Product overview

gmi technology for safety

Our products,
Our commitment

technology for safety

www.gminternational.com

OVER 40 YEARS IN INTRINSIC SAFETY AND INDUSTRIAL ELECTRONICS

Founded in 1993, G.M. International is a globally recognized specialist in solutions for hazardous areas, serving the Energy, Oil & Gas, petrochemical, pharmaceutical, food & beverage, fertilizer, and process industries. A strong commitment to research and development has shaped the company's identity, building a reputation for innovation, reliability, and engineering excellence.

With several subsidiaries across key international markets - including the USA, UAE, China, Japan, Singapore, France, Mexico, and India - and a well-established partner network, G.M. International supports customers in more than 50 countries, combining global reach with local expertise.

Headquartered in Northern Italy, the company operates a state-of-the-art manufacturing facility and continues to invest in advanced technologies to meet the evolving demands of mission-critical applications. Today, G.M. International is regarded as a trusted partner by leading automation contractors and EPC companies worldwide.

In 2024, the company completed a management buyout backed by DeA Capital. This milestone led to its transformation into a joint-stock company (S.p.A.) in 2025, reinforcing its governance, organizational structure, and financial strength to support a new phase of international growth.

2025 - New Subsidiary in India

2025 -G.M. International becomes a joint-stock company (S.p.A.) and increases its share capital to € 1,000,000

2025 - Launch of the X Series

2024 - Management Buyout Operation

2022 - New Subsidiary in Mexico

2020 - Fourth edition of SIL Manual

2017 - Rebranding

2016 - New Subsidiary in France

2015 - Relocation Headquarters in Villasanta

2014 - Launch of D6000 Series

2013 - New Subsidiary in China and Japan

2012 - Second Subsidiary in Dubai

2010 - Launch of D5000 Series

2008 - First edition of SIL Manual

2005 - Launch of D2000 Series

2004 - Launch of GMI Termination boards and custom solutions for DCS companies

2000 - Launch of D1000 Series

1993 - Founding of G.M. International specializing in intrinsic safety for the process industry.

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 stringest 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.


ZERTIFIKAT ◆ CERTIFICATE ◆ CERTIFICADO ◆ CERTIFICAT

FUNCTIONAL SAFETY CERTIFICATE

according to IEC EN 61508:2010

CERTIFICATE OWNER: G.M. International s.r.l.
Via G. Marneli, 53-55
I-20052 Villasanta (MB) – ITALY

WE HEREWITH CONFIRM THAT G.M. INTERNATIONAL S.R.L. MEET THE REQUIREMENTS OF IEC EN 61508:2010 PART 1 CLAUSES 5 – 6.
The Management of Functional Safety results to be in compliance to the above mentioned Clauses of IEC 61508: 2010, for safety related systems up to and included SIL 3.

Examination result: G.M. International s.r.l. was found to meet the standard defined requirements according to IEC EN 61508:2010 part 1 clause 5 – 6, under fulfillment of the conditions listed in the related Reports, in their currently valid version, on which this Certificate is based

Examination parameters: Documentation and Management of the Functional Safety

Applicable lifecycle phases: Phase 10 – Realization of safety-related system (IEC EN 61508-1 Clause 7)

Official Report No.: 71.05-236108.05 Rev.1

Reference Standard: IEC EN 61508:2010 Part 1

Sesto San Giovanni, June, 06th 2014

TÜV ITALIA S.r.l.

TÜV ITALIA S.r.l.
Industry Service Division
Director

TÜV

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.

Summary

Next generation of safety
X1 Series

X1 Series is a complete range of interfaces for universal marshalling within limited spaces: pass-through, galvanic isolators, converters, relays and intrinsically safe modules.

Specifically designed for high risk industries, challenging functional safety (SIL) requirements and harsh environmental conditions.

The Series requires less maintenance and installation efforts on site, with a smaller cabinet footprint and more flexibility for spare channels.

STRENGTHS

- **Reduced footprint:** high density design, 10 mm per channel
- **Universal application flexibility:** support for single-channel Universal I/O card marshalling across main field applications (signal conditioning, isolation, conversion, relays, intrinsically safe barriers)
- **Reduced maintenance effort:** disconnection without module extraction
- **Higher installation safety:** mechanical polarization preventing destructive mismatches
- **Higher reliability in harsh environments:** operating temperature from -40 °C to +70 °C, suitable for remote cabinets
- **Certified for hazardous areas:** installation in classified locations (Zone 2 / Div. 2)
- **High functional safety profile:** SIL 3 / SIL 2 compliant
- Higher EMC robustness: strong immunity to EMI disturbances
- **Advanced diagnostics capability:** full diagnostics of field devices and modules
- **Fault transparency:** fault mirroring up to supervised I/O card, per channel
- **End-to-end loop visibility:** identification of all elements in the signal loop
- **Centralized configuration & monitoring:** single-point access for all cabinet modules
- **Lower ownership cost:** reduced installation, maintenance and lifecycle costs

X1 Series Structure

Retention and detachment **leverage** mechanism

Mechanical **polarization** key system avoids misplacing and potentially destructive insertion of low-voltage modules into high-voltage slots and NIS modules into IS slots

Redundant and protected 24 Vdc power supply

High grade light plastic **IP20** housing protects main board and I/O card cable connector

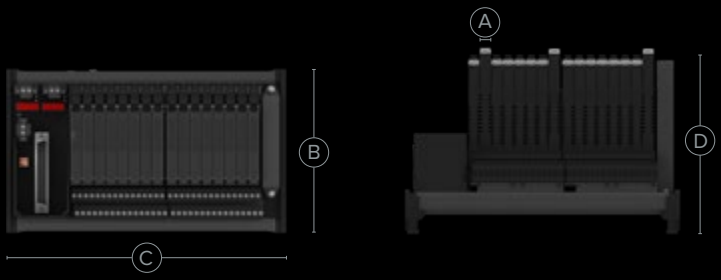
LEDs for power, status and **fault indication** are visible through the transparent cover

Laser engraving on module enclosure provides permanent marking of IS parameters, certifications and instructions

High **thermal efficiency**:
- 40 / +70°C extended operating range

Extractable screw or spring field terminal blocks

In-built TS35 **DIN rail** mounting capabilities



A ≒ **10 mm**
B ≒ **140 mm**
C ≒ **240 mm**
D ≒ **155 mm**

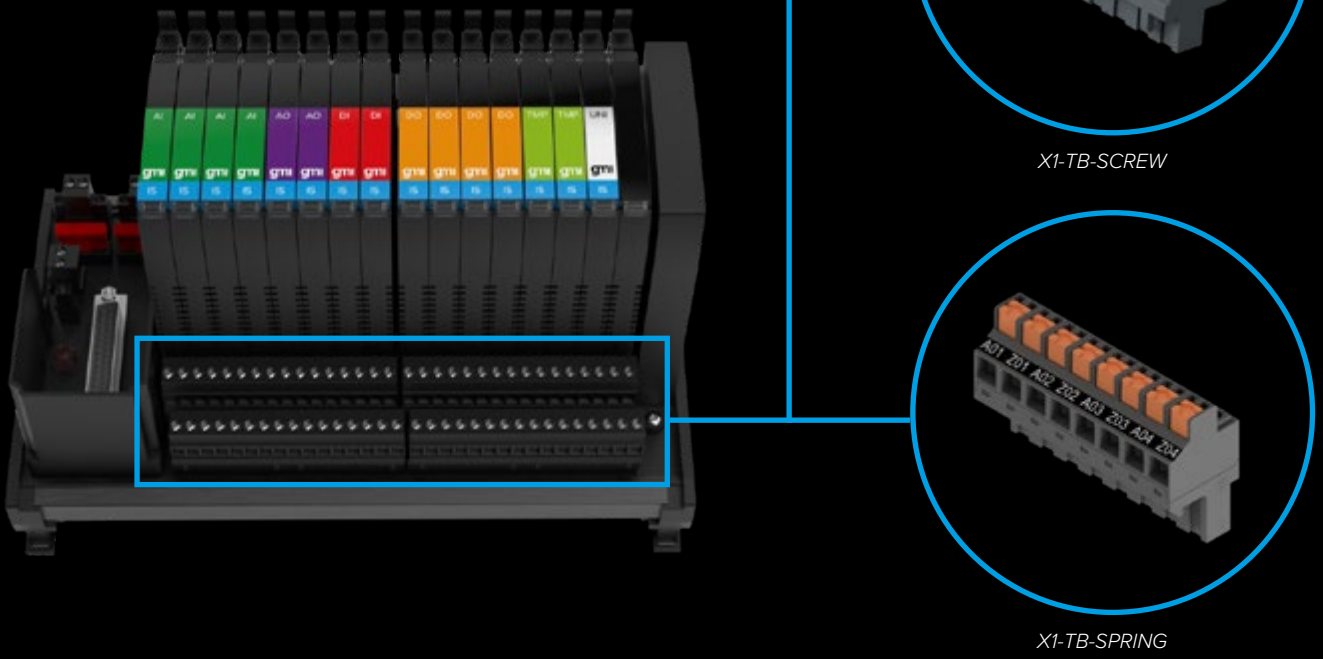
Universal Integrated Marchalling

The X1 Series consists of a comprehensive solution for interfacing customers systems with a complete range of modules. The compact design of the board and its modules reduces cabinet utilization and therefore lowers costs. Installation and maintenance are facilitaded thanks to innovative characteristics of the system.

Modules are available for all field signal types, both analog and digital, together with safety relays. Intrisically safe loops can also be interfaced, and the board itself can be installed in Zone 2 / Div 2.
Solutions for 8 or 16 channels I/O cards can be customized to suite all specific requirements.

The whole series is SIL 2 / SIL 3 certified, ensuring the highest reliability in extreme applications.

Terminal blocks



X1-TB-SCREW

X1-TB-SPRING

Fail-proof architecture

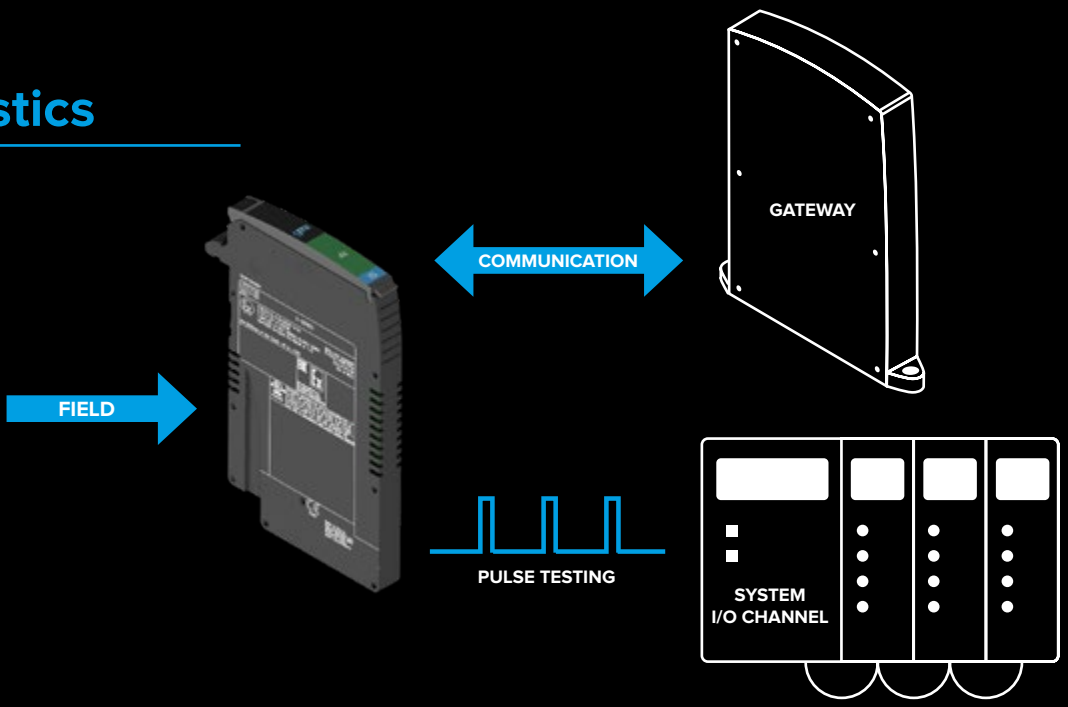
Polarization keys ensure correct insertion on each module on the board, therefore preventing dangerous misplacements.
The gateway is able to identify each module's unique ID and characteristics (AI, AO, DI, DO, Relay, Pass-through).
Fully redundant on-board 24Vdc power supply.
Functional safety is achieved on all modules via SIL3 and SIL2 certifications according to IEC61508, ensuring the highest levels of reliability and system uptime.

FULL COMPABILITY

SMART FEATURES

- **A single remote access point** allows for identification, configuration, monitoring and SIL3 HART Multiplexing.
- **Fault diagnostics** for each channel is transparently acquired by the I/O card.
- **Multiple industrial protocols** available through the gateway.
- **Multiple boards** can be daisy-chained and remotely connected.

Diagnostics



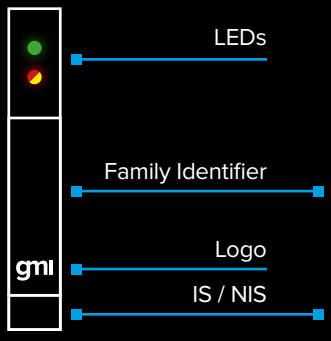
INTERNAL & FIELD DIAGNOSTICS

- **Internal Diagnostics:**
  - Module temperature monitoring
  - Ia/Va vs. Ib/Vb mismatch
  - Internal V or I output range
- **Field Diagnostics:**
  - Out-of-range error
  - Sensor burnout
  - Field device open/short circuit
  - Over-voltage & over-current monitor
  - Load resistence

MODULE IDENTIFICATION POLICY

- **Family identification**
  All models (even pass-through)can be identified through a Resistanceassociated to the Family
- **S/N Identification**
  Smart models can be identifieddown to the unique Serial Number

Labels color and coding



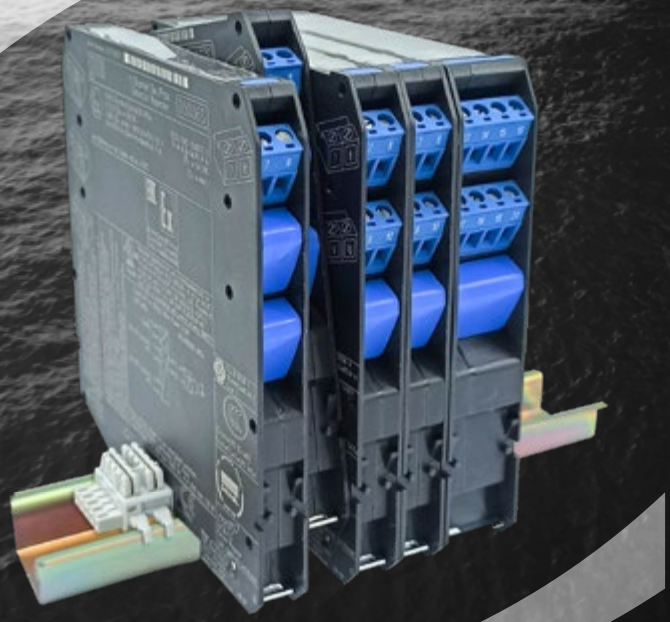
The front panel has multicolor LEDs, to indicate power presence (green LED) and it is color coded to identify module family and IS/NIS loops.

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.

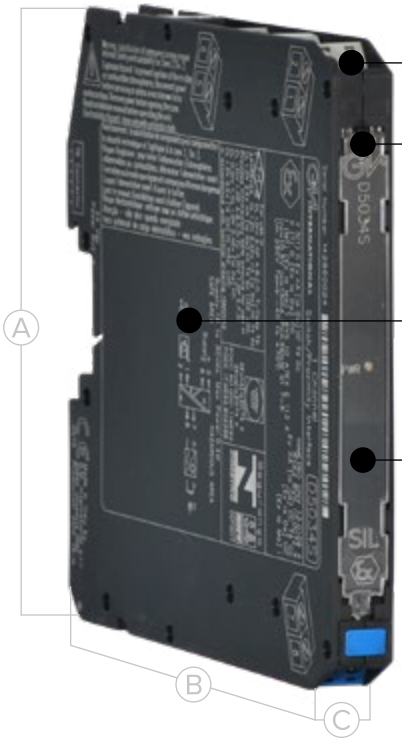
Intrinsically Safe Galvanic Isolators provide the most simple and cost effective means of implementing Intrinsic Safety into Hazardous Area applications.



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

Ⓐ 120 mm
Ⓑ 123 mm
Ⓒ 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 accurancy and repeatability, a very low heat dissipation, an high reliability and a SIL cerified 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

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

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

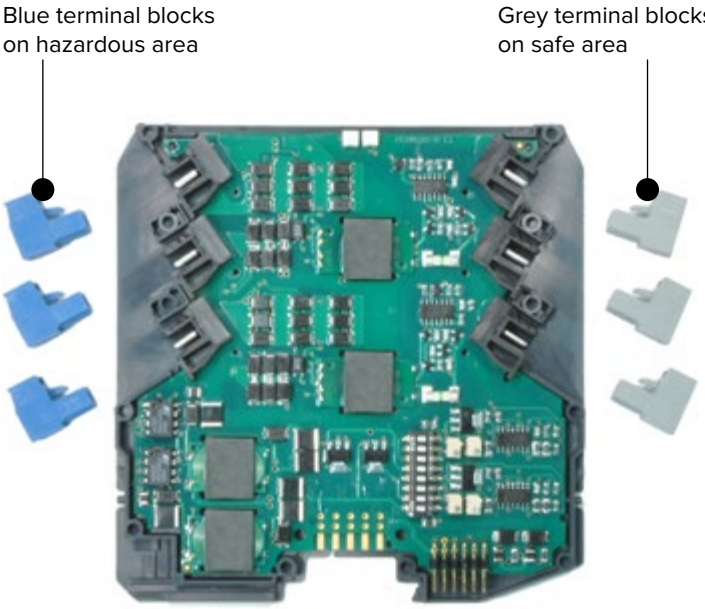
WIDE FUNCTIONALITY

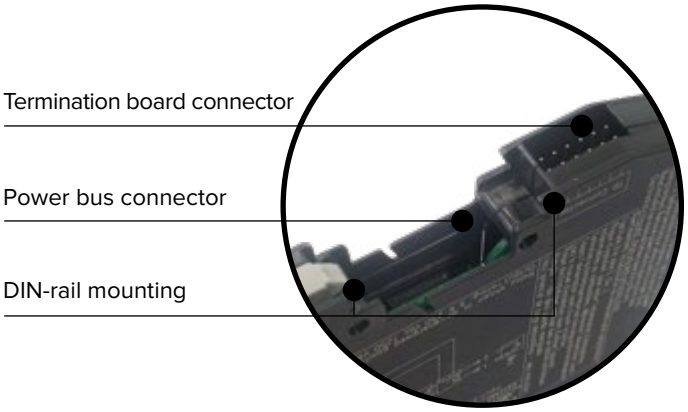
- More than 25 modules suitable for **SIL 2** and **SIL 3** applications according to IEC61508, IEC61511
- Three port galvanic isolation to eliminate noise, ground loop problems providing Intrinsic Safety without a high integrity safety earth connection
- Line fault alarm detects open or short circuit 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

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



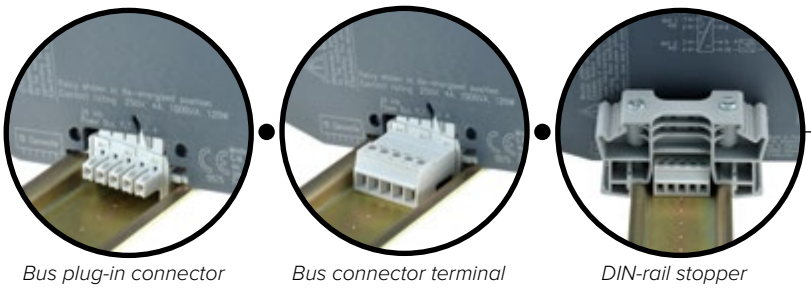


Enhanced Power Bus Mounting

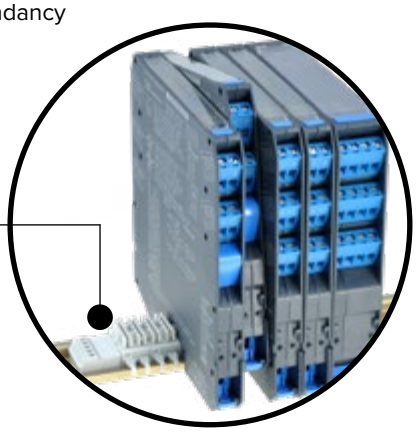
24 Vdc power supply voltage **can be applied** to the module by directly connecting to the plug-in terminal block of each module, or **via the power bus system**. The system consists of standard DIN-rail modules mounted on DIN-rail bus connectors. The maximum allowed powering capacity per trunk is **8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



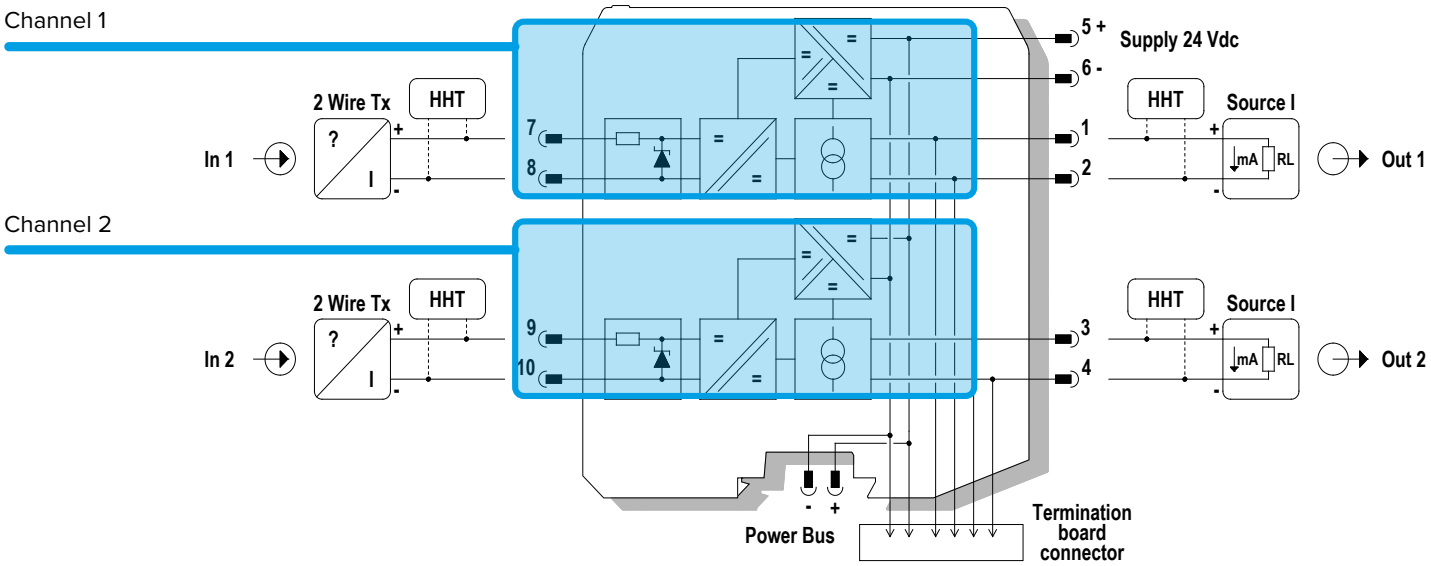
Customized Termination Boards for an easy integration with instrumentation of manufacturers are available:

- 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 unprecedent 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**

Easy USB configuration

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.

Visit **www.gminternational.com** to discover more about D5000 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

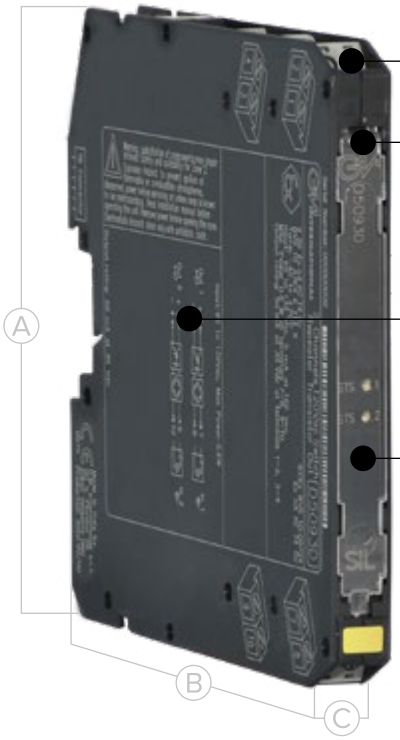
SIL certified relays are not used exclusively in Oil & Gas or petrochemical industries; they are also **a must in many other industries**:

- 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



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.

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Ⓐ 120 mm
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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

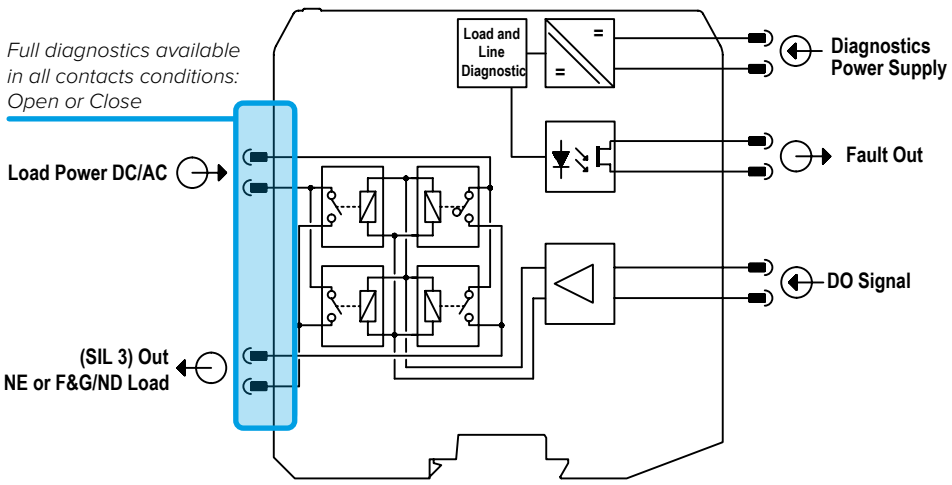
GM INTERNATIONAL PATENTED DIAGNOSTICS FEATURES

- 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.



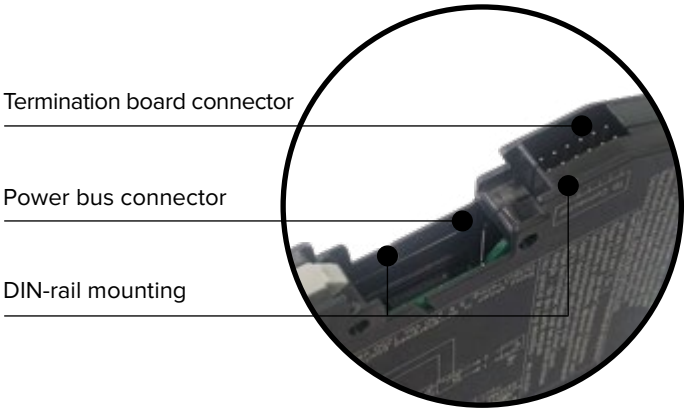
Universal Mounting units

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



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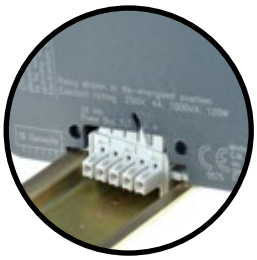
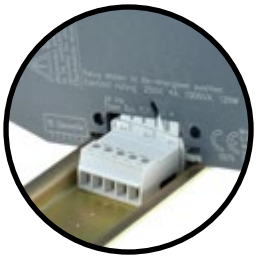
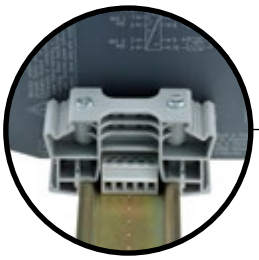


Bus plug-in connector



Bus connector terminal



DIN-rail stopper

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

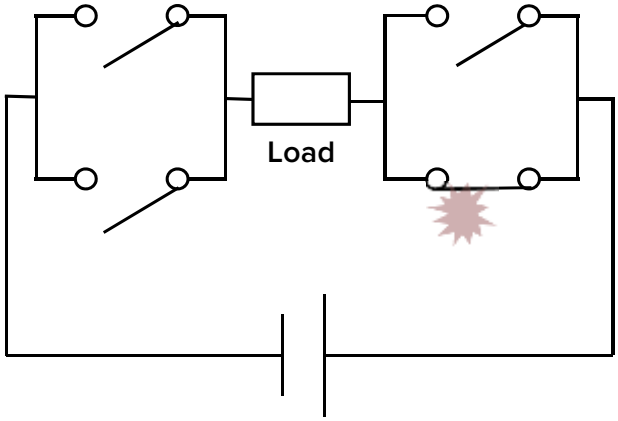
High Availability

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

Safety and Availability combined

2x2 Safety Relay contact matrix

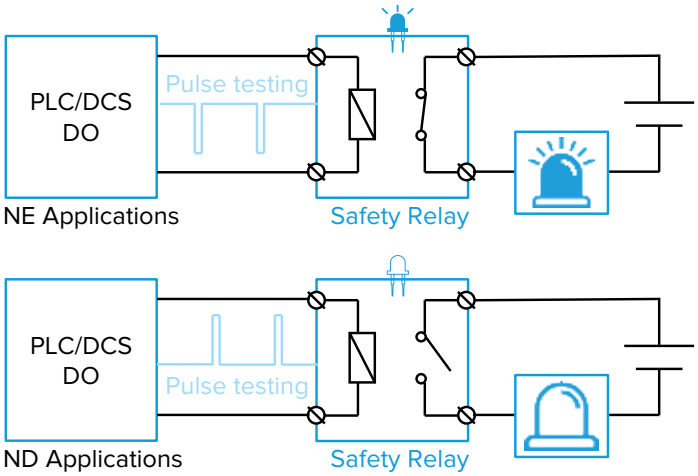


Line Monitoring Pulses Compatibility

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



Visit **www.gminternational.com** to discover more about Safety Relays.

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.

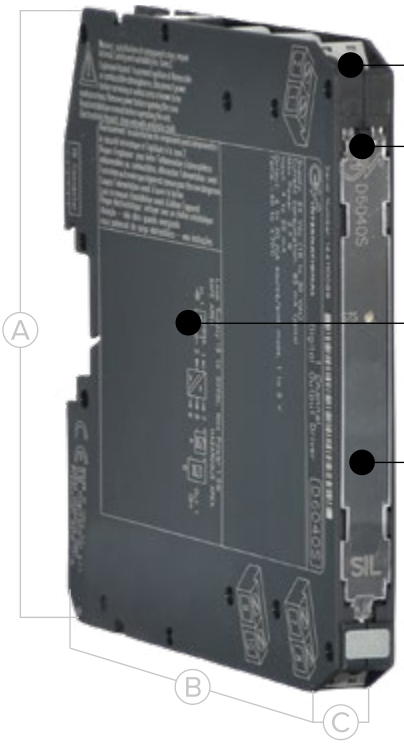
SIL 3

SIL 2

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 mm^2
- 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.

Operating temperature certified

from -40°C to +70°C

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

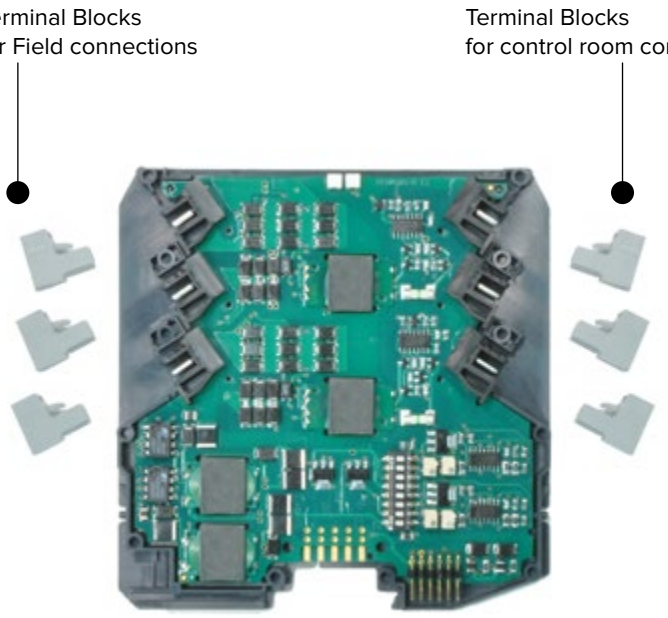
WIDE FUNCTIONALITY

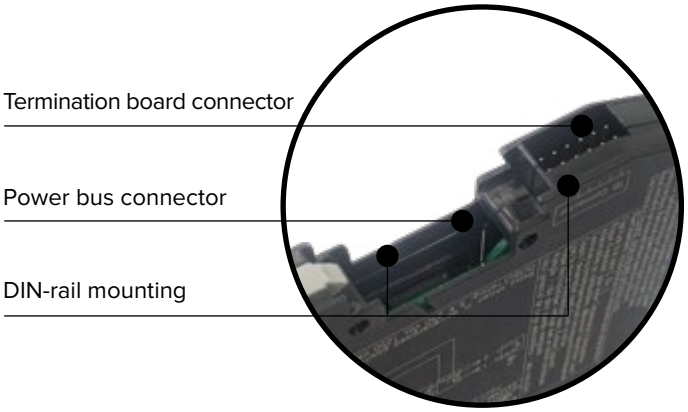
- Modules suitable for **SIL 2** applications according to IEC61508, IEC61511
- Three port galvanic isolation to eliminate noise, ground loop problems
- Line fault alarm detects open or short circuit of field cables
- Optional power bus DIN-rail connector
- Standard termination board with custom connectors 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

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



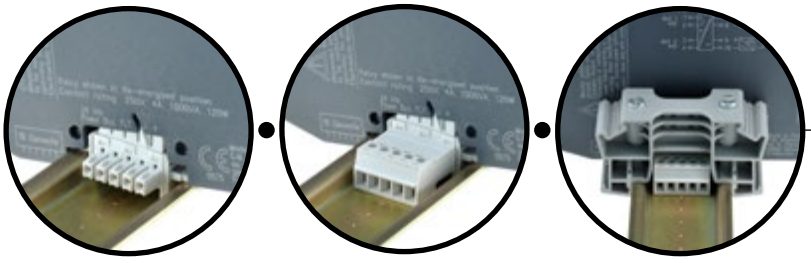


Enhanced Power Bus Mounting

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

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

20 years SIL certification

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

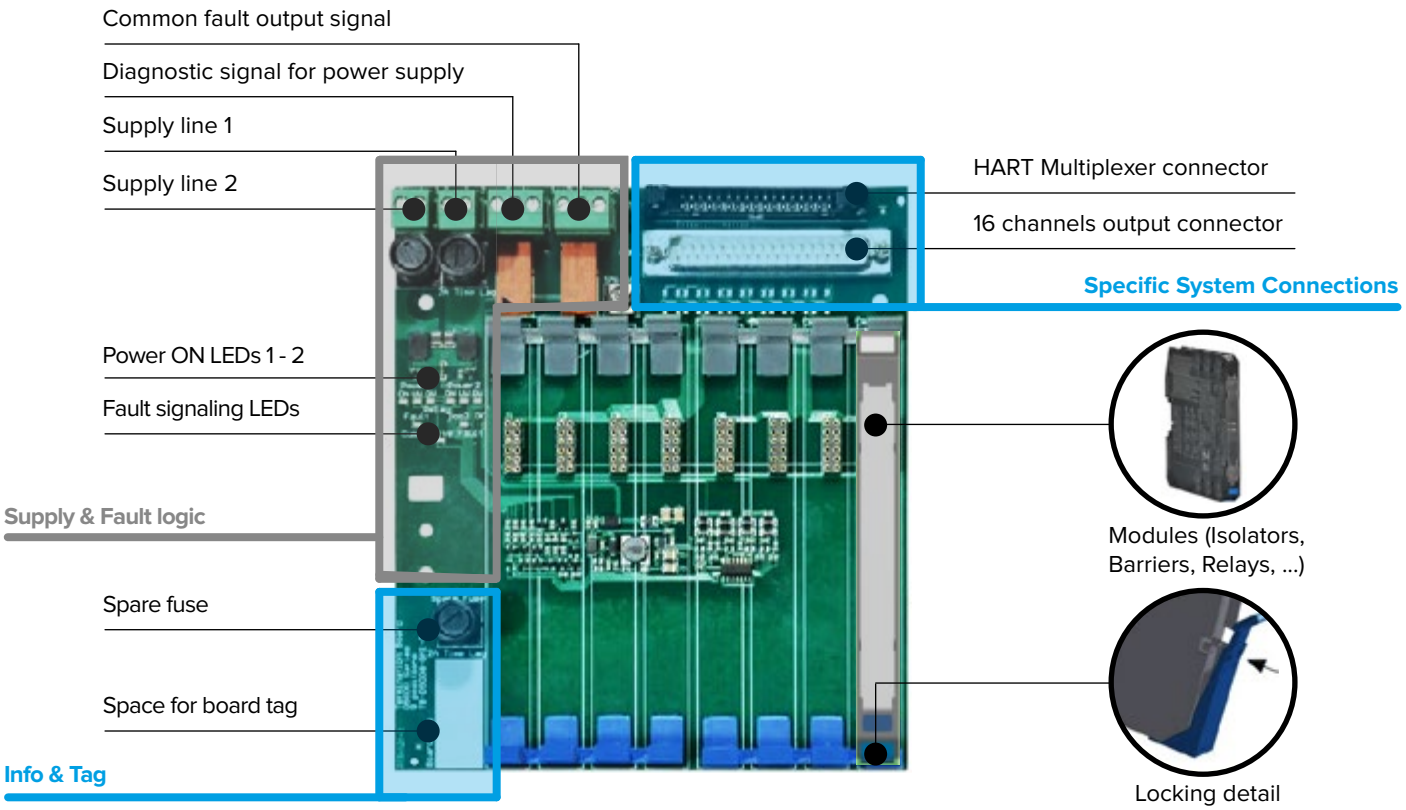
04

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.

100% customizable

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

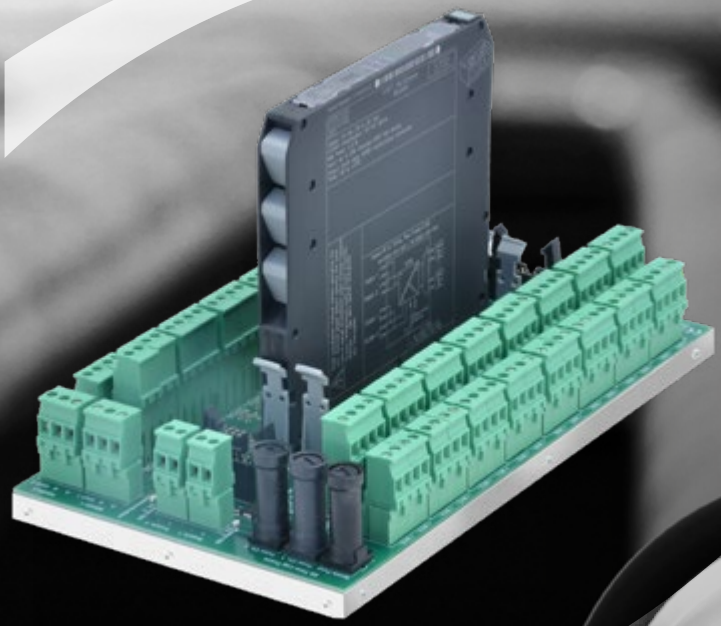
BENEFITS

- 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

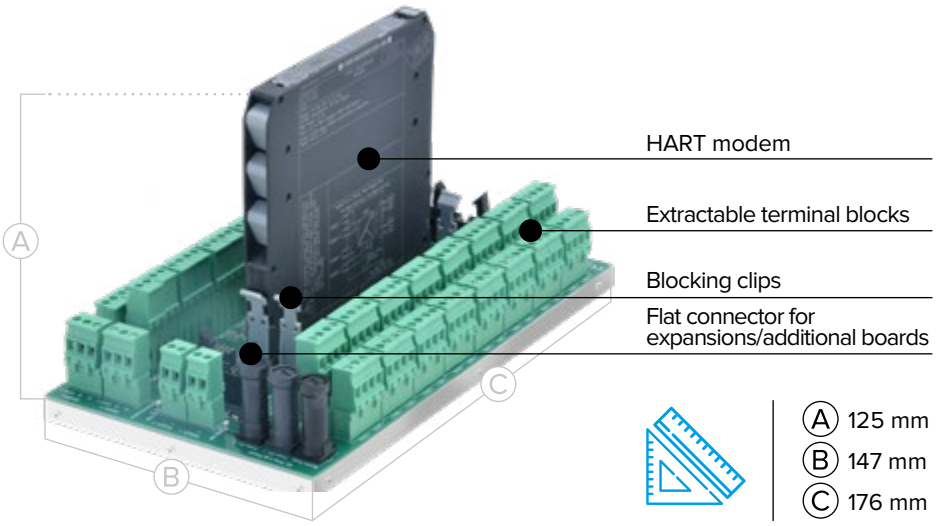
The new SIL 3 certified GM International HART interface system drastically reduces the complexity and cost of HMS installations; compared to the current state-of-the-art HART interface solutions on the market, GMI HART System significantly cuts the number of multiplexer modules required and increases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



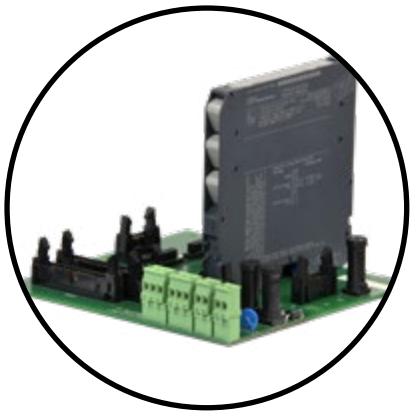
STRENGTHS

- **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 resiliance:** 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



A 125 mm
B 147 mm
C 176 mm



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**.

HART® COMMUNICATION PROTOCOL

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

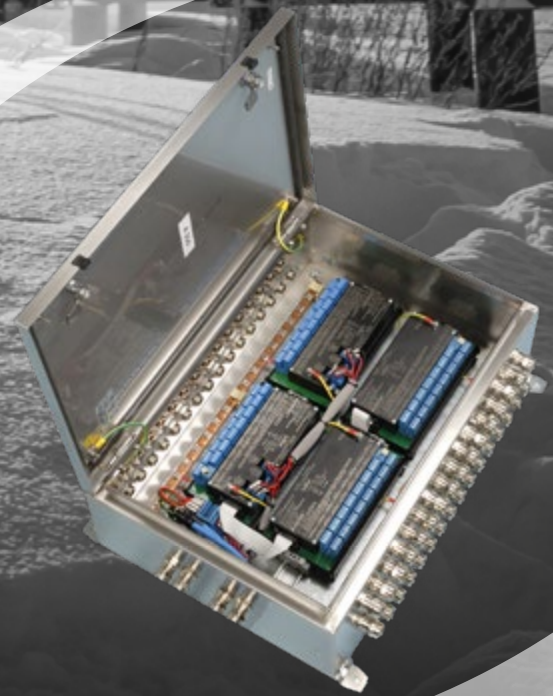
FDT Container compatible with Hart Maintenance Software

- 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

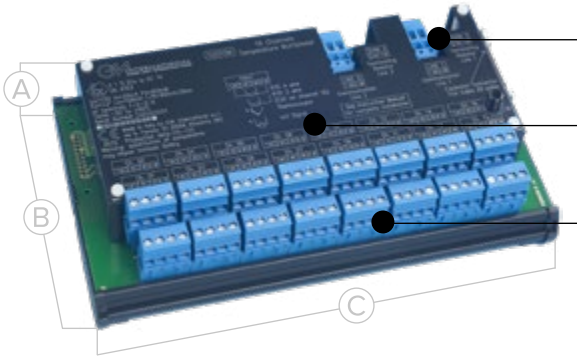
D2000 temperature multiplexer has been designed specifically for temperature measurements in hazardous location; taking full advantage of the low power requirements inherent of temperature measurement.
Field units do not require separate power supply nor certified enclosure.



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

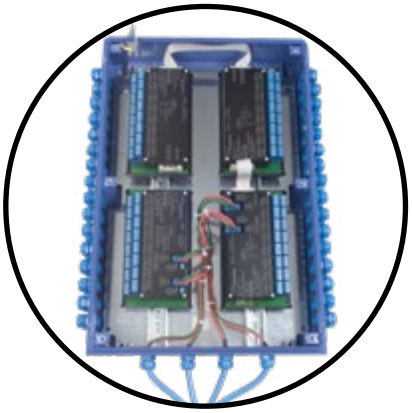


Gateway/power supply connectors

Laser engraving on entire enclosure and terminal blocks

Field extractable terminal blocks

A 78 mm
B 127 mm
C 220 mm



Installation example

Multiplexer Advantages

Cost and Installation Savings

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

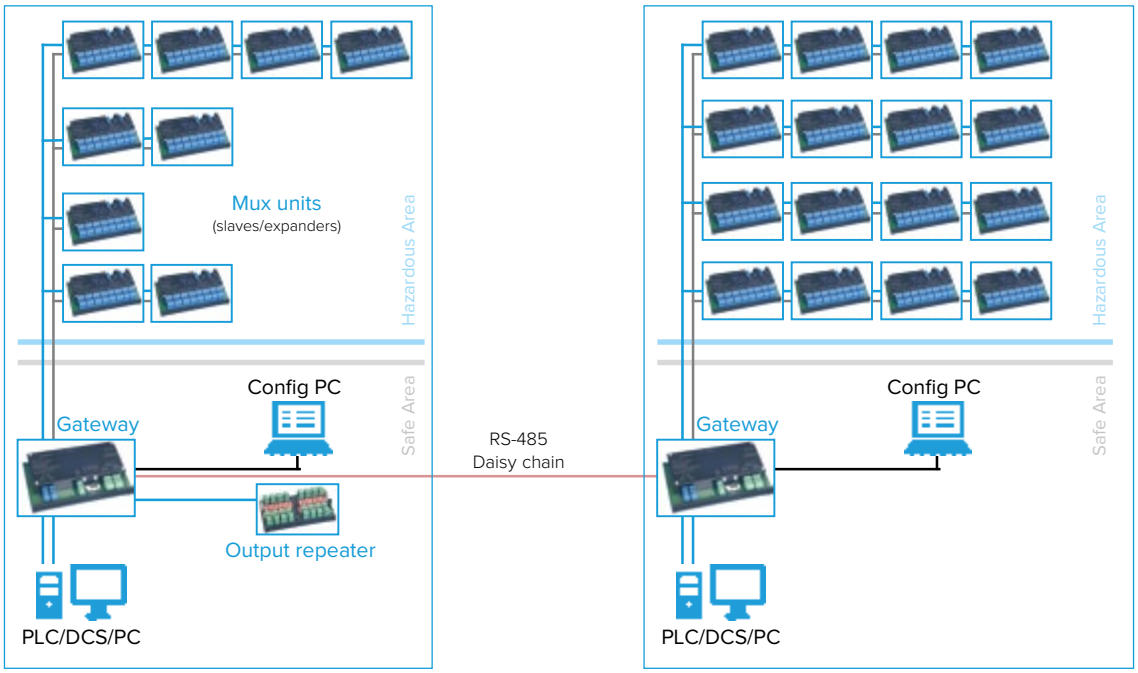
D2010M - D2011M
Analog/temperature multiplexer unit

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.

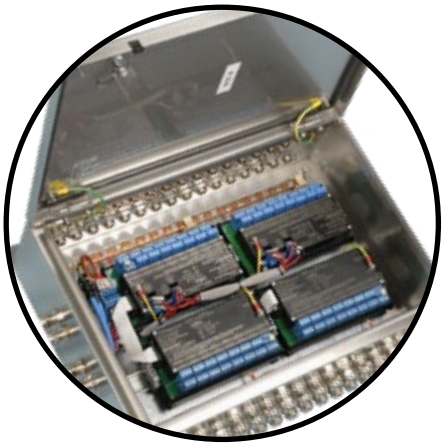


Multiplexer: The Only Solution

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.

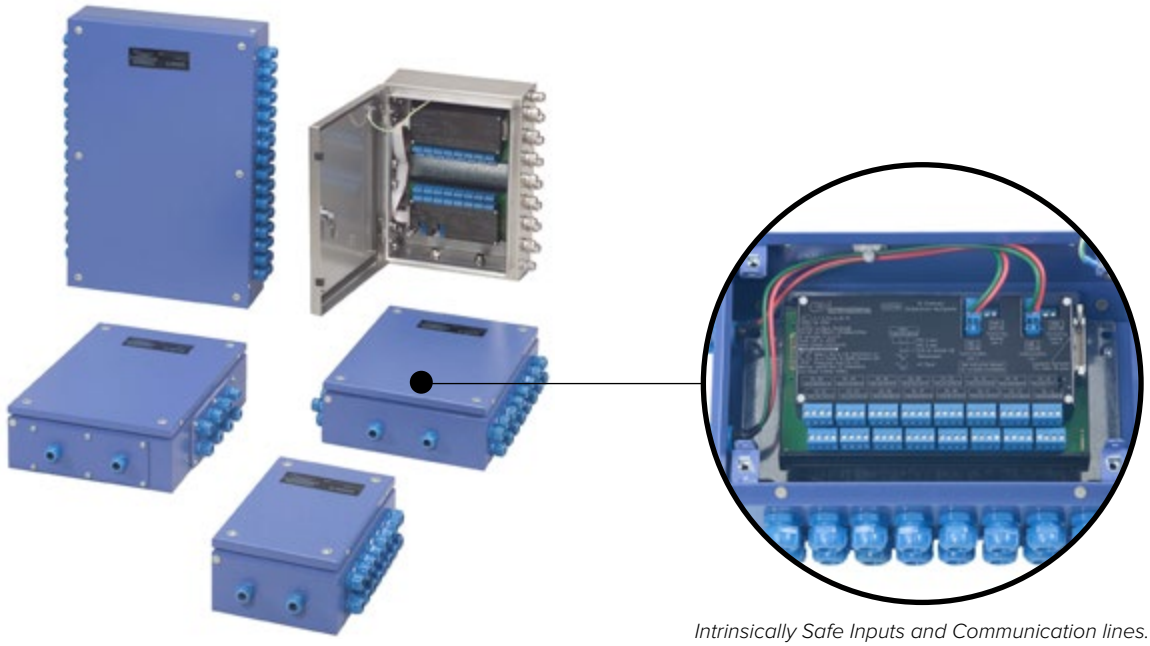
Customized Solutions Available



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.

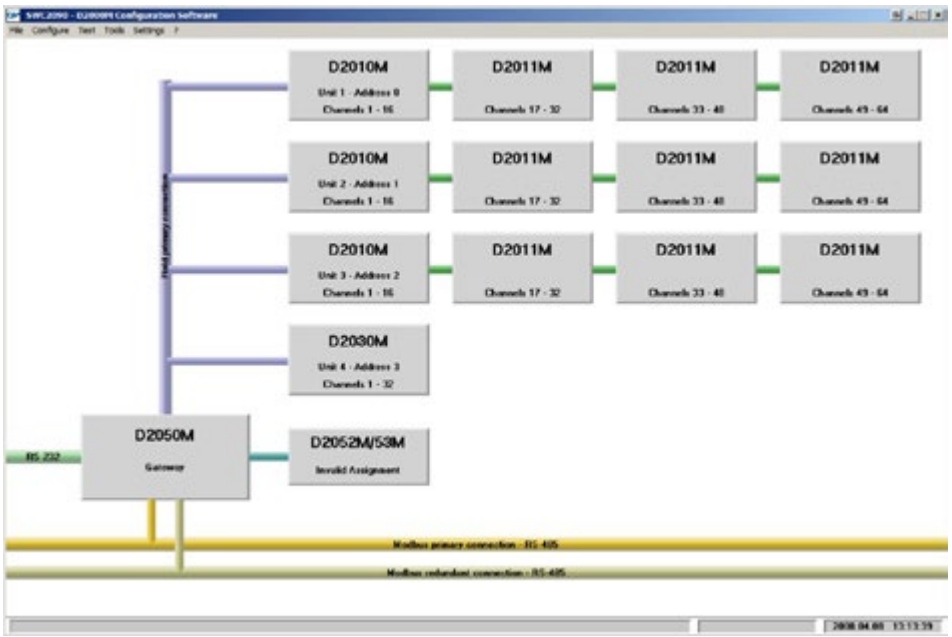
Software Configuration

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

Easy configuration



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

SIL 3 Power Supplies

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 < Output Voltage < 20Vdc
  - Output Voltage > 30Vdc

SIL marking

Reasons for Ideal OR-ing Diode

Availability & Safety

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

Laser engraving (to provide accurate, safe and permanent marking of parameters and instructions), LED Indicator and output voltage trimmer

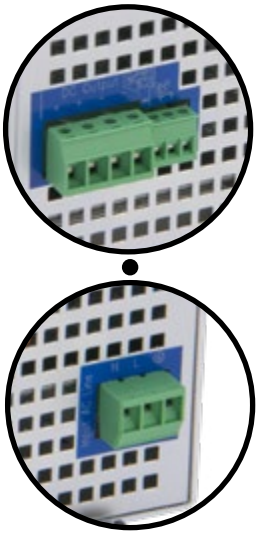
output terminals

Fault & load current sharing terminals

Input terminals

DIN-rail mounting clips

Ⓐ 124,5 mm
Ⓑ PSD1220: 111 mm
PSD1220-098: 124 mm
Ⓒ 183 mm



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

20 A, 24 V SIL 3 Power Supply

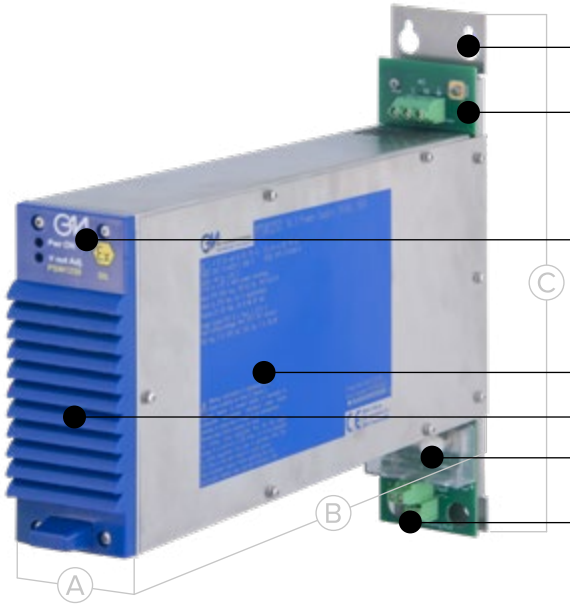
PSD1220 is the latest addition to the GM International power supply line, offering an innovative 20 Amps DIN-rail unit.
It supersedes predecessor model PSD1210 doubling the output capacity, yet retaining the exact same dimensions, terminal blocks and mounting arrangements.
Compact in size, yet fully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

Compact and Versatile

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



- Wall-mounting plate
- Input terminals
- LED indicator and output voltage trimmer
- Laser engraving to provide accurate, safe and permanent marking of parameters and instructions
- Air extractor for brushless fans
- Output terminals
- Fault & load current sharing terminals

Ⓐ 60,7 mm
Ⓑ 362,53mm
Ⓒ 261 mm

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.

High Performance

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

Redundant AC connection

Wall mounting bracket

LCD color display

Laser engraving label and instructions

A 7” rack: 178 mm
9” rack: 238 mm
19” rack: 482mm

B 360 mm

C 237 mm

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

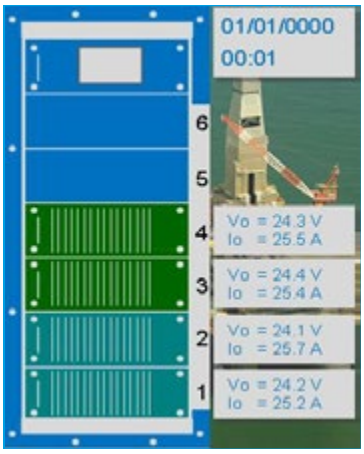
Short circuit proof

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.

Efficient and reliable power supply



PSO1250 diagnostic module display

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

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)

Zone 2 HOT swapping

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

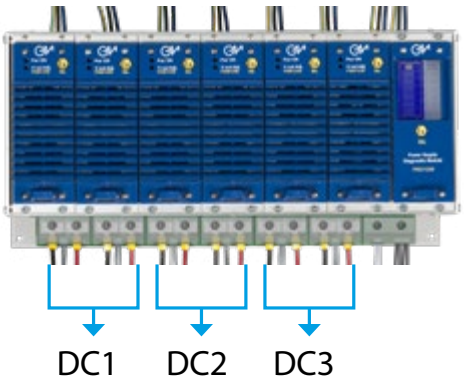
PSS1250 - 7" RACK

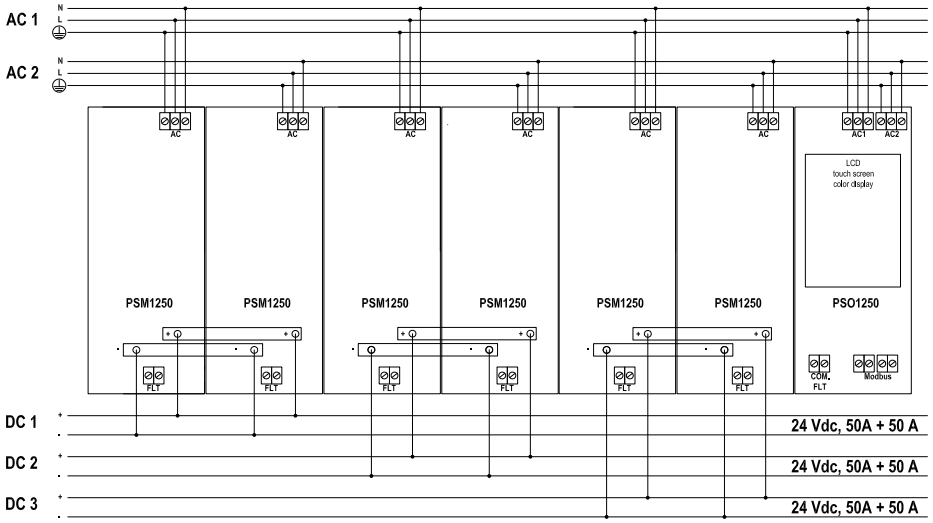
- Nominal input: 110 ÷ 240 Vac ±10% (48 ÷ 62 Hz)
- Adjustable output: 21 ÷ 28 Vdc
- Max peak: 100 Amps at 24Vdc
- Nominally 50 Amps per rack
- 24 Vdc/100 A = 2400W (1200W x2)
- Under/over voltage alarm output
- Built-in over load protection and Short circuit proof
- SIL3 certification
- Redundant fan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

PSS1250 Configuration Examples

PSS1250-HS-7-3-D

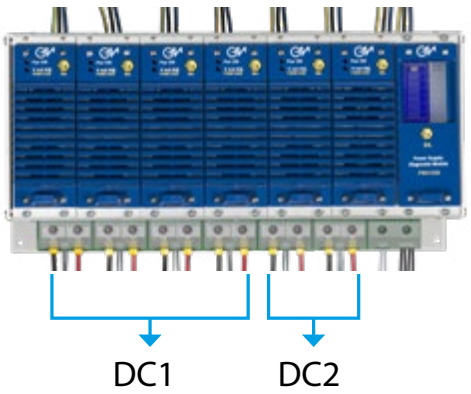
Two AC supplies, three redundant 50 A Outputs, PSO1250 overview module.
Three groups of two paralleled modules each.

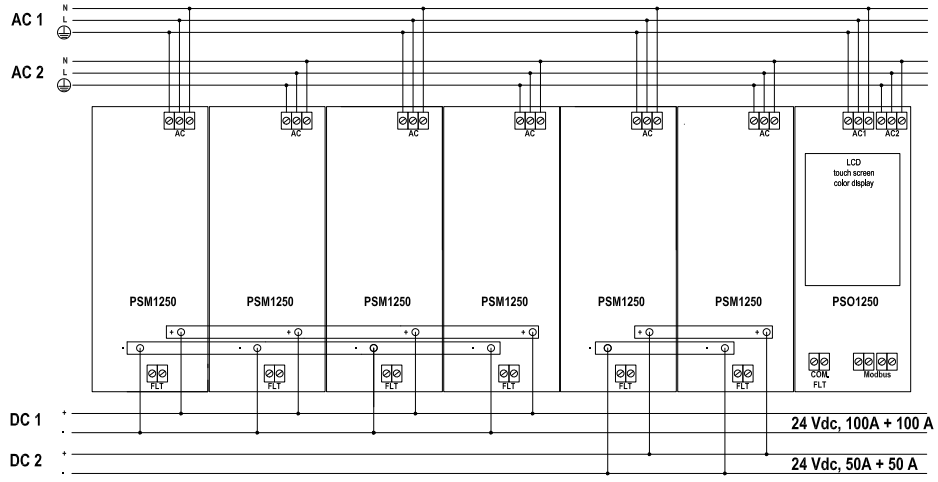




PSS1250-HS-7-2-D

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

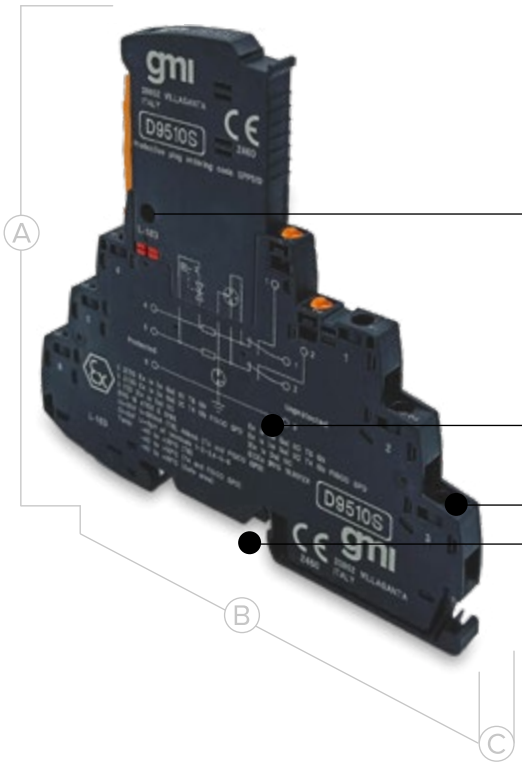
08

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



Ⓐ 105,8 mm
Ⓑ 100 mm
Ⓒ 6,2 mm

Universal DIN-rail Surge Arrester

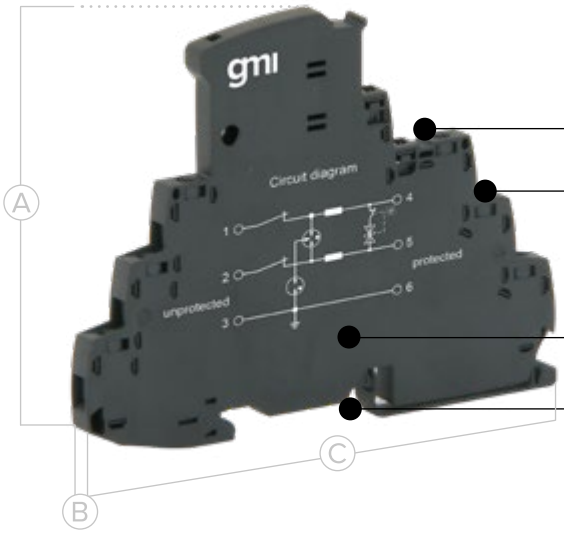
D9510S modules provide two-stage, **SIL 3**, surge protection for floating I/O signals for measurement in control and safety systems.
Its slim width of **only 6 mm** allows for easy fitting into any marshalling or distribution cabinet saving space and installation costs.
Disconnect knife on both signal paths are featured for easy testing of the loop.

Only 6,2 mm wide: asy fitting

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

D9400/D9500 Structure



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

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

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.

Local & Remote Alarm Indication

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

Notes

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 Resistence	●	●	3	12,5 mm	LFT*
D5039	1 / 2	●	Dry contact/Namur	Solid state Relay with Resistence	●	●	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
				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 Trasparency

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

X1 SERIES

ANALOG INPUT

Models	N. Ch.	L.M.	Input		Output		Smart	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
X1-IS-AI-01-S	1	●	●	●	-	●	●	-	3	10 mm	HART - LFT* - Suitable for digital acquisition via Gateway
X1-IS-AI-02-S	1	●	●	●	-	●	●	-	2	10 mm	HART - LFT* - Suitable for digital acquisition via Gateway

ANALOG OUTPUT

Models	N. Ch.	L.M.	Input	Output	Smart	Alarm	SIL	Size	Note
X1-IS-AO-01-S	1	●	4-20 mA	4-20 mA	●	-	3	10 mm	HART - LFT*
X1-IS-AO-02-S	1	●	4-20 mA	4-20 mA	●	-	2	10 mm	HART - LFT*

DIGITAL INPUT

Models	N. Ch.	L.M.	Input	Output	Smart	Alarm	SIL	Size	Note
X1-IS-DI-01-S	1	●	Dry contact/Namur	Transistor Output	-	-	3	10 mm	
X1-IS-DI-02-S	1	●	Dry contact/Namur	Transistor Output	●	-	2	10 mm	Suitable for digital acquisition via Gateway
X1-IS-DI-03-S	1	●	Dry contact/Namur	Resistance Output	-	-	3	10 mm	LFT*
X1-IS-DI-04-S	1	●	Dry contact/Namur	Resistance Output	-	-	2	10 mm	LFT*

DIGITAL OUTPUT

Models	N. Ch.	L.M.	Input	Output	Smart	Alarm	SIL	Size	Note
X1-IS-DO-01-S	1	-	24 Vdc	Solenoid valve /LED	●	-	3	10 mm	TB/Bus powered
X1-IS-DO-02-S	1	●	24 Vdc	Solenoid valve /LED	●	-	3	10 mm	TB/Bus powered

TEMPERATURE

Models	N. Ch.	L.M.	Input	Output		Smart	Alarm	SIL	Size	Note
				Source	Sink					
X1-IS-TMP-01-S	1	●	TC, mV, RTD, Ω, Pot	-	●	●	●	2	10 mm	Suitable for digital acquisition via Gateway

UNIVERSAL

Models	N. Ch.	L.M.	Input		Output		Smart	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
X1-IS-UNI-01-S	1	●	Universal (AI-AO-DI-DO)		-	●	●	-	2/3	10 mm	LFT* - Suitable for digital acquisition via Gateway

*LFT=Line Fault Trasparency

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	-	-	-	-	

X1 SERIES

SAFETY RELAY INPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	Smart	Pulse test	Diagnostics	SIL	Note
X1-NIS-RLI-01-S	1	NE	NE	NO	0 - 250 Vac/Vdc	50 mA	-	-	-	3	

*LFT=Line Fault Trasparency

SOLID STATE RELAY OUTPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	Smart	Pulse test	Diagnostics	SIL	Note
X1-NIS-RLO/SS-01-S	1	NE	NE	NO	24 Vdc	2 A	-	●	-	3	
X1-NIS-RLO/SS-02-S	1	NE	NE	NO	24 Vdc	2 A	-	●	-	2	
X1-NIS-RLO/SS-03-S	1	ND/F&G	ND/F&G	NO	24 Vdc	2 A	-	●	-	3	
X1-NIS-RLO/SS-04-S	1	NE	NE	NO	24 Vdc	2 A	●	●	●	3	LFT - configurable diagnostic
X1-NIS-RLO/SS-05-S	1	ND/F&G	ND/F&G	NO	24 Vdc	2 A	●	●	●	3	LFT - configurable diagnostic

ELECTRO-MAGNETIC RELAY OUTPUT

Model	N. Ch.	Relay	Load	NO/NC	Coil/Input	Contact Rating	Smart	Pulse test	Diagnostics	SIL	Note
X1-NIS-RLO/EM-01-S	1	NE	NE	NO	24 Vdc	2 A	-	●	-	3	
X1-NIS-RLO/EM-02-S	1	NE	NE	NO	24 Vdc	2 A	-	●	-	2	
X1-NIS-RLO/EM-03-S	1	ND/F&G	ND/F&G	NO	24 Vdc	2 A	-	●	-	3	
X1-NIS-RLO/EM-04-S	1	NE	NE	NO	24 Vdc	2 A	●	●	●	3	LFT - configurable diagnostic
X1-NIS-RLO/EM-05-S	1	ND/F&G	ND/F&G	NO	24 Vdc	2 A	●	●	●	3	LFT - configurable diagnostic

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

TEMPERATURE

Models	N. Ch.	L.M.	Input	Output		Duplicator	Alarm	SIL	Size	Note
				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

X1 SERIES

ANALOG INPUT

Models	N. Ch.	L.M.	Input		Output		Smart	Alarm	SIL	Size	Note
			Active	*Passive*	*Source*	*Sink*					
X1-NIS-AI-01-S	1	●	●	●	-	●	●	-	3	10 mm	HART - LFT* - Suitable for digital acquisition via Gateway
X1-NIS-AI-02-S	1	●	●	●	-	●	●	-	2	10 mm	HART - LFT* - Suitable for digital acquisition via Gateway

ANALOG OUTPUT

Models	N. Ch.	L.M.	Input	Output	Smart	Alarm	SIL	Size	Note
X1-NIS-AO-01-S	1	●	4-20 mA	4-20 mA	●	-	3	10 mm	HART - LFT*
X1-NIS-AO-02-S	1	●	4-20 mA	4-20 mA	●	-	2	10 mm	HART - LFT*

DIGITAL INPUT

Models	N. Ch.	L.M.	Input	Output	Smart	Alarm	SIL	Size	Note
X1-NIS-DI-01-S	1	●	Dry contact/Namur	Transistor Output	-	-	3	10 mm	
X1-NIS-DI-02-S	1	●	Dry contact/Namur	Transistor Output	●	-	2	10 mm	Suitable for digital acquisition via Gateway
X1-NIS-DI-03-S	1	●	Dry contact/Namur	Resistence Output	-	-	3	10 mm	LFT*
X1-NIS-DI-04-S	1	●	Dry contact/Namur	Resistence Output	-	-	2	10 mm	LFT*

DIGITAL OUTPUT

Models	N. Ch.	L.M.	Input	Output	Smart	Alarm	SIL	Size	Note
X1-NIS-DO-01-S	1	-	24 Vdc	Solenoid valve /LED	●	-	3	10 mm	TB/Bus powered max output 100 mA
X1-NIS-DO-02-S	1	●	24 Vdc	Solenoid valve /LED	●	-	3	10 mm	TB/Bus powered max output 100 mA

TEMPERATURE

Models	N. Ch.	L.M.	Input	Output		Smart	Alarm	SIL	Size	Note
				Source	Sink					
X1-NIS-TMP-01-S	1	●	TC, mV, RTD, Ω, Pot	-	●	●	●	2	10 mm	Suitable for digital acquisition via Gateway

UNIVERSAL

Models	N. Ch.	L.M.	Input		Output		Smart	Alarm	SIL	Size	Note
			Active	Passive	Source	Sink					
X1-NIS-UNI-01-S	1	●	Universal (AI-AO-DI-DO)		-	●	●	-	2/3	10 mm	LFT* - Suitable for digital acquisition via Gateway

*LFT=Line Fault Trasparency

Pass-Through

D6000 SERIES

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 overcurred 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 mouting

X1 SERIES

Models	N. Ch.	L.M.	Field	SIL	Size	Note
X1-NIS-PAS-01-S	1	-	Pass-Through	3	10 mm	Suitable for 3/4 wires
X1-NIS-PAS-02-S	1	-	Pass-Through	-	10 mm	
X1-NIS-PAS-03-S	1	-	Pass-Through	3	10 mm	Suitable for 3/4 wires

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

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

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

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

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
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

X1 SERIES

Models	N. Ch.	N. of Modules	Signal Type	System	Card Detail	Size	Note
X1-TB-08-GMI-01	8	8	Universal	patch cables	any	143 mm	Gateway/HART MUX connector
X1-TB-16-GMI-01	16	16	Universal	patch cables	any	143 mm	Gateway/HART MUX connector
X1-TB-16-GMI-02	16	16	Universal	patch cables	any	143 mm	Gateway/HART MUX connector - only for digital acquisition

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.

Notes

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 5th 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).

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.

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.

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.

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

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.

Notes

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