

7 • PROGRAMMING INSTRUCTIONS • XE SERIES CONTROLLERS

FUNCTIONS MENU

DISPLAY

Process variable	during normal operation
Function value	during programming
Set point	during normal operation
Function mnemonic	during programming

KEYS

- Digit select
- Increment value
- Enter
- Function

To enter function mode, press **F**

Nota: If **←** or **→** is not pressed within 10 seconds the instrument will time-out back to the process variable.

PARAMETERS

GROUP 1	GROUP 2	GROUP 3	GROUP 4
Y2 Set point (see note 1) 300	Proportional band 0.5...999.9% 5.0	Cycling time (Not displayed with ON-OFF action) 0...200 sec. 30	Enter correct Password PASS
Y3 Set point (see note 1) 300	Integral time 0.0...100.0 minutes 5.0 (0.0 no effect)	Cycling time for cool operation (Only for heat/cool instrument) 0...200 sec. 30	Return to process variable display Straightly from configuration process
Only for models with Y3 auxiliary output option	Derivative time 0.0...10.00 minutes 1.00 (0.00 no effect)	Y2 Hysteresis 0.01...10.00% span 0.50	Set point limit low Beginning of the scale S.P.L.L
Only for Heat/Cool controller (configuration E = 6,7)	Proportional band Y1 Cool 0.5...999.9% 5.0	Y3 Hysteresis 0.01...10.00% span 0.50	Set point limit high End of the scale S.P.L.H
	Dead band 0.0...5.0% output 1.0		Maximum power output (heat) 10...100% 100
	Hysteresis 0.01...10.0% span 0.50		Maximum power output (cool) 10...100% 100
			Slope up during transition of the Set point 0.0...120% span/min. 0.0 (see note 2)
			Slope down during transition of the Set point 0.0...120% span/min. 0.0 (see note 2)
			Time constant of the input filter 0...30 secs 0
			Input shift -50...50 digit 0
			Protection level code (see note) 0000...0222 0222
			Type of tune available No Tune available Only Auto-Tune
			Only for models with Serial communication option
			Device Number 0...63 0
			Baud rate index 0...4 1
			Parity 0...4 0
			Protoc. Ascon / Modbus / Jbus

Note: 1 Allowable Set point values depend upon the type of alarm configuration:
• Deviation alarm: -300...+300
• Band alarm: 0...300
• Independent: on full scale

Note: 2 Parameters Y2 and Y3 will not appear if in the configuration code (G=0 and H=0)

Note: If the controller is configured as an ON/OFF controller the whole group 2 parameters will be occulted and replaced by:

Note: Parameters Y2 and Y3 will not appear if in the configuration code (G=0 and H=0)
Group 3° parameters are not normally accessible, to display/modify it set access code to 0222

MODIFICATION OF A NUMERIC FIELD

It is possible to modify any numeric field by changing each digit in turn.

Example: to change 250 to 260

pressing **←** to select the required digit. Each successive press of this button moves the flashing digit one place to the left.

Pressing **Δ** increments the selected digit (for the most significant digit there is a - between 9 and 0)

Pressing **→** to accept the field or the field will be accepted automatically after the 10 seconds time-out.

Note: Parameter protection:
1st group: Visible and modification
2nd group: Visible but NO MODIFICATION
3rd group: NOT VISIBLE

CONFIGURATION

Enter correct password to start configuration process

Return to process variable display

Entering the configuration process

Enter the first block of 4 configuration index codes D, E, F, G

Enter the second block of configuration code H

Only for mA and volt input

Number of decimal places required 0...3

Engineering range low value for user configurable range

Engineering range high value for user configurable range

To the 4th group of parameters

The configuration code shall be continuously shown. There is no time-out. Exiting the configuration process you will access straightly the 4th group of parameters to modify, if necessary, Set point limits, maximum power output etc.

CONFIGURATION CODE

Input type, scale range (1)	D	Type of output Y1 (2)	E	Type of action and safety state Y1(3)	F
RTD Pt100 -200...600°C	0	Relay (On-Off with hysteresis)	0	Reverse Safety 0%	0
RTD IEC 751 Pt100 -99.9...300.0°C	1	Relay with time-proportioning	1	Direct Safety 0%	1
Thermocouple Type J 0...600°C	2	Logic 0/24 Vdc with time-proportioning	2	Reverse Safety 100% (Yh)	2
Thermocouple IEC 584 Type L 0...600°C	3	Time-proportioning relay	* 5	Direct Safety 100% (Yh)	3
Thermocouple IEC 584 Type K 0...1200°C	4	Logic 0/24 Vdc with time-proportioning	* 7	Reverse Safety -100% (Yh2)	* 4
Thermocouple IEC 584 Type S 0...1600°C	5			Direct Safety -100% (Yh2)	* 5
4...20mA	6				
0...20mA	7				
0...1 Vdc	8				
0...10 Vdc	9				

First block of 4 configuration code D,E,F,G

Second block of configuration code H

Notes:

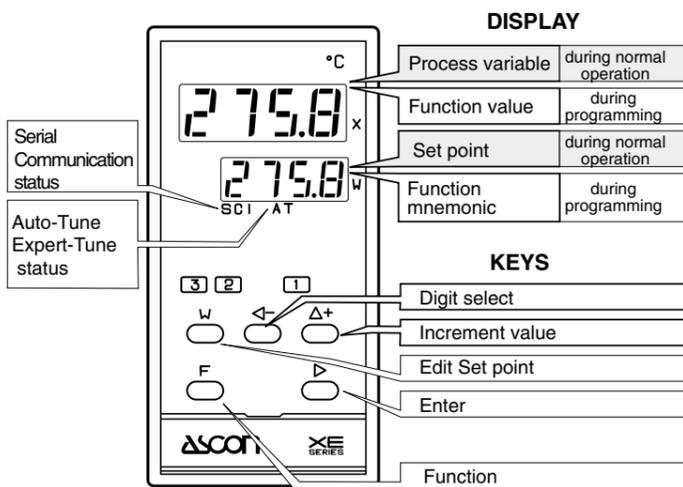
- For mA and Volts inputs, the beginning and end of scale values can be configured in engineering unit between -999 and 9999. The minimum scale span is 100 steps. The values can be expressed in units (xxxx), in tenths (xxx.x), hundredths (xx.xx), or thousandths (x.xxx).
- For heat-cool control, select the outputs with * from (G-6) to (G-9)
- The safety state is the value assumed by Y1 in case of failure in the control loop. Actually, it is the value defining the upper limit of Y1. Safety states with * (H-4) or (H-5) impose the maximum limit to Cool action.
- Excluding the output option Y3 (C = 0) implies selecting (H = 0) in configuration.

Type of Set point and control mode output Y3 (4)	H	Type of Set point and control mode output Y2	G
Disabled	0	Disabled	0
Deviation with startup inhibition Active high	1	Deviation with startup inhibition Active high	1
Deviation with startup inhibition Active low	2	Deviation with startup inhibition Active low	2
Band Active outside	3	Band Active outside	3
Band Active inside	4	Band Active inside	4
Independent Active high	5	Independent Active high	5
Independent Active low	6	Independent Active low	6
Deviation Active high	7	Deviation Active high	7
Deviation Active low	8	Deviation Active low	8
Cool - Heat	9	Loop - Break - Alarm	9

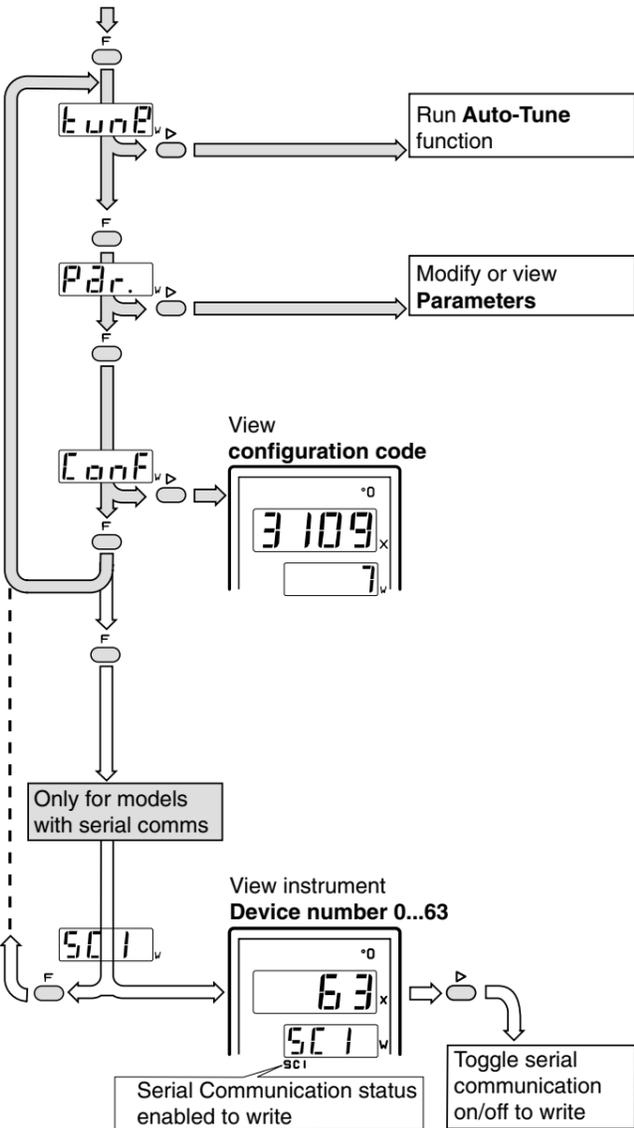
You can configure your instrument just entering through the keyboard an 5 characters code if at the power-up you will see 9999 .9999 that means the instrument IS NOT CONFIGURED

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FUNCTIONS MENU



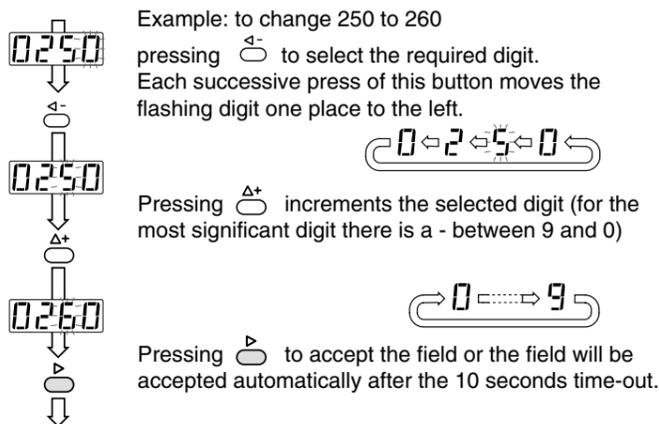
To enter function mode, press **F**



Note: If **←** or **↵** is not pressed within 10 seconds the instrument will time-out back to the process variable

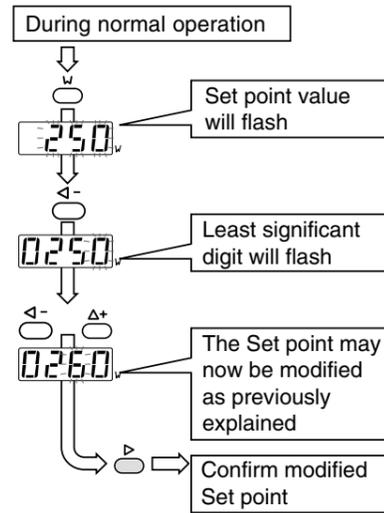
MODIFICATION OF A NUMERIC FIELD

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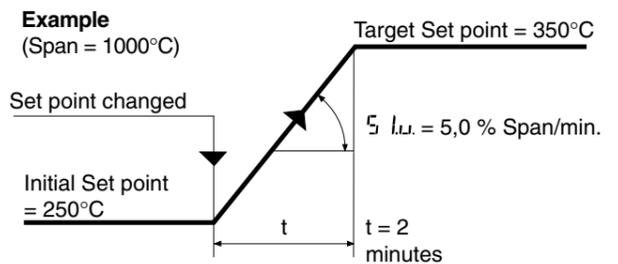
SET POINT

Modify Set Point



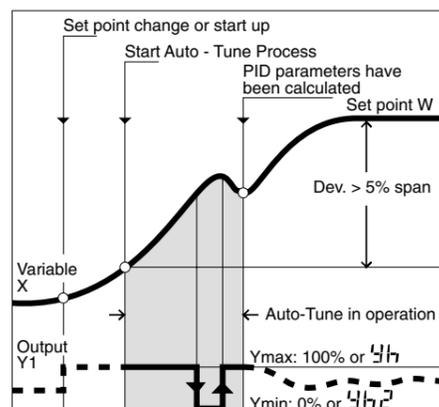
Note: The Set point will be automatically accepted after the 10 seconds time-out.

Note: After the Set point has been modified the new target Set point will be reached after a period of time, depending upon the values entered in the $S.L.U.$ (Slope up) and $S.L.D.$ (Slope down) gradient parameters.



The target Set point can be viewed at any time from the function menu.

AUTO-TUNE



Auto-tune should be used when the instrument is first installed to provide approximate values for the P.I.D algorithm. When the auto-tune cycle has been completed, the values for P.I.D will be automatically entered. It is possible to escape from the auto-tune procedure at any time by pressing any key.

The Auto-tune function is available if the following requirements are met:

1. Parameter $Flt_u = 1$
2. The deviation $> 5\%$ span

Auto-tune will function correctly:

- if the X variable has to increase or decrease
- if the heat/cool facility is selected the Auto-tune process will calculate the PID parameters for both heat and cool.

