent functional safety assessments are conducted by our experts to advise if functional safety and safety integrity have been achieved by the Safety Instrumented System in accordance with IEC 61508.

FUNCTIONAL SAFETY MANAGEMENT

This relates to how functional safety requirements and procedures are implemented during a project. We provide assistance or create and maintain in its entirety, the Functional Safety Lifecycle and Management requirements for clients in accordance with IEC 61511.

QUANTITATIVE RISK ASSESSMENTS

Our experts have delivered numerous QRA projects using our QRA Life Cycle methodology which have contained many different activities.

PROCESS HAZARD ASSESSMENT

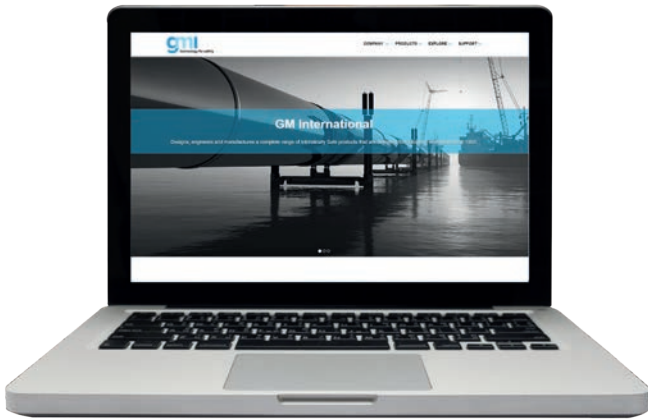
Our certified independent expert facilitators will perform the necessary preparation activities, then chair and deliver the appropriate reporting for the qualitative PHA activities including: HAZID, HAZAN, HAZOP, CHAZOP and FMEA.

SAFETY REQUIREMENTS SPECIFICATIONS

Our experts compile conceptual and detailed Safety Requirements Specifications to meet IEC 61511 requirements.

Softwares, Configuration and Online Tools

Software and configuration tools facilitate selection, parameterization, and operation of several GM International components. Visit our website www.gminternational.com to find a wide range of customized softwares and online tools.



SOFTWARE LIST

- **SWC1090 Configuration Software:** for D1000 and E1000 Isolators
- **SWC2090 Configuration Software:** for D2000M Multiplexer system
- **SWC5090 Configuration Software:** for D5000 and D5200 Isolators
- **Ex loop safety parameters verification:** online tool
- **Digital Output choice software:** online tool

Details

SWC1090 Configuration Software: for D1000 and E1000 Isolators

GM International customers have the possibility to choose between two easy methods of configuring their GMI D1000 Models: our well-known and handy PPC 1090 (standalone pocket portable) and our innovative SWC1090.

The SWC1090 interfaces your laptop, or computer, with the module (see below for available models), giving the possibility to configure every parameter, save them to file for future use, or to automatically print the full set of parameters into a Report Sheet. A very simple installation and no major system requirements (details below) make it a powerful and user-friendly way of working.

SWC2090 Configuration Software: for D2000M Multiplexer system

The SWC2090 interfaces your laptop, or computer, with the D2000M system via the D2050M gateway, giving the possibility to configure every parameter, save them to file for future use, or to automatically print the full configuration into a Report Sheet. A very simple installation and user interface make it a powerful and user-friendly way of working.

SWC5090 Configuration Software: for D5000 and D5200 Isolators

The SWC5090 interfaces your laptop, or computer, with the isolator (see below for available models), giving the possibility to configure every parameter, save them to file for future use, or to automatically print the full set of parameters into a Report Sheet.

A very simple installation and user interface make it a powerful and user-friendly way of working.

Note: PPC5092 adapter is needed in order to connect your PC/Laptop to the unit via USB connectivity.

Ex loop safety parameters verification: online tool

Ex loop safety parameters verification provides a comparison between the input parameters of field device, characteristics of cable and output parameter of selected barrier, getting an immediate result about the safety compatibility.

Free registration is requested and allows the user to save loop parameters for archive or future calculations.

Digital Output choice software: online tool

Digital output choice software provides the list of digital output barriers compatible with your valve. Asking only some parameter, it gives an immediate overview about barriers able to drive your electrovalve, ordering results by remaining cable length.



MSD0001 Rev. 4 (01/2024)

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