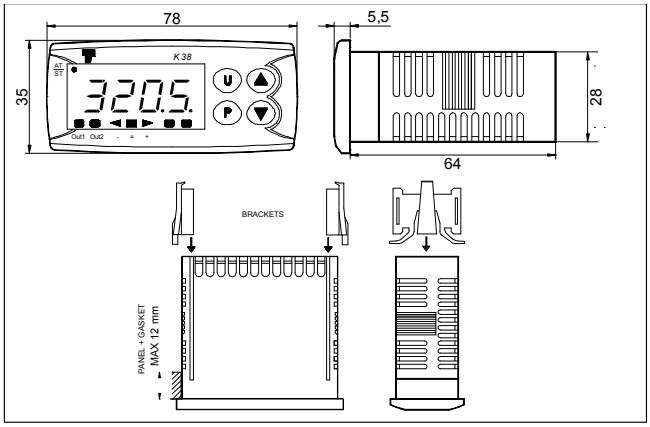
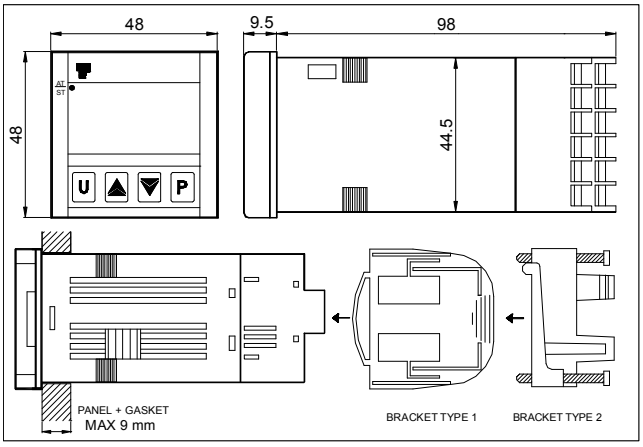
Kxx V

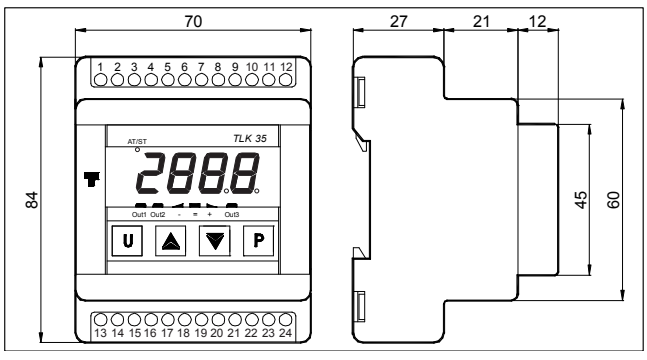
INDICATORS
with indipendent Timer option

Engineering Manual
Code : ISTR-MKXXENG0

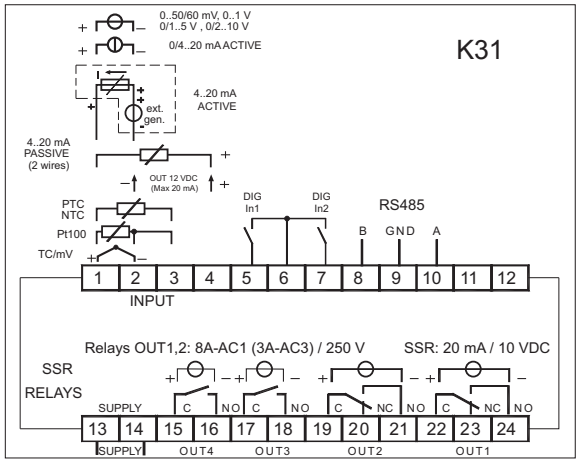
1. OUTLINE DIMENSIONS (mm)

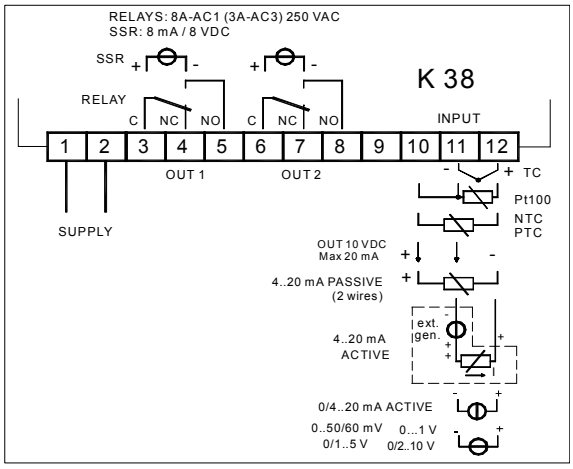


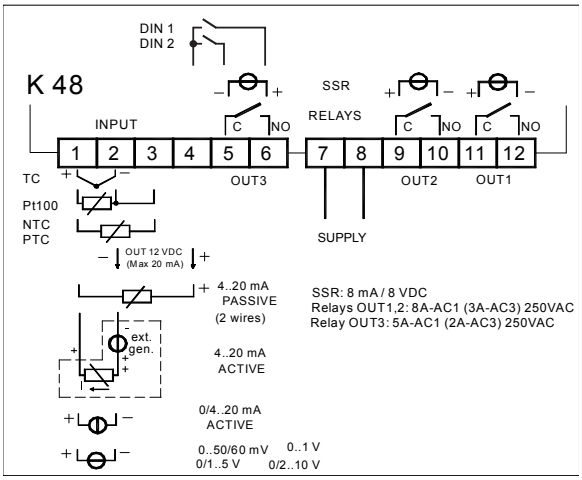


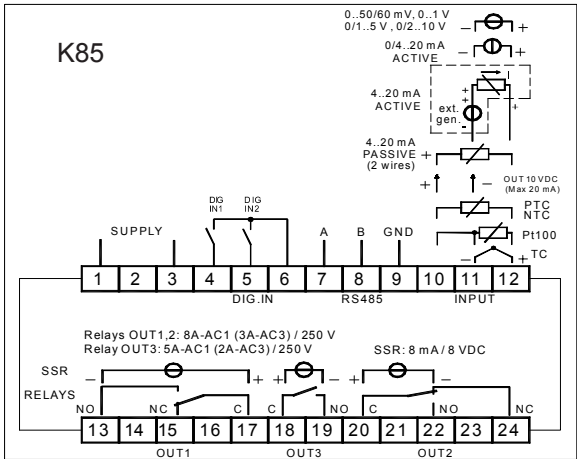


2. CONNECTION DIAGRAM









2.1 - MOUNTING REQUIREMENTS

This instrument is intended for permanent installation, for indoor use only, in an electrical panel which encloses the rear housing, exposed terminals and wiring on the back.
Select a mounting location having the following characteristics:

1) it should be easily accessible
2) there is minimum vibrations and no impact
3) there are no corrosive gases
4) there are no water or other fluid (i.e. condensation)
5) the ambient temperature is in accordance with the operative temperature (from 0 to 50 °C)
6) the relative humidity is in accordance with the instrument specifications (20% to 85 %)

The instrument can be mounted on panel with a maximum thick of 15 mm.
When the maximum front protection (IP65) is desired, the optional gasket must be monted.

2.2 GENERAL NOTES ABOUT INPUT WIRING

1) Don't run input wires together with power cables.
2) External components (like zener barriers, etc.) connected between sensor and input terminals may cause errors in measurement due to excessive and/or not balanced line resistance or possible leakage currents.
3) When a shielded cable is used, it should be connected at one point only.
4) Pay attention to the line resistance; a high line resistance may cause measurement errors.

2.3 THERMOCOUPLE INPUT

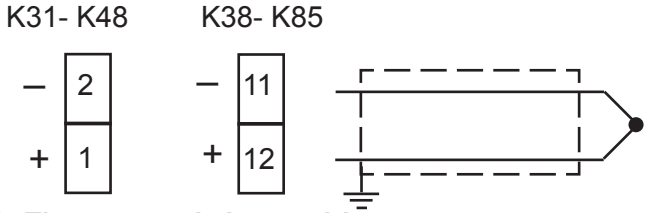


Fig. 3- Thermocouple input wiring

External resistance: 100 Ω max, maximum error 0,5 % of span.
Cold junction: automatic compensation from 0 to 50 °C.
Cold junction accuracy : 0.1 °C/°C after a warm-up of 20 minutes
Input impedance: > 1 MΩ
Calibration: according to EN 60584-1.
NOTE: for TC wiring use proper compensating cable preferable shielded.

2.4 INFRARED SENSOR INPUT

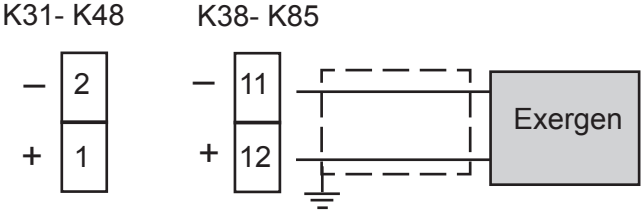


Fig. 4- Infrared input wiring

External resistance: don't care condition.
Cold junction: automatic compensation from 0 to 50 °C.
Cold junction accuracy : 0.1 °C/°C
Input impedance: > 1 MΩ

2.5 RTD (Pt 100) INPUT

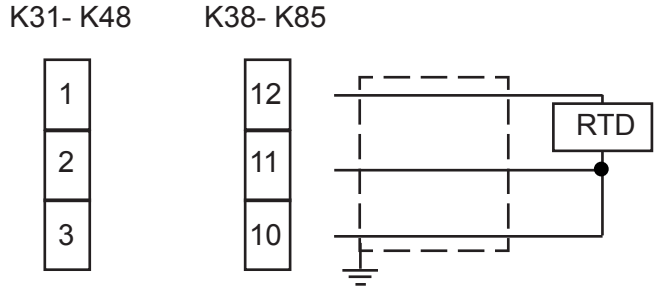


Fig. 5- RTD input wiring

Input circuit: current injection (135 μA).
Line resistance: automatic compensation up to 20 Ω/ wire with maximum error ± 0.1% of the input span.
Calibration: according to EN 60751/A2.
NOTE: The resistance of the 3 wires **must** be the same.

2.6 THERMISTORS INPUT

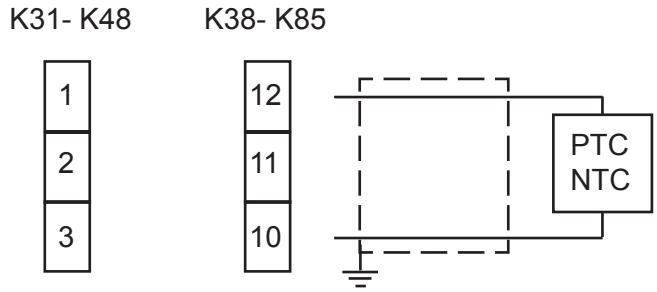


Fig. 6- PTC / NTC input wiring

Input circuit: current injection (25 μA).
Line resistance: not compensated.

2.7 V AND mV INPUT

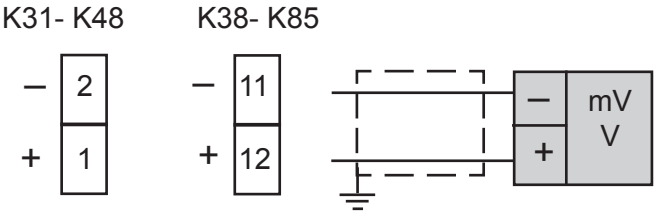


Fig. 7- V / mV input wiring
Input impedance: > 1 MΩ
Accuracy : ± 0.5 % of Span ± 1 dgt @ 25 °C.

2.8 - mA INPUT

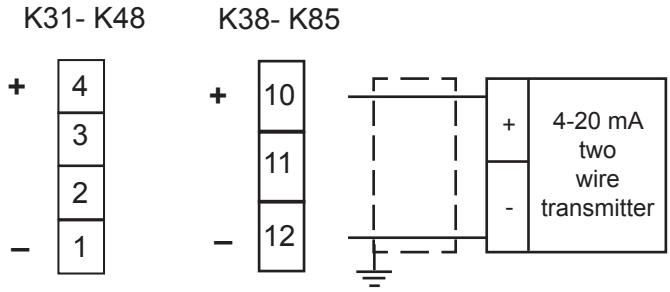


Fig. 8- 0/4-20 mA input wiring for passive transmitter using auxiliary pws

Input impedance:< 51 Ω.
Accuracy : 0.5 % of Span + 1 dgt @ 25 °C.
Protection: NOT protected from short circuit.
Internal auxiliary PWS: 10 V DC (± 10%), 20 mA max.

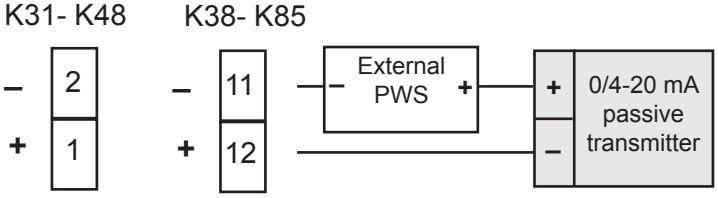


Fig. 9- 0/4-20 mA input wiring for passive transmitter using an external pws

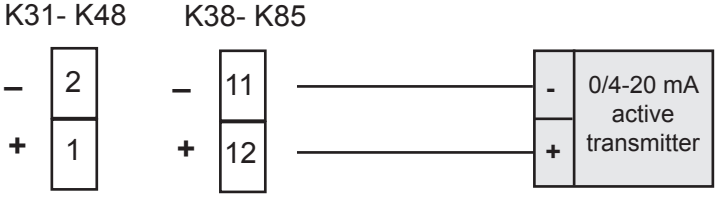


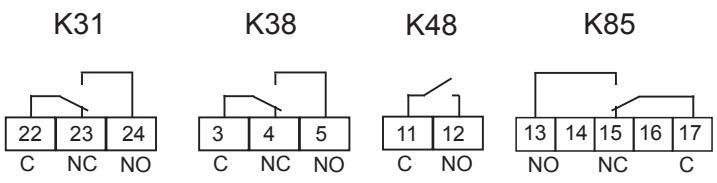
Fig. 10- 0/4-20 mA input wiring for active transmitter

2.8 OUTPUTS

Safety notes:

1) To avoid electrical shock, connect power line at last.
2) For supply connections use No 16 AWG or larger wires rated for at last 75 °C.
3) Use copper conductors only.
4) SSR outputs are not isolated. A double or reinforced isolation must be assured by the external solid state relays.

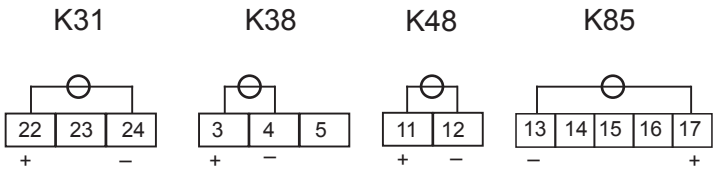
a.1) OUT 1 - Relay



Out 1 contact rating: - 8 A /250 V cosϕ =1
- 3 A /250 V cosϕ =0,4

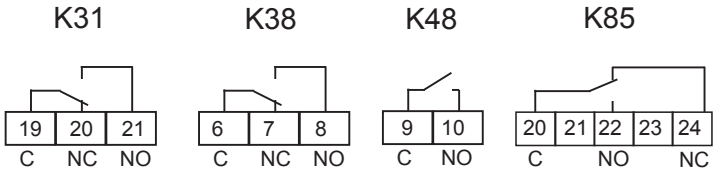
Operation: 1 x 10^5

a.2) OUT 1 - SSR



Logic level 0: Vout < 0.5 V DC
Logic level 1: 12 V ± 20% @ 1 mA
10 V ± 20% @ 20 mA

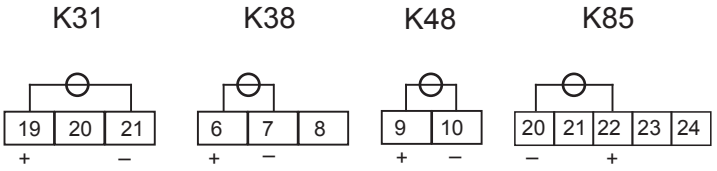
b.1) OUT 2 - Relay



Out 2 contact rating: - 8 A /250 V cosϕ =1
- 3 A /250 V cosϕ =0.4

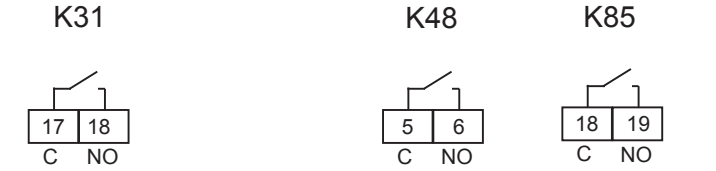
Operation: 1 x 10^5

b.2) OUT 2 - SSR



Logic level 0: Vout < 0.5 V DC
Logic level 1: 12 V ± 20% @ 1 mA
10 V ± 20% @ 20 mA

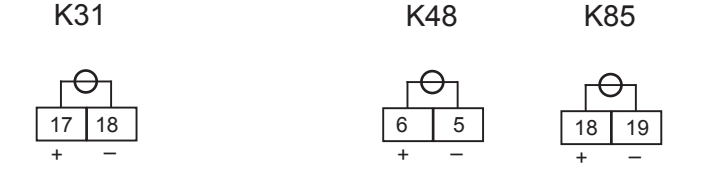
C.1) OUT 3 - Relay



Out 3 contact rating: - 8 A /250 V cosϕ =1
- 3 A /250 V cosϕ =0.4

Operation: 1 x 10^5

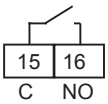
c.2) OUT 3 - SSR



Logic level 0: Vout < 0.5 V DC
Logic level 1: 12 V ± 20% @ 1 mA
10 V ± 20% @ 20 mA

d.1) OUT 4 - Relay

K31

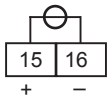


Out 2 contact rating: - 8 A /250 V cosφ =1
- 3 A /250 V cosφ =0.4

Operation: 1 x 105

b.1) OUT 4 - SSR

K31



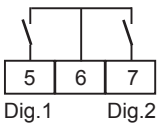
Logic level 0: Vout < 0.5 V DC
Logic level 1: 12 V ± 20% @ 1 mA
10 V ± 20% @ 20 mA

2.9 LOGIC INPUTS

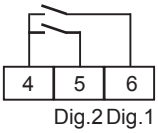
Safety notes:

1) Do not run logic input wiring together with power cables.
2) Use an external dry contact capable to switch 0.5 mA, 5 V DC.
3) The instrument needs 150 ms to recognize a contact status variation.
4) The logic inputs are **NOT** isolated by the measuring input. A double or reinforced isolation between logic inputs and power line must be assured by the external elements

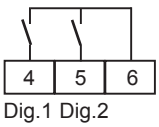
K31



K48



K85

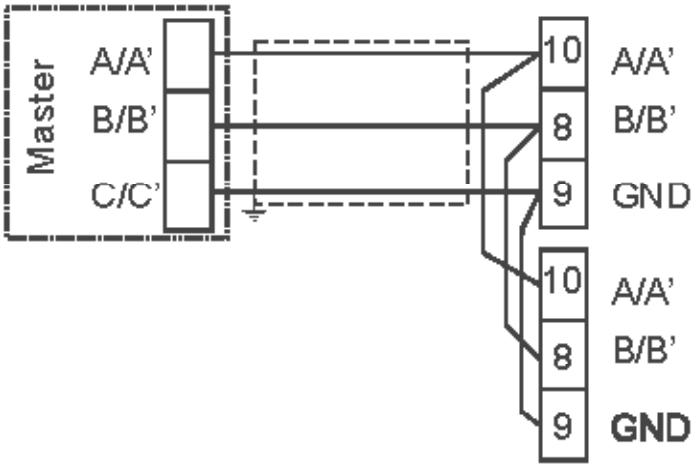


2.10 SERIAL INTERFACE

Interface type:
- NOT Isolated RS 485
- not isolated TTL

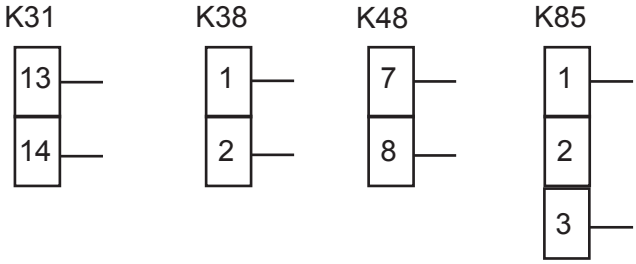
Voltage levels: according to EIA standard
Protocol type: MODBUS RTU.
Byte format: 8 bit without parity
Stop bit: one.
Baud rate: programmable from 1200 to 38400 baud
Address: programmable from 1 to 255
NOTES:

1) RS-485 interface allows to connect up to 30 devices with one remote master unit.
2) The cable length must not exceed 1.5 km at 9600 BAUD.



2.10 POWER SUPPLY

Power consumption: 5 VA max.



Supply voltage: 100 to 240 V AC/DC (± 10%)
24 V AC/DC (± 10%)
12 V AC/DC (± 10%)

NOTES:

1) Before connecting the instrument to the power line, make sure that line voltage is equal to the voltage shown on the identification label.
2) To avoid electrical shock, connect power line at the end of the wiring procedure.
3) For supply connections use No 16 AWG or larger wires rated for at last 75 °C.
4) Use copper conductors only.
5) For power supply the polarity is a do not care condition.
6) The power supply input is **NOT** fuse protected. Please, provide a T type 1A, 250 V fuse externally.

3.1 TECHNICAL SPECIFICATIONS

Case: Plastic, self-extinguishing degree: V-0 according to UL 94

Front protection: IP 65 (when the optional panel gasket is mounted) for indoor locations according to EN 60070-1

Rear terminals protection: IP 20 according to EN 60070-1

Terminal block: screw terminals (screw M3, for cables from ϕ 0.25 to ϕ 2.5 mm^2 or from AWG 22 to AWG 14) with connection diagrams

Weight: 180 g approx.

Power supply:

12 V AC/DC ($\pm$ 10 % of the nominal value).
24 V AC/DC ($\pm$ 10 % of the nominal value).
100 to 240 V AC ($\pm$ 10 % of the nominal value).

Power consumption: 5 VA max.

Insulation voltage:
2300 V rms according to EN 61010-1.

Display: one 4 digits red display h 12 mm + 3 LED Bargraph.

Display updating time: 500 ms.

Sampling time: 130 ms.

Resolution: 30000 counts.

Total Accuracy: $\pm$ 0.5% F.S.V. $\pm$ 1 digit @ 25°C of room temperature.

Common mode rejection: 120 dB at 50/60 Hz.

Normal mode rejection: 60 dB at 50/60 Hz.

Electromagnetic compatibility and safety requirements:
Compliance: directive EMC 2004/108/CE (EN 61326-1), directive LV 2006/95/CE (EN 61010-1)

Installation category: II

Pollution category: 2

Temperature drift: It is part of the global accuracy.

Operating temperature: from 0 to 50°C (from 32 to 122°F).

Storage temperature: -30 to +70°C (-22 to 158°F)

Humidity: from 20 % to 85% RH, non condensing.

Protections:WATCH DOG (hardware/software) for the automatic restart.

4. - CONFIGURATION PROCEDURE

4.1 - Introduction

When the instrument is powered, it starts immediately to work according to the parameters values loaded in its memory.
The instrument behaviour and its performances are governed by the value of the memorized parameters.
At the first start up the instrument will use a default" parameter set (factory parameter set); this set is a generic one (e.g. a TC J input is programmed).
We recommend that you modify the parameter set to suit your application (e.g. set the right input type, define the alarms, etc.)
To change these parameters you will need to enter the "Configuration procedure".

4.1.1 Access levels to the parameter modifications and their password

The instrument have one complete parameter set.
We call this set "configuration parameter set" (or "configuration parameters").
The access to the configuration parameters is protected by a programmable password (password level 3).
The configuration parameters are collected in various groups. Every group defines all parameters related with a specific function (E.g. alarms, output functions, serial link).
Note: the instrument will show only the parameters consistent with the specific hardware and in accordance with the value assigned to the previous parameters (e.g. if you set an output as "not used" the instrument will mask all other parameters related with this output).

4.2 - INSTRUMENT BEHAVIOUR AT POWER UP

At power up the instrument can show one of the following informations:
- The display will show the measured value
- The display will show one alarm threshold
- The display will show programmed time of the timer.

in all cases:
- The programmed alarm are enabled
- The serial link is immediately operative.

We define all the above described conditions as "Standard Display".

4.3. - HOW TO ENTER INTO THE CONFIGURATION MODE

1) Push the P button for more than 3 seconds.
   The display will show alternately 0 and << PASS >>.
2) Using ▲ and/or ▼ buttons set the programmed password.

NOTES:

a) The factory default password for configuration parameters is equal to 30.
b) All parameter modification are protected by a time out. If no button is pressed for more than 10 second the instrument return automatically back to the Standard display, the new value of the last selected parameter is lost and the parameter modification procedure is closed.
   When you desire to remove the time out (e.g. for the first configuration of an instrument) you can use a password equal to 1000 plus the programmed password (e.g. 1000 + 30 [default] = 1030).
   It is always possible to end manually the parameter configuration procedure (see the next paragraph).
c) During parameter modification the instrument continue to perform the Alarms and timer function.
   In certain conditions, when a configuration change can produce a bump to the process, it is advisable to temporarily stop the alarm functions during the programming procedure (its alarms output will be Off)
   A password equal to 2000 + the programmed value (e.g. 2000 + 30 = 2030).
   The alarms will restart automatically when the configuration procedure will be manually closed.

3) Push the P button
   If the password is correct the display will show the acronym of the first parameter group preceded by the symbol  .
   In other words the display will show  .
   The instrument is in configuration mode.

4.4. - HOW TO EXIT FROM THE CONFIGURATION MODE

Push [U] button for more than 5 seconds.
The instrument will come back to the "standard display"

4.5. - KEYBOARD FUNCTION DURING PARAMETER MODIFICATION

[U] A short press allows you to exit from the current parameter group and select a new parameter group.
A long press allows you to close the configuration parameter procedure (the instrument will come back to the "standard display").

[P] When the display is showing a group, It allows you to enter in the selected group.
When the display is showing a parameter, it allows you to memorize the selected value and to go to the next parameter within the same group.

[▲] It allows you to increase the value of the selected parameter.

It allows you to decrease the value of the selected parameter.

NOTE: The group selection is cyclic as well as the selection of the parameters in a group.

4.6. - FACTORY RESET - DEFAULT PARAMETERS LOADING PROCEDURE

Sometime, e.g. when you re-configure an instrument previously used for other works or from other people or when you have made too many errors during configuration and you decided to re-configure the instrument, it is possible to restore the factory configuration.
This action allows you to put the instruent in a defined condition (in the same condition it was at the first power up).
The default data are the typical values loaded in the instrument prior to shipment from factory.
To load the factory default parameter set, proceed as follows:

1) Press the P button for more than 5 seconds
2) The display will show alternately “PASS” and “0”.
3) By and button set the value -481.
4) Push P button.
5) The instrument will turn OFF all LEDs then it will show “dFLt” messages and than it turn ON all LEDs of the display for 2 seconds and than it will restart as for a new power up.

The procedure is complete.
Note: the complete list of the default parameter is available in Appendix A.

4.7. - ALL CONFIGURATION PARAMETERS

In the following pages we will describe all the parameters of the instrument. However, the instrument will only show the parameters applicable to its hardware options in accordance with the specific instrument configuration (i.e. setting AL1t [Alarm 1 type] equal to <<nonE>> [not used], all parameters related with the alarm 1 will be skipped).

] inP GROUP - Main and auxiliary input configuration

[2] SEnS - Input type
Available: Always
Range:
When the code of the input type is equal to C (see Ordering Code at page 29)

J	= TC J	(0 to 1000 °C/ 32 to 1832 °F)
crAL	= TC K	(0 to 1370 °C/ 32 to 2498 °F)
S	= TC S	(0 to 1760 °C/ 32 to 3200 °F)
r	= TC R	(0 to 1760 °C/ 32 to 3200 °F)
t	= TC T	(0 to 400 °C/ 32 to 752 °F)
ir.J	= Exergen IRS J	(0 to 1000 °C/ 32 to 1832 °F)
ir.cA	= Exergen IRS K	(0 to 1370 °C/ 32 to 2498 °F)
Pt1	= RTD Pt 100	(-200 to 850 °C/-328 to 1562 °F)
0.50	= 0 to 50 mV linear	
0.60	= 0 to 60 mV linear	
12.60	= 12 to 60 mV linear	

When the code of the input type is equal to E

J	= TC J	(0 to 1000 °C/ 32 to 1832 °F)
crAL	= TC K	(0 to 1370 °C/ 32 to 2498 °F)
S	= TC S	(0 to 1760 °C/ 32 to 3200 °F)
r	= TC R	(0 to 1760 °C/ 32 to 3200 °F)
t	= TC T	(0 to 400 °C/ 32 to 752 °F)
ir.J	= Exergen IRS J	(0 to 1000 °C/ 32 to 1832 °F)
ir.cA	= Exergen IRS K	(0 to 1370 °C/ 32 to 2498 °F)
Ptc	= PTC KTY81-121	(-55 to 150 °C/-67 to 302 °F)
ntc	= NTC 103-AT2	(-50 to 110 °C/-58 to 230 °F)
0.50	= 0 to 50 mV linear	
0.60	= 0 to 60 mV linear	
12.60	= 12 to 60 mV linear	

When the code of the input type is equal to I

0.20	= 0 to 20 mA linear
4.20	= 4 to 20 mA linear

When the code of the input type is equal to V

0.1	= 0 to 1 V linear
0.5	= 0 to 5 V linear
1.5	= 1 to 5 V linear
0.10	= 0 to 10 V linear
2.10	= 2 to 10 V linear

Note:
- When a TC input is selected and a decimal figure is programmed (see the next parameter) the maximum displayed value become 999.9 °C or 999.9 °F.
- Every change of the SEnS parameter setting will force the following change:
  [3] dP = 0
  [129] ES.L = -1999
  [130] ES.H = 9999

[3] dP - Decimal point position
Available: Always
Range:
When [2] SenS = Linear input: 0 to 3.
When [2] SenS different from linear input: 0 or 1
Notes: Every change of the dP parameter setting will produce:
1) a change of the parameters related with it (e.g. Alarm thresholds).
2) Peach hi and peack low memoryreset

[4] SSc – Initial scale read-out for linear inputs
Available: when a linear input is selected by [2] SenS.
Range: -1999 to 9999
Notes:
- It defines the value shown by the instrument when it measures the the minimum electrical value of the scale selected by [2] SenS parameter

- It allows the scaling of the analogue input to set the minimum displayed/measured value
  The instrument will show a measured value up to 5% less then SSc value and than it will show an underrange error.
- It is possible to set a initial scale read-out higher then the full scale read-out in order to obtain a reverse read-out scaling
  E.g. 0 mA = 0 mBar and 20 mA = - 1000 mBar (vacuum).

[5] FSc - Full scale read-out for linear input
Available: when a linear input is selected by [2] SenS.
Range: -1999 to 9999
Notes:
- It defines the value shown by the instrument when it measures the the maximum electrical value of the scale selected by [2] SenS parameter
- It allows the scaling of the analogue input to set the maximum displayed/measured value
  The instrument will show a measured value up to 5% higher than [5] FSc value and then it will show an overrange error.
- It is possible to set a full scale read-out lower than the initial scale read-out in order to obtain a reverse read-out scaling
  E.g. 0 mA = 0 mBar and 20 mA = - 1000 mBar (vacuum).

[6] 0.Pot - Offset value used to shift the zero of the readout.
Available: when a linear input is selected by [2] SenS parameter.
Range: from [4] SSc to [5] Fsc engineering units.

[7] unit - Engineering unit
Available: when a temperature sensor is selected by [2] SenS parameter.
Range:
°c = Centigrade
°F = Fahrenheit

[8] FiL - Digital filter on the measured value
Available: Always
Range: oFF (No filter) 0.1 to 20.0 s
Note: this is a first order digital filter applied on the measured value. For this reason it will affect the measured value but also the alarms behaviour.

[9] diF1 - Digital input 1 function
Available: when the instrument is equipped with digital inputs.
Range:
oFF = No function
AAC = Alarm Reset [status]
ASi = Alarm acknowledge (ACK) [status].
HoLd = Hold of the measured value [status].
r.Pic = Peacks reset [transition]
0.Pot = Start of the 0.Pot procedure. [transition]
r.PoP = Start of the 0.Pot procedure and Peacks reset [transition]
t.rHr = Timer Run/Hold/Reset [transition]
t.run = Timer Run [transition] a short closure allows to start timer execution.
t.rES = Timer rese [transition] a short closure allows to reset timer count.
t.rH = Timer run/hold [Status]
- Contact closure = timer RUN
- Contact opend = timer Hold

uP.du = Digital input 1 will work in parallel to the ⏶ button while digital input 2 will work in parallel to the ⏷ button.

[10] diF2 - Digital input 2 function
Available: when the instrument is equipped with digital inputs.
Range:
oFF = No function
AAC = Alarm Reset [status]
ASi = Alarm acknowledge (ACK) [status].
HoLd = Hold of the measured value [status].
r.Pic = Peacks reset [transition]
0.Pot = Start of the 0.Pot procedure. [transition]
r.PoP = Start of the 0.Pot procedure and Peacks reset [transition]
t.rHr = Timer Run/Hold/Reset [transition]
t.run = Timer Run [transition] a short closure allows to start timer execution.
t.rES = Timer reset [transition] a short closure allows to reset timer count.
t.rH = Timer run/hold [Status]
- Contact closure = timer RUN
- contact opend = timer Hold

uP.du = Digital input 1 will work in parallel to the ⏶ button while digital input 2 will work in parallel to the ⏷ button.

Notes about digital inputs :
2) When diF1 is equal to uP.du, diF2 setting is forced to uP.du and diF2 value and cannot perform another additional function.

] out group - Output parameters

[11] o1F - Out 1 function
Available: Always
Range:
nonE = Output not used. With this setting the status of the this output can be driven directly from serial link
AL = Alarm output
t.out = Timer output
t.HoF = Timer out - OFF in Hold
or.bo = Out-of-range or burn out indicator

P.FAL = Power failure indicator
bo.PF = Out-of-range, burn out and Power failure indicator.
diF.1 = The output repeats the digital input 1 status
diF.2 = The output repeats the digital input 2 status

Notes:

- When two or more outputs are programmed in the same way, these outputs will be driven in parallel.
- The power failure indicator will be reset when the instrument detect an alarm reset command by U key, digital input or serial link.

[12] o1.AL – Alarms linked up with the out 1

Available: when [11] o1F = AL

Range: 0 to 15 with the following rule.

+1 = Alarm 1
+2 = Alarm 2
+4 = Alarm 3
+8 = Alarm 4
+ 16 = Sensor break (burn out)

Example 1: Setting 3 (2+1) the output will be driven by the alarm 1 and 2 (OR condition).
Example 2: Setting 13 (8+4+1) the output will be driven by alarm 1 + alarm 3 + alarm 4.

[13] o1Ac – Output 1 action

Available: when [11] o1F is different from “nonE”

Range:

dir = Direct action
rEU = Reverse action
dir.r = Direct action with revers LED indication
rEU.r = Reverse action with reverse LED indication.

Notes:

- Direct action: the output repeats the status of the driven element.
  Example: the output is an alarm output with direct action. When the alarm is ON, the relay will be energized (logic output 1).
- Reverse action: the output status is the opposite of the status of the driven element.
  Example: the output is an alarm output with reverse action. When the alarm is OFF, the relay will be energized (logic output 1). This setting is usually named “fail-safe” and it is generally used in dangerous process in order to generate an alarm when the instrument power supply goes OFF or the internal watchdog starts.

[14] o2F - Out 2 function

Available: When the instrument has out 2 option.

Range:

nonE = Output not used. With this setting the status of the this output can be driven directly from serial link.
AL = Alarm output
t.out = Timer output
t.HoF = Timr out - OFF in Hold
or.bo = Out-of-range or burn out indicator
P.FAL = Power failure indicator
bo.PF = Out-of-range, burn out and Power failure indicator.
diF.1 = The output repeats the digital input 1 status
diF.2 = The output repeats the digital input 2 status

For other details see [11] O1F parameter

[15] o2.AL – Alarms linked up with Out 2

Available: when [14] o2F = AL

Range: 0 to 15 with the following rule.

+1 = Alarm 1
+2 = Alarm 2
+4 = Alarm 3
+8 = Alarm 4
+ 16 = Sensor break (burn out)

For more details see [13] o1.AL parameter

[16] o2Ac – Output 2 action

Available: when [14] o2F is different from “nonE”

Range:

dir = Direct action
rEU = Reverse action
dir.r = Direct action with revers LED indication
rEU.r = Reverse action with reverse LED indication.

For more details see [13] o1.Ac parameter.

[17] o3F - Out 3 function

Available: When the instrument has out 3 option

Range:

nonE = Output not used. With this setting the status of the this output can be driven directly from serial link.
AL = Alarm output
t.out = Timer output
t.HoF = Timr out - OFF in Hold
or.bo = Out-of-range or burn out indicator
P.FAL = Power failure indicator
bo.PF = Out-of-range, burn out and Power failure indicator.
diF.1 = The output repeates the digital input 1 status
diF.2 = The output repeates the digital input 2 status

For other details see [11] O1F parameter.

[18] o3.AL – Alarms linked up with Out 3

Available: when [17] o3F = AL

Range: 0 to 15 with the following rule.

+1 = Alarm 1
+2 = Alarm 2
+4 = Alarm 3
+8 = Alarm 4
+ 16 = Sensor break (burn out)

For more details see [13] o1.AL parameter

[19] o3Ac – Output 3 action

Available: when [17] o3F is different from “nonE”

Range:

dir = Direct action
rEU = Reverse action
dir.r = Direct action with revers LED indication
rEU.r = Reverse action with reverse LED indication.
For more details see [13] o1.Ac parameter.

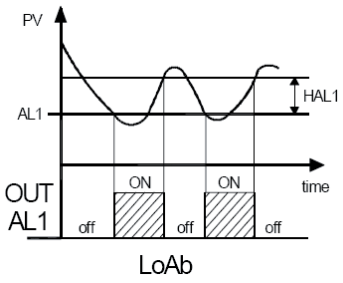
[20] o4F - Out 4 function
Available: When the instrument has out 4 option
Range:
nonE = Output not used. With this setting the status of the this output can be driven directly from serial link.
AL = Alarm output
t.out = Timer output
t.HoF = Timr out - OFF in Hold
or.bo = Out-of-range or burn out indicator
P.FAL = Power failure indicator
bo.PF = Out-of-range, burn out and Power failure indicator.
diF.1 = The output repeates the digital input 1 status
diF.2 = The output repeates the digital input 2 status
For other details see [11] O1F parameter.

[21] o4.AL – Alarms linked up with Out 4
Available: when [20] o4F = AL
Range: 0 to 15 with the following rule.
+1 = Alarm 1
+2 = Alarm 2
+4 = Alarm 3
+8 = Alarm 4
+ 16 = Sensor break (burn out)
For more details see [12] o1.AL parameter

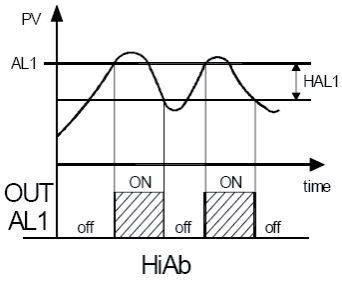
[22] o4Ac – Output 4 action
Available: when [20] o4F is different from “nonE”
Range:
dir = Direct action
rEU = Reverse action
dir.r = Direct action with revers LED indication
rEU.r = Reverse action with reverse LED indication.
For more details see [13] o1.Ac parameter.

] AL1 Group - Alarm 1 parameters

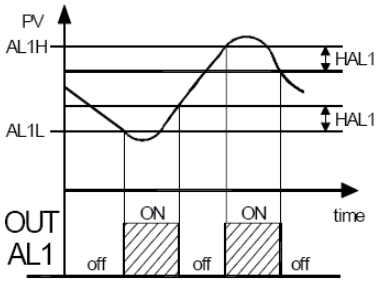
[23] AL1t - Alarm 1 type
Available: Always
Range:
nonE = Alarm not used
LoAb = Absolute low alarm
HiAb = Absolute high alarm
LHAb = Absolute band alarm
SE.br = Sensor break
- The (SE.br) sensor break alarm will be ON when the display shows ---- indication.



LoAb

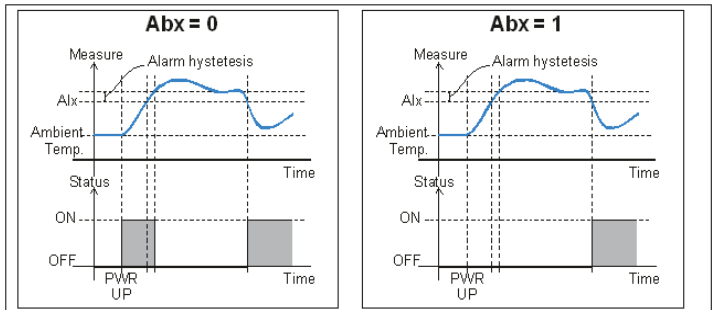


HiAb

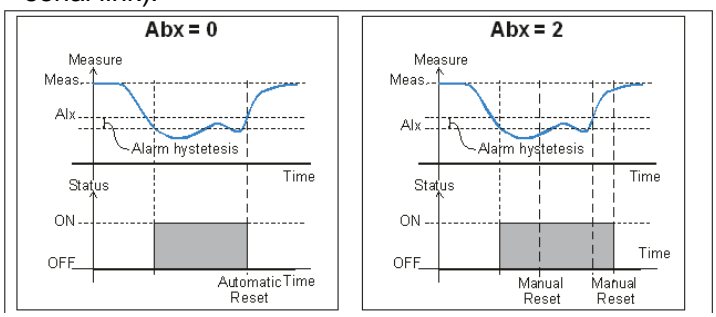


LHAb

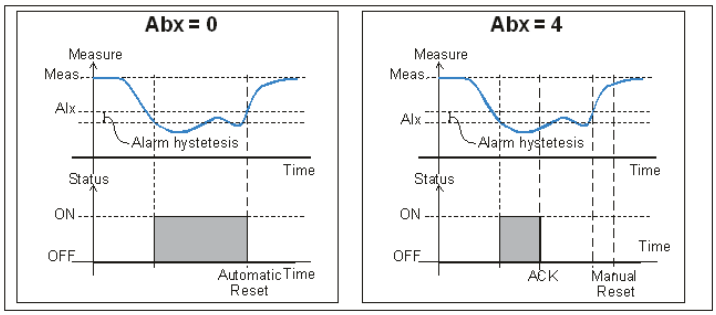
[24] Ab1 – Alarm 1 function
Available: when [24] AL1t is different from “nonE”
Range: 0 to 15 with the following rule:
+1 = Not active at power up.
+2 = Latched alarm (manual reset)
+4 = Acknowledgeable alarm
Example: setting Ab1 equal to 5 (1+4) the alarm 1 will be “not active at power up” and “Acknowledgeable”.
Notes:
- The “not active at power up” selection allows you to inhibit the alarm function at instrument power up. The alarm will be automatically enabled when the measured value reaches, for the first time, the alarm threshold plus or minus the hysteresis (in other words, when the initial alarm condition disappears).



- A “Latched alarm” (manual reset) is an alarm that will remain active even if the conditions that generated the alarm no longer persist. Alarm reset can be done only by an external command (U button, digital inputs or serial link).



- An “Acknowledgeable” alarm is an alarm that can be reset even if the conditions that generated the alarm are still present. Alarm acknowledge can be done only by an external command (U button, digital inputs or serial link).



- The instrument does not memorize in EEPROM the alarm status. For this reason, the alarm status will be lost if a power down occurs.

[25] AL1L - For High and low alarms, it is the low limit of the AL1 threshold
- For band alarm, it is low alarm threshold.
Available: when [23] AL1t is different from “nonE” or [23] AL1t is different from “SE.br”.
Range: from - 1999 to [26] AL1H engineering units.

[26] AL1H - For High and low alarms, it is the high limit of the AL1 threshold
- For band alarm, it is high alarm threshold.
Available: when [23] AL1t is different from “nonE” or [23] AL1t is different from “SE.br”.
Range: from [25] AL1L to 9999 engineering units.

[27] AL1- Alarm 1 threshold
Available: when
- [23] AL1t = LoAb Absolute low alarm
- [23] AL1t = HiAb Absolute high alarm

Range: from [25] AL1L to [26] AL1H engineering units.

[28] HAL1 - Alarm 1 hysteresis
Available: when [23] AL1t is different from “nonE” or [23] AL1t is different from “SE.br”.
Range: from 1 to 9999 engineering units
Notes:
- The hysteresis value is the difference between the Alarm threshold value and the point where the Alarm automatically resets.
- If the “reset point” (alarm threshold + or - hysteresis) is out of the measuring range, the instrument will not be able to reset tha alarm. The alarm reset can be done only turning the power OFF and than turning the power ON when the alarm condition is no more present.
- For band alarm, the alarm hysteresis operate on both threshold.

[29] AL1d – Alarm 1 delay
Available: when [23] AL1t different form “nonE”
Range: from oFF (0) to 9999 seconds
Note: The alarm goes ON only when the alarm condition persists for a time longer than [29] AL1d time but the reset is immediate.

[30] AL1o - Alarm 1 enabling during out of range indications
Available: when [24] AL1t different from “nonE”
Range:
No = Alarm NOT running when out-of-range conditions are detected.
YES = Alarm enabled when out-of-range conditions are detected.

] AL2 Group - Alarm 2 parameters

[31] AL2t - Alarm 2 type
Available: Aways
Range:
nonE = Alarm not used
LoAb = Absolute low alarm
HiAb = Absolute high alarm
LHAb = Absolute band alarm
SE.br = Sensor break

[32] Ab2 – Alarm 2 function
Available: when [31] AL2t is different from “nonE”
Range: 0 to 15 with the following rule:
+1 = Not active at power up.
+2 = Latched alarm (manual reset)
+4 = Acknowledgeable alarm
Example: setting Ab2 equal to 5 (1+4) the alarm 2 will be “not active at power up” and “Acknowledgeable”.
Notes: For other details see [24] Ab1 parameter.

[33] AL2L - For High and low alarms, it is the low limit of the AL2 threshold
- For band alarm, it is low alarm threshold.
Available: when [31] AL2t is different from “nonE” or [31] AL2t is different from “SE.br”.
Range: from - 1999 to [34] AL2H engineering units.

[34] AL2H - For High and low alarms, it is the high limit of the AL2 threshold
- For band alarm, it is high alarm threshold.
Available: when [31] AL2t is different from “nonE” or [31] AL2t is different from “SE.br”.
Range: from [33] AL2L to 9999 engineering units.

[35] AL2 - Alarm 2 threshold
Available: when
- [31] AL2t = LoAb Absolute low alarm
- [31] AL2t = HiAb Absolute high alarm

Range: from [33] AL2L to [34] AL2H engineering units.

[36] HAL2 - Alarm 2 hysteresis
Available: when [31] AL2t is different from “nonE” or [31] AL2t is different from “SE.br”.
Range: from 1 to 9999 engineering units
Notes: for other details see [28] HAL1 parameter

[37] AL2d - Alarm 2 delay
Available: when [31] AL2t different form “nonE”
Range: from oFF (0) to 9999 seconds
Note: The alarm goes ON only when the alarm condition persist for a time longer than [37] AL2d time but the reset is immediate.

[38] AL2o - Alarm 2 enabling during out of range indications
Available: when [31] AL2t different from “nonE”
Range:
No = Alarm NOT running when out-of-range conditions are detected.
YES = Alarm enabled when out-of-range conditions are detected.

] AL3 Group - Alarm 3 parameters

[39] AL3t - Alarm 3 type
Available: Always
Range:
nonE = Alarm not used
LoAb = Absolute low alarm
HiAb = Absolute high alarm
LHAb = Absolute band alarm
SE.br = Sensor break

[40] Ab3 – Alarm 3 function
Available: when [39] AL3t is different from “nonE”
Range: 0 to 15 with the following rule:
+1 = Not active at power up.
+2 = Latched alarm (manual reset)
+4 = Acknowledgeable alarm
Example: setting Ab3 equal to 5 (1+4) the alarm 3 will be “not active at power up” and “Acknowledgeable”.
Notes: For other details see [24] Ab1 parameter.

[41] AL3L - For High and low alarms, it is the low limit of the AL3 threshold
- For band alarm, it is low alarm threshold.
Available: when [39] AL3t is different from “nonE” or [39] AL3t is different from “SE.br”.
Range: from - 1999 to [42] AL3H engineering units.

[42] AL3H - For High and low alarms, it is the high limit of the AL3 threshold
- For band alarm, it is high alarm threshold.
Available: when [30] AL3t is different from “nonE” or [39] AL3t is different from “SE.br”.
Range: from [41] AL3L to 9999 engineering units.

[43] AL3 - Alarm 3 threshold
Available: when
- [39] AL3t = LoAb Absolute low alarm
- [39] AL3t = HiAb Absolute high alarm
Range: from [41] AL3L to [42] AL3H engineering units.

[44] HAL3 - Alarm 3 hysteresis
Available: when [39] AL3t is different to “nonE”
Range: from 1 to 9999 engineering units
Notes: for other details see [28] HAL1 parameter

[45] AL3d – Alarm 3 delay
Available: when [39] AL3t different form “nonE”
Range: from oFF (0) to 9999 seconds
Note: The alarm goes ON only when the alarm condition persist for a time longer than [45] AL3d time but the reset is immediate.

[46] AL3o - Alarm 3 enabling during out of range indications
Available: when [39] AL3t different from “nonE”
Range:
No = Alarm NOT running when out-of-range conditions are detected.
YES = Alarm enabled when out-of-range conditions are detected.

] AL4 Group - Alarm 4 parameters

[47] AL4t - Alarm 4 type
Available: Always
Range:
nonE = Alarm not used
LoAb = Absolute low alarm
HiAb = Absolute high alarm
LHAb = Absolute band alarm
SE.br = Sensor break

[48] Ab4 – Alarm 4 function
Available: when [47] AL3t is different from “nonE”
Range: 0 to 15 with the following rule:
+1 = Not active at power up.
+2 = Latched alarm (manual reset)
+4 = Acknowledgeable alarm
Example: setting Ab4 equal to 5 (1+4) the alarm 3 will be “not active at power up” and “Acknowledgeable”.
Notes: For other details see [24] Ab1 parameter.

[49] AL4L - For High and low alarms, it is the low limit of the AL4 threshold
- For band alarm, it is low alarm threshold.
Available: when [47] AL4t is different from “nonE” or [47] AL4t is different from “SE.br”.
Range: from - 1999 to [50] AL4H engineering units.

[50] AL4H - For High and low alarms, it is the high limit of the AL4 threshold
- For band alarm, it is high alarm threshold.
Available: when [47] AL4t is different from “nonE” or [47] AL4t is different from “SE.br”.
Range: from [49] AL4L to 9999 engineering units.

[51] AL4 - Alarm 4 threshold
Available: when
- [47] AL4t = LoAb Absolute low alarm
- [47] AL4t = HiAb Absolute high alarm

Range: from [49] AL4L to [50] AL4H engineering units.

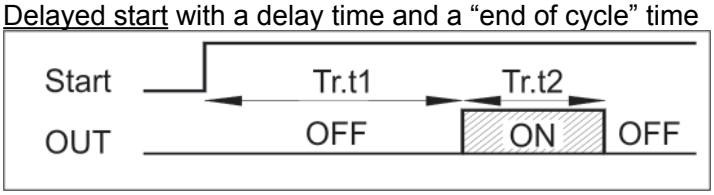
[52] HAL4 - Alarm 4 hysteresis
Available: when [47] AL4t is different to “nonE”
Range: from 1 to 9999 engineering units
Notes: for other details see [28] HAL1 parameter

[53] AL4d – Alarm 4 delay
Available: when [47] AL4t different from “nonE”
Range: from oFF (0) to 9999 seconds
Note: The alarm goes ON only when the alarm condition persist for a time longer than [53] AL4d time but the reset is immediate.

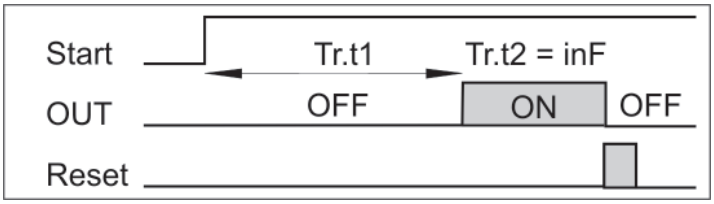
[54] AL4o - Alarm 4 enabling during out of range indications
Available: when [47] AL4t different from “nonE”
Range:
No = Alarm NOT running when out-of-range conditions are detected.
YES = Alarm enabled when out-of-range conditions are detected.

] tin Group - Timer function parameters

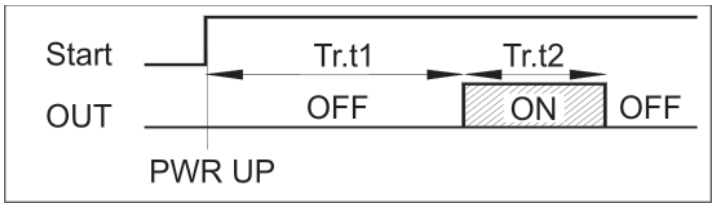
Five timer types are available:
Delayed start with a delay time and a “end of cycle” time



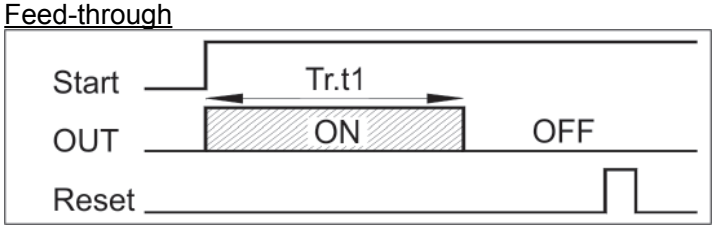
- Setting tr.t2 = Inf the timer out remains in ON condition until a reset command is detected.



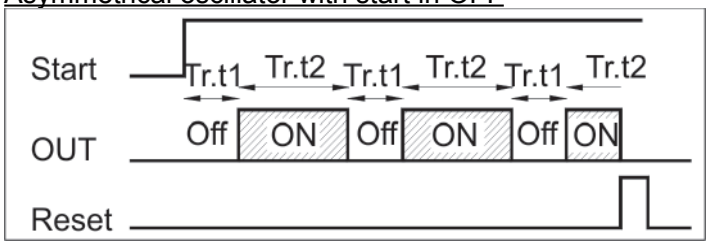
Delayed start at power up with a delay time and a “end of cycle” time



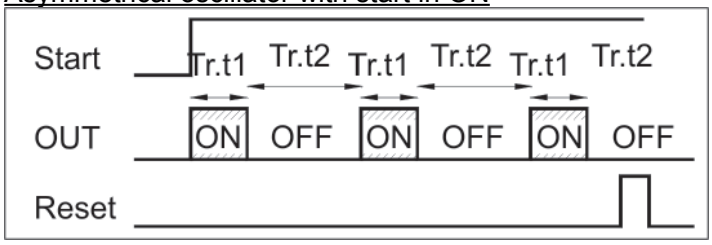
Feed-through



Asymmetrical oscillator with start in OFF



Asymmetrical oscillator with start in ON



NOTES:
- The instrument can receive the start, hold and reset commands by U button, by logic inputs and/or by serial link
- An HOLD command can suspend the time count.

[55] tr.F= Independent timer function
Available: Always
Range:
nonE = Timer not used
i.d.A = Delayed start timer
i.uP.d = Delayed start at power up
i.d.d = Feed-through timer
i.P.L = Asymmetrical oscillator with start in OFF
i.L.P = Asymmetrical oscillator with start in ON

[56] tr.u – Engineering unit of the time
Available: when [55] tr.F is different from nonE
Range:
hh.nn = Hours and minutes
nn.SS = Minutes and seconds
SSS.d = Seconds and tenth of seconds
Note: when the timer is running, you can see the value of this parameter but you can NOT modify it.

[57] tr.t1 – Time 1
Available: when [55] tr.F is different from nonE

Range:
- when [56] tr.u = hh.nn from 00.01 to 99.59
- when [56] tr.u = nn.SS from 00.01 to 99.59
- when [56] tr.u = SSS.d from 000.1 to 995.9

[58] tr.t2 – Time 2
Available: when [55] tr.F is different from nonE
Range:
- when [56] tr.u = hh.nn from 00.01 to 99.59 + inF
- when [56] tr.u = nn.SS from 00.01 to 99.59 + inF
- when [56] tr.u = SSS.d from 000.1 to 995.9 + inF

Note: Setting [58] tr.t2 = inF, the second time can be stopped by a reset command only.

[59] tr.St – Timer status
Available: when [55] tr.F is different from nonE
Range:
- run = Timer Run
- HoLd = Timer Hold
- rES = Timer reset

Note: this parameter allows to manage timer execution by a parameter (without digital inputs or U button).

] PAn group - Operator HMI

[60] PAS2 – Level 2 password: Limited access level
Available: Always
Range:
- oFF = Level 2 not protected by password (as level 1 = Operator level).
- from 1 to 999.

[61] PAS3 – Level 3 password : configuration level
Available: Always
Range: from 3 to 999.
Note: Setting [60] PAS2 equal to [61] PAS3, the level 2 will be masked.

[62] uSrb - U button function during RUN TIME
Available: ever
Range:
- nonE = No function
- AAc = Alarm reset
- ASi = Alarm acknowledge
- HoLd = Hold of the measured value
- d.Pic = The display will shows the peacks.
- r.Pic = Peaks reset
- 0.Pot = Start the 0.Pot routine
- r.Pot = 0.Pot routine + Peacks reset
- t.Pot = Input calibration with self-learning procedure
- Str.t = Timer run/hold/reset (see note below).

NOTES:
- When “Timer run/hold/reset” is selected, a short press starts/stops(hold) timer count while a long press (longer than 10 second) resets the timer.

[63] diSP – Display management
Available: Always
Range:
- nonE = Measured value
- AL1 = Alarm 1 threshold
- AL2 = Alarm 2 threshold
- AL3 = Alarm 3 threshold
- AL4 = Alarm 4 threshold
- ti.uP = When the timer is running, the display will show the timer counting up. At the end of the counting, the instrument will show “t.End” messages alternately with the measured value.
- ti.du = When the timer is running, the display will show the timer counting down. At the end of the counting, the instrument will show “t.End” messages alternately with the measured value.

[64] Edit - Alarm editing enabling
Available: Always
Range:
- AE Alarm thresholds can be modified
- AnE Alarm threshold can NOT be modified

] Ser group - Serial link parameter

[65] Add - Instrument address
Available: Always
Range:
- oFF = Serial interface not used
- from 1 to 254

[66] bAud - Baud rate
Available: when [65] Add different from oFF
Range:
- 1200 = 1200 baud
- 2400 = 2400 baud
- 9600 = 9600 baud
- 19.2 = 19200 baud
- 38.4 = 38400 baud

] COn Group - worked time count

[67] Co.tY – Measurement type
Available: Always
Range:
- oFF = Not used
- dAY = Total worked days with threshold. It is the number of hours that the instrument is turned ON divided for 24.
- Hour = Total worked hours with threshold. It is the number of hours that the instrument is turned ON.

Note:

It is an internal counter for machine service inspection intervals. It works every time the instrument is turned ON. When the count reaches the programmed threshold, the display shows alternately the standard display and the message “r. iSP” (requested Inspection). The count reset can be done only by changing the threshold value.

[68] h.Job – Threshold of the working period
Available: when [67] Co.tY = tot.d or [67] Co.tY = tot.H
Range:
- oFF = threshold not used
- from 1 to 999 days or
- from 1 to 999 hours.

] CAL group - user calibration group

This function allows to calibrate the complete measuring chain and to compensate the errors due to:
- Sensor location
- Sensor class (sensor errors)
- Instrument accuracy

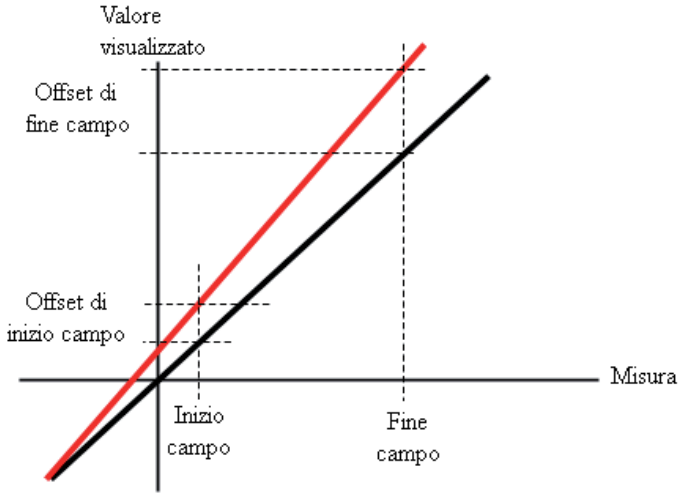
[69] AL.P – Adjust Low Point
Available: Always
Range: from -1999 to (AH.P - 10) engineering units
Note: the minimum differance between AL.P and AH.P is equal to 10 Engi.neering Units.

[70] ALo – Adjust Low Offset
Available: Always
Range: from -300 to 300 Engineering Units

[71] AH.P – Adjust High Point
Available: Always
Range: from (AL.P + 10) to 9999 engineering units
Note: the minimum differance between AL.P and AH.P is equal to 10 Engineering Units

[72] AH.o – Adjust High Offset
Available: Always
Range: from -300 to 300 Engineering Units

Example: Environmental chamber with an operative range from 10 to + 100 °C.
1) Insert in the chamber a reference sensor connected with a reference instrument (usually a calibrator).
2) Start the control of the instrument, and set a set point equal to the minimum value of the operative range (e.g. 10 °C)
   When the temperature in the chamber is steady, take note of the themperature measured by the reference system (e.g. 9 °C).
3) Set [69] AL.P = 10 (low working point) and [70] ALo =-1 (it is the difference between the reading of the instrument and the reading of the reference system).
   Note that after this set the measured value of the instrument is equal to the measured value of the reference system.
4) Set a set point equal to the maximum value of the operative range (e.g. 100 °C). When the temperature in the chamber is steady, take note of the themperature measured by the reference system (e.g. 98 °C).
5) Set [71] AH.P = 100 (low working point) and [72] ALo =-2 (it is the difference between the reading of the instruent and the reading of the reference system).
   Note that after this set the measured value of the instrument is equal to the measured value of the reference system.



The most important step of the configuration procedure is completed.
In order to exit from configuration parameter procedure, proceed as follows:
- Push U button.
- Push U button for more than 10 seconds
- The instrument will come back to the “standard display”.

5. - PARAMETERS PROMOTION

Another important step of the instrument configuration is due to the possibility to create a custom HMI (interface) in order to make the instrument easy to use for the operator and comfortable for the assistance.
By a special procedure, named promotion, the OEM can create two parameter subsets.
The first one is the “limited access” level.
This subset is protected by the password programmed by [60] PAS2 parameter.
The last subset is the “Operator” set (Level1).
This level si NOT password protected.
Notes:
- The “limited access” parameter are collected in a list.
- The sequence of the “limited access” parameters is programmable and can be made according to your needs
- The parameter sequence of the operator level is the same programmed for “limited access” level but only specified

parameters can be displayed and modified. This set must be create according to your requirements

5.1 - PARAMETERS PRMOTION PROCEDURE

The limited access parameter set is a list, so that, before to start promotion procedure, we suggest to operate as follows:

1) Prepare the exact parameter list you want to make accessible for limited access.
2) Number the desired parameters in the same sequence you want to have in the limited access.
3) Define which of the selected parameter will be available in Operator level also.

Example:
I would like to obtain the following limited access list:

- AL1 - Alarm 1 threshold
- AL3 - Alarm 2 threshold
- HAL4 -Histeresys of the alarm 4

But I want that the operator to be able to change AL3 threshold only.
In this case the promotion will be the following:

Param.	Promotion	Limited Access	Operator
- AL1 -	A 5	AL1	
- AL3 -	o 6	AL2	AL2
- Pb -	A 7	HAL4	

Now, proceed as follows:

1) Push the P button for more than 3 seconds.
2) The display will show alternately “PASS” and “0”.
3) By ▲ and ▼ button set a password equal to - 81.
4) Push P button.
   The instrument will show the acronym of the first configuration parameter group “inP”.
5) By U button select the group of the first parameter of your list.
6) By P button select the first parameter of your list.
7) The instrument will show alternately the acronym of the parameter and his current promotion level.
   The promotion level is defined by a letter followed by a number.
   The letter can be:
   – “c”: it shows that this parameter is NOT promoted and it is present only in configuration.
     In this case the number is forced to zero.
   – “A”: it shows that this parameter has been promoted to the limited access level.
     The number will show the position in the limited access list.
   – “o”: it shows that the parameter has been promoted to the Operator level.
     The number will show the position in the limited access list.
8) By ▲ and ▼ button assign to this parameter the desired position.
   Note: setting a value different from 0 the letter “c” will change automatically to “A” and the parameter is automatically promoted to the limited access level.
9) In order to modify the level from limited access to operator and vice versa, push U button and, maintaining the pressure, push Up button.
   The letter will change from “A” to “o” and vice versa.
10) Select the second parameter that you want to add to the “limited access” level and repeat step 6, 7 and 8.
11) Repeat step 6, 7, 8 until the list has been completed.
12) When you need to exit from promotion procedure, push U button and maintain the pressure for more than 10 seconds.
    The instrument will show the “standard display”.

NOTE: when you set the some number to two parameter, the instrument will use only the last programmed parameter.

6. - OPERATIVE MODES

As we said at paragraph 4.1, when the instrument is powered, it starts immediately to work according to the memorized parameter value.

6.1 - HOW TO ENTER INTO THE “OPERATOR LEVEL”

The instrument is showing the “standard display”.

1) Press the P button
2) The instrument will show alternately the acronym of the first parameter promoted to this level and its value.
3) By ▲ and ▼ button assign to this parameter the desired value.
4) Press the P button in order to memorize the new value and go to the next parameter.
5) When you want to come back to the “standard display” push the U button for more than 5 seconds.

NOTE: the parameter modification of the Operator level is subject to a time out. If no button is pressed for more than 10 seconds, the instrument goes back to the “standard display” and the new value of the last selected parameter will be lost.

6.2 - HOW TO ENTER INTO THE “LIMITED ACCESS LEVEL”

The instrument is showing the “standard display”.

1) Press the P button for more than 5 seconds
2) The display will show alternately “PASS” and “0”.
3) By ▲ and ▼ button set the value assigned to [114] PAS2 (Level 2 password).

NOTES:

a) The factory default password for configuration parameters is equal to 20.
b) All parameter modification are protected by a time out. If no button is pressed for more than 10 second the instrument comes automatically back to the Standard display, the new value of the last selected parameter is lost and the parameter modification procedure is closed.
   When you desire to remove the time out (e.g. for

the first configuration of an instrument) you can use a password equal to 1000 plus the programmed password (e.g. 1000 + 20 [default] = 1020).
It is always possible to manually End the parameter configuration procedure (see below).

4) Push P button.
5) The instrument will show alternately the acronym of the first parameter promoted to this level and its value.
6) By ▲ and ▼ button assign to this parameter the desired value.
7) Press the P button in order to memorize the new value and go to the next parameter.
8) When you want to come back to the “standard display” push the U button for more than 5 seconds.

6.3 - HOW TO SEE BUT NOT MODIFY THE “LIMITED ACCESS PARAMETERS”

Sometime it is necessary to give to the operator the possibility to see the value assigned to the parameter promoted in the Limited Access level but it is important that all changes are made by autorized personnel only.
In this cases, proceed as follows:

1) Press the P button for more than 5 seconds
2) The display will show alternately “PASS” and “0”.
3) By ▲ and ▼ button set the value -181.
4) Push P button.
5) The instrument will show alternately the acronym of the first parameter promoted to the level 2 and its value.
6) Using P button it is possible to see the value assigned to all parameter present in level 2 but it will not be possible to modify it.
7) It is possible to come back to the “standard display” by pushing the U button for more than 3 seconds or by pushing no pushbutton for more than 10 seconds.

6.4.1 Keyboard function when the instrument is in display mode

U — It will perform the action programmed by [116] uSrb (U button function during RUN TIME) parameter.

P — It allows entry into parameter modification procedures.

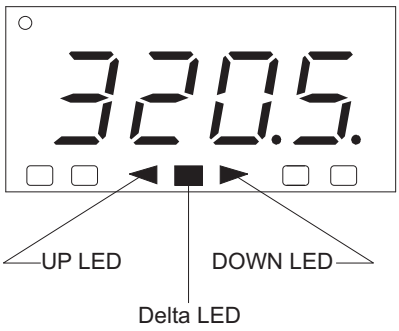
▲ — It allows you to start the “Direct set point modification” function (see below).

▼ — it allows you to display the “additional informations” (see below).

6.4.2 - Additional informations

This instrument is able to show you some additional informations that can help you to manage your system.
The additional information is related to how the instrument is programmed, hence in many cases, only part of this information is available.

1) When the instrument is showing the “standard display” push ▲ button.
The display will show the maximum measured value and turn ON the “UP” LED



2) Push ▲ button again.
The display will show the minimum measured value and turn ON the “down” LED
3) Push ▲ button again.
The display will show the differences between the maximum and the minimum measured value and turn ON the “delta” LED.
2) Push ▲ button again.
The display will show
- “h” followd by the worked hours or
- “d” followed by the worked days
according to the [67] co.tY parameter setting.

6.4.3 0.Pot Procedure

This function allows to allign the zero of the readout scaling (defined by [4] SSc and [5] FSc parameters) with the current measured value.
An example will help us to show the result.
Input type: 0 to 50 mV
[4] SSc = 0
[5] FSc = 100 (e.g. %)
[65] uSrb = 0.Pot
Now, the current input is equal to 30 mV and the current readout is equal to 60 (%)
Push the U button.
The display will shows zero and the new readout range becomes from -60 to +40.

7. - ERROR MESSAGES

7.1 - OUT OF RANGE SIGNALS

The display shows the OVER-RANGE and UNDER-RANGE conditions with the following indications:

Over-range

Under-range

The sensor break will be signalled as an out of range

NOTE: When an over-range or an under-range is detected, the alarms operate as in presence of the maximum or the minimum measurable value respectively.

To check the out of span Error condition, proceed as follows:

1) Check the input signal source and the connecting line.
2) Make sure that the input signal is in accordance with the instrument configuration.
   Otherwise, modify the input configuration (see section 4).
3) If no error is detected, send the instrument to your supplier to be checked.

7.2 - LIST OF POSSIBLE ERRORS

ErEP- Possible problem of the instrument memory.
The messages desappears automatically.
When the error continues, send the instrument to your supplier.

8. - GENERAL NOTES

8.1 - PROPER USE

Every possible use not described in this manual must be consider as a improper use.

This instrument is in compliance with EN 61010-1 “Safety requirements for electrical equipment for measurement, control and laboratory use”; for this reason it coud not be used as a safety equipment.

Whenever a failure or a malfunction of the control device may cause dangerous situations for persons, thing or animals, please remember that the plant has to be equipped with additional safety devices.

Tecnologic S.p.A. and its legal representatives do not assume any responsibility for any damage to people, things or animals deriving from violation, wrong or improper use or in any case not in compliance with the instrument’s features.

8.2 - GUARANTEE AND REPAIRS

This product is under warranty against manufacturing defects or faulty materials that are found within 12 months from delivery date.

The guarantee is limited to repairs or to the replacement of the instrument.

The tampering of the instrument or an improper use of the product will bring about the immediate withdrawal of the warranty’s effects.

In the event of a faulty instrument, either within the period of warrantee, or further to its expiry, please contact our sales department to obtain authorisation for sending the instrument to our company.

The faulty product must be shipped to Tecnologic with a detailed description of the faults found, without any fees or charge for Tecnologic, except in the event of alternative agreements.

8.3 - MAINTENANCE

This instrument does not requires periodical recalibration and it have no consumable parts so that no particular maintenance is required.

Some times, a cleaning action is suggestable.

1) SWITCH THE EQUIPMENT OFF (power supply, relay out, etc.).
2) Take the instrument out of its case.
3) Using a vacuum cleaner or a compressed air jet (max. 3 kg/cm^2) remove all deposits of dust and dirt which may be present on the louvers and on the internal circuits being careful not to damage the electronic components.
4) To clean external plastic or rubber parts use only a cloth moistened with:
   - Ethyl Alcohol (pure or denatured) [C2H5OH] or
   - Isopropyl Alcohol (pure or denatured) [(CH3)2CHOH] or
   - Water (H2O).
5) Make sure that there are no loose terminals.
6) Before putting the instrument back in its case, make sure that it is perfectly dry.
7) Put the instrument back and turn it ON.

8.4 - ACCESSORIES

The instrument has a lateral socket into which a special tool can be inserted. This tool, named A01, allows:

- To memorize a complete instrument configuration and to use it for other instruments.
- To transfer a complete instrument configuration to a PC or from a PC to an instrument
- To transfer from a PC to an instrument a complete instrument configuration
- To transfer a configuration from an A03 to another one.
- To test serial interface of the instruments and to help the OEM during machine start up.

TECNOLOGIC S.p.A.

VIA INDIPENDENZA 56
27029 VIGEVANO (PV) ITALY
TEL.: +39 0381 69871
FAX: +39 0381 698730
internet : http:\\www.tecnologic.it
e-mail: info@tecnologic.it