PIXSYS
elettronica

DRR 245

- Regolatore
- Controller

Manuale Installatore
User manual

Pay attention at the section marked with this symbol

Presta attenzione alla sezione contrassegnata da questo simbolo

Sommario

Sommaire

1 Introduction

Thank you for choosing a Pixsys controller.
Controller DRR245 is specifically conceived for application on control panels with DIN rail mounting.
Pixsys makes available in a single device all the options relevant to sensor input and actuators command, in addition to the extended power range 24…230 Vac/Vdc. With 18 sensors to select and outputs configurable as relay, SSR command, 4…20 mA and 0…10 Volt, the user or retailer can reduce warehouse stock by rationalising investment and device availability.
The series is equipped with serial communication RS485 Modbus RTU and with a loading control function via the amperometric transformer. The configuration is further simplified by the Memory cards which are equipped with internal battery and therefore don't require cabling to power the controller.

2 Model identification

Power supply 24…230 Vac/Vdc +/-15% 50/60 Hz – 5,5 VA	
DRR245-21-ABC-T	2 Relays 5 A + 1 Ssr/V/mA + RS485 + T.A.[1]

[1] Input T.A. for Loop Break Alarm.

3 Technical data

3.1 General data

Displays	4 0,40 inch displays 4 0,30 inch displays
Operating temperature	Temperature 0-45 °C Humidity 35..95 uR%
Sealing	IP65 front panel IP20 casing and terminals
Material	PC ABS UL94VO self-exstinguishing
Weight	165 g

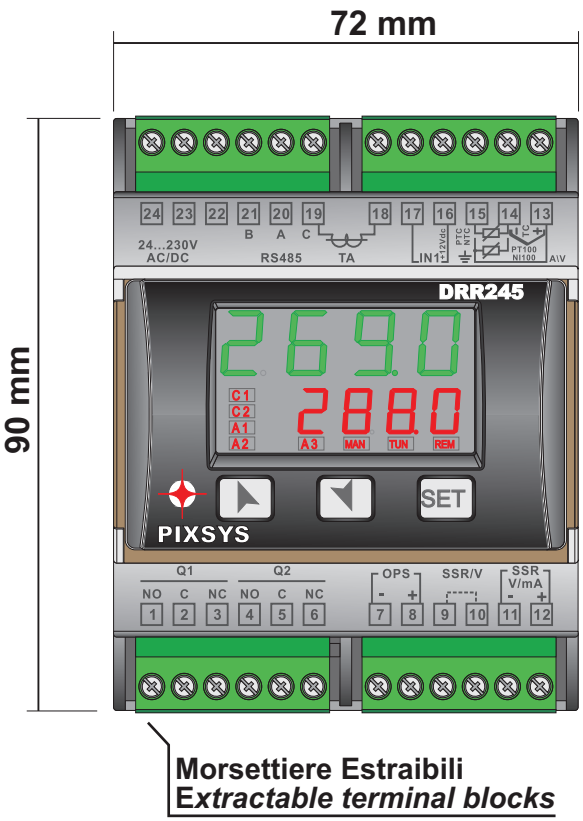
3.2 Hardware data

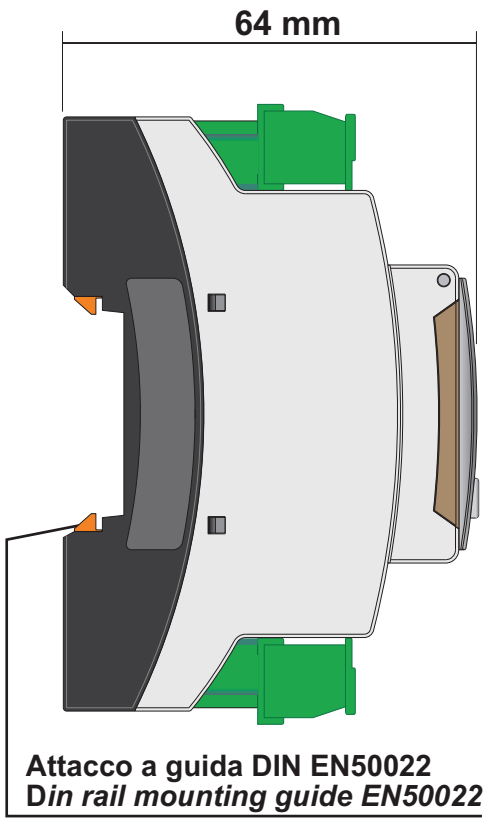
Analog input	**AN1:** configurable via software. **Input:** thermocouple type K, S, R, J. Automatic compensation of cold junction from from 0 °C to 50 °C. **Thermoresistance:** PT100, PT500, PT1000, Ni100, PTC1K, NTC10K (β 3435K) **Linear:** 0-10 V, 0-20 or 4-20 mA, 0-40 mV. **Amperometric transformer T.A.:** 50 mA, 1024 points. **Potentiometers:** 6 KΩ, 150 KΩ.	Tolerance (25 °C) +/-0.2% ±1 digit for thermocouple input, thermo resistane and V / mA. Cold junction accuracy 0.1 °C/°C. **Impedance:** **0-10 V:** Ri>110 KΩ **0-20 mA:** Ri<5 Ω **4-20 mA:** Ri<5 Ω **0-40 mV:** Ri>1 MΩ
Relay outputs	**2** relays. Configurable for command or alarm.	Contacts 5 A / 250 V~. Resistive loads.
SSR/V/mA output	**1** linear 0/4…20 mA / SSR/0…10 Volt Configurable as command or retransmission of setpoint / process.	Configurable: • SSR 12 V, 30 mA • 0-10 V (9500 points); • 0-20 mA (7500 points); • 4-20 mA (6000 points).

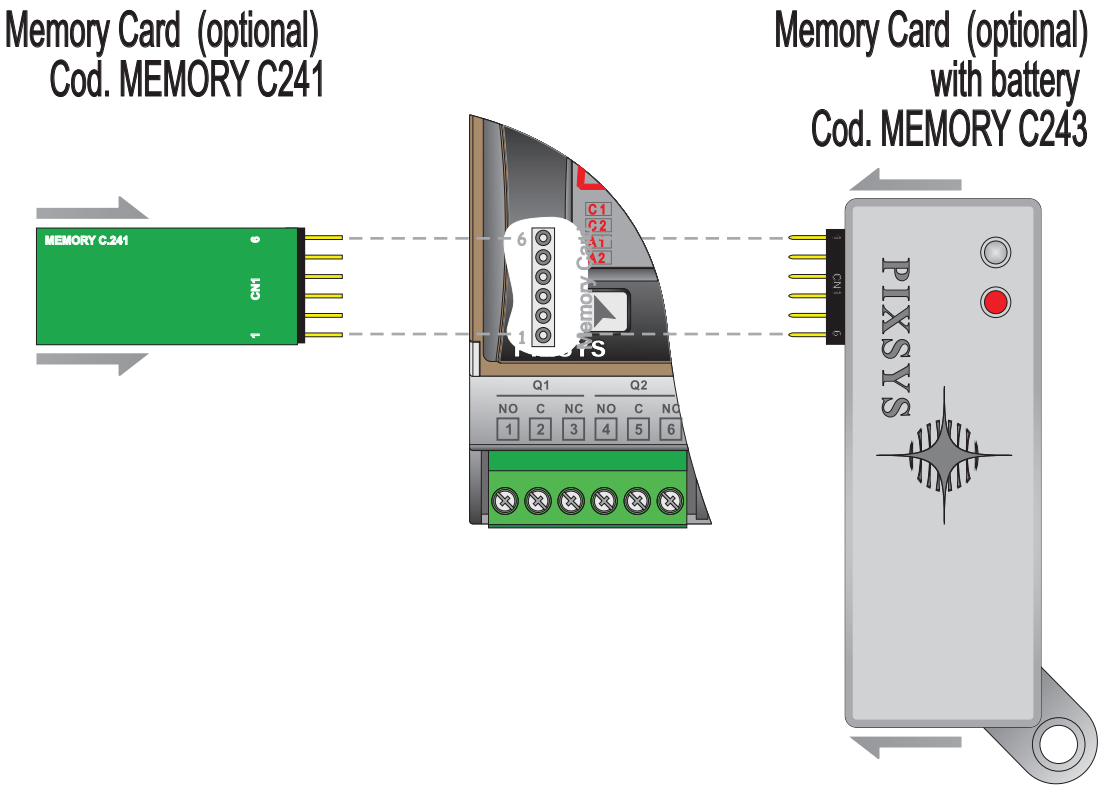
3.3 Software data

Regulation algorithms	ON - OFF with hysteresis. P, P.I., P.I.D., P.D. with proportional time.
Proportional band	0...9999 °C o °F
Integral time	0,0...999,9 sec. (0 excludes integral function)
Derivative time	0,0...999,9 sec. (0 excludes derivative function)
Controller functions	Manual or automatic Tuning, configurable alarms, protection of command and alarm setpoints, activation of functions via digital input, preset cycle with Start / Stop.

4 Dimensions and installation







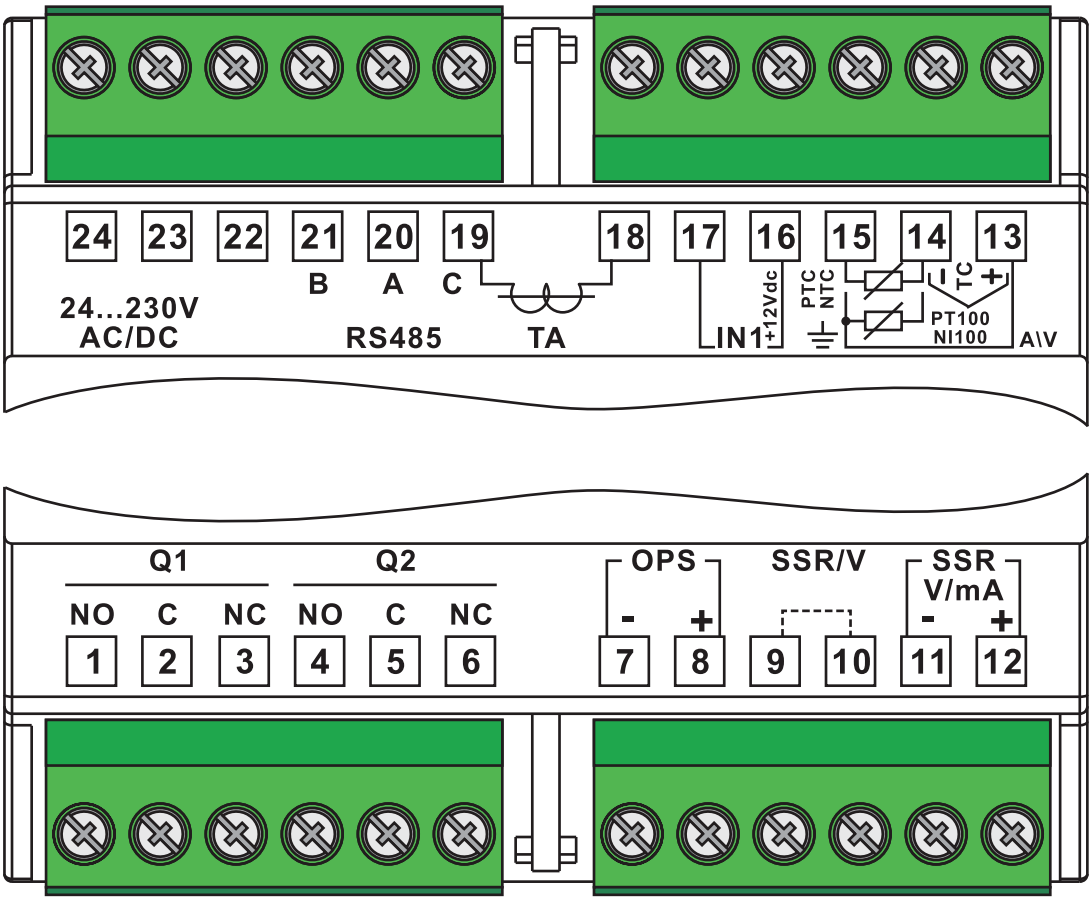
5 Electrical wirings

WARNING

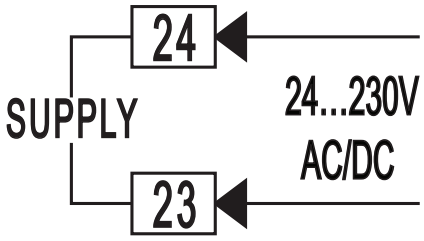
Although this controller was designed to resist noises in industrial environments, pease notice following safety guidelines:

- Separate the feeder line from the power lines.
- Avoid placing near units with remote control switches, electromagnetic contactors, high powered motors and in all instances use specific filters.
- Avoid placing near power units, particularly if phase controlled.

5.1 Wiring diagram

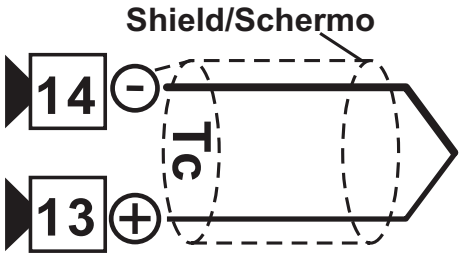


Power supply



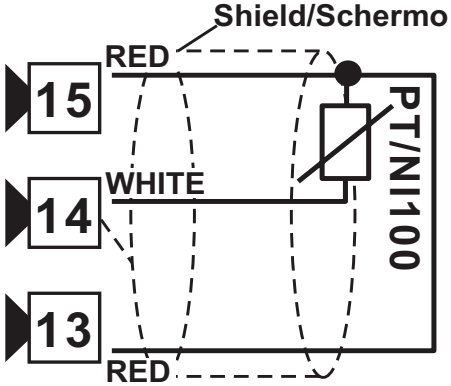
Switching power supply with extended range 24…230 Vac/dc ±15% 50/60 Hz – 5,5 VA (with galvanic isolation).

Analog input AN1



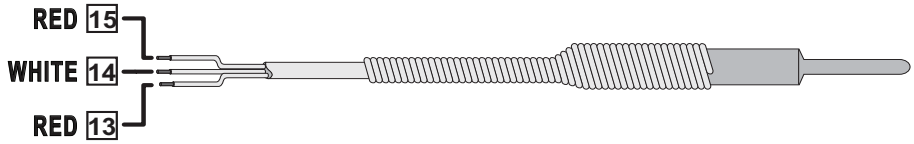
For thermocouples K, S, R, J.

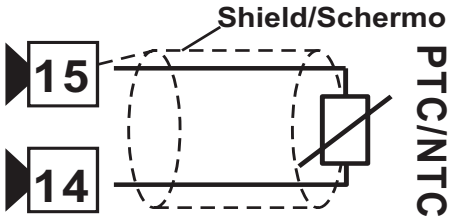
- Comply with polarity.
- For possible extensions, use a compensated wire and terminals suitable for the thermocouples used (compensated).
- When shielded cable is used, it should be grounded at one side only.



For thermoresistances PT100, NI100.

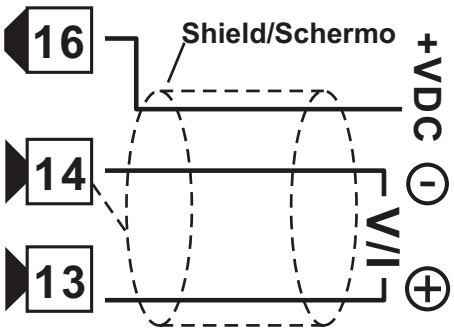
- For the three-wire connection use wires with the same section.
- For the two-wire connection short-circuit terminals 13 and 15.
- When shielded cable is used, it should be grounded at one side only.





For thermoresistances NTC, PTC, PT500, PT1000 and potentiometers.

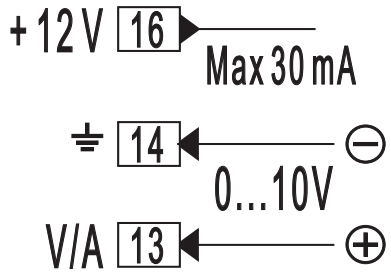
- When shielded cable is used, it should be grounded at one side only to avoid ground loop currents.



Linear signals V / mA.

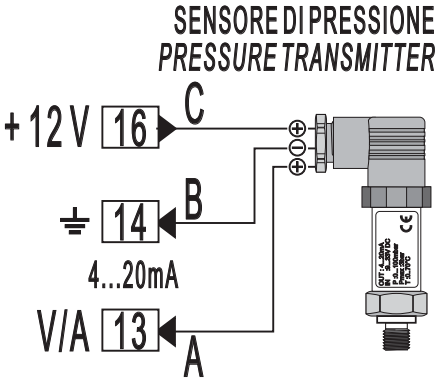
- Comply with polarity.
- When shielded cable is used, it should be grounded at one side only.

Examples of Connection for linear input



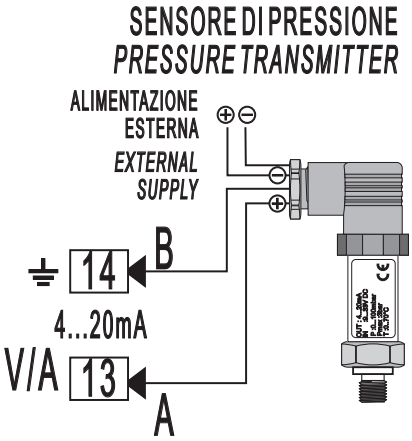
Linear signals 0….10 V.

Comply with polarity.



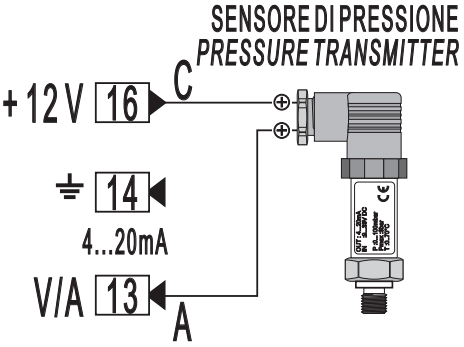
Linear signals 0/4….20 mA
with **three-wire sensor.**

Comply with polarity:
A= Sensor output
B= Sensor ground
C= Sensor supply



Linear signals 0/4….20 mA
with **external power of sensor.**

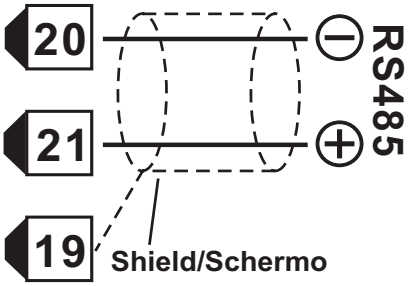
Comply with polarity:
A= Sensor output
B= Sensor ground



Linear signals 0/4….20 mA
with **two-wire sensor.**

Comply with polarity:
A= Sensor output
C= Sensor supply

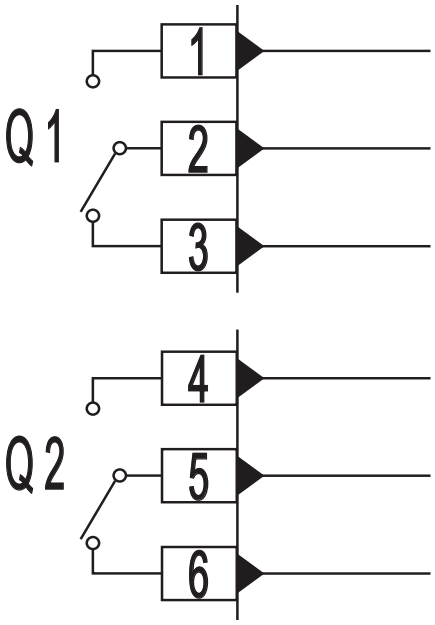
Serial Imput



RS485 Modbus RTU communication.

- For networks with more than five instruments supply in low voltage and preferably DC.
- Shield should **not** be grounded.

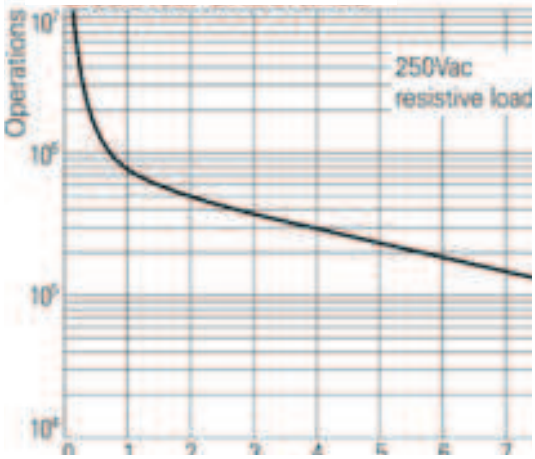
Relays Q1 – Q2



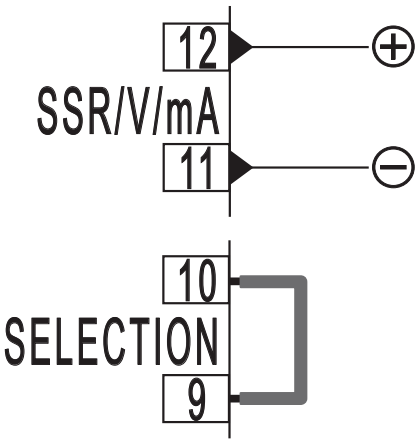
Capacity:

- 5 A, 250 Vac, resistive loads, 10^5 operations.
- 20/2 A, 250 Vac, cosφ = 0.3, 10^5 operations.

Electrical endurance:



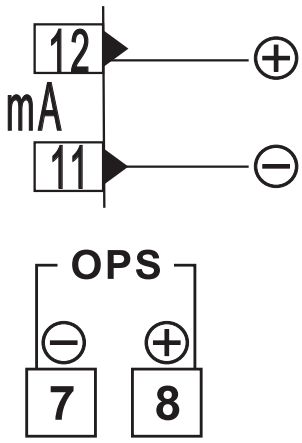
SSR output



SSR command 12 V / 30 mA.

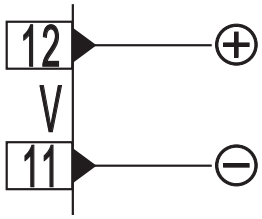
Short-circuit pins 9 and 10 as in the figure to use SSR output.

mA or Volt output

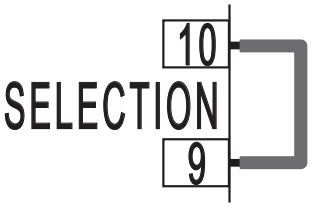


Pins 11-12:
linear output in **mA** configurable using parameters as command (parameter [out]) or retransmission of process or setpoint (parameter [rEtr.]).

Pins 7-8:
optional external power supply for current loop (max 24 Vdc).

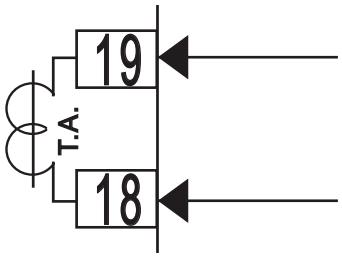


Linear output in **Volt** configurable using parameters as command (parameter c.out) or retransmission of process or setpoint (parameter rEtr.).



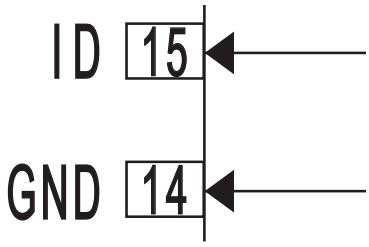
Short-circuit pins 9 and 10 as in the figure to use linear output in Volt.

Amperometric Transformer Input



- Input 50 mA for amperometric transformer.
- Sampling time 80 ms.
- Configurable by parameters.

Digital Input (1)

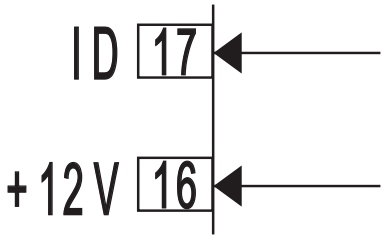


Combined use of digital input and T.A. input.

Digital input according to parameter dGt. 1.

This combined use is possible only with sensors TC, 0…10 V, 0/4…20 mA, 0…40 mV.

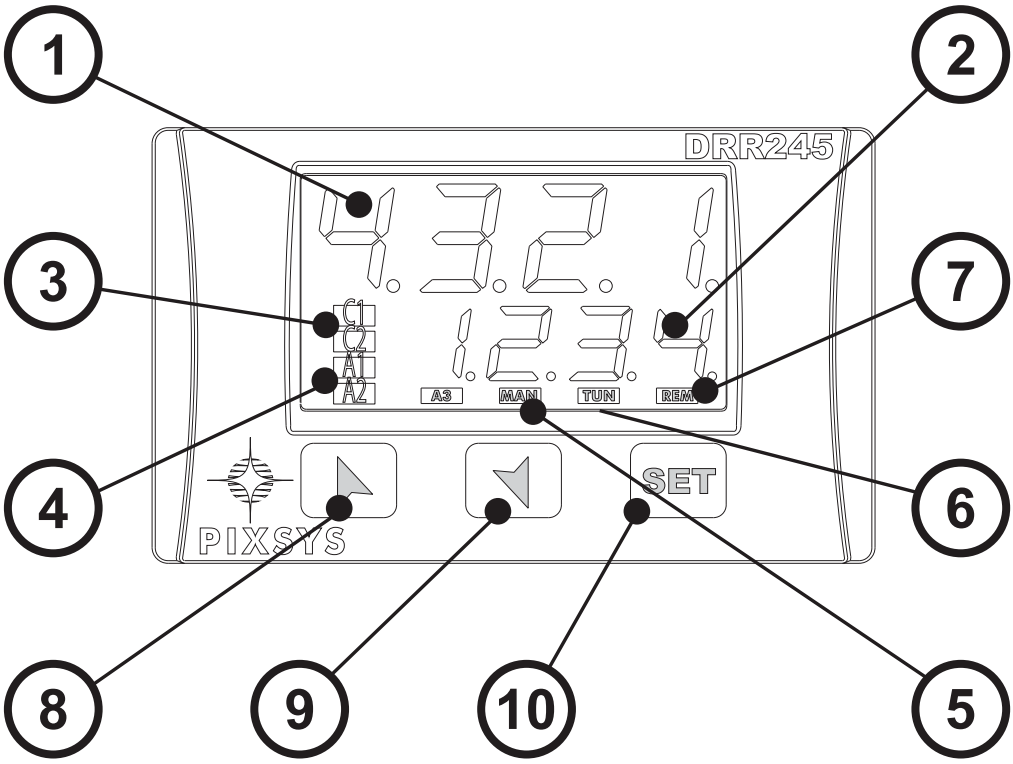
Digital Input (2)



Use of digital input without T.A. input.

Digital input according to parameter dGt. 1.

6 Displays and keys functions



6.1 Numeric Indicators (Displays)

1	1234	Normally displays the process. During the configuration phase, it displays the parameter being inserted
2	1234	Normally displays the setpoint. During the configuration phase, it displays the parameter value being inserted.

6.2 Meaning of Status Lights (Led)

3	C 1 C 2	ON when the output command is on. C1 with relay/SSR/mA/Volt command or C1 (open) and C2 (close) for a motorised valve.
4	A 1 A 2 A 3	ON when the corresponding alarm is on.
5	MAN	ON when the “Manual” function is on.
6	TUN	ON when the controller is running an “Autotuning” cycle.
7	REM	ON when the controller communicates via serial port.

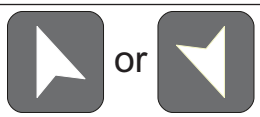
6.3 Keys

8		• Allows to increase the main setpoint. • During the configuration phase, allows to slide through parameters. Together with the SET key it modifies them. • Pressed after the SET key it allows to increase the alarm setpoint.
9		• Allows to decrease the main setpoint. • During the configuration phase, allows to slide through parameters. Together with the SET key it modifies them. • Pressed after the SET key it allows to decrease the alarm setpoint.
10		• Allows to display the alarm setpoint and runs the autotuning function. • Allows to vary the configuration parameters.

7 Controller Functions

7.1 Modifying Main Setpoint and Alarm Setpoint Values

The setpoint value can be changed from keyboard as follows:

	Press	Display	Do
1		Value on display 2 changes	Increases or decreases the main setpoint.
2		Visualize alarm setpoint on display 1.	
3		Value on display 2 changes.	Increases or decreases the alarm set point value.

7.2 Auto-Tune

The Tuning procedure calculates the controller parameters and can be manual or automatic according to selection on parameter 57 (tunE).

7.3 Manual Tuning

The manual procedure allows the user greater flexibility to decide when to update P.I.D. algorithm work parameters. The procedure can be activated in two ways.

- **By running Tuning from keyboard:**
  Press the SET key until display 1 shows the writing tunE with display 2 showing oFF, press ▶, display 2 shows on.
  The TUN led switches on and the procedure begins.

- **By running Tuning from digital input:**
  Select tunE on parameter 61 dGt.1.
  On first activation of digital input (commutation on front panel) the TUN led switches on and on second activation switches off.

7.4 Automatic Tuning

Automatic tuning activates when the controller is switched on or when the setpoint is modified to a value over 35%.
To avoid an overshoot, the treshold where the controller calculates the new P.I.D. parameters is determined by the setpoint value minus the “Set Deviation Tune” (see parameter 58 Sdt.1).

To exit Tuning and leave the P.I.D. values unchanged, just press the SET key until display 1 shows the writing tunE with the display showing on, press ◀, display 2 shows oFF.

The TUN led switches off and the procedure finishes.

7.5 Soft-Start

To reach the setpoint the controller can follow a gradient expressed in units (example: Degree / Hours).
Set the increase value in parameter 62 GrAd with the desired Units / Hours; only on **subsequent activation** the controller uses the Soft-Start function.
If parameter 59 oPMo is set on cont. and parameter 63 MAt i is different from 0, after switch-on and elapsing of the time set on parameter 63, setpoint **does not** follow the gradient anymore, but it reaches final setpoint with maximum power.
Autotuning does not work when Soft-Start is activated: otherwise if parameter 63 MAt i is different from 0 and parameter 57 tunE is set on Auto, Autotuning starts when Soft-Start time is finished.
If parameter 57 tunE is set on MAn, the Autotuning can be started only when Soft-Start finishes.

7.6 Automatic / Manual Regulation for % Output Control

This function allows to select automatic functioning or manual command of the output percentage.
With parameter 60 AuMA, you can select two methods.

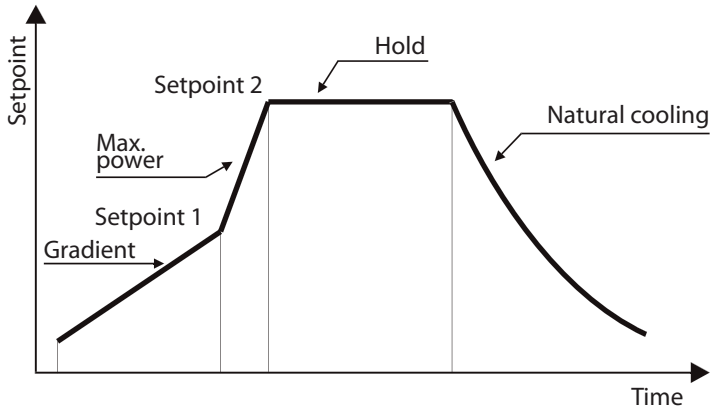
1 **The first selection (En)** allows you to enable the SET key with the writing P--- on display 1, while display two shows Auto. Press the ▶ key to show MAn; it is now possible, during the process display, to change the output percentage using the keys ▶ and ◀. To return to automatic mode, using the same procedure, select Auto on display 2: the led **MAN** switches off and functioning returns to automatic mode.

2 **The second selection (EnSt)** enables the same functioning, but with two important variants:

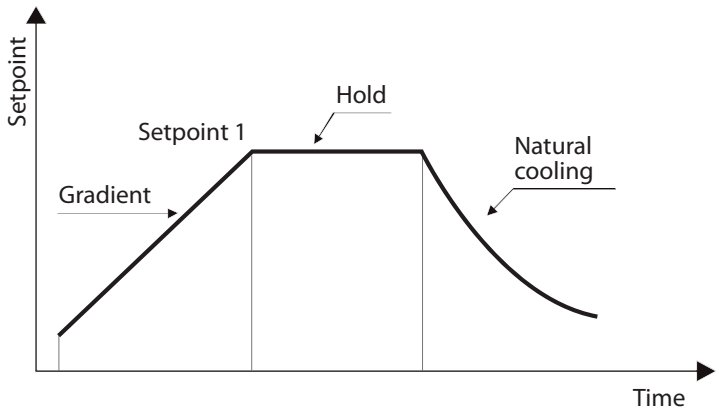
- If there is a temporary lack of voltage or after switch-off, the manual functioning will be maintained as well as the previously set output percentage value.
- If the sensor breaks during automatic functioning, the controller moves to manual mode while maintaining the output percentage command unchanged as generated by the P.I.D. immediately before breakage.

7.7 Pre-Programmed Cycle

The pre-programmed cycle function activates by setting PrcY or PcSS in parameter 59 oPMo.



First option (PrcY):
the controller reaches setpoint1 basing on the gradient set in parameter 62 GrAd, then it reaches maximum power up to setpoint 2. When the process reaches maximum power, this setpoint is maintained for the time set in parameter 63 MAt. On expiry, the command output is disabled and the controller displays StoP. The cycle starts at each activation of the controller, or via digital input if it is enabled for this type of functioning (see parameter 61 dGt.).



Second option (PcSS):
start-up is decided only on activation of the digital input, according to the setting of parameter 61 dGt.
On start-up, the controller reaches setpoint 1 basing on the gradient set in parameter 62 GrAd.
When the process reaches this gradient, it is maintained for the time set in parameter 63 MAt.
On expiry, the command output is disabled and the controller displays StoP.

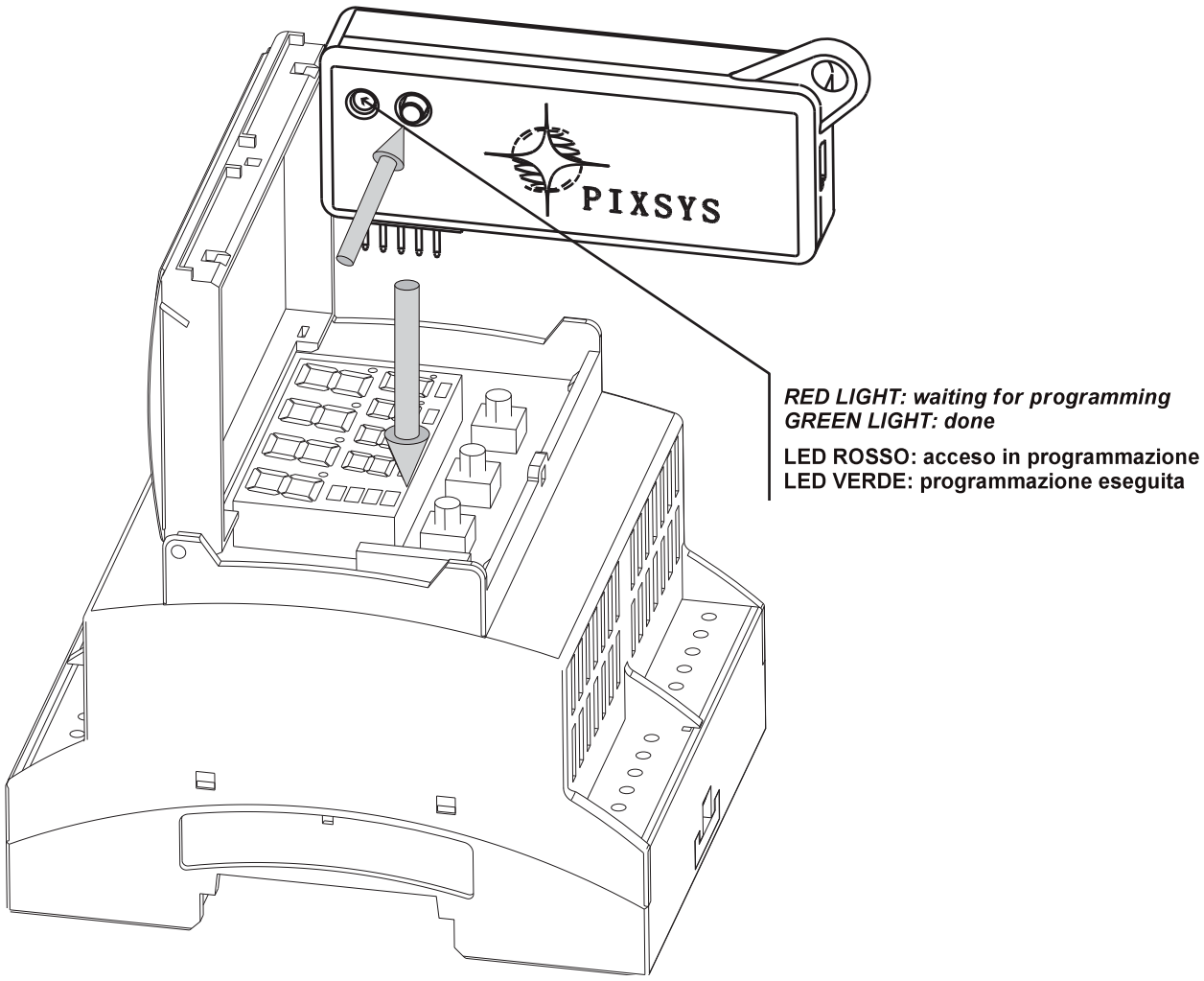
7.8 Memory Card (optional)

Look!

Parameters and setpoint values can be duplicated from one controller to another using the Memory card.

There are two methods:

- With the controller connected to the power supply.
  Insert the memory card **when the controller is off**.
  On activation display 1 shows nEn₀ and display 2 shows ----
  (only if the correct values are saved in the memory card).
  By pressing the ▶ key display 2 shows LoAd, then confirm using the SET key. The controller loads the new data and starts again.



- With the controller not connected to power supply.
  The memory card is equipped with an internal battery with an autonomy of about 1000 uses (2032 button battery, replaceable).
  Insert the memory card and press the programming buttons.
  When writing the parameters, the led turns red and on completing the procedure it changes to green. It is possible to repeat the procedure without any particular attention.

WARNING

Updating Memory Card

To *update* the memory card values, follow the procedure described in the first method, setting display 2 to ---- so as not to load the parameters on controller[2].

Enter configuration and **change at least one parameter.**

Exit configuration. Changes are saved automatically.

7.9 Loading default values

This procedure makes it possible to restore factory settings of the instrument.

	Press	Display	Do
1	SET for 3 second	Display 1 shows 0000 with the 1st digit flashing, while display 2 shows PASS.	
2	or	Change the flashing digit and move to the next one using the SET key.	Enter password: 9999.
3	SET to confirm	Instrument loads default settings and resets.	

8 LATCH ON Functions

For use with input Pot. 1 (potentiometer 6 KΩ) and Pot2 (potentiometer 150 KΩ) and with linear input (0…10 V, 0...40 mV, 0/4…20 mA), you can associate start value of the scale (parameter 6 LoL. i) to the minimum position of the sensor and value of the scale end (parameter 7 uPL. i) to the maximum position of the sensor (parameter 8 LAtc. configured as Std).

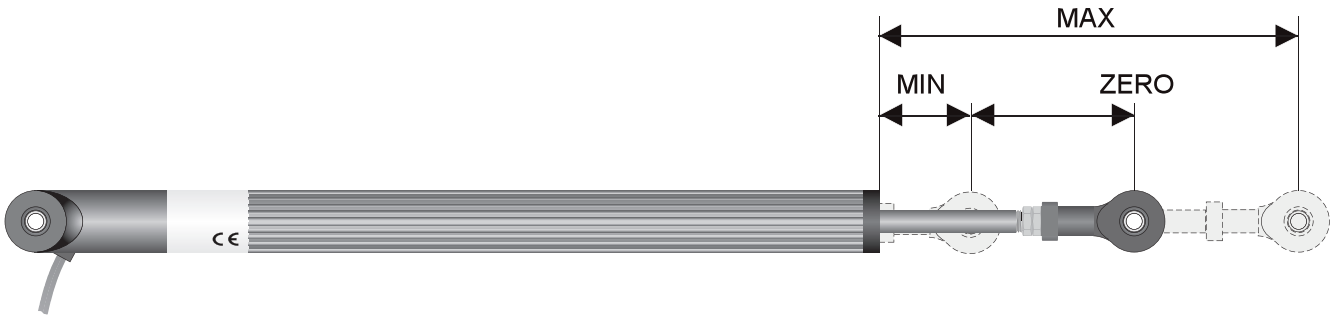
[2] If on activation the controller does not display NEno it means no data have been saved on the memory card, but it is possible to update values.

It is also possible to fix the point in which the controller will display 0 (however keeping the scale range between LoL. i and uPL. i) using the “virtual zero” option by setting u.0SE. or u.0 in in parameter 8 LAtc.
If you set u.0 in in the virtual zero will reset after each activation of the tool; if you set u.0SE. the virtual zero remains fixed once tuned.
To use the LATCH ON function configure as you wish the parameter LAtc.[3].

For the calibration procedure refer to the following table:

	Press	Display	Do
1	SET	Exit parameters configuration. Display 2 shows the writing LAtc.	Position the sensor on the minimum functioning value (associated with LoL. i).
2	◀	Set the value to minimum. The display shows LoU.	Position the sensor on the maximum functioning position (associated with uPL. i).
3	▶	Set the value to maximum. The display shows H iGH.	To exit the standard procedure press SET. For “virtual zero” settings position the sensor on the zero point.
4	SET	Set the virtual zero value. The display shows u irt. **N.B.:** For selection of u.0 in in the procedure in point 4 should be followed on each re-activation.	To exit the procedure press SET.

[3] The tuning procedure starts by exiting the configuration after changing the parameter.



8.1 Loop Break Alarm on Amperometric Transformer T.A.

This function allows to measure load current and to manage an alarm during malfunctioning with power in short circuit or always off. The amperometric transformer connected to terminals 15 and 16 must be 50mA (sampling time 80 ms).

- Set scale end value of the amperometric transformer in Amperes on parameter 47 [tA].
- Set the intervention threshold of the Loop Break Alarm in Amperes on parameter 48 [LbAt].
- Set the intervention delay time of the Loop Break Alarm on parameter 49 [LbAd].
- You can associate the alarm with a relay by setting the parameter [AL. 1], [AL. 2] or [AL. 3] as [LbA].

If a remote control switch or SSR remains closed, the controller signals the fault by showing [LbAc] on display 2 (alternatively with a command setpoint).

If instead the power stage remains open, or the load current is lower than the value set on [LbAt], the controller shows [LbAo] on display.

You can display the current absorbed during the closure phase of the power stage.

Press	Display	Do
1 SET	This key enables to scroll on display 2 the output percentage, auto/man selection, setpoint and alarms.	Press SET until the writing [AnLA] appears on display 1 and display 2 shows the current in amperes ([tA] >0). The value is also maintained when no current circulates on the load.

Setting on parameter 48 LbAt the value 0 is possible visualize the current absorbed without generating the Loop Break Alarm.

8.2 Digital input Functions

On ATR243 model digital input can be enabled by using parameters 59 oPMo and 61 dGt. i.

- **Parameter 59 oPMo.**

  N.B.: When using this settings, parameter 61 dGt. i is ignored.

  2tS : Switch two thresholds setpoint: with open contact DRR245 regulates on SET1; with closed contact regulates on SET2;

  2tS. i : Switch two thresholds setpoint: setpoint selection is done by an impulse on digital input;

  3tS. i : Switch three thresholds setpoint by an impulse on digital input;

  4tS. i : Switch four thresholds setpoint by an impulse on digital input;

  trES : Customized function;

  PcSS : Pre-programmed cycle (see paragraph 7.7).

  Setpoints values can be modified any time pressing SET key.

- **Parameter 61 dGt. i.**

  N.B.: Settings on this parameter are available only if cont or PrcY are selected on parameter 59 oPMo.

  StSt : Start / Stop; operating on digital input the controller switches alternatively from start to stop;

  rnoc : Run N.O. Controller is in start only with closed input;

  rnnc : Run N.C. Controller is in start only with open input;

  Lcno : With closed input allows to lock the reading of sensors;

  Lcnc : With open input allows to lock the reading of sensors;

  tunE : Enables / disables Tuning function if parameter 57 tunE is selected as MAn;

  AMA i : If parameter 60 AuMA is selected as En or EnSt controller switch from automatic to manual functioning;

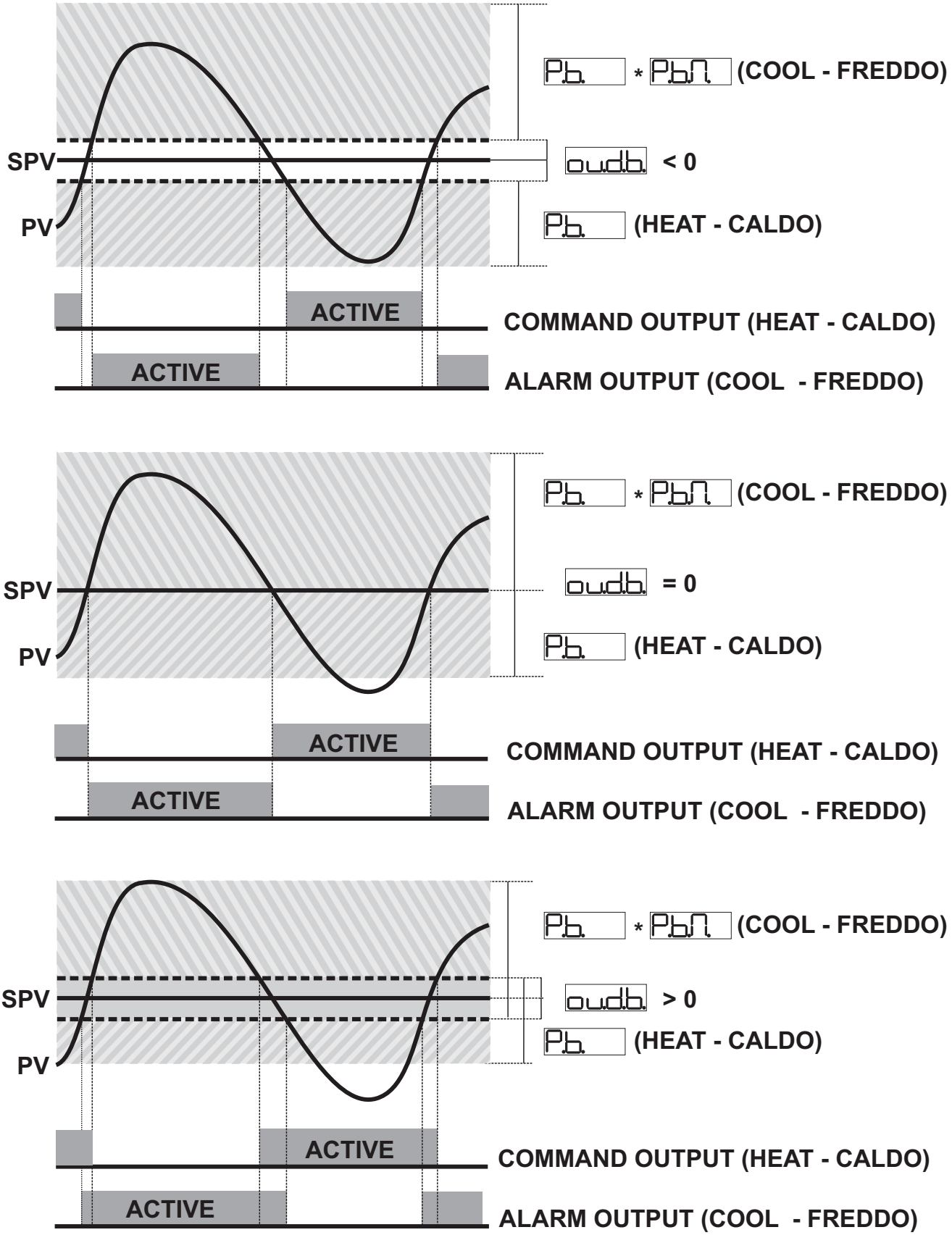
  AMAc : If parameter 60 AuMA is selected as En or EnSt DRR245 works in automatic mode if input is open or in manual mode if input is closed.

N.B.: For electrical wiring of digital input see paragraph 5.1.
The digital input functions **<u>are not</u>** available with sensors PT100 and NI100 if input is used also for amperometric transformer T.A..

8.3 Dual Action Heating-Cooling

DDR245 is also suitable also for systems requiring a combined heating-cooling action.
The command output must be configured as Heating P.I.D. (Actt = HEAt and with a Pb greater than 0), and one of the alarms (AL. 1, AL. 2 or AL. 3) must be configured as cooL.
The command output must be connected to the actuator responsible for heat, while the alarm will control cooling action.
The parameters to configure for the Heating P.I.D. are:
Actt = HEAt Command output type (heating);
Pb : Heating proportional band;
t. i : Integral time of heating and cooling;
td : Derivative time of heating and cooling;
tc. : Heating time cycle.
The parameters to configure for the cooling P.I.D. are the following (example: action associated to alarm 1):
AL. 1 = cooL Alarm 1 selection (cooling);
Pbn : Proportional band multiplier;
oudb : Overlapping / Dead band;
cotc. : Cooling time cycle.
The parameter Pbn (that ranges from 1.00 to 5.00) determines the proportional band of cooling basing on the formula:
Cooling proportional band = Pb x Pbn .
This gives a proportional band for cooling which will be the same as heating band if Pbn = 1.00, or 5 times greater if Pbn = 5.00.
The **integral time** and **derivative time** are the same for both actions.
The parameter oudb determines the percentage overlapping between the two actions. For systems in which the heating output and cooling output must never be simultaneously active a dead band (oudb ≤ 0) must be configured, and vice versa you can configure an overlapping (oudb > 0).

The following figure shows an example of dual action P.I.D. (heating-cooling) with t.1 = 0 and td = 0.



The parameter cAt.C. has the same meaning as the heating time cycle t.C. .
The parameter CooF. (cooling fluid) pre-selects the proportional band multiplier Pb.n. and the cooling P.I.D. time cycle cAt.C. basing on the type of cooling fluid:

CooF.	Cooling fluid type	Pb.n.	cAt.C.
Air	Air	1.00	10
oil	Oil	1.25	4
H2o	Water	2.50	2

Once selected, the parameter CooF., the parameters Pb.n. , oudb. and cAt.C. can however be changed.

9 Serial Communication

DRR245-21ABC-T is equipped with with RS485 and can receive/ broadcast data via serial communication using MODBUS RTU protocol. The device can only be configured as a Slave. This function enables the control of multiple controllers connected to a supervisory system (SCADA).
Each controller responds to a master query only if the query contains the same address as that in the parameter SLAd.
The addresses permitted range from 1 to 254 and there must not be controllers with the same address on the same line.
Address 255 can be used by the master to communicate with all the connected equipment (broadcast mode), while with 0 all the devices receive the command, but no response is expected.
DRR245 can introduce a delay (in milliseconds) in the response to the master request. This delay must be set on parameter 72 SEdE.
Each parameter change is saved by the controller in the EEPROM memory (100000 writing cycles), while the setpoints are saved with a delay of ten seconds after the last change.

N.B.: Changes made to words that are different from those reported in the following table can lead to malfunction.

Modbus RTU protocol features

Boud-rate	Can be selected on parameter 70 bdrt. : 4.8 4800 bit/sec . 9.6 9600 bit/sec. 19.2 19200 bit/sec. 28.8 28800 bit/sec. 38.4 38400 bit/sec. 57.6 57600 bit/sec.
Format	8, N, 1 (8 bit, no parity, 1 stop)
Supported functions	WORD READING (max 20 word) (0x03, 0x04) SINGLE WORD WRITING (0x06) MULTIPLE WORDS WRITING (max 20 word) (0x10)

Looking at the table here below it is possible to find all available addresses and functions:

RO	Read Only
R/W	Read / Write
WO	Write Only

Modbus Address	Description	Read Write	Reset value
0	Device type	RO	EEPROM
1	Software version	RO	EEPROM
5	Slave address	R/W	EEPROM
6	Boot version	RO	EEPROM
50	Automatic addressing	WO	-
51	System code comparison	WO	-
500	Loading default values (write 9999)	R/W	0
510	Setpoints storing time in eeprom (0-60 s)	R/W	10
999	Process subjected to the visualization filter	RO	?
1000	Process (with tenths of degree for temperature sensors; digits for linear sensors)	RO	?
1001	Setpoint 1	R/W	EEPROM
1002	Setpoint 2	R/W	EEPROM
1003	Setpoint 3	R/W	EEPROM
1004	Setpoint 4	R/W	EEPROM
1005	Alarm 1	R/W	EEPROM
1006	Alarm 2	R/W	EEPROM
1007	Alarm 3	R/W	EEPROM
1008	Setpoint gradient	RO	EEPROM

1009	Relay status (0 = Off, 1 = On) Bit 0 = Relay **Q1** Bit 1 = Relay **Q2** Bit 2 = Reserved Bit 3 = **SSR**	RO	0
1010	Heating output percentage (0-10000)	RO	0
1011	Cooling output percentage (0-10000)	RO	0
1012	Alarms status (0 = None, 1 = Active) Bit 0 = Alarm 1 Bit 1 = Alarm 2	RO	0
1013	Manual reset: write 0 to reset all alarms. In reading (0 = Not resettable, 1 = Resettable) Bit 0 = Alarm 1 Bit 1 = Alarm 2	WO	0
1014	Error flags: Bit 0 = Eeprom writing error Bit 1 = Eeprom reading error Bit 2 = Cold junction error Bit 3 = Process error (sensor) Bit 4 = Generic error Bit 5 = Hardware error Bit 6 = L.B.A.O. error Bit 7 = L.B.A.C. error Bit 8 = Missing calibration data error	RO	0
1015	Cold junction temperature (tenths of degree)	RO	?
1016	Start / Stop 0 = Controller in STOP 1 = Controller in START	R/W	0
1017	Lock conversion ON / OFF 0 = Lock conversion off 1 = Lock conversion on	R/W	0
1018	Tuning ON / OFF 0 = Tuning off 1 = Tuning on	R/W	0
1019	Automatic / manual selection 0 = Automatic 1 = Manual	R/W	0
1020	T.A. current ON (Ampere with tenths)	RO	?
1021	T.A. current OFF (Ampere with tenths)	RO	?
1022	OFF LINE[4] time (milliseconds)	R/W	?
1023	Instant Current (Ampere)	R/W	0
1024	Digital Input State	R/W	0

[4] If value is 0, the control is disabled. If different from 0, it is the max. time which can elapse between two pollings before the controller goes off-line.
If it goes off-line, the controller returns to Stop mode, the control output is disabled but the alarms are active.

1025	Synchronized Tuning for multizone system **0** = Tuning OFF (normal operating of the regulator) **1** = Output command OFF **2** = Output command ON **3** = Start Tuning **4** = End Tuning and output command OFF (write 0 for normal operating)	R/W	0
1099	Process subjected to the visualization filter and decimal point selection	RO	?
1100	Process with decimal point selection	RO	?
1101	Setpoint 1 with decimal point selection	R/W	EEPROM
1102	Setpoint 2 with decimal point selection	R/W	EEPROM
1103	Setpoint 3 with decimal point selection	R/W	EEPROM
1104	Setpoint 4 with decimal point selection	R/W	EEPROM
1105	Alarm 1 with decimal point selection	R/W	EEPROM
1106	Alarm 2 with decimal point selection	R/W	EEPROM
1107	Alarm 3 with decimal point selection	R/W	EEPROM
1108	Gradient Setpoint with decimal point selection	RO	EEPROM
1109	Percentage heating output (0-1000)	R/W	0
1110	Percentage heating output (0-100)	RO	0
1111	Percentage cooling output (0-1000)	RO	0
1112	Percentage cooling output (0-100)	RO	0
2001	Parameter 1	R/W	EEPROM
2002	Parameter 2	R/W	EEPROM
2072	Parameter 72	R/W	EEPROM
3000	Disabling serial control of machine[5]	WO	0
3001	First word display 1 (ascii)	R/W	0
3002	Second word display 1 (ascii)	R/W	0
3003	Third word display 1 (ascii)	R/W	0
3004	Fourth word display 1 (ascii)	R/W	0
3005	Fifth word display 1 (ascii)	R/W	0
3006	Sixth word display 1 (ascii)	R/W	0
3007	Seventh word display 1 (ascii)	R/W	0
3008	Eighth word display 1 (ascii)	R/W	0
3009	First word display 2 (ascii)	R/W	0
3010	Second word display 2 (ascii)	R/W	0
3011	Third word display 2 (ascii)	R/W	0
3012	Fourth word display 2 (ascii)	R/W	0
3013	Fifth word display 2 (ascii)	R/W	0
3014	Sixth word display 2 (ascii)	R/W	0
3015	Seventh word display 2 (ascii)	R/W	0
3016	Eight word display 2 (ascii)	R/W	0

[5] By writing 1 on this word, the effects of the writing are cancelled on all the Modbus addresses from 3001 to 3022. Control therefore returns to the controller.

3017	Word LED Bit 0 = LED **C1** Bit 1 = LED **C2** Bit 2 = LED **A1** Bit 3 = LED **A2** Bit 4 = LED **A3** Bit 5 = LED **MAN** Bit 6 = LED **TUN** Bit 7 = LED **REM**	R/W	0
3018	Word keys (write 1 to command keys) Bit 0 =  Bit 1 =  Bit 2 = 	R/W	0
3019	Word serial relay Bit 0 = Relay **Q1** Bit 1 = Relay **Q2**	R/W	0
3020	Word **SSR** serial (0 = Off, 1 = On)	R/W	0
3021	Word output **0...10 V** serial (0…10000)	R/W	0
3022	Word output **4...20 mA** serial (0…10000)	R/W	0
3023	Relay state in case of off-line (only if controlled by serial) Bit 0 = Relay **Q1** Bit 1 = Relay **Q2**	R/W	0
3024	Output state **SSR / 0…10 V / 4…20 mA** in case of off-line (only if controlled by serial) (0…10000)	R/W	0
3025	Serial process. Setting parameter 54 it is possible to make averages on the remote process	R/W	0
4001	Parameter 1[6]	R/W	EEPROM
4002	Parameter 2[6]	R/W	EEPROM
4072	Parameter 72[6]	R/W	EEPROM

[6] Parameters modified using serial address 4001 to 4072 will be stored on eeprom only after 10” since last writing of one parameter.

10 Configuration

10.1 Modify Configuration Parameter

For configuration parameters see paragraph 11.

	Press	Display	Do
1	SET for 3 second	Display 1 shows 0.000 with the 1st digit flashing, while display 2 shows PASS .	
2	or	Change the flashing digit and move to the next one using the SET key.	Enter password: 1234.
3	SET to confirm	Display 1 shows the first parameter and display 2 shows the value.	
4	or	Slide up / down through parameters.	
5	SET + or	Increase or decrease the value displayed by pressing firstly SET and then an arrow key.	Enter the new data which will be saved on releasing the keys. To change another parameter return to point 4.
6	+ simultaneously	End of configuration parameter change. The controller exits from programming.	

11 Table of Configuration Parameters

1 **Command Output:** Select command output type — Look!

Default (necessary for using process and setpoint retransmission function with Volt / mA output)

DRR245-21ABC-T

	COMMAND	*ALARM 1*	*ALARM 2*
c. o1	Q1	Q2	SSR
c. o2	Q2	Q1	SSR
c.SSr	SSR	Q1	Q2
c.uAL.	Q1 (opens) / Q2 (closes)	SSR	-
c.420	4...20 mA	Q1	Q2
c.020	0...20 mA	Q1	Q2
c.0 10	0...10 V	Q1	Q2

2 **Sensor:** Analog input configuration / sensor selection — Look!

tc. t	Tc-K **(Default)**	-260…1360 °C
tc. S	Tc-S	-40…1760 °C
tc. r	Tc-R	-40…1760 °C
tc. J	Tc-J	-200…1200 °C
Pt	PT100	-200…600 °C
Pt 1	PT100	-200…140 °C
n i	NI100	-60…180 °C
ntc	NTC10K	-40…125 °C
Ptc	PTC1K	-50…150 °C
Pt5	PT500	-100…600 °C
Pt 1t	PT1000	-100…600 °C
0. 10	0…10 Volt	
020	0…20 mA	

	4.20	4…20 mA
	0.40	0…40 mVolt
	Pot. 1	Potentiometer max 6 Kohm
	Pot.2	Potentiometer max 150 Kohm
	t.A.	50 mA secondary amperometric transformer
3	dP.	**Decimal Point:** Select number of displayed decimal points
	0	**Default**
	0.0	1 Decimal
	0.00	2 Decimal
	0.000	3 Decimal
4	LoL.S	**Lower Limit Setpoint:** Lower limit setpoint
		-999…+9999 digit* (degrees if temperature), **Default: 0.**
5	uPL.S	**Upper Limit Setpoint:** Upper limit setpoint
		-999…+9999 digit* (degrees if temperature), **Default: 1750.**
6	LoL. i	**Lower Linear Input 1:** AN1 lower range limit only for linear signals. Example: with input 4...20 mA this parameter takes value associated to 4 mA
		-999…+9999 digit*, **Default: 0.**
7	uPL. i	**Upper Linear Input 1:** AN1 upper range limit only for linear signals. Example: with input 4...20 mA this parameter takes value associated to 20 mA
		-999…+9999 digit*, **Default: 1000.**
8	Loct	**Latch On Function:** Automatic setting of limits for Linear input
	d iS.	Disabled **(Default)**
	Std.	Standard
	u.0St.	Virtual Zero Stored
	u.0 in.	Virtual Zero Initialized
9	ocAL.	**Offset Calibration:** Number added to displayed value of process (normally corrects the room temperature value)
		-999…+1000 digit* for linear sensors and potentiometers. **-200.0…+100.0 0** tenths for temperature sensors, **Default 0.0.**

* The display of the decimal point depends on the setting of parameter SEn. and the parameter dP. .

10 GcAL. **Gain Calibration:** Percentage value that is multiplied for the process value (allows to calibrated the working point)

-99.9%…+100.0%, **Default: 0.0.**

11 AcTt. **Action type:** Regulation type

HEAt Heating (N.O.) **(Default)**

cooL Cooling (N.C.)

HoaS Lock command above SPV.
Example: command output disabled when reaching setpoint, also with P.I.D. value different from 0

12 c. rE. **Command Rearmament:** Type of reset for state of command contact (always automatic in P.I.D. functioning)

AtrE. Automatic reset **(Default)**

MrE. Manual reset

MrES. Manual reset stored
(keeps relay status also after an eventual power failure)

13 c. SE. **Command State Error:** State of contact for command output in case of error

co Open contact **(Default)**

cc. Closed contact

14 c. Ld. **Command Led:** State of the OUT1 led corresponding to the relevant contact

co ON with open contact

cc. ON with closed contact (**Default)**

15 c. HY. **Command Hysteresis:** Hysteresis in ON / OFF or dead band in P.I.D.

-999…+999 digit* (degrees if temperature), **Default: 0.0.**

16 c. dE. **Command Delay:** Command delay (only in ON / OFF functioning).(In case of servo valve it also functions in P.I.D. and represents the delay between the opening and closure of the two contacts)

-180…+180 seconds (tenths of second in case of servo valve).
Negative: delay in switching off phase.
Positive: delay in activation phase.
Default: 0.

---

* The display of the decimal point depends on the setting of parameter SEn. and the parameter dP. .

17	c. SP.	**Command Setpoint Protection:** Allows or not to change the command setpoint value
	FrEE	Modification allowed **(Default)**
	Loch	Protected
18	Pb.	**Proportional Band:** Proportional band Process inertia in units (example: if temperature is in °C)
	0	ON / OFF t. i if equal to **0 (Default)**
	1-9999	digit* (degrees if temperature)
19	t. i	**Integral Time:** Process inertia in seconds
	0.0-999.9 seconds (0 = Integral disabled), **Default: 0.**	
20	t.d	**Derivative Time:** Normally ¼ the integral time
	0.0-999.9 seconds (0 = Derivative disabled), **Default: 0.**	
21	t.c.	**Cycle Time:** Cycle time (for P.I.D. on remote control switch 10 / 15 sec., for P.I.D. on SSR 1 sec.) or servo time (value declared by servo-motor manufacturer)
	1-300 seconds, **Default: 10.**	
22	oPoL.	**Output Power Limit:** Select maximum value for command output percentage.
	0-100%, **Default: 100%.**	
23	AL. 1	**Alarm 1:** Alarm 1 selection. Alarm intervention is correlated to AL1
	d iS.	Disabled **(Default)**
	A. AL.	Absolute alarm, referring to process
	b. AL.	Band alarm
	HdAL.	Upper deviation alarm
	LdAL.	Lower deviation alarm
	AcAL.	Absolute alarm, referring to command setpoint
	StAL.	Status alarm (active in Run / Start)
	cool	Cooling action
	LbA.	Status alarm “load control” (Loop Break Alarm) Example: status of contactors / SSR or heating elements

Look!

* The display of the decimal point depends on the setting of parameter SEn. and the parameter dP. .

24 A. 1So **Alarm 1 State Output:** Alarm 1 output contact and intervention type

- no. S. (N.O. start) Normally open, active at start
- nc. S. (N.C. start) Normally closed, active at start
- no. t. (N.O. threshold) Normally open, active on reaching alarm[7]
- nc. t. (N.C. threshold) Normally closed on reaching alarm[7]

25 A 1rE. **Alarm 1 Reset:** Alarm 1 contact reset type

- Ar E. Automatic reset **(Default)**
- MrE. Manual reset
- MrES. Manual reset stored (keeps relay status also after an eventually power failure)

26 A. 1SE. **Alarm 1 State Error:** State of contact for alarm 1 output in case of error

- co. Open contact **(Default)**
- cc. Closed contact

27 A. 1Ld **Alarm 1 Led:** Defines the state of the OUT2 led corresponding to the relative contact

- co. ON with open contact
- cc. ON with closed contact **(Default)**

28 A. 1HY **Alarm 1 Hysteresis**

-999…+999 digit* (tenths of degree if temperature), **Default: 0.0.**

29 A. 1dE. **Alarm 1 Delay**

-180…+180 seconds.
Negative: delay in alarm output phase.
Positive: delay in alarm entry phase.
Default: 0.

30 A. 1SP. **Alarm 1 Setpoint Protection:** Alarm 1 set protection. Does not allow user to modify setpoint

- FrEE Modification allowed **(Default)**
- Loch Protected
- H idE Protected and not visualized

---

[7] On activation, the output is inhibited if the controller is in alarm mode. Activates only if alarm condition reappers, after that it was restored.

* The display of the decimal point depends on the setting of parameter SEn and the parameter dP.

31	AL. 2	**Alarm 2:** Alarm 2 selection. Alarm intervention is associated with AL2
	d iS.	Disabled **(Default)**
	A. AL.	Absolute alarm, referring to process
	b. AL.	Band alarm
	HdAL.	Upper deviation alarm
	LdAL.	Lower deviation alarm
	AcAL.	Absolute alarm, referring to command setpoint
	StAL.	Status alarm (active in Run / Start)
	cooL	Cooling action
	LbA.	Status alarm “load control” (Loop Break Alarm) Example: status of contactors / SSR or heating elements
32	A2So.	**Alarm 2 State Output:** Alarm 2 output contact and intervention type
	no. S.	(N.O. start) Normally open, active at start **(Default)**
	nc. S.	(N.C. start) Normally closed, active at start
	no. t.	(N.O. threshold) Normally open, active on reaching alarm[8]
	nc. t.	(N.C. threshold) Normally closed, active on reaching alarm[8]
33	A2rE.	**Alarm 2 Rearmament:** Alarm 2 contact reset type
	A-E.	Automatic reset **(Default)**
	M-E.	Manual reset (reset / manual reset from keyboard)
	M-ES.	Manual reset stored (keeps relay status also after an eventually power failure)
34	A2SE.	**Alarm 2 State Error:** State of contact for alarm 2 output in case of error
	co.	Open contact **(Default)**
	cc.	Closed contact

[8] On activation, the output is inhibited if the controller is in alarm mode. Activates only if alarm condition reappers, after that it was restored.

* The display of the decimal point depends on the setting of parameter SEn. and the parameter dP. .

35 A2Ld **Alarm 2 Led:** State of OUT2 led corresponding to relative contact

co	ON with open contact
cc	ON with closed contact **(Default)**

36 A2HY **Alarm 2 Hysteresis**

-999…+999 digit* (tenths of degree if temperature), **Default: 0.0.**

37 A2dE **Alarm 2 Delay**

-180…+180 seconds.
Negative: delay in alarm output phase.
Positive: delay in alarm entry phase.
Default: 0.

38 A2SP **Alarm 2 Setpoint Protection:** Alarm 2 set protection. Does not allow operator to change value set

FrEE	Modification allowed **(Default)**
Loch	Protected
H idE	Protected and not visualized

47 tA **Amperometric Transformer:** Activation and scale range of amperometric transformer

0 Disabled
1-200 Ampere
Default: 0

48 LbAt **Loop Break Alarm Threshold:** Intervention threshold of Loop Break Alarm

0.0-200.0 Ampere
Default: 50.0

49 LbAd **Loop Break Alarm Delay:** Delay time for Loop break alarm intervention

0.0-200.0 Ampere
Default: 50.0

50 cooF **Cooling Fluid:** Type of refrigerant fluid for heating / cooling P.I.D.

A ir	Air **(Default)**
o iL	Oil
H2o	Water

* The display of the decimal point depends on the setting of parameter SEn and the parameter dP.

51 PbM **Proportional Band Multiplier:** Proportional band multiplier. Proportional band, for cooling action, is done by parameter 18 multiplied for this parameter.

1.00-5.00 **Default: 1.00**

52 odb **Overlap / Dead Band:** In heating / cooling P.I.D. mode (dual action) define dead band combination for heating / cooling action

-20.0-50.0% of proportional band value **(Default: 0).**
Negative indicates dead band value.
Positive means overlap.

53 cotc **Cooling Cycle Time:** Cycle time for cooling output

1-300 seconds, **Default: 10.**

54 cFLt **Conversion Filter:** ADC Filter: Number of input sensor readings to calculate average that defines process value.
N.B.: When readings increase, control loop speed slow down

dis	Disabled
2 SM	2 Samples Mean (2 samplings mean)
3 SM	3 Samples Mean
4 SM	4 Samples Mean
5 SM	5 Samples Mean
6 SM	6 Samples Mean
7 SM	7 Samples Mean
8 SM	8 Samples Mean
9 SM	9 Samples Mean
10SM	10 Samples Mean
11SM	11 Samples Mean
12SM	12 Samples Mean
13SM	13 Samples Mean
14SM	14 Samples Mean
15SM	15 Samples Mean

55 cFrn **Conversion Frequency:** Digital / analogue converter sampling frequency.
N.B.: When increasing conversion speed, reading stability slow down (example: for fast transients, as the pressure, it is advisable to increase sampling frequency)

- 242H 242 Hz (Maximum speed conversion)
- 123H 123 Hz
- 62 H 62 Hz
- 50 H 50 Hz
- 39 H 39 Hz
- 33.2H 33.2 Hz
- 19.6H 19.6 Hz
- 16.7H 16.7 Hz **(Default)** Ideal for filtering noises 50 / 60 Hz
- 12.5H 12.5 Hz
- 10 H 10 Hz
- 8.33H 8.33 Hz
- 6.25H 6.25 Hz
- 4.17H 4.17 Hz (Minimum speed conversion)

56 uFLt. **Visualization Filter:** Slow down the update of process value visualized on display, to simplify reading

- d iS. Disabled and pitchfork (maximum speed of display update)
- F ior. First order filter with pitchfork
- 2. SM 2 Samples Mean
- 3. SM 3 Samples Mean
- 4. SM 4 Samples Mean
- 5. SM 5 Samples Mean
- 6. SM 6 Samples Mean
- 7. SM 7 Samples Mean
- 8. SM 8 Samples Mean
- 9. SM 9 Samples Mean
- 10.SM 10 Samples Mean (Maximum slow down of display update)
- nuLL Disabled without pitchfork
- Fa 2 First order filter

57 tunE **Tune:** Tuning type selection

- dis Disabled **(Default)**
- Auto Automatic (P.I.D. parameters are calculated at activation and change of set point)
- MAn Manual (launch from keyboard or digital In)
- Sync Synchronized (see word modbus 1025)

58 Sdtu **Setpoint Deviation Tune:** Select the deviation from the command setpoint, for the threshold used by autotuning to calculate the P.I.D. parameters

0-5000 digit* (tenths of degree if temperature), **Default: 10.**

59 oPMo **Operating Mode:** Select operating mode

- cont Controller **(Default)**
- Prc4 Pre-programmed cycle
- 2tS Set changing by digital input
- 2tS i Set changing by digital input with impulse command
- 3tS i 3 sets changing by digital input with impulse command
- 4tS i 4 sets changing by digital input with impulse command
- trES Reset time **(custom function)**
- PcSS Pre-programmed cycle with Start / Stop by digital input

60 AuMA **Automatic / Manual:** Enable automatic / manual selection

- dis Disabled **(Default)**
- En Enabled
- EnSt Enabled with memory

61 dGt i **Digital Input:** Digital input functioning (par. 59 selection must be cont or Prc4)

- dis Disabled **(Default: 0)**
- StSt Pre-programmed cycle with Start / Stop
- rmo Run N.O. (enables regulation with N.O. contact)
- rmc Run N.C. (enables regulation with N.C. contact)
- Lco Lock conversion N.O. (stop conversion and display value with N.O.)
- Lcc Lock conversion N.C. (stop conversion and display value with N.C.)
- tunE Manual Tune (by digital input)
- AMA i Auto manual impulsive (see paragraph 8.2)
- AMAc Automatic manual contact (see paragraph 8.2)

* The display of the decimal point depends on the setting of parameter SEn and the parameter dP.

62 GrAd **Gradient:** Increase gradient for Soft-Start or pre-programmed cycle

0 Disabled

1-9999 Digit/hour* (degrees/hour with display of tenth if temperature)

Default: 0.

63 MAt i **Maintenance Time:** Maintenance time for pre-programmed cycle

00.00-24.00 hh.mm

Default: 00.00

64 uMcP. **User Menu Cycle Programmed:** Allows to modify rising gradient and maintenance time, from user menù, when pre-programmed cycle is in function

- dis. Disabled **(Default)**
- GrAd. Gradient
- MAt i. Maintenance time
- ALL Both gradient and maintenance time

65 u tY. **Visualization Type:** Select visualization for display 1 and 2

- 1P2S. 1 Process, 2 Setpoint **(Default)**
- 1P2H. 1 Process, 2 Hide after 3 sec.
- 1S2P. 1 Setpoint, 2 Process
- 1S2H. 1 Setpoint, 2 Hide after 3 sec.
- 1P2A. 1 Process, 2 Ampere (entrance T.A.)
- 1P2O. 1 Process, 2 Percent exit command

66 dEGr. **Degree:** Select degree type

- °C Centigrade **(Default)**
- °F Fahrenheit

67 rEtr. **Retransmission:** Retransmission for output 0-10 V **(Short-circuit pins 9 and 10)** or 4…20 mA. Parameters 68 and 69 define the lower and upper limits of the scale

- dis. Disabled
- uo. P. Volt process
- MA. P. mA process
- uo. C Volt command setpoint
- MA. C mA command setpoint
- uoaP. Volt output percentage
- MAoP. mA output percentage
- uoA1 Volt alarm 1 setpoint

mA alarm 1 setpoint

Volt alarm 2 setpoint

mA alarm 2 setpoint

Volt T.A.

mA T.A.

Volt Emissivity

mA Emissivity

68 **Lower Limit Retransmission:** Output V / mA retransmission lower limit range

-999…+9999 digit* (degrees if temperature), **Default: 0.**

69 **Upper Limit Retransmission:** Output V / mA retransmission upper limit range

-999…+9999 digit* (degrees if temperature), **Default: 1000.**

70 **Baud Rate:** Select baud rate for serial communication

4800 bit/s

9600 bit/s

19200 bit/s **(Default)**

28800 bit/s

39400 bit/s

57600 bit/s

71 **Slave Address:** Select slave address for serial communication

1 – 254
Default: 254

72 **Serial Delay:** Select serial delay

0 – 100 milliseconds
Default: 20

73 **Lower Limit Output Percentage:** Select minimum value for command output percentage

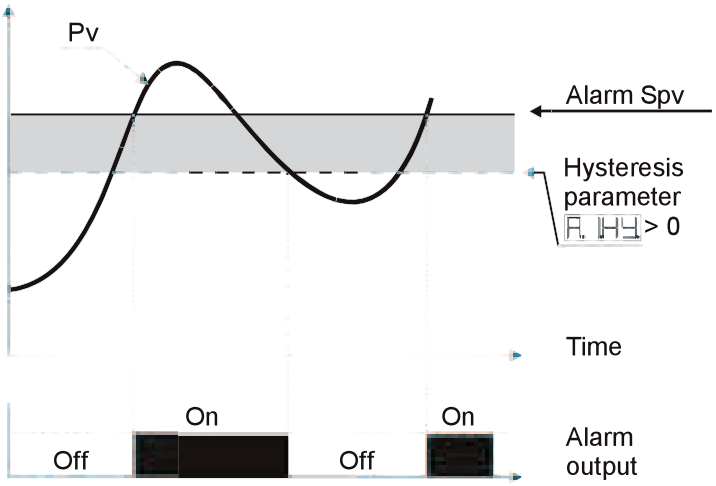
0 – 100%, Default: 0%.

Example: with selected 0...10 V and set on at 10%, command output can change from a min. of 1 V to a max. of 10 V.

* The display of the decimal point depends on the setting of parameter and the parameter .

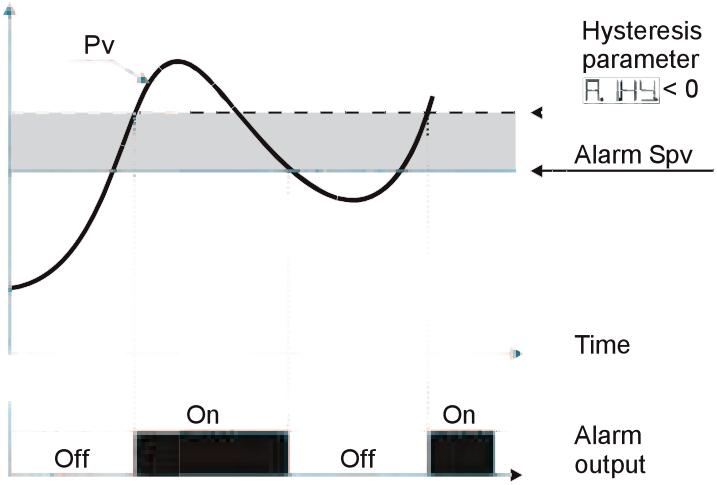
Look!

Absolute Alarm or Threshold Alarm (A. AL. selection)



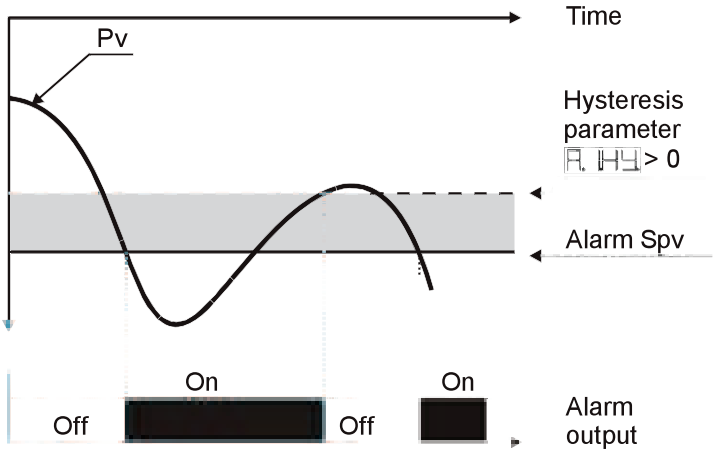
Absolute alarm with controller in heating functioning (par. 11 ACTI. selected HEAT) and hysteresis value greater than “0” (par. 28 A. HY > 0).

N.B.



Absolute alarm with controller in heating functioning (par. 11 ACTI. selected HEAT) and hysteresis value less than “0” (par. 28 A. HY < 0).

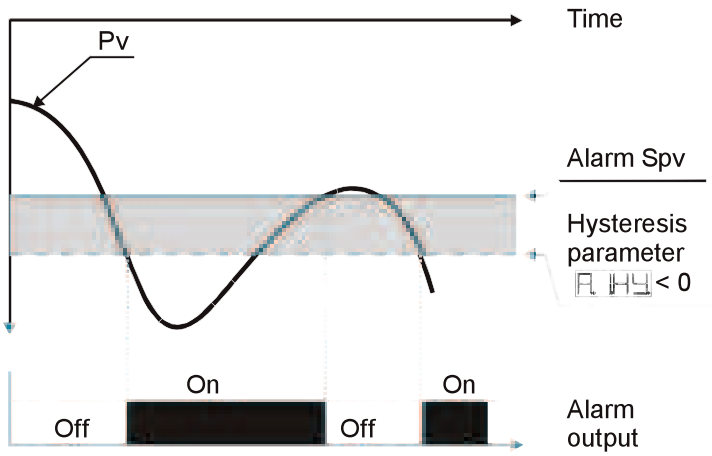
N.B.



Absolute alarm with controller in cooling functioning (par. 11 ACTI. selected cool) and hysteresis value greater than “0” (par. 28 A. HY > 0).

N.B.

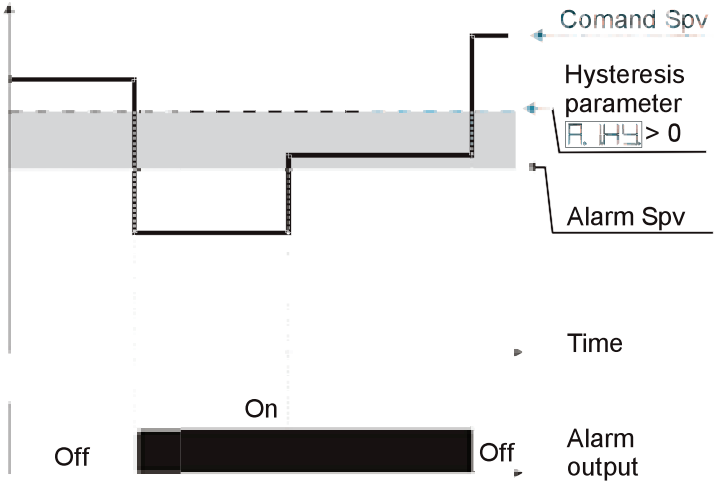
N.B.: The example refers to alarm 1; the function can also be enabled for alarm 2.



Absolute alarm with controller in cooling functioning
(par. 11 ACTI. selected cool) and hysteresis value less than “0”
(par. 28 A. HY < 0).

N.B.

Absolute Alarm or Threshold Alarm Referring to Setpoint Command (AcAL. selection)

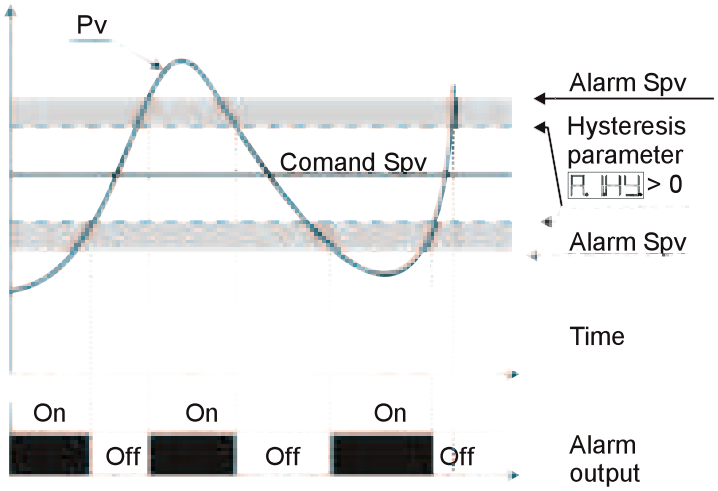


Absolute alarm refers to the command set, with the controller in heating functioning
(par. 11 ACTI. selected HEAT) and hysteresis value greater than “0”
(par. 28 A. HY > 0).
The command set can be changed by pressing the arrow keys on front panel or using serial port RS485 commands.

N.B.

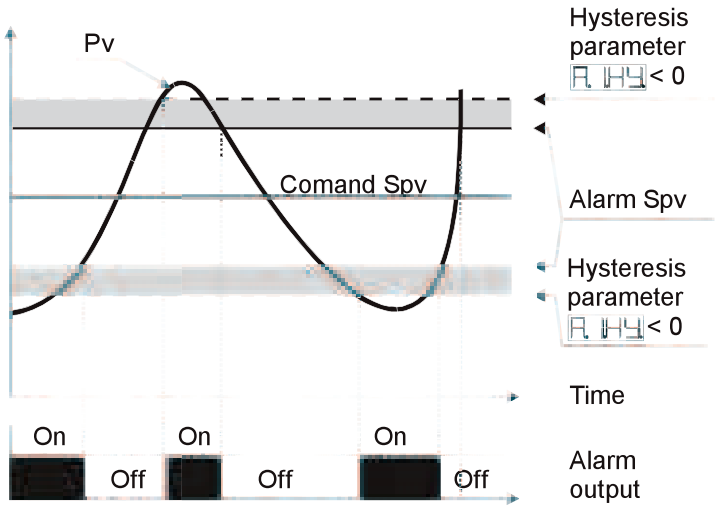
N.B.: The example refers to alarm 1; the function can also be enabled for alarm 2.

Band Alarm (b. AL. selection)



Band alarm with <u>hysteresis value greater than “0”</u> (par. 28 A. HY > 0).

N.B.

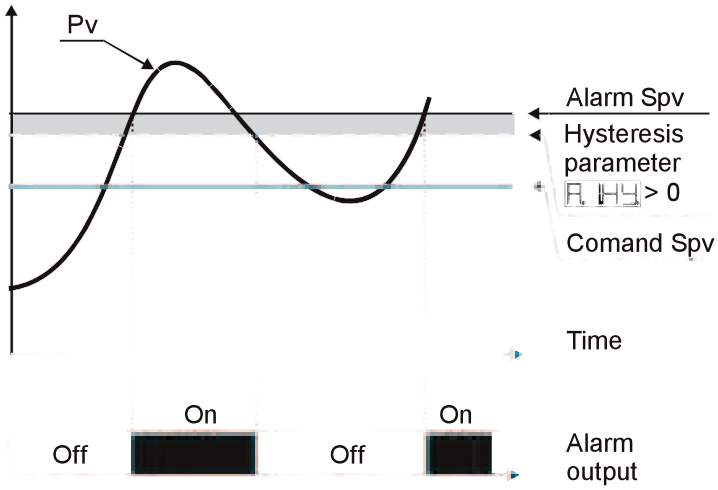


Band alarm with <u>hysteresis value minor than “0”</u> (par. 28 A. HY < 0).

N.B.

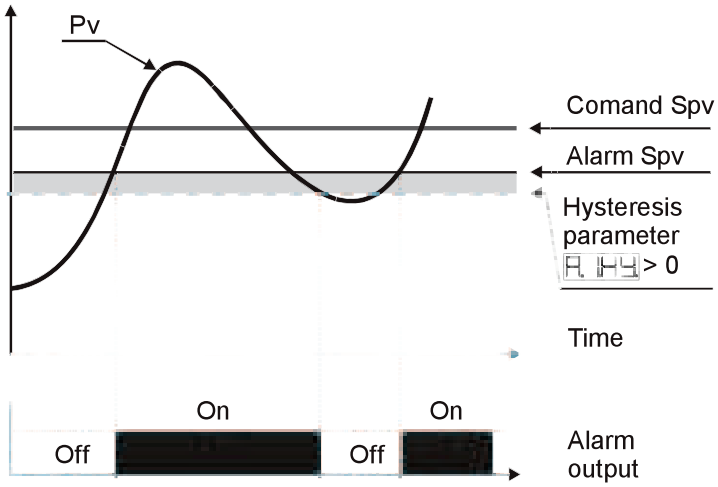
N.B.: The example refers to alarm 1; the function can also be enabled for alarm 2.

Upper Deviation Alarm (HdAL. selection)



Upper deviation alarm <u>value of alarm setpoint greater than “0”</u> and <u>hysteresis value greater than“0”</u> (par. 28 A. HY > 0).

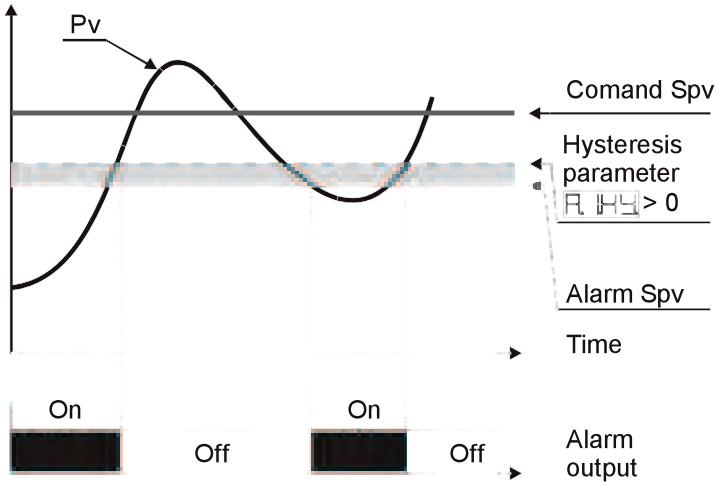
N.B.²



Upper deviation alarm value of alarm setpoint minor than “0” and hysteresis value greater than “0”
(par. 28 A. HY > 0).

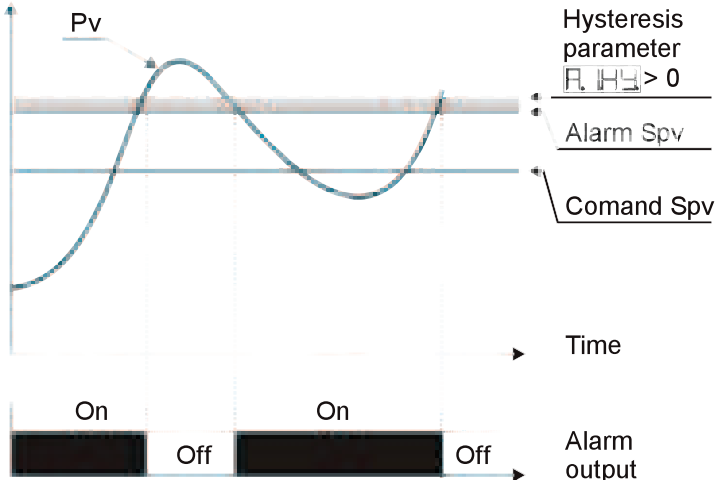
N.B.²

Lower Deviation Alarm (HdAL selection)



Lower deviation alarm value of alarm setpoint greater than “0” and hysteresis value greater than “0”
(par. 28 A. HY > 0).

N.B.²



Lower deviation alarm value of alarm setpoint minor than “0” and hysteresis value greater than “0”
(par. 28 A. HY > 0).

N.B.²

N.B.²: a) The example refers to alarm 1; the function can also be enabled for alarm 2.

b) With hysteresis value less than “0” (A. HY < 0) the broken line moves under the alarm setpoint.

13 Table of Anomaly Signals

If installation malfunctions, controller will switch off regulation output and will report the anomaly.
For example, controller will report failure of a connected thermocouple visualizing E-05 (flashing) flashing on display.
For other signals see table below.

#	Cause	What to do
E-01 SYS.E	Error in EEPROM cell programming.	Call Assistance.
E-02 SYS.E	Cold junction temperature sensor failure or environment temperature out of range.	Call Assistance.
E-04 SYS.E	Incorrect configuration data. Possible loss of instrument calibration.	Verify that configuration parameters are correct.
E-05 cPAr	Thermocouple open or temperature outside of limits.	Control connection with probes and their integrity.
E-08 SYS.E	Missing calibration.	Call Assistance.

14 Configuration EASY-UP

Look!

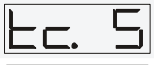
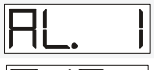
To Simplify the setting of parameters and the integration of the different components involved in the control system, Pixsys introduces the EASY-UP coding which allows to set sensors and/or command outputs in one single step.

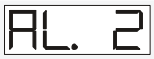
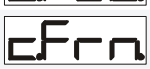
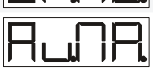
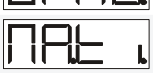
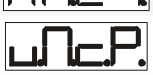
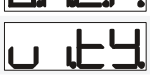
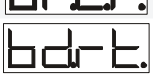
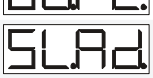
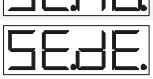
By means of the code listed in the data sheet enclosed to the sensor or actuator (SSR, motorized valve, etc.) the EASY-UP coding will set the relevant main parameters on the controllers (ex. selection of PT100 on parameter “Sensor” and the corresponding measuring range on parameters “Lower and Upper limits of the setpoint”).

Different codes may be entered on the controllers in sequence to configure inputs, control output or retransmission of signal.

15 Summary of Configuration parameters

Date:	**Model DRR245:**
Installer:	**System:**
Notes:	

	Command output type selection
	Analog input configuration
	Number of decimal points
	Lower limit setpoint
	Upper limit setpoint
	Lower limit range AN1 only for linear
	Upper limit range AN1 only for linear
	Automatic setting of linear input limits
	Offset calibration
	Gain calibration
	Regulation type
	Command output reset type
	Contact state for command output in case of error
	Define the OUT1 led state
	Hysteresis in ON / OFF or dead band in P.I.D.
	Command delay
	Command setpoint protection
	Proportional band
	Integral time
	Derivative time
	Cycle time
	Upper limit of heating output percentage
	Alarm 1 selection
	Alarm 1 output contact and intervention type
	Reset type of alarm 1 contact
	State of contact for alarm 1 output
	State of OUT2 led
	Alarm 1 hysteresis
	Alarm 1 delay
	Alarm 1 set protection

	Alarm 2 selection
	Alarm 2 output contact and intervention type
	Reset type of alarm 2 contact
	State of contact for alarm 2 output
	State of OUT2 led
	Alarm 2 hysteresis
	Alarm 2 delay
	Alarm 2 set protection Alarm 2 set protection
	Activation and scale range of amperometric transformer
	Intervention threshold of Loop Break Alarm
	Delay time for Loop Break Alarm intervention
	Cooling fluid type
	Proportional band multiplier
	Overlapping / Dead band
	Cycle time for cooling output
	Analog converter filter
	Sampling frequency of analog converter
	Display filter
	Autotuning type selection
	Command setpoint deviation for tuning threshold
	Operating mode
	Automatic / manual selection
	Digital input functioning
	Gradient for Soft-Start
	Cycle maintenance time
	Gradient change and maintenance time by user
	Display data selection
	Degree type selection
	Retransmission for output 0-10 V or 4…20 mA
	Lower limit range for linear output
	Upper limit range for linear output
	Select baud rate for serial communication
	Select slave address
	Select the serial delay
	Lower limit of heating output percentage

Notes / Updates