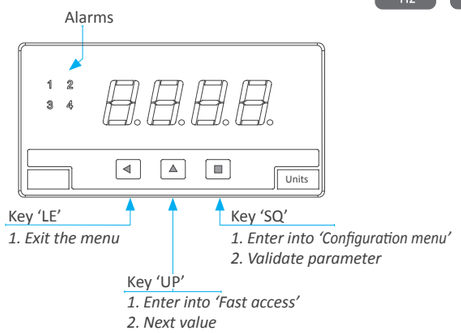
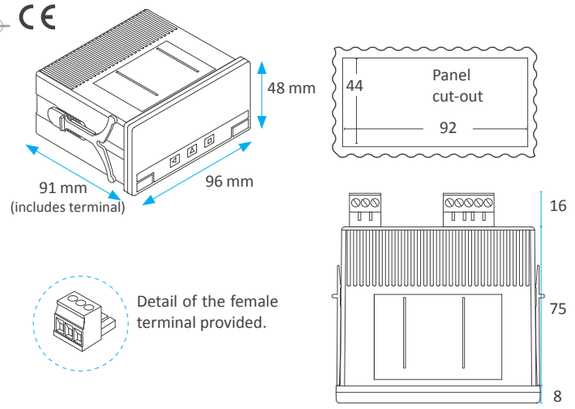
Vac/Aac · Vdc/Adc · °C °F · Process · Resistance · Hz

5 YEARS Extended Warranty · CE EN-61010-1 Security · CE EN-61326-1 Electromagnetic C. · Q ISO 9001 Certified Quality · 45 YEARS 1969-2014

1. Front view



2. Dimensions and panel cut-out (mm)



Detail of the female terminal provided.

3. How to order

Series		Model		Customization
EC4	-	ZR3	-	

-XXXX *(customized execution)*
-*(empty)*

4. Additional documentation

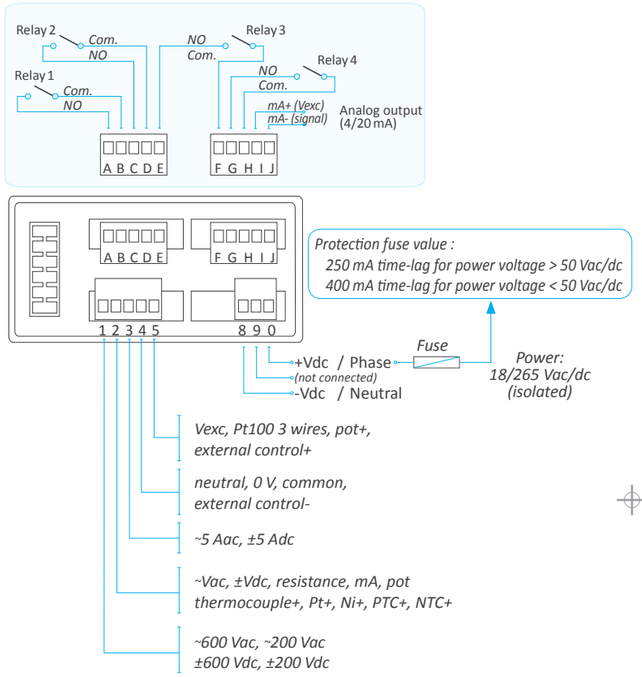
User's manual EC4-ZR3	www.fema.es/docs/4608_EC4-ZR3_manual_en.pdf
Datasheet EC4-ZR3	www.fema.es/docs/4609_EC4-ZR3_datasheet_en.pdf
Quick installation guide EC4-ZR3	www.fema.es/docs/4610_EC4-ZR3_installation_en.pdf

User's Manual EC4-ZR3

5. Installation and start-up

1. Open the instrument (see section 7).
2. Select the jumpers for the desired signal range (see section 8).
3. Close the instrument (see section 7).
4. Connect the signal and the power (see section 6).
5. Configure the instrument from the '*Configuration menu*' (see section 9).
6. **If you need additional information, see section 4.**

6. Connections

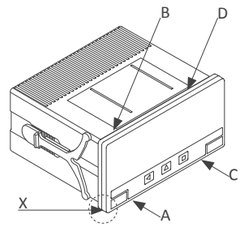


7. How to open the instrument

Use a flat screwdriver to unlock clips 'D', C', 'B' and 'A', in this order. Remove the front filter. Gently let the internal boards slide out of the instrument.

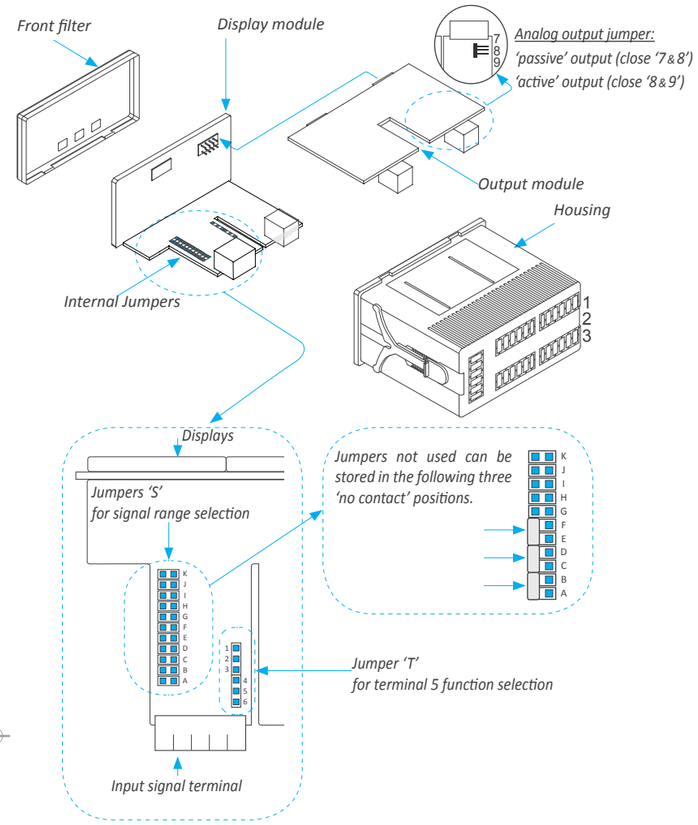
To reinsert the boards in the housing :

1. make sure that the boards are correctly connected to the displays pins
2. slide the boards into the housing guides
3. place the front filter at corner X, and then insert clips 'A', 'B', 'C' and 'D' in this order.



Risk of electric shock. Removing the front cover will grant access to internal circuits which may be at dangerous voltage. Disconnect the input signal and the power supply to prevent electric shock to the operator. Operation must be performed by qualified personnel only.

8. Internal structure and jumpers for range selection



AC ranges	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)
~600 Vac	from 9999 to -1999	G & I	4-5	<0.30 % (up to 150 Hz)
~200 Vac		I		
~20 Vac		A & I		
~2 Vac		B & I		
~200 mVac		C & I		
~60 mVac		E & I		
~5 Aac		I		<0.50 % (up to 150 Hz)
~20 mAac		D & I		

DC ranges	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)
±600 Vdc	from 9999 to -1999	G	4-5	<0.20 %
±200 Vdc		---		
±20 Vdc		A		
±2 Vdc		B		
±200 mVdc		C		
±60 mVdc		E		<0.25 %
±5 Adc		- - -		
±20 mAdc		D		<0.15 %

Resistance ranges	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% reading)
0 to 5 K	from 9999 to -1999	F & H & K	4-5	<1.5 % of reading
0 to 50 K		F & K		

Thermocouples	Jumpers 'S'	Jumper 'T'	Range in ºC (in ºF)	Total error (cold junction included)
tc. K	E	4-5	-100 / 1350 ºC (-148 / 2462 ºF)	<3 ºC
tc. J			-100 / 1200 ºC (-148 / 2192 ºF)	
tc. E			-100 / 1000 ºC (-148 / 1832 ºF)	
tc. N			-100 / 1300 ºC (-148 / 2372 ºF)	
tc. L			-100 / 900 ºC (-148 / 1652 ºF)	
tc. R	E & J		0 / 1768 ºC (32 / 3214 ºF)	
tc. S			0 / 1768 ºC (32 / 3214 ºF)	
tc. T			-100 / 400 ºC (-148 / 752 ºF)	
tc. C	E		0 / 2300 ºC (32 / 4172 ºF)	<5 ºC
tc. B	E & J		700 / 1820 ºC (1292 / 3308 ºF)	

Pt and Ni probes	Jumpers 'S'	Jumper 'T'	Range in ºC (in ºF)	Total error	Current at sensor
Pt100 (3 wires)	F & H & J	5-6	-200 / 700 ºC (-328 / 1292 ºF)	<1ºC	< 900 uA
Pt100 (2 wires)	F & H	4-5	-200 / 700 ºC (-328 / 1292 ºF)		< 900 uA
Pt500	F		-150 / 630 ºC (-238 / 1166 ºF)		< 90 uA
Pt1000	F		-190 / 630 ºC (-310 / 1166 ºF)		< 90 uA
Ni100	F & H		-60 / 180 ºC (-76 / 356 ºF)		< 900 uA
Ni200	F & H		-60 / 120 ºC (-76 / 248 ºF)		< 900 uA
Ni1000	F		-60 / 180 ºC (-76 / 356 ºF)		< 90 uA

Process signals	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)
4/20 mA	from 9999 to -1999	D	1-2*	<0.15 %
0/10 Vdc		A		<0.20 %

* Place jumper 'T' at position 1-2 for +15 Vdc excitation voltage at terminal 5. Optionally, place jumper 'T' at position 4-5 to work with 'external contact' at terminal 5.

Potentiometers nominal value	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)
500 R to 20 K	from 9999 to -1999	A	2-3	<0.5 %

Frequency	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% reading)
15 Hz to 100 Hz	from 9999 to -1999	select Vac or Aac range	4-5	<0.15% of reading

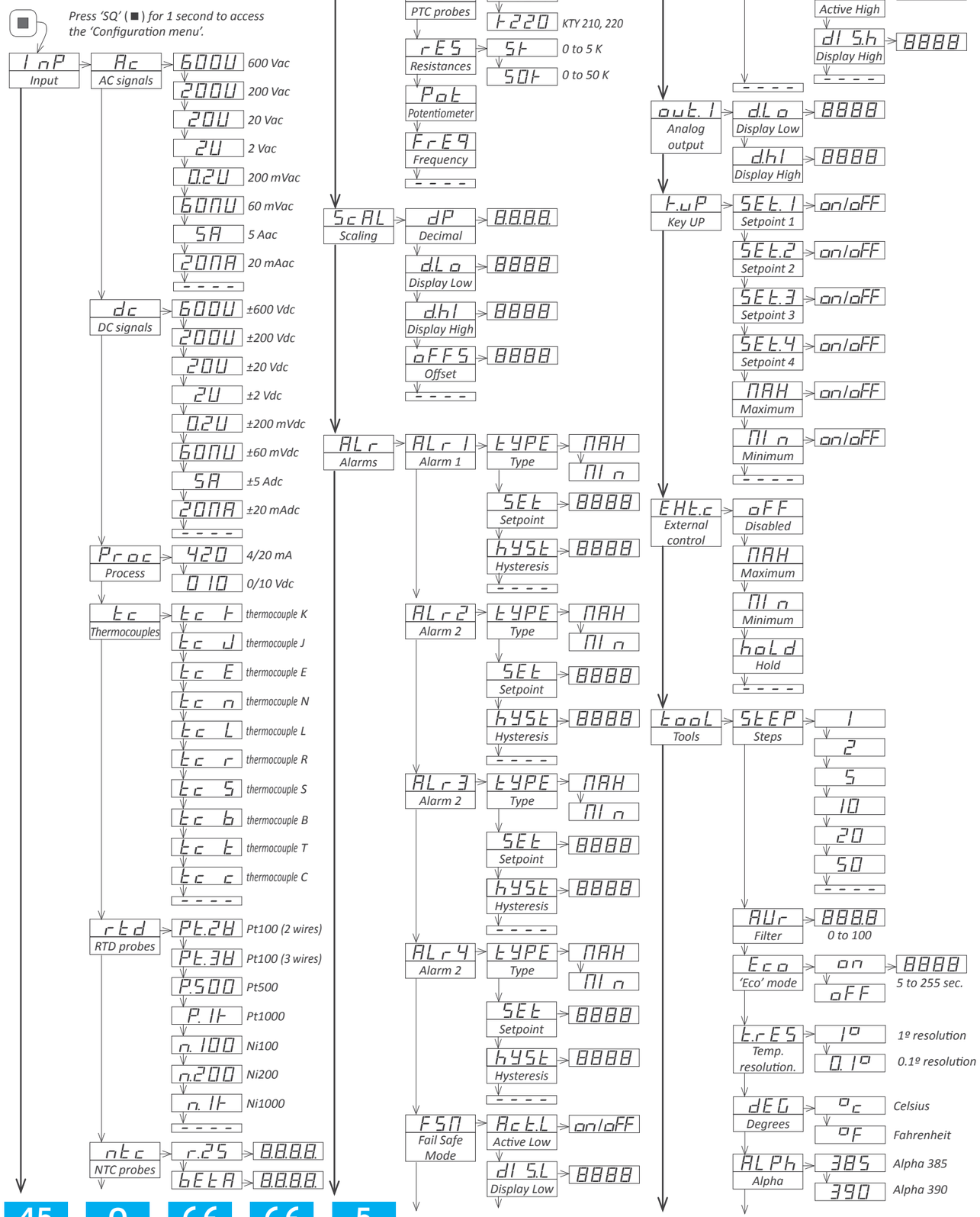
PTC probes Family	Jumpers 'S'	Jumper 'T'	Range in ºC (in ºF)	Total error
KTY-121	F	4-5	-55 / 150 ºC (-67 / 302 ºF)	<1 ºC
KTY-210	F & H & K			
KTY-220	F & H & K			

NTC probes 'R_{25}' (configurable)*	Jumpers 'S'	Jumper 'T'	Range of measure	Accuracy (% of reading)	Beta (configurable)*
10KOhm	F & K	4-5	-60 ºC to 150 ºC	<1.5 % of reading	3500

*'Beta' configurable (2000 to 5500). R25 configurable. Measure from 100 Ohm to 1MOhm.

9. Configuration menu

Press 'SQ' (■) for 1 second to access the 'Configuration menu'.



Front keypad menu operation

Key SQ (■) -
1. Press to access the 'Configuration menu'.
2. Press to enter into the actual menu entry.
3. Press to accept a value.

Key UP (▲) -
1. Press to access the 'Fast access' menu.
2. Press to move through available menu options.
3. Press to increase the value of a numerical parameter.

Key LE (◀) -
1. Without function.
2. Press to return to a previous level of the menu, discarding changes (to validate changes, use **SQ** (■)).
3. Move through the digits of a numerical parameter.

To save the configuration changes, press key LE (◀) until exiting the menu (shown by flashing decimal points). Instrument shows the signal range selected and starts operation with the new configuration.

10. Regulations

This instrument conforms to the actual CE regulations. For a copy of the 'CE declaration of conformity' see section 4. Applicable regulations are :

Security regulations EN-61010-1 ('Fixed' equipment, 'Permanently connected'. 'Double' isolation. Category of measure 600V CAT-II)

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.

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 rules and regulations.

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

5 YEARS Extended Warranty

Standard warranty of 2 years according to actual european legislation. Free of cost warranty extension of 5 years, available at http://www.fema.es/garantia.asp

11. Factory configuration

Range, scaling and decimal point	4/20 mAdc = 0/100.0
Scaling and decimal point	4/20 mAdc = 0/100.0
Offset reading	0
Alarms	
Alarms 1, 2, 3 and 4	
Type	alarm as maximum
Setpoint	1000
Hysteresis	0 counts
Fail safe mode	
Active Low	off
Display Low	-1999
Active High	off
Display High	9999
Analog output	
Display Low	0
Display High	1000
Key UP (Fast access)	all off
Setpoint 1	on
Setpoint 2	on
Setpoint 3	on
Setpoint 4	on
Memory of maximum	off
Memory of minimum	off
External control	off
Tools	
Step	1
Average	0
'Eco' mode	off
Temperature resolution	1º
Degrees	ºC
Alpha	385
cJc	on
AC 'deadband'	20
Luminosity	3
Password	off
Segment linearization	
Active	off
Inputs 0 to 20	values 0.00, 1.00, 2.00, ..., 19.00, 20.00
Readings 0 to 20	values 0, 100, 200, 300, ...1900, 2000
Analog output	0/100.0=4/20 mA
	active (jumper 8 & 9)
Jumpers 'S'	range for 4/20 mA (jumper D)
Jumper 'T'	Vexc (jumper 1-2)

12. User's manual

If you need additional information, see section 4 to download the full User's Manual.