# INSTRUCTION MANUAL

## SIL 2 Quadruple Repeater Power Supply
## DIN-Rail and Termination Board
## Model D6212Q

gml
technology for safety

## Characteristics

**General Description:**

The quadruple channel Repeater Power Supply D6212Q provides a fully floating DC supply for energizing conventional 2-wire 0/4-20 mA transmitters, and repeats the current to drive a load in applications requiring SIL 2 level (according to IEC 61508:2010) in safety related systems for high risk industries.

**Function:**

4 channels analog input for 2-wire loop powered transmitters (or separately powered inputs, only for channels 1 and 2), providing isolation between input, output and supply, and current source output signals. The module is fully configurable to achieve any desired input/output combination: any number of outputs can be independently linked to each input. Output function can be configured as: adder, subtractor, low/high selector. An optically coupled open-drain alarm output with user-settable trip point is also provided.

Modbus RTU RS-485 output is available on Bus connector to interface digital device.

**Configurability:**

Totally software configurable (no jumpers or switches), by PC via USB with PPC5092 adapter and related configurator software or by RS485 Modbus output, in order to choose: input signal range, linear or reverse output signal, alarm trip point, low, high, window or fault repeater alarm mode, hysteresis, delay time.

Mounting on standard DIN-Rail, with or without Power Bus, or on customized Termination Boards.

## Technical Data

**Supply:**

24 Vdc nom (21.5 to 30 Vdc) reverse polarity protected, ripple within voltage limits ≤ 5 Vpp, 2 A time lag fuse internally protected.

*Current consumption @ 24 V:* 200 mA max. with 20 mA input/output for 4 channels.

*Power dissipation:* 2.75 W max. with 24 V supply voltage and 20 mA input/output for 4 channels.

**Isolation (Test Voltage):**

In/Out 1.5 KV; In/Supply 1.5 KV; Out/Supply 500 V; In/Alarm 1.5 KV; Supply/Alarm 500 V; Out/Alarm 500 V.

**Input:**

0/4 to 20 mA (2 wire Tx current limited at ≈ 25 mA) and separately powered inputs (only for channels 1 and 2).

*Transmitter line voltage:*

14.5 V typical at 20 mA with max. 20 mVrms ripple, 14.0 V minimum.

*Integration time:* 500 ms.

*Resolution / Visualization:* 1 µA.

**Fault:** Out-of-range (burnout) fault detection can be enabled or disabled. Any analog output can be programmed to detect fault condition forcing downscale or highscale.

Alarm can be programmed to detect fault condition. Fault conditions are also signalled via Power Bus or Termination Board and by a red LED on the front panel (one for each channel).

*Out-of-range:* low and high separated trip point values are fully programmable.

**Output:**

0/4 to 20 mA, on max. 300 Ω load source mode, current limited at about 25 mA.

*Response time:* 100 ms max. (10 to 90 % step change).

*Output ripple:* ≤ 20 mVrms on 250 Ω.

*Modbus Output:* for parameter configuration and burnout / fault indication. Modbus RTU protocol up to 57.6 Kbit/s with RS-485 connection on Power Bus connector.

**Alarm:**

*Trip point range:* within rated limits of the input sensors.

*Output:* voltage free SPST photoMOS: 100 mA, 60 Vdc (≤ 1 V voltage drop).

**Performance:**

Ref. Conditions 24 V supply, 250 Ω loads, 23 ± 1 °C ambient temperature.

*Calibration accuracy:* ≤ ± 0.05 % of full scale on inputs and outputs.

*Linearity error:* ≤ ± 0.05 % of full scale on inputs and outputs.

*Supply voltage influence:* ≤ ± 0.02 % of full scale for a min to max supply change.

*Load influence:* ≤ ± 0.02 % of full scale for a 0 to 100 % load resistance change.

*Temperature influence:* ≤ ± 0.01% of input full scale and ≤ ± 0.005 % of output full scale for a 1 °C change.

**Compatibility:**

$C\epsilon$ CE mark compliant, conforms to Directives: 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.

*Approvals:*

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 120 g.

*Connection:* by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm$^2$.

*Protection class:* IP 20.

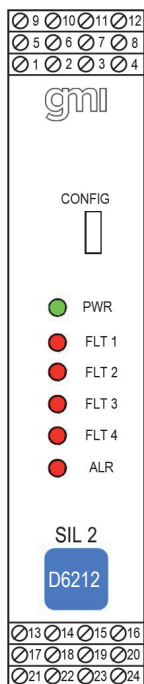*Dimensions:* Width 22.5 mm, Depth 123 mm, Height 120 mm.

## Ordering Information

| Model: | D6212 | |
|---|---|---|
| 4 channels | | Q |

Power Bus and DIN-Rail accessories:
Connector JDFT050                                        Cover and fix MCHP196
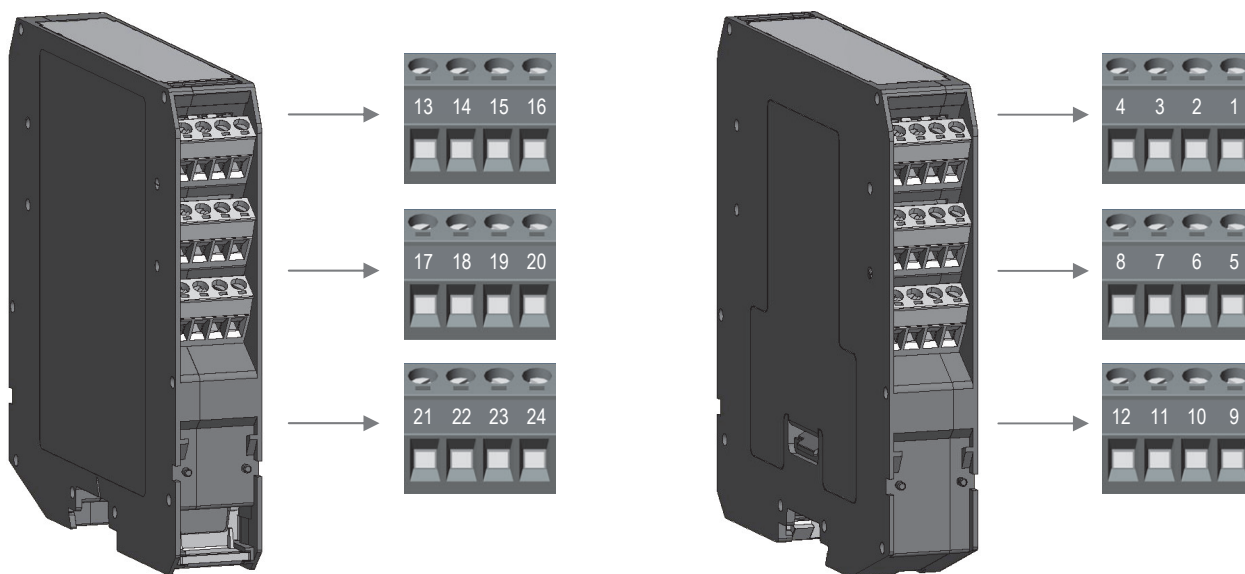Terminal block male MOR017                   Terminal block female MOR022

Operating parameters are programmable from PC by the GM Pocket Portable Adapter PPC5092 via USB serial line and SWC5090 Configurator software.

## Front Panel and Features

⊘9 ⊘10 ⊘11 ⊘12
⊘5 ⊘6 ⊘7 ⊘8
⊘1 ⊘2 ⊘3 ⊘4

gmi

CONFIG

🟢 PWR
🔴 FLT 1
🔴 FLT 2
🔴 FLT 3
🔴 FLT 4
🔴 ALR

SIL 2

D6212

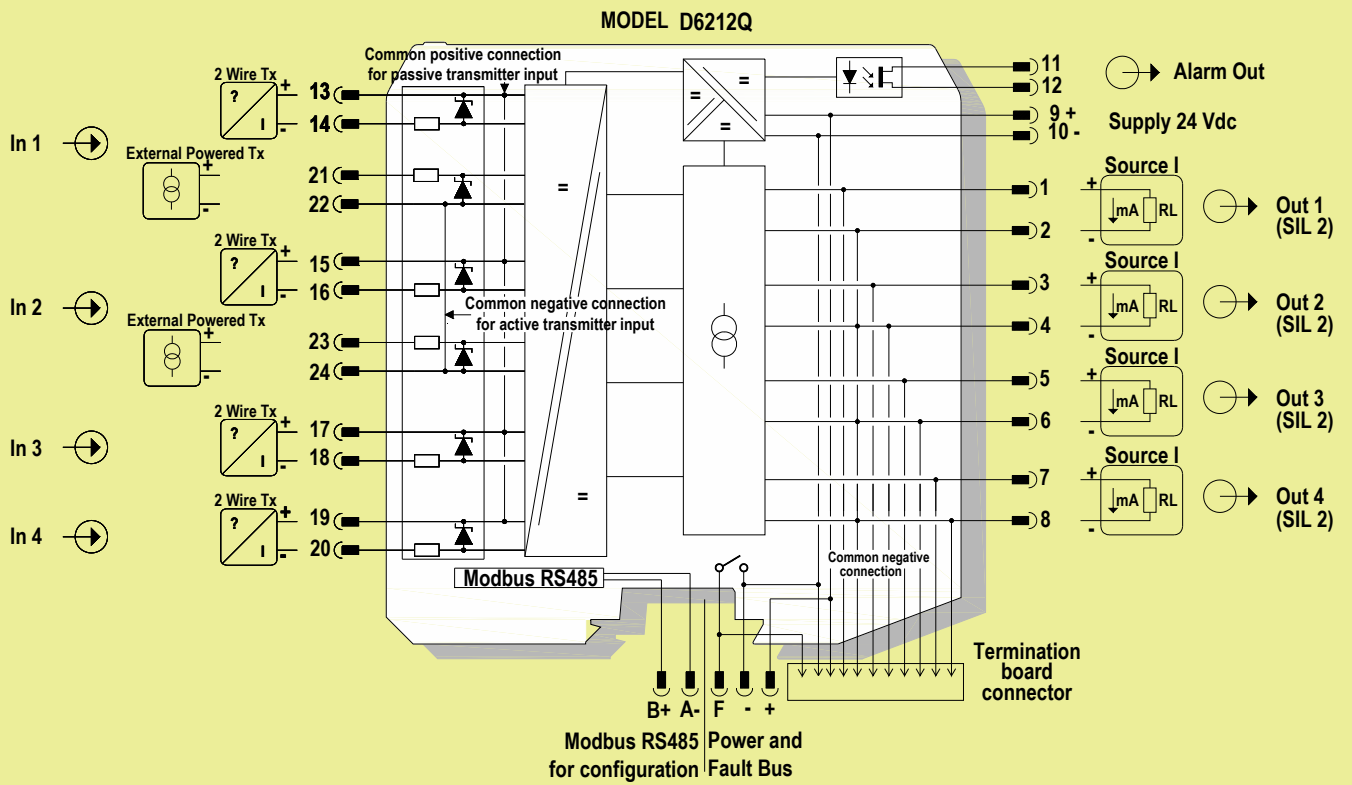⊘13 ⊘14 ⊘15 ⊘16
⊘17 ⊘18 ⊘19 ⊘20
⊘21 ⊘22 ⊘23 ⊘24

- Quadruple channels for 2 wires Transmitters or externally powered transmitters.
- 0/4-20 mA Input, Output Signals.
- Input and Output short circuit proof.
- Source current Outputs.
- Modbus RTU RS-485 Output.
- Fully programmable operating parameters.
- High Accuracy, μP controlled A/D converter.
- Three port isolation, Input / Output / Supply.
- EMC Compatibility to EN61000-6-2, EN61000-6-4, EN61326-1, EN61326-3-1 for safety system.
- High Density, four channels per unit.
- Out of range (Burnout) fault detection
- Open-drain alarm output with user-settable trip point
- Simplified installation using standard DIN-Rail and plug-in terminal blocks or customized Termination Boards.

## Terminal block connections



| 13 | 14 | 15 | 16 |

| 17 | 18 | 19 | 20 |

| 21 | 22 | 23 | 24 |

| 4 | 3 | 2 | 1 |

| 8 | 7 | 6 | 5 |

| 12 | 11 | 10 | 9 |

| | | | |
|---|---|---|---|
| **13** | + Input for 2 Wire Transmitters Ch 1 | **1** | + Output Ch 1 |
| **14** | - Input for 2 Wire Transmitters Ch 1 | **2** | - Output Ch 1 |
| **15** | + Input for 2 Wire Transmitters Ch 2 | **3** | + Output Ch 2 |
| **16** | - Input for 2 Wire Transmitters Ch 2 | **4** | - Output Ch 2 |
| **17** | + Input for 2 Wire Transmitters Ch 3 | **5** | + Output Ch 3 |
| **18** | - Input for 2 Wire Transmitters Ch 3 | **6** | - Output Ch 3 |
| **19** | + Input for 2 Wire Transmitters Ch 4 | **7** | + Output Ch 4 |
| **20** | - Input for 2 Wire Transmitters Ch 4 | **8** | - Output Ch 4 |
| **21** | + Input for External Powered Transmitters Ch 1 | **9** | + Power Supply 24 Vdc |
| **22** | - Input for External Powered Transmitters Ch 1 | **10** | - Power Supply 24 Vdc |
| **23** | + Input for External Powered Transmitters Ch 2 | **11** | Alarm out |
| **24** | - Input for External Powered Transmitters Ch 2 | **12** | Alarm out |

**MODEL D6212Q**

Common positive connection for passive transmitter input

**2 Wire Tx** + 13

? 

I - 14

**In 1**

**External Powered Tx** +

-

**2 Wire Tx** + 15

? 

I - 16

**In 2**

Common negative connection for active transmitter input

**External Powered Tx** +

-

21

22

23

24

**2 Wire Tx** + 17

? 

I - 18

**In 3**

**2 Wire Tx** + 19

? 

I - 20

**In 4**

**Modbus RS485**

11

12

9 +

10 -

**Alarm Out**

**Supply 24 Vdc**

**Source I** +

mA RL

-

1

2

**Out 1 (SIL 2)**

**Source I** +

mA RL

-

3

4

**Out 2 (SIL 2)**

**Source I** +

mA RL

-

5

6

**Out 3 (SIL 2)**

**Source I** +

mA RL

-

7

8

**Out 4 (SIL 2)**

Common negative connection

**Termination board connector**

B+ A- F - +

**Modbus RS485 for configuration**

**Power and Fault Bus**

## Warning

D6212 must be installed, operated and maintained only by qualified personnel, in accordance to the relevant national/international installation standards.
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 quadruple channel Repeater Power Supply D6212Q provides a fully floating DC supply for energizing conventional 2-wire 0/4-20 mA transmitters, and repeats the current to drive a load in applications requiring SIL 2 (according to IEC 61508:2010) in safety related systems for high risk industries.
4 channels analog input for 2-wire loop powered transmitters (or separately powered inputs, only for channels 1 and 2), providing isolation between input, output and supply, and current source output signals. The module is fully configurable to achieve any desired input/output combination: any number of outputs can be independently linked to each input.
Output function can be configured as: adder, subtractor, low/high selector. An optically coupled open-drain alarm output with user-settable trip point is also provided.
Modbus RTU RS-485 output is available on Bus connector to interface digital device.

Presence of supply power is displayed by a "POWER ON" green signaling LED; fault for each channel and alarm conditions are signaled by related red front panel LED.

## Installation

D6212 is a quadruple repeater power supply 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. D6212Q unit can be mounted with any orientation over the entire ambient temperature range.
Electrical connections 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. Connect only one individual conductor per each clamping point, use conductors up to 2.5 mm² (13 AWG) and a torque value of 0.5-0.6 Nm. Use only cables that are suitable for a temperature of at least 85°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, as an example:
Connect 24 Vdc power supply positive at terminal "9" and negative at terminal "10".
Connect positive output of analog channel 1 (mA source mode) at terminal "1" and negative output (common to all channels) at "2" (channel 1).
For other channels connect terminals "3" and "4" for channel 2, terminals "5" and "6" for channel 3, "7" and "8" for channel 4.
Connect alarm output at terminals "11" and "12".
In case of a 2 wire input transmitter, connect the wires at terminal "13" for positive and "14" for negative (channel 1), or "15" for positive and "16" for negative (channel 2), or "17" for positive and "18" for negative (channel 3), or "19" for positive and "20" for negative (channel 4). Note that positive terminals of all channels are in common.
For separately powered transmitters, connect input signal at terminal "21" for positive and "22" for negative (channel 1), or "23" for positive and "24" for negative (channel 2). Note that negative terminals of all channels are in common.

Connect alarm transistors checking the load rating to be within the maximum rating (100 mA at 60 V (≤ 1.0 V voltage drop)).
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.
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.
Any penetration of cleaning liquid must be avoided to prevent damage to the unit. Any unauthorized card modification must be avoided.
D6212Q unit must be connected to SELV or PELV supplies.
All circuits connected to D6212Q unit 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.
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, for 2 wire transmitter connection the supply voltage on each channel must be ≥ 14 V, output signal should be corresponding to the input from the transmitter, alarm LED should reflect the input variable condition with respect to trip points setting.
If possible change the transmitter output and check the corresponding output.

## Configuration parameters:

The SWC5090 is able to continuously scan the module and display the real-time values on screen. Note that while the module is being monitored, configuration screens are disabled.

The display shows all the monitored parameters:
- ☐ Input: represents the value read from field.
- ☐ Output: represents the theoretical output value.
- ☐ Alarm status: is represented by a led, which is red when activated.
- ☐ Faults: is represented by a led, which is red when activated
- ☐ Graph: shows only the variable chosen from the monitored values box.

**INPUT:**

**Out of range:**
- ☐ Low threshold: input value below which the fault is triggered
- ☐ High threshold: input value above which the fault is triggered

**Tag:**
- ☐ 16 alphanumerical characters

**OUTPUT:**

**Type:**
- ☐ 0-20 mA Source
- ☐ 4-20 mA Source
- ☐ Custom Source        all output parameters are fully customizable

**Downscale:** analog output downscale in normal working condition (range 0 to 24 mA)
**Upscale:** analog output upscale in normal working condition (range 0 to 24 mA)
**Under range:** analog output value in under range condition (range 0 to 24 mA)
**Over range:** analog output value in over range condition (range 0 to 24 mA)
**Fault output value:** analog output value in case of fault condition (range 0 to 24 mA)
**Fault in case of:** analog output is forced to "Fault Output Value" when input is out of configured range

**Advanced settings:** When the advanced settings button is clicked, the following settings box is shown.

**Input A selector:**
- ☐ Input 1:    output represent Input1
- ☐ Input 2:    output represent Input2
- ☐ Input 3:    output represent Input3
- ☐ Input 4:    output represent Input4

**Output operations:**
- ☐ None:       output operations are disabled.
- ☐ Subtraction: analog output represents the subtraction of the two selected input channels.
- ☐ Sum:        analog output represents the sum of the two selected input channels.
- ☐ Maximum:   analog output represents the higher of the two selected input ch.
- ☐ Minimum:   analog output represents the lower of the two selected input channels.

**Input B selector:** (it is shown when the output operations selected is not None)
- ☐ Input 1:    represents the second operand used for the output operation.
- ☐ Input 2:    represents the second operand used for the output operation.
- ☐ Input 3:    represents the second operand used for the output operation.
- ☐ Input 4:    represents the second operand used for the output operation.
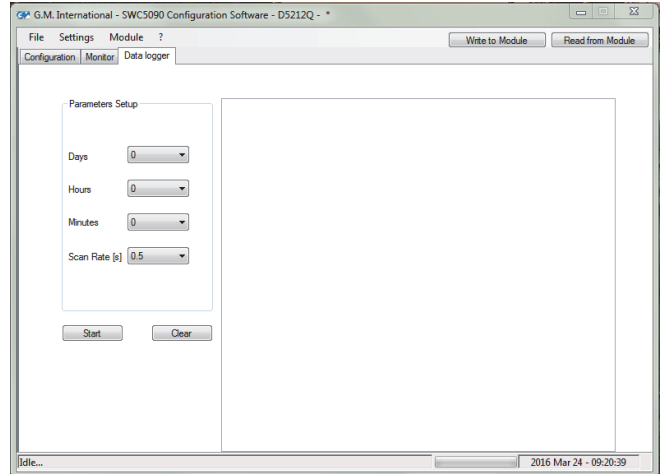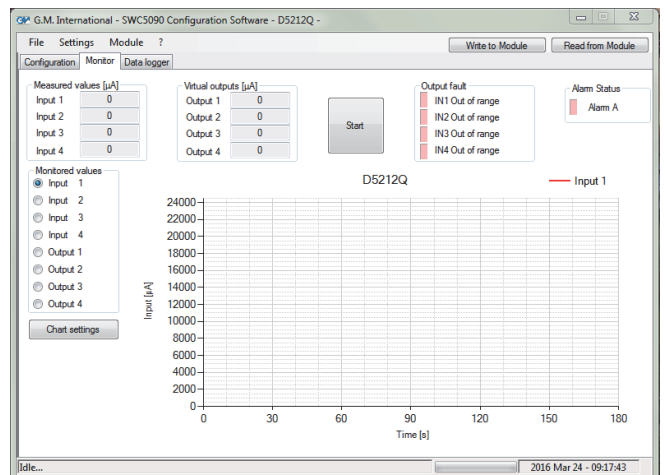
## Screenshots:
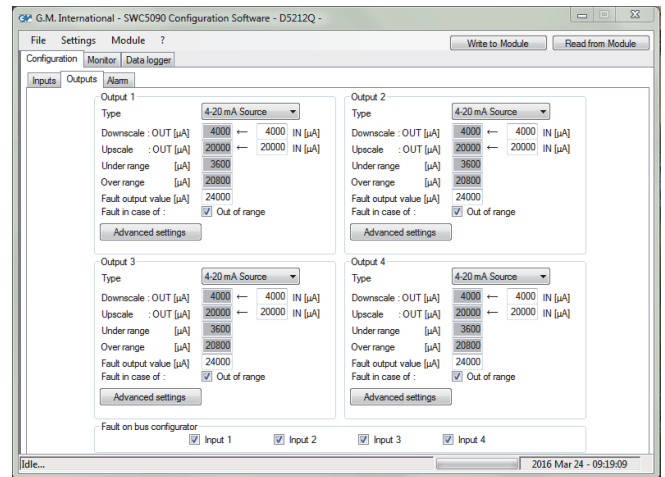
Output Configuration
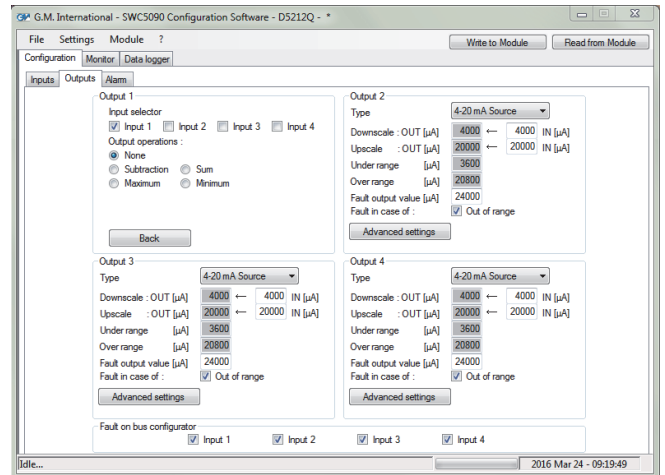
Output Advanced

Data logger Configuration

Monitor

## Configuration parameters:

**ALARM:**

**Type:**
- ☐ None: alarm is disabled
- ☐ Low: alarm is triggered when input descends below "Low Set"
- ☐ High: alarm is triggered when input ascends above "High Set"
- ☐ Window: alarm is triggered below "Low Set" and above "High Set"

**Alarm lock:**
alarm is inhibited until source ascends above or descends below the configuration parameters, and then, it behaves as standard configuration.

**Input A selector:**
- ☐ **Input 1:** alarm is triggered on Input1
- ☐ **Input 2:** alarm is triggered on Input2
- ☐ **Input 3:** alarm is triggered on Input3
- ☐ **Input 4:** alarm is triggered on Input4

**Output operations:**
- ☐ **None:** output operations are disabled.
- ☐ **Subtraction:** analog output represents the subtraction of the two selected input ch.
- ☐ **Sum:** analog output represents the sum of the two selected input channels.
- ☐ **Maximum:** analog output represents the higher of the two selected input channels
- ☐ **Minimum:** analog output represents the lower of the two selected input channels

**Input B selector:** (it is shown when the output operations selected is not None)
- ☐ **Input 1:** represents the second operand used for the output operation
- ☐ **Input 2:** represents the second operand used for the output operation
- ☐ **Input 3:** represents the second operand used for the output operation
- ☐ **Input 4:** represents the second operand used for the output operation

**NO contact position in alarm:**
- ☐ **Open:** alarm output is closed under regular working conditions, and it opens in case of alarm
- ☐ **Closed:** alarm output is open under regular working conditions, and it closes in case of alarm

**Low Set:**
input value below which the alarm is triggered (in Low, Window)

**Low Hysteresis:**
hysteresis on the low set value

**High Set:**
Input value above which the alarm is triggered

**High Hysteresis:**
hysteresis on the high set value

**On Delay:**
time for which the input has to be in alarm condition before the alarm output is triggered, configurable from 0 to 1000 seconds in steps of 100 ms

**Off Delay:**
time for which the input has to be in normal condition before the alarm output is deactivated, configurable from 0 to 1000 seconds in steps of 100 ms.
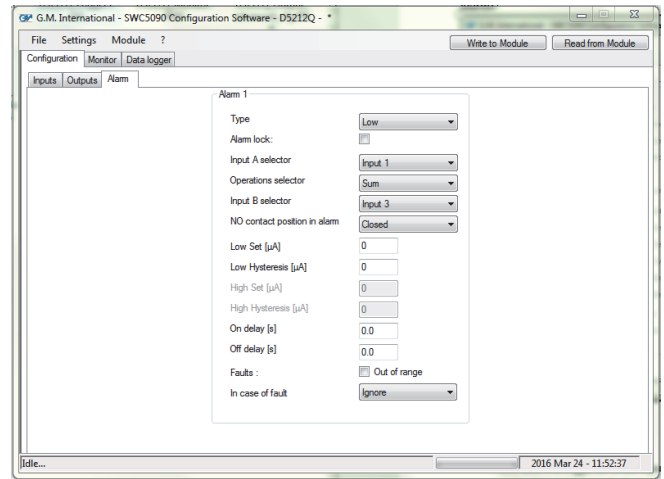
**FAULT:**
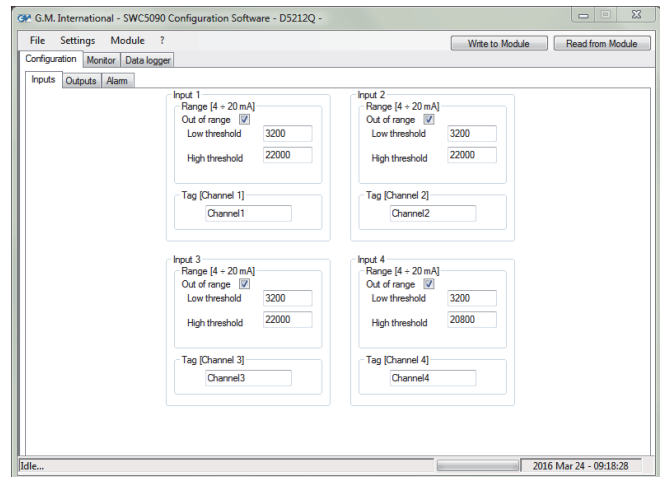alarm is triggered when input is out of configured range

**In case of fault:**
- ☐ **Ignore:** alarm is not affected
- ☐ **Lock status:** remains in the same status as it was before fault occurred
- ☐ **Alarm active:** alarm is triggered
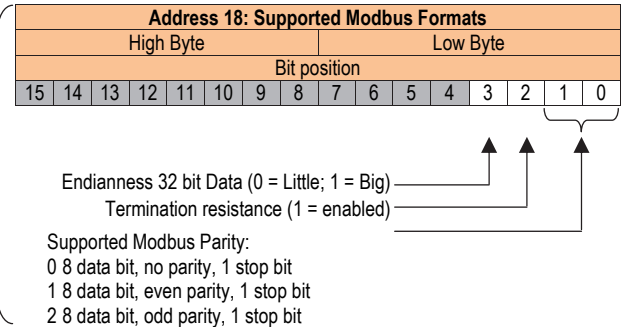- ☐ **Alarm inactive:** alarm is deactivated
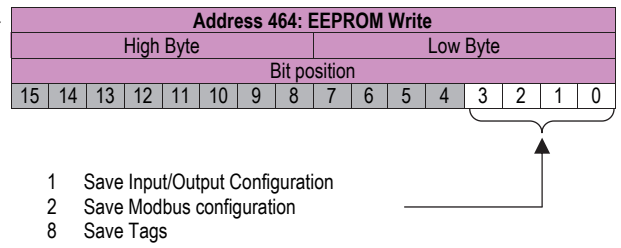
## Screenshots:

Alarm Configuration

Input Configuration

| Param. | Description | Notes | Type [11] |
|---|---|---|---|
| 0 | G.M. Factory Code | | |
| 1 | Instrument Code | | |
| 2 | Option Code | Identification | R |
| 3 | Hardware Release | Data | |
| 4 | Software Release | | |
| 5 to 15 | Reserved | | |
| 16 | Modbus Address | | |
| 17 | Modbus Baudrate | Communication Data | R/W |
| 18 | Modbus Format | | |
| 64 | Input1 measured value(Low 16 bits) [1] | | |
| 65 | Input1 measured value(High 16 bits) [1] | | |
| 66 | Input2 measured value(Low 16 bits) [1] | | |
| 67 | Input2 measured value(High 16 bits) [1] | | |
| 68 | Input3 measured value(Low 16 bits) [1] | | |
| 69 | Input3 measured value(High 16 bits) [1] | Input (Field) | R |
| 70 | Input4 measured value(Low 16 bits) [1] | Data | |
| 71 | Input4 measured value(High 16 bits) [1] | | |
| 72 | Input1 fault [2] | | |
| 73 | Input2 fault [2] | | |
| 74 | Input3 fault [2] | | |
| 75 | Input4 fault [2] | | |
| 102 | Input1 Downscale (Low 16 bits) [1] | | |
| 103 | Input1 Downscale (High 16 bits) [1] | | |
| 104 | Input1 Upscale (Low 16 bits) [1] | | |
| 105 | Input1 Upscale (High 16 bits) [1] | | |
| 106 | Input1 Fault Switch [3] | | |
| 107 | Input1 Low Range Fault (Low 16 bits) [1] | | |
| 108 | Input1 Low Range Fault (High 16 bits) [1] | | |
| 109 | Input1 High Range Fault (Low 16 bits) [1] | | |
| 110 | Input1 High Range Fault (High 16 bits) [1] | | |
| 111 | Input2 Downscale (Low 16 bits) [1] | | |
| 112 | Input2 Downscale (High 16 bits) [1] | | |
| 113 | Input2 Upscale (Low 16 bits) [1] | | |
| 114 | Input2 Upscale (High 16 bits) [1] | | |
| 115 | Input2 Fault Switch [3] | | |
| 116 | Input2 Low Range Fault (Low 16 bits) [1] | | |
| 117 | Input2 Low Range Fault (High 16 bits) [1] | | |
| 118 | Input2 High Range Fault (Low 16 bits) [1] | | |
| 119 | Input2 High Range Fault (High 16 bits) [1] | Input (Field) | R/W |
| 120 | Input3 Downscale (Low 16 bits) [1] | Configuration | |
| 121 | Input3 Downscale (High 16 bits) [1] | | |
| 122 | Input3 Upscale (Low 16 bits) [1] | | |
| 123 | Input3 Upscale (High 16 bits) [1] | | |
| 124 | Input3 Fault Switch [3] | | |
| 125 | Input3 Low Range Fault (Low 16 bits) [1] | | |
| 126 | Input3 Low Range Fault (High 16 bits) [1] | | |
| 127 | Input3 High Range Fault (Low 16 bits) [1] | | |
| 128 | Input3 High Range Fault (High 16 bits) [1] | | |
| 129 | Input4 Downscale (Low 16 bits) [1] | | |
| 130 | Input4 Downscale (High 16 bits) [1] | | |
| 131 | Input4 Upscale (Low 16 bits) [1] | | |
| 132 | Input4 Upscale (High 16 bits) [1] | | |
| 133 | Input4 Fault Switch [3] | | |
| 134 | Input4 Low Range Fault (Low 16 bits) [1] | | |
| 135 | Input4 Low Range Fault (High 16 bits) [1] | | |
| 136 | Input4 High Range Fault (Low 16 bits) [1] | | |
| 137 | Input4 High Range Fault (High 16 bits) [1] | | |
| 160 | Output1 Downscale (Low 16 bits) [1] | | |
| 161 | Output1 Downscale (High 16 bits) [1] | | |
| 162 | Output1 Upscale (Low 16 bits) [1] | | |
| 163 | Output1 Upscale (High 16 bits) [1] | | |
| 164 | Output1 Under Range (Low 16 bits) [1] | | |
| 165 | Output1 Under Range (High 16 bits) [1] | | |
| 166 | Output1 Over Range (Low 16 bits) [1] | | |
| 167 | Output1 Over Range (High 16 bits) [1] | | |
| 168 | Output1 Fault Current (Low 16 bits) [1] | | |
| 169 | Output1 Fault Current (High 16 bits) [1] | | |
| 170 | Output1 Fault Mask [3] | | |
| 172 | Output1 InputA Selector [4] | | |
| 173 | Output1 InputB Selector [4] | | |
| 174 | Output1 Operation [5] | | |
| 175 | Output2 Downscale (Low 16 bits) [1] | | |
| 176 | Output2 Downscale (High 16 bits) [1] | | |
| 177 | Output2 Upscale (Low 16 bits) [1] | Output | R/W |
| 178 | Output2 Upscale (High 16 bits) [1] | Configuration | |
| 179 | Output2 Under Range (Low 16 bits) [1] | | |
| 180 | Output2 Under Range (High 16 bits) [1] | | |
| 181 | Output2 Over Range (Low 16 bits) [1] | | |
| 182 | Output2 Over Range (High 16 bits) [1] | | |
| 183 | Output2 Fault Current (Low 16 bits) [1] | | |
| 184 | Output2 Fault Current (High 16 bits) [1] | | |
| 185 | Output2 Fault Mask [3] | | |
| 187 | Output2 InputA Selector [4] | | |
| 188 | Output2 InputB Selector [4] | | |
| 189 | Output2 Operation [5] | | |
| 190 | Output3 Downscale (Low 16 bits) [1] | | |
| 191 | Output3 Downscale (High 16 bits) [1] | | |
| 192 | Output3 Upscale (Low 16 bits) [1] | | |
| 193 | Output3 Upscale (High 16 bits) [1] | | |

**Supported ModBus Baudrates**

| Index | Baudrate |
|---|---|
| 0 | 4800 |
| 1 | 9600 |
| 2 | 19200 |
| 3 | 38400 |
| 4 | 57600 |

**Address 18: Supported Modbus Formats**

| High Byte | | | | | | | | Low Byte | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bit position | | | | | | | | | | | | | | | |
| 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

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

| Param. | Description | Notes | Type [11] |
|---|---|---|---|
| 194 | Output3 Under Range (Low 16 bits) [1] | Output Configuration | R/W |
| 195 | Output3 Under Range (High 16 bits) [1] | | |
| 196 | Output3 Over Range (Low 16 bits) [1] | | |
| 197 | Output3 Over Range (High 16 bits) [1] | | |
| 198 | Output3 Fault Current (Low 16 bits) [1] | | |
| 199 | Output3 Fault Current (High 16 bits) [1] | | |
| 200 | Output3 Fault Mask [3] | | |
| 202 | Output3 InputA Selector [4] | | |
| 203 | Output3 InputB Selector [4] | | |
| 204 | Output3 Operation [5] | | |
| 205 | Output4 Downscale (Low 16 bits) [1] | | |
| 206 | Output4 Downscale (High 16 bits) [1] | | |
| 207 | Output4 Upscale (Low 16 bits) [1] | | |
| 208 | Output4 Upscale (High 16 bits) [1] | | |
| 209 | Output4 Under Range (Low 16 bits) [1] | | |
| 210 | Output4 Under Range (High 16 bits) [1] | | |
| 211 | Output4 Over Range (Low 16 bits) [1] | | |
| 212 | Output4 Over Range (High 16 bits) [1] | | |
| 213 | Output4 Fault Current (Low 16 bits) [1] | | |
| 214 | Output4 Fault Current (High 16 bits) [1] | | |
| 215 | Output4 Fault Mask [3] | | |
| 217 | Output4 InputA Selector [4] | | |
| 218 | Output4 InputB Selector [4] | | |
| 219 | Output4 Operation [5] | | |
| 220 | Fault Bus Configuration [4] | Fault Config. | R/W |
| 240 | Alarm Configuration [6] | Alarm Control | R/W |
| 242 | Alarm Startup Lock [7] | | |
| 243 | Alarm Fault Configuration [8] | | |
| 244 | Alarm Fault Mask [3] | | |
| 245 | Contact Position in Case of Alarm [9] | | |
| 246 | Delay to Alarm Issue [10] | | |
| 247 | Delay to Alarm Removal [10] | | |
| 248 | Alarm Low Threshold (Low 16 bits) [1] | | |
| 249 | Alarm Low Threshold (High 16 bits) [1] | | |
| 250 | Alarm Low Threshold Hysteresis (Low 16 bits) [1] | | |
| 251 | Alarm Low Threshold Hysteresis (High 16 bits) [1] | | |
| 252 | Alarm High Threshold (Low 16 bits) [1] | | |
| 253 | Alarm High Threshold (High 16 bits) [1] | | |
| 254 | Alarm High Threshold Hysteresis (Low 16 bits) [1] | | |
| 255 | Alarm High Threshold Hysteresis (High 16 bits) [1] | | |
| 256 | Alarm InputA Selector [4] | | |
| 257 | Alarm InputB Selector [4] | | |
| 258 | Alarm Operation Selector [5] | | |
| 464 | EEPROM Write | Command | W |
| 548 | Output 1 virtual value (Low 16 bits) [1] | Output Data | R |
| 549 | Output 1 virtual value (High 16 bits) [1] | Output Data | R |
| 553 | Output 2 virtual value (Low 16 bits) [1] | Output Data | R |
| 554 | Output 2 virtual value (High 16 bits) [1] | Output Data | R |
| 558 | Output 3 virtual value (Low 16 bits) [1] | Output Data | R |
| 559 | Output 3 virtual value (High 16 bits) [1] | Output Data | R |
| 563 | Output 4 virtual value (Low 16 bits) [1] | Output Data | R |
| 564 | Output 4 virtual value (High 16 bits) [1] | Output Data | R |
| 567 | Alarm status [7] | Alarm Data | R |
| 600 | Ch. 1 chars 0, 1 | Tags | R/W |
| 601 | Ch. 1 chars 2, 3 | Tags | R/W |
| 602 | Ch. 1 chars 4, 5 | Tags | R/W |
| 603 | Ch. 1 chars 6, 7 | Tags | R/W |
| 604 | Ch. 1 chars 8, 9 | Tags | R/W |
| 605 | Ch. 1 chars 10, 11 | Tags | R/W |
| 606 | Ch. 1 chars 12, 13 | Tags | R/W |
| 607 | Ch. 1 chars 14, 15 | Tags | R/W |
| 608 | Ch. 2 chars 0, 1 | Tags | R/W |
| 609 | Ch. 2 chars 2, 3 | Tags | R/W |
| 610 | Ch. 2 chars 4, 5 | Tags | R/W |
| 611 | Ch. 2 chars 6, 7 | Tags | R/W |
| 612 | Ch. 2 chars 8, 9 | Tags | R/W |
| 613 | Ch. 2 chars 10, 11 | Tags | R/W |
| 614 | Ch. 2 chars 12, 13 | Tags | R/W |
| 615 | Ch. 2 chars 14, 15 | Tags | R/W |
| 616 | Ch. 3 chars 0, 1 | Tags | R/W |
| 617 | Ch. 3 chars 2, 3 | Tags | R/W |
| 618 | Ch. 3 chars 4, 5 | Tags | R/W |
| 619 | Ch. 3 chars 6, 7 | Tags | R/W |
| 620 | Ch. 3 chars 8, 9 | Tags | R/W |
| 621 | Ch. 3 chars 10, 11 | Tags | R/W |
| 622 | Ch. 3 chars 12, 13 | Tags | R/W |
| 623 | Ch. 3 chars 14, 15 | Tags | R/W |
| 624 | Ch. 4 chars 0, 1 | Tags | R/W |
| 625 | Ch. 4 chars 2, 3 | Tags | R/W |
| 626 | Ch. 4 chars 4, 5 | Tags | R/W |
| 627 | Ch. 4 chars 6, 7 | Tags | R/W |
| 628 | Ch. 4 chars 8, 9 | Tags | R/W |
| 629 | Ch. 4 chars 10, 11 | Tags | R/W |
| 630 | Ch. 4 chars 12, 13 | Tags | R/W |
| 631 | Ch. 4 chars 14, 15 | Tags | R/W |

**Address 464: EEPROM Write**

| High Byte | | | | | | | | Low Byte | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bit position | | | | | | | | | | | | | | | |
| 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

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

**Notes:**
(1) Expressed in 100 nA
(2) 0 = No fault,
    1 = Input out of range
(3) 0 = Ignore input fault,
    1 = Report input out of range
(4) 0 = Input1,
    1 = Input2,
    2 = Input3,
    3 = Input4
(5) 0 = None,
    1 = Sum,
    2 = Subtraction,
    3 = Maximum,
    4 = Minimum
(6) 0 = None,
    1 = Low,
    2 = High,
    3 = Window,
    4 = Fault repeater
(7) 0 = Inactive,
    1 = Active
(8) 0 = Ignore,
    1 = Lock status,
    2 = Alarm active,
    3 = Alarm inactive
(9) 0 = Open,
    1 = Closed
(10) Expressed in tenths of seconds
(11) Parameter type:
    R = read only,
    W = write only,
    R/W = read and write