EN

S312A-4-L-4R / S312A-4-H-4R Line
Advanced Analog Indicators
4-Digits Display with 4 relay outputs

1. GENERAL SPECIFICATIONS

- Universal input: voltage, current, thermocouples,, thermoresistors (2, 3 or 4 wires measurements), potentiometer.
- Programmable retransmission of the measured instantaneous value by the isolated analog output (voltage or active/passive current).
- Filter programmable at 20 levels to stabilise reading.
- Temperature measurement displayable in Celsius or Fahrenheit degrees.
- Cold junction compensation in case of thermocouple input.
- 4 Digits display.
- Four alarms are activable on the instantaneous input value (alarm type: maximum, minimum, automatically resettable or not).
- Alarms status visible through four leds on the frontal panel.
- Rs485 serial communication with MODBUS RTU protocol, maximum 32 nodes.
- Four relay outputs for alarms signalling.
- Easy navigation on the programming Menu by three buttons on the frontal panel.
- Quick configuration of the alarm thresholds by the Quick Alarms Menu.
- Disturbance Rejection at 50 and 60 Hz.
- Display contrast settable.
- Four relay output: default state for out3 and out4 are settable by internal jumper

2. TECHNICAL SPECIFICATIONS

Power Supply:	Code S312A-4-L-4R: 10-40 Vdc, 19-28 Vca 50-60 Hz, max 3 W. Code S312A-4-H-4R: 85-265 Vac 50-60 Hz, max 3 W.
Voltage Input:	0..10 V, input impedance: 100 kΩ Resolution: 10000 points.
Current Input:	0..20 mA, input impedance ~20 Ω Resolution: 10000 points.
Thermoresistor Input (RTD) PT100	2, 3 or 4 wires measurement, excitation current: 1,1 mA, resolution: 0,1 °C. Temperature Range : -150 °C..650 °C. Resistance Range: 20..350 Ω.
Thermocouple Input:	Type: J, K, R, S, T, B, E, N; resolution: 10 μV . Refer to the **TABLE: TC RANGE** for the measurement range.
Potentiometer Input:	Excitation Current: 1,1 mA. Potentiometer value from 1 kΩ to 100 kΩ, to use always with a parallel resistor equal to 330 Ω.
Analog Output:	Generated Current: 0..20 mA, max load resistance: 500 Ω. Voltage: 0..10 V, min load resistance: 1 kΩ. Configurable Start and Full scale values. Resolution: 2 μA/ 1 mV.

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Relay output:	Capacity:5 A / 250 Vac.			
Sampling Frequency:	Fixed: 2 Hz.			
Response Time:	700 ms.			
Environmental Conditions:	Temperature: -10..60°C, Humidity min: 30%, max 90% at 40°C non-condensing.			
Errors referred to max measuring range:	Calibration Error	Thermal Coefficient	Linearity error	Others
Voltage/Current Input:	0,1%	0,01%/°K	0,05%	EMI (2):<1%
Input for thermocouples: J,K,E,T,N:	0,1%	0,01%/°K	0,5 °C	EMI (2): <1%
Input for Thermocouples: R,S:	0,1%	0,01%/°K	1 °C	EMI (2): <1%
Input for Thermocouples: B :	0,1%	0,01%/°K	2 °C	EMI (2): <1%
Cold junction compens.:	" 1,5 °C			
Potentiometer :	0,1%	0,01%/°K	0,1%	EMI (2): <1%
Thermoresistor Input :	0,1%	0,01%/°K	0,2%	EMI (2): <1%
Voltage/Current Output :	0,1%	0,01%/°K	0,05%	EMI (2): <1%
Isolation :	1500 V among each pair of ports			
Connections :	-Removable screw terminals, pitch 3,5 mm / 5,08 mm. -Three buttons for menu navagation.			
Protection Degree :	IP65 (on the frontal panel with the provided seal)			
Dimensions (L x W x H)	98,2 x 88,5 x 48 mm			
Standards CE	EN61000-6-4/2002-10 (electromagnetic emission, industrial environment). EN61000-6-2/2006-10 (electromagnetic immunity, industrial environment). EN61010-1/2001 (safety). All circuits must be isolated from the other circuits under dangerous voltage with double isolation. The power supply transformer must comply with EN60742: “Isolated transformers and safety transformers”.			

Table: TC Range

TC TYPE	Admitted Range	TC TYPE	Admitted Range
J	-210..1200 °C	S	-50..1768 °C
K	-200..1372 °C	R	-50..1768 °C
E	-200..1000 °C	B	250..1820 (3) °C
N	-200..1300 °C	T	-200..400 °C

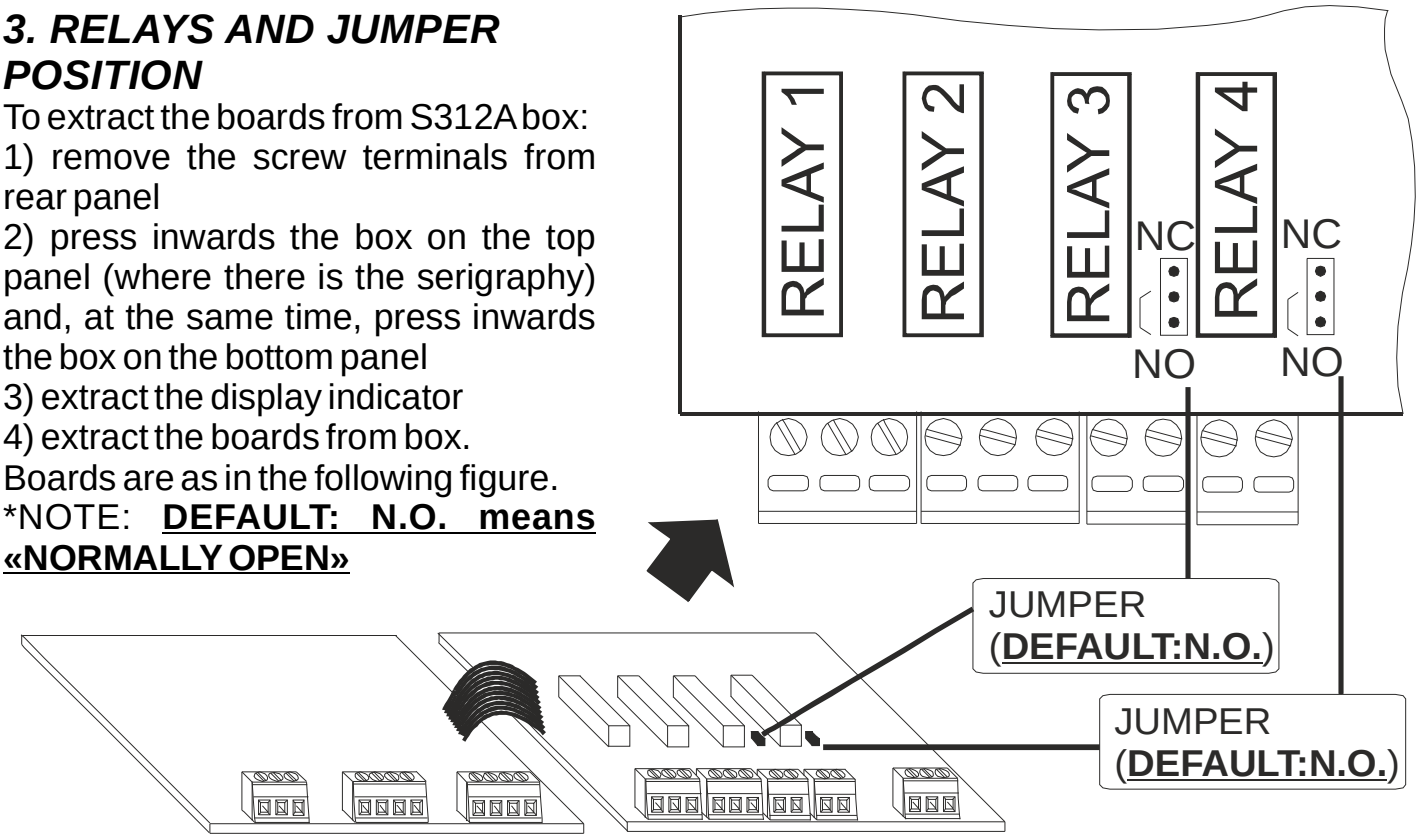
(2) EMI: electromagnetic interferences.

(3) Up to 250 °C, the output is considered equivalent to a null temperature.

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3. RELAYS AND JUMPER POSITION

To extract the boards from S312A box:
1) remove the screw terminals from rear panel
2) press inwards the box on the top panel (where there is the serigraphy) and, at the same time, press inwards the box on the bottom panel
3) extract the display indicator
4) extract the boards from box.
Boards are as in the following figure.
*NOTE: **DEFAULT: N.O. means «NORMALLY OPEN»**



4. FUNCTIONING DESCRIPTION

The measured or integrated input value is translated into an analog output signal.
The instantaneous measurement of the input is displayed. The values are also available via Modbus RTU protocol upon query by RS485 bus.

4.1 Setting Modalities

All the parameters of the instrument may be set by the programming Menu or RS485. The alarms thresholds may be quickly set by the *Quick Alarm Menu*. Besides the software has been developed for the programming and the configuration of the module (consult the web site www.seneca.it).

4.2 Retransmission Modalities

The instrument allows the following retransmission modalities:
Analog Output: The measured input value is translated into an analog output signal (voltage or current).

4.3 Alarms on the Analog input

Four alarms may be activated on the instantaneous value of the input. Each alarm may be set on the following way:
1) Alarm on the minimum thershold. 2) Alarm on the maximum thershold.
3) Retained Alarm on the minimum threshold (the reset is not automatic).
4) Retained Alarm on the maximum threshold (the reset is not automatic).
For each alarm, it is possible to set Threshold and Hysteresys. If the alarm is set as high, the alarm will turn OFF when the input value is Threshold-Hysteresys; instead if the alarm is set as low, the alarm condition will end when if the input value is Threshold+Hysteresys. The alarms status is displayed by four leds on the frontal panel and by the relays. The relays toggle at the alarm condition and return to the initial status at the end of the alarm condition or at the reset (if retained). The retained alarms are reset by pressing the buttons **UP** + **OK/MENÙ** for some seconds (on normal view functioning).

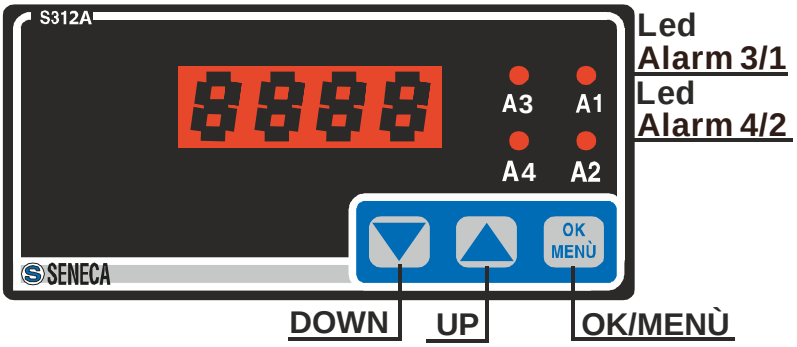
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4.4 Password for access to the menu

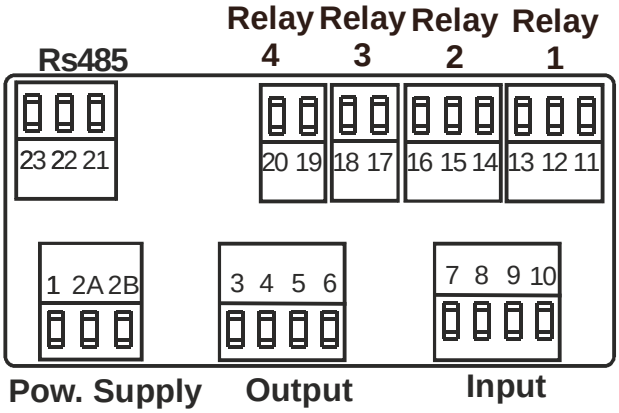
It is possible to enable the protection of the Programming Menu by password.
The Quick Alarm Menu is instead password free.

5. BUTTONS AND TERMINALS POSITION

FRONTAL PANEL: BUTTONS AND LEDS



REAR SIDE: TERMINALS



6. ELECTRICAL CONNECTIONS

POWER SUPPLY: Verify the code on the applied label.

Code S312A-4-L-4R

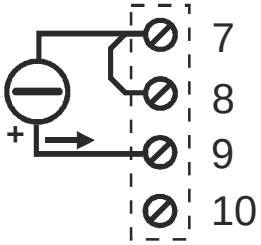


Code S312A-4-H-4R



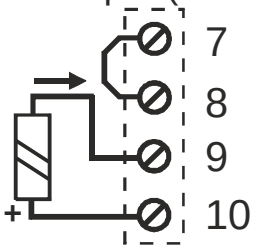
CURRENT INPUT

mA input



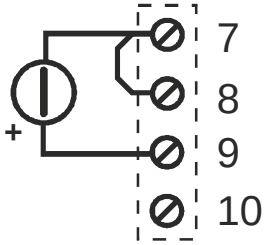
The loop is powered by the sensor

mA input (2 wires)



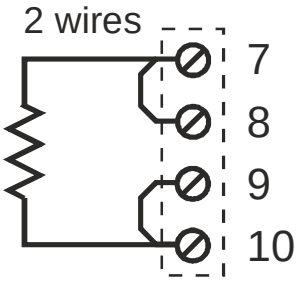
The loop is powered by the module (17 V Loop)

VOLTAGE INPUT

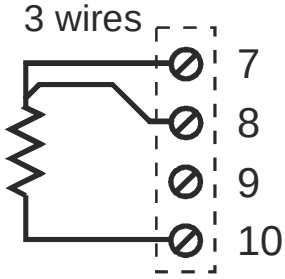


PT100 INPUT

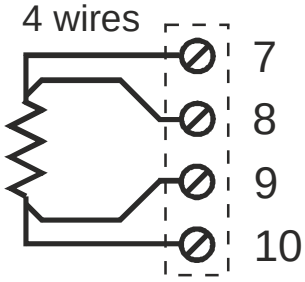
2 wires



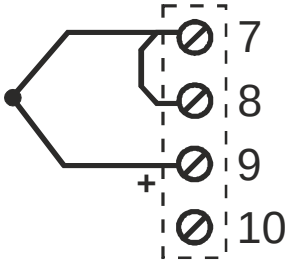
3 wires



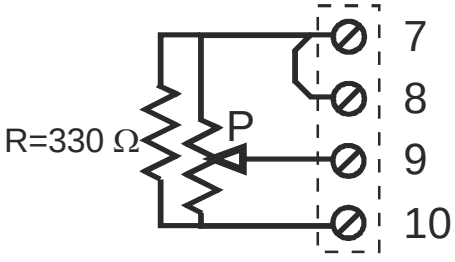
4 wires



THERMOCOUPLE INPUT



POTENTIOMETER INPUT

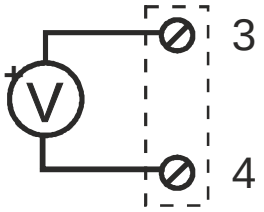


Resistance R=330 Ω (not provided),
P=1 kΩ ÷ 100 kΩ

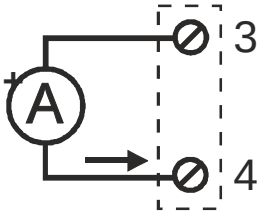
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ANALOG OUTPUT

Voltage

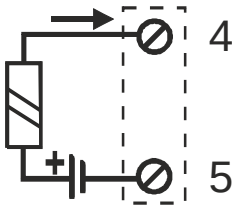


Generated Current



Active Output (powered) to connect to passive inputs.

Ext. Power Supply Current



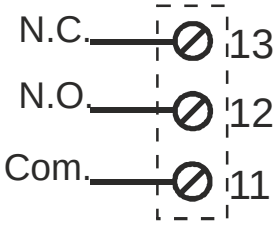
Unpowered passive output to be connected to active inputs.

RELAY OUTPUT

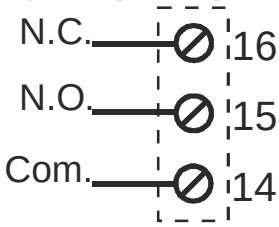
RS485



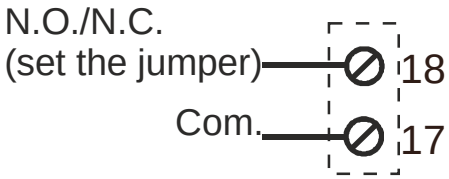
Relay Output 1 (5 A/250 Vac)



Relay Output 2 (5 A/250 Vac)

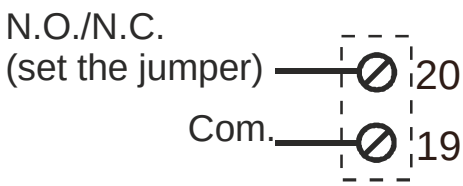


Relay Output 3 (5 A/250 Vac)



Default: N.O. normally open

Relay Output 4 (5 A/250 Vac)



Default: N.O. normally open

7. MENU'S PARAMETERS

Parameters settable from Menu : C.O.n.F.

Parameter Symbol	Parameter Name	Description and setting range	Default Value
PASS	Enables the Password for the access to menu	Setting a value diffferent from **5477**, the password (always 5477) will be required at the start of the menu.	5477: Password disabled

Parameters settable from Menu : I.n.P.t.

Parameter Symbol	Parameter Name	Description and setting range	Default Value
tYPE	Input Type	1 = Voltage 2 = Current 3 = Potentiometer 4 = TC J 5 = TC K 6 = TC R 7 = TC S 8 = TC T 9 = TC B 10 = TC E 11 = TC N 12 = PT100 (2 wires) 13 = PT100 (3 wires) 14 = PT100 (4 wires)	2 : Current

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LO-E	Electrical Start Scale Value	Only for input type 1, 2 and 3. Start scale in V (voltage input) or mA (current input) or % (potentiometer). It defines also the value of the input signal associated to the minimum value of view (LO-d). **Settable Values** Values included between the minimum and maximum limits specified for the secleted input type. Minimum Value: 0, Maximum Value: 99,99.	4,00 (mA)
HI -E	Electrical Full Scale value	Only for input type 1, 2 and 3. Full scale in V (voltage input) or mA (current input) or % (potentiometer). It defines also the value of the input signal associated to the maximum value of view (HI -d). **Settable Values** Values included between the minimum and maximum limits specified for the secleted input type. Minimum Value: 0, Maximum Value: 99,99.	20,00 (mA)

Parameters settable from Menu : SCAL.

<table>
<tr><th>Parameter Symbol</th><th>Parameter Name</th><th>Description and setting range</th><th>Default Value</th></tr>
<tr><td>LO-d</td><td>Start scale of instantaneous view</td><td rowspan="2">Only for inputs 1, 2 and 3.
Integer values between the following limits:<table><tr><th>Display Digits Number</th><th>Min. Limit</th><th>Max. Limit</th></tr><tr><td>4</td><td>-1999</td><td>9999</td></tr></table></td><td>0</td></tr>
<tr><td>HI -d</td><td>Full scale of instantaneous view</td><td>1000</td></tr>
<tr><td>dP</td><td>Decimal Point position on the instantaneous view</td><td><u>Inputs 1, 2 and 3</u>
0 = no decimal point (ex 1234),
1 = first digit (es 123.4) ... ...
N display digit-1

<u>Temperature Measurement</u>
0 = resolution: °C (°F).
1 = resolution: °C/10 (°F/10).</td><td>0 = No decimal point</td></tr>
<tr><td>FAHr</td><td>Temperature measurement in ° C or ° F</td><td>0 = Celsius degrees.
1 = Fahrenheit degrees.</td><td>0 = ° C</td></tr>
<tr><td>FILt</td><td>Filter Level</td><td>0 = no filter
1 ... 20</td><td>0 = No filter</td></tr>
</table>

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Parameters settable from Menues :

A.L.1. . A.L.2. .A.L.3. . A.L.4. .

Alarm 1 parameters: accessible from A.L.1 menu and identified by the final index 1.
Alarm 2 parameters: accessible from A.L.2 menu and identified by the final index 2.
Alarm 3 parameters: accessible from A.L.3 menu and identified by the final index 3.
Alarm 4 parameters: accessible from A.L.4 menu and identified by the final index 4.

<table>
<tr><th>Parameter Symbol</th><th>Parameter Name</th><th>Description and setting range</th><th>Default Value</th></tr>
<tr><td>SEt 1</td><td>Alarm 1 Threshold</td><td rowspan="4">Value referred to the displayed value (decimal point set by dP).
Temperature input: value expressed as set by FAHr (° C or ° F).
Settable value on the following ranges:
<table><tr><th>Display Digits Number</th><th>Min. Limit</th><th>Max. Limit</th></tr><tr><td>4</td><td>-1999</td><td>9999</td></tr></table></td><td>1000</td></tr>
<tr><td>SEt2</td><td>Alarm 2 Threshold</td><td>1000</td></tr>
<tr><td>HYS 1</td><td>Alarm 1 Hysteresys</td><td>10</td></tr>
<tr><td>HYS2</td><td>Alarm 2 Hysteresys</td><td>10</td></tr>
<tr><td>tYP 1</td><td>Alarm 1 Type</td><td rowspan="2">0 = Alarm disabled
1 = Alarm on the minimum threshold
2 = Alarm on the maximum threshold
3 = Retained alarm on the minimum threshold (the reset is not automatic)
4 = Retained alarm on the maximum threshold (the reset is not automatic)</td><td>0: Al 1 disabled</td></tr>
<tr><td>tYP2</td><td>Alarm 2 Type</td><td>0: Al 2 disabled</td></tr>
<tr><td>rLY 1</td><td>Relay 1: N.O./N.C.</td><td rowspan="2">Relay Functioning:
0 = relay normally opened (N.O.)
1 = relay normally closed (N.C.).</td><td>0: N.O.</td></tr>
<tr><td>rLY2</td><td>Relay 2: N.O./N.C.</td><td>0: N.O.</td></tr>
<tr><td>SEt3</td><td>Alarm 3 Threshold</td><td rowspan="4">Value referred to the displayed value (decimal point set by dP).
Temperature input: value expressed as set by FAHr (° C or ° F).
Settable value on the following ranges:
<table><tr><th>Display Digits Number</th><th>Min. Limit</th><th>Max. Limit</th></tr><tr><td>4</td><td>-1999</td><td>9999</td></tr></table></td><td>1000</td></tr>
<tr><td>SEt4</td><td>Alarm 4 Threshold</td><td>1000</td></tr>
<tr><td>HYS3</td><td>Alarm 3 Hysteresys</td><td>10</td></tr>
<tr><td>HYS4</td><td>Alarm 4 Hysteresys</td><td>10</td></tr>
<tr><td>tYP3</td><td>Alarm 3 Type</td><td rowspan="2">0 = Alarm disabled
1 = Alarm on the minimum threshold
2 = Alarm on the maximum threshold
3 = Retained alarm on the minimum threshold (the reset is not automatic)
4 = Retained alarm on the maximum threshold (the reset is not automatic)</td><td>0: Al 3 disabled</td></tr>
<tr><td>tYP4</td><td>Alarm 4 Type</td><td>0: Al 4 disabled</td></tr>
<tr><td>rLY3</td><td>Relay 3: N.O./N.C.</td><td rowspan="2">Relay Functioning:
0 = relay normally opened (N.O.)
1 = relay normally closed (N.C.).</td><td>0: N.O.</td></tr>
<tr><td>rLY4</td><td>Relay 4: N.O./N.C.</td><td>0: N.O.</td></tr>
</table>

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Parameters settable from Menu : OUT..

Parameter Symbol	Parameter Name	Description and setting range	Default Value
LO-t	Instantaneous display value associated to the minimum value of the output.	Limits for the scaling of the retransmitted output. Decimal point set by dP. Settable values on the following limits:	0
HI-t	Instantaneous display value associated to the maximum value of the output.		1000
tyPE	Retransmitted output type	1 = 0..10 V 2 = 4..20 mA 3 = 0..20 mA	2: 4..20 mA

Display Digits Number	Min. Limit	Max. Limit
4	-1999	9999

Parameters settable from Menu : bUS..

Parameter Symbol	Parameter Name	Description and setting range	Default Value
Addr	MODBUS Address	Settable Values: from 1 to 255.	1
PAr	Parity control	0 = None 1 = Even 2 = Odd.	0: None
dEL	Delay of the response	Number of pauses of 6 characters each to be entered between the end of the Rx message and the start of the Tx. Settable value: 0..255.	0: No Delay
bAUd	Serial communication speed	Serial communication speed in baud: 0 = 4800 3 = 38400 6 = 1200 1 = 9600 4 = 57600 7 = 2400 2 = 19200 5 = 115200 8 = 14400	3: 38400

Parameters settable from Menu : SYS..

Parameter Symbol	Parameter Name	Description and setting range	Default Value
CONt	Display Contrast	Values : 1 (minimum contrast) to 20 (maximum).	10
bUrn	Behavior in case of Burn out (with PT100 or TC)	0 = Full scale value indication 1 = Start scale value indication If the value is set to full scale, also the retransmitted output goes to the 100% (0% if the value is set to the start scale) and the maximum (minimum) alarms are activated.	0: Full scale Indicat.
dFLt	Default Settings	1 = Overwrite the set values with the default values.	

E.HI.t. By confirming with **OK/MENÙ** all the parametes are saved in flash memory and after some instants the module is reset.

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8. ERROR SIGNALLINGS

The errors are directly viewed through display.

We are going to list all the possible signallings with the correspondent meaning:

nnnn: Instantaneous value to display > HI -d value of the 2.5% or if the instantaneous value > maximum displayable.

UUUU: Instantaneous value to display < LO-d value of the 2.5% or instantaneous value to display < minimum displayable.

bUrn: Burn-out of the temperature sensor.

SErr: communication error with the cold junction thermometer.

EErr: at the start may signal an error on the calibration memory. The functioning of the module is blocked while the Modbus communication is available.

9. ORDER CODES

Code			Description
Model	S312A		Indicator with universal analog input, 4 relays.
Display	-4		4 digits
Power Supply	-H		85..265 VAC
	-L		10..40 VDC / 19..28 VAC
Output relay	-4R		4 output relay
Options		/T	Calibration and configuration Service

10. MODBUS REGISTERS

The S312A-4-L-4R and S312A-4-H-4R lines indicators have MODBUS 16 bits (words) registers, accessible by RS485 serial communication.

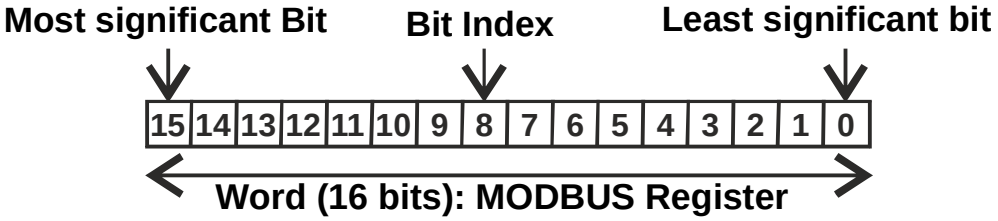
10.1 Supported MODBUS Commands

Code	Function	Description
03	Read Holding Registers	Reading of word registers up to 16 at a time.
06	Write Single Register	Writing of a word register.
16	Write Multiple Registers	Writing of word registers up to 16 at a time.

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10.2 Holding Registers

The 16-bit Holding Registers have the following structure:



In the table the notation Bit [x:y] indicates all bits from x to y. For example Bit [2:1] indicates bit 2 and bit 1, and serves to illustrate the meaning of the various united combinations of the values of the two bits. Default values are indicated with the * symbol.

REGISTER	Description	ADDR	R/W
MACHINE ID	**Bit [15:8]: contain the module's ID: 70.** **Bit [7:0]: contain the firmware's revision.**	**40001**	**R**
FW_CODE	**Register containing the internal code of the firmware.**	**40002**	**R**
TYP_INP_CEL_FAHR	**Register for the setting of the input type and of the temperature measure unit.**	**40003**	**R/W**
Bit [15:8]	Set the input type: 1 : Voltage, 2* : Current 3 : Potentiometer, 4 : Thermocouple J 5 : Thermocouple K, 6 : Thermocouple R 7 : Thermocouple S, 8 : Thermocouple T 9 : Thermocouple B, 10 : Thermocouple E 11: Thermocouple N, 12 : PT100 (2 wires) 13 : PT100 (3 wires), 14 : PT100 (4 wires)		
Bit [7:1]	Not used		
Bit 0	*Temperature in Celsius or Fahrenheit degrees*: 0* : Celsius 1 : Fahrenheit		
HI_E	**Electrical Full Scale of the input in V/100, mA/100 or %/100**	**40004**	**R/W**
Bit [15:0]	Full scale in Volt/100, mA/100 or %/100 respectively for input types 1, 2 and 3. This value must be included between the minimum and maximum specified for each input. Besides this parameter defines the value of the input signal associated to the maximum instantaneous value of view: HI_D. Min : 0, Max: 9999. Default: 2000.		
LO_E	**Electrical Start Scale of the input in V/100, mA/100 or %/100**	**40005**	**R/W**
Bit [15:0]	Start scale in Volt/100, mA/100 or %/100 respectively for input types 1, 2 and 3. This value must be included between the minimum and maximum specified for each input. Besides this parameter defines the value of the input signal associated to the minimum instantaneous value of view: LO_D. Min : 0, Max: 9999. Default: 400.		

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DP/FILTER	**Decimal point position.**	40006	R/W
Bit [15:8]	Decimal point position: 0* = decimal point absent (ex. 1234) , 1 = first digit (ex 123.4), 2 = second digit, ..., N display digits-1. For temperature measurements: 0: °C (°F) resolution, 1: °C/10 (°F/10) resolution.		
Bit [7:0]	Set the filter level. Admitted values: 0* = no filter, 1 ..20.		
TYP_AL1/RLY1	**Sets the normal status of relay 1 and alarm 1 type.**	40007	R/W
Bit [15:8]	Set the Alarm 1 functioning: 0* = Alarm disabled 1 = Alarm on the minimum threshold 2 = Alarm on the maximum threshold 3 = Retained alarm on the minimum threshold (reset is not automatic) 4 = Retained alarm on the maximum threshold (reset is not automatic)		
Bit [7:1]	Not used		
Bit 0	Sets the relay 1 functioning: 0* = normally opened 1 = normally closed		
TYP_AL2/RLY2	**Sets the normal status of relay 2 and alarm 2 type.**	40008	R/W
Bit [15:8]	Set the Alarm 2 functioning: 0* = Alarm disabled 1 = Alarm on the minimum threshold 2 = Alarm on the maximum threshold 3 = Retained alarm on the minimum threshold (reset is not automatic) 4 = Retained alarm on the maximum threshold (reset is not automatic)		
Bit [7:1]	Not used		
Bit 0	Sets the relay 2 functioning: 0* = normally opened 1 = normally closed		

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TYP_AL3/RLY3	**Sets the normal status of relay 3 and alarm 3 type.**	**40009**	**R/W**
Bit [15:8]	Set the Alarm 3 functioning: 0* = Alarm disabled 1 = Alarm on the minimum threshold 2 = Alarm on the maximum threshold 3 = Retained alarm on the minimum threshold (reset is not automatic) 4 = Retained alarm on the maximum threshold (reset is not automatic)		
Bit [7:1]	Not used		
Bit 0	Sets the relay 3 functioning: 0* = normally opened 1 = normally closed		
TYP_AL4/RLY4	**Sets the normal status of relay 4 and alarm 4 type.**	**40010**	**R/W**
Bit [15:8]	Set the Alarm 4 functioning: 0* = Alarm disabled 1 = Alarm on the minimum threshold 2 = Alarm on the maximum threshold 3 = Retained alarm on the minimum threshold (reset is not automatic) 4 = Retained alarm on the maximum threshold (reset is not automatic)		
Bit [7:1]	Not used		
Bit 0	Sets the relay 4 functioning: 0* = normally opened 1 = normally closed		
PASSWORD	**Enables / disables the password for the access to the programming menu.**	**40011**	**R/W**
Bit [15:0]	By setting a value different from **5477**, at the start of the programming menu the password (always 5477) will be required. Default: 5477.		
TYP_OUT/BURN	**Sets the behavior in case of Burn Out (PT100 or TC) and output type**	**40012**	**R/W**
Bit [15:8]	Set the retransmitted output type: 1 = 0..10 V output 2* = 4..20 mA output 3 = 0..20 mA output		
Bit [7:1]	Not used		
Bit 0	*Behavior in case of PT100 or Thermocouple Burn out*: 0* = Full scale indication 1 = Start scale indication.		

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CONTRAST	**Display contrast**	40013	R/W
Bit [15:8]	Set the display contrast: values from 1 (minimum constrast) to 20 (maximum contrast). Default: 10.		
Bit [7:0]	Not used		
SET1	**Alarm 1 Threshold**	**40014**	**R/W**
Bit [15:0]	Alarm 1 threshold: value referred to the view scale but without decimal point. For example if the value referred to the view scale is 20,0 sets 200. See **HI_T** for parameter limits. Default: 1000.		
HYS1	**Alarm 1 Hysteresis**	**40015**	**R/W**
Bit [15:0]	Alarm 1 hysteresis: value referred to the view scale but without decimal point. For example if the value referred to the view scale is 10,00 sets 1000. See **HI_T** for parameter limits. Default: 10.		
SET2	**Alarm 2 Threshold**	**40016**	**R/W**
Bit [15:0]	Alarm 2 threshold: value referred to the view scale but without decimal point. For example if the value referred to the view scale is 20,0 sets 200. See **HI_T** for parameter limits. Default: 1000.		
HYS2	**Alarm 2 Hysteresis**	**40017**	**R/W**
Bit [15:0]	Alarm 2 hysteresis: value referred to the view scale but without decimal point. For example if the value referred to the view scale is 10,00 sets 1000. See **HI_T** for parameter limits. Default: 10.		
SET3	**Alarm 3 Threshold**	**40018**	**R/W**
Bit [15:0]	Alarm 3 threshold: value referred to the view scale but without decimal point. For example if the value referred to the view scale is 20,0 sets 200. See **HI_T** for parameter limits. Default: 1000.		
HYS3	**Alarm 3 Hysteresis**	**40019**	**R/W**
Bit [15:0]	Alarm 3 hysteresis: value referred to the view scale but without decimal point. For example if the value referred to the view scale is 10,00 sets 1000. See **HI_T** for parameter limits. Default: 10.		

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SET4	**Alarm 4 Threshold**	**40020**	**R/W**
Bit [15:0]	Alarm 4 threshold: value referred to the view scale but without decimal point. For example if the value referred to the view scale is 20,0 sets 200. See **HI_T** for parameter limits. Default: 1000.		
HYS4	**Alarm 4 Hysteresis**	**40021**	**R/W**
Bit [15:0]	Alarm 4 hysteresis: value referred to the view scale but without decimal point. For example if the value referred to the view scale is 10,00 sets 1000. See **HI_T** for parameter limits. Default: 10.		
HI_T	**Displayed value correspondent to the maximum value of the analog output**	**40022**	**R/W**
Bit [15:0]	Displayed input value corresponding to retransmitted output maximum value. Set the value referred to the view scale but without decimal point. Example: if the value referred to the view scale is 10,0, set 100. Default: 1000. Min value: -1999 Max value: 9999		
LO_T	**Displayed value correspondent to the minimum value of the analog output**	**40023**	**R/W**
Bit [15:0]	Displayed input value corresponding to retransmitted output minimum value. Set the value referred to the view scale but without decimal point. Example: if the value referred to the view scale is 10,0, set 100. Default: 0. Min. and Max value: see **HI_T**		
HI_D	**Full Scale value of instantenous view**	**40024**	**R/W**
Bit [15:0]	Set the full scale value of the view scale. Only for input 1, 2 and 3. The decimal point on the set integer value is given by **dP**. Default: 1000. Min and max values: see **HI_T**.		
LO_D	**Start Scale value of instantenous view**	**40025**	**R/W**
Bit [15:0]	Set the start scale value of the view scale. Only for input 1, 2 and 3. The decimal point on the set integer value is given by **dP**. Default: 0. Limits value:see **HI_T**.		

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ADDR	**Register for the setting of the Modbus address and parity control.**	**40026**	**R/W**
Bit [15:8]	Set the module's address. Permissible values from **0x01** to **OxFF** (decimal values in the range of 1-255). Default: 1.		
Bit [7:0]	Set the control parity type: 00000000 *: No parity (NONE) 00000001 : Even parity (EVEN) 00000010 : Odd parity (ODD)		
BAUDR	**Register for the setting of the Baudrate and the response delay time in characters.**	**40027**	**R/W**
Bit [15:8]	00000000 (0x00): 4800 00000100 (0x04): 57600 00000001 (0x01): 9600 00000101 (0x05): 115200 00000010 (0x02): 19200 00000110 (0x06): 1200 00000011*(0x03): 38400 00000111 (0x07): 2400 00001000 (0x08): 14400		
Bit [7:0]	Response delay time. It represents the number of pauses of 6 characters each to be entered between the end of the Rx message and the start of the Tx message. Default value: 0.		
RESET	**Module's Reset**	**40058**	**R/W**
Bit [15:0]	-By writing 0xC1A0, the module is reset.		
STATUS	**Errors and alarms Signalling.**	**40059**	**R**
Bit [15:11]	Not used.		
Bit 10	**1**: *Alarm 4 active.*		
Bit 9	**1**: *Alarm 3 active.*		
Bit 8	**1**: *Alarm 2 active.*		
Bit 7	**1**: *Alarm 1 active.*		
Bit 6	**1**: if the value to view is < LO-d of the ***2,5 %*** or temperature sensor under range.		
Bit 5	**1**: If the value to view is > HI -d of the **2,5 %** or the temperature sensor is over range.		
Bit 4	**1**: *Temperature Sensor Burn-out*		
Bit 3	Not used		
Bit 2	**1**: *Failure on the cold junction thermometer initialization.*		
Bit 1	**1***: Fault on cold junction thermometer.*		
Bit 0	**1**: *Calibration Eeprom damaged* Contact Seneca srl to solve the problem.		
FLOAT_REAL_MSW	**Measure in % if input is potentiometer (Floating point format, most significant word).**	**40060**	**R**
FLOAT_REAL_LSW	**Measure in % if input is potentiometer (Floating point format, least significant word).**	**40061**	**R**
DISPLAY	**Displayed value**	**40064**	**R**
mV_CJ_FLOAT_MSW	**Cold junction voltage in mV (Floating point format, most significant word).**	**40072**	**R**
mV_CJ_FLOAT_LSW	**Cold junction voltage in mV (Floating point format, least significant word).**	**40073**	**R**

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mV_TC_FL_MSW	**Voltage in mV read from the thermocouple (Floating point, most significant word).**	**40074**	**R**
mV_TC_FL_LSW	**Voltage in mV read from the thermocouple (Floating point, least significant word).**	**40075**	**R**
TEMP_TC_FL_MSW	**Temperature in °C read from the thermocouple (Floating point, most significant word).**	**40076**	**R**
TEMP_TC_FL_LSW	**Temperature in °C read from the thermocouple (Floating point, least significant word).**	**40077**	**R**
TEMP_CJ_SHORT	**Cold junction temperature in 1/256 of °C.**	**40078**	**R**
Rx_FLOAT_MSW	**Resistance in Ohm if PT100 (Floating point format, most significant Word).**	**40079**	**R**
Rx_FLOAT_LSW	**Resistance in Ohm if PT100 (Floating point format, least significant Word).**	**40080**	**R**
TEMP_RTD_FL_MSW	**Temperature read from PT100 in °C (Floating point format , most significant word).**	**40081**	**R**
TEMP_RTD_FL_LSW	**Temperature read from PT100 in °C (Floating point format , least significant word).**	**40082**	**R**
Rx_short	**Measured resistance if PT100 (in Ω/100)**	**40083**	**R**
mVOLT_FL_MSW	**Measurement in mV in case of voltage input (Floating point format, most significant word).**	**40084**	**R**
mVOLT_FL_LSW	**Measurement in mV in case of voltage input (Floating point format, least significant word).**	**40085**	**R**
μAMPER_FL_MSW	**Measurement in μA in case of current input (Floating point format, most significant word).**	**40086**	**R**
μAMPER_FL_LSW	**Measurement in μA in case of current input (Floating point format, least significant word).**	**40087**	**R**



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CSQ IQNet ISO9001-2000

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11 *SETTABLE VALUES FOR MULTIPLE CHOICE PARAMETERS*

The various options for the multiple choice parameters are listed below. Default values are indicated with the * symbol.

11.1 IN.P.t. (ELECTRICAL INPUT)

tYPE

Selects the input type among the following:

1 = Voltage	5 = TC K	9 = TC B	13 = PT100 (3 wires)
2* = Current	6 = TC R	10 = TC E	14 = PT100 (4 wires)
3 = Potentiometer	7 = TC S	11 = TC N	
4 = TC J	8 = TC T	12 = PT100 (2 wires)	

11.2 S.C.A.L. (SETTING DISPLAYED VALUE)

FAHr

Selects if the temperature will be displayed in:
0* = Celsius degrees
1 = Fahrenheit degrees.

FILt

Sets the level filter. Admitted Value:
0* = no filter
1 ... 20.

11.3 A.L.1. /A.L.2. /AL3. /AL4. (ALARM SETTING)

tYPE 1/tYPE2/tYPE3/tYPE4

Sets the alarm type :
0* = Inactive Alarm
1 = Alarm on the minimum threshold
2 = Alarm on the maximum threshold
3 = Retained alarm on the minimum threshold (reset is not automatic)
4 = Retained alarm on the maximum threshold (reset is not automatic).

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rLY1/rLY2/rLY3/rLY4
Sets the functioning of the correspondent relay
0* = relay normally opened
1 = relay normally closed.

11.4 O.U.t.. **(RETRANSMITTED OUTPUT SETTING)**

tYPE
Sets the type of the retransmitted output:
1 = 0..10 V output 2* = 4..20 mA output
3 = 0..20 mA output

11.5 b.U.S.. **(RS485 SETTINGS)**

Addr
Selects the slave Modbus address. Values from da 1 to 255. Default: 1.

PAr
Selects the parity control of the serial communication:
0* = None 1 = Even 2 = Odd.

dEL
Sets the response delay time. Values: 0 .. 255. 0* = no delay, 1 = 1 pause, etc.

bAUd
Sets the Baudrate :

0 = 4800	3* = 38400	6 = 1200
1 = 9600	4 = 57600	7 = 2400
2 = 19200	5 = 115200	8 = 14400

11.6 S.Y.S.. (**SYSTEM**)

CONt
Sets the display contrast:
Values from 1 (minimum contrast) to 20 (maximum contrast). Default: 10.

bUrn
Behavior in case of Burn Out of PT100 or Thermocouple:
0* = Full scale indication
1 = Start scale indication.

11.7 d.F.L.t. (**DEFAULT SETTING**)
1 = Sets the default values for all the parameters.

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8. SETTING EXAMPLES

8.1 Modification parameters examples

We are going to illustrate an example of HI -d parameter modification for a 6 digits model. In this example the digit to modify, that in the real case flashes, is bordered:

Once the parameter to modify has been selected, the set value is for example:



The pressure of the **DOWN** button entails:



DOWN has brought the digit to the maximum value.
Now the pressure of **OK/MENÙ** buttons entails the position shift of the digit to modify:



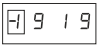
The pressure of the **UP** button entails:



that is the digit has been increased of a unit.
To set a negative value, place on the most significant digit by subsequent pressures of **OK/MENÙ** button :



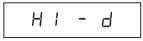
By pressing the **DOWN** button:



The last digit is brought to the most negative value: -1.

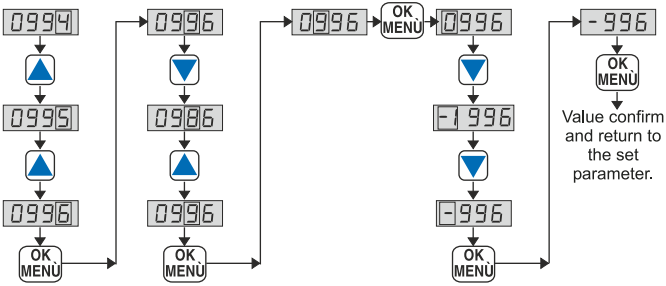
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A further pressure of the **OK/MENÙ** button, entails the return to the voice correspondent to the just modified parameter:



PARAMETERS MODIFICATION

The modification is performed digit by digit. The digit to modify **flashes**: on the figure this digit is bordered.



: Increments the digit value of a unit. : Decreases the digit value of a unit.

OK MENÙ : Confirms the value of the digit and go to the next one. If last digit: confirms the value of the digit and an other pressure carries back to the just set parameter.

Notes on Values Setting

Negative Values: the last digit allows to insert also the '**-**' sign or "**-1**' value.

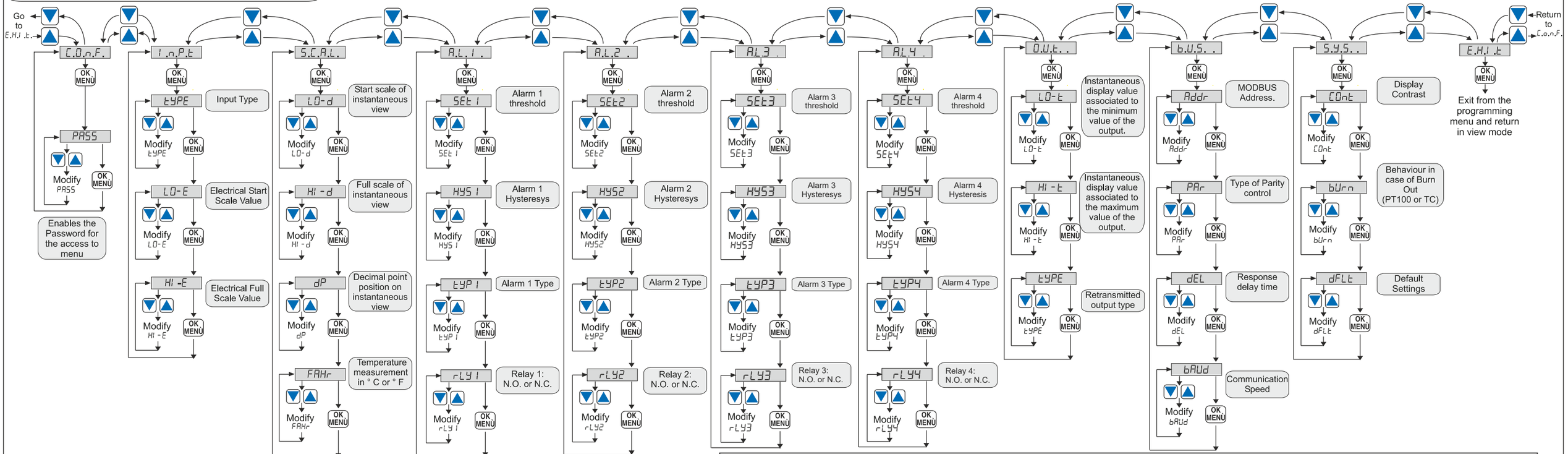
The Inserted Values are out of the parameter range: the value is carried within the range.

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ACCESS TO THE PROGRAMMING MENU :

▼ + OK MENU : Press the two buttons simultaneously for some seconds.

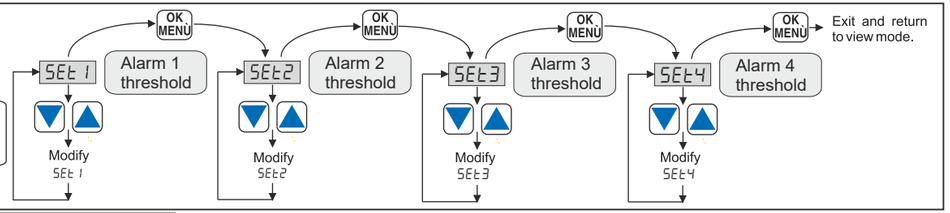
PROGRAMMING MENU SCHEME



QUICK ALARM MENU SCHEME

ACCESS TO THE QUICK ALARM MENU :

OK MENU : Press the button for some seconds.



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