

TEMPERATURE CONTROLLER

33 X 72
KR1 model

Quick Guide • ISTR-FKR1ITA01



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DECLARATION OF CONFORMITY AND MANUAL RETRIEVAL

Class II instrument, panel mounting. This controller has been designed with compliance to the European Directives. Consult Declaration of Conformity for further details on Directives and Standards used for Compliance.

All information about the controller usage are inserted in the user manual.

The Declaration of Conformity and the manual of the controller can be downloaded (free of charge) from the web-site:

www.ascontecnologic.com

Once connected to the web-site, search:

KR1

then click on **KR1** in the result page.

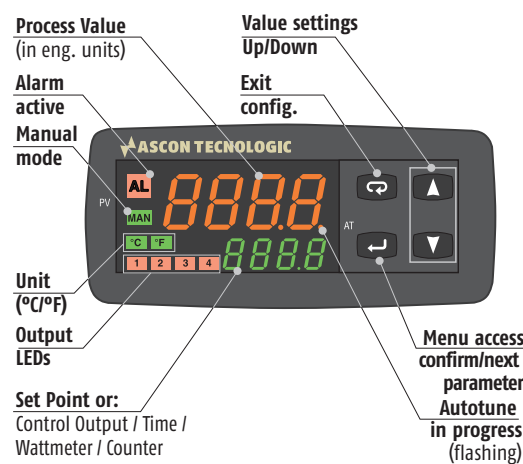
In the lower part of the product page (in any language) is present the download area with links to the documents available for the controller (in the available languages).

Warning!

- Whenever a failure or a malfunction of the device may cause dangerous situations for persons, things or animals, please remember that the plant must be equipped with additional devices which will guarantee safety.

- We warrant that the products will be free from defects in material and workmanship for 18 months from the date of delivery. Products and components that are subject to wear due to conditions of use, service life and misuse are not covered by this warranty.

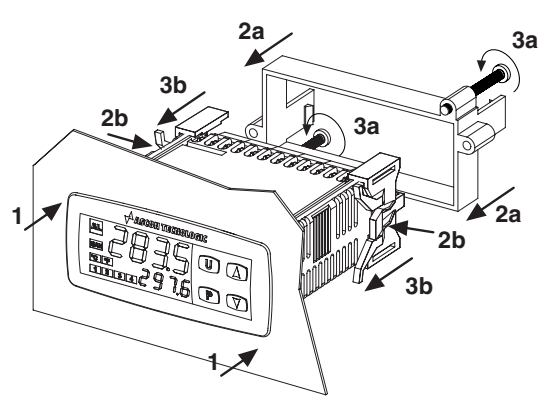
DISPLAY AND KEYS



KEYS FUNCTIONS

	Operator Mode	Editing Mode
	Menu access	Confirm/Next parameter
	Set Point Change Access	Value change (Down)
	Display Output Value and Power/Timer/Program/Wattmeter Count	Value change (Up)
	Programmable	Exit Configuration session

MOUNTING



Attention

The controller can be installed using 2 different types of brackets. Follow the sequence 1, 2a, 3a for the closed version of the bracket, the sequence 1, 2b, 3b for the 2 pieces bracket type.

DIMENSIONS

Overall dimensions (L x H x D): 78 x 35 x 69.5 mm
(3.07 x 1.37 x 2.73 in.)
Panel Cut-out (L x H): 71+0.6 x 29+0.6 mm
(2.79+0.023 x 1.14+0.023 in.)

MODEL CODE

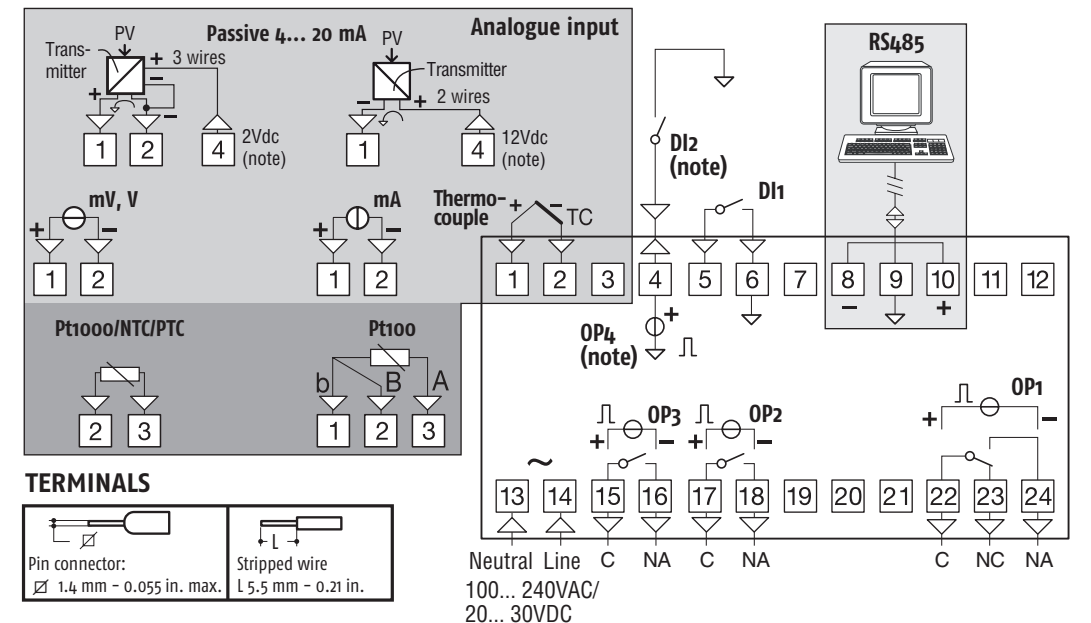
The Code identifies the controller hardware.

Model: KR1 ABCDEFGHI - 0000

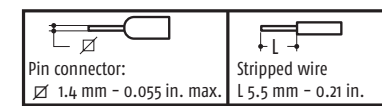
Line	KR	1	
Optional functions	A		
None	-		
Timer	T		
Power Supply	B		
100... 240Vac (-15... +10%)	H		
24Vac (-25... +12%) or 24Vdc (-15... +25%)	L		
Input	C		
TC, PT100, PT1000, mA, mV, V + Digital Input 1	C		
TC, NTC, PTC, mA, mV, V + Digital Input 1	E		
Output OP1	D		
Relay (for resistive loads)	R		
VDC for SSR	O		
Output OP2	E		
None	-		
Relay (for resistive loads)	R		
VDC for SSR	O		
Output OP3	F		
None	-		
Relay (for resistive loads)	R		
VDC for SSR	O		
Output OP4	G		
Digital I/O (see the Electrical Connections paragraph for details)	O		
Serial Communications	H		
TTL	-		
RS485 Modbus + TTL Modbus	S		
Terminal Type	I		
Standard (screw type non removable terminal blocks)	-		
With plug-in screw type terminal blocks	E		
With plug-in clamp type terminal blocks	M		
Removable terminal blocks (fixed part only)	N		

Line	KR	1	
Output OP3	F		
None	-		
Relay (for resistive loads)	R		
VDC for SSR	O		
Output OP4	G		
Digital I/O (see the Electrical Connections paragraph for details)	O		
Serial Communications	H		
TTL	-		
RS485 Modbus + TTL Modbus	S		
Terminal Type	I		
Standard (screw type non removable terminal blocks)	-		
With plug-in screw type terminal blocks	E		
With plug-in clamp type terminal blocks	M		
Removable terminal blocks (fixed part only)	N		

ELECTRICAL CONNECTIONS



TERMINALS



Note: Terminal 4 can be programmed as:

- Digital Input (DI2) connecting a free of voltage contact between terminals 4 and 11
- 0... 12 V SSR Drive Output (OP4) connecting the load between terminals 4 and 11
- 12 Vdc (20 mA) transmitter power supply connecting the transmitter between terminals 4 and 1

CONFIGURATION CODE (step 1)

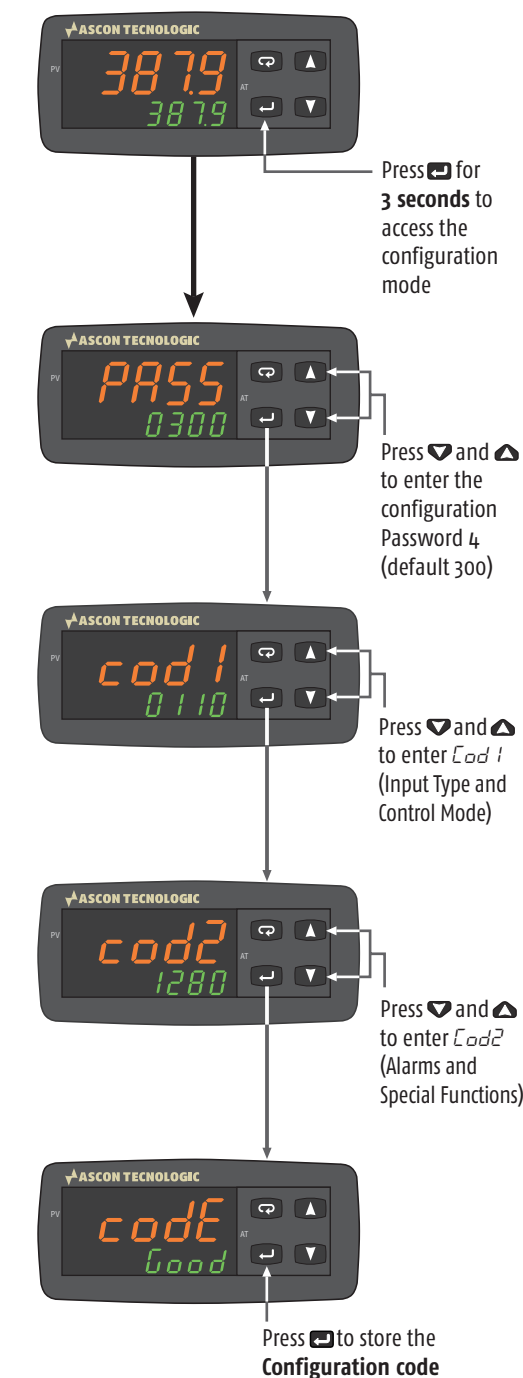
The Controller Configuration (Input type, Control mode Alarms and Auxiliary functions) can be made entering two 4-digit codes. Before to start Configuration procedure, prepare the 2 configuration codes according to the following tables.

Input Type and Range	Cod 1		User Cod 1			
	L	M	L	M	N	O
TC J	-50... +1000°C	0 0				
TC K	-50... +1370°C	0 1				
TC S	-50... +1760°C	0 2				
TC R	-50... +1760°C	0 3				
TC T	-70... +400°C	0 4				
Infrared J	-50... +785°C	0 5				
Infrared K	-50... +785°C	0 6				
PT 100/PTC KTY81-121	-200... +850°C/-55... +150°C	0 7				
PT 1000/NTC 103-AT2	-200... +850°C/-50... +110°C	0 8				
Linear 0... 60 mV		0 9				
Linear 12... 60 mV		1 0				
Linear 0... 20 mA (this selection forces Out 4 = TX)		1 1				
Linear 4... 20 mA (this selection forces Out 4 = TX)		1 2				
Linear 0... 5 V		1 3				
Linear 1... 5 V		1 4				
Linear 0... 10 V		1 5				
Linear 2... 10 V		1 6				
TC J	-58... +1832°F	1 7				
TC K	-58... +2498°F	1 8				
TC S	-58... +3200°F	1 9				
TC R	-58... +3200°F	2 0				
TC T	-94... +752°F	2 1				
Infrared J	-58... +1445°F	2 2				
Infrared K	-58... +1445°F	2 3				
PT 100/PTC KTY81-121	-328... +1562°F/-67... +302°F	2 4				
PT 1000/NTC 103-AT2	-328... +1562°F/-58... +230°F	2 5				

Alarm 3	Cod 2			User Cod 2			
	P	Q	R	P	Q	R	S
Alarm 2							
Alarm 1							
Not used	0	0	0				
Sensor break	1	1	1				
Absolute	High	2	2				
	Low	3	3				
Absolute High/Low	External High/Low	4	4				
	Internal High/Low	5	5				
Deviation	Deviation high	6	6				
	Deviation low	7	7				
Band	External band	8	8				
	Internal band	9	9				

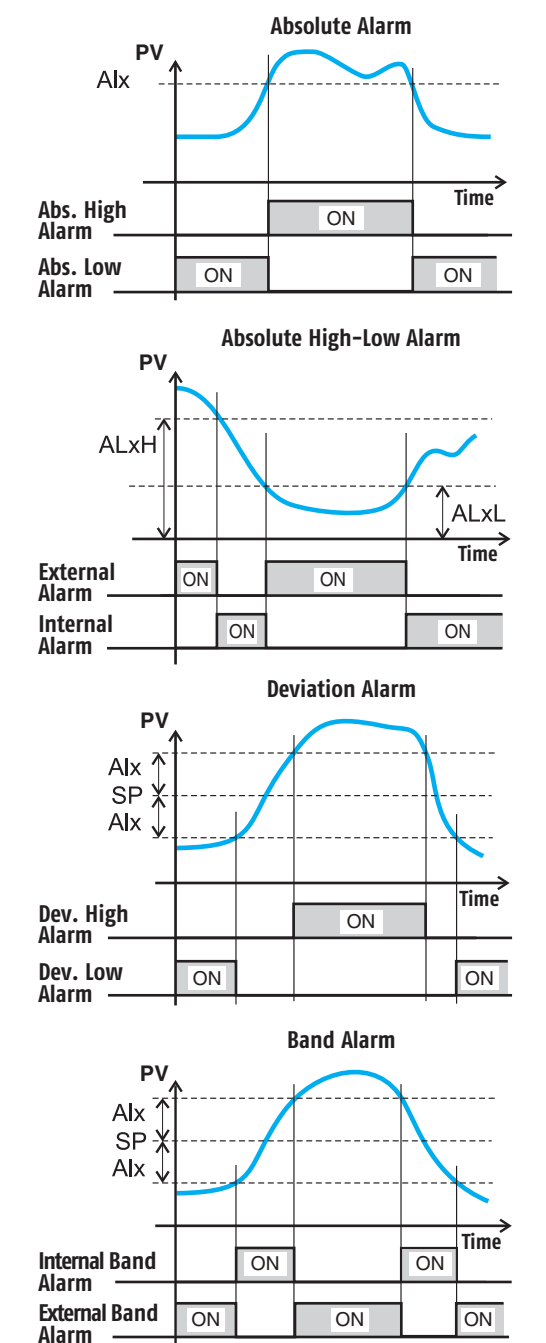
Auxiliary functions activation	S
None	0
Wattmeter (instantaneous power expressed in W)	1
Wattmeter (energy expressed in Wh)	2
Absolute worked time (expressed in days)	3
Absolute worked time (expressed in hours)	4

HOW TO SET THE CONFIGURATION CODE (step: 2)

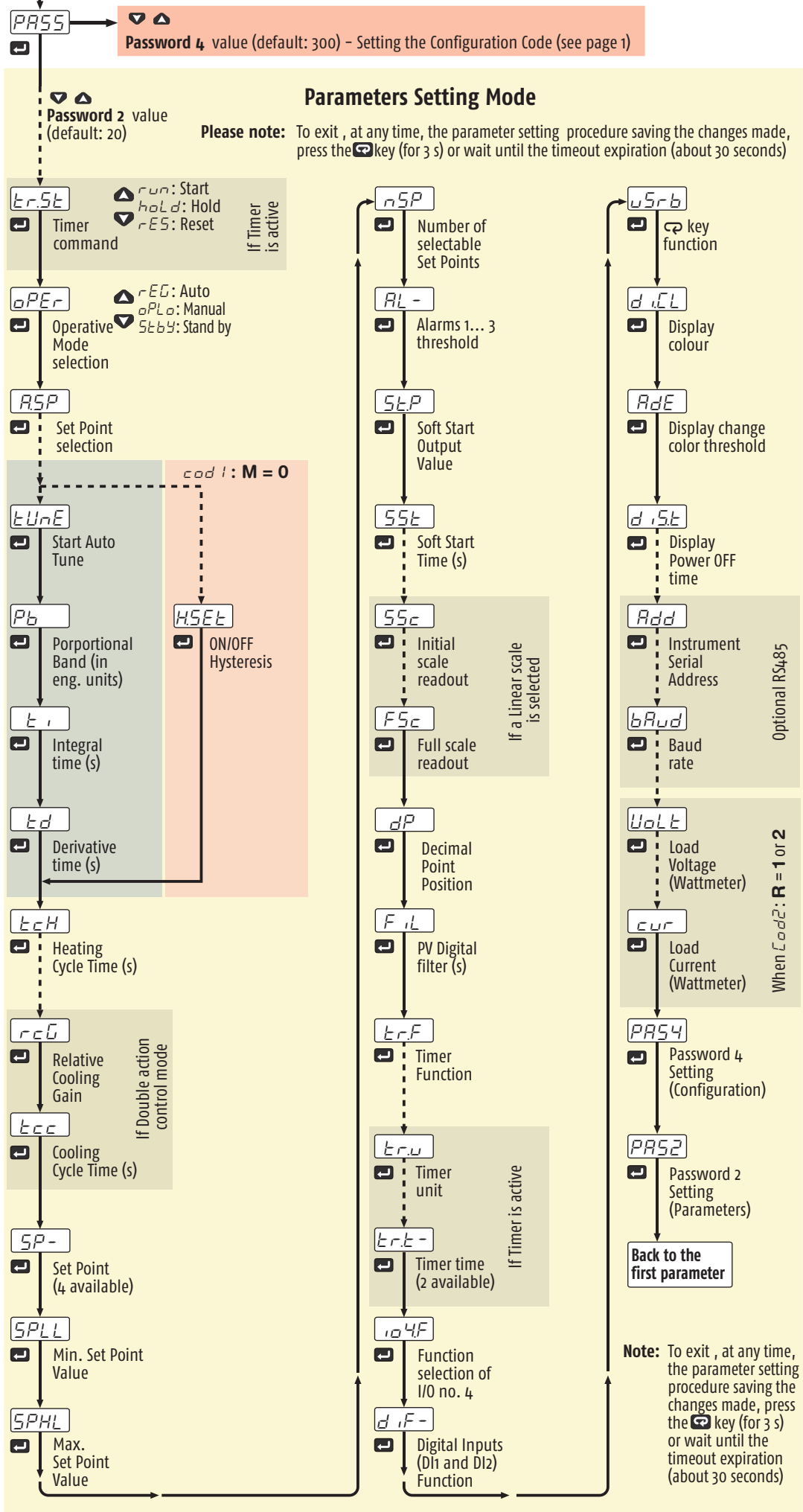
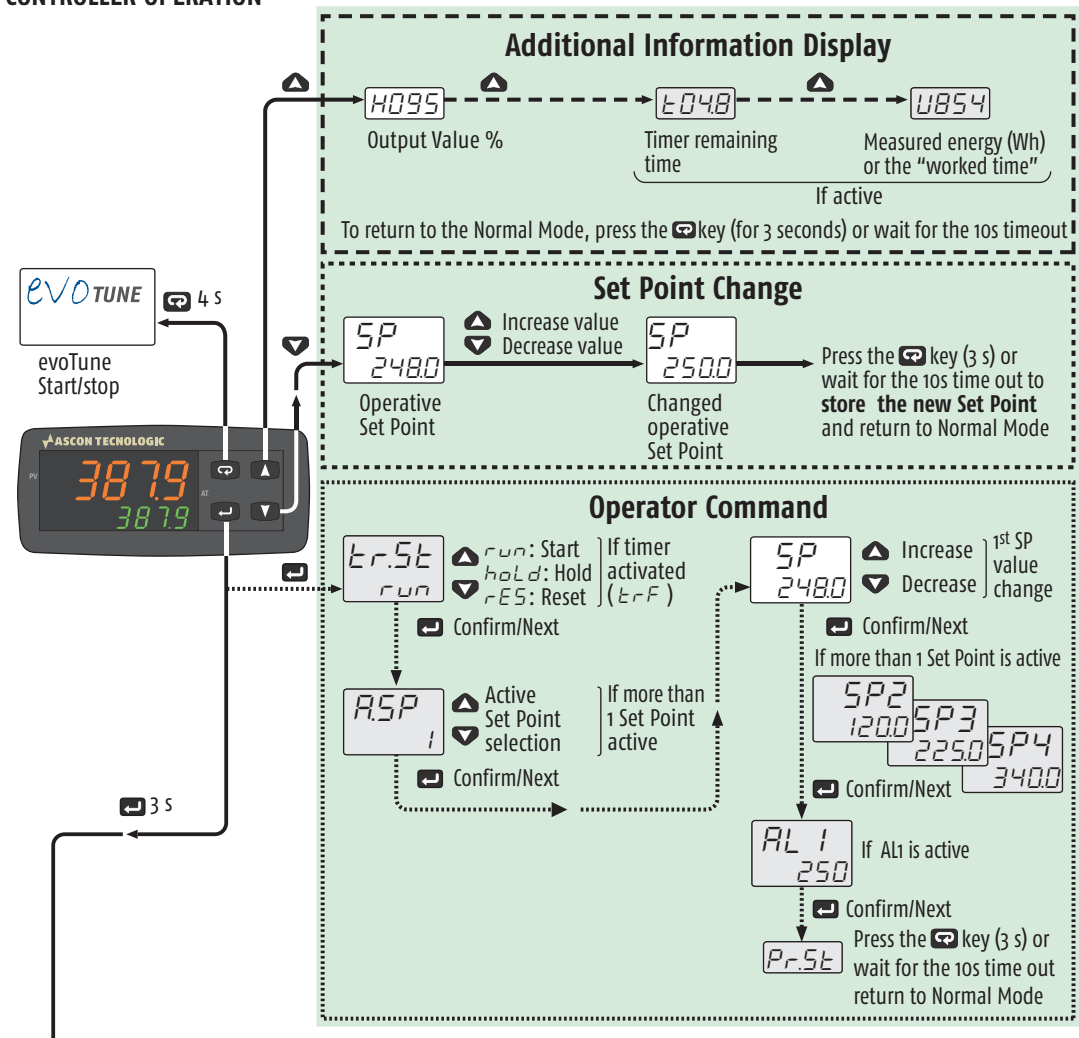


Note: To leave the Configuration session without saving the settings made, press the button

ALARM TYPES



CONTROLLER OPERATION



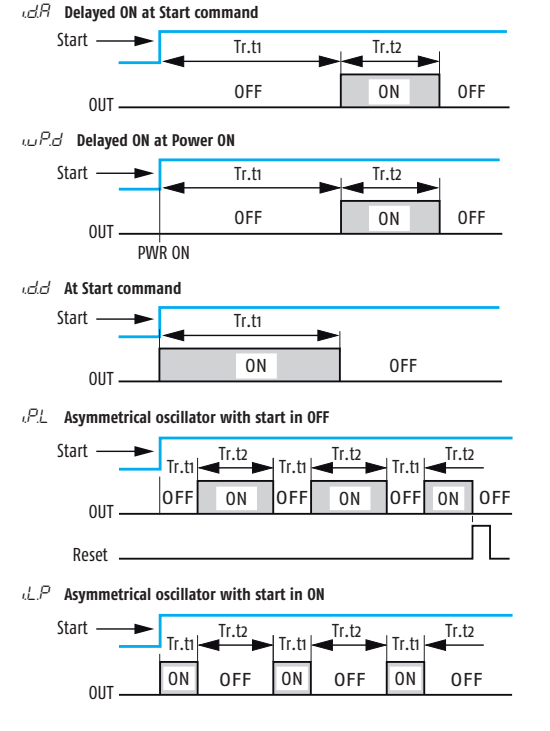
Parameters List (PASS: 20)

Param.	Description	Range	Default value	User value
trSt	Timer status		Option	
oPEr	Operative Mode Selection	Auto = reg, Manual = oPLO, Standby = stdy		
RSP	Set Point Selection	0... 3	0 = SP	
tUnE	Start Auto Tune	0... 1	0 = OFF	
Pb	Proportional Band	1... 9999	20	
tI	Integral Time	0... 10000 s	200	
tD	Derivative Time	0... 1000 s	50	
HSEt	Hysteresis ON/OFF Control	0... 9999	1	
tCH	Heating output cycle time	0.1... 130 s	20.0	
rCG	Relative Cooling Gain	0.01... 99.99	1.00	
tCC	Cooling output cycle time	0.1... 130 s	20.0	
SP	Set Point 1			
SP2	Set Point 2	-1999... +9999 (E.U.)		
SP3	Set Point 3			
SP4	Set Point 4			
SPLL	Set Point min. Value	-1999... SPHL (E.U.)		
SPHL	Set Point max. Value	SPLL... 9999 (E.U.)		
nSP	No. of Set Points	1... 4	1	
AL1	Alarm 1 threshold	AL1L... AL1H		
AL1L	Alarm 1 low threshold/AL1 low limit	-1999... +9999 (E.U.)	-1999	
AL1H	Alarm 1 high threshold/AL1 high limit		9999	
AL2	Alarm 2 threshold	AL2L... AL2H		
AL2L	Alarm 2 low threshold/AL2 low limit	-1999... +9999 (E.U.)	-1999	
AL2H	Alarm 2 high threshold/AL2 high limit		9999	
AL3	Alarm 3 threshold	AL3L... AL3H		
AL3L	Alarm 3 low threshold/AL3 low limit	-1999... +9999 (E.U.)	-1999	
AL3H	Alarm 3 high threshold/AL3 high limit		9999	
StP	Soft Start Output value	-100... 100%	0	
SSt	Soft Start Time	0.00... 8.00 (hh.mm)	0	
SSc	Low Scale readout	-1999... sch	-1999	
FSc	High Scale readout	scL... +9999	9999	
dP	Number of decimals	0... 3	0	
FIL	Measured value Digital filter	OFF; 0.1... 20.0 s	0 = OFF	
trF	Timer Type	nonE, i.d.A, i.uP.d, i.d.d, i.P.L, i.L.P	none	
trU	Timer Units	0 = hh.mm, 1 = mm.ss, 2 = sss.d	1 = mm.ss	
trt1	Time 1	00.01... 995.9	1.00	
trt2	Time 2	00.00... 995.9	1.00	
io4F	I/O 4 Function	ON = Transmitter Power Supply, DiZC = Dig. In. from contact, DiZU = 24 VDC Digital Input	ON	
dIF1	Digital Input 1 Function	0... 21	0	
dIF2	Digital Input 2 Function	0... 21	0	
uSrb	Key "CP" Function	nonE, tunE, oPLO, stand-by	tunE	
dIL	Display colour	0 = Change, 1 = Red, 2 = Green, 3 = Orange	2	
AdE	Display change color threshold	0 (OFF)... 9999 (E.U.)		
dISt	Display Power OFF time	0 (OFF) (display ON), 0.1... 99.59	OFF	
AdD	Instrument Address	1... 254	1	
bAud	Baud rate	1200, 2400, 9600 baud, 19.2, 38.4 kbaud	9600	
VolE	Load Voltage (Wattmeter)	1... 999 (V)	230	
cur	Load Current (Wattmeter)	1... 9999 (A)		
PRs4	Password 4 Setting (Configuration)	0... 999	300	
PRs2	Password 2 Setting (Parameters)	0... 999	20	

Functions selection

Code displayed	Description
nonE	Timer not used
i.d.A	Delayed ON at start command
i.uP.d	Activation ON at Power ON
i.d.d	At start command
i.PL	Asymmetrical oscillator with start in OFF
i.L.P	Asymmetrical oscillator with start in ON

Timer functioning diagram



Digital Inputs DI1 and DI2 Functions

Code displayed	Description
0	Disabled (OFF)
1	Alarm Reset
2	Alarm Acknowledge (ACK)
3	Hold of the measured value
4	Stand by mode
5	Manual Mode
6	Heat with "SP" and Cool with "SP2"
7	Timer Run/Reset [on transition]
8	Timer Run [on transition]
9	Timer Reset [on transition]
10	Timer Run/Reset
11	Timer Run/Reset with lock at the end of the time count
12	Timer Run/Reset with lock at the end of the time count
13	No function (OFF)
14	No function (OFF)
15	No function (OFF)
16	No function (OFF)
17	No function (OFF)
18	Sequential Set Point selection [on transition]
19	SP/SP2 selection
20	Binary coding for Set Point selection on DI1 and DI2 (00 = SP, 01 = SP2, 10 = SP3, 11 = SP4)
21	Digital inputs in parallel to the UP and Down keys (DI1 = UP key, DI2 = DOWN key)

uSrb Key "CP" Function

Code displayed	Description
nonE	Not used
tunE	Starts auto tuning functions
oPLO	Manual mode
ARrC	Alarm Reset
ARsA	Alarm Acknowledge
chSP	Circular Set Point Selection
Stby	Stand-by
StErE	Starts/Stop/Reset timer