

C40-D multisignal panel meter

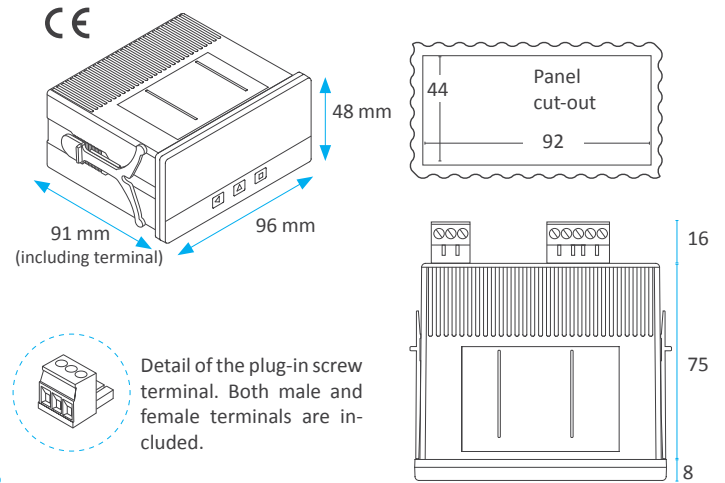
Multisignal digital panel meter, configurable to work as AC and DC voltmeter (up to 600 V), AC and DC ammeter (up to 5 A), process signals (mA and Vdc) with and without excitation voltage, thermocouples K, J, E, N, L, R, S, B, T and C, temperature probes Pt100 with 2 and 3 wires, Pt500, Pt1000, Ni100, Ni200, Ni1000, PTC and NTC, resistances, potentiometers and frequency. AC measures in True RMS. Standard 96 x 48 mm (1/8 DIN) size. Scalable reading with 4 digits (9999 to -1999) and configurable decimal point. 'Fast access' function to alarm setpoints, external contact for special functions, 'Eco' mode for reduced consumption, 5 brightness levels. Single universal power supply 18 to 265 Vac/dc. Optional relays, analog output and Modbus RTU serial communications. Recommended for OEM applications.



Technical specifications

| | |
|-------------------------------|---|
| Digits | 4 |
| Reading | 9999 / -1999 |
| Decimal point | configurable |
| Led color | red |
| Digit height | 14 mm |
| Accepted signal ranges | <i>see tables at page 3 for more information</i> |
| • AC voltages and AC currents | ~600 Vac, ~200 Vac, ~20 Vac, ~2 Vac ~200 mVac, ~60 mVac, ~5 Aac, ~20 mAac (True RMS measure) (accepts phase-neutral and phase-phase measure) (frequency up to 150 Hz) |
| • DC voltages and DC currents | ±600 Vdc, ±200 Vdc, ±20 Vdc, ±2 Vdc ±200 mVdc, ±60 mVdc, ±5 Adc, ±20 mAdc |
| • thermocouples | K, J, E, N, L, R, S, B, T and C (automatic cold junction compensation) |
| • resistive 'Pt' probes | Pt100 with 2 and 3 wires, Pt500, Pt1000 |
| • resistive 'Ni' probes | Ni100, Ni200, Ni1000 |
| • resistive NTC probes | <i>see table at page 3</i> |
| • resistive PTC probes | families KTY-121, KTY-210 and KTY-220 |
| • process | 4/20 mA, 0/10 Vdc (+15 Vdc excitation voltage configurable at terminal 5) |
| • frequency | up to 100 Hz (minimum 15 Hz). Vac and Aac ranges. |
| • resistances | ranges 0/5 KOhm and 0/50 KOhm |
| • potentiometers | with nominal values from 500 Ohm up to 20 KOhm |
| Thermal drift offset+span | 150 ppm/°C |
| Readings | 3 readings / second |
| Refresh | 3 refresh / second |
| Response time | <300 mSec. (0 % to 99 % of signal) |
| Power 'U' | 18 to 265 Vac/dc (isolated 1500 Veff @60 seconds) |

Dimensions (mm)



| | |
|----------------------------|--|
| Output and control options | 1 or 2 relays 1 analog output 4/20 mA isolated 1 Modbus RTU isolated serial output |
| Protection | IP50 standard (optional IP65) |
| Consumption (normal mode) | <1.0 W (meter only) <2.5 W (meter with options) |
| Consumption ('Eco' mode) | <0.3 W (meter only) <1.5 W (meter with options) |
| Connections | plug-in screw terminals |
| Weight | <150 grams |
| Temperature of operation | 0 to 50 °C |

How to order

| Series | Model | Power | Option 1 | Option 2 | Others | Customization |
|--------|-------|--------------------|--|---------------------------|--|--|
| C40 | D | U | | | | |
| | | -U (18-265 Vac/dc) | -A1 (1 relay) -M1 (analog output) -S1 (Modbus RTU) -(empty) | -A2 (1 relay) -(empty) | -NBT (no front keypad) -65 (front IP65) -(empty) | -XXXX (customized execution) -(empty) |

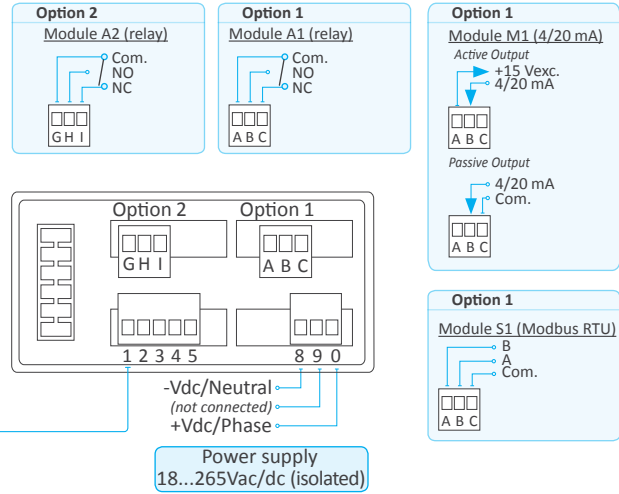
Additional documentation

| | |
|--------------------------------|--|
| User's manual C40-D | www.fema.es/docs/4149_C40-D_manual_en.pdf |
| Datasheet C40-D | www.fema.es/docs/4148_C40-D_datasheet_en.pdf |
| Quick installation guide C40-D | www.fema.es/docs/4150_C40-D_installation_en.pdf |
| CE declaration of conformity | www.fema.es/docs/4152_CE-Declaration_C40_en.pdf |
| Warranty | www.fema.es/docs/4153_Warranty1_en.pdf |

Functions included

- 'Fast access'** menu press the 'UP' ('▲') front key to access and modify the alarm setpoints, and / or the maximum and minimum memory. Configurable menu.
- 'External control'** function.... external contact at multifunctional terminal 5, configurable for : 'second scaling', decimal point change, 'hold' the reading, tare function, activate the maximum or minimum memory.
- 'Eco'** mode..... automatic turn off of the display leds, to reduce the consumption of the instrument when the operator is not using it.
- Alarms** 1 or 2 alarms, independent, configurable as maximum or minimum, with setpoint and hysteresis.
- Reading offset**..... this function allows to configure a fixed number of counts to be added to the reading.
- 'Second scaling'** function.... define two scalings for the same signal and control which one is active with the **'External control'** option.
- Display filters**..... recursive filter for noisy signals and configurable steps for minimum predefined changes on the reading.
- Output and control options**... optional 1 or 2 relay outputs, 1 analog 4/20 mA isolated output, 1 Modbus RTU isolated serial output.
- Brightness** configurable 5 levels of brightness intensity.
- Password** blocks the configuration menu.
- Front Units**..... set of labels 'Units 7' included

Connections and rear view

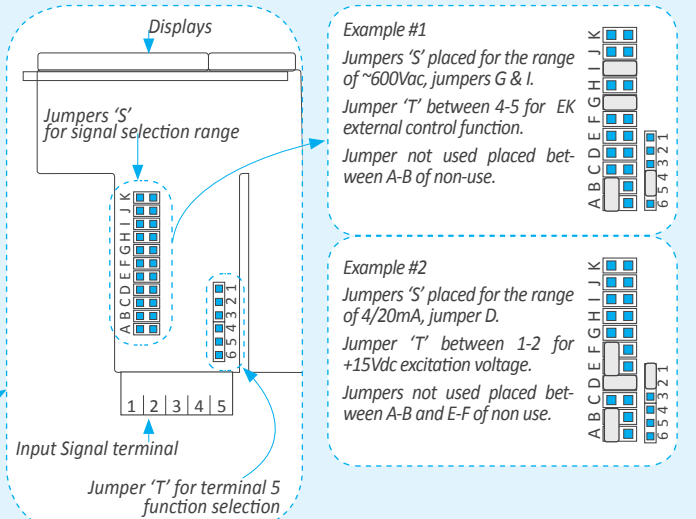
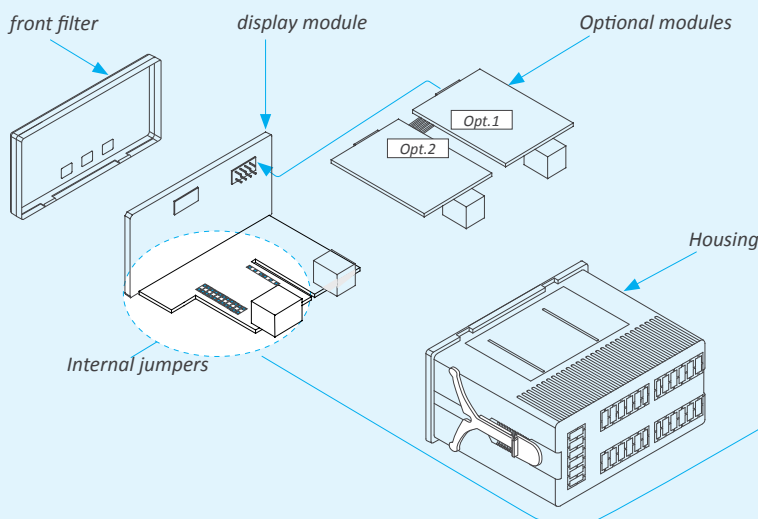


| 1 | 2 | 3 | 4 | 5 | Input Signal ranges |
|--------------|--------------|--------------|--------------|-------|--|
| ~Vac +Vdc | | | ~Vac -Vdc | | ~600 Vac, ±600 Vdc, ~200 Vac, ±200 Vdc |
| | ~Vac +Vdc | | ~Vac -Vdc | | ~20 V, ~2 V, ~200 mV, ~60 mV, ~20 mA ±20 V, ±2 V, ±200 mV, ±60 mV, ±20 mA |
| | | ~Aac +Adc | ~Aac -Adc | | ~5 Aac ±5 Adc |
| | tc+ | | tc- | | Thermocouples |
| | + | | - | | Pt (2 wire), Ni, NTC, PTC |
| | pt+ | | pt- | Sense | Pt100 (3 wire) |
| | mA | | | Vexc. | 4/20 mA passive |
| | mA+ | | mA- | | 4/20 mA active |
| | +Vdc | | com. | Vexc. | 0/10 Vdc passive |
| | +Vdc | | com. | | 0/10 Vdc active |
| | res+ | | res- | | Resistances |
| | signal | | pot- | pot+ | Potentiometers |



* Risk of electric shock. The 'EK' external control function shares terminal 4 with the common of the input signal connection. When measuring dangerous voltages AND using 'EK' external control contact, apply the appropriate protections to isolate the operator from dangerous voltages.

Internal structure - Jumpers for input range selection



Input signal ranges - Technical specifications

| Vac ranges (Veff.) | Scale by default | Scalable | Jumpers 'S' | Jumper 'T' | Accuracy (% FS) | Max. oversignal | Z _{in} |
|--------------------|------------------|--------------------|-------------|------------|----------------------|-----------------|-----------------|
| ~600 Vac* | 600 | from 9999 to -1999 | G I | 4-5 | <0.30% (up to 150Hz) | 800 Vac | 12 MOhm |
| ~200 Vac | 200.0 | | I | | | 800 Vac | 12 MOhm |
| ~20 Vac | 20.00 | | A I | | | 150 Vac | 1 MOhm |
| ~2 Vac | 2.000 | | B I | | | 100 Vac | 100 KOhm |
| ~200 mVac | 200.0 | | C I | | | 30 Vac | 10 KOhm |
| ~60 mVac | 60.0 | | E I | | | 3 Vac | 1 MOhm |

* measure 300V CAT-III , 600V CAT-II. Measure of frequency available for all ranges.

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

| Aac ranges (Aeff.) | Scale by default | Scalable | Jumpers 'S' | Jumper 'T' | Accuracy (% FS) | Max. oversignal | Z _{in} |
|--------------------|------------------|--------------------|-------------|------------|----------------------|---------------------|-----------------|
| ~5 Aac | 5.00 | from 9999 to -1999 | I | 4-5 | <0.50% (up to 150Hz) | 7 Aac (max. 7 sec.) | 20 mOhm |
| ~20 mAac | 20.00 | | D I | | | 25 mAac | 4.7 Ohm |

| Adc ranges | Scale by default | Scalable | Jumpers 'S' | Jumper 'T' | Accuracy (% FS) | Max. oversignal | Z _{in} |
|------------|------------------|--------------------|-------------|------------|-----------------|---------------------|-----------------|
| ±5 Adc | ±5.00 | from 9999 to -1999 | --- | 4-5 | <0.25% | 7 Adc (max. 7 sec.) | 20 mOhm |
| ±20 mAac | ±20.00 | | D | | | 25 mAac | 4.7 Ohm |

| Process signals | Scale by default | Scalable | Jumpers 'S' | Jumper 'T' | Accuracy (% FS) | Max. oversignal | Z _{in} |
|-----------------|------------------|--------------------|-------------|------------|-----------------|-----------------|-----------------|
| 4/20 mA | 0/100.0 | from 9999 to -1999 | D | 1-2' | <0.15% | 25 mA | 4.7 Ohm |
| 0/10 Vdc | 0/100.0 | | A | | <0.20% | 25 Vdc | 1 MOhm |

* 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.

| NTC probes 'R ₂₅ '* (configurable) | Jumpers 'S' | Jumper 'T' | Range of measure | Accuracy (% of reading) | Beta* (configurable) |
|---|-------------|------------|------------------|-------------------------|----------------------|
| 10K | F K | 4-5 | -60 °C to 150 °C | <1.5% of reading | 3500 |

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

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

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

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

| Resistance ranges | Scale by default | Scalable | Jumpers 'S' | Jumper 'T' | Accuracy (% of reading) |
|-------------------|------------------|--------------------|-------------|------------|-------------------------|
| 0 a 5 KOhm | 9.999 | from 9999 to -1999 | F H K | 4-5 | <1.5% of reading |
| 0 a 50 KOhm | 99.99 | | F K | | |

| Potentiometers nominal value | Scale by default | Scalable | Jumpers 'S' | Jumper 'T' | Accuracy (% FS) |
|------------------------------|------------------|--------------------|-------------|------------|-----------------|
| 500 Ohm to 20 KOhm | 0/100.0 | from 9999 to -1999 | A | 2-3 | <0.5% |

| Frequency signals | Scale by default | Scalable | Jumpers 'S' | Jumper 'T' | Accuracy (% reading) |
|-------------------|------------------|--------------------|-------------------|------------|----------------------|
| 15 Hz to 100 Hz | 0/100.0 | from 9999 to -1999 | Vac or Aac ranges | 4-5 | <0.15% of reading |

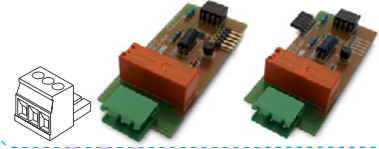


Maximum oversignal is the maximum signal accepted by the instrument. Higher signal values may cause instrument damage. Lower values are not destructive but may be out of accuracy specifications.

Options and accessories

Relay Output

Module A1 and A2
Function 1 relay output
3 contacts (NC, NO, Com)
up to 250 Vac @ 8 Amperes



Analog Output

Module M1
Function 1 analog output isolated
4/20 mA
isolated 1000 Vdc



Modbus RTU output

Module S1
Function 1 Modbus RTU output
9.600 bps, 4.800 bps
isolated 1000 Vdc



Option without keypad

Reference NBT



Protection IP65

Reference 65
O-ring for IP65 front protection



Wall mount housing

Reference WME



DIN rail mount adapter

Reference DRA-M



Option 'customized'

Customization of standard instruments

- improved technical performances
- custom configurations
- special functions
- ...



Set of Unit (included)

Reference Units7

| Description | Vdc | Vac | Adc |
|-------------|------|------|---------|
| | Aac | mVdc | mVac |
| | mAdc | mAac | % |
| | °C | °F | ph |
| | m | cm | mm |
| | bar | psi | Pa |
| | N | Ω | KΩ |
| | W | kW | MW |
| | kV | kA | m/min |
| | rpm | l | (empty) |

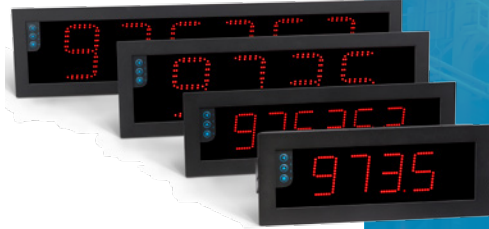


Other FEMA meters

Series B

4 and 6 digits

digit height 60 and 100 mm
color red, green
reading 25 and 50 meters
formats B24, B26, B44, B46



Series M

4, 5 and 6 digits

digit height 14 mm
color red, green
reading 5 meters
size 96 x 48 mm

DIGITAL PANEL METER
SERIES M
Full Signal Ranges Available



Series K

Further view

digit height 20 mm
color red
reading 8 meters
size 96 x 48 mm

DIGITAL PANEL METERS
SERIES K
20 mm Digit Size



Series S

Compact size

digit height 14 mm
color red, green
reading 5 meters
size 72 x 36 mm

DIGITAL PANEL METERS
SERIES S
Compact Size 72x36 mm



More signals



50
YEARS

Q
ISO 9001

CE
EN-61010-1

CE
EN-61326-1

5
YEARS

1969-2019

Certified Quality

Security

Electromagnetic C.

Extended Warranty