50 YEARS 1969-2019 · Q ISO 9001 Certified Quality · 5 YEARS Extended Warranty · CE EN-61010-1 Security · CE EN-61326-1 Electromagnetic C. · 4/20mA Process · 0/10Vdc Process · Pt Temperature · tc Temperature · NTC Temperature · Resistances

1. INSTALLATION AND START-UP

1. Connect the power supply (see section 4).
   • see section *8* for an explanation on '*normal mode*' of operation.
2. Remove the front filter to access the configuration key pad.
   • see section *6* for an explanation on how to access the internal key pad.
3. Access the '*configuration menu*' (see section 8) and at the '*function code*' parameter (see section 9), introduce one of the '*predefined configuration codes*' (see section 7).
4. If a custom configuration is needed, download the user's manual for a full explanation on how to customize input range and scale the display (see section 3).
   • customize the input signal range.
   • scale the reading.
5. Connect the input signal (see section 4).
   • for a list of display errors see section *10*.
6. If needed, connect the output signal (see section 4) and configure the alarm.
7. Other functions you may consider to configure:
   • the '*Temperature tools*', to configure the temperature reading.
   • the '*Display tools*', to configure offsets, filters and brightness).
   • the '*Tools*', to define a behavior for the output in case of error or while inside the '*configuration menu*', or the password function to block access to the '*configuration menu*'.
8. Remove the rear connector, install the instrument in the panel and reconnect the connector.

Access the user's manual (see section 3) for detailed explanations. Do not forget to read the '*installation precautions*' section at the user's manual.

2. MATERIAL INCLUDED

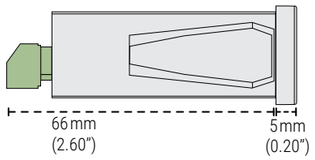
The instrument is provided with the following elements :

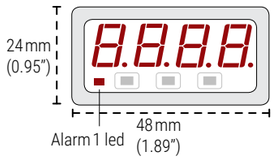
- 1 x instrument P4P
- 1 x plug-in screw terminal, connected to the instrument
- 1 x quick installation guide

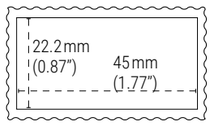
3. ADDITIONAL DOCUMENTATION

User's manual P4P	www.fema.es/docs/5895_P4P_manual_en.pdf
Datasheet P4P	www.fema.es/docs/5897_P4P_datasheet_en.pdf
Quick installation guide P4P	www.fema.es/docs/5899_P4P_installation_en.pdf
Declarations of conformity	www.fema.es/docs/5889_CE-Declaration_P4_en.pdf
Warranty	www.fema.es/docs/4153_Warranty1_en.pdf
Web	www.fema.es/Series_P4
Scan the QR code to directly access the user's manual of this instrument.	

4. CONNECTIONS AND VIEWS







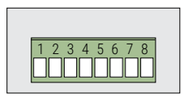


Table 1 | **Connections for power**

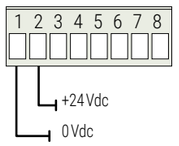


Table 2 | **Power connections**

	Power terminals	
Power	1	2
24 Vdc	- (0 Vdc)	+ (24 Vdc)

(Isolated, consumption <1.0 W, overvoltage cat. 2).

Needs protection fuse for power supply: 400 mA time-lag

Table 3 | **Transistor output connections**

	Output terminals	
Output	7	8
Transistor	collector	emitter

Table 4 | **Transistor output connections**

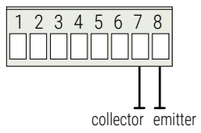
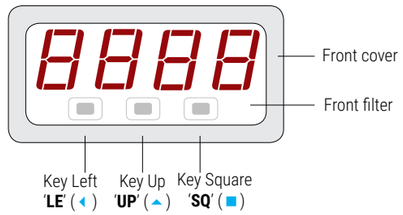


Table 5 | **Input signal connections**

	Input terminal			
Input signal	3	4	5	6
4/20 mA (active loop)	mA+ (out)			mA- (in)
0/10 Vdc	common			+Vdc
Thermocouples	tc-	tc+		
Ntc	ntc-		ntc+	
Pt100 (3 wires)	pt100-	pt100- (3rd wire)	pt100+	
Pt100 (2 wires)	pt100-	short to terminal 3	pt100+	
Pt500, Pt1000	pt-		pt+	
Resistances	res-		res+	

6. CONFIGURATION SYSTEM



The instrument is fully configurable from the 3 push buttons accessible behind the front filter. To remove the front filter, force the front cover to snap out of the body housing, and remove the front filter.

Gently push the connection terminals at the back, and the instrument will move to the front, enough to make the keypad accessible

7. PREDEFINED CONFIGURATION CODES

Table 6 | **Predefined configuration codes**

Signal type	Input signal range	Configuration. code	Default reading	Associated text*
Process	4/20 mA	010	0.0/100.0	420
	0/10 Vdc	011	0.0/100.0	010
	reserved	012 to 014		
Pt100 (2 and 3 wires)	-200/850 °C	015	-200.0/850.0	P.100
Pt500	-200/630 °C	016	-200.0/630.0	P.500
Pt1000	-200/630 °C	017	-200.0/630.0	P.1k
	reserved	018 to 019		
Thermoc. J	-200/1200 °C	020	-200/1200	tc.J
Thermoc. K	-200/1372 °C	021	-200/1372	tc.K
Thermoc. E	-200/1000 °C	022	-200/1000	tc.E
Thermoc. R	-50/1768 °C	023	-50/1768	tc.r
Thermoc. S	-50/1768 °C	024	-50/1768	tc.S
	reserved	025 to 029		
Ntc	Ntc 44004	030	-80.0/120.0	4004
	Ntc 44005	031	-80.0/120.0	4005
	Ntc 44006	032	-70.0/120.0	4006
	Ntc 44007	033	-80.0/120.0	4007
	Ntc 44008	034	-40.0/120.0	4008
	Ntc 44030	035	-80.0/75.0	4030
	Ntc 44031	036	-70.0/75.0	4031
	Ntc 44032	037	-40.0/75.0	4032
	Ntc 44033	038	-80.0/75.0	4033
	Ntc 44034	039	-80.0/75.0	4034
	Ntc R25=10K β=3500	040	-50.0/90.0	ntc.2
	reserved	041 to 044		
Resistance	0/1 KOhm	045	0/1.000	1K
	0/10 KOhm	046	0/10.00	10K
	0/100 KOhm	047	0/100.0	100K
	0/1 MOhm	048	0/1.000	1M
	reserved	049 to 099		
	(End of list)	'----'		
	(Custom selection)	'uSEr'		

Notes

• Code '**uSEr**' indicates that a user custom configuration is active, and it does not match any of the listed codes This code is non-selectable, for information only.
• Code '**----**' identifies the end of the list, it follows code '**099**' and the list continues with code '**010**'. Select '**----**' to exit the list without applying changes.
• * The '*associated text*' is displayed at power-up, and indicates the actual signal range configured.

5. HOW TO ORDER

Reference	Description
P4P	Miniature meter for process and temperature

8. HOW TO OPERATE

AT POWER-UP When the power supply is connected:

- the '*display*' shows the firmware code '**b5.xx**'.
- the '*display*' shows the configured '*input signal*' (for example: '**420**').
- the instrument is now in '*normal mode*' of operation and the '*display*' reading is according to the input signal and the applied scaling.

FROM 'NORMAL MODE' OF OPERATION

- key '**SQ**' (■) gives access to the '*configuration menu*' *(see section 9)*.

HOW TO ENTER THE 'CONFIGURATION MENU'

With the instrument in '*normal mode*' of operation, press the '**SQ**' (■) key and maintain for 1 second. The horizontal leds light from bottom to top. When the upper led lights, the instrument enters into the '*configuration menu*'.

The first menu entry displayed is '**Function code**' (**codE**). You can introduce one of the '*predefined configuration codes*' *(see section 7)* for a fast configuration, or download the user's manual *(see section 3)* for a full explanation on the functions available.

If the '**SQ**' (■) key is released before entering into the '*configuration menu*', the horizontal leds light downwards from top to bottom, and the instrument returns to '*normal mode*' of operation.

HOW TO OPERATE INSIDE THE 'CONFIGURATION MENU'

Inside the '*configuration menu*', use the front keypad to move through menu entries, parameters, and select configuration values:

- **Key 'SQ'** (■) functions as the '*ENTER*' key. It selects the menu entry currently displayed. At numerical value entries, it validates the number displayed.
- **Key 'UP'** (▲) moves vertically through the different menu entries. At numerical value entries, it modifies the selected digit by increasing its value to 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. The most significant digit has additional values '-' and '-1'.
- **Key 'LE'** (◄) functions as the '*ESCAPE*' key. It leaves the selected menu entry, and eventually, will leave the '*configuration menu*'. When leaving the '*configuration menu*', the changed parameters are activated. At numerical value entries, the **'LE'** (◄) key allows to select the active digit. To modify a numeric value press the '**UP**' (▲) key to increase the value '+1'. Press the **'SQ'** (■) key to validate the value.

'ROLLBACK' FUNCTION

If there is no interaction from the operator for 60 seconds, the instrument exits the '*configuration menu*' discarding changes, and returns to '*normal mode*' of operation.

WHEN EXITING THE 'CONFIGURATION MENU'

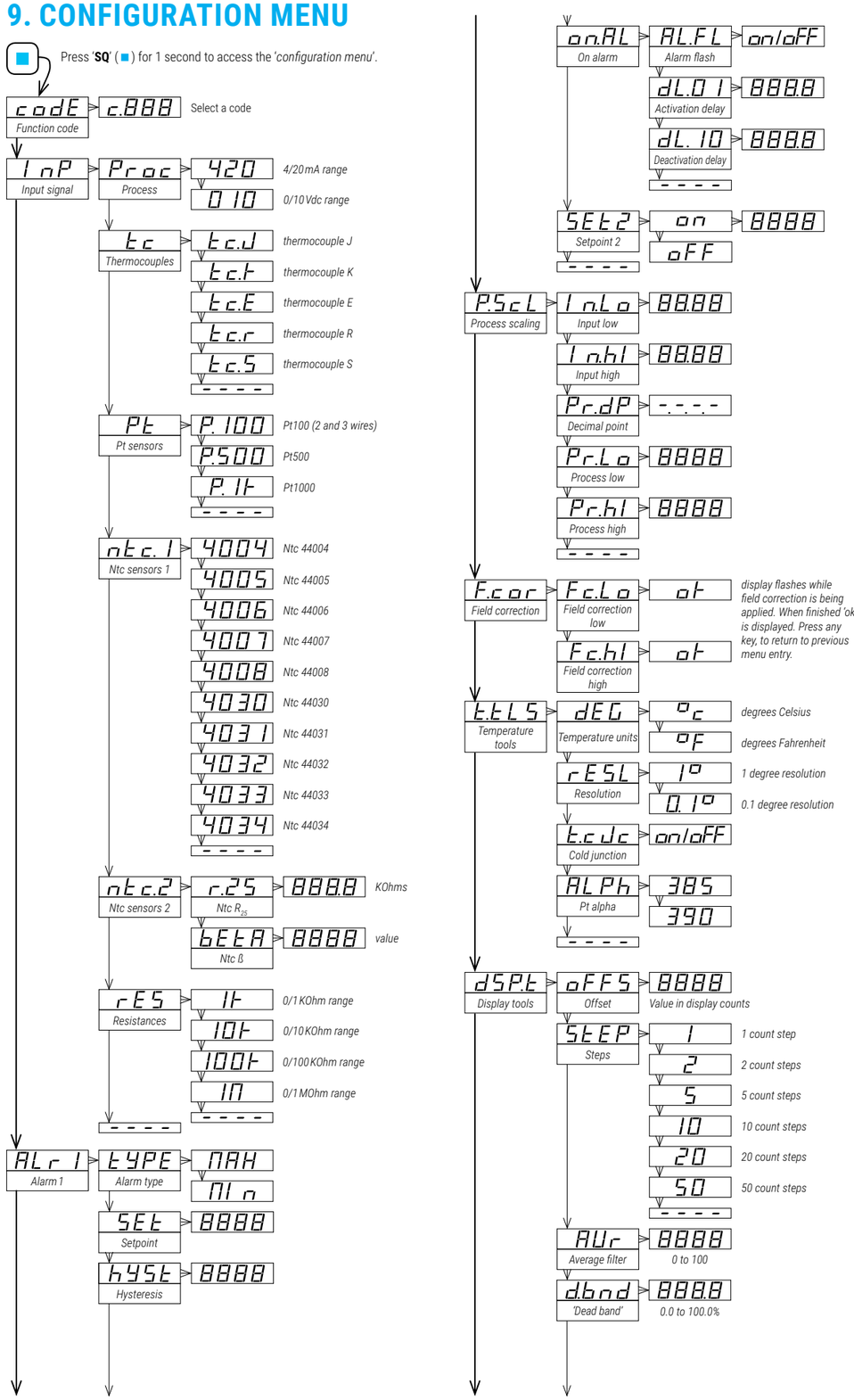
When exiting the '*configuration menu*' without changes (either by '*rollback*' activation or because there are no changes in the configuration), the horizontal leds light down from top to bottom, and the instrument returns to '*normal mode*' of operation.

When exiting the '*configuration menu*' with changes, the display leds light a round shape while the new configuration is stored. When the round shape is finished, a start-up is applied. After start-up, the new configuration is active and the instrument is in '*normal mode*' of operation.

⚠ When inside the '*configuration menu*', the output signal remains overranged at maximum signal. Other configurations available at the '**On SQ**' parameter

⚠ When the operator exits the '*configuration menu*', the output signal is inactive for a duration <5 seconds, while the instrument restarts.

9. CONFIGURATION MENU



10. ERROR CODES

Table 7 | **Error codes**

'**Er.01**'	Password error. The password code entered is not correct.
'**Er.02**'	Input hardware overrange. The input signal is higher than the maximum signal that can be measured.
'**Er.03**'	Input hardware underrange. The input signal is lower than the minimum signal that can be measured.
'**Er.06**'	Display overrange. The display value should be higher than the maximum value that can be displayed.
'**Er.07**'	Display underrange. The display value should be lower than the minimum value that can be displayed.
'**Er.08**'	Scaled process display slope not valid. The values for '*Process low*' (**Pr.Lo**) and '*Process high*' (**Pr.hI**) can not be the same.
'**Er.10**'	Invalid scaled process display slope. Values for '*Process low*' and '*Process high*' can not be the same. Enter a different value to validate the parameter.
'**Er.11**'	Short circuit error. The input signal detects a short circuit. Applies to 4/20 mA and resistive temperature sensors (Pt100, Ntc, ...).
'**Er.12**'	Sensor break. Thermocouple open. Ntc connection open. Pt100 3rd wire connected to Pt+ or Pt100 open.
'**Er.13**'	Overload at the 4/20 mA input. The input signal detected is higher than 60 mA, and the instrument has opened the circuit. The instrument tries to reconnect every 1 second.
'**Er.14**'	The third wire of the Pt100 is open (not connected, broken, or third wire resistance is higher than 15 Ohms). Short-circuit terminals 3 and 4 to overlook the third wire.

Error codes: [1]are shown flashing on display; [2]are not visible inside the '*configuration menu*'; [3]remain active on display until the problem that caused the error is solved; [4] if multiple errors solve the first problem to see the next active error code.

Table 8 | **Messages**

'**-nA-**'	Function not available. For the actual configuration, the function is not available.
'*flash*'	Display flashes because of the 'on alarm' parameter configuration, does not activate any error.

Messages do not trigger the '**On error**' (**on.Er**) function.

11. FACTORY CONFIGURATION

Function code (**codE**)	10	
Input range (**InP**)	4/20 mA	
Alarm 1 (**ALr1**)		
Alarm type (**tYPE**)	maximum	
Setpoint (**SEt**)	100.0	
Hysteresis (**hYSt**)	1	
On alarm (**on.AL**)		
Alarm flash (**AL.FL**)	on	
Activation delay (**dL.01**)	0.0	
Deactivation delay (**dL.10**)	0.0	
Setpoint 2	off	
Process scaling (**P.ScL**)		
Input low (**In.Lo**)	4.00	(mA)
Input high (**In.hI**)	20.00	(mA)
Process decimal point (**Pr.dP**)	---.-	
Process low (**Pr.Lo**)	0.0	
Process high (**Pr.hI**)	100.0	
Temperature tools (**t.tLS**)		
Temperature units (**dEG**)	ºc	
Resolution (**rESL**)	1º	
Cold junction (**t.cJc**)	on	
Pt alpha (**ALPh**)	385	
Display tools (**dSP.t**)		
Offset (**oFFS**)	0	
Steps (**StEP**)	1	
Average filter (**AVr**)	0	
Dead band (**d.bnd**)	0.0	
Brightness (**brGt**)	3	
Tools (**tooL**)		
On error (**on.Er**)	to.hI	(output active)
On '*SQ*' (**on.Sq**)	to.hI	(output active)
On power-up (**on.Pu**)		
Delay (**dLAY**)	0	
Password (**PASS**)	0000	(disabled)

RESET TO DEFAULT FACTORY PARAMETERS

To return to default factory parameters, enter into '*configuration menu*', go to '*Tools*' (**tooL**) / '*Factory reset*' (**FAct**) and select '**yes**'

- the leds light a round shape while the new configuration is applied
- the start up message appears ('**420**')
- the actual signal input value is displayed
- the instrument is in '*normal mode*' of operation

12. REGULATIONS

This instrument conforms to the actual CE regulations. For a copy of the '*CE declaration of conformity*' see section *3*. Applicable regulations are :

Security regulations EN-61010-1 ('*Fixed*' equipment, '*Permanently connected*'. '*Double*' isolation. Overvoltage category 2).

Electromagnetic compatibility regulations EN-61326-1

This instrument does not provide a general mains switch and will start operation as soon as power is connected. The instrument does not provide protection fuse, and the fuse must be added during installation. Instrument designed to be panel mounted.

Risk of electrical shock. Instrument terminals can be connected to dangerous voltage.

Instrument protected with double isolation. No earth connection required.

Instrument conforms to CE and UKCA rules and regulations.

According to directive 2012/19/EU, electronic equipment must be recycled in a selective and controlled way at the end of its useful life.

5 YEARS Extended Warranty — Standard warranty of 3 years according to actual european legislation. Free of cost warranty extension of 5 years, available at (see section 3).