

Series CCT

Signal Converters with isolation
for thermocouple probes



| | | |
|---------------|-----------------------|---------------------|
| CCT-22 | Thermocouple J | up to 700°C |
| CCT-23 | Thermocouple K | up to 1200°C |
| CCT-24 | Thermocouple T | up to 400°C |
| CCT-25 | Thermocouple E | up to 800°C |
| CCT-26 | Thermocouple S | up to 1600°C |
| CCT-27 | Thermocouple R | up to 1700°C |

IDEAL SOLUTION to convert a wide range of analogue signals (process, temperatures, current, frequencies...) to standard 10Vdc or 20mA process signals, for further retransmission to a remote data acquisition system or PLC's. The galvanic isolation offered by the CCT instruments between the signal circuit and the remote equipment, reduces to a minimum any eventual problem related to ground loops between different circuits.

Models CCT-22,23,24,25,26,27

Converters for thermocouples J, K, T, E, R, S

Signal converters for Thermocouples. Selection of input and output ranges with internal jumpers and potentiometers. Galvanic isolation between input, output and power circuits.



Order Reference

| CCT | Model | Power | Input | Output |
|-----|-----------|---------------------|-----------------|---------------|
| | 01 | 0 | 0/1000°C | 4/20mA |
| | - 22 | -0 (230 Vac) | 0/1200 °C | 4/20mA |
| | - 23 | -1 (115 Vac) | 0/1000 °C | 0/10Vdc |
| | - 24 | -2 (24 Vac) | 0/800 °C | ... |
| | - 25 | -3 (48 Vac) | 0/600 °C | |
| | - 26 | -6 (24Vdc isolated) | 0/400 °C | |
| | - 27 | | ... | |

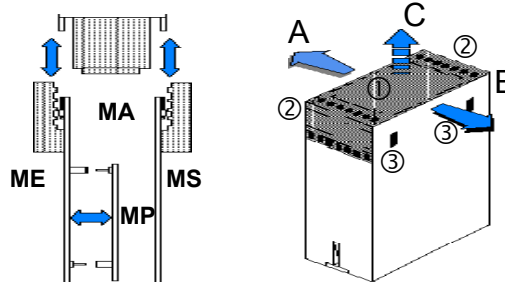
Technical Data

| | |
|--|--|
| Accuracy | Class <0.3 |
| Ripple | <0,5 % |
| Temperature coefficient | <0,015 %/ °C |
| Pass band | 1.5 Hz (-3 dB a 3Hz) |
| Response time | <250 mSec. |
| Output in mA | 0/20 mA / 4/20 mA, ... R _L < 600 Ohms max. 22mA active output loop |
| Output in Vdc | 0/10 Vdc, 0/1 Vdc, ... R _L > 1000 Ohms max. 11Vdc |
| Isolation | 2 KVe _{eff} / 50Hz / 1 min (tested at 4 KVe _{eff}) |
| Isolated circuits | input / output / power |
| Weight | 270 gr. |
| Wire section | 4mm ² maximum |
| Housing IP protection | IP40 |
| Terminals IP protection | IP20 |
| Housing material | polycarbonate, light grey RAL 7032, UL 94 V-1 |
| Mounting | standard DIN rail (DIN46277, |
| DIN EN 50022) (35 x 7,5mm) (1,38 x 0,3") | |
| Terminals | Polycarbonate, UL 94 V-2 |
| Consumption | <1,5 VA |
| Storage temperature | -30 to +80 °C |
| Working temperature | -10 to +60 °C |

Access to internal circuits

With a flat screwdriver, force the front cover and walls towards **A** and **B**, until fixations '3' are free. Take the instrument from points '2', and extract it pulling towards **C**, until the internal circuits appear. The internal circuits have the following names:

- ME .- Signal Input Module
- MS .- Signal Output Module
- MA .- Power Module
- MP .- Personalized Module



Power options

The CCT converters allow different power modules in AC and DC. The instrument does not have internal protection fuse. Following is a recommendation on value and type of fuse for each power module available.

| Ref. | Power | Fuse Recommended |
|------|------------------|------------------|
| «0» | 230 Vac 50/60 Hz | 50 mA Time Lag |
| «1» | 115 Vac 50/60 Hz | 100 mA Time Lag |
| «2» | 24 Vac 50/60 Hz | 300 mA Time Lag |
| «3» | 48 Vac 50/60 Hz | 150 mA Time Lag |
| «6» | 24 Vdc | 300 mA Fast Fuse |

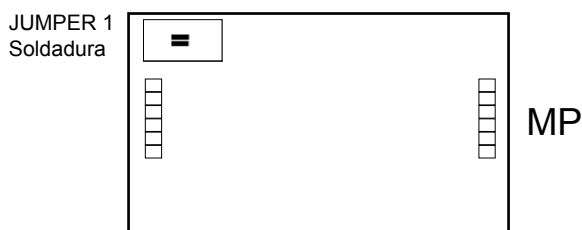
CCT-22, 23, 24, 25, 26 y 27

Thermocouple signals type J, K, T, E, R, S

Thermocouple signal converters. Each model contains a circuit to linearize the thermocouple signal over seven segments, according DIN 43732, DIN 43710 and IPTS 68. The output signal is proportional to the real temperature in °C, not to the electric signal generated by the thermocouple.

INPUT RANGE SELECTION

Configure the desired thermocouple input range by selecting the appropriate jumpers on «MP» module, as shown on the table below:



ADDITIONAL SPECIFICATIONS

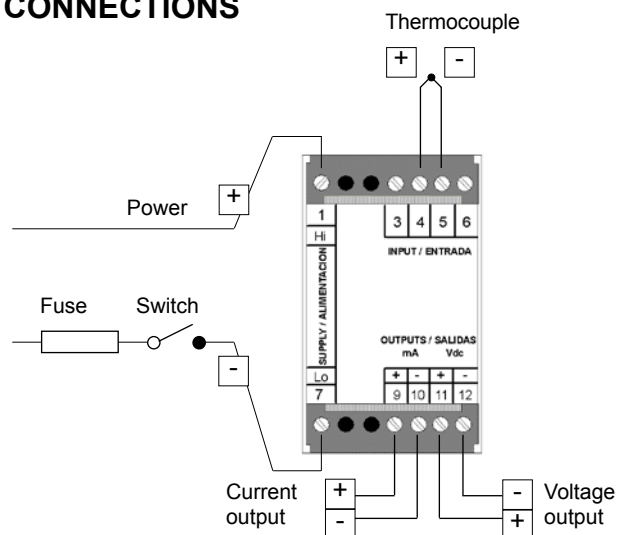
Cold junction compensation
 Thermocouples J, K, T and E 0,05 °C/°C
 Thermocouples S y R 0,1 °C/°C

Overvoltages 75 Vdc maximum

| MODEL | RANGE | JUMPERS «MP» / «ME» |
|--------------------------|---------|---------------------|
| CCT-22 Thermocouple J | 700 °C | --- / --- |
| | 600 °C | --- / --- |
| | 500 °C | --- / --- |
| | 400 °C | J1 / --- |
| CCT-23 Thermocouple K | 1200 °C | --- / --- |
| | 1000 °C | --- / --- |
| | 900 °C | --- / --- |
| | 800 °C | --- / --- |
| | 700 °C | J1 / --- |
| | 600 °C | J1 / --- |
| | 500 °C | J1 / --- |
| | 300 °C | J1 / C |

| MODEL | RANGE | JUMPERS «MP» / «ME» |
|----------------------------|-------------|---------------------|
| CCT-24 Thermocouple T | 400 °C | J1 / C |
| | 300 °C | J1 / C |
| | 200 °C | J1 / C |
| CCT-25 Thermocouple E | 800 °C | --- / --- |
| CCT-26 Thermocouple S | 1600 °C | --- / C |
| CCT-27 - Thermocouple R | 850/1700 °C | --- / C |

CONNECTIONS

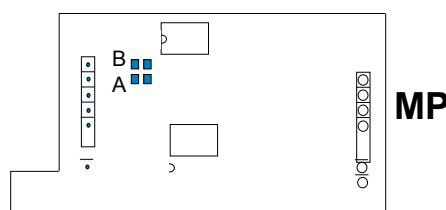


SENSOR BREAK DETECTION

The CCT instruments are provided with a control to detect when the sensor is broken or when the circuit sensor is opened. This control provides 2 methods of detection :

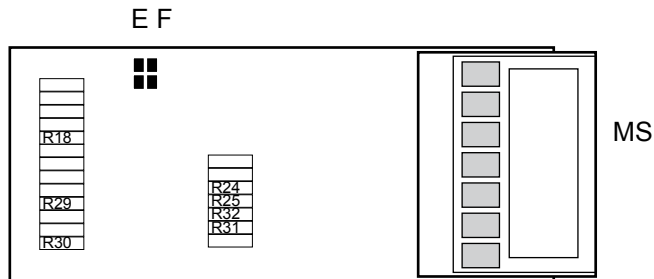
Closing jumper A : The signal output goes up over 20 mA (or > 10Vdc).

Closing jumper B : The signal output goes down below 4mA (or < 0 Vdc)



Output signal module (MS)

The CCT has available outputs in voltage and current. Only one of the outputs can be active. Additional to the standard 0/10 Vdc and 4/20mA outputs, it is possible to reconfigure the instrument to any of the outputs shown in the table below.



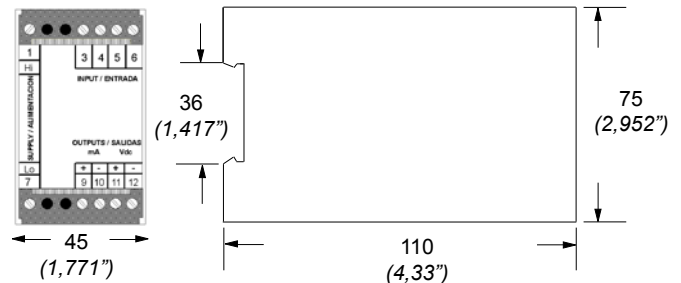
| Other mA outputs (Resistances in Ohms) | | | Other Vdc outputs (Resistances in KOhms) | | | | | |
|---|------|------|---|--------|------|-----|------|-----|
| OUTPUT | R18 | R24 | R25 | OUTPUT | R29 | R30 | R31 | R32 |
| 0/5mA | --- | 100 | --- | ±10Vdc | 49,9 | --- | 200 | --- |
| 0/10mA | --- | 49,9 | --- | 0/1Vdc | --- | --- | 11 | 100 |
| 1/5mA | 100K | 124 | --- | 0/5Vdc | --- | --- | 100 | 100 |
| 0/20mA | --- | --- | 24,9 | 1/5Vdc | --- | 100 | 66,5 | 100 |

Jumpers E and F .- Closed in 4/20 mA output. Open for other outputs
 Note .- The symbol «- - -» means «NOT installed»

Readjustment procedure

- 1.- Open the housing to access the instrument internal circuits
- 2.- Select jumpers on boards «ME», «MP» and «MS»
- 3.- Connect signal generator to signal input terminals
- 4.- Connect multimeter to signal output terminals
- 5.- Power up the instrument as indicated on the label
- 6.- Generate the low signal level and operate potentiometer P1 on «ME» until the multimeter shows the desired signal output
- 7.- Generate the high signal level and operate potentiometer P2 on «ME» until the multimeter shows the desired signal output
- 8.- Repeat steps 6 to 7 in order to correct deviations and check the adjust

Mechanical dimensions mm (inch)

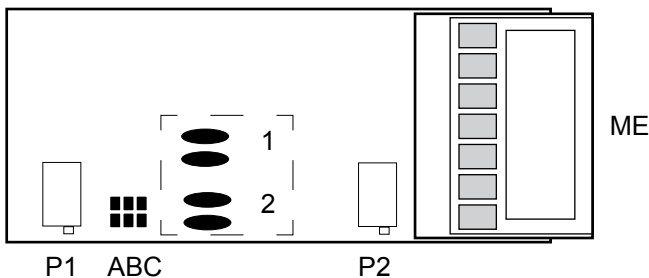


Input signal module (ME)

Placed on the «ME» module are the potentiometers and jumpers for Zero and Gain adjustment.

- Jumper 1 .- Closed for Gross Positive Offset
- Jumper 2 .- Closed for Gross Negative Offset
- Jumper A .- Closed for Fine Negative Offset

- Jumper B .- Closed for Maximum GAIN
- Jumper C .- Closed for Middle GAIN
- Jumper B and C .- Open for Minimum GAIN



- P1 .- Zero Adjust Potentiometer
- P2 .- Gain Adjust Potentiometer

CE Declaration of conformity

Manufacturer FEMA ELECTRÓNICA, S.A.
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Series CCT, models 01, 04, 06, 08, 20, 22, 23, 24, 25, 26, 27, 32, 55I, 55V, 80, 90, 95

The manufacturer declares that the instruments indicated comply with the directives and rules indicated below.

Directive of electromagnetic compatibility 2004/108/CEE
 Directive of low voltage 73/23/CEE

Security rules 61010-1
 Emmission rules 50081-1
 Immunity rules 50082-1

Barberà del Vallès October 2009
 Daniel Juncà - Quality Manager