Super-mini Signal Conditioners F2 Series

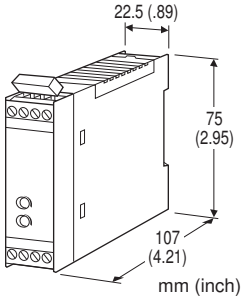
THERMOCOUPLE TRANSMITTER

Functions & Features

• Accepting direct input from a thermocouple and providing a standard process signal
• 5-segment linearization
• Burnout protection
• High-accuracy cold junction compensation
• Fast response type available
• High-density mounting

Typical Applications

• High-accuracy cold junction compensation benefits narrow span measurements
• 0.1 μA burnout sensing enables long distance transmission with minimum offset drifts
• Electric furnace (isolation)
• No burnout type can connect to a single T/C in parallel with a recorder



CE

MODEL: F2TS-[1][2]-R[3]

ORDERING INFORMATION

• Code number: F2TS-[1][2]-R[3]
Specify a code from below for each of [1] through [3].
(e.g. F2TS-2A-R/BL/CE/Q)
• Temperature range (e.g. 0 – 800°C)
• Special output range (For codes Z & 0)
• Specify the specification for option code /Q
(e.g. /C01)

[1] INPUT THERMOCOUPLE

2: K (CA) (Usable range -270 to +1370°C, -454 to +2498°F)
4: J (IC) (Usable range -210 to +1200°C, -346 to +2192°F)
5: T (CC) (Usable range -270 to +400°C, -454 to +752°F)
7: R (Usable range -50 to +1760°C, -58 to +3200°F)
8: S (Usable range -50 to +1760°C, -58 to +3200°F)

[2] OUTPUT

Current
A: 4 – 20 mA DC (Load resistance 750 Ω max.)
B: 2 – 10 mA DC (Load resistance 1500 Ω max.)
C: 1 – 5 mA DC (Load resistance 3000 Ω max.)
D: 0 – 20 mA DC (Load resistance 750 Ω max.)
E: 0 – 16 mA DC (Load resistance 900 Ω max.)
F: 0 – 10 mA DC (Load resistance 1500 Ω max.)
G: 0 – 1 mA DC (Load resistance 15 kΩ max.)
Z: Specify current (See OUTPUT SPECIFICATIONS)
Voltage
1: 0 – 10 mV DC (Load resistance 10 kΩ min.)
2: 0 – 100 mV DC (Load resistance 100 kΩ min.)
3: 0 – 1 V DC (Load resistance 1000 Ω min.)
4: 0 – 10 V DC (Load resistance 10 kΩ min.)
5: 0 – 5 V DC (Load resistance 5000 Ω min.)
6: 1 – 5 V DC (Load resistance 5000 Ω min.)
0: Specify voltage (See OUTPUT SPECIFICATIONS)

POWER INPUT

DC Power
R: 24 V DC
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

[3] OPTIONS (multiple selections)

Response Time (0 – 90 %)
blank: Standard (≤ 0.5 sec.)
/K: Fast Response (Approx. 25 msec.)
Burnout
blank: Upscale burnout
/BL: Downscale burnout
/BN: No burnout
Standards & Approvals (must be specified)
/N: Without CE
/CE: CE marking
Other Options
blank: none
/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our web site.)
/C01: Silicone coating
/C02: Polyurethane coating

GENERAL SPECIFICATIONS

Construction: Stand-alone; terminal access at the front
Connection: Euro type connector terminal
(applicable wire size: 0.2 to 2.5 mm^2, stripped length 7 mm)
Housing material: Flame-resistant resin (black)
Isolation: Input to output to power

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Zero adjustment: -5 to +5 % (front)
Span adjustment: 95 to 105 % (front)
Linearization: Standard
Cold junction compensation: CJC sensor attached to the input terminals

INPUT SPECIFICATIONS

Offset: Max. 1.5 times span
Input resistance: 30 kΩ min.
Burnout sensing: 0.1 μA

Minimum span (in °C)
K (CA): min. span 75°C
J (IC): min. span 100°C
T (CC): min. span 200°C
R: min. span 1600°C
S: min. span 1000°C

Minimum span (in °F)
K (CA): min. span 140°F
J (IC): min. span 180F
T (CC): min. span 360°F
R: min. span 2880°F
S: min. span 1800°F

Note: The described accuracy may be partially not satisfied when the temperature ranges below 0°C. Consult factory.

OUTPUT SPECIFICATIONS

■ **DC Current**: 0 – 20 mA DC
Minimum span: 1 mA
Offset: Max. 1.5 times span
Load resistance: Output drive 15 V max.
■ **DC Voltage**: -10 – +12 V DC
Minimum span: 5 mV
Offset: Max. 1.5 times span
Load resistance: Output drive 1 mA max.; at ≥ 0.5 V

INSTALLATION

Current consumption
•**DC**: Approx. 80 mA
Operating temperature: -5 to +55°C (23 to 131°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Mounting: DIN rail
Weight: 150 g (0.33 lb)

PERFORMANCE in percentage of span

Accuracy: ±0.4 % (at over 400°C or 750°F for R and S)
Cold junction compensation error
(at 20°C ±10°C or 68°F ±18°F)
K, J, T: ±1°C or ±1.8°F
S, R: ±2°C or ±3.6°F
Temp. coefficient: ±0.09 %/°C (±0.05 %/°F)
(at over 400°C or 750°F for R and S)
Burnout response: ≤ 10 sec.
Line voltage effect: ±0.1 % over voltage range
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

STANDARDS & APPROVALS

EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
RoHS Directive

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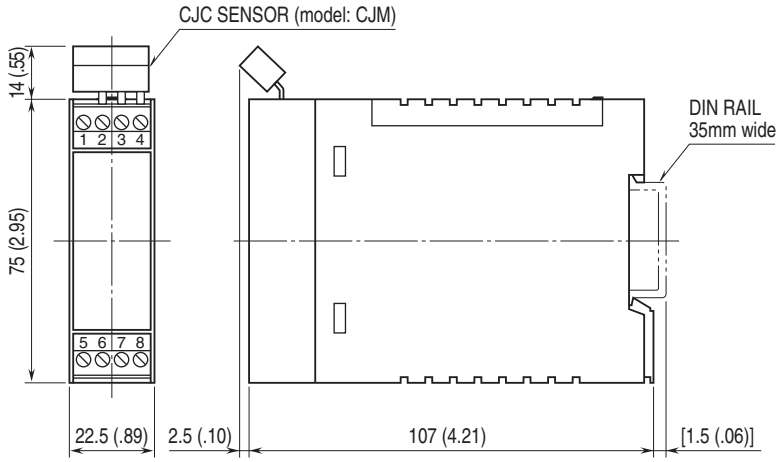
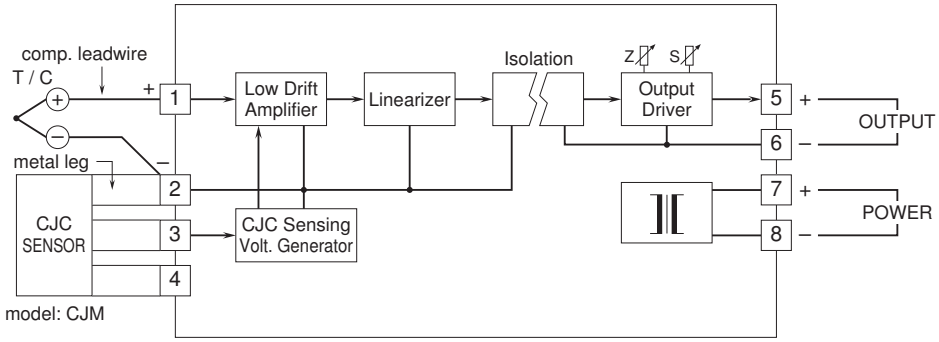
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



⚠ Specifications are subject to change without notice.

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