SERIES C

FEMA

PRESENTATION SERIES C

95.31

FEMA

Units

OEM
APPLICATIONS
YOUR METER !

50
YEARS
1969-2019

Q
ISO 9001
Certified Quality

5
YEARS
Extended Warranty

SERIES C
'OEM' DIGITAL PANEL METERS

C E

FEMA ELECTRÓNICA
MANUFACTURING FOR INDUSTRIAL AUTOMATION

1. Multisignal 'low cost' meter

Multiple signals accepted ...

Multiple types of signals covering AC and DC voltmeters and ammeters, 10 types of thermocouples, most used Pt and Ni RTD probes, NTC probes, process signals, resistances and potentiometers....

Vac/Aac	600 Vac, 200 Vac, 20 Vac, 2 Vac, 200 mVac, 60 mVac, 5 Aac, 20 mAac
Vdc/Adc	±600 Vdc, ±200 Vdc, ±20 Vdc, ±2 Vdc, ±200 mVdc, ±60 mVdc, ±5 Adc, ±20 mAdc
°C °F	thermocouples K, J, E, N, L, C, R, S, B, T
°C °F	Pt100 (2 and 3 wires), Pt500, Pt1000
°C °F	Ni100, Ni200, Ni1000
°C °F	NTC, PTC
Process	4/20 mA, 0/10 Vdc (provides +15Vdc Vexc)
Resistance	resistances 0/5 K and 0/50 K
	potentiometers up to 20 K
Hz	frecuency signals 0/100Hz for AC ranges

... in a single instrument ...

The same instrument can be configured for all the signals listed below.

95.31

Universal power supply 18...265Vac/dc

... at an unbeatable price.

See 'General Specifications' at next page

The Series C of digital panel meters offers versatility and reliability in common industrial applications, offering a **single unit** able to cover a **wide range of analog signal** applications, from AC and DC currents and voltages, thermocouples, RTD (Pt and Ni) to NTC's and resistances.
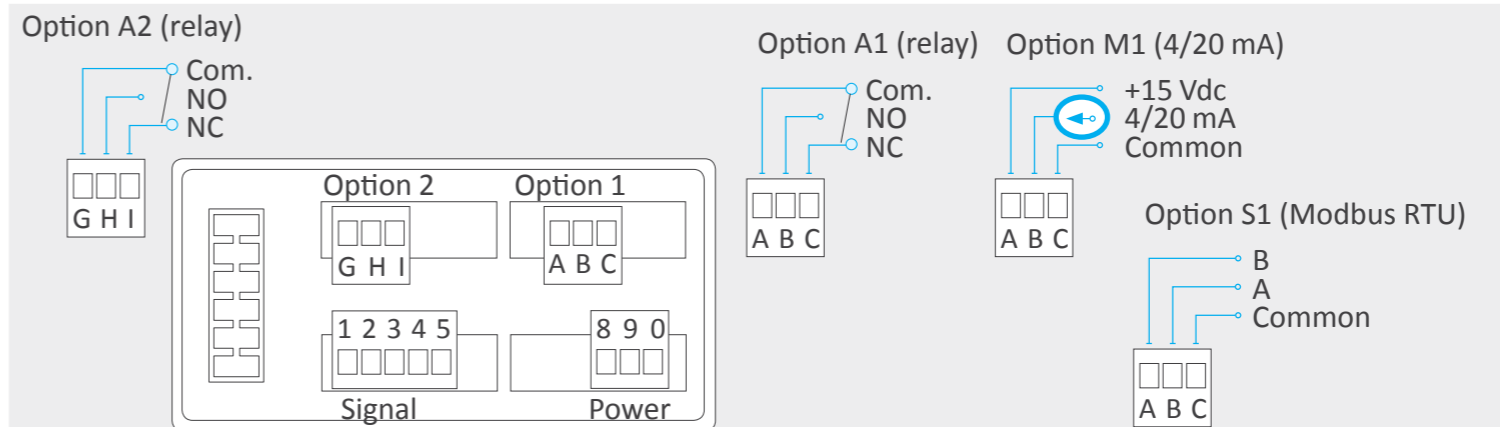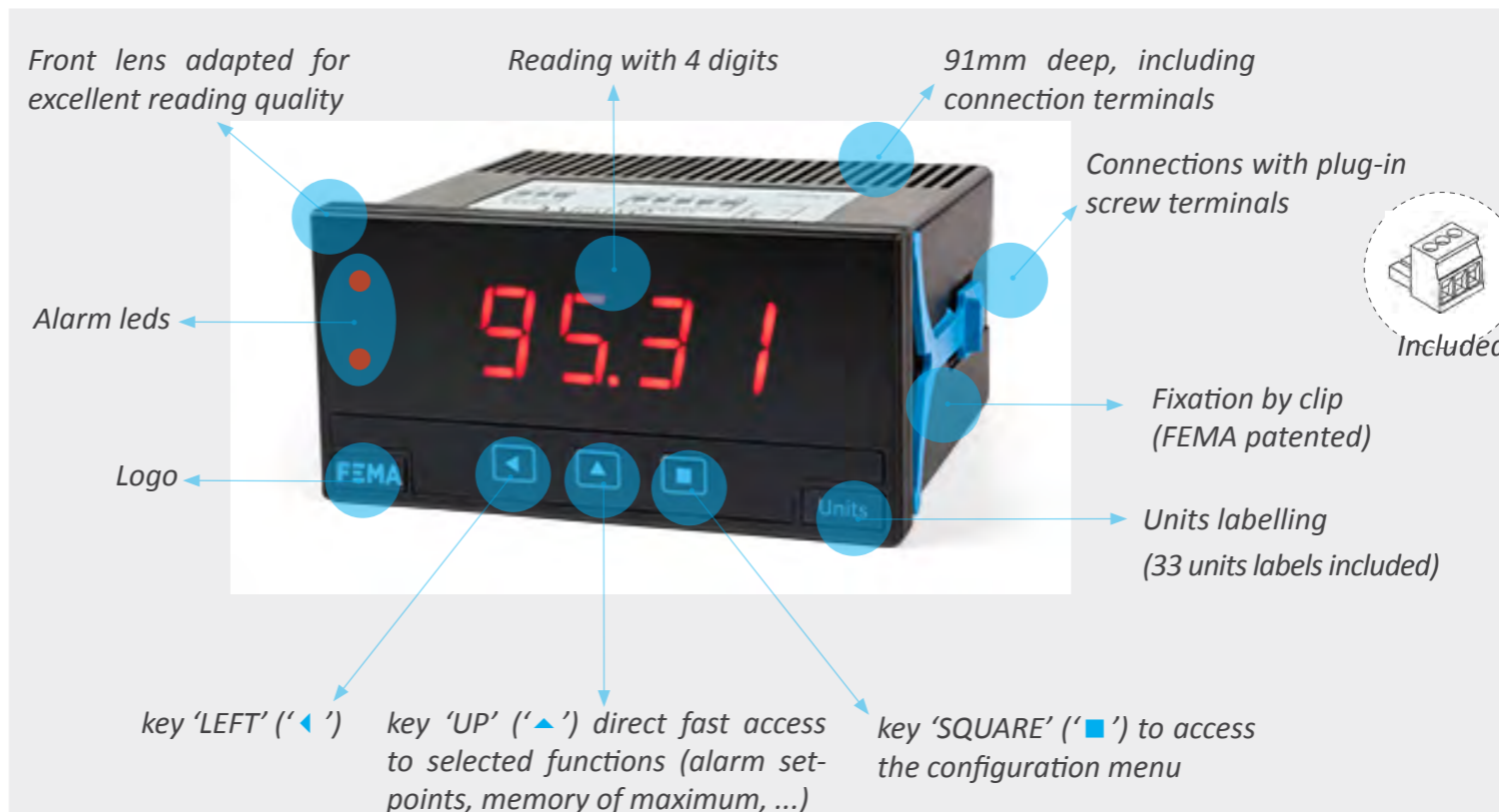
Series C achieves a **reduced price** mainly obtained from reduced technical specifications (accuracy and response time mainly), compared to upper grade series like Series M, although **still offering around 0.2% FS accuracy and 3 acquisitions / second**. Series C also has a limited compatibility for output and control options compared with Series M, but **still can feature 1 or 2 relay outputs, or 1 analog 4/20mA output or 1 serial ModbusRTU output**. All circuits are **isolated**.

Series C **benefits from scale economy, making use of high quality components**, power supplies, housings and quality procedures from higher grade Series M.

The Series C internal architecture features a **modular design** providing field upgradable option cards, to expand functionality as needed.

In short, Series C is the **recommended series for OEM companies**, due its reduced price and its wide range of signals accepted, it presents a compact solution, technically reliable, that adapts to wide range of needs in the industrial automation field.
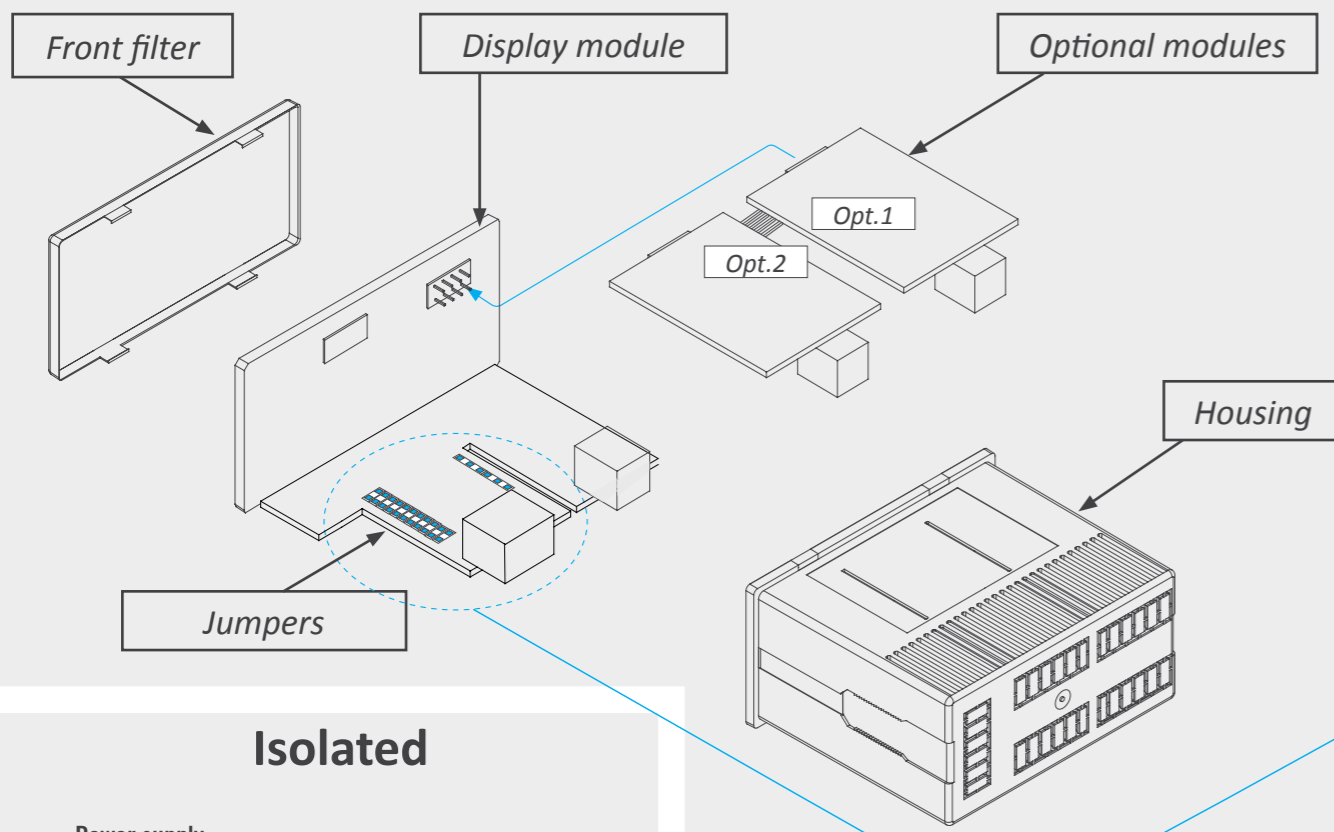
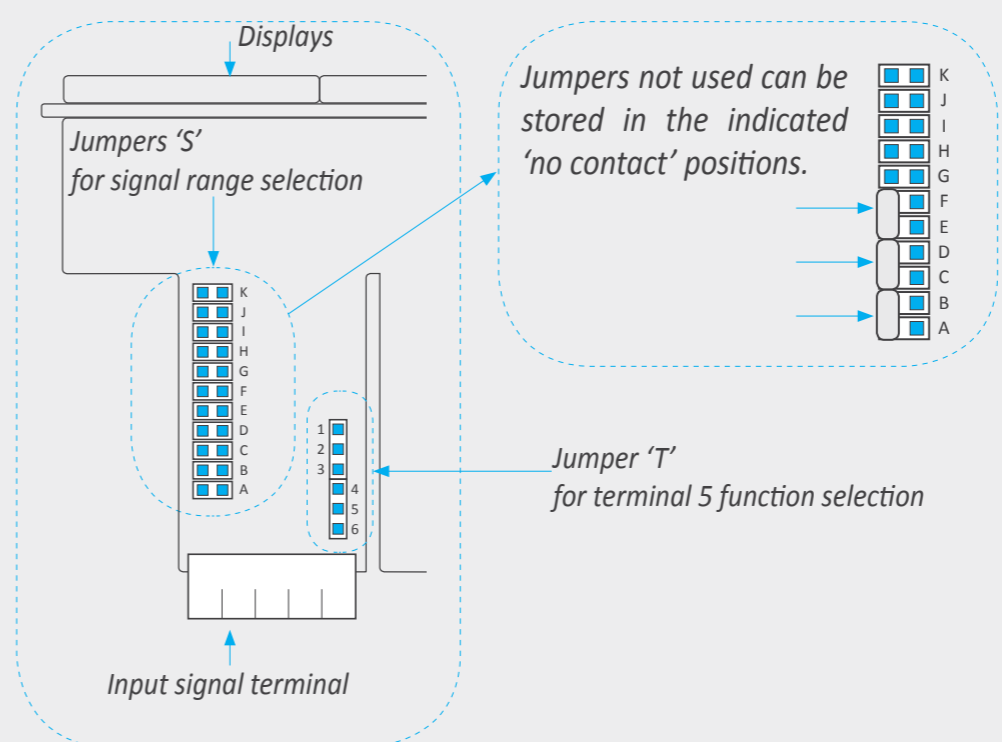| General specifications	
Digits	4
Digit height	14 mm
Reading distance	up to 5 meters
Color	red
Reading	9999/-1999
Decimal point	configurable by menu
Type of digit	7 segments led
Input channels	1
Configuration	3 mechanical front push buttons (optional without push buttons) internal jumpers for range selection
Front size	96 x 48 mm (1/8 DIN)
Front protection	IP50 (Optional IP65)
Mounting	Panel - optional DIN rail mount - optional wall mount - optional benchtop housing
Weight	<150 gr
Depth	91 mm (included connection terminals)
Connections	plug-in screw terminals
Power supply	type -U, 18-265 Vac/dc
Power supply isolation	1500 Veff (60 seconds)
Consumption	<1,5 W (meter only) <2,5 W (meter with options) <0,3 W (with 'ECO mode')
Operating temperature	0 to 50 ºC
Storage temperature	-20 to +70 ºC
Output and control options	2 slots (Opt.1 and Opt.2) 2 relay, analog output, Modbus RTU output

Front lens adapted for excellent reading quality

Reading with 4 digits

91mm deep, including connection terminals

Connections with plug-in screw terminals

Included

Alarm leds

Fixation by clip (FEMA patented)

Logo

Units labelling (33 units labels included)

key 'LEFT' (' ◄ ')

key 'UP' (' ▲ ') direct fast access to selected functions (alarm set-points, memory of maximum, ...)

key 'SQUARE' (' ■ ') to access the configuration menu

Option A2 (relay)
Com.
NO
NC
G H I

Option 2
G H I

Option 1
A B C

1 2 3 4 5
Signal

8 9 0
Power

Option A1 (relay)
Com.
NO
NC
A B C

Option M1 (4/20 mA)
+15 Vdc
4/20 mA
Common
A B C

Option S1 (Modbus RTU)
B
A
Common
A B C

Output and control options

Relay outputs

Module . . . . A1 (for Opt.1) and A2 (for Opt.2)

Function. . . . . 1 relay output
3 contacts (NC, NO, Common)
up to 250 Vac @ 8 Ampere

Analog output

Module . . . . M1 (for Opt.1)

Function. . . . . 1 analog output isolated
4/20 mA
isolated 1000 Vdc

Output Modbus RTU

Module . . . . S1 (for Opt.1)

Function. . . . . 1 Modbus RTU board
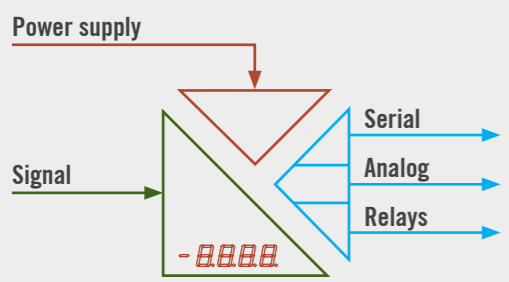isolated 1000 Vdc

Internal structure

Front filter

Display module

Optional modules

Opt.1

Opt.2

Housing

Jumpers

Isolated

Power supply

Signal

Serial

Analog

Relays

-8888

Jumpers for input range selection

Displays

Jumpers 'S'
for signal range selection

Jumpers not used can be stored in the indicated 'no contact' positions.

K J I H G F E D C B A

1 2 3 4 5 6

Jumper 'T'
for terminal 5 function selection

Input signal terminal

How to open the instrument

To open the housing, use a flat screwdriver to free the fixation 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.

B   D

C

X   A
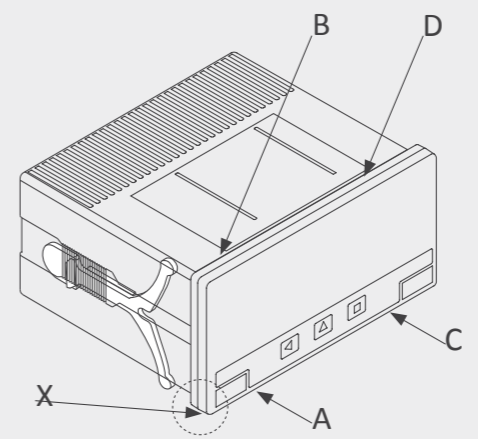
Specifications for Vac, Vdc, Aac, Adc input ranges

Vac ranges (Veff.)	Scale by default	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)	Max. over-signal	Z_{in}
~ 600 Vac	600		G & I			800 Vac	12 M
~ 200 Vac	200.0		I			800 Vac	12 M
~ 20 Vac	20.00	from 9999 to -1999	A & I	4-5	<0.30 %	150 Vac	1 M
~ 2 Vac	2.000		B & I			100 Vac	100 K
~ 200 mVac	200.0		C & I			30 Vac	10 K
~ 60 mVac	60.0		E & I			3 Vac	1 M

Vdc ranges	Scale by default	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)	Max. over-signal	Z_{in}
±600 Vdc	600		G			800 Vac	12 M
±200 Vdc	200.0		- - -			800 Vac	12 M
±20 Vdc	20.00	from 9999 to -1999	A	4-5	<0.20 %	150 Vac	1 M
±2 Vdc	2.000		B			100 Vac	100 K
±200 mVdc	200.0		C			30 Vac	10 K
±60 mVdc	60.0		E		<0.25 %	3 Vac	1 M

Aac ranges (Aeff.)	Scale by default	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)	Max. over-signal	Z_{in}
~ 5 Aac	5.000	from 9999 to -1999	I	4-5	<0.50 %	7 Aac	20 mOhm
~ 20 mAac	20.00		D & I	4-5		25 mAac	4.7 R

Adc ranges	Scale by default	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)	Max. over-signal	Z_{in}
±5 Adc	±5.000	from 9999 to -1999	- - -	4-5	<0.25 %	7 Adc	20 mOhm
±20 mAdc	±20.00		D	4-5	<0.15 %	25 mAdc	4.7 R

Specifications for Temperature sensors

Thermo-couples	Jumpers 'S'	Jumper 'T'	Range in ºC (in ºF)	Total error (cold junction included)
tc. K	E		-200 / 1350 ºC (-328 / 2462 ºF)	
tc. J	E		-200 / 1200 ºC (-328 / 2192 ºF)	
tc. E	E		-190 / 1000 ºC (-310 / 1832 ºF)	
tc. N	E		-200 / 1300 ºC (-328 / 2372 ºF)	
tc. L	E	4-5	-200 / 900 ºC (-328 / 1652 ºF)	<3 º
tc. C	E		0 / 2300 ºC (-32 / 4172 ºF)	
tc. R	E & J		0 / 1768 ºC (32 / 3214 ºF)	
tc. S	E & J		0 / 1768 ºC (32 / 3214 ºF)	
tc. B	E & J		100 / 1820 ºC (212 / 3308 ºF)	
tc. T	E & J		-200 / 400 ºC (-328 / 752 ºF)	

Pt and Ni probes	Jumpers 'S'	Jumper 'T'	Range in ºC (in ºF)	Total error	Current at sensor
Pt100 (3 wires)	F & H	5-6	-200 / 700 ºC (-328 / 1292 ºF)		< 900 uA
Pt100 (2 wires)	F & H		-200 / 700 ºC (-328 / 1292 ºF)		< 900 uA
Pt500	F		-150 / 630 ºC (-150 / 630 ºF)		< 90 uA
Pt1000	F		-190 / 630 ºC (-310 / 1166 ºF)	<1º	< 90 uA
Ni200	F & H	4-5	-60 / 180 ºC (-76 / 356 ºF)		< 900 uA
Ni200	F & H		-80 / 245 ºC (-112 / 473 ºF)		< 900 uA
Ni1000	F		-60 / 180 ºC (-76 / 356 ºF)		< 90 uA

NTC probes 'R_{25}'	Jumpers 'S'	Jumper 'T'	Range of measure	Total error (% reading)	Beta (configurable)
..., 1K, 1.5K, 2K, 2.2K, 3.3K, 4.7K, 5K, 6.8K, 10K, 12K, 15K, 22K, ...	F & K	4-5	de 100 R a 100 K	<1.5% of reading	from 2000 to 5000

Nota - obtain from NTC datasheet, temperature at 100 R and at 100 K

PTC probes Family	Jumpers 'S'	Jumper 'T'	Range in ºC (in ºF)	Total error
KTY-121	F			
KTY-210	F & H & K	4-5	-55 / 150 ºC (-67 / 302 ºF)	<0.5 º
KTY-220				

Specifications for Process, Resistances and Potentiometers

Process ranges	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)	Max. over-signal	Z_{in}
4/20 mA	from 9999 to -1999	D	1-2*	<0.15 %	25 mA	4.7 mOhm
0/10 Vdc		A		<0.20 %	25 Vdc	1 M

Resistance ranges	Scalable	Jumpers 'S'	Jumper 'T'	Total error (% reading)
0 to 10 K	from 9999 to -1999	F & H & K	4-5	<1.5% of reading
0 to 100 K		F & K		

Potentiometers Nominal value	Scalable	Jumpers 'S'	Jumper 'T'	Accuracy (% FS)
200 R to 50 K	from 9999 to -1999	A	2-3	<1.5%

* Jumper 'T' at position 1-2 for +15 Vdc excitation voltage at terminal 5. Optionally, jumper 'T' at position 4-5 for 'EK' external contact function at terminal 5.

See 'Special functions' at next page

Being an OEM panel meter, the Series C has several special functions which help to adapt to a wider variety of applications.

Function 'fast access' (key UP '▲')

Access the alarm setpoint at the key 'UP' ('▲'). Key 'UP' is a configurable menu, where operator can configure which functions will be accessible. Available functions are : setpoint for alarm 1, setpoint for alarm 2, memory of maximum and memory of minimum. If only one function is configured, the key 'UP' ('▲') will directly access the value when pressing the key.

External control

'External control' ia a digital contact at the rear terminal that can be controlled by the operator as an 'open' or 'closed' state. The state of the terminal controls a function, configurable by the operator. Available functions are :
- second scaling
- hold the reading
- decimal point control (to change reading scales)
- memory of maximum and minimum reading

Second scaling

Configure an optional second scaling for scalable signal ranges (process, Vac, Vdc, Aac, Adc and resistances). The operator can control which scaling is applied to the signal reading by using an external contact called 'external control'.

More info click here.

Function TARE

Apply a tare to the

Active una tara de la indicación.

The 'Tare function' allows to operate the instrument for weight applications and others. The tare function assings the actual input signal value to a reading of '0' by adding an internal offset, without modifying the scaling parameters.

'Eco' mode

Reduced consumption with 'Eco' mode. Reading will power off when is not needed. A decimal point will gently light on and off indicating that the instrument is measuring on the background. Display will light on again in case of alarm activation or operator pressing the keypad. Consumptions go down to <0,3 Watt.

More info click here.

Temperature tools

Reading in 'ºC' o 'ºF' configurable. Resolution in 1º or 0.1º. Alpha 385 or 390.

Offset reading

Configure a number of counts to be added (positive or negative) to the reading. For applications where fixed 'tares' are needed, or compensation of wire resistances (such as 3 wire RTD's, or resistance measures).

See 'How to order' at next page

How to order

Series	Model	Power	Option 1	Option 2	Customization
C40	- D	- U	-	-	-

-U   *(18-265 Vac/dc)*

-A1   *(1 relay)*
-M1   *(analog output)*
-S1   *(Modbus RTU)*
-(empty)

-A2* *(1 relay)*
-(empty)

needs option1 installed

-(empty)

Complete references

C40-D-U
C40-D-U-A1
C40-D-U-A1-A2
C40-D-U-M1
C40-D-U-M1-A2
C40-D-U-S1
C40-D-U-S1-A2

Aditional Documentation

Quick Installation Guide	www.fema.es/docs/4150_C40-D_installation_en.pdf
Datasheet	www.fema.es/docs/4148_C40-D_datasheet_en.pdf
User's Manual	www.fema.es/docs/4149_C40-D_manual_en.pdf

Other Options

Option without keypag
Reference . -NBT

Opction 'customized'
Customization of standard instruments
• improved technical perfomances
• custom configurations
• special functions
• ...

Protection IP65
Reference . -65

Accesories

Wall mount housing
Reference . WME

DIN rail mount adapter
Reference . . . . . DRA-M

Benchtop housing
Reference . THM

Front adapter 96x96mm
Reference . KA96

Included in box

1 Instrument
1 pack plug in screw terminal
1 Quick Installation Guide
1 label set Units-7

Vdc	Vac	Adc
Aac	mVdc	mVac
mAdc	mAac	%
ºC	ºF	ph
m	cm	mm
bar	psi	Pa
N	Ω	kΩ
W	kW	MW
kV	kA	m/min
rpm	l	

FEMA

45 YEARS
1969-2014

FEMA ELECTRÓNICA is, for 45 years, dedicated to provide quality instrumentation to process automation companies. The trust demonstrated by our customers all these years are our major achievement, and also the measure of the quality of our products and services. Our goal is to also win also your trust.

Q ISO 9001
Certified Quality

FEMA ELECTRÓNICA follows external audits to certify that the quality of our internal processes for product development, manufacturing, sales and customer care are according to the actual rules commonly accepted in industry. To this date, FEMA ELECTRÓNICA is certified according to ISO9001:2008, certification granted through TÜV Rheinland certification company. FEMA ELECTRÓNICA implemented its first ISO9001 quality certification back in 1999.

CE EN-61010-1
Security

Instruments designed according to European security regulations EN-61010-1.

CE EN-61326-1
Electromagnetic C.

Instruments designed according to European electromagnetic compatibility regulations EN-61326-1.

5 YEARS
Extended Warranty

All instruments provided with 2 year standard warranty against all manufacturing defects, as requested by the current European legislation. FEMA ELECTRÓNICA offers to his customers a free warranty extension from 2 to 5 years at no additional cost. To activate the Extended Warranty, follow the link http://www.fema.es/warranty.asp where you can fill the requested data for each FEMA product.

Industry Series of Digital Meters

DIGITAL PANEL METER
SERIES M
Full Signal Ranges Available

www.fema.es / Serie M

Series M - With up to 6 digits

Digits . . . . .4, 5 or 6 digits
14 mm digit height
red or green color
view up to 5 meters

Front size . . . . .96 x 48 mm
for panel

Outputs . . . . .relays 1, 2 3, 4 or 6
isolated analog output
Modbus RTU, RS-485, RS-232

Power supply. . . . . .85 to 265 Vac / Vdc
11 to 60 Vdc and 24 / 48 Vac

DIGITAL PANEL METERS
SERIES K
20 mm Digit Size

www.fema.es / Serie K

Series K - Larger distance view

Digts . . . . .4 digits
20 mm digit height
red color
view up to 8 meters

Front size . . . . .96 x 48 mm
for panel

Outputs . . . . .relays 1, 2 3, 4 or 6
isolated analog output
Modbus RTU, RS-485, RS-232

Power supply. . . . . .85 to 265 Vac / Vdc
11 to 60 Vdc and 24 / 48 Vac

DIGITAL PANEL METERS
SERIES S
Compact Size 72x36 mm

www.fema.es / Serie S

Series S - Compact Size

Digits . . . . .4 digits
14 mm digit height
red or green color
view up to 5 meters

Front size . . . . .72 x 36 mm
for panel

Outputs . . . . .relays 1, 2 or 4
isolated analog output
Modbus RTU, RS-485, RS-232

Power supply. . . . . .85 to 265 Vac / Vdc
11 to 60 Vdc and 24 / 48 Vac

DIGITAL PANEL METERS
SERIES B

www.fema.es / Serie B

Series B - Big Meters

Digits . . . . .4 and 6 digits
60 mm and 100mm digit height
red or green color
view up to 25 and 50 meters

Front size . . . . .for panel, wall or hang

Outputs . . . . .relays 1, 2 or 3
isolated analog output
Modbus RTU, RS-485, RS-232

Power supply. . . . .-H 85 to 265 Vac and
-L 11 to 60 Vdc and 24 / 48 Vac

Panel meters
Standard 96 x 48 mm

Large format meters
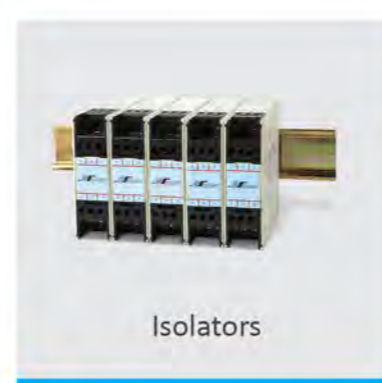
Panel meters
Compact 72 x 36 mm
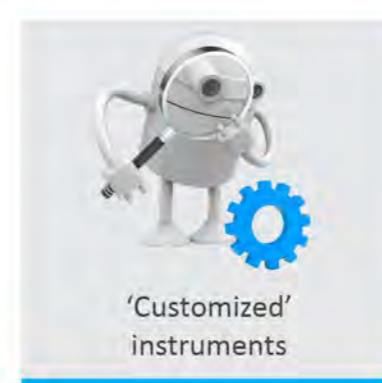
Bar meters

Signal converters

Panel meters
Miniature 48 x 24 mm

Isolators

Low Cost

'Customized'
instruments

FEMA
ELECTRÓNICA

FEMA ELECTRÓNICA, S.A.

Altimira 14 - Pol. Ind. Santiga
E08210 Barberà del Vallès
BARCELONA - SPAIN

- Tel. +34 93.729.6004

- info@fema.es
  www.fema.es

Process	Temperature
Counter	Weight
Flow	Time
Frequency	Temperature
Speed	Vac
Aac	Integrators
Potentiometer	Temperature
Period	Adc
Vdc	Resistances
Digital	Digital
Digital	Digital
Custom	

Process · Temperature (Pt) · Counter · Weight · Flow · Time
Frequency · Temperature (tc) · Speed · Vac · Aac · Integrators
Potentiometer · Temperature (NTC PTC) · Period · Adc · Vdc · Resistances
Digital (Modbus RTU) · Digital (RS-485 RS-232) · Digital (BCD Parallel) · Digital (BCD Multiplex) · Custom