

Super-mini Terminal Block Signal Conditioners *M5-UNIT*

THERMOCOUPLE TRANSMITTER

MODEL **M5TS**

MODEL & SUFFIX CODE SELECTION

M5TS-□□-□□

MODEL _____

INPUT THERMOCOUPLE _____

- | | |
|-------------|-------------|
| 1 : (PR) | 6 : B (RH) |
| 2 : K (CA) | 7 : R |
| 3 : E (CRC) | 8 : S |
| 4 : J (IC) | N : N |
| 5 : T (CC) | 0 : Specify |

OUTPUT _____

Current

Voltage

- | | |
|---------------------|---------------------|
| A : 4 – 20mA DC | 4 : 0 – 10V DC |
| Z : Specify current | 5 : 0 – 5V DC |
| | 6 : 1 – 5V DC |
| | 4W : -10 – +10V DC |
| | 5W : -5 – +5V DC |
| | 0 : Specify voltage |

POWER INPUT _____

M : 85 – 264V AC *1

R : 24V DC

*1: CE not available.

OPTIONS _____

/K : Fast response

/BN : No burnout

/BL : Downscale burnout

ORDERING INFORMATION

Specify code number and variables.

- **Code number** (e.g. M5TS-2A-R/K/BL)
- **Temperature range** (e.g. 0 – 800°C)
- **Special output range** (For codes Z & 0)

GENERAL SPECIFICATIONS

Construction: Terminal block

Connection: M3.5 screw terminals
(nickel-plated steel; torque 0.8 N·m)

Housing material: Flame-resistant resin (black)

Isolation: Input to output to power

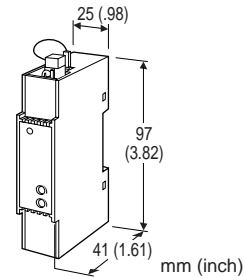
Front adjustments: ±2% for zero and span

Burnout protection: Upscale standard; downscale or no burnout optional

Linearization: Standard

Cold Junction Compensation: CJC sensor attached to the input terminals

Power LED: Green light turns on when the power is supplied.



Functions & Features

- Accepting direct input from a thermocouple and providing a standard process signal
- Linearization
- Burnout protection
- Cold junction compensation
- Fast response type available
- High-density mounting
- Power LED
- CE marking for 24V power

INPUT & OUTPUT

■ **INPUT:** Thermocouples

Minimum span: 3mV

Input resistance: 20kΩ minimum

Burnout sensing: 0.1μA

Temperature range

| T/C | USABLE RANGE | LOWER RANGE | MIN. SPAN |
|---------|-----------------|-----------------|-----------|
| (PR) | 0 to 1760°C | 0 to 880°C | 370°C |
| K (CA) | -270 to +1370°C | -270 to +1200°C | 75°C |
| E (CRC) | -270 to +1000°C | -270 to +750°C | 50°C |
| J (IC) | -210 to +1200°C | -210 to +800°C | 60°C |
| T (CC) | -270 to +400°C | -270 to +325°C | 75°C |
| B (RH) | 0 to 1820°C | 0 to 750°C | 780°C |
| R | -50 to +1760°C | -50 to +550°C | 360°C |
| S | -50 to +1760°C | -50 to +550°C | 380°C |
| N | -270 to +1300°C | -270 to +1100°C | 110°C |
| T/C | USABLE RANGE | LOWER RANGE | MIN. SPAN |
| (PR) | 32 to 3200°F | 32 to 1616°F | 670°F |
| K (CA) | -454 to +2498°F | -454 to +2192°F | 140°F |
| E (CRC) | -454 to +1832°F | -454 to +1382°F | 90°F |
| J (IC) | -346 to +2192°F | -346 to +1472°F | 110°F |
| T (CC) | -454 to +752°F | -454 to +617°F | 140°F |
| B (RH) | 32 to 3308°F | 32 to 1382°F | 1450°F |
| R | -58 to +3200°F | -58 to +1022°F | 680°F |
| S | -58 to +3200°F | -58 to +1022°F | 700°F |
| N | -454 to +2372°F | -454 to +2012°F | 200°F |

Remark: The transmitter may not satisfy specified accuracy for temperature ranges below 0°C. For more details, consult M-System.

OUTPUT

•DC Current: 0 – 20mA DC

Minimum span: 1mA

Zero suppression/elevation: Max. 1.5 times span

Load resistance: Output drive 11V maximum

| Output | Load Resistance |
|----------|-------------------|
| 4 – 20mA | : 550 (Ω maximum) |

•DC Voltage: 0 – 10V DC

Minimum span: 1V

Zero suppression/elevation: Max. 1.5 times span

Load resistance: Output drive 10mA maximum; at ≥1V

| Output | Load Resistance |
|------------|--------------------|
| 0 – 10V | : 1000 (Ω minimum) |
| 0 – 5V | : 500 |
| 1 – 5V | : 500 |
| -10 – +10V | : 8000 |
| -5 – +5V | : 4000 |

INSTALLATION

Power input

AC: Operational voltage range 85 – 264V;
47 – 66 Hz; approx. 2VA at 100V
approx. 3VA at 200V
approx. 3VA at 264V

DC: Operational voltage range 24V ±10%;
ripple 10% p-p max.; approx. 2W

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 0 to 90% RH (non-condensing)

Mounting: DIN rail

Dimensions: W25×H113×D41 mm (0.98"×4.45"×1.61")

See General Spec. Sheet Figure C-1.

Weight: 80 g (2.8 oz.)

Terminal assignment: See General Spec. Sheet Figure D-2.

PERFORMANCE in percentage of span

Accuracy (whichever is greater)

K, E, J: ±0.1% of FS or ±0.2°C

T, N: ±0.2% of FS or ±0.2°C

PR, B, R, S: ±0.3% of FS (at over 400°C for R, S and PR; over 770°C for B)

Cold junction compensation error

(at 20°C ±10°C or 68°F ±18°F)

K, E, J, T & N: ±0.5°C or ±0.9°F maximum

S, R & PR: ±1°C or ±1.8°F maximum

Temp. coefficient: ±0.015%/°C (±0.008%/°F)

(at over 400°C for R, S and PR; over 770°C for B)

Response time: ≤0.5 seconds (0 – 90%)

approx. 25 milliseconds with option /K

Burnout response: ≤10 seconds

Line voltage effect: ±0.1% over voltage range

Insulation resistance: ≥100MΩ with 500V DC

Dielectric strength

DC powered: 2000V AC @1 minute

(input to output to power to ground)

AC powered: 1500V AC @1 minute

(input to output to power to ground)

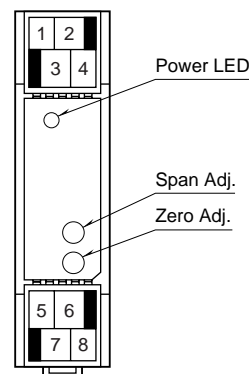
STANDARDS & APPROVALS

CE conformity: EMC Directive (89/336/EEC)

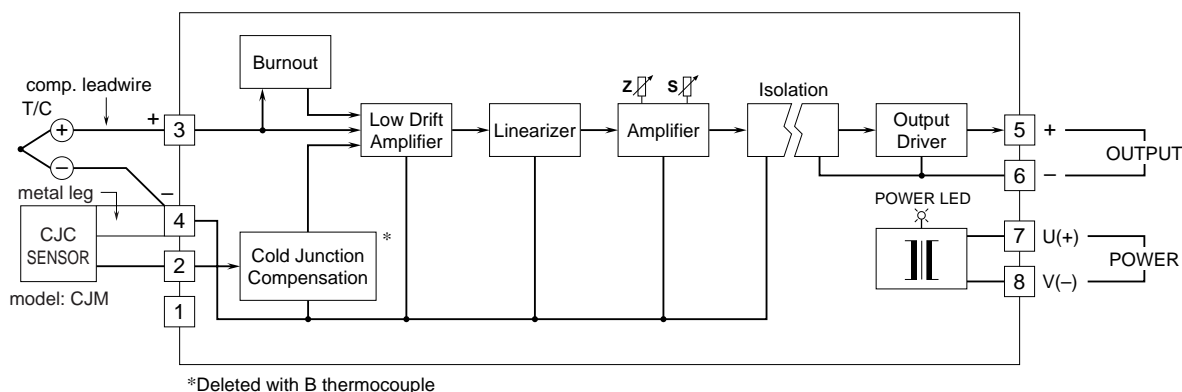
EMI EN61000-6-4

EMS EN61000-6-2

FRONT PANEL CONFIGURATION



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications subject to change without notice.