

# INSTRUCTION & SAFETY MANUAL

SIL 2 Temperature Signal Converter Multifunction, Trip Amplifiers, DIN-Rail and Termination Board, Models D5273S



Characteristics General Description: The single channel Temperature Signal Converter, Trip amplifiers D5273S accepts a low level dc signal from millivolt, thermocouple or 2-3-4 wire RTD or transmitting potentiometer sensors, located in Hazardous Area, and converts, with isolation, the signal to drive a Safe Area load, suitable for applications requiring SIL 2 level according to IEC 61511) in safety related systems for high risk industries. Output signal can be direct or reverse. Cold junction compensation can be programmed as automatic, using an internal temperature sensor or fixed to a user-customizable temperature value. D5273S offers two independent trip amplifiers via two SPDT output relays. Mounting on standard DIN-Rail, with or without Power Bus, or on customized Termination Boards, in Safe Area or in Zone 2. Fault Detection: D5273S is able to detect multiple fault sources: - Sensor Burnout (i.e. when input is disconnected) - Sensor out of configured range; Analog output saturation (beyond user-configured output limits);
 Internal module fault; Module out of allowed temperature range (-40 to + 70 °C). The module can be programmed to reflect such fault conditions on Analog Output (Upscale, Downscale, Custom Value) and/or on each Alarm Output. **Technical Data** Supply: 24 Vdc nom (18 to 30 Vdc) reverse polarity protected, ripple within voltage limits ≤ 5 Vpp, 2 A time lag fuse internally protected. *Current consumption @* 24 V: 50 mA with 20 mA output and relays energized typical. Power dissipation: 1.3 W with 24 V supply, 20 mA output and relays energized typical. Isolation (Test Voltage): I.S.In/Outs 2.5KV; I.S.In/Supply 2.5KV; AnalogOut/Supply 500V; Analog Out/Alarm Outs 1.5 KV; Alarm Outs/Supply 1.5 KV; Alarm Out/Alarm Out 1.5KV. Input: (for details see Input specifications table on page 8) millivolt or thermocouple type A1, A2, A3, B, E, J, K, L, LR, N, R, S, T, U, or 2-3-4 wire RTD Pt50, Pt100, Pt200, Pt300, Pt400, Pt500, Pt1000 to IEC, Pt100 to IANSI, Ni100, Ni120 to DIN43760, Pt46, Pt50, Pt100, Pt200, Pt300, Pt400, Pt500, Cu53, Cu100 to GOST6651 (russian standard) and Cu9.035 (or Cu10), or 3 wire transmitting potentiometer (100 Ω to 10 kΩ). Choice between °C/°F. Possibility of configuring user customized sensor (TC or RTD). Integration time: from 50 ms to 500 ms depending on sensor and fast/slow integration. *Resolution*: 1 µV on mV/TC, 1 mΩ on RTD/resistance, 0.0001 % on potentiometer. Visualization: 0.1 °C on temp.,10 µV on mV, 100 mΩ on resistance, 0.1 % on pot. Input range: within sensor limits (-50 to +80 mV for TC/mV, 0-4 kΩ for resistance). *Measuring RTD current:* ≤ 0.15 mA. 2 wire RTD line resistance compensation: ≤ 100 Ω (programmable). 2 wire RTD line resistance compensation:  $\leq 100 \Omega$  (programmable). Thermocouple Reference Junction Compensation: programmable as automatic with internal compensator or fixed (- 60 to + 100 °C). Thermocouple burnout current: < 50 µA. **Fault:** enabled/disabled. Analog output can be programmed to reflect fault conditions via downscale, highscale or customized value forcing. Fault conditions are also signaled via BUS and by red LED on front panel for each channel. Fault conditions are: Sensor burnout, Sensor out of range, Output saturation, Internal fault, Module out of temperature range. **Output:** Fully customizable 0/4 to 20 mA, on max. 300  $\Omega$  load source mode, current limited at 24 mA. In sink mode, external voltage generator range is V min. 3.5V at 0 $\Omega$  load and V max. 30V. If generator voltage Vg > 10 V, a series resistance  $\geq$  (Vg - 10)/0.024  $\Omega$  is needed. The maximum value of series resistance is (Vg - 3.5)/0.024  $\Omega$ . Resolution: 1 µA current output. Transfer characteristic: linear, direct or reverse on all input sensors. Response time:  $\leq 20 \text{ ms} (10 \text{ to } 90 \% \text{ step}).$ Output ripple:  $\leq 20 \text{ mVrms on } 250 \Omega \text{ load.}$ DC Load breaking capacity: V (V) Modbus Output: Modbus RTU protocol up to 115.200 baud on Bus connector Modbus Output: Modbus R10 protocol up to 115.200 baud on Bus connector. Alarm: Trip point range: within rated limits of input sensor (see input step resolution). ON-OFF delay time: 0 to 1000 s, 100 ms step. Hysteresis: 0-500 °C, 0-50 mV, 0-50 %. Output: Two voltage free SPDT relay contacts. Contact material: Ag Alloy (Cd free). Contact rating: 4 A 250 Vac 1000 VA, 4 A 250 Vdc 120 W (resistive load). Mechanical / Electrical life: 5 \* 10<sup>6</sup> / 3 \* 10<sup>4</sup> operation, typical. Bounce time NO / NC contact: 3 / 8 ms, typical. Frequency response: 10 Hz maximum. Performance: Ref Conditions: 24 V sumply 250 0 load, 23 ± 1 °C ambient temperature 300 250 200 Resistive Load 100 Frequency response: 10 Hz maximum. Performance: Ref. Conditions 24 V supply, 250 Ω load, 23 ± 1 °C ambient temperature, slow integration speed, 4-wires configuration for RTD. Input: Calibration and linearity accuracy: see section "Input Specifications". Temperature influence: ≤ ± 2 µV on mV or thermocouple, ± 20 mΩ on RTD (≤ 300 Ω @ 0°C) or ± 200 mΩ on RTD (> 300 Ω @ 0°C), ± 0.02 % on potentiometer for a 1 °C change. Ref. Junction Compensation influence: ≤ ± 1 °C (thermocouple sensor). Analog Output: Calibration accuracy: ≤ ± 0.05 % of full scale. Linearity error: ≤ ± 0.05 % of full scale for a min to max supply change. Load influence: ≤ ± 0.02 % of full scale for a 0 to 100 % load resistance change. Temperature influence: ≤ ± 0.01 % on zero and span for a 1 °C change.

- Compatibility:
- C E mark compliant, conforms to Directive. 2014/34/EU ATEX, 2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.
- Environmental conditions:
- Operating: temperature limits 40 to + 70 °C, relative humidity 95 %, up to 55 °C. Storage: temperature limits 45 to + 80 °C. Safety Description:

# Image: Second second

associated apparatus and non-sparking electrical equipment

Uo/vcc=72.V, lo/scc=23 mA, Po/Po=40 mW, Ui/Vmax = 12.8 V, li/Imax = 28.7 mA, Ci = 0 nF, Li = 0 nH atterminals 13.14-15-16. Um = 250 Vrms, -40 °C ≤ Ta ≤ 70 °C.

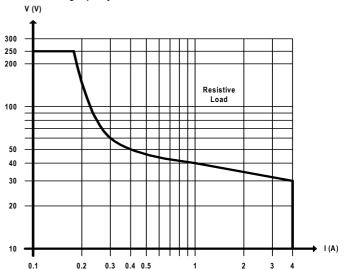
- Protection class: IP 20

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Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

# Programming

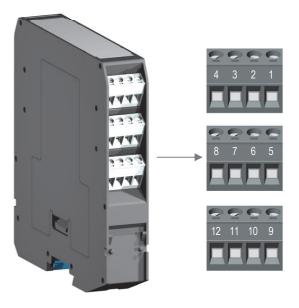
The module is fully programmable. Operating parameters can be changed from PC via PPC5092 adapter connected to USB serial line and SWC5090 software. Measured values and diagnostic alarms can be read on both serial configuration or Modbus output line. SWC5090 software also allows the Monitoring and Recording of values. For details please see WC5090 manual ISM0154.



			Orde	ring Information	
	Model: 1 channel	D5273	S	Power Bus and DIN-Rail accessories: Connector JDFT050 Terminal block male MOR017	Cover and fix MCHP196 Terminal block female MOR022
			Front P	anel and Features	
Ø 9 Ø 100 11 Ø 12         Ø 5 Ø 6 Ø 7 Ø 8         Ø 1 Ø 2 Ø 3 Ø 4         CONFIG         Ø         PWR ●         FLT ●         ALR A●         ALR B●	<ul> <li>D5273S alarm tri</li> <li>Input fro</li> <li>mV, thei</li> <li>2-wire R</li> <li>Internal</li> <li>Fastest i</li> <li>4-20 mA</li> <li>Two ind</li> <li>Multiple</li> <li>High Ac</li> <li>Three p</li> </ul>	soutput. SIL 2 according to IE( p amplifier and relay of m Zone 0 (Zone 20), in rmocouple, 2 or 3 or 4 TD line resistance com Reference Junction Co ntegration time: 50 ms A Output Signal temper ependent Trip Amplifie Fault detection. curacy, µP controlled a ort isolation, Input/Output/	C 61511 for Tproof utput. nstallation in Zone wire RTD or transp pensation. ompensation autor ature linear or reve rs each with SPD A/D converter. out/Supply.	f = 2/10 years (≤10% / >10 % of total SIF), 2. mitting potentiometer Input Signal. matic or fixed (programmable value).	PFDavg (1 year) 3.15 E-04, SFF 77.08% with analog PFDavg (1 year) 3.76 E-04, SFF 74.95% with single m.
SIL 2 D5273 Ø13@14@16@16	<ul> <li>ATEX, IE</li> <li>Type Ap</li> <li>High De</li> <li>Simplifie</li> </ul>	proval Certificate DNV f insity, one Analog Out ad installation using sta	RO, EAC-EX, UKR for maritime applica out + two Alarms. andard DIN-Rail ar	R TR n. 898, TÜV Certifications. tions. Id plug-in terminal blocks, with or without F uments associated with the barrier.	Power Bus.

# Terminal block connections





# HAZARDOUS AREA

- **13** + Input for thermocouple TC or for 3, 4 wire RTD or potentiometer
- 14 Input for thermocouple TC or for 2, 3, 4 wire RTD or potentiometer
- **15** Input for 2, 3, 4 wire RTD or potentiometer
- 16 Input for 4 wire RTD

# SAFE AREA

- 1 Common pole (CM1) of Alarm 1 output
- 2 Normally Open pole (NO1) of Alarm 1 output
- 3 Normally Closed pole (NC1) of Alarm 1 output
- 5 Common pole (CM2) of Alarm 2 output
- 6 Normally Open pole (NO2) of Alarm 2 output
- 7 Normally Closed pole (NC2) of Alarm 2 output
- 9 + Power Supply 24 Vdc
- 10 Power Supply 24 Vdc
- 11 + Analog Output (source current mode) or Analog Output (sink current mode)
- 12 Analog Output (source current mode) or + Analog Output (sink current mode)

#### **Parameters Table**

In the system safety analysis, always check the Hazardous Area/Hazardous Locations devices to conform with the related system documentation, if the device is Intrinsically Safe check its suitability for the Hazardous Area/Hazardous Locations and group encountered and that its maximum allowable voltage, current, power (Ui/Vmax, Ii/Imax, Pi/Pi) are not exceeded by the safety parameters (Uo/Voc, Io/Isc, Po/Po) of the D5273 series Associated Apparatus connected to it. Also consider the maximum operating temperature of the field device, check that added connecting cable and field device capacitance and inductance do not exceed the limits (Co/Ca, Lo/La, Lo/Ro) given in the Associated Apparatus parameters for the effective group. See parameters indicated in the table below:

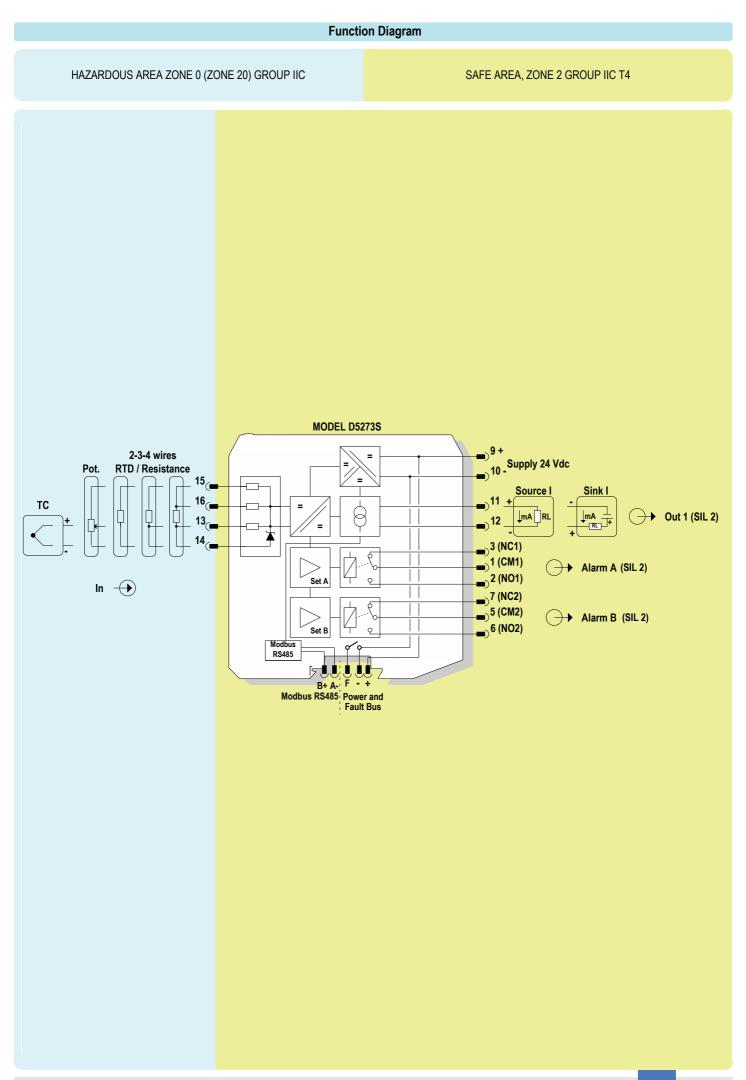
D5273 Terminals	D5273 Associa Apparatus Paran		Must be	Hazardous Area/ Hazardous Locations Device Parameters
	Uo / Voc = 7.2	2 V	≤	Ui / Vmax
13 - 14 - 15 - 16	lo / lsc = 23 m	۱A	≤	li/ Imax
	Po / Po = 40 n	۱W	≤	Pi / Pi
D5273 Terminals		D5273 Associated Apparatus Parameters Cenelec (US)		Hazardous Area/ Hazardous Locations Device + Cable Parameters
	Co / Ca = 13.5 μF Co / Ca = 240 μF Co / Ca = 1000 μF Co / Ca = 1000 μF Co / Ca = 240 μF	IIC (A, B) IIB (C) IIA (D) I iaD (E, F, G)	≥	Ci / Ci device + C cable
13 - 14 - 15 - 16	Lo / La = 67 mH Lo / La = 268 mH Lo / La = 537 mH Lo / La = 882 mH Lo / La = 268 mH	IIC (A, B) IIB (C) IIA (D) I iaD (E, F, G)	2	Li / Li device + L cable
	Lo / Ro = 875 μH/Ω Lo / Ro = 3500 μH/Ω Lo / Ro = 7100 μH/Ω Lo / Ro = 11480 μH/Ω Lo / Ro = 3500 μH/Ω	IIC (A, B) IIB (C) IIA (D) I iaD (E, F, G)	≥	Li / Ri device and L cable / R cable

When used with separately powered intrinsically safe devices, check that maximum allowable voltage, current (Ui/Vmax, Ii/Imax) of the D5273 Associated Apparatus are not exceeded by the safety parameters (Uo/Voc, Io/Isc) of the Intrinsically Safe device, indicated in the table below:

D5273 Terminals	D5273 Associated Apparatus Parameters	Must be	Hazardous Area/ Hazardous Locations Device Parameters
	Ui / Vmax = 12.8 V	≥	Uo / Voc
13 - 14 - 15 - 16	li / Imax = 28.7 mA	≥	lo / lsc
	Ci = 0 nF, Li= 0 nH		

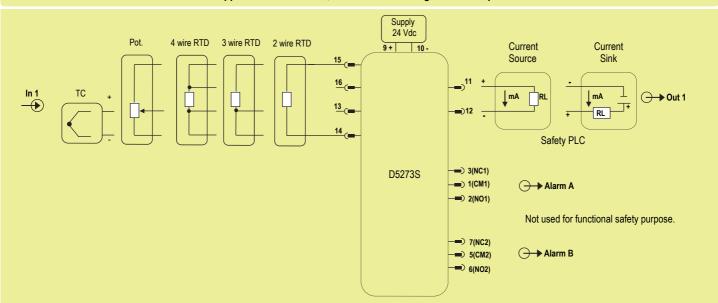
For installations in which both the Ci and Li of the Intrinsically Safe apparatus exceed 1 % of the Co and Lo parameters of the Associated Apparatus (excluding the cable), then 50 % of Co and Lo parameters are applicable and shall not be exceeded (50 % of the Co and Lo become the limits which must include the cable such that Ci device + C cable  $\leq$  50 % of Co and Li device + L cable  $\leq$  50 % of Lo).

If the cable parameters are unknown, the following value may be used: Capacitance 180pF per meter (60pF per foot), Inductance 0.60µH per meter (0.20µH per foot).



#### **Functional Safety Manual and Application**

#### Application for D5273S, with 4-20 mA Analog Current Output



#### Description:

For this application, enable 4 - 20 mA Source or Sink mode (see page 11 for more information).

The module is powered by connecting 24 Vdc power supply to Pins 9 (+ positive) and 10 (- negative). The green LED is lit in presence of supply power.

Input sensor (Thermocouple, RTD, Potentiometer) is applied from Pins 13 to 16 (see page 10 for more information about input settings).

Source or Sink output current is applied to Pins 11-12. Alarm A and Alarm B Outputs are only used for service purpose (not for Safety purpose).

#### Safety Function and Failure behavior:

D5273S is considered to be operating in Low Demand mode, as a Type B module, having Hardware Fault Tolerance (HFT) = 0.

- The failure behaviour of D5273S module (only the 4 20 mA current output configuration is used for functional safety application) is described from the following definitions:
  - Fail-Safe State: is defined as the output going to Fail Low or Fail High, considering that the Safety logic solver can convert the Low and High failures (dangerous detected failures) to the Fail-Safe state.
  - □ Fail Safe: failure mode that causes the module / (sub)system to go to the defined Fail-Safe state without a demand from the process .

□ Fail Dangerous: failure mode that does not respond to a demand from the process (i.e. being unable to go to the defined Fail-Safe state) or deviates the output current by more than 3% of the correct value.

- Fail High: failure mode that causes the output signal to go above the maximum output current (> 20 mA). This limit value can be programmed by the user, but in this analysis it is set to 20 mA. Assuming that the application program in the Safety logic solver is configured to detect High failures and does not automatically trip on these failures, they have been classified as Dangerous Detected (DD) failures.
- Fail Low: failure mode that causes the output signal to go below the minimum output current (< 4 mA). This limit value can be programmed by the user, but in this analysis it is set to 4 mA. Assuming that the application program in the Safety logic solver is configured to detect Low failures and does not automatically trip on these failures, they have been classified as Dangerous Detected (DD) failures.</p>

Fail "No Effect": failure mode of a component that plays a part in implementing the Safety Function but that is neither a safe failure nor a dangerous failure. When calculating the SFF, this failure mode is not taken into account.

- □ Fail "Not part": failure mode of a component which is not part of the Safety Function but is part of the circuit diagram and is listed for completeness.
- When calculating the SFF this failure mode is not taken into account.

As the module is supposed to be proven-in-use device, therefore according to the requirements of IEC 61511-1 section 11.4.4, a HFT = 0 is sufficient for SIL 2 (sub-) systems including Type B components and having a SFF equal or more than 60%.

Failure rate data: taken from Siemens Standard SN29500.

#### Failure rate table:

Failure category	Failure rates (FIT)
$\lambda_{dd}$ = Total Dangerous Detected failures	240.26
$\lambda_{du}$ = Total Dangerous Undetected failures	71.43
$\lambda_{sd}$ = Total Safe Detected failures	0.00
$\lambda_{su}$ = Total Safe Undetected failures	0.00
$\lambda_{tot safe}$ = Total Failure Rate (Safety Function) = $\lambda_{dd}$ + $\lambda_{du}$ + $\lambda_{sd}$ + $\lambda_{su}$	311.69
MTBF (safety function, single channel) = (1 / $\lambda_{tot safe}$ ) + MTTR (8 hours)	366 years
$\lambda_{\text{no effect}}$ = "No Effect" failures	190.31
$\lambda_{\text{not part}}$ = "Not Part" failures	229.50
$\lambda_{tot device}$ = Total Failure Rate (Device) = $\lambda_{tot safe}$ + $\lambda_{no effect}$ + $\lambda_{not part}$	731.50
MTBF (device, single channel) = (1 / $\lambda_{tot device}$ ) + MTTR (8 hours)	156 years

#### Failure rates table according to IEC 61508:2010 Ed.2 :

$\lambda_{sd}$	λ <sub>su</sub>	λ <sub>dd</sub>	λ <sub>du</sub>	SFF	DCD	
0.00 FIT	0.00 FIT	240.26 FIT	71.43 FIT	77.08%	77.08%	
 where DC means the diagnostic equation (acts or demonstry) for the input sensor by the opticity logic solver and interval						

where DC means the diagnostic coverage (safe or dangerous) for the input sensor by the safety logic solver and internal diagnostic circuits. This type "B" system has SFF = 77.08  $\% \ge 60 \%$  and HFT = 0, which is sufficient to get SIL 2 in accordance with the requirements of IEC 61511-1 section 11.4.4 during a proven-in-use assessment.

PFDavg vs T[Proof] table (assuming Proof Test coverage of 99%), with determination of SIL supposing module contributes ≤10% of total SIF dangerous failures:

 T[Proof] = 1 year
 T[Proof] = 3 years
 T[Proof] = 20 years

 PFDavg = 3.15E-04 Valid for SIL 2
 PFDavg = 9.46E-04 Valid for SIL 2
 PFDavg = 6.31E-03 Valid for SIL 1

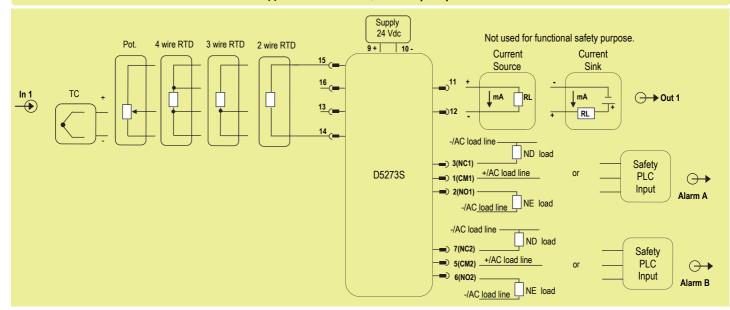
PFDavg vs T[Proof] table (assuming Proof Test coverage of 99%), with determination of SIL supposing module contributes >10% of total SIF dangerous failures:

#### T[Proof] = 10 years PFDavg = 3.15E-03 Valid for SIL 2

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### Functional Safety Manual and Application

Application for D5273S, alarm trip amplifiers



#### Description:

For this application, Alarm A or Alarm B Trip Amplifiers are programmed using NE relay condition (see page 11 for more information).

The module is powered by connecting 24 Vdc power supply to Pins 9 (+ positive) and 10 (- negative). The green LED is lit in presence of supply power.

Input sensor (Thermocouple, RTD, Potentiometer) is applied from Pins 13 to 16 (see page 11 for more information about input settings).

Each Alarm Trip Amplifier has got 2 relay contacts: Normally Open (NO) contact (Pins 1-2 for Alarm A and Pins 5-6 for Alarm B) and Normally Closed (NC) contact (Pins 1-3 for Alarm A and Pins 5-7 for Alarm B). NO contacts can be only used for Normally Energized (NE) load, while NC contacts can be only used for Normally De-energized (ND) load.

Alarm A and Alarm B output relays are normally energized, NO contacts are closed so that NE loads are normally energized, while NC contacts are open so that ND loads are normally de-energized. In case of alarm, the system de-energized to trip, output relays are de-energized, NO contacts are open so that NE loads are de-energized, NO contacts are closed so that ND loads are energized. To prevent relay contacts from damaging, connect an external protection (fuse or similar), chosen according to the relay breaking capacity (see page 2 for relay contact rating). Analog current output is only used for service purpose (not for Safety purpose).

#### Safety Function and Failure behavior:

D5273S is considered to be operating in Low Demand mode, as a Type B module, having Hardware Fault Tolerance (HFT) = 0.

- The failure behaviour of D5273S module (only the Alarm A or Alarm B output configuration is used for functional safety application) is described from the following definitions: Fail-Safe State: it is defined as the output relay being de-energized, with the NO contact remaining open (de-energizing the NE load) and the NC contact remaining closed energizing the ND load); the user can program the trip point value at which the output relay must be de-energized.
  - □ Fail Safe: failure mode that causes the module / (sub)system to go to the defined Fail-Safe state without a demand from the process.
  - □ Fail Dangerous: failure mode that leads to a measurement error of more than 3% of the correct value and, therefore, has the potential not to respond to a demand from the process (i.e. being unable to go to the defined Fail-Safe state), so that the output relay is energized and the NO contact remains closed (energizing the NE load), while the NC contact remains open (de-energizing the ND load).

Fail "No Effect": failure mode of a component that plays a part in implementing the Safety Function but that is neither a safe failure nor a dangerous failure. When calculating the SFF, this failure mode is not taken into account.

- □ Fail "Not part": failure mode of a component which is not part of the safety function but is part of the circuit diagram and is listed for completeness.
- When calculating the SFF this failure mode is not taken into account.

As the module is supposed to be proven-in-use device, therefore according to the requirements of IEC 61511-1 section 11.4.4, a HFT = 0 is sufficient for SIL 2 (sub-) systems including Type B components and having a SFF equal or more than 60%.

Failure rate data: taken from Siemens Standard SN29500.

# Failure rate table:

Failure category	Failure rates (FIT)
$\lambda_{dd}$ = Total Dangerous Detected failures	0.00
$\lambda_{du}$ = Total Dangerous Undetected failures	85.70
$\lambda_{sd}$ = Total Safe Detected failures	0.00
$\lambda_{su}$ = Total Safe Undetected failures	256.38
$\lambda_{tot safe}$ = Total Failure Rate (Safety Function) = $\lambda_{dd}$ + $\lambda_{du}$ + $\lambda_{sd}$ + $\lambda_{su}$	342.08
MTBF (safety function, single channel) = (1 / $\lambda_{tot safe}$ ) + MTTR (8 hours)	333 years
$\lambda_{\text{no effect}}$ = "No Effect" failures	202.52
$\lambda_{\text{not part}}$ = "Not Part" failures	186.90
$\lambda_{tot device}$ = Total Failure Rate (Device) = $\lambda_{tot safe}$ + $\lambda_{no effect}$ + $\lambda_{not part}$	731.50
MTBF (device, single channel) = (1 / $\lambda_{tot device}$ ) + MTTR (8 hours)	156 years

#### Failure rates table according to IEC 61508:2010 Ed.2 :

	$\lambda_{sd}$	λ <sub>su</sub>	$\lambda_{dd}$	λ <sub>du</sub>	SFF
	0.00 FIT	256.38 FIT	0.00 FIT	85.70 FIT	74.95%
T I :	a tura "D" avatara la	000 - 74 00 0/ >			

This type "B" system has SFF = 74.95 %  $\geq$  60 % and HFT = 0, which is sufficient to get SIL 2 in accordance with the requirements of IEC 61511-1 section 11.4.4 during a proven-in-use. **PFDavg vs T[Proof] table** (assuming Proof Test coverage of 99%), with determination of SIL supposing module contributes  $\leq$ 10% of total SIF dangerous failures:

#### T[Proof] = 1 year T[Proof] = 2 years T[Proof] = 20 years PEDayg = 3 76E-04 Valid for SIL 2 PEDayg = 7 52E-04 Valid for SIL 2 PEDayg = 7 52E-03 Valid for SIL 1

PFDavg vs T[Proof] table (assuming Proof Test coverage of 99%), with determination of SIL supposing module contributes >10% of total SIF dangerous failures:

T[Proof] = 10 years

PFDavg = 3.76E-03 Valid for SIL 2

#### Testing procedure at T-proof

The proof test shall be performed to reveal dangerous faults which are undetected by diagnostic.

This means that it is necessary to specify how dangerous undetected faults, which have been noted during the FMEDA, can be revealed during the proof test.

The test for D5273S with analog current output consists of the following steps:

Steps	Action
1	Bypass the Safety PLC or take any other appropriate action to avoid a false trip.
	Send a command to the temperature converter to go to the full scale current output and verify that the analog current reaches that value. This tests is for voltage compliance problems, such as low supply voltage or increased wiring resistance, and for other possible failures.
3	Send a command to the temperature converter to go to the low scale current output and verify that the analog current reaches that value. This tests is for possible quiescent current related failures.
4	Restore the loop to full operation.
5	Remove the bypass from the Safety-related PLC or restore normal operation. st 2 (to reveal 99 % of possible Dangerous Undetected failures)
5 roof te	Remove the bypass from the Safety-related PLC or restore normal operation.  st 2 (to reveal 99 % of possible Dangerous Undetected failures)
5 roof te	Remove the bypass from the Safety-related PLC or restore normal operation.  st 2 (to reveal 99 % of possible Dangerous Undetected failures)  Action
5 roof te	Remove the bypass from the Safety-related PLC or restore normal operation.  st 2 (to reveal 99 % of possible Dangerous Undetected failures)
5 roof tes Steps 1	Remove the bypass from the Safety-related PLC or restore normal operation.  st 2 (to reveal 99 % of possible Dangerous Undetected failures)  Action Bypass the Safety PLC or take any other appropriate action to avoid a false trip.
5 roof tes Steps 1 2	Remove the bypass from the Safety-related PLC or restore normal operation.  st 2 (to reveal 99 % of possible Dangerous Undetected failures)  Action Bypass the Safety PLC or take any other appropriate action to avoid a false trip. Perform steps 2 and 3 of <b>Proof Test 1</b> .

	Action
1	Bypass the Safety PLC or take any other appropriate action to avoid a false trip.
2	For each trip amplifier, send a command to the temperature converter to go to the high alarm current output and verify that the related relay contacts
	(between terminal blocks 1-2 or 1-3 for trip amplifier 1 and 5-6 or 5-7 for trip amplifier 2) are switched.
3	For each trip amplifier, send a command to the temperature converter to go to the low alarm current output and verify that the related relay contacts
	(between terminal blocks 1-2 or 1-3 for trip amplifier 1 and 5-6 or 5-7 for trip amplifier 2) are switched.
4	Restore the loop to full operation.
5	Remove the bypass from the Safety-related PLC or restore normal operation.
Droof to	st 2 (to reveal 99 % of possible Dangerous Undetected failures)
Steps	Action
1	Bypass the Safety PLC or take any other appropriate action to avoid a false trip.
2	Perform steps 2 and 3 of Proof Test 1.
3	Perform a two-point calibration of each temperature trip amplifier (i.e. 4 mA and 20 mA) and verify that the related relay contacts

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- (between terminal blocks 1-2 or 1-3 for trip amplifier 1 and 5-6 or 5-7 for trip amplifier 2) are switched.
- 4 Restore the loop to full operation.
- 5 Remove the bypass from the Safety-related PLC or restore normal operation.

#### Warning

D5273 series are isolated Intrinsically Safe Associated Apparatus installed into standard EN50022 T35 DIN-Rail located in Safe Area or Zone 2, Group IIC, Temperature T4, Hazardous Area (according to EN/IEC60079-15) within the specified operating temperature limits Tamb –40 to +70 °C, and connected to equipment with a maximum limit for AC power supply Um of 250 Vrms. Not to be connected to control equipment that uses or generates more than 250 Vrms or Vdc with respect to earth ground.

D5273 series must be installed, operated and maintained only by qualified personnel, in accordance to the relevant national/international installation standards (e.g. IEC/EN60079-14 Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (other than mines)), following the established installation rules, particular care shall be given to segregation and clear identification of I.S. conductors from non I.S. ones.

De-energize power source (turn off power supply voltage) before plug or unplug the terminal blocks when installed in Hazardous Area or unless area is known to be nonhazardous. Warning: substitution of components may impair Intrinsic Safety and suitability for Zone 2.

Warning: de-energize main power source (turn off power supply voltage) and disconnect plug-in terminal blocks before opening the enclosure to avoid electrical shock when connected to live hazardous potential.

Explosion Hazard: to prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or unless area is known to be nonhazardous. Failure to properly installation or use of the equipment may risk to damage the unit or severe personal injury. The unit cannot be repaired by the end user and must be returned to the manufacturer or his authorized representative. Any unauthorized modification must be avoided.

#### Operation

The input channel of Temperature Signal Converter, Trip amplifiers D5273 accepts a low level dc signal from millivolt, thermocouple or 2-3-4 wire RTD temperature or transmitting Potentiometer sensor, located in Hazardous Area, and converts, with isolation, the signal to a 4-20 mA floating output current to drive a Safe Area load. Presence of supply power is displayed by a "POWER ON" green signaling LED; integrity of field sensor and connecting line can be monitored by a configurable burnout circuit which, if enabled, can drive analog output signal to upscale or downscale limit. Burnout condition is signaled by red front panel fault LED.

#### Installation

D5273 series are temperature signal converters housed in a plastic enclosure suitable for installation on T35 DIN-Rail according to EN50022, with or without Power Bus or on customized Termination Board. D5273 unit can be mounted with any orientation over the entire ambient temperature range.

Electrical connection of conductors up to 2.5 mm<sup>2</sup> are accommodated by polarized plug-in removable screw terminal blocks which can be plugged in/out into a powered unit without suffering or causing any damage (for Zone 2 installations check the area to be nonhazardous before servicing).

The wiring cables have to be proportionate in base to the current and the length of the cable.

On the section "Function Diagram" and enclosure side a block diagram identifies all connections.

Identify the function and location of each connection terminal using the wiring diagram on the corresponding section,

as an example (thermocouple input, source current output, both trip amplifier outputs of alarms):

Connect 24 Vdc power supply positive at terminal "9" and negative at terminal "10".

Connect positive output of analog channel at terminal "11" and negative output at "12".

Connect trip amplifier output of alarm 1 at terminal "1" - "2" (for Normally Open NO contact) or "1" - "3" (for Normally Closed NC contact). Connect trip amplifier output of alarm 2 at terminal "5" - "6" (for Normally Open NO contact) or "5" - "7" (for Normally Closed NC contact). Connect thermocouple positive extension wire at terminal "13", negative and shield (if any) at terminal "14".

Make sure that compensating wires have the correct metal and thermal e.m.f. and are connected to the appropriate thermocouple terminal, note that a wrong compensating cable type or a swapped connection is not immediately apparent but introduces a misleading measurement error that appears as a temperature drift.

Intrinsically Safe conductors must be identified and segregated from non I.S. and wired in accordance to the relevant national/international installation standards (e.g. EN/IEC60079-14 Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (other than mines)), make sure that conductors are well isolated from each other and do not produce any unintentional connection.

Connect SPST alarm contacts checking the load rating to be within the contact maximum rating 4 A 250 Vac 1000 VA, 4 A 250 Vdc 120 W (resistive load).

To prevent alarm relay contacts from damaging, connect an external protection (fuse or similar), chosen according to the relay breaking capacity diagram on data sheet. The enclosure provides, according to EN60529, an IP20 minimum degree of mechanical protection (or similar to NEMA Standard 250 type 1) for indoor installation, outdoor installation requires an additional enclosure with higher degree of protection (i.e. IP54 to IP65 or NEMA type 12-13) consistent with the effective operating environment of the specific installation. Units must be protected against dirt, dust, extreme mechanical (e.g. vibration, impact and shock) and thermal stress, and casual contacts.

If enclosure needs to be cleaned use only a cloth lightly moistened by a mixture of detergent in water.

Electrostatic Hazard: to avoid electrostatic hazard, the enclosure of D5273 must be cleaned only with a damp or antistatic cloth.

Any penetration of cleaning liquid must be avoided to prevent damage to the unit. Any unauthorized card modification must be avoided.

According to EN61010, D5273 series must be connected to SELV or SELV-E supplies.

Alarm relay output contacts must be connected to load non exceeding category II overvoltage limits.

Warning: de-energize main power source (turn off power supply voltage) and disconnect plug-in terminal blocks before opening the enclosure to avoid electrical shock when connected to live hazardous potential.

#### Start-up

Before powering the unit check that all wires are properly connected, particularly supply conductors and their polarity, input and output wires, also check that Intrinsically Safe conductors and cable trays are segregated (no direct contacts with other non I.S. conductors) and identified either by color coding, preferably blue, or by marking. Check conductors for exposed wires that could touch each other causing dangerous unwanted shorts.

Turn on power, the "power on" green leds must be lit, output signal must be in accordance with the corresponding input signal value and input/output chosen transfer function, alarm LED should reflect the input variable condition with respect to trip points setting. If possible change the sensor condition and check the corresponding Safe Area output.

# Input specifications:

•	specificat								
Input	Туре	Alpha	Ohms	Standards	Min Span	Accuracy	Accuracy Range	Maximum Range	
			50	IEC 60751	30 °C (54 °F)	±0.4 °C ±0.7 °F	-200 to 850 °C (-328 to 1562 °F)	-200 to 850 °C (-328 to 1562 °F)	
			100	IEC 60751		±0.2 °C ±0.4 °F	-200 to 850 °C (-328 to 1562 °F)	-200 to 850 °C (-328 to 1562 °F)	
			200	IEC 60751	_	±0.2 °C	-200 to 850 °C	-200 to 850 °C	
			200	IEC 00731	_	±0.4 °F ±0.2 °C	(-328 to 1562 °F) -200 to 850 °C	(-328 to 1562 °F) -200 to 850 °C	
		0.003850	300	IEC 60751	20 °C	±0.4 °F	(-328 to 1562 °F)	(-328 to 1562 °F)	
			400	IEC 60751	(36 °F)	±0.2 °C ±0.4 °F	-200 to 850 °C (-328 to 1562 °F)	-200 to 850 °C (-328 to 1562 °F)	
				500	IEC 60751		±0.2 °C ±0.4 °F	-200 to 850 °C (-328 to 1562 °F)	-200 to 850 °C (-328 to 1562 °F)
			1000	IEC 60751	_	±0.2 °C	-200 to 850 °C	-200 to 850 °C	
	Platinum				20 °C	±0.4 °F ±0.2 °C	(-328 to 1562 °F) -200 to 625 °C	(-328 to 1562 °F) -200 to 625 °C	
		0.003916	100	ANSI	(36 °F)	±0.4 °F	(-328 to 1157 °F)	(-328 to 1157 °F)	
			46	GOST 6651	30 °C	±0.4 °C ±0.7 °F	-200 to 650 °C (-328 to 1202 °F)	-200 to 650 °C (-328 to 1202 °F)	
			50	GOST 6651	(54 °F)	±0.4 °C	-200 to 650 °C	-200 to 650 °C	
RTD			100	GOST 6651		±0.7 °F ±0.2 °C	(-328 to 1202 °F) -200 to 650 °C	(-328 to 1202 °F) -200 to 650 °C	
RID					_	±0.4 °F ±0.2 °C	(-328 to 1202 °F) -200 to 650 °C	(-328 to 1202 °F) -200 to 650 °C	
		0.003910	200	GOST 6651		±0.4 °F	(-328 to 1202 °F)	(-328 to 1202 °F)	
			300	GOST 6651	20 °C (36 °F)	±0.2 °C ±0.4 °F	-200 to 650 °C (-328 to 1202 °F)	-200 to 650 °C (-328 to 1202 °F)	
			400	GOST 6651		±0.2 °C	-200 to 650 °C	-200 to 650 °C	
					_	±0.4 °F ±0.2 °C	(-328 to 1202 °F) -200 to 650 °C	(-328 to 1202 °F) -200 to 650 °C	
			500	GOST 6651		±0.4 °F	(-328 to 1202 °F)	(-328 to 1202 °F)	
	Nickol	0.00618	100	DIN 43760	20 °C	±0.2 °C ±0.4 °F	-60 to 180 °C (-76 to 356 °F)	-60 to 180 °C (-76 to 356 °F)	
	Nickel	0.00672	120	DIN 43760	(36 °F)	±0.2 °C ±0.4 °F	-80 to 320 °C (-112 to 608 °F)	-80 to 320 °C (-112 to 608 °F)	
			50	GOST 6651	30 °C	±0.4 °C	-50 to 200 °C	-50 to 200 °C	
					(54 °F) 30 °C	±0.7 °F ±0.4 °C	(-58 to 392 °F) -50 to 200 °C	(-58 to 392 °F) -50 to 200 °C	
	Copper	0.00428	53	GOST 6651	(54 °F)	±0.7 °F	(-58 to 392 °F)	(-58 to 392 °F)	
			100	GOST 6651	20 °C (36 °F)	±0.2 °C ±0.4 °F	-50 to 200 °C (-58 to 392 °F)	-50 to 200 °C (-58 to 392 °F)	
		0.00427	9.035		40 °C (72 °F)	±1.0 °C ±1.8 °F	-50 to 260 °C (-58 to 500 °F)	-50 to 260 °C (-58 to 500 °F)	
	Resi	stance	0 to 4000		10 ohm	±0.4 ohm	0 to 4000	0 to 4000	
Ohm	Poten	tiometer	100 to 10000		10%	±0.1%	0 to 100%	0 to 100%	
		A1		GOST 8.585-2001	100 °C	±0.75 °C	25 to 2500 °C	-10 to 2500 °C	
					(180 °F) 100 °C	±1.35 °F ±0.75 °C	(77 to 4532 °F) 25 to 1800 °C	(14 to 4532 °F) -10 to 1800 °C	
		A2		GOST 8.585-2001	(180 °F)	±1.35 °F	(77 to 3272 °F)	(14 to 3272 °F)	
		A3		GOST 8.585-2001	100 °C (180 °F)	±0.75 °C ±1.35 °F	25 to 1800 °C (77 to 3272 °F)	-10 to 1800 °C (14 to 3272 °F)	
		В		IEC 60584 GOST 8.585-2001	75 °C (135 °F)	±0.75 °C ±1.35 °F	180 to 1800 °C (356 to 3272 °F)	-10 to 1800 °C (14 to 3272 °F)	
		E		IEC 60584	40 °C	±0.3 °C	-100 to 1000 °C	-250 to 1000 °C	
				GOST 8.585-2001 IEC 60584	(72 °F) 40 °C	±0.6 °F ±0.3 °C	(-148 to 1832 °F) -125 to 750 °C	(-418 to 1832 °F) -200 to 1200 °C	
		J		GOST 8.585-2001	(72 °F)	±0.6 °F	(-193 to 1382 °F)	(-328 to 2192 °F)	
тс		К		IEC 60584 GOST 8.585-2001	40 °C (72 °F)	±0.3 °C ±0.6 °F	-125 to 1350 °C (-193 to 2462 °F)	-250 to 1350 °C (-418 to 2462 °F)	
10		L		DIN 43710	40 °C (72 °F)	±0.3 °C ±0.6 °F	-100 to 800 °C (-148 to 1472 °F)	-200 to 800 °C (-328 to 1472 °F)	
		LR		GOST 8.585-2001	40 °C	±0.3 °C	-75 to 800 °C	-200 to 800 °C	
	N			IEC 60584	(72 °F) 40 °C	±0.6 °F ±0.3 °C	(-103 to 1472 °F) -100 to 1300 °C	(-328 to 1472 °F) -250 to 1300 °C	
				GOST 8.585-2001 IEC 60584	(72 °F) 50 °C	±0.6 °F ±0.5 °C	(-148 to 2372 °F) 75 to 1750 °C	(-418 to 2372 °F) -50 to 1750 °C	
		R		GOST 8.585-2001	(90 °F) 50 °C	±0.9 °F	(167 to 3182 °F) 75 to 1750 °C	(-58 to 3182 °F)	
	S			IEC 60584 GOST 8.585-2001	(90 °F)	±0.5 °C ±0.9 °F	(167 to 3182 °F)	-50 to 1750 °C (-58 to 3182 °F)	
		т		IEC 60584 GOST 8.585-2001	40 °C (72 °F)	±0.3 °C ±0.6 °F	-100 to 400 °C (-148 to 752 °F)	-250 to 400 °C (-418 to 752 °F)	
		U		DIN 43710	40 °C	±0.3 °C	-100 to 400 °C	-200 to 600 °C	
		-			(72 °F)	±0.6 °F	(-148 to 752 °F)	(-328 to 1112 °F)	
mV		DC			10 mV	±10 μV	-50 to 80 mV	-50 to 80 mV	

Notes: RTD/resistance accuracy shown in 4-wires configuration, in slow integration speed TC/mV Accuracy shown in slow integration speed

# **Configuration parameters:**

#### INPLIT-

- Sensor Connection:
- D TC C RTD
- Potentiometer
- O Voltage
- Resistance

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

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

Lowscale: 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) via internal compensator (1 for each channel) Automatic

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

Integration speed:

250 ms (mV/TC,2 wire RTD); 375 ms (Pot.), 500 ms (3,4 wire RTD) □ Slow 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 ( $\mu$ V or m $\Omega$  depending on input sensor); Multiplier: input multiplication value;

analog output represents input of first channel,

Tag: 16 alphanumerical characters

## OUTPUT:

Function:

Input 1

Type: 4-20 mA Sink

(for SIL applications)

0-20 mA Sink

Custom Sink fully customizable range from 0 to 24 mA, Sink mode 4-20 mA Source (for SIL applications)

O-20 mA Source

Custom Source

fully customizable range from 0 to 24 mA, Source mode Downscale: output downscale in normal condition (range 0 to 24 mA)

Upscale: output upscale in normal condition (range 0 to 24 mA) Under Range: analog output downscale in Under Range condition (range 0 to 24 mA) Over Range: analog output upscale 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" in case of:

input sensor interruption,

input sensor out of configured input range,

module operating temperature limits.

output is below Under Range or above Over Range,

module internal fault,

 Burnout Internal fault

Sensor out of range

Output Saturation

□ Module Temp. Out of range internal module temperature under or over specified

ALARM: Type:

iype.	
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.
Source: reference	value for alarm triggering
Input 1	input of first channel,
Condition:	
🗆 NE	alarm output is normally energized when deactivated,
	for SIL applications
	alarm output is normally do operaized when deactivated

alarm output is normally de-energize ed when deactiv 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 °C, 0-50 mV, 0-50 %, 0 to 2 KΩ) 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 %, 0 to 2 KΩ) 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:

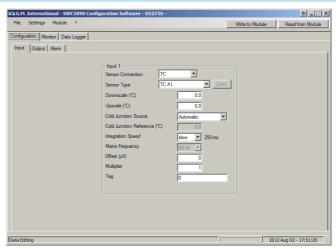
- Iqnore alarm is not affected
- Lock status alarm remains in the same status as it was before Fault occurred
- 🗆 Go On alarm is triggered,
- Go Off alarm is deactivated

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.

Each alarm has completely independent configurations Note:

See ISM0154 Manual for details on SWC5090 software.

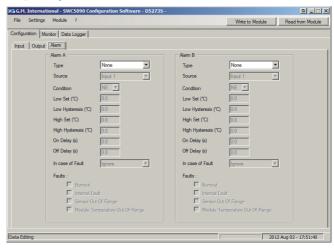
# Screenshots:



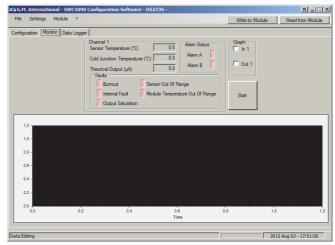
#### Input configuration

CAG.M. International - SWC5090 Configuration Software - D52735 -		B_IX
File Settings Module ?	Write to Module	Read from Module
File Settings Module ? Configuration Montor Data Lagger Input Cottput Awam Cottput Awam Cottput Awam Cottput 1 Function Function Function Function Function Upscale (µA) 20000 Under Range (µA) 20000 Under Range (µA) 20000 Cover Range (µA) 20000 Fault Output Value (µA) 20000 Fault Output Value (µA) 20000 Fault Output Value Cottput Saturation Module Temperature Out Of Range Cottput Saturation Module Temperature Out Of Range	White to Module	Read from Module
Data Editing	2012 /	Aug 02 - 17:51:30

#### Output configuration



### Alarm configuration



Monitor

# Supported Modbus parameters:

The unit can communicate via Modbus RTU RS-485 protocol. Below is a list of all registers.

0         G.M. Factory Code         Identification Data         R           1         Instrument Code         Identification Data         R           3         Hardware Release         Generation Data         RW           16         Modbus Badrate (1)         Communication Data         RW           17         Modbus Badrate (1)         Communication Data         RW           18         Modbus Badrate (1)         Communication Data         RW           19         Ch. 1 Measured Value (Low 16 bits))         Communication Data         RW           116         Ch. 1 Fault configuration (1)         Input Data         R           117         Ch. 1 Distat (Low 16 bits) (1)         Input Configuration         R           120         Ch. 1 Divider         Input Configuration         R           121         Ch. 1 Multipler         Input Configuration         R           122         Ch. 1 Downscale (Low 16 bits) (1)         Input Configuration         R           123         Ch. 1 Downscale (Low 16 bits) (1)         Input Configuration         R           124         Ch. 1 Downscale (Low 16 bits) (1)         Input Configuration         R           126         Ch. 1 Ubers Range (1)         Instate Range (1)         Instate Range (1)	Addr.	Description	Notes	<b>Type</b> <sup>(10)</sup>
1         Instrument Code         Identification Data         R           2         Option Code         Identification Data         R           4         Software Release         Communication Data         R/W           16         Modbus Format' 10         Communication Data         R/W           18         Modbus Format' 10         Communication Data         R/W           18         Modbus Format' 10         Communication Data         R/W           19         Ch. 1 Measured Value (High 16 his) <sup>(h)</sup> Communication Data         R/W           72         Ch. 1 Fault status 0         Input Data         R           116         Ch. 1 Fault status 0         Input Configuration         R/W           20         Ch. 1 Orset (High 16 bits) (%)         Input Configuration         R/W           212         Ch. 1 Divenscale (Low 16 bits) (%)         Input Configuration         R/W           225         Ch. 1 Highscale (Kigh 16 bits) (%)         Input Configuration         R/W           226         Ch. 1 Highscale (Kigh 16 bits) (%)         Output Configuration (%)         R/W           23         Ch. 1 Output configuration (%)         Atarm A Saut Configuration (%)         Atarm A Saut Configuration (%)           244         Ch. 1 Highscale (Kigh 16 bits) (%)		C M Eastery Code	NULES	Type
2         Option Code         Identification Data         R           3         Hardware Release         Identification Data         RW           16         Moduus Baudrate (1)         Communication Data         RW           17         Moduus Saudrate (1)         Communication Data         RW           18         Moduus Saudrate (1)         Communication Data         RW           18         Moduus Saudrate (1)         Communication Data         RW           17         Ch. 1 Measured Value (Içur 16 bits)         Input Data         R           17         Ch. 1 Input configuration (1)         Input Data         R           17         Ch. 1 Input Configuration (1)         Input Configuration         R           19         Ch. 1 Order (Low 16 bits) (9)         Input Configuration         RW           122         Ch. 1 Outgrate (Low 16 bits) (9)         Input Configuration         RW           123         Ch. 1 Downscale (Low 16 bits) (9)         Input Configuration         RW           124         Ch. 1 Downscale (Low 16 bits) (9)         Input Configuration         RW           124         Ch. 1 Downscale (Low 16 bits) (9)         Input Configuration         RW           125         Ch. 1 Highscale (Low 16 bits) (9)         Input Configuration (9)				
3         Hardware Release           4         Software Release           6         Modbus Address           77         Modbus Format' (1)           18         Modbus Format' (1)           71         Ch. 1 Messured Value (Low 16 bits) <sup>(6)</sup> 72         Ch. 1 Messured Value (Low 16 bits) <sup>(6)</sup> 73         Ch. 1 Fault status (1)           74         Ch. 1 Fault status (1)           75         Ch. 1 Fault configuration (1)           70         Ch. 1 Sensor Type (1)           71         Ch. 1 Sensor Type (1)           72         Ch. 1 Multipler           72         Ch. 1 Foult configuration (1)           73         Ch. 1 Foult Configuration (1)           74         Ch. 1 Orset (High 16 bits) (1)           72         Ch. 1 Multipler           72         Ch. 1 Downscale (1)           72         Ch. 1 Differ (High 16 bits) (1)           72         Ch. 1 Highscale (Low 16 bits) (1)           72         Ch. 1 Highscale (Low 16 bits) (1)           73         Ch. 1 Ownscale (1)           74         Ch. 1 Ownscale (1)           75         Ch. 1 Highscale (Low 16 bits) (1)           76         Ch. 1 Highscale (High 16 bits) (1)				-
4         Software Release           16         Modus Address           17         Modus Baudrate (1)         Communication Data         RW           18         Modus Softrast (1)         Communication Data         RW           17         Ch. 1 Measured Value (Low 16 bits)(9)         Input Data         R           17         Ch. 1 Measured Value (Low 16 bits)(9)         Input Data         R           17         Ch. 1 Input comfiguration (1)         Input Data         R           176         Ch. 1 Input comfiguration (1)         Input Configuration         R           171         Ch. 1 Oriset (Low 16 bits) (9)         Input Configuration         R           172         Ch. 1 Diverscale (Low 16 bits) (9)         Input Configuration         R           172         Ch. 1 Diverscale (Low 16 bits) (9)         Input Configuration         R           172         Ch. 1 Diverscale (Low 16 bits) (9)         Input Configuration         R           172         Ch. 1 Diverscale (Low 16 bits) (9)         Input Configuration         R           173         Ch. 1 Diverscale (Low 16 bits) (9)         Input Configuration         R           174         Ch. 1 Diverscale (Low 16 bits) (9)         Input Configuration         R           174         Ch. 1 Di			Identification Data	R
16         Modbus Address         Communication Data         RW           17         Modbus Format (*)         Ch. 1 Measured Value (Low 16 bits)(*)         Input Data         RW           17         Ch. 1 Measured Value (Low 16 bits)(*)         Input Data         R           17         Ch. 1 Cold Junction value (*)         Input Data         R           17         Ch. 1 Fault status (*)         Input Data         R           17         Ch. 1 Fault status (*)         Input Data         R           17         Ch. 1 Fault status (*)         Input Data         R           17         Ch. 1 Fault status (*)         Input Configuration (*)         Input Configuration (*)           18         Ch. 1 Obvier         Input Configuration (*)         Input Configuration (*)         R/W           120         Ch. 1 Upscale (*)         16 bits) (*)         Input Configuration (*)         R/W           122         Ch. 1 Upscale (*)         160 Ch. 1 Upscale (*)         Output Configuration (*)         R/W           161         Ch. 1 Pownscale (*)         Input Sets(*)         Output Configuration (*)         R/W           162         Ch. 1 Upscale (*)         Input Sets(*)         Output Configuration (*)         R/W           164         Ch. 1 Own Sets(*)	3	Hardware Release		
17         Modbus Format (1)         Communication Data         R/W           18         Modbus Format (1)         Ch. 1 Measured Value (Low 16 bits)(3)         Input Data         R           71         Ch. 1 Measured Value (Low 16 bits)(3)         Input Data         R           73         Ch. 1 Input Configuration (1)         Input Data         R           74         Ch. 1 Input Configuration (1)         Input Data         R           75         Ch. 1 Fixed Cold Junction temp, value (9)         Input Configuration         R           712         Ch. 1 Muttpiler         Input Configuration         R           712         Ch. 1 Highscale (Low 16 bits) (%)         Input Configuration         R           712         Ch. 1 Highscale (Low 16 bits) (%)         Output Configuration         R           712         Ch. 1 Upscale (Low 16 bits) (%)         Output Configuration         R           712         Ch. 1 Upscale (Injh 16 bits) (%) <t< td=""><td>4</td><td>Software Release</td><td></td><td></td></t<>	4	Software Release		
18         Modbus Format (*)           71         Ch. 1 Measured Value (Low 16 bits)*)           72         Ch. 1 Measured Value (10) 16 bits)*)           73         Ch. 1 Cold Junction value (*)           74         Ch. 1 Input Configuration (*)           75         Ch. 1 Fault status (*)           76         Ch. 1 Sensor Type (*)           78         Ch. 1 Offset (10) 16 bits) (*)           79         Ch. 1 Offset (10) 16 bits) (*)           71         Ch. 1 Offset (10) 16 bits) (*)           72         Ch. 1 Offset (10) 16 bits) (*)           73         Ch. 1 Offset (10) 16 bits) (*)           74         Ch. 1 Downscale (Low 16 bits) (*)           72         Ch. 1 Mytorer           73         Ch. 1 Ownscale (Low 16 bits) (*)           74         Ch. 1 Highscale (Uigh 16 bits) (*)           72         Ch. 1 Highscale (Ligh 16 bits) (*)           73         Cold Juncton source selecton (*)           74         Ch. 1 Uder Range (*)           75         Ch. 1 Highscale (High 16 bits) (*)           74         Ch. 1 Ownscale (*)           75         Ch. 1 Highscale (High 16 bits) (*)           74         Ch. 1 Own Range (*)           76         Ch. 1 Vearenant (*)	16	Modbus Address		
18         Modbus Format (*)           71         Ch. 1 Measured Value (Low 16 bits)*)           72         Ch. 1 Measured Value (10) 16 bits)*)           73         Ch. 1 Cold Junction value (*)           74         Ch. 1 Input Configuration (*)           75         Ch. 1 Fault status (*)           76         Ch. 1 Sensor Type (*)           78         Ch. 1 Offset (10) 16 bits) (*)           79         Ch. 1 Offset (10) 16 bits) (*)           71         Ch. 1 Offset (10) 16 bits) (*)           72         Ch. 1 Offset (10) 16 bits) (*)           73         Ch. 1 Offset (10) 16 bits) (*)           74         Ch. 1 Downscale (Low 16 bits) (*)           72         Ch. 1 Mytorer           73         Ch. 1 Ownscale (Low 16 bits) (*)           74         Ch. 1 Highscale (Uigh 16 bits) (*)           72         Ch. 1 Highscale (Ligh 16 bits) (*)           73         Cold Juncton source selecton (*)           74         Ch. 1 Uder Range (*)           75         Ch. 1 Highscale (High 16 bits) (*)           74         Ch. 1 Ownscale (*)           75         Ch. 1 Highscale (High 16 bits) (*)           74         Ch. 1 Own Range (*)           76         Ch. 1 Vearenant (*)		Modbus Baudrate (1)	Communication Data	R/W
71         Ch. 1 Measured Value (Low 16 bits) <sup>(6)</sup> 72         Ch. 1 Measured Value (Low 16 bits) <sup>(6)</sup> 73         Ch. 1 Cold Junction value ( <sup>6)</sup> 74         Ch. 1 Input temperature ( <sup>6)</sup> ( <sup>6)</sup> 75         Ch. 1 Fault status ( <sup>6)</sup> 116         Ch. 1 Sensor Type ( <sup>1)</sup> 117         Ch. 1 Sensor Type ( <sup>1)</sup> 118         Ch. 1 Fixed Cold (junction temp, value ( <sup>6)</sup> 119         Ch. 1 Offset (Lig) 16 bits) ( <sup>6)</sup> 120         Ch. 1 Offset (Lig) 16 bits) ( <sup>6)</sup> 121         Ch. 1 Multipler           122         Ch. 1 Downscale (Low 16 bits) ( <sup>6)</sup> 123         Ch. 1 Downscale (Low 16 bits) ( <sup>6)</sup> 124         Ch. 1 Upt configuration ( <sup>1)</sup> 125         Ch. 1 Highscale (Cow 16 bits) ( <sup>6)</sup> 126         Ch. 1 Upt configuration ( <sup>1)</sup> 127         Ch. 1 Upt configuration ( <sup>1)</sup> 128         Alarm A Configuration ( <sup>1)</sup> 124         Alarm A Low Threshold (Low 16 bits) ( <sup>6)</sup>				
72         Ch. 1 Cold Junction value (2)         Input Data         R           73         Ch. 1 Cold Junction value (2)         Input Data         R           74         Ch. 1 Fugut status (1)         Input Data         R           75         Ch. 1 Fautt status (1)         Input Data         R           76         Ch. 1 Fautt status (1)         Input Configuration (1)         Input Configuration (1)           116         Ch. 1 Sensor Type (1)         Input Configuration (1)         Input Configuration (1)           120         Ch. 1 Offset (Link) 16 bits) (10)         Input Configuration (1)         R/W           122         Ch. 1 Multipiler         Input Configuration (1)         R/W           123         Ch. 1 Downscale (Low 16 bits) (10)         Input Configuration (1)         R/W           124         Ch. 1 Under Range (1)         Input Configuration (1)         R/W           125         Ch. 1 Highscale (Link) 16 bits) (10)         Output Configuration (1)         R/W           126         Ch. 1 Under Range (1)         Input Configuration (1)         R/W           126         Ch. 1 Under Range (1)         Input Configuration (1)         R/W           124         Alarm A Fault Configuration (1)         R/W         R/W           124         Alarm A				
73         Ch. 1 Cold Junction value (?)         Input Data         R           74         Ch. 1 Input Configuration (?)         Input Data         R           75         Ch. 1 Input Configuration (?)         Input Oatifiguration (?)         Input Configuration (?)           116         Ch. 1 Fixed Cold junction temp. value (?)         Input Configuration (?)         Input Configuration (?)           120         Ch. 1 Offset (High 16 bits) (?)         Input Configuration (?)         Input Configuration (?)           121         Ch. 1 Downscale (High 16 bits) (?)         Input Configuration (?)         Input Configuration (?)           122         Ch. 1 Highscale (High 16 bits) (?)         Output Configuration (?)         R/W           122         Ch. 1 Highscale (High 16 bits) (?)         Output Configuration (?)         R/W           123         Ch. 1 Uncer Range (?)         Output Configuration (?)         R/W           160         Ch. 1 Output configuration (?)         Output Configuration (?)         R/W           163         Ch. 1 Uncer Range (?)         Output Configuration (?)         R/W           244         Alarm A Low Threshold (Low 16 bits) (?)         R/W         Alarm A Low Hysteresis (Low 16 bits) (?)           244         Alarm A Low Threshold (Low 16 bits) (?)         Alarm A Low Hysteresis (Low 16 bits) (?)         Alarm				
74         Ch. 1 Input Configuration (1)           75         Ch. 1 Fixed Cold junction temp. value (8)           116         Ch. 1 Fixed Cold junction temp. value (8)           119         Ch. 1 Offset (Liow 16 bits) (8)           120         Ch. 1 Offset (Liow 16 bits) (8)           121         Ch. 1 Divider           122         Ch. 1 Divider           123         Ch. 1 Divider           124         Ch. 1 Divider           125         Ch. 1 Highscale (Low 16 bits) (8)           126         Ch. 1 Highscale (Liow 16 bits) (8)           126         Ch. 1 Under Range (7)           127         Ch. 1 Under Range (7)           128         Ch 10 Vere Range (7)           129         Ch 1 Under Range (7)           124         Alarm A Low Threshold (Liow 16 bits) (8)           124         Alarm A Low Threshold (Liow 16 bits) (8)           124         Alarm A Low Threshold (Liow 16 bits) (8)           244         Alarm A High Threshold (High 16 bits) (8)				_
75         Ch. 1 Fault status (1)           116         Ch. 1 Sensor Type (1)           117         Ch. 1 Offset (Low 16 bits) (5)           120         Ch. 1 Offset (Low 16 bits) (5)           121         Ch. 1 Offset (Low 16 bits) (5)           122         Ch. 1 Offset (Low 16 bits) (5)           123         Ch. 1 Downscale (High 16 bits) (5)           124         Ch. 1 Downscale (High 16 bits) (5)           125         Ch. 1 Highscale (Low 16 bits) (5)           126         Ch. 1 Highscale (Low 16 bits) (5)           126         Ch. 1 Under Range (7)           160         Ch. 1 Ownscale (7)           126         Ch. 1 Upscale (7)           126         Ch. 1 Upscale (10)           127         Alarm A Source (7)           128         Ch. 1 Upscale (7)           129         Alarm A Configuration (7)           124         Alarm A Configuration (7)           124         Alarm A Low Threshold (Low 16 bits) (6)           124         Alarm A Low Threshold (Low 16 bits) (6)           124         Alarm A Low Threshold (Low 16 bits) (6)           124         Alarm A Low Threshold (Low 16 bits) (6)           124         Alarm A Low Threshold (Low 16 bits) (6)           124         Alarm A Low Thresh			Input Data	R
116         Ch. 1 Input Configuration (*)           117         Ch. 1 Sixed Cold junction temp. value (*)           118         Ch. 1 Offset (Liow 16 bits) (*)           120         Ch. 1 Multipler           121         Ch. 1 Downscale (Low 16 bits) (*)           122         Ch. 1 Downscale (Low 16 bits) (*)           123         Ch. 1 Downscale (Low 16 bits) (*)           124         Ch. 1 Downscale (Low 16 bits) (*)           125         Ch. 1 Highscale (Ligh 16 bits) (*)           126         Ch. 1 Undut configuration (*)           126         Ch. 1 Under Range (*)           161         Ch. 1 Downscale (Low 16 bits) (*)           162         Ch. 1 Under Range (*)           164         Ch. 1 Over Range (*)           164         Alarm A Low Threshold (High 16 bits) (*)           164 </td <td></td> <td></td> <td></td> <td></td>				
117         Ch. 1 Sensor Type (!)           118         Ch. 1 Offset (Uoy 16 bits) (!)           120         Ch. 1 Offset (Uoy 16 bits) (!)           121         Ch. 1 Divider           122         Ch. 1 Divider           123         Ch. 1 Divider           124         Ch. 1 Divider           125         Ch. 1 Highscale (Low 16 bits) (!)           126         Ch. 1 Highscale (Low 16 bits) (!)           126         Ch. 1 Highscale (Low 16 bits) (!)           126         Ch. 1 Output configuration (!)           161         Ch. 1 Output configuration (!)           162         Ch. 1 Upscale (!)           163         Ch. 1 Upscale (!)           164         Ch. 1 Over Range (!)           165         Ch. 1 Fault cornent (!)           244         Alarm A Configuration (!)           244         Alarm A Low Threshold (Low 16 bits) (!)           245         Alarm A Low Threshold (Low 16 bits) (!)           246         Alarm A High Threshold (Low 16 bits) (!)           247         Alarm A Delay OFF (!)           250         (!)           251         Alarm B Eault Configuration (!)           256         Alarm B Low Threshold (Low 16 bits) (!)           256         Alar	75	Ch. 1 Fault status (1)		
117         Ch. 1 Sensor Type (!)           118         Ch. 1 Offset (Uoy 16 bits) (!)           120         Ch. 1 Offset (Uoy 16 bits) (!)           121         Ch. 1 Divider           122         Ch. 1 Divider           123         Ch. 1 Divider           124         Ch. 1 Divider           125         Ch. 1 Highscale (Low 16 bits) (!)           126         Ch. 1 Highscale (Low 16 bits) (!)           126         Ch. 1 Highscale (Low 16 bits) (!)           126         Ch. 1 Output configuration (!)           161         Ch. 1 Output configuration (!)           162         Ch. 1 Upscale (!)           163         Ch. 1 Upscale (!)           164         Ch. 1 Over Range (!)           165         Ch. 1 Fault cornent (!)           244         Alarm A Configuration (!)           244         Alarm A Low Threshold (Low 16 bits) (!)           245         Alarm A Low Threshold (Low 16 bits) (!)           246         Alarm A High Threshold (Low 16 bits) (!)           247         Alarm A Delay OFF (!)           250         (!)           251         Alarm B Eault Configuration (!)           256         Alarm B Low Threshold (Low 16 bits) (!)           256         Alar	116	Ch. 1 Input Configuration (1)		
118         Ch. 1 Fixed Cold junction temp. value (%)           119         Ch. 1 Offset (Liph 16 bits) (%)           120         Ch. 1 Offset (Liph 16 bits) (%)           121         Ch. 1 Multiplier           122         Ch. 1 Downscale (Low 16 bits) (%)           123         Ch. 1 Highscale (Liph 16 bits) (%)           124         Ch. 1 Highscale (Liph 16 bits) (%)           125         Ch. 1 Highscale (High 16 bits) (%)           126         Ch. 1 Highscale (High 16 bits) (%)           126         Ch. 1 Under Range (?)           161         Ch. 1 Downscale (Down 16 bits) (%)           162         Ch. 1 Under Range (?)           163         Ch. 1 Doescale (?)           164         Ch. 1 Over Range (?)           166         Ch. 1 Fault current (?)           240         Alarm A Fault Configuration (?)           241         Alarm A Low Threshold (Low 16 bits) (%)           242         Alarm A Low Hysteresis (Low 16 bits) (%)           244         Alarm A High Threshold (Low 16 bits) (%)           244         Alarm A Delay ON (%)           252         Alarm A Delay ON (%)           253         Alarm A Delay ON (%)           254         Alarm B Low Threshold (Low 16 bits) (%)           255	117			
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121Ch. 1 MultiplierInput ConfigurationR/W122Ch. 1 Downscale (Low 16 bits) (%)Input ConfigurationR/W123Ch. 1 Downscale (Ligh 16 bits) (%)Ch. 1 Highscale (High 16 bits) (%)Ch. 1 Highscale (High 16 bits) (%)126Ch. 1 Highscale (High 16 bits) (%)Ch. 1 Downscale (%)Ch. 1 Undput configuration (%)161Ch. 1 Downscale (%)Ch. 1 Undput configuration (%)Ch. 1 Undput configuration (%)162Ch. 1 Undpace (%)Ch. 1 Over Range (%)Ch. 1 Over Range (%)166Ch. 1 Fault current (%)Ch. 1 Fault current (%)240Alarm A Configuration (%)Alarm A Low Threshold (Low 16 bits) (%)241Alarm A Low Threshold (Low 16 bits) (%)242Alarm A Low Threshold (Low 16 bits) (%)244Alarm A Ligh Threshold (Low 16 bits) (%)245Alarm A Ligh Threshold (Low 16 bits) (%)246Alarm A Low Threshold (Low 16 bits) (%)250(%)251Alarm A Delay OF (%)252Alarm B Endit Configuration (%)253Alarm B Source (%)254Alarm B Bour Threshold (Low 16 bits) (%)255Alarm B Low Threshold (High 16 bits) (%)256Alarm B High Threshold (Low 16 bits) (%)256Alarm B Bour Threshold (High 16 bits) (%)266Alarm B Bour Threshold (High 16 bits) (%)266Alarm B High Threshold (High 16 bits) (%)267Alarm B Bour OR (%)268Alarm B Bolay OR (%)269Alarm B High Threshold (High 16 bits) (%)261				
122     Ch. 1 Divider     Input Configuration     R/W       123     Ch. 1 Downscale (Low 16 bits) (h)     Input Configuration     R/W       124     Ch. 1 Highscale (Low 16 bits) (h)     Input Configuration     Input Configuration       125     Ch. 1 Highscale (Low 16 bits) (h)     Input Configuration     Input Configuration       126     Ch. 1 Highscale (High 16 bits) (h)     Input Configuration     Input Configuration       160     Ch. 1 Output configuration (h)     Input Configuration     Input Configuration       163     Ch. 1 Under Range (h)     Input Configuration     Input Configuration       164     Ch. 1 Over Range (h)     Input Configuration (h)     Input Configuration       244     Alarm A Fault Configuration (h)     Input Configuration     R/W       245     Alarm A Low Threshold (Low 16 bits) (h)     Input Configuration     Input Configuration       246     Alarm A Low Threshold (High 16 bits) (h)     Input Configuration (h)     Input Configuration       250     Inarm A Delay ON (h)     Inarm A Low Threshold (Low 16 bits) (h)     Input Configuration (h)       255     Alarm A Delay OFF (h)     Input Configuration (h)     Input Configuration (h)       256     Alarm B Low Threshold (Low 16 bits) (h)     Input Configuration (h)     Input Configuration (h)       256     Alarm B High Hysteresis (Low 16 bits)				
122         Ch. 1 Downscale (Low 16 bits) (%)           123         Ch. 1 Downscale (Low 16 bits) (%)           126         Ch. 1 Highscale (Ligh 16 bits) (%)           126         Ch. 1 Highscale (High 16 bits) (%)           138         Cold Junction source selection (%)           160         Ch. 1 Output configuration (%)           161         Ch. 1 Over Range (%)           162         Ch. 1 Hoyscale (%)           164         Ch. 1 Over Range (%)           166         Ch. 1 Fault current (%)           240         Alarm A Configuration (%)           241         Alarm A Fault Configuration (%)           242         Alarm A Low Threshold (Low 16 bits) (%)           243         Alarm A Low Threshold (High 16 bits) (%)           244         Alarm A Low Threshold (High 16 bits) (%)           245         Alarm A High Threshold (Low 16 bits) (%)           246         Alarm A Low Threshold (Low 16 bits) (%)           250         (%)           251         Alarm A Delay ON (%)           252         Alarm B Configuration (%)           254         Alarm B Eow Hysteresis (Low 16 bits) (%)           255         Alarm B Low Threshold (Low 16 bits) (%)           256         Alarm B Low Hysteresis (Low 16 bits) (%)			Input Configuration	R/W
124         Ch. 1 Downscale (High 16 bits) (%)           125         Ch. 1 Highscale (LW 16 bits) (%)           126         Ch. 1 Highscale (High 16 bits) (%)           138         Cold Junction source selection (%)           160         Ch. 1 Downscale (%)           161         Ch. 1 Under Range (%)           162         Ch. 1 Upscale (%)           164         Ch. 1 Upscale (%)           166         Ch. 1 Fault current (%)           240         Alarm A Configuration (%)           241         Alarm A Source (%)           242         Alarm A Low Threshold (Low 16 bits) (%)           243         Alarm A Low Threshold (Low 16 bits) (%)           244         Alarm A Low Threshold (High 16 bits) (%)           245         Alarm A Low Hysteresis (Low 16 bits) (%)           246         Alarm A Low Hysteresis (Ligh 16 bits) (%)           250         (%)           251         Alarm A Delay OF (%)           252         Alarm B Eaut Configuration (%)           254         Alarm B Low Threshold (Ligh 16 bits) (%)           255         Alarm B Low Threshold (Low 16 bits) (%)           256         Alarm B Eaut Configuration (%)           257         Alarm B Low Threshold (Low 16 bits) (%)           258	122	Ch. 1 Divider	input oorniguration	1.7,4,4
124         Ch. 1 Downscale (High 16 bits) (%)           125         Ch. 1 Highscale (LW 16 bits) (%)           126         Ch. 1 Highscale (High 16 bits) (%)           138         Cold Junction source selection (%)           160         Ch. 1 Downscale (%)           161         Ch. 1 Under Range (%)           162         Ch. 1 Upscale (%)           164         Ch. 1 Upscale (%)           166         Ch. 1 Fault current (%)           240         Alarm A Configuration (%)           241         Alarm A Source (%)           242         Alarm A Low Threshold (Low 16 bits) (%)           243         Alarm A Low Threshold (Low 16 bits) (%)           244         Alarm A Low Threshold (High 16 bits) (%)           245         Alarm A Low Hysteresis (Low 16 bits) (%)           246         Alarm A Low Hysteresis (Ligh 16 bits) (%)           250         (%)           251         Alarm A Delay OF (%)           252         Alarm B Eaut Configuration (%)           254         Alarm B Low Threshold (Ligh 16 bits) (%)           255         Alarm B Low Threshold (Low 16 bits) (%)           256         Alarm B Eaut Configuration (%)           257         Alarm B Low Threshold (Low 16 bits) (%)           258	123	Ch. 1 Downscale (Low 16 bits) (6)		
125       Ch. 1 Highscale (Low 16 bits) (ii)         126       Ch. 1 Highscale (High 16 bits) (ii)         138       Cold Junction source selection (ii)         160       Ch. 1 Output configuration (iii)         161       Ch. 1 Upscale (iii)         162       Ch. 1 Upscale (iii)         163       Ch. 1 Upscale (iiii)         164       Ch. 1 Over Range (iii)         163       Ch. 1 Upscale (iiii)         240       Alarm A Fault Configuration (iii)         241       Alarm A Fault Configuration (iii)         2424       Alarm A Low Threshold (Low 16 bits) (iii)         243       Alarm A Low Threshold (Low 16 bits) (iii)         244       Alarm A High Threshold (Low 16 bits) (iii)         245       Alarm A High Threshold (Low 16 bits) (iii)         246       Alarm A High Hysteresis (Low 16 bits) (iii)         247       Alarm A High Hysteresis (High 16 bits) (iii)         250       Alarm B Fault Configuration (iii)         252       Alarm B Source (iii)         253       Alarm B Source (iii)         254       Alarm B Low Threshold (Low 16 bits) (iii)         255       Alarm B Low Threshold (Low 16 bits) (iii)         256       Alarm B High Threshold (Low 16 bits) (iii)         257       A				
126         Ch. 1 Highscale (High 16 bits) (i)           138         Cold Junction source selection (ii)           160         Ch. 1 Doutput configuration (i)           161         Ch. 1 Ubyscale (iii)           162         Ch. 1 Ubyscale (iiii)           163         Ch. 1 Upscale (iiii)           164         Ch. 1 Upscale (iiii)           165         Ch. 1 Upscale (iiii)           166         Ch. 1 Fault current (iii)           240         Alarm A Configuration (iii)           241         Alarm A Low Threshold (Low 16 bits) (iii)           243         Alarm A Low Threshold (Low 16 bits) (iii)           244         Alarm A Low Threshold (Low 16 bits) (iii)           245         Alarm A Low Hysteresis (Low 16 bits) (iii)           246         Alarm A Low Threshold (Low 16 bits) (iii)           247         Alarm A Delay OFF (iii)           250         (iii)           251         Alarm B Delay OFF (iii)           252         Alarm B Dum Threshold (Low 16 bits) (iii)           253         Alarm B Source (iii)           254         Alarm B Dum Threshold (Low 16 bits) (iii)           255         Alarm B Buby Threshold (Low 16 bits) (iii)           256         Alarm B Buby Threshold (Low 16 bits) (iii)				
138         Cold Junction source selection (*)           160         Ch. 1 Output configuration (*)           161         Ch. 1 Upscale (*)           162         Ch. 1 Upscale (*)           163         Ch. 1 Upscale (*)           164         Ch. 1 Upscale (*)           165         Ch. 1 Upscale (*)           166         Ch. 1 Fault current (*)           240         Alarm A Configuration (*)           241         Alarm A Fault Configuration (*)           242         Alarm A Low Threshold (Low 16 bits) (*)           243         Alarm A Low Threshold (Low 16 bits) (*)           244         Alarm A Low Hysteresis (Ligh 16 bits) (*)           245         Alarm A Low Hysteresis (Ligh 16 bits) (*)           246         Alarm A High Threshold (Low 16 bits) (*)           247         Alarm A Delay OFF (*)           248         Alarm A Delay OFF (*)           250         (*)           (*)         100           255         Alarm B Low Threshold (Low 16 bits) (*)           256         Alarm B Low Threshold (Low 16 bits) (*)           257         Alarm B Low Threshold (Low 16 bits) (*)           258         Alarm B Low Threshold (Low 16 bits) (*)           259         Alarm B Boled DYFF (*) <td></td> <td>Ch 1 Highscale (High 16 bits) (6)</td> <td></td> <td></td>		Ch 1 Highscale (High 16 bits) (6)		
160       Ch. 1 Output configuration (1)         161       Ch. 1 Under Range (7)         163       Ch. 1 Upscale (7)         164       Ch. 1 Over Range (7)         166       Ch. 1 Over Range (7)         166       Ch. 1 Over Range (7)         166       Ch. 1 Pault current (7)         240       Alarm A Configuration (1)         241       Alarm A Low Threshold (Low 16 bits) (6)         242       Alarm A Low Threshold (Low 16 bits) (6)         244       Alarm A Low Threshold (Low 16 bits) (6)         244       Alarm A Low Threshold (Low 16 bits) (6)         245       Alarm A Low Threshold (Low 16 bits) (6)         246       Alarm A Low Threshold (Low 16 bits) (6)         247       Alarm A Low Threshold (Low 16 bits) (6)         248       Alarm A High Threshold (Low 16 bits) (6)         250       (6)         251       Alarm B Dalay OFF (9)         252       Alarm B Source (1)         253       Alarm B Low Threshold (Low 16 bits) (6)         254       Alarm B Bour Source (1)         255       Alarm B Low Threshold (Low 16 bits) (6)         256       Alarm B Low Threshold (Low 16 bits) (6)         257       Alarm B Bolay OFF (9)         266       Alarm B				
161       Ch. 1 Downscale (?)         162       Ch. 1 Under Range (?)         163       Ch. 1 Upscale (?)         164       Ch. 1 Special (?)         166       Ch. 1 Fault current (?)         240       Alarm A Configuration (1)         241       Alarm A Source (1)         242       Alarm A Source (1)         243       Alarm A Low Threshold (Low 16 bits) (6)         244       Alarm A Low Threshold (Low 16 bits) (7)         245       Alarm A Low Hysteresis (Ligh 16 bits) (7)         246       Alarm A High Threshold (Low 16 bits) (7)         247       Alarm A High Threshold (Low 16 bits) (7)         248       Alarm A High Hysteresis (Ligh 16 bits) (7)         250       (6)         251       Alarm A Delay ON (7)         252       Alarm B Dourg OFF (7)         254       Alarm B Source (1)         255       Alarm B Low Threshold (Low 16 bits) (7)         256       Alarm B Low Threshold (Low 16 bits) (7)         257       Alarm B Low Threshold (Low 16 bits) (7)         258       Alarm B Low Threshold (Low 16 bits) (7)         260       Alarm B Budy Threshold (Low 16 bits) (7)         261       Alarm B High Hysteresis (High 16 bits) (7)         262       A				
162Ch. 1 Under Range (?)Output ConfigurationR/W163Ch. 1 Over Range (?)Output ConfigurationR/W164Ch. 1 Fault current (?)Configuration (!)R/W240Alarm A Configuration (!)Alarm A Fault Configuration (!)R/W241Alarm A Low Threshold (Low 16 bits) (!)R/WR/W242Alarm A Low Threshold (Low 16 bits) (!)R/WR/W243Alarm A Low Threshold (Low 16 bits) (!)R/WR/W244Alarm A Low Threshold (Low 16 bits) (!)R/WR/W245Alarm A Low Threshold (Low 16 bits) (!)R/WR/W246Alarm A High Threshold (Low 16 bits) (!)R/WR/W250Alarm A High Threshold (Low 16 bits) (!)R/WR/W251Alarm A Delay OFF (!)R/WR/W252Alarm B Delay OFF (!)R/WR/W253Alarm B Eout Configuration (!)R/W254Alarm B B Low Threshold (Low 16 bits) (!)R/W255Alarm B Low Threshold (Low 16 bits) (!)R/W256Alarm B Low Threshold (Low 16 bits) (!)R/W257Alarm B B Low Threshold (Low 16 bits) (!)R/W268Alarm B Low Threshold (Low 16 bits) (!)R/W269Alarm B Low Threshold (Low 16 bits) (!)R/W260Alarm B High Threshold (Low 16 bits) (!)Command261Alarm B High Threshold (Low 16 bits) (!)Command262Alarm B High Threshold (Low 16 bits) (!)Command264Alarm B Delay				
163Ch. 1 Upscale (?)Output CollingurationNW164Ch. 1 Ver Range (?)166Ch. 1 Fault current (?)240Alarm A Configuration (1)241Alarm A Fault Configuration (1)242Alarm A Fault Configuration (1)243Alarm A Low Threshold (Low 16 bits) (6)244Alarm A Low Threshold (High 16 bits) (6)245Alarm A Low Threshold (Low 16 bits) (6)246Alarm A High Threshold (Low 16 bits) (6)247Alarm A High Threshold (Low 16 bits) (6)248Alarm A High Threshold (Low 16 bits) (6)249Alarm A High Threshold (High 16 bits) (6)250(6)251Alarm B Delay OFF (9)252Alarm B Delay OFF (9)253Alarm B Eault Configuration (1)254Alarm B Bur Configuration (1)255Alarm B Bur Whysteresis (Low 16 bits) (6)257Alarm B Bur Whysteresis (Low 16 bits) (6)257Alarm B Dew Threshold (Low 16 bits) (6)258Alarm B High Threshold (Low 16 bits) (6)259Alarm B Bur Whysteresis (Low 16 bits) (6)261Alarm B High Threshold (Low 16 bits) (6)262Alarm B High Threshold (Low 16 bits) (6)263Alarm B Belay OFF (9)264Alarm B Delay OFF (9)265Alarm B Delay OFF (9)264Alarm B Belay ON (7)265Alarm B Theorical Output Current (7)266Ch. 1 Output Current Saturation Fault277Satura B Status283Alarm B Status28			Output Configuration F	
163       Ch. 1 Upscale (h)       Control of the second se	162	Ch. 1 Under Range (7)		
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250         Alarm A High Hysteresis (High 16 bits) (6)         Alarm A Delay ON (9)           251         Alarm A Delay OFF (9)         Alarm Control         R/W           253         Alarm B Configuration (1)         Alarm S Source (1)         Alarm B Source (1)         Alarm B Low Threshold (Low 16 bits) (6)         Alarm B High Hysteresis (Low 16 bits) (6)         Alarm B High Hysteresis (Low 16 bits) (6)         Alarm B High Hysteresis (Low 16 bits) (6)         Alarm B Delay OFF (9)         Alarm A Command execution (4)         Command         W           265         Alarm B Delay OFF (9)         Alarm A Status         Alarm data         R           255         Ch. 1 Output Current Saturation Fault         Output data         R           255         Ch. 1 chars 0,1         Alarm A Status         Alarm data         R           2559         Ch. 1 chars 4,5         S559         Ch. 1 chars 4,5				
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253       Alarm B Configuration (1)         254       Alarm B Fault Configuration (1)         255       Alarm B Source (1)         256       Alarm B Low Threshold (Low 16 bits) (6)         257       Alarm B Low Threshold (High 16 bits) (6)         258       Alarm B Low Hysteresis (Low 16 bits) (6)         259       Alarm B Low Hysteresis (Low 16 bits) (6)         260       Alarm B High Threshold (Low 16 bits) (6)         261       Alarm B High Threshold (Low 16 bits) (6)         262       Alarm B High Threshold (Low 16 bits) (6)         263       Alarm B High Hysteresis (Low 16 bits) (6)         264       Alarm B Delay ON (9)         265       Alarm B Delay OFF (9)         464       Command execution (4)       Command         524       Ch. 1 Output Current Saturation Fault       Output data         525       Ch. 1 Theorical Output Current (7)       Output data         532       Alarm A Status       Alarm data         533       Alarm B Status       Alarm data         556       Ch. 1 chars 0,1       557         559       Ch. 1 chars 4,5       559         559       Ch. 1 chars 8,9       Tags         561       Ch. 1 chars 10,11       562         562<			Alarm Control	R/W
254         Alarm B Fault Configuration (1)           255         Alarm B Source (1)           256         Alarm B Low Threshold (Low 16 bits) (6)           257         Alarm B Low Threshold (High 16 bits) (6)           258         Alarm B Low Hysteresis (Low 16 bits) (6)           259         Alarm B Low Hysteresis (Ligh 16 bits) (6)           260         Alarm B High Threshold (Low 16 bits) (6)           261         Alarm B High Threshold (Low 16 bits) (6)           262         Alarm B High Threshold (Low 16 bits) (6)           263         Alarm B High Hysteresis (High 16 bits) (6)           264         Alarm B Delay ON (9)           265         Alarm B Delay OFF (9)           464         Command execution (4)           524         Ch. 1 Output Current Saturation Fault           525         Ch. 1 Output Current Saturation Fault           524         Ch. 1 Output Current Saturation Fault           525         Ch. 1 Theorical Output Current (7)           532         Alarm A Status           533         Alarm B Status           555         Ch. 1 chars 0,1           557         Ch. 1 chars 4,5           558         Ch. 1 chars 6,7           560         Ch. 1 chars 8,9           561         Ch				1011
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256Alarm B Low Threshold (Low 16 bits) <sup>(6)</sup> 257Alarm B Low Threshold (High 16 bits) <sup>(6)</sup> 258Alarm B Low Hysteresis (Low 16 bits) <sup>(6)</sup> 259Alarm B Low Hysteresis (Low 16 bits) <sup>(6)</sup> 260Alarm B High Threshold (Low 16 bits) <sup>(6)</sup> 261Alarm B High Threshold (Low 16 bits) <sup>(6)</sup> 262Alarm B High Threshold (High 16 bits) <sup>(6)</sup> 263Alarm B Delay ON <sup>(9)</sup> 265Alarm B Delay OFF <sup>(9)</sup> 464Command execution <sup>(4)</sup> 524Ch. 1 Output Current Saturation Fault525Ch. 1 Theorical Output Current <sup>(7)</sup> 532Alarm A Status556Ch. 1 chars 0,1557Ch. 1 chars 2,3558Ch. 1 chars 4,5559Ch. 1 chars 8,9561Ch. 1 chars 10,11562Ch. 1 chars 12,13				
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258Alarm B Low Hysteresis (Low 16 bits) (6)259Alarm B Low Hysteresis (High 16 bits) (6)260Alarm B High Threshold (Low 16 bits) (6)261Alarm B High Threshold (High 16 bits) (6)262Alarm B High Hysteresis (Low 16 bits) (6)263Alarm B Delay ON (9)265Alarm B Delay OFF (9)464Command execution (4)524Ch. 1 Output Current Saturation Fault525Ch. 1 Theorical Output Current (7)532Alarm A Status533Alarm B Status556Ch. 1 chars 0,1557Ch. 1 chars 2,3558Ch. 1 chars 4,5559Ch. 1 chars 4,5559Ch. 1 chars 10,11562Ch. 1 chars 12,13				
258Alarm B Low Hysteresis (Low 16 bits) (6)259Alarm B Low Hysteresis (High 16 bits) (6)260Alarm B High Threshold (Low 16 bits) (6)261Alarm B High Threshold (High 16 bits) (6)262Alarm B High Hysteresis (Low 16 bits) (6)263Alarm B Delay ON (9)265Alarm B Delay OFF (9)464Command execution (4)524Ch. 1 Output Current Saturation Fault525Ch. 1 Theorical Output Current (7)532Alarm B Status556Ch. 1 chars 0,1557Ch. 1 chars 2,3558Ch. 1 chars 4,5559Ch. 1 chars 4,5559Ch. 1 chars 10,11562Ch. 1 chars 12,13	257	Alarm B Low Threshold (High 16 bits) (6)		
259Alarm B Low Hysteresis (High 16 bits) <sup>(6)</sup> 260Alarm B High Threshold (Low 16 bits) <sup>(6)</sup> 261Alarm B High Threshold (High 16 bits) <sup>(6)</sup> 262Alarm B High Hysteresis (Low 16 bits) <sup>(6)</sup> 263Alarm B Belay ON <sup>(9)</sup> 265Alarm B Delay OFF <sup>(9)</sup> 464Command execution <sup>(4)</sup> 524Ch. 1 Output Current Saturation Fault525Ch. 1 Theorical Output Current <sup>(7)</sup> 532Alarm A Status533Alarm B Status556Ch. 1 chars 0,1557Ch. 1 chars 2,3558Ch. 1 chars 4,5559Ch. 1 chars 4,5559Ch. 1 chars 10,11562Ch. 1 chars 12,13	258			
260Alarm B High Threshold (Low 16 bits) (6)261Alarm B High Threshold (High 16 bits) (6)262Alarm B High Hysteresis (Low 16 bits) (6)263Alarm B Delay ON (9)265Alarm B Delay OFF (9)464Command execution (4)Command524Ch. 1 Output Current Saturation Fault525Ch. 1 Theorical Output Current (7)532Alarm A Status533Alarm B Status556Ch. 1 chars 0,1557Ch. 1 chars 2,3558Ch. 1 chars 4,5559Ch. 1 chars 6,7560Ch. 1 chars 8,9561Ch. 1 chars 10,11562Ch. 1 chars 12,13				
261Alarm B High Threshold (High 16 bits) <sup>(6)</sup> 262Alarm B High Hysteresis (Low 16 bits) <sup>(6)</sup> 263Alarm B High Hysteresis (High 16 bits) <sup>(6)</sup> 264Alarm B Delay ON <sup>(9)</sup> 265Alarm B Delay OFF <sup>(9)</sup> 464Command execution <sup>(4)</sup> Command524Ch. 1 Output Current Saturation Fault525Ch. 1 Theorical Output Current <sup>(7)</sup> Output data532Alarm A Status533Alarm B Status556Ch. 1 chars 0,1557Ch. 1 chars 4,5559Ch. 1 chars 4,5559Ch. 1 chars 4,5559Ch. 1 chars 8,9561Ch. 1 chars 10,11562Ch. 1 chars 12,13				
262         Alarm B High Hysteresis (Low 16 bits) <sup>(6)</sup> 263         Alarm B High Hysteresis (High 16 bits) <sup>(6)</sup> 264         Alarm B Delay ON <sup>(9)</sup> 265         Alarm B Delay OFF <sup>(9)</sup> 464         Command execution <sup>(4)</sup> Command           524         Ch. 1 Output Current Saturation Fault         Output data           525         Ch. 1 Noutput Current Saturation Fault         Output data           523         Alarm A Status         Alarm data           533         Alarm B Status         Alarm data           556         Ch. 1 chars 0,1         557           559         Ch. 1 chars 4,5           559         Ch. 1 chars 4,5           559         Ch. 1 chars 8,9           561         Ch. 1 chars 10,11           562         Ch. 1 chars 12,13				
263         Alarm B High Hysteresis (High 16 bits) <sup>(6)</sup> 264         Alarm B Delay ON <sup>(9)</sup> 265         Alarm B Delay OFF <sup>(9)</sup> 464         Command execution <sup>(4)</sup> Command           524         Ch. 1 Output Current Saturation Fault         Output data           525         Ch. 1 Theorical Output Current (7)         Output data         R           532         Alarm A Status         Alarm data         R           533         Alarm B Status         Alarm data         R           555         Ch. 1 chars 0,1         557         Ch. 1 chars 4,5           559         Ch. 1 chars 4,5         Tags         R/W           560         Ch. 1 chars 8,9         Tags         R/W				
264         Alarm B Delay ON (9)           265         Alarm B Delay OFF (9)           464         Command execution (4)         Command           524         Ch. 1 Output Current Saturation Fault         Output data           525         Ch. 1 Theorical Output Current (7)         Output data         R           532         Alarm A Status         Alarm data         R           533         Alarm B Status         Alarm data         R           556         Ch. 1 chars 0,1         557         Ch. 1 chars 2,3           558         Ch. 1 chars 4,5         559         Ch. 1 chars 4,5           559         Ch. 1 chars 8,9         Tags         R/W           561         Ch. 1 chars 10,11         562         Ch. 1 chars 12,13				
265         Alarm B Delay OFF (9)           464         Command execution (4)         Command         W           524         Ch. 1 Output Current Saturation Fault         Output data         R           525         Ch. 1 Theorical Output Current (7)         Output data         R           532         Alarm A Status         Alarm data         R           533         Alarm B Status         Alarm data         R           556         Ch. 1 chars 0,1         557         Ch. 1 chars 2,3           558         Ch. 1 chars 4,5         559         Ch. 1 chars 6,7           550         Ch. 1 chars 8,9         Tags         R/W           561         Ch. 1 chars 10,11         562         Ch. 1 chars 12,13		Alarm B High Hysteresis (High 16 bits) <sup>(6)</sup>		
464         Command execution (4)         Command         W           524         Ch. 1 Output Current Saturation Fault         Output data         R           525         Ch. 1 Theorical Output Current (7)         Output data         R           532         Alarm A Status         Alarm data         R           533         Alarm B Status         Alarm data         R           556         Ch. 1 chars 0,1         Frags         R           557         Ch. 1 chars 2,3         Frags         R/W           558         Ch. 1 chars 6,7         Frags         R/W           560         Ch. 1 chars 8,9         Frags         R/W           561         Ch. 1 chars 10,11         Frags         Frags				
464         Command execution (4)         Command         W           524         Ch. 1 Output Current Saturation Fault         Output data         R           525         Ch. 1 Theorical Output Current (7)         Output data         R           532         Alarm A Status         Alarm data         R           533         Alarm B Status         Alarm data         R           556         Ch. 1 chars 0,1         Frags         R           557         Ch. 1 chars 2,3         Frags         R/W           558         Ch. 1 chars 6,7         Frags         R/W           560         Ch. 1 chars 8,9         Frags         R/W           561         Ch. 1 chars 10,11         Frags         Frags				
524         Ch. 1 Output Current Saturation Fault         Output data         R           525         Ch. 1 Theorical Output Current (7)         Output data         R           532         Alarm A Status         Alarm data         R           533         Alarm B Status         Alarm data         R           556         Ch. 1 chars 0,1         Frage         Frage           557         Ch. 1 chars 2,3         Frage         Frage           558         Ch. 1 chars 6,7         Frage         Frage           560         Ch. 1 chars 8,9         Frage         Frage           561         Ch. 1 chars 10,11         Frage         Frage	464		Command	W
525         Ch. 1 Theorical Output Current (7)         Output data         R           532         Alarm A Status         Alarm data         R           533         Alarm B Status         Alarm data         R           556         Ch. 1 chars 0,1         Sinter Status         Sinter Status         R           557         Ch. 1 chars 2,3         Sinter Status         Sinter Status         R           558         Ch. 1 chars 4,5         Sinter Status         Sinter Status         R           560         Ch. 1 chars 6,7         Tags         R/W           561         Ch. 1 chars 10,11         Sinter Status         Tags         Sinter Status				
532         Alarm A Status         Alarm data         R           533         Alarm B Status         Alarm data         R           556         Ch. 1 chars 0,1         557         Ch. 1 chars 2,3           558         Ch. 1 chars 4,5         559         Ch. 1 chars 6,7           560         Ch. 1 chars 8,9         Tags         R/W           561         Ch. 1 chars 10,11         562         Ch. 1 chars 12,13			Output data	R
533         Alarm B Status         Alarm data         R           556         Ch. 1 chars 0,1         557         Ch. 1 chars 2,3         558         Ch. 1 chars 4,5         559         Ch. 1 chars 6,7         559         Ch. 1 chars 8,9         Tags         R/W           561         Ch. 1 chars 10,11         562         Ch. 1 chars 12,13         Tags         R/W				
533         Alarm B Status           556         Ch. 1 chars 0,1           557         Ch. 1 chars 2,3           558         Ch. 1 chars 4,5           559         Ch. 1 chars 6,7           560         Ch. 1 chars 8,9           561         Ch. 1 chars 10,11           562         Ch. 1 chars 12,13			Alarm data	R
557         Ch. 1 chars 2,3           558         Ch. 1 chars 4,5           559         Ch. 1 chars 6,7           560         Ch. 1 chars 8,9           561         Ch. 1 chars 10,11           562         Ch. 1 chars 12,13				
558         Ch. 1 chars 4,5           559         Ch. 1 chars 6,7           560         Ch. 1 chars 8,9           561         Ch. 1 chars 10,11           562         Ch. 1 chars 12,13				
558         Ch. 1 chars 4,5           559         Ch. 1 chars 6,7           560         Ch. 1 chars 8,9           561         Ch. 1 chars 10,11           562         Ch. 1 chars 12,13	557	Ch. 1 chars 2,3		
559         Ch. 1 chars 6,7         Tags         R/W           560         Ch. 1 chars 8,9         Tags         R/W           561         Ch. 1 chars 10,11         562         Ch. 1 chars 12,13         Tags         R/W				
560         Ch. 1 chars 8,9         Tags         R/W           561         Ch. 1 chars 10,11         562         Ch. 1 chars 12,13         64				
560         Ch. 1 chars 8,9           561         Ch. 1 chars 10,11           562         Ch. 1 chars 12,13			Tags	R/W
562 Ch. 1 chars 12,13				
563 Ch. 1 chars 14.15	562	Ch. 1 chars 12,13		
	563	Ch. 1 chars 14,15		

# Supported modbus functions:

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

# Notes:

Each Modbus parameter is described by one 16-bit word. Commands related to Channel 2 are valid only for model D5072D

- (1) see command details on next page.
- Returned value must be divided by 16 to obtain Temperature in ° Celsius.
- (3) Value is valid only when Input source is Tc or RTD.
- (4) All configurations must be confirmed via Addr. 464, see details on next page.
- (5) Expressed in:
  - µV when Input Connection is Tc or Voltage; mΩ when Input Connection is RTD or Resistance; ppm when Input Connection is Potentiometer.
- (6) Expressed in:µV when Input Connection is Voltage; Tenths of °C when Input Connection is Tc or RTD; mΩ when Input Connection is Resistance; ppm when Input Connection is Potentiometer.
- (7) Expressed in µA.
- (8) Expressed in Tenths of ° Celsius.
- (9) Expressed in Tenths of seconds.
- (10) Parameter Type:

R = read only,

W = write only, R/W = read and write.

# Modbus parameters details:

