Our products,
Our commitment
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 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 effectiveness of the safety layer.
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.
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 CTU and Ukraine), NEPSI (China), PESO (India), TIIS (Japan), INMETRO (Brazil). 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

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Intrinsically Safe Isolators
D5000 Series

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)
- **Totally independent Dual Ch.**: Dual Power Supply
- **Easier Troubleshooting**: Status led indication
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

ENCLOSURE CHARACTERISTICS

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

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.

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; are just some of the factors that guarantee a product with:

- High signal transfer accuracy and repeatability
- Very low heat dissipation
- High reliability; SIL certified for 20 years useful life time

High Performance

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.

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

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

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

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.

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**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](http://www.gminternational.com)

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**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](http://www.gminternational.com) to discover more about D5000 Series of our Intrinsically Safe Isolators.
Intrinsically Safe Isolators
D1000 Series

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

**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, 50-400 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

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.

Enhanced Power Bus Mounting

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
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 Adapters**

**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. The SWC1090 can also be downloaded from our website.

**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.

Visit [www.gminternational.com](http://www.gminternational.com) to discover more about D1000 Series of our Intrinsically Safe Isolators.
Safety Relays

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.

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

Line & Load Monitoring

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.

GM INTERNATIONAL PATENTED DIAGNOSTICS FETATURES

- 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

Full diagnostics available in all contacts conditions: Open or Close

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

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.
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

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

Safety and Availability combined

Compatible to any Line Monitored DO card

Visit [www.gminternational.com](http://www.gminternational.com) to discover more about Safety Relays.
GM International new 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 2**: 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

ENCLOSURE CHARACTERISTICS

- High channel density (3/6/12 mm per channel) resulting from innovative circuit design using advanced surface mount components
- Single, dual or quad channel models
- Plug-in screw terminal blocks to secure wires up to 2.5 mm²
- Configuration components are easily accessed by removing the side cover or via connector front panel

LONGER LIFETIME

- 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

WIDE FUNCTIONALITY

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.
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

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

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

**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](http://www.gminternational.com)

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

High availability systems employ power supply modules connected in parallel to achieve redundancy and enhance system reliability; typically using an 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

<table>
<thead>
<tr>
<th>Paralleling Diodes</th>
<th>Schottky Diode</th>
<th>Active Ideal Diode (AID)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equivalent resistance</td>
<td>16 mΩ</td>
<td>1.2 mΩ</td>
</tr>
<tr>
<td>Voltage drop at 50 A</td>
<td>0.8 V</td>
<td>0.06 V</td>
</tr>
<tr>
<td>Power dissipation at 50 A</td>
<td>40 W</td>
<td>3 W</td>
</tr>
<tr>
<td>Efficiency at 1200 W</td>
<td>96.77 %</td>
<td>99.75 %</td>
</tr>
<tr>
<td>Heat sink</td>
<td>Large</td>
<td>None</td>
</tr>
<tr>
<td>Voltage switchovers</td>
<td>With oscillations</td>
<td>Smooth, no oscillations</td>
</tr>
</tbody>
</table>
PSD1220
Structure

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.

20 A, 24 V
SIL 3
Power Supply

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

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.

50 A, 24 V SIL 3 Power Supply

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

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

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

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

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
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 5 Km
- **Higher Reliability**: Certified -40° to +60° C
- **Avoid Fault Propagation**: Channel to channel isolation
- **Resilience to Surges**: 500 V Isolation
- **Improved Measuring precision**: 18 Bits accuracy
- **Faster Reaction time**: from 0.4 sec for 64 Ch. to 1.6 sec for 256 Ch.
- **Faster Data Collection**: 112 KBaud Communication Speed
- **Reduced Bulk Power Supply**: Separate power supply not required
- **Harsh environment resistance**: G3 conformal coating
- **Easier Troubleshooting**: Status led indication
Structure

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

Multiplexer Advantages

Cost and Installation Savings
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.

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.

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
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 36V (Both I.S. And N.I.S.)
- **Increases the Discharge capacity and reduces 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
- **Local & remote Faster maintenance reaction time**: Versions available with Fault Indication
- **Simple testing and documentation, reduced downtime**: Available with Hot Swap Plug module
- **Safe disconnection and signaling in case of overload**
D9024S Structure

D9024S 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 6mm 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.

Universal Din Rail Surge Arrester

FEATUES
- 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: Easy fitting
D9400/D9500
Structure

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
D9324S Structure

Screw-on S.S. Surge Arrester

D9324S provides surge protection for floating I/O signal circuit in a screw-on module. Ex-d certified and with IP67 protection for sensor heads; connection 1/4” NPT.

Suitable for installation onto explosion proof enclosures for a wide range of applications.

FEATURES

- **SIL 3** according to IEC 61508:2010 Ed.2
- Input from Zone 0 (Zone 20), installation in Zone 1 and 2
- Protection of a floating double wire in intrinsically safe circuits
- Suitable for explosion proof enclosures
- HART compatible
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
- **Higher Reliability In & Outdoor**: 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
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 and above (PACTwareConsortium)
  - FDT Container (M&M)
  - E+H Fieldcare (Endress + Hauser)
  - Field Mate (Yokogawa)
  - PRM (Yokogawa)
  - FDM (Honeywell)
  - ValveLink (Emerson)
  - ...
Termination Boards
Standard and customized

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
- **Flexibility**: 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

Common fault output signal
Diagnostic signal for power supply
Supply line 1
Supply line 2
Power ON LEDs 1 - 2
Fault signaling LEDs
Supply & Fault logic
Spare fuse
Space for board tag

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.

Universal Termination Boards

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
Field Indicators
T3000 Series

T3010S offers simple and effective process variable read-out in Hazardous Locations. Loop powered, 4-20 mA unit with less than 1 V voltage drop designed to display the process variables in any engineering units between -19999 to +19999. Clear 20mm height, 7-segments LCD display blinking to indicate over or under-range conditions.

A protected slot to insert the measured engineering unit label is provided, after the last digit, for easy identification. Loop tag indication can be also provided.

The indicator is housed in a compact IP 66 enclosure for installation in the field and can be mounted on flat surface, front panel or 2” pipe or post.

STRENGTHS

- **Higher Visibility**: Large LCD Display, 20 mm high
- **Increased applicability**: Low voltage drop (<1 V)
- **Easier Maintenance**: IP66 Enclosure with 2 chambers
- **Wall, Pipe-Post, or Panel mounting**
- **Simplified Installation**: Field configurable
- **Improved Reliability**: Under and Over range detection
- **Easier Identification**: Protected slot available for engineering value label
- **Hazardous and Safe Area Versions Available**
Field Indicators

Structure

**4 ½ Digit Loop Powered Indicator**

T3010S units can be connected in series to a 4-20 mA loop (figure A) or can be driven from Safe Area to provide local indication in Hazardous Areas up to Zone 0 / Div. 1 (figure B).

In both cases, the unit must be protected by a suitable intrinsically safe barrier. Please check data sheet for further information.
# Product List

## I.S. Barriers

### D5000 SERIES

#### ANALOG INPUT

<table>
<thead>
<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>L.M.</th>
<th>Input</th>
<th>Output</th>
<th>Duplicator</th>
<th>Alarm</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>D5011</td>
<td>1/2</td>
<td>-</td>
<td>Active</td>
<td>Passive</td>
<td>Source</td>
<td>Sink</td>
<td>-</td>
<td>3</td>
<td>12,5 mm</td>
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<tr>
<td>D5014</td>
<td>1/2</td>
<td>-</td>
<td>Dry contact/Namur</td>
<td>Relay</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>12,5 mm</td>
<td>HART</td>
</tr>
<tr>
<td>D5015</td>
<td>1/2</td>
<td>-</td>
<td>Dry contact/Namur</td>
<td>Relay</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>12,5 mm</td>
<td>HART</td>
</tr>
<tr>
<td>D5212Q</td>
<td>4</td>
<td>-</td>
<td>TC, mV, RTD, Ω, Pot</td>
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<td>-</td>
<td>2</td>
<td>22,5 mm</td>
<td>Modbus</td>
<td></td>
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<tr>
<td>D5254S</td>
<td>1</td>
<td>-</td>
<td>TC, mV, RTD, Ω, Pot</td>
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<td>-</td>
<td>2</td>
<td>22,5 mm</td>
<td>Modbus</td>
<td></td>
</tr>
<tr>
<td>D5072</td>
<td>1/2</td>
<td>-</td>
<td>TC, mV, RTD, Ω, Pot</td>
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<td>-</td>
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<td>12,5 mm</td>
<td>Modbus</td>
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<tr>
<td>D50725-087</td>
<td>1</td>
<td>-</td>
<td>2-3-4 wire RTD</td>
<td>2-3-4 wire RTD</td>
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<td>2</td>
<td>12,5 mm</td>
<td>RTD to RTD</td>
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<tr>
<td>D5072-096</td>
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<td>-</td>
<td>TC, mV</td>
<td>mV</td>
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<td>2</td>
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<td>mV to mV</td>
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<td>D5273S</td>
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<td>-</td>
<td>TC, mV, RTD, Ω, Pot</td>
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<td>-</td>
<td>2</td>
<td>22,5 mm</td>
<td>Modbus</td>
<td></td>
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</table>

#### ANALOG OUTPUT

<table>
<thead>
<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>L.M.</th>
<th>Input</th>
<th>Output</th>
<th>Duplicator</th>
<th>Alarm</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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<tbody>
<tr>
<td>D5020</td>
<td>1/2</td>
<td>-</td>
<td>4-20 mA</td>
<td>4-20 mA</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>12,5 mm</td>
<td>HART</td>
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#### DIGITAL INPUT

<table>
<thead>
<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>L.M.</th>
<th>Input</th>
<th>Output</th>
<th>Duplicator</th>
<th>Alarm</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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<td>Dry contact/Namur</td>
<td>Relay</td>
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<td>3</td>
<td>12,5 mm</td>
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<tr>
<td>D5031</td>
<td>1/2</td>
<td>-</td>
<td>Dry contact/Namur</td>
<td>Voltage free contact</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>12,5 mm</td>
<td></td>
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<tr>
<td>D5032</td>
<td>1/2</td>
<td>-</td>
<td>Dry contact/Namur</td>
<td>Relay</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>12,5 mm</td>
<td>Only for TB</td>
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<tr>
<td>D5034</td>
<td>1/2</td>
<td>-</td>
<td>Namur</td>
<td>Namur</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>12,5 mm</td>
<td>Transparent for Namur</td>
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<td>D5036</td>
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<td>-</td>
<td>Dry contact/Namur</td>
<td>Relay</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>12,5 mm</td>
<td>No G3 Coating</td>
</tr>
<tr>
<td>D5037</td>
<td>1/2</td>
<td>-</td>
<td>Dry contact/Namur</td>
<td>Voltage free contact</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>12,5 mm</td>
<td>No G3 Coating</td>
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<tr>
<td>D5231E</td>
<td>8</td>
<td>-</td>
<td>Dry contact/Namur</td>
<td>Solid State Relay</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>22,5 mm</td>
<td>Logical out func. + Modbus</td>
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</tbody>
</table>

#### DIGITAL OUTPUT

<table>
<thead>
<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>L.M.</th>
<th>Input</th>
<th>Output</th>
<th>Power supply</th>
<th>Alarm</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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<tbody>
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<td>D5040</td>
<td>1/2</td>
<td>-</td>
<td>24 Vdc</td>
<td>Solenoid valve / LED</td>
<td>Loop powered</td>
<td>-</td>
<td>3</td>
<td>12,5 mm</td>
<td>2..4 Field Selectable Out</td>
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<tr>
<td>D5048S</td>
<td>1</td>
<td>-</td>
<td>24 Vdc</td>
<td>Solenoid valve / LED</td>
<td>Loop powered</td>
<td>-</td>
<td>3</td>
<td>12,5 mm</td>
<td>1..3 Field Selectable Out</td>
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<tr>
<td>D5049S</td>
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<td>-</td>
<td>24 Vdc/Dry contact</td>
<td>Solenoid valve / LED</td>
<td>Bus powered</td>
<td>-</td>
<td>3</td>
<td>12,5 mm</td>
<td>1..3 Field Selectable Out</td>
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<tr>
<td>D5240T</td>
<td>3</td>
<td>-</td>
<td>24 Vdc/Dry contact</td>
<td>Solenoid valve / LED</td>
<td>Bus powered</td>
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<td>2</td>
<td>22,5 mm</td>
<td>3..9 Field Selectable Out</td>
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<td>D5244</td>
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<td>24 Vdc</td>
<td>Relay</td>
<td>Loop Powered</td>
<td>-</td>
<td>2</td>
<td>22,5 mm</td>
<td>Voltage Free Relay Out</td>
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### OTHERS

<table>
<thead>
<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>L.M.</th>
<th>Input</th>
<th>Output</th>
<th>Power supply</th>
<th>Alarm</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>D5062S</td>
<td>1</td>
<td>-</td>
<td>Vibration sensor</td>
<td>0 to -20 V</td>
<td>Bus powered</td>
<td>-</td>
<td>2</td>
<td>12.5 mm</td>
<td></td>
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<tr>
<td>D5093</td>
<td>1/2</td>
<td>-</td>
<td>24-220 Vdc/Vac</td>
<td>Voltage free contact</td>
<td>Loop Powered</td>
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<td>3</td>
<td>12.5 mm</td>
<td>NIS Digital input module</td>
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<td>D5263S</td>
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<td>-</td>
<td>Strain gauges</td>
<td>Strain gauges</td>
<td>Bus powered</td>
<td>-</td>
<td>2</td>
<td>22.5 mm</td>
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<td>D5264S</td>
<td>1</td>
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### D1000 SERIES

#### ANALOG INPUT

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<th>Input</th>
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#### DIGITAL INPUT

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### OTHERS

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<td>D5290S-091</td>
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<td>NC</td>
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<td>-</td>
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---

**D1060**

**D1061**

**D1062**

**D1063**

**D1064**

**D1080D**

**D1081D**

**D1100D**

---

**Model N. Ch. L. M. Input Output Power supply Alarm Size Note**

<table>
<thead>
<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>L. M.</th>
<th>Input</th>
<th>Output</th>
<th>Power supply</th>
<th>Alarm</th>
<th>Size</th>
<th>Note</th>
</tr>
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<tbody>
<tr>
<td>D1092</td>
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<td>NO</td>
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<tr>
<td>D1092-069</td>
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<td>NO/NC</td>
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<td>3 A</td>
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<td>NO</td>
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<td>-</td>
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## Galvanic Isolators

### ANALOG INPUT

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<thead>
<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>L.M.</th>
<th>Input</th>
<th>Output</th>
<th>Duplicator</th>
<th>Alarm</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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<tbody>
<tr>
<td>D6011</td>
<td>1 / 2</td>
<td>-</td>
<td>-</td>
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<tr>
<td>D6014</td>
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<td>D6254S</td>
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<tr>
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<td>-</td>
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<tr>
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<td>-</td>
<td>TC, mV</td>
<td>mV</td>
<td>-</td>
<td>2</td>
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<td>-</td>
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<td>-</td>
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<td>-</td>
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### ANALOG OUTPUT

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<th>N. Ch.</th>
<th>L.M.</th>
<th>Input</th>
<th>Output</th>
<th>Duplicator</th>
<th>Alarm</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>D6020</td>
<td>1 / 2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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### DIGITAL INPUT

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<th>Models</th>
<th>N. Ch.</th>
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<th>Input</th>
<th>Output</th>
<th>Duplicator</th>
<th>Alarm</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>D6030</td>
<td>1 / 2</td>
<td>-</td>
<td>Dry contact/Namur</td>
<td>Relay</td>
<td>-</td>
<td>2</td>
<td>12.5 mm</td>
<td>Only for TB</td>
<td></td>
</tr>
<tr>
<td>D6031</td>
<td>1 / 2</td>
<td>-</td>
<td>Dry contact/Namur</td>
<td>Voltage free contact</td>
<td>-</td>
<td>2</td>
<td>12.5 mm</td>
<td>Only for TB</td>
<td></td>
</tr>
<tr>
<td>D6032</td>
<td>1 / 2</td>
<td>-</td>
<td>Dry contact/Namur</td>
<td>Relay</td>
<td>-</td>
<td>2</td>
<td>12.5 mm</td>
<td>No G3 Coating</td>
<td></td>
</tr>
<tr>
<td>D6034</td>
<td>1 / 2</td>
<td>-</td>
<td>Namur</td>
<td>Namur</td>
<td>-</td>
<td>2</td>
<td>12.5 mm</td>
<td>Transparent for Namur</td>
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<tr>
<td>D6036</td>
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<td>Dry contact/Namur</td>
<td>Relay</td>
<td>-</td>
<td>2</td>
<td>12.5 mm</td>
<td>No G3 Coating</td>
<td></td>
</tr>
<tr>
<td>D6037</td>
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<td>Dry contact/Namur</td>
<td>Voltage free contact</td>
<td>-</td>
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<td>12.5 mm</td>
<td>No G3 Coating</td>
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<tr>
<td>D6231E</td>
<td>8</td>
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<td>Dry contact/Namur</td>
<td>Solid State Relay</td>
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<td>22.5 mm</td>
<td>Logical out func. + Modbus</td>
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### OTHERS

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<th>Models</th>
<th>N. Ch.</th>
<th>L.M.</th>
<th>Input</th>
<th>Output</th>
<th>Power supply</th>
<th>Alarm</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>D6263S</td>
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<td>-</td>
<td>Strain gauges</td>
<td>Strain gauges</td>
<td>Bus powered</td>
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<td>2</td>
<td>22.5 mm</td>
<td>Modbus</td>
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<tr>
<td>D6264S</td>
<td>1</td>
<td>-</td>
<td>Strain gauges</td>
<td>4-20 mA</td>
<td>Bus powered</td>
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<td>2</td>
<td>22.5 mm</td>
<td>Modbus</td>
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### Surge Arresters

<table>
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<th>Models</th>
<th>N. Ch.</th>
<th>N. Wires</th>
<th>Signal Type</th>
<th>Removable cartridge</th>
<th>Fault Indication</th>
<th>Mounting</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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<tbody>
<tr>
<td>D9024S</td>
<td>1</td>
<td>2</td>
<td>24 Vdc AI, AO, DI, DO</td>
<td>-</td>
<td>-</td>
<td>DIN-Rail</td>
<td>3</td>
<td>6 mm</td>
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<tr>
<td>D9410S</td>
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<td>2</td>
<td>24 Vdc AI, AO, DI, DO</td>
<td>-</td>
<td>●</td>
<td>DIN-Rail</td>
<td>3</td>
<td>6 mm</td>
<td></td>
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<tr>
<td>D9420S</td>
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<td>3</td>
<td>Bus System</td>
<td>-</td>
<td>●</td>
<td>DIN-Rail</td>
<td>3</td>
<td>6 mm</td>
<td></td>
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<tr>
<td>D9510S</td>
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<td>2</td>
<td>24 Vdc AI, AO, DI, DO</td>
<td>●</td>
<td>●</td>
<td>DIN-Rail</td>
<td>3</td>
<td>6 mm</td>
<td></td>
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<tr>
<td>D9520S</td>
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<td>3</td>
<td>Bus System</td>
<td>●</td>
<td>●</td>
<td>DIN-Rail</td>
<td>3</td>
<td>6 mm</td>
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<tr>
<td>D9401S</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>DIN-Rail</td>
<td>3</td>
<td>6 mm</td>
<td>Remote Fault indicator Set</td>
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<tr>
<td>D9324S</td>
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<td>24 Vdc AI, AO, DI, DO</td>
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<td>-</td>
<td>1/2” NPT</td>
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<td>24 mm</td>
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### Multiplexer Systems

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

<table>
<thead>
<tr>
<th>Models</th>
<th>Output</th>
<th>Mounting</th>
<th>Fault Indication</th>
<th>SIL</th>
<th>Installation Area</th>
<th>Size</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSD1000</td>
<td>24 Vdc - 0.6 A</td>
<td>DIN-Rail</td>
<td>-</td>
<td>-</td>
<td>Safe or Zone 2</td>
<td>22,5 mm</td>
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<tr>
<td>PSD1000F</td>
<td>24 Vdc - 0.6 A</td>
<td>DIN-Rail</td>
<td>●</td>
<td>-</td>
<td>Safe or Zone 2</td>
<td>22,5 mm</td>
<td></td>
</tr>
<tr>
<td>PSD1001</td>
<td>15 Vdc - 20 mA</td>
<td>DIN-Rail</td>
<td>-</td>
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<td>Safe or Zone 2</td>
<td>22,5 mm</td>
<td>I.S. Device</td>
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<td>PSD1001C</td>
<td>13.5 Vdc - 100 mA</td>
<td>DIN-Rail</td>
<td>-</td>
<td>3</td>
<td>Safe or Zone 2</td>
<td>22,5 mm</td>
<td>I.S. Device</td>
</tr>
<tr>
<td>PSD5201</td>
<td>14.5 Vdc - 150 mA</td>
<td>DIN-Rail</td>
<td>-</td>
<td>3</td>
<td>Safe or Zone 2</td>
<td>22,5 mm</td>
<td>I.S. Device</td>
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<tr>
<td>PSD1220</td>
<td>24 Vdc - 20 A</td>
<td>DIN-Rail</td>
<td>●</td>
<td>3</td>
<td>Safe or Zone 2</td>
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<td>PSD1220-098</td>
<td>24 Vdc - 20 A</td>
<td>DIN-Rail</td>
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<td>Safe or Zone 2</td>
<td>183 mm</td>
<td>Replacement of PSD1210</td>
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<tr>
<td>PSW1250</td>
<td>24 Vdc - 50 A</td>
<td>Wall-Mount</td>
<td>●</td>
<td>3</td>
<td>Safe or Zone 2</td>
<td>61 mm</td>
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<tr>
<td>PSM1250</td>
<td>24 Vdc - 50 A</td>
<td>Wall-Mount</td>
<td>●</td>
<td>3</td>
<td>Safe or Zone 2</td>
<td>61 mm</td>
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</tr>
<tr>
<td>PSO1250</td>
<td>-</td>
<td>Wall-Mount</td>
<td>●</td>
<td>-</td>
<td>Safe or Zone 2</td>
<td>61 mm</td>
<td>Diagnostics module</td>
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<tr>
<td>PSS1250-HS</td>
<td>24 V - 300 A 48 V - 150 A</td>
<td>Wall-Mount</td>
<td>●</td>
<td>3</td>
<td>Safe or Zone 2</td>
<td>178 / 238 / 482 mm</td>
<td>Hot Swap, Various size available</td>
</tr>
<tr>
<td>PSS1250</td>
<td>24 V - 300 A 48 V - 150 A</td>
<td>Wall-Mount</td>
<td>●</td>
<td>3</td>
<td>Safe or Zone 2</td>
<td>178 / 238 / 482 mm</td>
<td>Various size available</td>
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</table>
HART Multiplexer

<table>
<thead>
<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>Signal Type</th>
<th>Function</th>
<th>SIL</th>
<th>Size</th>
<th>Note</th>
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<tbody>
<tr>
<td>5700</td>
<td>256</td>
<td>HART Signals</td>
<td>Master and Slave module</td>
<td>3</td>
<td>12.5 mm</td>
<td>From 1 to 256 Channels</td>
</tr>
<tr>
<td>TB-D5001-HRT-003</td>
<td>64</td>
<td>HART Signals</td>
<td>Flat cable TB</td>
<td>-</td>
<td>176 mm</td>
<td>For connection via GMI TB</td>
</tr>
<tr>
<td>TB-D5001-HRT-004</td>
<td>32</td>
<td>HART Signals</td>
<td>Hard terminals TB</td>
<td>-</td>
<td>218 mm</td>
<td>For direct connection to HART signal</td>
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Field Indicators

<table>
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<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>Input</th>
<th>Power Supply</th>
<th>IP Rating</th>
<th>Installation Area</th>
<th>Size</th>
<th>Note</th>
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<tbody>
<tr>
<td>T3010S</td>
<td>4.5</td>
<td>4 - 20 mA</td>
<td>Loop Powered</td>
<td>65</td>
<td>Hazardous</td>
<td>144 mm</td>
<td>Mounting Kit available</td>
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<tr>
<td>T3010S-NIS</td>
<td>4.5</td>
<td>4 - 20 mA</td>
<td>Loop Powered</td>
<td>65</td>
<td>Safe</td>
<td>144 mm</td>
<td>Mounting Kit available</td>
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NOTE
New products are always under development. For the most updated product list please refer to www.gminternational.com

Termination Boards

GMI BOARDS

<table>
<thead>
<tr>
<th>Models</th>
<th>N. Ch.</th>
<th>N. of Modules</th>
<th>Signal Type</th>
<th>System</th>
<th>Card Detail</th>
<th>Size</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB-D5008-GMI-001</td>
<td>8 / 16</td>
<td>8</td>
<td>Universal</td>
<td>patch cables</td>
<td>any</td>
<td>156 mm</td>
<td>HART connector</td>
</tr>
<tr>
<td>TB-D5008-GMI-002</td>
<td>8 / 16</td>
<td>8</td>
<td>AO</td>
<td>patch cables</td>
<td>any</td>
<td>166 mm</td>
<td>HART connector</td>
</tr>
<tr>
<td>TB-D5016-GMI-001</td>
<td>16 / 32</td>
<td>16</td>
<td>Universal</td>
<td>patch cables</td>
<td>any</td>
<td>300 mm</td>
<td>HART connector</td>
</tr>
<tr>
<td>TB-D5208-GMI-001</td>
<td>8 / 16</td>
<td>8</td>
<td>Universal</td>
<td>patch cables</td>
<td>any</td>
<td>230 mm</td>
<td>HART connector</td>
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</tbody>
</table>

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.
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.
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.

**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.