INSTRUCTION MANUAL

SIL 2 Switch / Proximity Detector Repeater, Open Collector Output DIN-Rail and Termination Board, Model D5231E

gmi
technology for safety

Characteristics

General Description:

The Switch/Proximity Detector Repeater type D5231E is a unit with eight independent channels suitable for applications requiring SIL 2 level (according to IEC 61508:2010) in safety related systems for high risk industries.

The unit can be configured for switch or proximity detector (EN60947-5-6 NAMUR), NO or NC input and for NO or NC floating solid-state relay (photo-MOS) isolated output compatible with logic circuits. Configuration is programmable from PC by the GM Pocket Portable Adapter PPC5092 via USB serial line and SWC5090 Configurator software.

Each channel enables a Safe Area load to be controlled by a switch, or a proximity detector, located in Hazardous Area.

Fault detection circuit (configurable by PC) is available for all proximity sensors and switches equipped with end of line resistors. In case of fault, when enabled it de-energizes the corresponding solid-state relay (photo-MOS) and turns the fault red LED on; when disabled the corresponding solid-state relay (photo-MOS) repeats the input line open or closed status as configured.

D5231E has eight inputs and eight independent outputs. Modbus RTU RS-485 output is available on Bus connector.

Mounting on standard DIN-Rail, with or without Power Bus, or on customized Termination Boards, in Safe Area / Non Hazardous Location or in Zone 2 / Class I, Division 2 or Class I, Zone 2.

Technical Data

Supply:

24 Vdc nom (18 to 30 Vdc) reverse polarity protected, ripple within voltage limits ≤ 5 Vpp, 2 A time lag fuse internally protected.

Current consumption @ 24 V: 75 mA for 8 channels with short circuit input and solid-state relay (photo-MOS) closed, typical.

Power dissipation: 1.8 W with 24 V supply voltage, for 8 channels with short circuit input and solid-state relay (photo-MOS) closed, typical.

Isolation (Test Voltage):

I.S. In/Out 1.5 KV; I.S. In/Supply 1.5 KV; Out/Supply 500 V.

Input switching current levels:

ON ≥ 2.1 mA (1.9 to 6.2 mA range), OFF ≤ 1.2 mA (0.4 to 1.3 mA range),

switch current ≈ 1.65 mA ± 0.2 mA hysteresis.

Fault current levels: open fault ≤ 0.2 mA, short fault ≥ 6.8 mA.

Input equivalent source: 8 V 1 KΩ typical (8 V no load, 8 mA short circuit).

Output:

voltage free SPST optocoupled open-collector transistor (solid-state relay, photo-MOS).

Open-collector rating: 100 mA at 35 V (≤ 1.0 V voltage drop).

Leakage current: ≤ 10 µA at 35 V.

Response time: 500 µs.

Frequency response: 500 Hz maximum.

Modbus Output: Modbus RTU protocol up to 115.200 baud on Bus connector.

Compatibility:

CE mark compliant, conforms to Directive: 2014/34/EU ATEX, 2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

Environmental conditions:

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

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

Max altitude: 2000 m a.s.l.

Safety Description:

ATEX: II 3(1)G Ex ec [ia Ga] IIC T4 Gc, II (1)D [Ex ia Da] IIIC, I (M1) [Ex ia Ma] I. *IECEx / INMETRO:* Ex ec [ia Ga] IIC T4 Gc, [Ex ia Da] IIIC, [Ex ia Ma] I.

UL: NI / I / 2 / ABCD / T4, AIS / I, II, III / 1 / ABCDEFG, AEx ec [ia Ga] IIC T4 Gc; *C-UL:* NI / I / 2 / ABCD / T4, AIS / I, II, III / 1 / ABCDEFG, Ex ec [ia Ga] IIC T4 Gc X.

CCC: Ex ec [ia Ga] IIC T4 Gc; [Ex ia Ga] IIC; [Ex ia Da] IIIC; *EAC-EX:* 2Ex ec [ia Ga] IIC T4 Gc X; [Ex ia Da] IIIC X; [Ex ia Ma] I X.

associated apparatus and non-sparking electrical equipment.

Uo/Voc = 10.9 V, Io/Isc = 12 mA, Po/Po = 31 mW at terminals 21-13, 21-14, 22-15, 22-16, 23-17, 23-18, 24-19, 24-20.

Um = 250 Vrms, -40 °C ≤ Ta ≤ 70 °C.

Approvals:

UL 22 ATEX 2809X conforms to EN60079-0, EN60079-7, EN60079-11.

IECEx ULD 22.0022X conforms to IEC60079-0, IEC60079-7, IEC60079-11.

INMETRO DNV 23.0289 X conforms to ABNT NBR IEC60079-0, ABNT NBR IEC60079-7, ABNT NBR IEC60079-11.

UL & C-UL E222308 conforms to UL61010-1, UL913, UL 121201, UL 60079-0, UL60079-11, UL60079-7 for UL

and CAN/CSA C22.2 No. 61010-1-12, CSA C22.2 No. 213, CAN/CSA C22.2 No. 60079-0, CAN/CSA C22.2 No. 60079-11, CAN/CSA No. 60079-7 for C-UL.

ЕАЭС RU C-IT.AA87.B.01310/24 conforms to GOST 31610.0, GOST 31610.7, GOST 31610.11

CCC 2020322316000978 conforms to GB/T 3836.1, GB/T 3836.3, GB/T 3834.4.

DNV Type Approval Certificate No. TAA00001U0 and KR No.MIL20769-EL002 Certificates for maritime applications.

SIL 2 conforms to IEC61508:2010 Ed.2.

Mounting:

EN/IEC60715 TH 35 DIN-Rail with or without Power Bus or on customized Termination Board.

Weight: about 175 g.

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

Location: installation in Safe Area/Non Hazardous Locations or Zone 2, Group IIC T4 or Class I, Division 2, Group A,B,C,D, T4 or Class I, Zone 2, Group IIC, T4.

Protection class: IP 20.

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

Programming

The module is fully programmable. Operating parameters can be changed from PC via PPC5092 adapter connected to USB serial line and SWC5090 software.

Measured values and diagnostic alarms can be read on both serial configuration or Modbus output line.
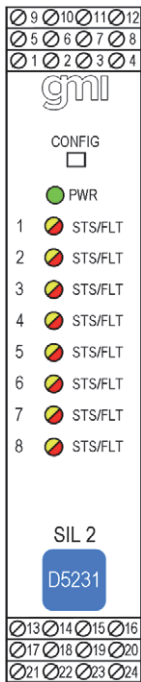
SWC5090 software also allows the Monitoring and Recording of values. For details please see SWC5090 manual ISM0154.

Ordering Information

| Model:	D5231	
8 channels		E

Power Bus and DIN-Rail accessories:
Connector JDFT049   Cover and fix MCHP196
Terminal block male MOR017   Terminal block female MOR022

Front Panel and Features

- 8 fully independent channels
- Input from Zone 0 (Zone 20) / Division 1, Installation in Zone 2/Division 2.
- NO/NC switch/proximity Detector Input, NO/NC solid-state output relay .
- Field open and short circuit detection.
- High Accuracy, µP controlled A/D converter.
- Three port isolation, Input/Output/Supply.
- Modbus RTU RS-485 Output.
- EMC Compatibility to EN61000-6-2, EN61000-6-4, EN61326-1, EN61326-3-1 for safety system.
- Fully programmable operating parameters.
- Any input can be assigned to any number of outputs. Logical output functions available.
- ATEX, IECEx, UL & C-UL, INMETRO, CCC certifications.
- Type Approval Certificate DNV and KR for maritime applications.
- High Density, eight channels per unit.
- Simplified installation using standard DIN-Rail and plug-in terminal blocks, with or without power Bus, or customized Termination Boards.
- 250 Vrms (Um) max. voltage allowed to the instruments associated with the barrier.

Terminal block connections
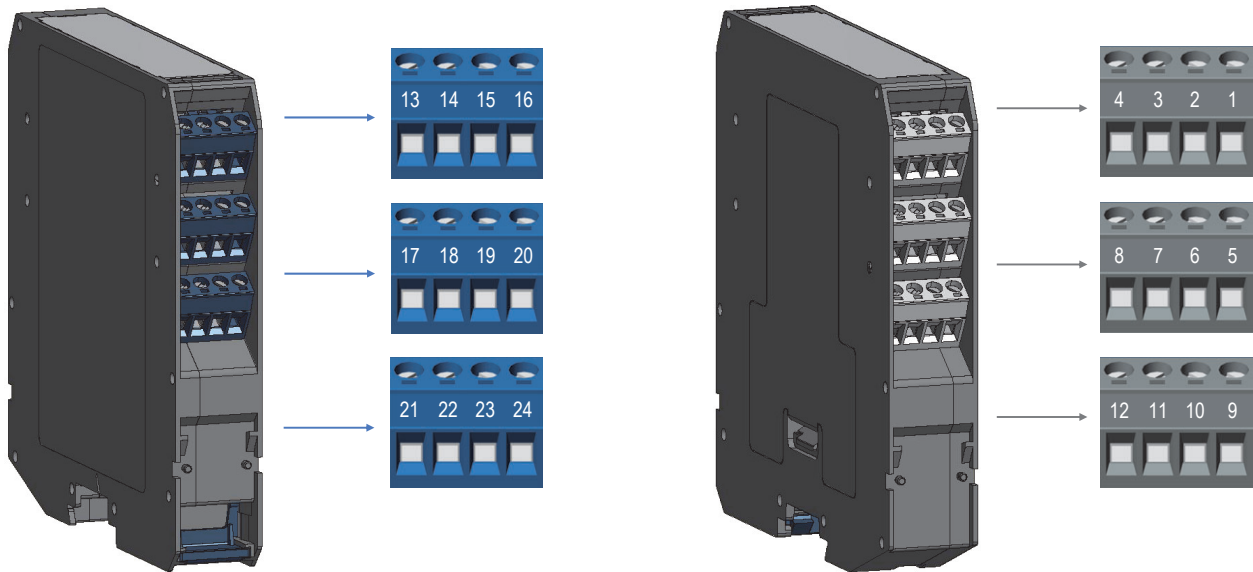
	HAZARDOUS AREA		SAFE AREA
13	- Input Ch 1 for Proximity or Voltage free Contact	**1**	Output 1
14	- Input Ch 2 for Proximity or Voltage free Contact	**2**	Output 2
15	- Input Ch 3 for Proximity or Voltage free Contact	**3**	Output 3
16	- Input Ch 4 for Proximity or Voltage free Contact	**4**	Output 4
17	- Input Ch 5 for Proximity or Voltage free Contact	**5**	Output 5
18	- Input Ch 6 for Proximity or Voltage free Contact	**6**	Output 6
19	- Input Ch 7 for Proximity or Voltage free Contact	**7**	Output 7
20	- Input Ch 8 for Proximity or Voltage free Contact	**8**	Output 8
21	+ Common positive Input for Ch 1 to 8	**9**	+ Power Supply 24 Vdc
22	+ Common positive Input for Ch 1 to 8	**10**	- Power Supply 24 Vdc
23	+ Common positive Input for Ch 1 to 8	**11**	Common Output channel 1 to 8
24	+ Common positive Input for Ch 1 to 8	**12**	Common Output channel 1 to 8

Parameters Table

In the system safety analysis, always check the Hazardous Area/Hazardous Locations devices to conform with the related system documentation, if the device is Intrinsically Safe check its suitability for the Hazardous Area/Hazardous Locations and group encountered and that its maximum allowable voltage, current, power (Ui/Vmax, Ii/Imax, Pi/Pi) are not exceeded by the safety parameters (Uo/Voc, Io/Isc, Po/Po) of the D5231 series Associated Apparatus connected to it. Also consider the maximum operating temperature of the field device, check that added connecting cable and field device capacitance and inductance do not exceed the limits (Co/Ca, Lo/La, Lo/Ro) given in the Associated Apparatus parameters for the effective group. See parameters indicated in the table below:
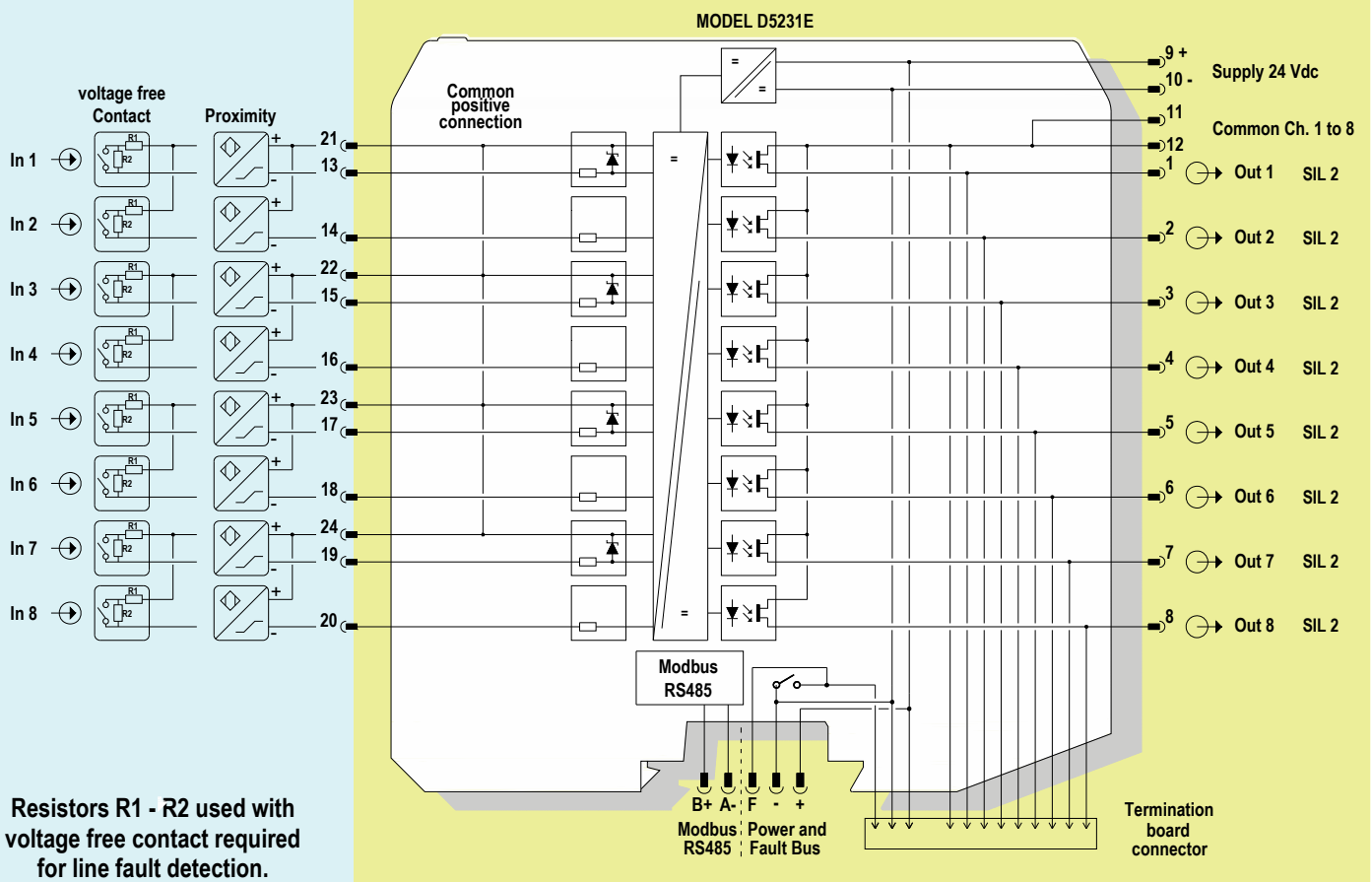
D5231 Terminals	D5231 Associated Apparatus Parameters		Must be	Hazardous Area/ Hazardous Locations Device Parameters
21-13, 21-14, 22-15, 22-16, 23-17, 23-18, 24-19, 24-20	Uo / Voc = 10.9 V		≤	Ui / Vmax
	Io / Isc = 12 mA		≤	Ii/ Imax
	Po / Po = 31 mW		≤	Pi / Pi

D5231 Terminals	D5231 Associated Apparatus Parameters Cenelec (US)		Must be	Hazardous Area/ Hazardous Locations Device + Cable Parameters
21-13, 21-14, 22-15, 22-16, 23-17, 23-18, 24-19, 24-20	Co / Ca = 2 µF Co / Ca = 14.3 µF Co / Ca = 62.9 µF Co / Ca = 69.9 µF Co / Ca = 14.3 µF	IIC (A, B) IIB (C) IIA (D) I IIIC (E, F, G)	≥	Ci / Ci device + C cable
	Lo / La = 270 mH Lo / La = 1000 mH Lo / La = 1000 mH Lo / La = 1000 mH Lo / La = 1000 mH	IIC (A, B) IIB (C) IIA (D) I IIIC (E, F, G)	≥	Li / Li device + L cable
	Lo / Ro = 1147 µH/Ω Lo / Ro = 4590 µH/Ω Lo / Ro = 9181 µH/Ω Lo / Ro = 15063 µH/Ω Lo / Ro = 4590 µH/Ω	IIC (A, B) IIB (C) IIA (D) I IIIC (E, F, G)	≥	Li / Ri device and L cable / R cable

For installations in which both the Ci and Li of the Intrinsically Safe apparatus exceed 1% of the Co and Lo parameters of the Associated Apparatus (excluding the cable), then 50% of Co and Lo parameters are applicable and shall not be exceeded (50% of the Co and Lo become the limits which must include the cable such that Ci device + C cable ≤ 50 % of Co and Li device + L cable ≤ 50 % of Lo). The reduced capacitance of the external circuit (including cable) shall not be greater than 1 µF for Groups I, IIA, IIB and 600 nF for Group IIC. If the cable parameters are unknown, the following value may be used: Capacitance 200 pF per meter (60 pF per foot), Inductance 1 µH per meter (0.20 µH per foot).

HAZARDOUS AREA ZONE 0 (ZONE 20) GROUP IIC,
HAZARDOUS LOCATIONS CLASS I, DIVISION 1, GROUPS A, B, C, D,
CLASS II, DIVISION 1, GROUPS E, F, G, CLASS III, DIVISION 1,
CLASS I, ZONE 0, GROUP IIC

SAFE AREA, ZONE 2 GROUP IIC T4,
NON HAZARDOUS LOCATIONS, CLASS I, DIVISION 2,
GROUPS A, B, C, D T-Code T4, CLASS I, ZONE 2, GROUP IIC T4

MODEL D5231E

voltage free Contact   Proximity

In 1   21 / 13
In 2   14
In 3   22 / 15
In 4   16
In 5   23 / 17
In 6   18
In 7   24 / 19
In 8   20

Common positive connection

=

Modbus RS485

B+ A- F - +

Modbus RS485   Power and Fault Bus

9 +
10 -   Supply 24 Vdc
11
12   Common Ch. 1 to 8
1   Out 1   SIL 2
2   Out 2   SIL 2
3   Out 3   SIL 2
4   Out 4   SIL 2
5   Out 5   SIL 2
6   Out 6   SIL 2
7   Out 7   SIL 2
8   Out 8   SIL 2

Termination board connector

Resistors R1 - R2 used with voltage free contact required for line fault detection.

D5231 series is an isolated Intrinsically Safe Associated Apparatus installed into standard EN/IEC60715 TH 35 DIN-Rail located in Safe Area or Zone 2, Group IIC, Temperature T4 Hazardous Area within the specified operating temperature limits Tamb –40 to +70 °C, connected to equipment with a maximum limit for power supply Um of 250 Vrms or Vdc.
Not to be connected to control equipment that uses or generates more than 250 Vrms or Vdc with respect to earth ground.
D5231 series must be installed, operated and maintained only by qualified personnel, in accordance with the relevant national/international installation standards (e.g. IEC/EN60079-14 Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (other than mines)), following the established installation rules; particular care must be given to segregation and clear identification of I.S. conductors from non I.S. ones.
De-energize power source (turn off power supply voltage) before plug or unplug the terminal blocks when installed in Hazardous Area or unless area is known to be nonhazardous.
Warning: substitution of components may impair Intrinsic Safety and suitability for Zone 2.
Warning: de-energize main power source (turn off power supply voltage) and disconnect plug-in terminal blocks before opening the enclosure to avoid electrical shock when connected to live hazardous potential.
Explosion Hazard: to prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or unless area is known to be nonhazardous.
Failure to properly installation or use of the equipment may risk to damage the unit or severe personal injury.
The unit cannot be repaired by the end user and must be returned to the manufacturer or his authorized representative.
Any unauthorized modification must be avoided.

Operation

The Switch/Proximity Detector Repeater type D5231E is a unit with eight independent channels suitable for applications requiring SIL 2 level (according to IEC 61508:2010) in safety related systems for high risk industries.
The unit can be configured for switch or proximity detector (EN60947-5-6 NAMUR), NO or NC input and for NO or NC floating solid-state relay (photo-MOS) isolated output compatible with logic circuits. Configuration is programmable from PC by the GM Pocket Portable Adapter PPC5092 via USB serial line and SWC5090 Configurator software. Each channel enables a Safe Area load to be controlled by a switch, or a proximity detector, located in Hazardous Area.
Fault detection circuit (configurable by PC) is available for all proximity sensors and switches equipped with end of line resistors. In case of fault, when enabled it de-energizes the corresponding solid-state relay (photo-MOS) and turns the fault red LED on; when disabled the corresponding solid-state relay (photo-MOS) repeats the input line open or closed status as configured.
Note: use of voltage free electrical contacts with fault detection enabled (control equipment) requires, near the switch at the end of the line a R1=1 KΩ typical (470 Ω to 2 KΩ range) resistor in series and a R2=10 kΩ typical (5 KΩ to 15 KΩ range) resistor in parallel to the contacts in order to allow the fault detection circuit to distinguish between a condition of contact close/open and a line open/short circuit fault.

Installation

D5231 series module is housed in a plastic enclosure suitable for installation on EN/IEC60715 TH 35 DIN-Rail, with or without Power Bus or on customized Termination Board.
D5231 series can be mounted with any orientation over the entire ambient temperature range.
Electrical connection are accommodated by polarized plug-in removable screw terminal blocks which can be plugged in/out into a powered unit without suffering or causing any damage **(for Zone 2 installations check the area to be nonhazardous before servicing)**. Connect only one individual conductor per each clamping point, use conductors from 0.2 mm² (24 AWG) up to 2.5 mm² (13 AWG) and a torque value of 0.5-0.6 Nm. For USA and Canada installations, use only cables that are suitable for a temperature of at least 75°C. The wiring cables have to be proportionate in base to the current and the length of the cable.
On the section "Function Diagram" and enclosure side a block diagram identifies all connections.
Identify the function and location of each connection terminal using the wiring diagram on the corresponding section.

Intrinsically Safe conductors must be identified and segregated from non I.S. and wired in accordance to the relevant national/international installation standards (e.g. EN/IEC60079-14 Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (other than mines)), make sure that conductors are well isolated from each other and do not produce any unintentional connection. Isolation in accordance with EN/IEC 60079-11 clause 6.3.13 is provided between non-intrinsically safe circuits and intrinsically safe circuits. Isolation in accordance with EN/IEC 60079-11 clause 6.3.13 is not provided between separated intrinsically safe circuits.
The enclosure provides, according to EN60529, an IP20 minimum degree of protection (or similar to NEMA Standard 250 type 1). The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1. When installed in Zone 2, the unit shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with IEC 60079-0. When installed in a Class I, Zone 2 Hazardous Location, the unit shall be mounted in a supplemental AEx or Ex enclosure that provides a degree of protection not less than IP54 in accordance with UL/CSA 60079-0. When installed in a Class I, Division 2 Hazardous Location, the unit shall be mounted in a supplemental enclosure that provides a degree of protection not less than IP54. The enclosure must have a door or cover accessible only by the use of a tool. The end user is responsible to ensure that the operating temperature of the module is not exceeded in the end use application.
Units must be protected against dirt, dust, extreme mechanical (e.g. vibration, impact and shock) and thermal stress, and casual contacts. If enclosure needs to be cleaned use only a cloth lightly moistened by a mixture of detergent in water.
Electrostatic Hazard: to avoid electrostatic hazard, the enclosure of D5231series must be cleaned only with a damp or antistatic cloth.
Any penetration of cleaning liquid must be avoided to prevent damage to the unit.
Any unauthorized modification must be avoided.
D5231 series must be connected to SELV or PELV supplies.
All circuits connected to D5231 series must comply with the overvoltage category II (or better) according to EN/IEC60664-1.

Start-up

Before powering the unit check that all wires are properly connected, particularly supply conductors and their polarity, input and output wires, also check that Intrinsically Safe conductors and cable trays are segregated (no direct contacts with other non I.S. conductors) and identified either by color coding, preferably blue, or by marking.
Check conductors for exposed wires that could touch each other causing dangerous unwanted shorts.
Turn on power, the "power on" green LED must be lit, output signal must be in accordance with the corresponding input signal value and input/output chosen transfer function,
Status/fault LED should reflect the input variable condition with respect to configured settings. If possible change the sensor condition and check the corresponding Safe Area output.

CONFIGURATION

Configuration parameters can be read and written from the module or from saved file.
It is also possible to reset the module configuration to factory default settings.
A report sheet containing complete configuration can be printed.

INPUTS 1 to 8:

Sensor Type:
☐ Proximity
☐ Voltage free contact
Note: To enable line diagnostic on Voltage free contacts, configure sensor as "Proximity" and follow instructions in Section "Operation".

TAGS 1 to 8:
16 alphanumerical characters.

OUTPUTS 1 to 8:

Source:
☐ Input 1   Output represents Input 1,
☐ Input 2   Output represents Input 2,
☐ Input 3   Output represents Input 3,
☐ Input 4   Output represents Input 4,
☐ Input 5   Output represents Input 5,
☐ Input 6   Output represents Input 6,
☐ Input 7   Output represents Input 7,
☐ Input 8   Output represents Input 8,
☐ Logical function   Output represents AND/OR function of selected inputs.

Contact: normal condition of output contact when input is open
☐ Open
☐ Closed

In case of fault: Output behaviour when Input fault is detected.
☐ Ignore   Ignore,
☐ Open
☐ Closed

Fault repeater: Output represents Input Fault status

Logical Function: visible only when selected in "Output source".
Select 2 or more (up to 8) Inputs to connect logically.
☐ AND   Output represents AND logical function of selected Inputs,
          - NO: On AND On = Close; On AND Off = Open; Off AND Off = Open
          - NC: On AND On = Open; On AND Off = Close; Off AND Off = Close
☐ OR Output represents OR logical function of selected Inputs
          - NO: On OR On = Close; On OR Off = Close; Off OR Off = Open
          - NC: On OR On = Open; On OR Off = Open; Off OR Off = Close

Custom function: visible only when selected in "Output source".
Select 2 or more (up to 8) Inputs to connect logically.

MONITOR

Allows the real-time monitoring of every Input and Output status.
Note that configuration is disabled when Monitoring is active.

INPUT STATUS: The status of each input is shown
☐ Open circuit   Open circuit fault (only for Proximity Inputs),
☐ Off Off,
☐ On On,
☐ Short circuit   Short circuit fault (only for Proximity Inputs).
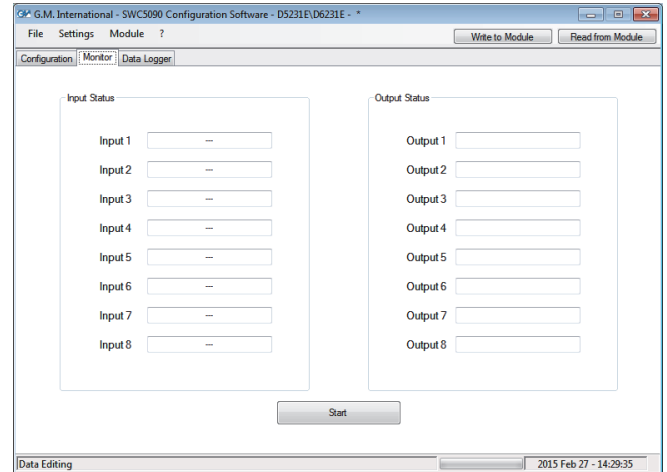
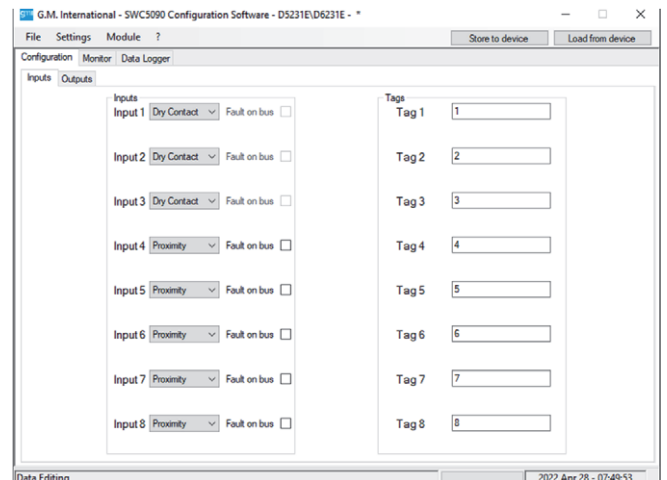**OUTPUT STATUS:** The status of each output contact is shown
☐ Open
☐ Closed

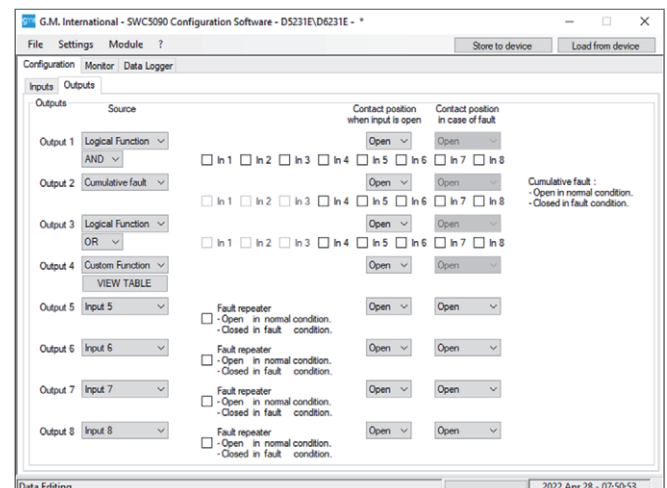SWC5090 Software and PPC5092 USB Adapter

Input / Output status real-time monitor

Input configuration

Output configuration

D5231 - SIL 2 Switch/Proximity Detector Repeater, O.C. Output

G.M. International ISM0172-14

Configurating and Monitoring via Software:

CUSTOM FUNCTION:

Select 2 or more (up to 8) Inputs to connect logically.

The screenshots' section show the custom function applied to the output 4. In this case the user has the possibility to configure the output behaviour in function of the input 1, input 3 and input 5 logical states, by entering the 0 or 1 in the relative output column.

DATA LOGGER

The status of all Inputs and all Outputs is acquired at constant chosen intervals and saved to user selected file in Comma Separated Value format (.csv).

Note that configuration is disabled when Data Logger is active.

PARAMETERS SETUP:

Days: Number of days to acquire.
Hours: Number of hours to acquire.
Minutes: Number of minutes to acquire.
Scan rate: Frequency interval for acquisitions.

General Notes:

SWC5090 Software can be downloaded for free at www.gminternational.com
PPC5092 Adapter is needed to interface PC to D5231E module.
The PC supplies the module via USB, therefore operating power supply (24 Vdc) is not strictly needed when configuring the module.
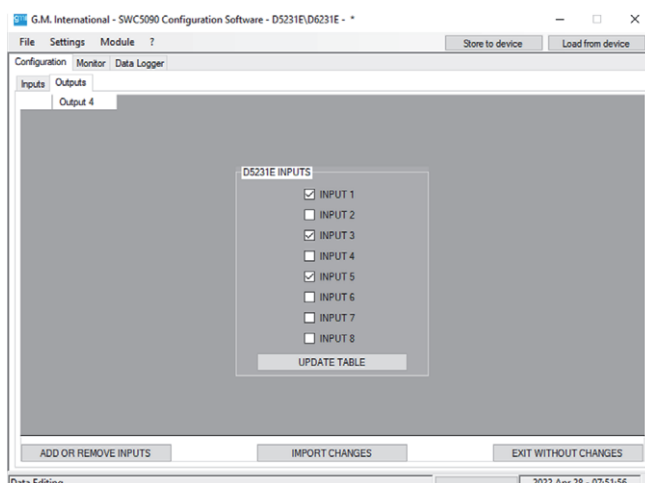Each channel has completely independent configurations.
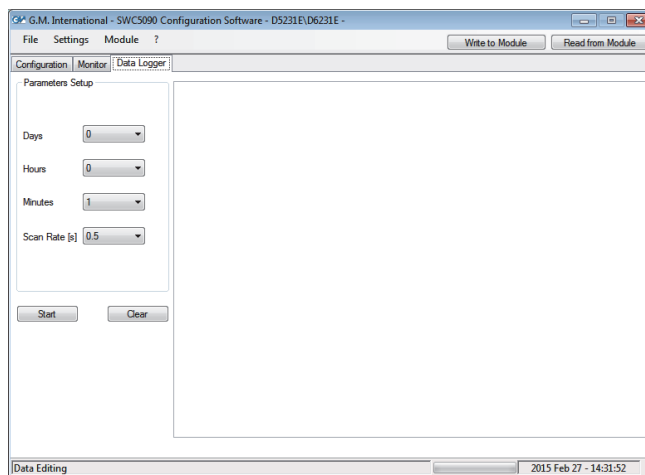See ISM0154 Manual for details on SWC5090 software.

Screenshots:
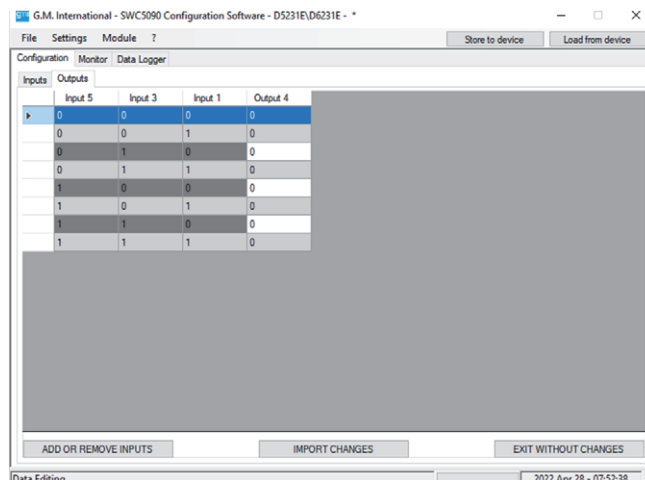
Custom output function configuration

Custom output function inputs selection

Real-time data logging to file

Supported Modbus parameters:

D5231E communicates via Modbus RTU RS-485 protocol. Below are all available registers.

Addr.	Description	Notes	Type[5]
0	GM International code	Identification Data	R
1	Software release		
2	Product code		
3	Option code		
4	Hardware revision		
300	Modbus Address	Communication Data	R/W
301	Modbus Baudrate [1]		
302	Modbus Format [1]		
900	Input status of all channels [1]	Input Data	R
1000-1015	Output 1 Source [2]	Output Configuration	R/W
1016-1031	Output 2 Source [2]		
1032-1047	Output 3 Source [2]		
1048-1063	Output 4 Source [2]		
1064-1079	Output 5 Source [2]		
1080-1095	Output 6 Source [2]		
1096-1111	Output 7 Source [2]		
1112-1135	Output 8 Source [2]		
1128	Output 1 Fault configuration [1]	Fault Configuration	R/W
1129	Output 2 Fault configuration [1]		
1130	Output 3 Fault configuration [1]		
1131	Output 4 Fault configuration [1]		
1132	Output 5 Fault configuration [1]		
1133	Output 6 Fault configuration [1]		
1134	Output 7 Fault configuration [1]		
1135	Output 8 Fault configuration [1]		
202	Fault on Bus [1]		
800	Inputs configuration [1]	Input Configuration	R/W
100	Commands execution [4]	Command	W
1200	Outputs Status	Output Data	R
700-707	Ch 1 [3]	Tags	R/W
708-715	Ch 2 [3]		
716-723	Ch 3 [3]		
724-731	Ch 4 [3]		
732-739	Ch 5 [3]		
740-747	Ch 6 [3]		
748-755	Ch 7 [3]		
756-763	Ch 8 [3]		

Notes:

Each Modbus parameter is described by one 16-bit word.

(1) See command details on the right.
(2) Each Output can reflect the status of any Input.
In order to change Output Source fill Output Address range as shown below:
Input 1: All addresses contain value 43690.
Input 2: All addresses contain value 52428.
Input 3: All addresses contain value 61680.
Input 4: All addresses contain value 65280.
Input 5: Addresses contain:
0,65535,0,65535,0,65535,0,65535,0,65535,0,65535,0,65535,0,65535.
Input 6: Addresses contain:
0,0,65535,65535,0,0,65535,65535,0,0,65535,65535,0,0,65535,65535.
Input 7: Addresses contain:
0,0,0,0,65535,65535,65535,65535,0,0,0,0,65535,65535,65535,65535.
Input 8: Addresses contain:
0,0,0,0,0,0,0,0, 65535,65535,65535,65535,65535,65535,65535,65535.
(3) Tags are composed of 16 characters.
Each address contains 2 chars, starting from left.
(4) All configurations must be confirmed via Addr. 464, see details on the right.
(5) Parameter Type:
R = read only,
W = write only,
R/W = read and write.

Supported modbus functions:

Code	Name	Notes
03	read holding registers	reads a stream of words from memory
04	read input registers	reads a stream of words from memory
08	diagnostics: subcode 0	returns query data
06	write single register	writes a word in memory
16	write multiple registers	writes a stream of words in memory

Parameters details:

Address 301: Supported ModBus Baudrates

Index	Baudrate
0	4800
1	9600
2	19200
3	38400
4	57600
5	115200

Address 302: Supported ModBus Formats

Endianness 32 bit Data (0 = Little; 1 = Big)
Termination resistance (1 = enabled)
Supported Modbus Parity:
0 8 data bit, no parity, 1 stop bit
1 8 data bit, even parity, 1 stop bit
2 8 data bit, odd parity, 1 stop bit

Address 900: Input status

In 8 In 7 In 6 In 5 In 4 In 3 In 2 In 1 | In 8 In 7 In 6 In 5 In 4 In 3 In 2 In 1
(0 = Ok; 1 = Fault) (0 = Off; 1 = On)

Address 1128 to 1135 Output Fault Configuration

Contact status:
(0 = Out closed; 1 = Out open)
In case of Fault:
(0 = Open; 1 = Closed)
In 8 In 7 In 6 In 5 In 4 In 3 In 2 In 1
(0 = None; 1 = Fault on Output)
Reflect status of Input Fault on Output

Address 202: Output Fault on Bus Configuration

In 8 In 7 In 6 In 5 In 4 In 3 In 2 In 1
(0 = None; 1 = Fault on BUS)
Reflect status of Input Fault on BUS

Address 800: Inputs Configuration

In 8 In 7 In 6 In 5 In 4 In 3 In 2 In 1
(0 = Proximity; 1 = Dry contact)

Address 100: Commands

1 Save Input/Output Configuration
2 Save Modbus configuration
8 Save Tags

Address 1200: Outputs Data

Out 8 Out 7 Out 6 Out 5 Out 4 Out 3 Out 2 Out 1
(0 = Open; 1 = Close)