Алматы (7273)495-231 Ангарск (3955)42-70-56 Архангельск (8182)63-90-72 Астрахань (8512)99-46-04 Барнаул (3852)73-04-42 Белгород (4735)40-23-142 Благовещенск (4162)35-142-07 Брянск (4232)59-03-52 Владименск (4162)35-142-07 Владикавказ (8672)42-90-42 Владимар (4935) 49-43-18 Волгоград (844)278-03-42 Вологара (8172)26-41-59 Воронеж (473)204-51-73 Екатеринбург (343)384-55-142 Ижевск (3412)26-03-58 Иваново (4932)77-34-06 Иркутск (395)273-98-46 Казань (843)206-01-42 Калининград (4012)72-03-81 Калининград (4012)72-03-81 Киров (3842)65-04-62 Киров (8332)68-02-04 Коломна (4966)23-41-49 Кострома (4942)77-07-42 Краснодар (861)203-40-90 Краснодар (861)203-40-90 Краснодар (861)203-40-90 Краснодар (861)203-40-90 Краснодар (81)203-40-90 Краснода

Киргизия (996)312-96-26-47

Магнитогорск (4219)55-03-13 Москва (495)268-04-70 Мурманск (8152)59-142-93 Набережные Челны (8552)20-53-41 Нижний Новгород (831)429-08-12 Ноябрьск (3843)20-46-81 Ноябрьск (3496)41-32-12 Новосибирск (383)357-86-73 Ноябрьск (3496)41-32-12 Омск (3492)41-32-12 Омск (3812)21-46-40 Орел (4262)44-53-42 Оренбург (4223)37-68-04 Пенза (8412)35-31-16 Петрозаводск (8142)55-98-37 Псков (8112)59-10-37

Россия (495)268-04-70

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Пермь (342)205-81-47 Ростов-на-Дону (863)308-18-15 Рязань (4912)46-61-142 Самара (846)206-03-16 Саранск (8342)35-96-24 Санкт-Петербург (812)309-46-40 Саратов (845)243-87-8 Севастополь (862)35-31-93 Симферополь (8652)87-13-56 Смоленск (4212)29-41-42 Сочи (862)242-72-31 Ставрополь (8652)20-65-13 Сыктывкар (8212)42-95-17 Сургут (3462)77-88-42 Тамбов (4752)50-40-97 Тверь (4352)63-31-42 Тольяти (8435)63-91-07 Томск (3835)98-41-53 Тула (4272)33-79-87 Тюмень (3452)66-21-18 Ульяновск (8435)24-23-59 Уфа (347)359-42-12 Хабаровск (8435)24-23-59 Уфа (347)359-42-12 Хабаровск (842)292-98-04 Чебоксары (8435)42-53-07 Челябинск (4212)92-98-04 Черповец (8202)49-02-142 Чита (3035)38-34-83 Якутск (4112)23-90-97 Яроспавль (4422)69-52-93

Казахстан (772)734-952-31

Конфигуратор для изоляторов серий D5000/D5200, D6000/D6200 SWC5090. Инструкция по эксплуатации

Document code: ISM0154 Installation and use of the SWC5090 Configuration Software

Revision: 13

Sheet 3 of 61

1. Introduction

The Configuration Software SWC5090 provides a PC user interface for D5000/D6000 series modules that allows the user to:

- Read and Write configuration parameters from and to the unit (via COM port);
- Restore data to and from local hard drive for backup;
- Monitor Input values (via COM port).
- Record monitoring sessions and save data to file.

1.2 Configurable models

G.M. International models that can be configured via SWC5090 software are:

- Smart Solenoid Drivers: D5293S, D5294S, D5295S.
- Temperature Converters: D5072S, D5072D, D5273S, D6072S, D6072D, D6273S.
- Resistance Repeaters: D5072S-087, D5072D-087.
- Thermocouple/mV Repeaters: D5072S-096, D5072D-096.
- Analog Input: D5212Q, D6212Q
- Digital Input: D5231E, D6231E.
- Digital Output: D5240T.
- Analog Signal Converter and Trip Amplifiers: D5254S, D6254S.
- Load Cell/Strain Gauge Converter: D5246S.
- HART® Mux Modem: 5700/5700-110.

1.3 Requirements

The Configuration Software has to be installed on a machine with the following minimum requirements:

- Pentium class Processor 200MHz;
- 800x600 pixels screen resolution;
- 256 MB RAM;
- 1 USB port;
- "Microsoft Windows" operating system with latest updates installed;
- Windows 7 and 8 users should set text size at 100% (Small) in the Display settings of the Control Panel (see screenshot in Figure 1).



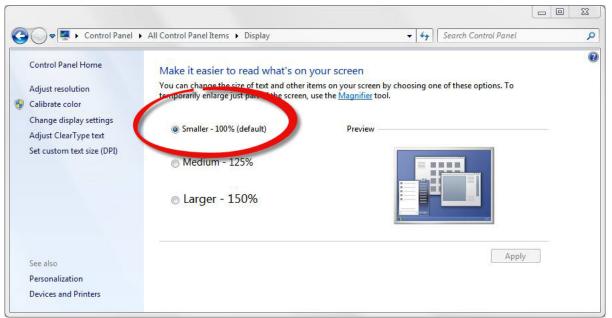


Figure 1: display text size settings screenshot.

Furthermore, the following items are required:

- PPC5092 (USB-to-MiniUSB Adapter) with correct drivers installed (See Section 8.1);
- MiniUSB cable (provided with PPC5092).



Figure 2: PPC5092 Adapter.



Figure 3: Mini-USB cable included with PPC5092.

2. SWC5090 Main Window

At start-up, the SWC5090 Configuration Software loads a Main Window, which is the same for all modules. The Main Window is basically a frame with a menu at the top and a bottom bar.

In case the module is already connected to the PC correctly, the SWC5090 detects it and asks the user if he wishes to Read parameters from module directly. COM port is automatically set in the configuration file for future sessions.

Instead, if the module is not connected at startup, the user can:

• decide to work offline by selecting the desired model from the "Module" entry in the Menu



• read offline parameters saved to file by going to "File -> Open file" entry in the Menu

If the module is connected after startup of the SWC5090, the user has to manually read parameters by pressing the dedicated button on the top right of the screen.

2.1 Main Menu

gni G.N	1. Internatio	nal - SWC50	90 Configuration Software - D5072S\D6072S -		_		×
File	Settings	Module	?	Store to device	Load fr	om device	;
			Figure 4. Ma				

Figure 4: Menu.

The menu at the top of the Main Window (see Figure 4) is divided into the following entries:

- "File"
- **Open:** load configuration data from local hard drive backup;
- **Save:** save configuration data to the present local hard drive backup;
- Save as...: save configuration data to a different local hard drive backup;
- **Print Preview:** screen preview of the configuration report to be printed;
- **Print:** configuration report print on paper;
- Exit: exit from the configuration software.
- "Settings"
 - Serial

In the COM Port Setup window (see Figure 5) the user can choose the COM Port of the PPC5092 in the dropdown menu at the top. The connection to the module can be tested by pressing the "**Test Port COM#**" button. Finally the COM Port can be updated by pressing the "**Update Com Port & Exit**" button or left unchanged by pressing the "**Exit without changes**" button.

COM1	~
Test Port	COM1
Update Com	Port & Exit

Figure 5: COM Port Setup window.

Modbus

In the Module Modbus Setup window (see Figure 6) the user can introduce the Modbus address of the module (from 1 to 247), the Modbus Baud Rate (selectable among 4800, 9600, 19200, 38400, 57600 and 115200 bps) and the Modbus Format (no parity 1 stop bit, even parity 1 stop bit, odd parity 1 stop bit).

The changes are saved by pressing the "**Ok**" button, while they are discarded by pressing "**Cancel**". Note that the "**Store to device**" button on the menu bar must be pressed to make the Modbus settings effective. Moreover, the module must be power cycled.



Sheet 6 of 61

Address		<u> </u>	
Baud Rate	38400		×
Format	no parity	1 stop bit	~
Term Res	OFF		~
Endianness	Little Endian		~

Figure 6: Modbus Setup window.

- Temperature Scale (only available with Temperature converters)
- Choose between °C and °F. The setting is stored into the configuration file for future uses.
- "Module"
 - Select Model: during off-line operations, select the module window among supported ones;
 - Show Identification: show the instrument and option code, and the software and hardware release. Identification
 is only available after that a read operation from module has been successfully completed.
 - Load Factory Settings: loads default parameters to configurator screen, for the selected module.
- "?"
 - Show EULA: The End User License Agreement is displayed and a copy can be saved;
 - Help: Opens this document in pdf format;
 - About SWC5090: Shows the release of the current SWC5090 Configuration Software.
 - In the Update Manager window (see Figure 7) the user can automatically check the "Running Version" against the "Last released Version" from G.M. International database. The Configuration Software can be updated by pressing the "Update" button or left unchanged by pressing the "Exit" button.

Update Manager	×
Running Version	1.3.6
Last Released Version	1.3.6
The current version is the I Push button <exit> to</exit>	
Update	Exit

Figure 7: Update Manager window.

On the right of the menu, two quick buttons are available: "Load from device", "Store to device".

By pressing the first one, the configuration settings, the Modbus settings and the Tag currently stored in the Module are read from the module and displayed. Since this operation overwrites the settings on the screen, the user is asked for confirmation.



The **"Store to device"** button allows the storage to the Module of the configuration settings, the Modbus settings and the Tag, which are currently displayed on the Configuration window. By doing so, the previous settings saved on the Module are overwritten.

Note that all configuration functions are available only when offline (Monitor or Data Logger are inactive).

In particular, the "Store to device" button is activated only when configuration data was successfully read from the Module or loaded from a backup file.

2.2 Bottom Bar

	2017 May 26 - 12:20:56
--	------------------------

Figure 8: Bottom Bar.

The Bottom Bar (see Figure 8) includes a status bar, a progress bar that indicates that the operation is in progress, and the current date & time.

3. Application Windows

The center of the SWC5090 Configuration Software window is filled with the Application Window, which is different for each module. In the Application Window the user can read the field data, configure the data ranges and so on.

3.1 D5072S, D5072D, D5273S, D6072S, D6072D, D6273S (up to software revision 2)



D5072S, D5072D, D5273S, D6072S, D6072D, D6273S are Universal Converters and share the same screens, except for the number of input, output and alarm channels.

The Application Window user interface is organized into the following areas:

- Configuration
 - Input
 - Output
 - Alarm
- Monitor
- Data Logger



3.1.1 Configuration

3.1.1.1 Input

guration Monitor Data Logger		e Load from device
out Output Alarm		
Input 1 TC Sensor Connection TC J Sensor Type TC J Downscale (°C) 0.0 Upscale (°C) 1000.0 Cold Junction Source Automatic Cold Junction Reference (°C) 0.0 Integration Speed slow Mains Frequency 50 Hz Offset (µV) 0 Multiplier 1 Tag Channel 1	Input 2 Sensor Connection TC Sensor Type TC J Downscale (°C) 100 Cold Junction Source Automa Cold Junction Reference (°C) Integration Speed Integration Speed slow Offset (µV) Integration Speed Tag Channe	0.0 375 ms 0 1

Figure 9: D5072D / D6072D Input configuration screen.

INPUT

Sensor Connection:

- TC
- RTD
- Potentiometer
- Voltage
- Resistance

Sensor Type: input sensor type (see list in section "Input specifications")

possibility of configuring a completely customized input curve (TC/RTD)

Wires: 2, 3, 4 wires selection for RTD/Resistance inputs

Downscale: input value of measuring range corresponding to defined low output value **Upscale:** input value of measuring range corresponding to defined high output value **Cold Junction Source:** reference junction compensation type (thermocouple only)

- Automatic via internal compensator (1 for each channel)
- Fixed programmable temperature compensation at fixed temperature
- Other Input remote compensation using RTD on remaining channel

Cold Junction Reference: fixed temperature compensation value (Cold Junction type Fixed only), range from -60 to +100 °C.

Integration speed:

- Slow 250 ms (mV/TC,2 wire RTD); 375 ms (Pot.), 500 ms (3,4 wire RTD)
- Fast 50 ms (mV/TC,2 wire RTD); 75 ms (Pot.), 100 ms (3,4 wire RTD)

Mains Frequency:

- 50 Hz
- 60 Hz only available with fast integration speed

Offset: value to be added/subtracted to input (μ V or m Ω depending on input sensor)

Multiplier: input multiplication value

Tag: 16 alphanumerical characters

Note: Downscale and Upscale settings should follow Minimum Span requirements stated in the data sheet, in order to avoid negative impacts on Output resolution.



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3.1.1.2 Output

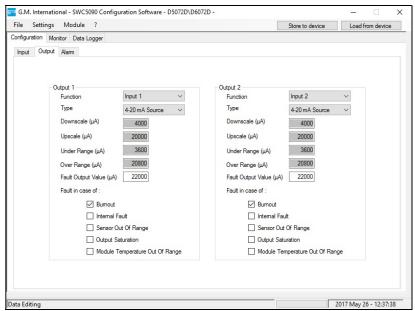


Figure 10: D5072D / D6072D Output configuration screen.

OUTPUT

•

•

•

Function: Input 1

- analog output represents input of first channel
 - analog output represents input of second channel
 - analog output represents the sum of the two input channels
 - analog output represents the subtraction of the two input ch.
- Min(Input 1, Input 2) analog output represents the lower of the two input ch.

All Output parameters are fully customizable

analog output represents the higher of the two input ch.

Max(Input 1, Input 2) Type:

•

0-20 mA Sink •

Input 2

Input 1 + 2

Input 1 - 2

- 4-20 mA Sink
- **Custom Sink**
- 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 downscale in normal working condition (range 0 to 24 mA) **Underrange:** analog output downscale in underrange condition (range 0 to 24 mA) **Overrange:** analog output downscale in overrange 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" in case of:
 - **Burnout** input sensor interruption •
 - Internal fault module internal fault
 - Sensor out of range input sensor out of configured input range
 - **Output Saturation** output is below Underrange or above Overrange
 - Module Temp. Out of range internal module temp. under or over specified module operating temp. limits



3.1.1.3 Alarm

	iguration Software - D5072D\D6072D -	×		ational - SWC5090 Confi	guration solewan	E-052755(002)	/33 -		
File Settings Module ?		Store to device Load from device	File Setting	gs Module ?				Store to devi	rice Load from device
Configuration Monitor Data Logger			Configuration	Monitor Data Logger					
Input Output Alarm			Input Outp	ut Alarm					
	Alam B								
	Type None 🗸	1		Alam A			Alam B		100
	Source Input 1	1		Туре	Window	~	Туре	Window	~
	Condition NE ~			Source	Input 1	~	Source	Input 1	~
	Low Set (°C) 0.0			Condition	NE \sim		Condition	NE \sim	
	Low Hysteresis (°C) 0.0			Low Set (°C)	100.0		Low Set (°C)	100.0	
	High Set (°C) 0.0			Low Hysteresis ("C)	10.0		Low Hysteresis ("C)	10.0	
	High Hysteresis (°C) 0.0			High Set (°C)	500.0		High Set (°C)	500.0	
	On Delay (s) 0.0			High Hysteresis ("C)	10.0		High Hysteresis ("C)	10.0	
	Off Delay (s) 0.0			On Delay (s)	1.0		On Delay (s)	1.0	
				Off Delay (s)	1.0		Off Delay (s)	1.0	
	In case of Fault Ignore 🗸	d		In case of Fault	Go On	~	In case of Fault	Go On	~
	Faults :			Faults :	la factoria de la composición de la composicinde la composición de la composición de la composición de		Faults :	Lonson Corr	
	Burnout Internal Fault			Bum	out		Burnout		
	Sensor Out Of Range			🗌 Inter			Internal I		
	Module Temperature Out Of Range				ior Out Of Range ule Temperature Ou			Out Of Range	
					uie Temperature Ou	t Of Hange	Module 1	Temperature Out Of	f Range
Data Editing		2017 May 26 - 13:36:53	Data Editing						2017 May 26 - 13:39:53

Figure 11: D5072D/D6072D (on the left) and D5273S/D6273S (on the right) alarm configuration screen.

ALARM

Type:

None	alarm is disabled
Low	alarm is triggered when source descends below "Low Set"
LowLock	alarm is inhibited until source ascends over "Low Set" and then, it behaves as a standard "Low" configuration
High	alarm is triggered when source ascends over "High Set"
HighLock	alarm is inhibited until source descends below "High Set" and then, it behaves as a standard "High" configuration
Window	alarm is triggered below "Low Set" and above "High Set"
Fault Repeater	alarm output reflects selected (one or more) Fault status
ce: reference value for ala	arm triggering
Input 1	input of first channel
Input 2	input of second channel
Input 1 + 2	sum of the two input channels
Input 1 - 2	subtraction of the two input channels
Min(Input 1, Input 2)	lower of the two input channels
	Low LowLock High HighLock Window Fault Repeater rce: reference value for ala Input 1 Input 2 Input 1 + 2 Input 1 - 2

Max(Input 1, Input 2) higher of the two input channels

Condition:

- NE alarm output is normally energized when deactivated
- ND alarm output is normally de-energized when deactivated
- **Low Set:** source value at which the alarm is triggered (in Low, LowLock, Window)
- Low Hysteresys: triggered Low alarm deactivates when source value reaches
 - Low Set + Low Hysteresys (0-500 $^\circ\text{C},$ 0-50 mV, 0-50 %)

High Set: source value at which the alarm is triggered (in High, HighLock, Window)

High Hysteresys: triggered High alarm deactivates when source value reaches

High Set - High Hysteresys (0-500 °C, 0-50 mV, 0-50 %)

On Delay: time for which the source variable 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 source variable has to be in normal condition before the alarm output is deactivated; configurable from 0 to 1000 seconds in steps of 100 ms

In case of fault:

- Ignore alarm is not affected
- Lock status alarm remains in the same status as it was before Fault occurred



- Go On
- Go Off alarm is deactivated

alarm is triggered,

Faults: if "Type" is set to "Fault repeater" select which faults will be repeated by alarm output; if "In case of fault" is different from "Ignore", select which faults should influence alarm output behaviour.

3.1.2 Monitor

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

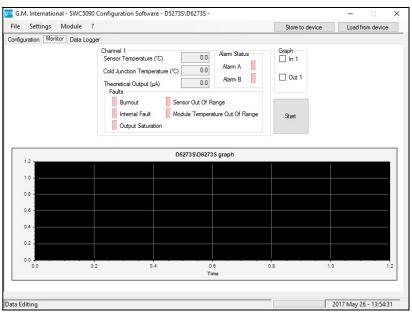


Figure 12: D5273S/D6273S Monitor screen.

The display shows Input and Theoretical Output values, fault and alarm status and a graph of chosen variable.

3.1.2.1 Input

Input variable is shown as it is detected by the module, after having applied configured calculations (Offset, Multiplier) and conversions.

Cold Junction Temperature shows the value of the internal Cold Junction; this value will influence the Output measure when Cold Junction configuration is set to "Automatic".

3.1.2.2 Output

This value represents the theoretical output. During certain conditions, this value may differ from the measured value at output terminal blocks.

3.1.2.3 Alarm status

Alarm status is represented by a LED, which is RED when activated. The LED status reflects the status of the Alarm exactly as configured.

3.1.2.4 Faults

Each Fault status is represented by a LED, which is RED when activated.

Note that the LED status does not take into account the current module configuration, therefore it only indicates the existence of the fault condition, independently from any configured behavior in case of fault.

3.1.2.5 Graph

The graph can show only one variable that must be chosen from the checkboxes above.

3.1.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.

By changing the parameters, the user can decide the duration of the recording period and the frequency of readings. After pressing "Start" button, the SWC5090 will prompt for a filename where the values will be stored in .CSV format.



Note that while the module is being recorded, Configuration screens are disabled, while Monitoring remains active.

e Settings Mo	dulo 2	Store to device	Load from device
		 Store to device	Load from device
iguration Monitor	Data Logger		
Parameters S	etup		1
Days	0 ~		
Hours	0 ~		
Minutes	1 ~		
	11 Sec.		
Scan Rate [s	0.5 ~		
Start	Clear		

Figure 13: Data Logger screen.

3.2 D5072S, D5072D, D6072S, D6072D (from software revision 3)



D5072S, D5072D, D6072S, D6072D are Universal Converters and share the same screens, except for the number of input, output and alarm channels.

The Application Window user interface is organized into the following areas:

- Configuration
 - Input
 - Output
 - Alarm
- Monitor
- Data Logger



3.2.1 Configuration

3.2.1.1 Input

le S	ettings Module ?			L	Store to device	Load from device
figurati	ion Monitor Data Logger					
nput	Output Alarm					
	ouput //um					
	Input 1	Tc	~	Input 2	Tc	~
	Sensor family			Sensor family		
	Sensor connection	2 wires	~	Sensor connection	2 wires	~
	Sensor Type	Themocouple J	\sim	Sensor Type	Thermocouple J	~
	Burnout	Active	\sim	Burnout	Active	~
	Cold Junction Source	Internal	~	Cold Junction Source	Internal	~
	Cable resistance Multiplier Tag	0.00 [Ω] 0 Channel1]	Cable resistance Multiplier Tag	0.00 [Ω] 0 Channel2	
	Common parameters					
	Integration Speed Slov	w v				
	Open custom t	able				
	Callendar-Van D	lusen				

Figure 14: D5072D / D6072D Input configuration screen.

INPUT

Sensor family:

- TC
- RTD
- Voltage
- Resistance
- Potentiometer

Sensor Type: input sensor type (see list in section "Input specifications")

possibility of configuring a completely customized input curve (TC/RTD) connection: 2, 3, 4 wires selection for RTD/Resistance inputs

Sensor connection:

- 2 wires or External compensator selection for TC
- 3 wires selection for potentiometer

Downscale: input value of measuring range corresponding to defined low output value **Upscale:** input value of measuring range corresponding to defined high output value **Cold Junction Source:** reference junction compensation type (thermocouple only)

- Automatic via internal compensator (1 for each channel)
- Fixed programmable temperature compensation at fixed temperature
- Other remote compensation using RTD on remaining channel

Cold Junction Reference: fixed temperature compensation value (Cold Junction type Fixed only), range from -60 to +100 °C.

Cable resistance: available only for RTD and resistance sensors. Configurable from 0 to 50 Ω

External compensator: compensation using RTD, Callendar van dusen or custom curve.

Integration speed:

- Slow
- Fast

Multiplier: input multiplication value

Tag: 16 alphanumerical characters

Note: Downscale and Upscale settings should follow Minimum Span requirements stated in the data sheet, in order to avoid negative impacts on Output resolution.



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3.2.1.2 Output

	?		Store to device	Load from devi		
ation Monitor Data Log	gger					
Output Alarm						
Output1		Output2				
Function	Temp1 ~	Function	Temp1	~		
Drive	Source ~	Drive	Source	~		
Туре	4-20 mA Low 🗸	Туре	4-20 mA Low	~		
Downscale :	4000.0 [μA] 0.0 [°C] Downscale :	4000.0 [µA]	0.0 [°C]		
Upscale :	20000.0 [µA] 1000.0 [°C] Upscale :	20000.0 [µA]	1000.0 [°C]		
Under range :	3600.0 [µA]	Under range :	3600.0 [μA]			
Over range :	20800.0 [µA]	Over range :	20800.0 [µA]			
Fault output value :	3200.0 [µA]	Fault output value :	3200.0 [µA]			
Damping factor :	0 [s]	Damping factor :	0 [s]			
Fault Burnout		Fault				
Internal fault		Internal fault				
Cold junction		Cold junction				
Cable resistance		Cable resistance	e			
Sensor out of spec	ification	Sensor out of sp	Sensor out of specification			
Out saturation		Out saturation				

Figure 15: D5072D / D6072D Output configuration screen.

OUTPUT

Function:

- Temp 1 analog output represents input of first channel
- Temp 2 analog output represents input of second channel
- Temp 1 2 analog output represents the subtraction of the two input channels
 - Temp 2 1 analog output represents the subtraction of the two input channels
- Temp mean represents the inputs mean value.
- Minimum analog output represents the lower of the two input channels
- Maximum) analog output represents the higher of the two input channels
- Redundancy When both sensors are available (no burnout condition) the input value represents the mean value of inputs. In case of one of them go on burnout condition, the input value represents the only working sensor.
 - Value 1 analog output represents input of first channel (Not available only for TC\RTD sensors)
 - Value 2 analog output represents input of second channel (Not available only for TC\RTD sensors)

Drive: Source, Sink mode.

Type:

- 4-20 mA Low
- 4-20 mA High
- 0-20mA High
- 4-20 mA NE43 Low, NAMUR RECOMMENDATION
- 4-20 mA NE43 High, NAMUR RECOMMENDATION
- Custom Scale: all Output parameters are fully customizable

Damping factor: causes conventional single-pole low pass filtering which is similar to an R-C network. Although high damping values will greatly suppress noise and make the output signal stable, it causes a slow response time.

Downscale: analog output downscale in normal working condition (range 0 to 24 mA)

Upscale: analog output downscale in normal working condition (range 0 to 24 mA)

Underrange: analog output downscale in underrange condition (range 0 to 24 mA)

Overrange: analog output downscale in overrange 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" in case of:

Burnout input sensor interruption



- Internal fault
- Cold junction
- Cable resistance
- Sensor out of range
- Output Saturation
- Module Temp. Out of range
 - 3.2.1.3 Alarm

module internal fault

- when resistance value is higher than 50 Ω
- input sensor out of configured input range
- output is below Underrange or above Overrange
- internal module temp. under or over specified module operating temp. limits

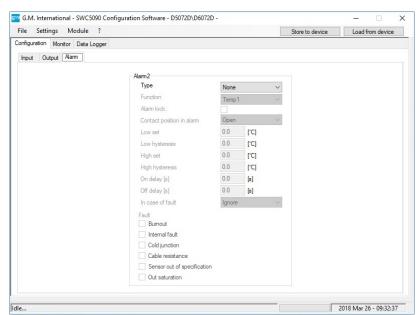


Figure 16: D5072D/D6072D alarm configuration screen.

ALARM

Type:

•

•

.

- None alarm is disabled
- Low alarm is triggered when source descends below "Low Set"
- High alarm is triggered when source ascends over "High Set"
 - Window alarm is triggered below "Low Set" and above "High Set"
 - Fault Repeater alarm output reflects selected (one or more) Fault status

Function:

- Temp 1 analog output represents input of first channel
- Temp 2 analog output represents input of second channel
- Temp 1 2 analog output represents the subtraction of the two input channels
 - Temp 2 1 analog output represents the subtraction of the two input channels
- Temp mean represents the inputs mean value.
- Minimum analog output represents the lower of the two input channels
- Maximum) analog output represents the higher of the two input channels
- Redundancy When both sensors are available (no burnout condition) the input value represents the mean value of inputs. In case of one of them go on burnout condition, the input value represents the only working sensor.
- Value 1 analog output represents input of first channel (Not available only for TC\RTD sensors)
- Value 2 analog output represents input of second channel (Not available only for TC\RTD sensors)

Alarm lock: alarm is inhibited until source ascends over "Low Set or descends below "High Set, and then it behaves as a standard "Low" or "High" configuration

Contact position in alarm:

• Open alarm output is normally Open in case of alarm condition



- Closed alarm output is normally Closed in case of alarm condition
- Low Set: source value at which the alarm is triggered (in Low, LowLock, Window)

Low Hysteresys: triggered Low alarm deactivates when source value reaches Low Set + Low Hysteresys **High Set:** source value at which the alarm is triggered (in High, HighLock, Window)

High Hysteresys: triggered High alarm deactivates when source value reaches High Set - High Hysteresys

On Delay: time for which the source variable 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 source variable has to be in normal condition before the alarm output is deactivated; configurable from 0 to 1000 seconds in steps of 100 ms

In case of fault:

- Ignore alarm is not affected
- Lock alarm remains in the same status as it was before Fault occurred
- Alarm active alarm is triggered,
- Alarm inactive alarm is deactivated

Faults: if "Type" is set to "Fault repeater" select which faults will be repeated by alarm output; if "In case of fault" is different from "Ignore", select which faults should influence alarm output behaviour.

3.2.2 Monitor

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

le Setti	ngs N	lodule	?			Store to device	Load from device
nfiguration	Monitor	Data Log	ger				
	- Chann - Field	el 1 values			Channel 2 Field values		
			Head 1 sensor temperature	[°C]	ł	lead 2 sensor temperature	[°C]
			Head 1 cold junction temperature	[°C]		lead 2 cold junction temperature	[°C]
			Theoretical output	[µA]		heoretical output	[µA]
	Sens	or working t	emperature		Sensor working temp	perature	
			Minimum temperature	[°C]	h	1inimum temperature	[°C]
			Maximum temperature	[°C]	I	laximum temperature	[°C]
			Reset values			Reset values	
	Faults				Faults		
		Open / bur	nout		Open / burnout		
		Cold junctio	n		Cold junction		
	Cable resistance				Cable resistance		
					Sensor out of specification		
		Sensor out of specification					
		Dutput satu	ration		Output saturation	n	
	Cumula	ative faults			Alarm status		
		nternal / ha	ardware fault		Alam B		
		Configuratio	n fault				
				St	rt		

Figure 17: D5072D/D6072D Monitor screen.

The display shows Input and Theoretical Output values, fault and alarm status and a graph of chosen variable.

3.2.2.1 Input

Input variable is shown as it is detected by the module, after having applied configured calculations (Multiplier) and conversions.

3.2.2.2 Output

This value represents the theoretical output. During certain conditions, this value may differ from the measured value at output terminal blocks.

3.2.2.3 Alarm status

Alarm status is represented by a LED, which is RED when activated. The LED status reflects the status of the Alarm exactly as configured.



3.2.2.4 Faults

Each Fault status is represented by a LED, which is RED when activated.

Note that the LED status does not take into account the current module configuration, therefore it only indicates the existence of the fault condition, independently from any configured behavior in case of fault.

3.2.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.

By changing the parameters, the user can decide the duration of the recording period and the frequency of readings. After pressing "Start" button, the SWC5090 will prompt for a filename where the values will be stored in .CSV format. Note that while the module is being recorded, Configuration screens are disabled, while Monitoring remains active.

Settings Module	2 ?	Store to device	Load from device
guration Monitor Data	a Logger		
Parameters Setup			
Days 0	~		
Hours 0	~		
Minutes 1	~		
Scan Rate [s] 0.	5 ~		
Start	Clear		

Figure 18: Data Logger screen.

3.3 D5072S-087, D5072D-087(from software revision 3)



D5072S-087, D5072D-087 are Universal Repeaters and share the same screens, except for the number of input, output and alarm channels.

The Application Window user interface is organized into the following areas:

- Configuration
 - Input / Output
- Monitor
- Data Logger



3.3.1 Configuration

3.3.1.1 Input

le Settin	gs Module ?			Store to device	Load from device
nfiguration	Monitor Data Logger				
nput\Output					
			Input 2		
input	Sensor connection	3 wires \checkmark	Sensor connection	3 wires	~
	In \Out function	Linear standard V	In\Out function	Linear standard	~
	Burnout	Active ~	Burnout	Active	~
	Multiplier	ALUVE 1	Multiplier	Active	1
	-	1			
	Cable resistance [Ω]	0.00		Ω]	0.00
	Tag	Channel1	Tag	Channel 2	
Outpu	.t1		Output2		
	Integration Speed Slov	w ~	Integration Speed	Slow ~	
	Fault		Fault		
	Internal fault		Internal fault		
	Burnout		Bumout		
Input	common parameters		Output duplication		
	Open custom ta	able			
	Integration Speed Slov	w ~	Active/Inactive		
	integration speed Sio				

Figure 19: D5072D-087 Input / Output configuration screen.

INPUT

Sensor connection: 2, 3, 4 wires selection

Input / Output function:

- Linear standard: output reflects the input signal (standard range)
- Linear extended: output reflects the input signal (extended range)
- Custom: possibility of configuring a completely customized input curve

Burnout:

- Active: when selected burnout fault condition is triggered
- Inactive: when selected burnout fault condition is not triggered

Multiplier: input multiplication value

Cable resistance: configurable from 0 to 50 Ω

Tag: 16 alphanumerical characters

Output Integration speed:

- Slow
- Fast

Fault condition:

- Internal fault: module internal fault
- Burnout: input sensor interruption

Input Integration speed:

Slow

Fast

Output duplication:

Active/inactive: when selected, it disables Input 2 and Output 2 configuration

3.3.2 Monitor

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



nfiguration	Monitor Data Logger			
- ingentation	Channel 1 Field values	Channel 2 Field values		
	Head 1 measured value [Ω] Theoretical output [Ω]		Head 2 measured value Theoretical output	[Ω] [Ω]
	Faults Open / burnout	Faults Open / b	umout	
	Cumulative faults			
	Internal / hardware fault			
	Conliguration ratik			
		Start		

Figure 20: D5072D-087 Monitor screen.

The display shows Field values and Fault status.

3.3.2.1 Field values

Field values represent heads measured values and theoretical outputs.

3.3.2.2 Faults

Each Fault status is represented by a LED, which is RED when activated.

Note that the LED status does not take into account the current module configuration, therefore it only indicates the existence of the fault condition, independently from any configured behavior in case of fault.

3.3.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.

By changing the parameters, the user can decide the duration of the recording period and the frequency of readings. After pressing "Start" button, the SWC5090 will prompt for a filename where the values will be stored in .CSV format. Note that while the module is being recorded, Configuration screens are disabled, while Monitoring remains active.

e Settings Module ?	Store to device Load from dev	/ice
figuration Monitor Data Logger		
Parameters Setup		-
Davs 0 ~		
Days 0 V		
Hours 0 ~		
Hours		
Minutes 0 ~		
Minutes		
Scan Bate [s] 0.5		
Scan Rate [s] 0.5 ~		
Start Clear		

Figure 21: Data Logger screen.



Sheet 20 of 61

3.4 D5072S-096, D5072D-096



D5072S-096, D5072D-096 are Universal Repeaters and share the same screens, except for the number of input, output and alarm channels.

The Application Window user interface is organized into the following areas:

- Configuration
- Input / Output
- Monitor
- Data Logger

3.4.1 Configuration

3.4.1.1 Input

					Store to device	Load from device
urat	ion Monitor Data Logger					
nt\O	Dutput					
	Input 1			Input 2		
	In\Out function	Linear	~	In\Out function	Linear	~
	Burnout	Active	~	Burnout	Active	~
	Cold Junction Source	Internal	\sim	Cold Junction Source	Internal	\sim
	Cold Junction Reference [°C]		0.0	Cold Junction Reference [°C]		0.0
	Tag	Channel1		Tag	Channel2	
	Output1 Fault Internal fault Burnout			Output2 Fault Internal fault Burnout		
	Input common parameters Open custom table	_				
	Integration Speed Slow	~				

Figure 22: D5072D-096 Input / Output configuration screen.

INPUT

Input / Output function:

- Linear: output reflects the input signal
- Custom: possibility of configuring a completely customized input curve(Thermocouple)
- Thermocouple: input sensor type(see list in section "Input specifications")

Burnout

• Active: when selected burnout fault condition is triggered



• Inactive: when selected burnout fault condition is not triggered

Cold junction source:

- Internal: via internal compensator (1 for each channel)
- External: programmable temperature compensation at fixed temperature

Cold Junction Reference: fixed temperature compensation value (Cold Junction type Fixed only), range from -60 to +100 °C.

Tag: 16 alphanumerical characters

Integration speed:

- Slow
- Fast

Fault condition:

- Internal fault: module internal fault
- Burout: input sensor interruption

3.4.2 Monitor

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

ile Setti	ngs Mod	ule ?			Store to device	Load from device
onfiguration	Monitor D	ata Logger				
	Channel 1			Channel 2		
	Field val	ues		Field values		
		Head 1 measured value	[mV]		Head 2 measured value	[mV]
		Theoretical output	[mV]		Theoretical output	[mV]
	Faults			Faults		
	Op	en / bumout		Open / bu	mout	
	Cumulativ	e faults				
	Inte	ernal / hardware fault				
	Cor	nfiguration fault				
			Sta	rt		
			Jta			
		L	510			
			518			
			514			
			5.6			
			5.6			
			5.6			
			30	n		
				N		
				<u> </u>		
				<u></u>		
				<u></u>		2018 Apr 13 - 14:30:39

Figure 23: D5072D-096 Monitor screen.

The display shows Field values and Fault status.

3.4.2.1 Field values

Field values represent heads measured values and theoretical outputs.

3.4.2.2 Faults

Each Fault status is represented by a LED, which is RED when activated.

Note that the LED status does not take into account the current module configuration, therefore it only indicates the existence of the fault condition, independently from any configured behavior in case of fault.

3.4.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.

By changing the parameters, the user can decide the duration of the recording period and the frequency of readings. After pressing "Start" button, the SWC5090 will prompt for a filename where the values will be stored in .CSV format. Note that while the module is being recorded, Configuration screens are disabled, while Monitoring remains active.



Sheet 22 of 61

G.M. International - SWC5090 Configuration Software - D5072D-096 -	>
File Settings Module ?	Store to device Load from device
onfiguration Monitor Data Logger	
Parameters Setup	
Days 0 V	
Hours 0 ~	
Hours 0 ~	
Minutes 0 ~	
Scan Rate [s] 0.5 V	
Start Clear	
2	2018 Apr 13 - 14:31:45

Figure 24: Data Logger screen.

3.5 D5231E / D6231E (up to software revision 0)



D5231E is an intrinsically safe eight channel Switch/Proximity detector repeater interface. Modbus RTU RS-485 output is available on Bus connector.

The Application Window user interface is organized into the following areas:

- Configuration
- Monitor
- Data Logger



3.5.1 Configuration

G.M. International - SWC5090 Configuration Software - D5231E\D6231E -		- 🗆 🗙	🚾 G.M. Internat	tional - SWC5090 Con	figuration Software - D5231E\D6231	Ε-		- II >
File Settings Module ?	Store to device	Load from device	File Setting:	is Module ?			Store to dev	vice Load from device
Configuration Monitor Data Logger			Configuration M	Monitor Data Logger				
Inputs Outputs			Inputs Output	ts				
Input I Preximity V Fault on bus	Tags Tag 1 1		Outputs	Source		Contact position when input is open	Contact position in case of fault	
Input 2 Proximity V Fault on bus	Tag 2 2		Output 1 In	nput 1 v	Fault repeater - Open in normal condition. - Closed in fault condition.	Open 🗸	Closed ~	
Input 3 Proximity V Fault on bus	Tag 3 3		Output 2 In		Fault repeater - Open in normal condition. - Closed in fault condition.	Open 🗸	Closed ~	
Input 4 Dry Contact V Fault on bus	Tag4 4		Output 3 C Output 4 In	Cumulative fault 🗸	🗋 ln 1 🔲 ln 2 🛄 ln 3 🗌 ln	Open ~ 4 In 5 In 6 Open ~	Cosed In 8	Cumulative fault : - Open in nomal condition. - Closed in fault condition.
Input 5 Dry Contact 🗸 Fault on bus	Tag 5 5		Output 5 In			Open ~	Open 😪	
Input 6 Dry Contact V Fault on bus	Tag 6 6		Output 6 In	nput 6 v		Open ~	Open 😔	
Input 7 Dry Contact V Fault on bus	Tag 7 7		Output 7 In	nput 7 🗸 🗸		Open 🗸	Open 😔	
Input 8 Dry Contact V Fault on bus	Tag 8 8			logical Function \checkmark	🗌 ln 1 🗌 ln 2 🗌 ln 3 🗍 lr	Open ∨ 4 □ ln 5 □ ln 6	Open 🚽	
Data Editing		2017 May 30 - 10:29:14	Data Editing					2017 May 30 - 10:26:26

Figure 25: D5231E / D6231E input (on the left) and output (on the right) configuration screen.

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:

- Sensor Type
- Proximity
- Dry Contact

Note: To enable line diagnostic on Voltage free contacts, follow instructions in Section "Operation" of Instruction Manual ISM0172 and configure sensor as "Proximity".

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
 - Cumulative fault: Output represents OR function of selected inputs fault conditions
- Contact: normal condition of output contact
 - Open
 - Closed
- In case of fault:
 - Ignore
 - Open
 - Closed
- Fault repeater: Output represents Input Fault status
- Logical Function: visible only when selected in "Output source" Allows the logical binding of 2 or more (up to 8) Inputs.
 - AND Output represents AND logical function of selected Inputs,



- OR
- Output represents OR logical function of selected Inputs.

3.5.2 Monitor

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

e Settings Module ?				Store to device	Load from device
figuration Monitor Data Logger	1				
Input Status			Output Status		
Input 1			Output 1		
Input 2			Output 2		
Input 3	-		Output 3		
Input 4			Output 4		
Input 5			Output 5		
Input 6			Output 6		
Input 7			Output 7		
Input 8			Output 8		
		Start			

Figure 26: D5231E / D6231E Monitor screen.

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

3.5.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.

By changing the parameters, the user can decide the duration of the recording period and the frequency of readings. After pressing "Start" button, the SWC5090 will prompt for a filename where the values will be stored in .CSV format. Note that while the module is being recorded, Configuration screens are disabled, while Monitoring remains active.



Sheet 25 of 61

G.M. International - SWC5090 Configuration Software - D5231E\[06231E -	>
le Settings Module ?	Store to dev	vice Load from device
figuration Monitor Data Logger		
Parameters Setup		
lays 0 ~		
lours 0 ~		
linutes 1 ~		
can Rate [s] 0.5 V		
Start Clear		
a Editing		2017 May 30 - 10:39:00

Figure 27: Data Logger screen.

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

3.6 D5231E / D6231E (from software revision 1)

1 B B B B B B B B B B B B B B B B B B B	
	555
The second	S.
1 Subar and American Little A	COM
	D3231E
And a second sec	
a state and the state of the st	1
	CONFIG
	1 PMR
	1.515/01
THAT I STATE	1 2 50/10 1 2 50/10
	A 575/713
	O STE/LT
R STORES ZEE	1 2 310/01
	C BATHER
	SIL

D5231E is an intrinsically safe eight channel Switch/Proximity detector repeater interface. Modbus RTU RS-485 output is available on Bus connector.

The Application Window user interface is organized into the following areas:

- Configuration
- Monitor
- Data Logger



Sheet 26 of 61

3.6.1 Configuration

🚎 G.M. International - SWC5090 Configurati	ion Software - D5231E\D6231E -		- 🗆 ×	G.M. Interr	national - SWC5090 Co	nfiguration Software - D5231E\D623	1E -		– 🗆 X
File Settings Module ?		Store to device	Load from device	File Settin	ngs Module ?			Store to de	vice Load from device
Configuration Monitor Data Logger				Configuration	Monitor Data Logger				
Inputs Outputs				Inputs Outp	puts				
Inputs Input 1 Proximity	Fault on bus Tags	1	1	Outputs	Source		Contact position when input is open	Contact position in case of fault	
Input 2 Proximity	✓ Fault on bus □ Tag 2	2]	Output 1	Input 1 🗸 🗸	Fault repeater - Open in normal condition. - Closed in fault condition.	Open 🗸	Closed ~	
Input 3 Proximity	✓ Fault on bus □ Tag 3	3	1	Output 2	Input 2 V	Fault repeater - Open in normal condition. - Closed in fault condition.	Open 🗸	Closed ~	
Input 4 Dry Contact	Fault on bus Tag 4	4		Output 3	Cumulative fault \vee	🗌 ln 1 🗌 ln 2 🔲 ln 3 📃 l	Open ∨ n 4 □ ln 5 □ ln 6	Closed 🚽	Cumulative fault : - Open in normal condition. - Closed in fault condition.
Input 5 Dry Contact	✓ Fault on bus Tag 5	5		Output 4	Input 4 v		Open ∨	Open 🗸	
			*: 	Output 5	Input 5 ~		Open 🗸	Open 🧹	
Input 6 Dry Contact		0		Output 6	Input 6 v		Open 🗸	Open 💛	
Input 7 Dry Contact	Fault on bus Tag 7	7	1	Output 7	Input 7 ~		Open 🗸	Open 👻	
Input 8 Dry Contact	✓ Fault on bus Tag 8	8]		Logical Function \checkmark AND \checkmark	🗌 ln 1 🗌 ln 2 🗌 ln 3 🔲 l	Open ∨ n 4 [] ln 5 [] ln 6	Open	
Data Editing		-	2017 May 30 - 10:29:14	Data Editing					2017 May 30 - 10:26:26

Figure 28: D5231E / D6231E input (on the left) and output (on the right) configuration screen.

G.M. International - SWC5090 Configuration Softw	ware - D5231E\D6231E - *		- 🗆 🗙	G.M. Int	ernational - SWC5090 Configuration Softv	vare - D5231E\D6231E - *		- 🗆 X
File Settings Module ?		Store to device	Load from device	File Sett	ings Module ?		Store to device	Load from device
Configuration Monitor Data Logger				Configuration	Monitor Data Logger			
Inputs Outputs				Inputs Ou	tputs			
Outputs Source	Contact position when input is open	Contact position in case of fault		Outputs	Source	Contact position when input is open	Contact position in case of fault	
Output 1 Custom Function V Input 1 Input 2	Open 🗸	Open 🚽		Output 1	Custom Function ~ VIEW TABLE	Open ~	Open 🗠	
Output 2 Input 3 Input 4 Input 5	Open ~	Open		Output 2	Input 2 V	Open \sim	Open 🗸	
Output 3 Output 3 Input 7 Input 8 Logical Function	Open ~	Open 🥪		Output 3	Input 3 ~	Open 🗸	Open 🗸	
Output 4 Custom Function	Open 🗸	Open ~		Output 4	Input 4 V	Open ~	Open v	
Output 5 Input 5 V	Open 🗸	Open 👾		Output 5	Input 5 🗸	Open 🗸	Open 🗸	
Output 6 Input 6 🗸	Open 🗸	Open 💛		Output 6	Input 6 🗸	Open 🗸	Open 🗸 🗸	
Output 7 Input 7 ~	Open ~	Open 🚽		Output 7	Input 7 V	Open ~	Open ~	
Output 8 Input 8 ~	Open 🗸	Open		Output 8	Input 8 V	Open ~	Open V	
Data Editing			2021 Oct 05 - 09:47:16	Data Editing				2021 Oct 05 - 09:47:48

Figure 29: D5231E / D6231E custom function selection.

G.M. International - SWC5090 Configuration Software - D5231E\D6	231E - *	- 🗆 🗙	G.M. International - SWC5090 Configuration Software - D5231E\D6231E - *	- 🗆 ×
File Settings Module ?	Store to device	Load from device	File Settings Module ?	Store to device Load from device
Configuration Monitor Data Logger			Configuration Monitor Data Logger	
Inputs Outputs			Inputs Outputs	
Output 1			Input 2 Input 1 Output 1	
			0 1 0	
D5231E INPUTS			1 1 1	
	INPUT 1			
	INPUT 2			
	INPUT 3			
	INPUT 4			
	INPUT 5			
	INPUT 6			
	INPUT 7			
	INPUT 8			
UPD/	ATE TABLE			
ADD OR REMOVE INPUTS IMPOR	RT CHANGES EXIT	WITHOUT CHANGES	ADD OR REMOVE INPUTS IMPORT CHANGES	EXIT WITHOUT CHANGES
Data Editing		2021 Oct 05 - 09:48:58	Data Editing	2021 Oct 05 - 09:49:18

Figure 30: D5231E / D6231E custom function 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
- Dry Contact

Note: To enable line diagnostic on Voltage free contacts, follow instructions in Section "Operation" of Instruction Manual ISM0172 and configure sensor as "Proximity".

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
- Cumulative fault: Output represents OR function of selected inputs fault conditions
- Custom function: Output is fully configurable by user and its behavior depends of the logical configuration of the selected inputs.

Contact: normal condition of output contact

- Open
- Closed

In case of fault:

- Ignore
- Open
- Closed
- Fault repeater: Output represents Input Fault status
- **Logical Function:** visible only when selected in "Output source" Allows the logical binding of 2 or more (up to 8) Inputs.
- AND Output represents AND logical function of selected Inputs,
- OR Output represents OR logical function of selected Inputs.

• Custom Function (Configuration procedure):

- Select from Output Source "Custom Function"
- Click the "VIEW TABLE" button to open the configuration panel
- Click the "ADD OR REMOVE INPUTS" to modify the inputs used in custom function
- Click the "UPDATE TABLE" to open the logical truth table, then modify the value (0 or 1) in the output column corresponding to the inputs values configuration.
- Click the "IMPORT CHANGES" to save the truth table.



3.6.2 Monitor

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

le Settings Module ?			Store to device	Load from device
figuration Monitor Data Logger				
Input Status		Output Status		
Input 1	-	Output 1		
Input 2	-	Output 2		
Input 3	-	Output 3		
Input 4		Output 4		
Input 5		Output 5		
Input 6		Output 6		
Input 7		Output 7		
Input 8		Output 8		
		Start		

Figure 31: D5231E / D6231E Monitor screen.

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

3.6.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.

By changing the parameters, the user can decide the duration of the recording period and the frequency of readings. After pressing "Start" button, the SWC5090 will prompt for a filename where the values will be stored in .CSV format. Note that while the module is being recorded, Configuration screens are disabled, while Monitoring remains active.



ile Settings M	adula 2		
		Store t	to device Load from device
nfiguration Monitor	Data Logger		
Parameters Setup			
Days 0	~		
-,-			
lours 0	~		
linutes 1	~		
ican Rate [s] 0.5	~		
ican nate [a]			
Start	Clear		
a Editing			2017 May 30 - 10:39:00

Figure 32: Data Logger screen.

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

3.7 D5240T



Note: Software revision of the module can be found by clicking on "Module > Show identification > Software revision". D5240T is a Digital Output Isolator, suitable for driving solenoid valves, visual or audible alarms or other process control devices in Hazardous Area.

The Application Window user interface is organized into the following areas:

- Configuration
- Data Logger



3.7.1 Configuration

	ngs Module					Store to device	Load from device	8
nfiguration	DataLogger							
		External inputs status		Outputs co	-Counting			
		External inputs status		Outputs co	Hardw	are		
			- Input 1	Output 1	Input 1	~		
				Output 1	Input I	*		
			- Input 2	Output 2	Input 2	~		
			- Input 3					
				Output 3	Input 3	\sim		
				Module TA				
		START		D5240	Г	Tag		

Figure 33: D5240T configuration screen.

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. **TAG:** Identification of the specific operating loop of the module.

External inputs status: Status of each Input channel is indicated in the related field.

Outputs configuration: Each Output can be configured to be driven by an independent Input, or by its opposite.

D5240T Input can be Hardware (via Terminal blocks) and/or Software (via Modbus). Both types can be used to drive the Output. For Software input see next Section.

Hardware input:

Output 1 to 3:

- Input1: Output represents Input1
- Input2 :Output represents Input2
- Input3: Output represents Input3
- Not Input1: Output represents Not Input1 *
- Not Input2 :Output represents Not Input2 *
- Not Input3: Output represents Not Input3 *

^{*} Note: example: Input = 1; Output = 0



Revision: 13

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ile Setti	ngs Module	?				Store to d	evice	Load from device	
nfiguration	DataLogger								
External i	nputs status		Outputs con						
				Hardware		Logical function	Mod	Bus	
		- Input 1	Output 1	Input 1	~	AND	None	~	
		- Input 2							
		- Input 3	Output 2	Input 2	~	AND	✓ None	~	
	2	in par o	Output 3	Input 3	~	AND	< None	~	
			Output 3	input o		7110	HONG	-	
			Module TAG	i					
	START		D5240T		Tag				

Figure 34: D5240T Advanced configuration options.

ADVANCED OPTIONS:

Advanced options for configuration can be found by clicking on the "Module > Advanced Options" entry of the main menu. Hardware and Software Input can be logically combined to drive the Output.

Hardware Input	Logical function	Software Input	Output
0	AND	0	0
0	AND	1	0
1	AND	0	0
1	AND	1	1
0	OR	0	0
0	OR	1	1
1	OR	0	1
1	OR	1	1

Note: Selecting "Not Input" changes Input to opposite state (1 to 0; 0 to 1). Note: Only when the selected Modbus input is different from "None", the hardware input can be set to "None".

3.7.2 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.

By changing the parameters, the user can decide the duration of the recording period and the frequency of readings. After pressing "Start" button, the SWC5090 will prompt for a filename where the values will be stored in .CSV format. Note that while the module is being recorded, Configuration screens are disabled, while Monitoring remains active.



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		Configuration Softw	are - D5240T -		– 🗆 🗙
and the second second second	Module ?			Store to device	Load from device
Configuration Dat	aLogger				
Configuration Uat	Parameters Se Days Hours Minutes Scan Rate [5]	0 ~ 0 ~ 1 ~			
Data Editing				 	2017 May 26 - 14:10:33

Figure 35: Data Logger screen.

PARAMETERS SETUP:

Days: Number of days to acquireHours: Number of hours to acquireMinutes: Number of minutes to acquireScan rate: Frequency interval for acquisitions

3.8 D5293S, D5294S (software revision 0)



Note: Software revision of the module can be found by clicking on "Module > Show identification > Software revision". The D5293S-D5294S Application Window user interface is organized into three Tabs:

- Configuration
 - User Manual Settings
 - Fault Conditions Monitoring
 - Tag
 - Acquire Functions
 - Continuous Scan
- Monitor
 - Measured Values
 - Graph



Data Logger

3.8.1 Configuration

3.8.1.1 Continuous Scan

Continuous S	ican	
	Stop	

Figure 36: Continuous Scan box.

By pressing the **"Start**" button in the **Continuous Scan** box (see Figure 36), the module starts acquiring the data field (in the **Measured Values**) periodically. To interrupt data acquisition press the same button – this time the label will be **"Stop"** – shall be pressed.

3.8.1.2 Tag

Tag]
loop1	

Figure 37: Tag box.

The Tag (see Figure 37) provides a label that can be associated to the specific loop.

3.8.1.3 User Manual Settings

User Manual Settings	
Load Supply Voltage RMS (V)	23.8
Load Current RMS (A)	0.083
Load OFF Resistance (Ohm)	157
Isolation Resistance (kOhm)	490
Supply Voltage Limits (± V)	1.2
Load Current Limits (± A)	0.005
Load OFF Res. Limits (± Ohm)	25
Isolation Res. Limit (kOhm)	50

Figure 38: User Manual Settings box.

User Manual Settings (see Figure 38) can partially be acquired through the **Acquire Functions** and/or changed manually before being written to the D5293S/D5294S module through the **"Write to Module"** button on the Menu Bar. **User Manual Settings** include:



• Load Supply Voltage RMS (V)

indicates the RMS voltage that is actually applied (in ON State, load energized) or that will be applied (in OFF State, load de-energized) to the load.

• Load Current RMS (A)

represents the RMS current that is flowing through the load (hence it will be zero in OFF state).

Load OFF Resistance (Ω)

is the load resistance measured in OFF State. In ON State, this value will remain at the saturation value (5 k Ω)

• Isolation Resistance (kΩ)

shows the leakage resistance to earth. Also the Isolation Resistance is measured only in OFF State; during ON State, it goes to the saturation value of $3 M\Omega$

• Coil Integrity

monitors the status of the relay coil in ON State: "FAIL" indicates that a relay coil is in short-circuit

• Driver Status

indicates whether the load has been energized ("ON") or not ("OFF")

User Manual Settings specify nominal values and limits that will activate the fault indication (red LED and two fault relay contacts). See Section 3.8.1.4 for more details.

Remember that only after pressing the "Write to Module" button on the Menu Bar User Manual Settings and Fault Conditions Monitoring become effective.

See Section 3.8.1.4 for an explanation of the color indicators on the left.

3.8.1.4 Fault Conditions Monitoring

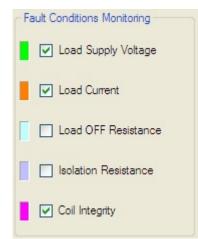


Figure 39: Fault Conditions Monitoring box.

Fault Conditions Monitoring (see Figure 39) indicate which subset of the User Manual Settings shall activate the fault. Therefore:

- If *Load Supply Voltage* is enabled, a measured *Load Supply Voltage RMS* outside the specified limits will activate the fault.
- If *Load Current* is enabled,

a measured Load Current RMS outside the specified limits will activate the fault.

- If *Load OFF Resistance* is enabled, a measured *Load OFF Resistance* outside the specified limits shall activate the fault.
- If Isolation Resistance is enabled, only a measured Isolation Resistance <u>below</u> the specified limit shall activate the fault.
- If *Coil Integrity* is enabled, a coil short circuit in ON state shall activate the fault.

Note that, by activating the monitoring of a fault condition, the related color indicator on the left side becomes brighter together with the corresponding measured value and user manual settings. This color policy allows a fast identification of the quantities that contribute to the fault activation.



Fault Conditions Monitoring are combined with the **Driver Status**. While the *Load Supply Voltage RMS* can always be effective, the *Load Current RMS* and *Coil Integrity* can be active only during the ON State, whereas the *Load OFF Resistance* and the *Isolation Resistance* only during the OFF State.

Note also that only after pressing the **"Write to Module"** button on the Menu Bar the **User Manual Settings** and the **Fault Conditions Monitoring** will be saved onto the module, hence becoming effective.

3.4.1.5 Fault Activation

The fault is activated if <u>at least one</u> of the following conditions are met:

- Load Supply Voltage Monitoring is enabled AND ((Load Supply Voltage RMS < Load Supply Voltage RMS Nominal – Supply Voltage Limits) OR (Load Supply Voltage RMS > Load Supply Voltage RMS Nominal + Supply Voltage Limits))
- Load Current Monitoring is enabled AND the load is Activated AND ((Load Current RMS < Load Current RMS Nominal - Load Current Limits) OR (Load Current RMS > Load Current RMS Nominal + Load Current Limits))
- Load OFF Resistance Monitoring is enabled AND the load is De-activated AND
 ((Load OFF Resistance < Load OFF Resistance Nominal Load OFF Resistance Limits) OR
 (Load OFF Resistance > Load OFF Resistance Nominal + Load OFF Resistance Limits))
- Isolation Resistance Monitoring is enabled AND the load is De-activated AND (Isolation Resistance < Isolation Resistance Nominal - Isolation Resistance Limit)
- Coil Integrity Monitoring is enabled AND the load is Activated AND Coil Integrity is FAIL.

Active			Status				
Monitoring		OFF State		ON State			
Load Supply Voltage	$V_{\rm meas} < V_{\rm nom} - V_{\rm lim}$	$V_{\rm nom} - V_{\rm lim} \leq V_{\rm meas}$ or $V_{\rm meas} \leq V_{\rm nom} + V_{\rm lim}$	$V_{\rm nom} + V_{\rm lim} < V_{\rm meas}$	$V_{\rm meas} < V_{\rm nom} - V_{\rm lim}$	$V_{\text{nom}} - V_{\text{lin}}$ $O _{\text{Meas}} \leq V_{\text{n}}$	$V_{\text{meas}} \le V_{\text{meas}}$ r $V_{\text{hom}} + V_{\text{lim}}$	$V_{\rm nom} + V_{\rm lim} < V_{\rm meas}$
Load Current	Not applicable			$I_{\rm meas} < I_{\rm nom} - I_{\rm lim}$	$I_{\rm nom} - I_{\rm lin}$ O $I_{\rm meas} \le I_{\rm n}$	$I_{\text{meas}} \leq I_{\text{meas}}$ r $I_{\text{hom}} + I_{\text{lim}}$	$I_{\rm nom} + I_{\rm lim} < I_{\rm meas}$
Load OFF Resistance	$R_{ m meas} < R_{ m nom} - R_{ m lim}$	$\begin{aligned} R_{\text{nom}} - R_{\text{lim}} &\leq R_{\text{meas}} \\ & \text{Or} \\ R_{\text{meas}} &\leq R_{\text{nom}} + R_{\text{lim}} \end{aligned}$	$R_{\rm nom} + R_{\rm lim} < R_{\rm meas}$	Not applicable			
Isolation Resistance	$R_{\rm meas} < R_{\rm nom} - R_{\rm lim}$	$R_{\rm nom} - R_{\rm lim} \le R_{\rm meas}$		Not applicable			
Coil Integrity	Not applicable			FAIL			ОК

Table 1: Combination of Monitoring functions activation with Driver Status.

Table 1 shows how the activation of the various Monitoring functions combines with the Driver Status: a red cell indicates that the fault can be activated, while a green cell indicates that the fault cannot be activated.

Note again that only after pressing the **"Write to Module"** button on the Menu Bar, the **User Manual Settings** and **Fault Conditions Monitoring** will be exported to the module, hence becoming effective.

When the fault is activated, the red LED is lighted and the two fault relays open. On the Application Window the **Measured Values** that caused the fault turn red.

3.8.1.5 Acquire Functions

and the set of the set
cquire ON parame

Figure 40: Acquire Functions box.

The Acquire Functions (see Figure 40) allows the user to acquire the Measured Values to the User Manual Settings.



These functions ease the user's task, while avoiding that the technical details (supply voltage, load current, load resistance, etc.) of the application are necessary for the module configuration. If the load is de-energized (OFF State), the "Acquire OFF parameters" button will copy the Load Supply Voltage RMS and the Load OFF Resistance to the corresponding User Manual Settings. If the load is energized (ON State), the "Acquire ON parameters" button will copy the Load Supply Voltage RMS and the Load Current RMS to the corresponding User Manual Settings.

Note that the data acquisition button can be pressed only when the continuous scan is active, hence avoiding to acquire outdated field values.

3.8.2 Monitor

3.8.2.1 **Measured Values**

e Settings Mod	ule :			Write to	Module Read from Modu
figuration Monitor Da	ita Logger				
leasured Values					
Load Supply Voltage	RMS (V)		Load Current RMS (/	A)	
Load OFF Resistance	(Ω)	(ΚΩ)	Start		
Driver Status			Coil Integrity		
raph					
Load Supply Voltage	RMS 📃 Load Cur	ment RMS (A) 📃 Isol	ation Resistance (KΩ)	Load OFF Resistance	e (Ω)
1.2 -			D5294S graph		
1.0 -					
0.8					
0.8					
0.6					
0.6					
0.6	0.2	0.4	0.6	0.8	1.0
0.6	0.2	0.4	0.6 Time	0.8	1.0

Figure 41: Monitor Tab.

Measured Values (see Figure 41) are periodically acquired from the field, when the Start/Stop is activated (odometer running in the Bottom Bar). When the Start/Stop button is deactivated, the Measured Values remain frozen to the last field acquisition value.

Measured Values include:

- Load Supply Voltage RMS (V) indicates the RMS voltage that is actually applied (in ON State, load energized) or that will be applied (in OFF State, load de-energized) to the load.
- Load Current RMS (A)
 - represents the RMS current that is flowing through the load (hence it will be zero in OFF state).
- Load OFF Resistance (Ω) is the load resistance measured in OFF State. In ON State, this value will remain at the saturation value (5 k Ω)
- Isolation Resistance (kΩ) shows the leakage resistance to earth. Also the Isolation Resistance is measured only in OFF State; during ON State, it goes to the saturation value of 3 M Ω
- **Coil Integrity** monitors the status of the relay coil in ON State: "FAIL" indicates that a relay coil is in short-circuit
- **Driver Status**
 - indicates whether the load has been energized ("ON") or not ("OFF")

See Section 3.8.1.4 for the explanation of the color indicators on the left.

3.8.2.2 Graph

It is possible to show the value of a variable on a graph. To do so, start acquisition by pressing the Start button and then select the desired variable by checking the corresponding checkbox. Note that only one variable can be seen at a time.



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3.9 D5293S (software revisions 1 and 2) *



Note: Software revision of the module can be found by clicking on "Module > Show identification > Software revision". The D5293S is a relay module suitable for the switching of safety related circuits, up to SIL 3 level according to IEC 61508:2010 Ed.2, for high risk industries.

The Application Window user interface is organized into the following areas:

- Configuration
- Monitor
- Data Logger

3.9.1 Configuration

	Write to Mode	Read from Modu
	Load Current RMS	
D.O	- Current Upper Limit (A) 4.000	
.0	- Current Lower Limit (A) 0.005	
	ons Monitoring (Command Status (OFF))	Acquire Functions
		Acquire Functions
	Supply Voltage	
		- Current Upper Limit (A) 4.000

Figure 42: D5293S Configuration screen.

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.

^{*} For software revision n. 2, it is not possible to disable hysteresis and to check coil integrity.



A report sheet containing complete configuration can be printed.

User Manual Settings:

Load Supply Voltage RMS

- Voltage Upper Limit (V): Maximum allowed load RMS voltage
- Voltage Lower Limit (V): Minimum allowed load RMS voltage

Load Current RMS

- Current Upper Limit (A): Maximum allowed load RMS current
- Current Lower Limit (A): Minimum allowed load RMS current

FAULT CONDITIONS MONITORING:

(Command Status [ON]): Faults contributing to the output cumulative fault when the driver is on.

FAULT CONDITIONS MONITORING:

(Command Status [OFF]): Faults contributing to the output cumulative fault when the driver is off.

- Load Supply Voltage: When checked, the load supply voltage can activate the cumulative fault.
- Load Current: When checked, the load current can activate the cumulative fault.
- Coil Integrity: When checked, the short circuit of any coil can activate the cumulative fault (only until **software revision 1**).

TAG: Identification of the specific operating loop of the module.

ACQUIRE FUNCTIONS: Acquisition and saving of the diagnostics field parameters.

- Acquire OFF parameters: The currently measured OFF parameters are copied to the USER MANUAL SETTINGS (available only when the driver is OFF).
- Acquire ON parameters: The currently measured ON parameters are copied to the USER MANUAL SETTINGS (available only when the driver is ON).

CONTINUOUS SCAN: Continuous measurement of the field parameters.

• Start/Stop: Activates/de-activates the measurement of the field parameters.

INVERT FAULT RELAY: When not checked, the output fault contacts open in case of fault. When checked, the output fault contacts close in case of fault.

ADVANCED OPTIONS:

Advanced options for configuration can be found by clicking on the "Module > Advanced Options" entry of the main menu.

GM. Internation	nal - SWC50	90 Configuration S	oftwar	e - D5293S - *			
File Settings	Module	?			W	rite to Module	Read from Module
Configuration Moni User Manual Settir Load Supply Vo	Show Load Adva	t Model VIdentification Factory Settings Inced Options	•	Load interruption Input impedance Hysteresis	Current RMS		
	pper Limit (V) ower Limit (V)				- Current Upper Limit (A)		
Fault Conditions M Coad Supply Coad Curren Coil Integrity	v Voltage t	nmand Status [ON])		Fault Conditions Monitori	ng (Command Status [OFF]) ge		Functions
Invert fault re	elay			Continuous Scan			
Data Editing						2015	Feb 27 - 14:34:07

Figure 43: Advanced configuration options.

Load Interruption:

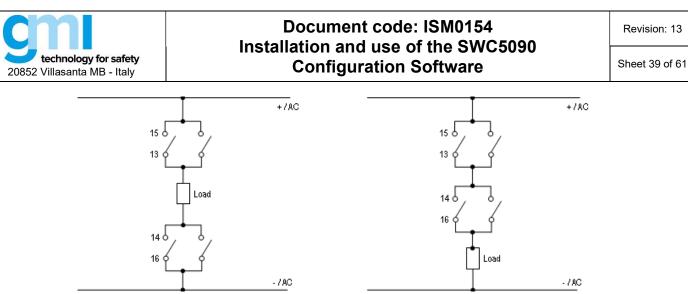


Figure 44: Bipolar (on the left) and unipolar (on the right) load interruption.

- Bipolar: Load is disconnected by removing connection to both AC/DC lines
- Unipolar: Load is disconnected only from one AC/DC line.

Input impedance:

- Mirror: The fault in the field is directly mirrored to the PLC DO.
- Always OFF: Input impedance seen by the PLC with Pulse Testing is always HIGH.
- Always ON: Input impedance seen by the PLC with Pulse Testing is always LOW.

3.9.1.1 Hysteresis (always visible since software revision 2):

ad Supply Voltage RMS				Load Current RMS
- Voltage Upper Limit (V)	260.0	- High hysteresis	20.0	- Current Upper Limit (A) 4.000 - High hysteresis 0.200
- Voltage Lower Limit (V)	10.0	- Low hysteresis	1.0	- Current Lower Limit (A) 0.005 - Low hysteresis 0.001

Figure 45: D5293S with Hysteresis enabled.

- ON:
 - Upper Fault condition is activated when signal is higher than Upper Limit and deactivates when lower than Upper Limit – High Hysteresis value.
 - Lower Fault condition is activated when signal is lower than Lower Limit and deactivates when higher than Lower Limit + Low Hysteresis value.
- **OFF:** No hysteresis is present and fault conditions are triggered exactly when signal is higher or lower than defined limits.

3.9.2 Monitor

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



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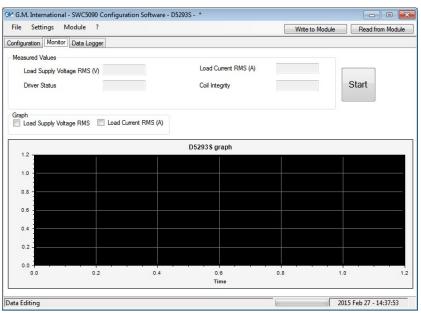


Figure 46: D5293S Monitor screen.

Measured Values (see Figure 46) are periodically acquired from the field, when the Start/Stop is activated (odometer running in the Bottom Bar). When the Start/Stop button is deactivated, the **Measured Values** remain frozen to the last field acquisition value.

Measured Values include:

- Load Supply Voltage RMS (V) indicates the RMS voltage that is actually applied (in ON State, load energized) or that will be applied (in OFF State, load de-energized) to the load.
- Load Current RMS (A) represents the RMS current that is flowing through the load (hence it will be zero in OFF state).
- Coil Integrity

monitors the status of the relay coil in ON State: "FAIL" indicates that a relay coil is in short-circuit

• **Driver Status** indicates whether the load has been energized ("ON") or not ("OFF")

3.9.2.1 Graph

It is possible to show the value of a variable on a graph. To do so, start acquisition by pressing the Start button and then select the desired variable by checking the corresponding checkbox. Note that only one variable can be seen at a time.

3.9.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.



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G.M. International - SWC5090 Configuration Software - D5072D\D6072D -	
File Settings Module ?	Write to Module Read from Module
Configuration Monitor Data Logger	
Parameters Setup	
Days 0 💌	
Hours 0	
Minutes 1	
Scan Rate [s] 0.5	
Start Clear	
ata Editing	2015 Feb 27 - 14:38:36

Figure 47: Data Logger screen.

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

3.10 D5294S, D5295S (software revisions 1 and 2) *



Note: Software revision of the module can be found by clicking on "Module > Show identification > Software revision". D5294S and D5295S are relay module suitable for the switching of safety related circuits, up to SIL 3 level according to IEC 61508:2010 Ed.2, for high risk industries.

The Application Window user interface is organized into the following areas:

Configuration

^{*} For software revision n. 2, it is not possible to disable hysteresis.



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- Monitor
- Data Logger

3.10.1 Configuration

G.M. International - SWC5090 Configuration Soft			🔤 G.M. International - SWC5090 Configuration Software - D5295S - * 🛛 🚽				
File Settings Module ?		Store to	o device Load from device	File Settings Module ?		Store t	to device Load from device
Configuration Monitor Data Logger				Configuration Monitor Data Logger			
User Manual Settings Load Supply Voltage RMS		Load Current RMS		User Manual Settings Load Supply Voltage RMS	Los	ad Current RMS	
- Voltage Upper Limit (V) 260.0 - Voltage Lower Limit (V) 10.0		- Current Upper Limit (A) 5.000 - Current Lower Limit (A) 0.005		- Voltage Upper Limit (V) 260.0 - Voltage Lower Limit (V) 10.0		- Current Upper Limit (A) 5.000 - Current Lower Limit (A) 0.005	
Load OFF Resistance		Isolation Resistance		Load OFF Resistance	- Isol	lation Resistance	
- Resistance Upper Limit (Ω) 49000 - Resistance Lower Limit (Ω) 5		- Resistance Lower Limit (KQ)	00	- Resistance Upper Limit (Ω) 49000 - Resistance Lower Limit (Ω) 5	-1	Resistance Lower Limit (KD) 1	100
Fault Conditions Monitoring (Command Status [ON]) Coad Supply Voltage Coad Current Coal Integrity Load OFF Resistance Isolation Resistance	Fault Conditions M Load Supply Load Currer Coll Integrity Load OFF F Isolation Re	t lesistance	Acquire Functions Acquire Off Params Tag D5294S	Fault Conditions Monitoring (Command Status [ON]) Cload Supply Voltage Load Current Col Integrity Col Integrity Load OFF Resistance Modition Resistance	Fault Conditions Monitori Load Supply Volta Load Current Coil Integrity Load OFF Resistan Isolation Resistant	ance	Acquire Functions Acquire Off Params Tag D5295S
Contact position in case of fault Open Closed	Continuous Scan Start			Contact position in case of fault Open Closed	Continuous Scan Start		
Data Editing			2017 May 29 - 08:35:39	Data Editing			2017 May 29 - 08:36:06

Figure 48: D5294S (on the left) and D5295S (on the right) configuration screen (software revision 1).

e Settings Module ?	S	tore to device Load from device	File Settings Module ?		Store to device Load from device
figuration Monitor Data Logger			Configuration Monitor Data Logger		
lser Manual Settings Load Supply Voltage RMS	Load Current RMS		User Manual Settings Load Supply Voltage RMS	Load Current RM	S
- Voltage Upper Limit (V) 260.0 - High hystere - Voltage Lower Limit (V) 10.0 - Low hysteree			Voltage Upper Limit (V) 260.0 - High hys Voltage Lower Limit (V) 10.0 - Low hyst		er Limit (A) 5.000 - High hysteresis 0.200 er Limit (A) 0.005 - Low hysteresis 0.001
Load OFF Resistance	Isolation Resistance		Load OFF Resistance	Isolation Resistan	ice
- Resistance Upper Limit (Ω) 49000 - High hyster - Resistance Lower Limit (Ω) 5 - Low hyster	- Resistance Lower Limit (KD	100 - Low hysteresis 10	Resistance Upper Limit (Ω) 43000 - High h Resistance Lower Limit (Ω) 5 - Low hy		wer Limit (KD) 100 - Low hysteresis 10
ault Conditions Monitoring (Command Status (ON)) State Supply Voltage Load Current Coll trikeginy Load OFF Resistance Isolation Resistance	Fault Conditions Monitoring (Command Status (OFF Load Supply Voltage Load Current Col Integrity Load OFF Resistance Isolation Resistance	Acquire Functions Acquire Off Params Tag D5294S	Load Conditions Monitoring (Command Status [DNI] Load Supply Voltage Load Current Col Integrity Load OFF Resistance Modation Resistance	Fault Conditions Monitoring (Command Load Supply Voltage Load Current Coll Integrity Load OFF Resistance Isolation Resistance	Status (OFF) Acquire Functions Acquire Off Params Tag [D52955
ontact position in case of fault)) Open)) Closed	Continuous Scan Start		Contact position in case of fault Open Closed	Continuous Scan Start	

Figure 49: D5294S (on the left) and D5295S (on the right) configuration screen (software revision 2).

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. **User Manual Settings:**

- Load Supply Voltage RMS
 - Voltage Upper Limit (V): Maximum allowed load RMS voltage
 - Voltage Lower Limit (V): Minimum allowed load RMS voltage
- Load Current RMS
 - Current Upper Limit (A): Maximum allowed load RMS current
 - Current Lower Limit (A): Minimum allowed load RMS current
- Load OFF Resistance
- Resistance Upper Limit (Ω): Maximum allowed load OFF resistance

Resistance Lower Limit (Ω): Minimum allowed load OFF resistance

- Isolation Resistance
- Resistance Lower Limit (kΩ): Minimum allowed load-to-earth isolation resistance

FAULT CONDITIONS MONITORING (Command Status [ON]):



Faults contributing to the output cumulative fault when the driver is on.

- Load Supply Voltage: When checked, the load supply voltage can activate the cumulative fault.
- Load Current: (only for D5294S) When checked, the load current can activate the cumulative fault.
- Coil Integrity: When checked, the short circuit of any coil can activate the cumulative fault.
- Load OFF Resistance: (only for D5295S) When checked, the load OFF resistance can activate the cumulative fault.
- Isolation Resistance: (only for D5295S)
 When checked, the load-to-earth isolation resistance can activate the cumulative fault.

FAULT CONDITIONS MONITORING (Command Status [OFF]):

Faults contributing to the output cumulative fault when the driver is off.

- Load Supply Voltage: When checked, the load supply voltage can activate the cumulative fault.
- Load Current: (only for D5295S) When checked, the load current can activate the cumulative fault.
- Load OFF Resistance: (only for D5294S)
 When checked, the load OFF resistance can activate the cumulative fault.
- Isolation Resistance: (only for D5294S)
 - When checked, the load-to-earth isolation resistance can activate the cumulative fault.

TAG: Identification of the specific operating loop of the module.

ACQUIRE FUNCTIONS: Acquisition and saving of the diagnostics field parameters.

- Acquire OFF parameters: The currently measured OFF parameters are copied to the USER MANUAL SETTINGS (available only when the driver is OFF).
- Acquire ON parameters: The currently measured ON parameters are copied to the USER MANUAL SETTINGS (available only when the driver is ON).

CONTINUOUS SCAN: Continuous measurement of the field parameters.

• Start/Stop: Activates/de-activates the measurement of the field parameters.

INVERT FAULT RELAY: When not checked, the output fault contacts open in case of fault. When checked, the output fault contacts close in case of fault.

CM G.M. International - SWC5090 Configuration Sc	oftware - D5295S - *
File Settings Module ?	Write to Module Read from Module
Configuration Monif	+
User Manual Settin	
Load Supply Load Factory Settings	Load Current RMS
Advanced Options	Load Type
- Voltage Upper Limit (V) 260.0	Load interruption
- Voltage Lower Limit (V) 10.0	Input impedance nt Lower Limit (A) 0.005
	Hysteresis >
Load OFF Resistance	Isolation Resistance
- Resistance Upper Limit (Ω) 49000 - Resistance Lower Limit (Ω) 5	- Resistance Lower Limit (KΩ) 2000
Fault Conditions Monitoring (Command Status [ON])	Fault Conditions Monitoring (Command Status [OFF]) Acquire Functions
Load Supply Voltage	Load Supply Voltage Acquire Off Params
Load Current	V Load Current
Coil Integrity Load OFF Resistance	Coil Integrity Load OFF Resistance Tag
Isolation Resistance	Isolation Resistance D5295S
Invert fault relay	Continuous Scan
Data Editing	2015 Feb 27 - 14:41:24

Figure 50: D5294S, D5295S Advanced configuration options.

ADVANCED OPTIONS:

Advanced options for configuration can be found by clicking on the "Module > Advanced Options" entry of the main menu.



Load Type:

- Auto: automatically selects Load type between Generic Load and Solenoid.
- Generic Load: any load up to 50 k Ω resistance.
- **Solenoid:** specific for Solenoid loads up to 10 kΩ; resistance is calculated even in presence of series connected diodes.

Load Interruption:

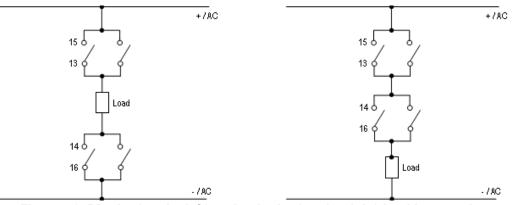


Figure 51: Bipolar (on the left) and unipolar (on the right) load interruption.

- Bipolar: Load is disconnected by removing connection to both AC/DC lines
- Unipolar: Load is disconnected only from one AC/DC line.

Input impedance:

- Mirror: The fault in the field is directly mirrored to the PLC DO.
- Always OFF: Input impedance seen by the PLC with Pulse Testing is always HIGH.
- Always ON: Input impedance seen by the PLC with Pulse Testing is always LOW.

3.10.1.1 Hysteresis (always visible since software revision 2):

- Voltage Upper Limit (V) 260.0 - High hysteresis 20.0	- Current Upper Limit (A) 5.000 - High hysteresis 0.200
- Voltage Lower Limit (V) 10.0 - Low hysteresis 1.0	- Current Lower Limit (A) 0.005 - Low hysteresis 0.001
ad OFF Resistance	Isolation Resistance
rad OFF Resistance Resistance Upper Limit (Ω) 49000 - High hysteresis 2000	Isolation Resistance - Resistance Lower Limit (ΚΩ) 100 - Low hysteresis 10

Figure 52: D5294S, D5295S with Hysteresis enabled.

- ON:
 - Upper Fault condition is activated when signal is higher than Upper Limit and deactivates when lower than Upper Limit – High Hysteresis value.
 - Lower Fault condition is activated when signal is lower than Lower Limit and deactivates when higher than Lower Limit + Low Hysteresis value.
- OFF:
 - No hysteresis is present and fault conditions are triggered exactly when signal is higher or lower than defined limits.



3.10.2 Monitor

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

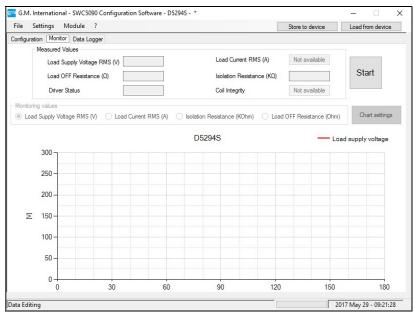


Figure 53: D5294S, D5295S Monitor screen.

Measured Values (see Figure 53) are periodically acquired from the field, when the Start/Stop is activated (odometer running in the Bottom Bar). When the Start/Stop button is deactivated, the Measured Values remain frozen to the last field acquisition value.

Measured Values include:

- Load Supply Voltage RMS (V) indicates the RMS voltage that is actually applied (in ON State, load energized) or that will be applied (in OFF State, load de-energized) to the load.
- Load Current RMS (A) represents the RMS current that is flowing through the load (hence it will be zero in OFF state).
- Load OFF Resistance (Ω) is the load resistance measured in OFF State. In ON State, this value will remain at the saturation value (5 kΩ)
- Isolation Resistance (k Ω) shows the leakage resistance to earth. Also the Isolation Resistance is measured only in OFF State; during ON State, it goes to the saturation value of 3 M Ω
- Coil Integrity monitors the status of the relay coil in ON State: "FAIL" indicates that a relay coil is in short-circuit
- Driver Status

indicates whether the load has been energized ("ON") or not ("OFF")

3.10.2.1 Graph

It is possible to show the value of a variable on a graph. To do so, start acquisition by pressing the Start button and then select the desired variable by checking the corresponding checkbox. Note that only one variable can be seen at a time.

3.10.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.



Sheet 46 of 61

le Settings Module ?	Store to device Load from device
nfiguration Monitor Data Logger	
Parameters Setup	
-	
Days 0 ~	
Hours 0 ~	
Hours 0 V	
Minutes 1 ~	
Scan Rate [s] 0.5 V	
Start Clear	
U.G.	

Figure 54: Data Logger screen.

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

3.11 D5264S



D5264S is Load Cell/Strain Gauge Bridge Isolating Converter module suitable for applications requiring SIL 2 level (according to IEC 61511) in safety related systems for high risk industries.

The Application Window user interface is organized into the following areas:

- Configuration
 - Input
 - Output
 - Alarm
- Monitor
- Data Logger



3.11.1 Configuration

3.11.1.1 Input / Output

Input range Unipolar	Aput
Tag D5264S Calibration Maximum weight [Div] 100000 Reference weight [Div]: Acquire Zero Acquire Reference U	Type 12-20 mA Source ✓ Downscale : OUT [µA] 12000 ← 0 IN [Div] Jpscale : OUT [µA] 20000 ← 1000000 IN [Div] Jnder Range [µA] 3600 Over Range [µA] 20800

Figure 55: D5264S Input / output configuration screen.

INPUT

Conversion speed (Input data acquisition time):

- Slow: 100 ms
- Fast: 12.5 ms

Tag: 16 alphanumerical characters

Maximum weight: configurable from 0 to 100000 divisions. Higher values lead to greater resolutions.

Reference weight: weight used for calibration. Configurable form 0 to selected maximum weight.

Acquire Zero: press button to start the zero acquiring procedure.

Acquire Reference: press button to start reference acquiring procedure

Input range:

- Unipolar: the input scale ranges from 0 to the maximum value. This scale is particularly indicated to measure a weight.
- Bipolar: the input scale ranges form to + maximum value. This scale is particularly indicated for other sensors, i.e. strain gauges.

OUTPUT

Туре:

•

- 0-20 mA Sink
- 4-20 mA Sink
- Custom Sink

All Output parameters are fully customizable.

- 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 downscale in normal working condition (range 0 to 24 mA) **Underrange:** analog output downscale in underrange condition (range 0 to 24 mA) **Overrange:** analog output downscale in overrange condition (range 0 to 24 mA)



3.11.1.2 Alarm

File Settings Module ?			Store to device	Load from device
File Settings Module ? Configuration Monitor Data Logger Input\Output Alarm	Alarm Alarm configuration Contact position in case of a Low Set (Div)	None v Jam Open v	Store to device	Load from device
	Low Hysteresis [Div] 0 High Set [Div] 0 High Hysteresis [Div] 0 On Delay [s] 0 Off Delay [s] 0			

Figure 56: D5264S Alarm configuration screen.

ALARM

Configuration:

- None alarm is disabled
- Low alarm is triggered when source descends below "Low Set"
- High alarm is triggered when source ascends over "High Set"
- Window alarm is triggered below "Low Set" and above "High Set"

Contact position in case of 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: source value below which the alarm is triggered (in Low, Window)

Low Hysteresis: hysteresis on the low set value

High Set: source value above which the alarm is triggered (in High, Window)

High Hysteresis: hysteresis on the high set value

On Delay: time for which the source variable 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 source variable has to be in normal condition before the alarm output is deactivated; configurable from 0 to 1000 seconds in steps of 100 ms

3.11.2 Monitor

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



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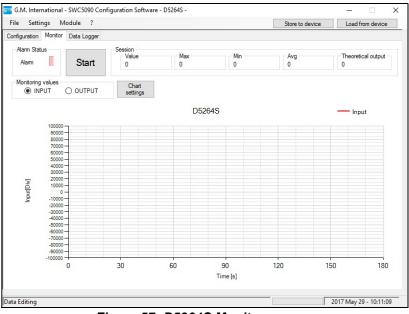


Figure 57: D5264S Monitor screen.

The display shows Input and Theoretical Output values, fault and alarm status and a graph of chosen variable.

3.11.2.1 Input

Input variable is shown as it is detected by the module.

3.11.2.2 Output

This value represents the theoretical output. During certain conditions, this value may differ from the measured value at output terminal blocks.

3.11.2.3 Alarm status

Alarm status is represented by a LED, which is RED when activated. The LED status reflects the status of the Alarm exactly as configured.

3.11.2.4 Graph

The graph can show only one variable that must be chosen from the checkboxes above.

3.11.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.



Sheet 50 of 61

📴 G.M. International - SWC5090 Configuration Software - D5264S -		– 🗆 X
File Settings Module ?	Store to device	Load from device
Configuration Monitor Data Logger		
Parameters Setup		
Days 0 ~		
Hours 0 V		
Minutes 1 ~		
Scan Rate [s] 0.5 V		
Start Clear		
Data Editing	20	17 May 29 - 10:13:37

Figure 58: Data Logger screen.

3.12 D5254S / D6254S

D5254S / D6254S is Power Supply Repeater and Trip Amplifier.

The Application Window user interface is organized into the following areas:

- Configuration
 - Input
 - Output
 - Alarm
- Monitor
- Data Logger

3.12.1 Configuration

3.12.1.1 Input / Output

nfiguration Monitor	Data logger	
puts and output Ala		
Input		Output
Input type	Current ~	Type 4-20 mA Source \checkmark
Range	0/4 ÷ 20 mA	Downscale : OUT [µA] 4000 ← 4000 IN [µA] Upscale : OUT [µA] 20000 ← 20000 IN [µA]
Input conversion	Linear	Under range [µA] 3600
Out of range	Square root Low threshold [μΑ] 3200 High threshold [μΑ] 22000	Over range [µA] 20800 Fault output value [µA] 24000 Fault in case of : [v] Out of range
Tag	D5254S\D6254S	

Figure 59: D5254S / D6254S Input / output configuration screen.



INPUT

Input Type:

- current
- voltage

Range:

- 0/4-20 mA represents the allowed input current ranges
 - ± 12 V represents the allowed input voltage ranges

Input conversion:

- Linear the module repeats in linear scale the input to the output
- Square root the module converts in square root scale the input to output

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 Sink
- 4-20 mA Sink
- Custom Sink all Output parameters are fully customizable
- 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



Sheet 52 of 61

3.12.1.2 Alarm

uration Monitor Data logger ts and output Alarms			
Alam 1		- Alarm 2	
Туре	None ~	Туре	None ~
Alam lock:		Alarm lock:	
NO contact position in alarm	Open \vee	NO contact position in alarm	Open 🗸
Low Set [µA]	0	Low Set [µA]	0
Low Hysteresis [µA]	0	Low Hysteresis [µA]	0
High Set [µA]	0	High Set [µA]	0
High Hysteresis [µA]	0	High Hysteresis [µA]	0
On delay [s]	0.0	On delay [s]	0.0
Off delay [s]	0.0	Off delay [s]	0.0
Faults :	Out of range	Faults :	Out of range
In case of fault	Ignore \lor	In case of fault	Ignore \lor
	Ignore 🗸	Alarm acknowledgement	Ignore 🗸

Figure 60: D5254S / D6254S Alarm configuration screen.

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.

NO contact position in case of 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 affected



- Lock status remains in the same status as it was before Fault occurred
- Alarm active alarm is triggered
- Alarm inactive alarm is deactivated

Alarm acknowledgement:

.

- Ignore alarm is automatically reset
- Active high a voltage source of 24 Vdc must be applied, at the relative terminals, to reset alarm
- Alarm active a voltage source of 0 Vdc must be applied, at the relative terminals, to reset the alarm

3.12.2 Monitor

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

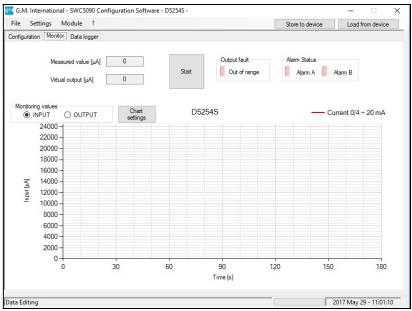


Figure 61: D5254S / D6254S Monitor screen.

The display shows Input and Theorical Output values, fault and alarm status and a graph of chosen variable.

3.12.2.1 Input

Input variable is shown as it is detected by the module.

3.12.2.2 Output

This value represents the theorical output. During certain conditions, this value may differ from the measured value at output terminal blocks.

3.12.2.3 Alarm status

Alarm status is represented by a LED, which is RED when activated. The LED status reflects the status of the Alarm exactly as configured.

3.12.2.4 Fault

Fault status is represented by a LED, which is RED when activated.

3.12.2.5 Graph

The graph can show only one variable that must be chosen from the checkboxes above.

3.12.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.



Sheet 54 of 61

File Settings Module ?		Store to device	Load from device
ile Settings Module ? Onfiguration Monitor Data logger	Parameters Selup Days 0 v Hours 0 v Minutes 0 v Scan Rate [s] 0.5 v	Store to device	Load from device
	Start Clear		

Figure 62: Data Logger screen.

3.13 D5212Q / D6212Q



D5212Q / D6212Q is Quadruple Repeater Power Supply.

The Application Window user interface is organized into the following areas:

- Configuration
 - Input
 - Output
 - Alarm
- Monitor
- Data Logger



3.13.1 Configuration

3.13.1.1 Input / Output

File Settings Module		Store to device	Load from device
onfiguration Monitor Data log	gger		
Inputs Outputs Alarm			
	Input 1 Range [4 ÷ 20 mA]	Input 2 Range [4 ÷ 20 mA]	
	Out of range	Out of range	
	Low threshold 3200	Low threshold 3200	
	High threshold 22000	High threshold 22000	
	Tag [Channel 1]	Tag [Channel 2]	
	Channel 1	Channel2	
	Input 3	Input 4	
	Range [4 ÷ 20 mA]	Range [4 ÷ 20 mA]	
	Out of range	Out of range	
	Low threshold 3200	Low threshold 3200	
	High threshold 22000	High threshold 20800	
	High threshold 22000	High threshold 20800	
	Tag [Channel 3]	Tag [Channel 4]	
	Channel3	Channel4	

Figure 63: D5212Q / D6212Q Input / output configuration screen.

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



Sheet 56 of 61

Output 1
Input selector
✓ Input 1 ☐ Input 2 ☐ Input 3 ☐ Input 4
Output operations :
None
Subtraction Sum
Maximum Minimum
Back

Figure 64: D5212Q / 6212Q advanced settings details.

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.

3.13.1.2 Alarm

Configuration Monitor Data logger				
Inputs Outputs Alarm				
	Alam 1			
	Туре	None	~	
	Alarm lock:			
	Input selector	Input 1	\sim	
	Operations selector	None	\sim	
	NO contact position in alarm	Closed	~	
	Low Set [µA]	0		
	Low Hysteresis [µA]	0		
	High Set [µA]	0		
	High Hysteresis [µA]	0		
	On delay [s]	0.0		
	Off delay [s]	0.0		
	Fault :	Out of range		
	In case of fault	Ignore	\sim	

Figure 65: D5212Q / D6212Q Alarm configuration screen.



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



3.13.2 Monitor

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

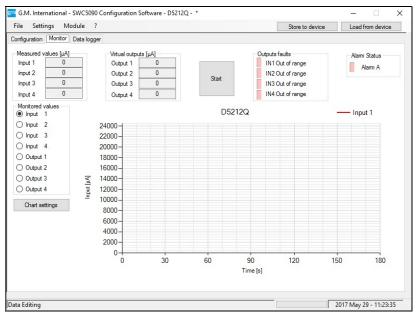


Figure 66: D5212Q / D6212Q Monitor screen.

The display shows Input and Theoretical Output values, fault and alarm status and a graph of chosen variable.

3.13.2.1 Input

This value represents the value read from field.

3.13.2.2 Output

This value represents the theoretical output value.

3.13.2.3 Alarm status

Alarm status is represented by a LED, which is RED when activated. The LED status reflects the status of the Alarm exactly as configured.

3.13.2.4 Fault

Fault status is represented by a LED, which is RED when activated.

3.13.2.5 Graph

The graph can show only one variable that must be chosen from the checkboxes above.

3.13.3 Data Logger

The SWC5090 can monitor and record data from the module at constant configurable time intervals.



🚾 G.M. International - SWC5090 Configuration Software - D5212Q - *		- 🗆 ×
File Settings Module ?	Store to device	Load from device
Configuration Monitor Data logger		
Parameters Setup		
Days 0 ~		
Hours 0 ~		
Hours 0 ~		
Minutes 0 V		
Scan Rate [s] 0.5 V		
Start Clear		
Statt Gear		
ata Editing		017 May 29 - 11:24:55

Figure 67: Data Logger screen.

3.14 5700 / 5700-110

5700 / 5700-110 is HART® Multiplexer Modem.

3.14.1 Configuration

To configure 5700 / 5700-110 module, connect the device to PC through PPC5092, then click on "Load from device" button.

e Settings Module	e ?	Store	to device Load from device
ameters			
evice parameters			
Master		Device	
Polling Address :	0 ~	Tag :	GMI TAG
Master Type :	1 ~	Descriptor :	GMI DESCRIPTOR
Baud Rate :	38400 ~	Last configuration day :	13
Scan		Last configuration month :	9
Scan Mode :	1 ~	Last configuration year :	2022
Scan Command :	Command 1 \sim	Device Id :	436
		Hardware revision :	1
Communication		Default Preambles to Device :	5
Retry on busy :	3	Assembly number :	273-1
Retry on error :	2	Long Tag :	GMI LONG TAG
Search Mode :	Only Channel 0 V		
Message			
Message :	GMI MESSAGE		

Figure 68: 5700 / 5700-110 Parameters screen.

DEVICE PARAMETERS

- Polling address: device address (from 0 to 62).
- Master type: primary or secondary master type.
- Baud rate: data transmission speed (from 1200 to 115200 bit/s).



SCAN

- **Scan mode:** when 'Scan mode' is active mux continuously sends the command configured in 'Scan Command' to the field devices.
- Scan Command: HART commands #1, #2 and #3 are supported.

COMMUNICATION

- Retry on busy: number of retries when the device replies busy.
- Retry on error: number of retries when the device replies with errors.
- **Search mode:** building only polling address 0 (Channel 0) or from polling address 0 to 15 (All Channels) on each loop. Note that the search mode from 0 to 15 can be much slower.

MESSAGE

- **Message:** 32-character message string stored in the device.
- Default preambles to device: default number of preambles sent to the field device.

DEVICE

- Tag: identification of the specific module (maximum 8 alphanumerical characters).
- Descriptor: 16-character descriptor string stored in the device.
- Long Tag: 32-character long tag string stored in the device.
- Default preambles to device: default number of preambles sent to the field device.

4. Monitor

The SWC5090 is able to continuously scan the module and display real-time values on screen. A graph of the chosen variable (Input or Output) can also be displayed.

Please refer to modules specific chapters for more details on this feature.

5. Data Logger

The SWC5090 can monitor and record data from them module at constant time intervals. Data is stored on a Comma Separated Value file (.CSV).

Please refer to modules specific chapters for more details on this feature.

6. Configuration File

Each time the main User Interface window is closed, a configuration file (SWC5090.ini) is saved in the installation directory. The configuration file contains the last COM port used for the configuration and other parameters related to the software.

7. Report sheet

The SWC5090 can print the full configuration set in A4 format. Below an example configuration report.



Sheet 61 of 61

Date: 2017 May 29

Model: D5273S\D6273S Serial:	Date: 2017 May 29	Model: D5273S\D6273S Seri	al: Date:
Input 1		Input 1	
Тад	Channel 1	Tag	Channel 1
Sensor Connection	TC	Sensor Connection	TC
Sensor Type	TC J	Sensor Type	TC J
Downscale (°C)	0.0	Downscale (°C)	0.0
Upscale (°C)	1000.0	Upscale (°C)	1000.0
Cold Junction Source	Automatic	Cold Junction Source	Automatic
Cold Junction Reference (°C)	0.0	Cold Junction Reference (°C)	0.0
Integration Speed	slow	Integration Speed	slow
Mains Frequency	50 Hz	Mains Frequency	50 Hz
Offset	0	Offset	0
Multiplier	1	Multiplier	1
Output 1		Output 1	
			17 P.19
Function	Input 1	Function	Input 1
Type	4-20 mA Source	Type	4-20 mA Source 4000
Downscale (µA)	4000	Downscale (µA)	
Upscale (µA)	20000 3600	Upscale (µA)	20000 3600
Under Range (µA)	20800	Under Range (µA)	20800
Over Range (µA) Fault Output Value	20800	Over Range (µA) Fault Output Value	20800
Fault Output Value Faults	22000	Fault Output Value Faults	22000
Burnout	Active	Burnout	Active
Internal Fault	Inactive	Internal Fault	Inactive
Sensor Out Of Range	Inactive	Sensor Out Of Range	Inactive
Out Saturation	Inactive	Out Saturation	Inactive
Module Out Of Temperature Range	Inactive	Module Out Of Temperature Range	Inactive
module out of remperature manye	II ICCUVC	module Out or remperature mange	in lace ve

Figure 69: Configuration Report example.

Алматы (7273)495-231 Ангарск (3955)42-70-56 Архангельск (8182)63-90-72 Астрахань (8512)99-46-04 Барнаул (3852)73-04-42 Белгород (4735)40-23-142 Благовешенск (4162)35-142-07 Благовещенск (4162)35-142-0 Брянск (4232)59-03-52 Владивосток (423)249-42-31 Владикавказ (8672)42-90-42 Владимир (4935) 49-43-18 Волгоград (844)278-03-42 Волгоград (8472)26-41-59 Воронеж (473)204-51-73 Екатеринбург (343)384-55-142 Ижевск (3412)26-03-58 Иваново (4932)77-34-06 Иркутск (395)279-98-46 Казань (843)206-01-42 Калининград (4012)72-03-81 Калуга (4242)92-23-67 Кемерово (3842)65-04-62 Киров (8332)68-02-04 Коломна (4966)23-41-49 Кострома (4942)77-07-42 Краснодар (861)203-40-90 Красноярар (001)203-00-00 Краснояраск (001)204-03-01 Курск (4712)77-13-04 Курган (4352)50-90-47 Липецк (4742)52-20-81

Киргизия (996)312-96-26-47

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Тверь (4352)63-31-42 Тольяти (8435)63-91-07 Томск (3835)98-41-53 Тула (4272)33-79-87 Тюмень (3452)66-21-18 Улан-Удэ (3012)59-97-51 Ульяновск (8435)24-23-59 Ульяновск (8435)24-23-59 Уфа (347)359-42-12 Хабаровск (4212)92-98-04 Чебоксары (8435)42-53-07 Челябинск (421)202-03-61 Череповец (8202)49-02-142 Чита (3035)38-34-83 Якутск (4112)23-90-97 Ярославль (4422)69-52-93