

Plug-in Signal Conditioners M-UNIT

N: N (Usable range -270 to +1300°C, -454 to +2372°F)

O: Specify

THERMOCOUPLE TRANSMITTER

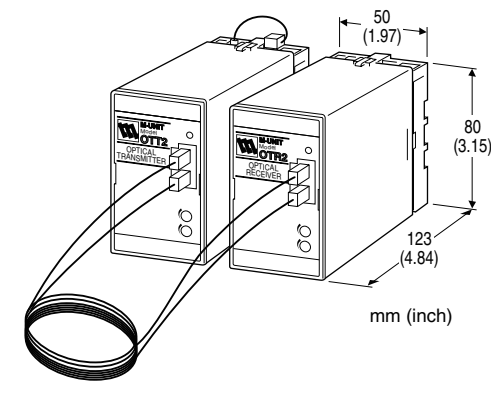
(fiber optics isolation)

Functions & Features

- Isolation up to several hundred thousand volts with a fiber optics cable
- ON/OFF temperature control signal
- Linearization
- Burnout
- High-density mounting

Typical Applications

- Ion implanter
- Electron-beam devices
- Dust chamber
- Protection against inductive noises in power substations



MODEL: OTT2-[1]-[2][3]

ORDERING INFORMATION

- Code number: OTT2-[1]-[2][3]

Specify a code from below for each [1] through [3].
(e.g. OTT2-2-B/BL/Q)

- Temperature range (e.g. 0 - 800°C) • Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT THERMOCOUPLE

- 1: (PR) (Usable Range 0 to 1760°C, 32 to 3200°F)
- 2: K (CA) (Usable range -270 to +1370°C, -454 to +2498°F)
- 3: E (CRC) (Usable range -270 to +1000°C, -454 to +1832°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)
- 6: B (RH) (Usable range 0 to 1820°C, 32 to 3308°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] POWER INPUT

AC Power

- B: 100 V AC
- C: 110 V AC
- D: 115 V AC
- F: 120 V AC
- G: 200 V AC
- H: 220 V AC
- J: 240 V AC

DC Power

- S: 12 V DC
- R: 24 V DC

[3] OPTIONS (multiple selections)

Burnout

- blank: Upscale burnout
- /BL: Downscale burnout
- /BN: No burnout

Other Options

- blank: none
- /Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to M-System's web site.)

- /C01: Silicone coating
- /C02: Polyurethane coating
- /C03: Rubber coating

TERMINAL SCREW MATERIAL

- /S01: Stainless steel

RELATED PRODUCTS

- Thermocouple Receiver (model: OTR2)
- Fiber optics cable:
 - 10 meters (model: AMPCP2-10M)
 - 20 meters (model: AMPCP2-20M)
 - 30 meters (model: AMPCP2-30M)
- Optical cable used for the AMPCP2
Mitsubishi Rayon Super Eska SH 4001
Minimum bend radius: 25 mm
Tension strength: ≤ 70 N
- Connector used for the AMPCP2
Avago Technologies HFBR-4532Z
- Recommended SSR: OMRON G3NA

GENERAL SPECIFICATIONS

Construction: Plug-in

Transmission method: Light pulse (100 - 500 Hz)



Maximum transmission distance: 30 meters (98 ft)

Connection

I/O & power input: M3.5 screw terminals

Optical fiber: Connector

Screw terminal: Chromated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Input or control output to power

Zero adjustment: -5 to +5 % (front)

Span adjustment: 95 to 105 % (front)

Burnout: Upscale standard; downscale or no burnout optional

Linearization: Standard

Cold junction compensation: CJC sensor attached to the input terminals (B thermocouple is without CJC as standard)

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

INPUT SPECIFICATIONS

Minimum span: 3 mV

Offset: Max. 1.5 times span

Input resistance: 30 kΩ min.

Burnout sensing: 0.1 μA

Minimum span (in °C)

(PR): min. span 370°C

K (CA): min. span 75°C

E (CRC): min. span 50°C

J (IC): min. span 60°C

T (CC): min. span 75°C

B (RH): min. span 780°C

R: min. span 360°C

S: min. span 380°C

N: min. span 110°C

Minimum span (in °F)

(PR): min. span 670°F

K (CA): min. span 140°F

E (CRC): min. span 90°F

J (IC): min. span 110°F

T (CC): min. span 140°F

B (RH): min. span 1410°F

R: min. span 650°F

S: min. span 690°F

N: min. span 200°F

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

OUTPUT SPECIFICATIONS

■ **Control Output:** External SSR
(output from the OTT2)

Drive: Approx. 15 V; $Z_0 = 1.2 \text{ k}\Omega$

INSTALLATION

Power input

• **AC:** Operational voltage range: rating $\pm 10\%$,
50/60 ± 2 Hz, approx. 3 VA

• **DC:** Operational voltage range: rating $\pm 10\%$
ripple 10 %p-p max., approx. 2.6 W (110 mA at 24 V)

Operating temperature: -5 to +60°C (23 to 140°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Mounting: Surface or DIN rail

Weight: 350 g (0.77 lb)

PERFORMANCE in percentage of span

Accuracy: $\pm 0.3\%$ (at over 400°C or 750°F for R, S and PR;
over 770°C or 1420°F for B)

(Overall performance with the OTT2 and OTR2 combined)

Cold junction compensation error

(at 20°C $\pm 10^\circ\text{C}$ or 68°F $\pm 18^\circ\text{F}$)

K, E, J, T & N: $\pm 0.5^\circ\text{C}$ or $\pm 0.9^\circ\text{F}$

S, R & PR: $\pm 1^\circ\text{C}$ or $\pm 1.8^\circ\text{F}$

Temp. coefficient: $\pm 0.015\%/^\circ\text{C}$ ($\pm 0.008\%/^\circ\text{F}$)
(at over 770°C or 1420°F for B)

Response time: ≤ 0.6 second (0 – 90 %) (Overall
performance with the OTT2 and OTR2 combined)

Burnout response: ≤ 10 sec.

Line voltage effect: $\pm 0.1\%$ over voltage range

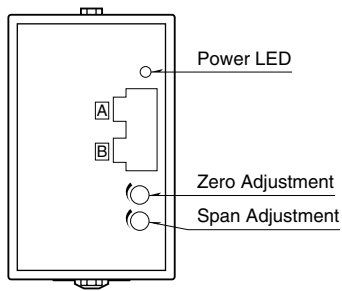
Insulation resistance: $\geq 100 \text{ M}\Omega$ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute

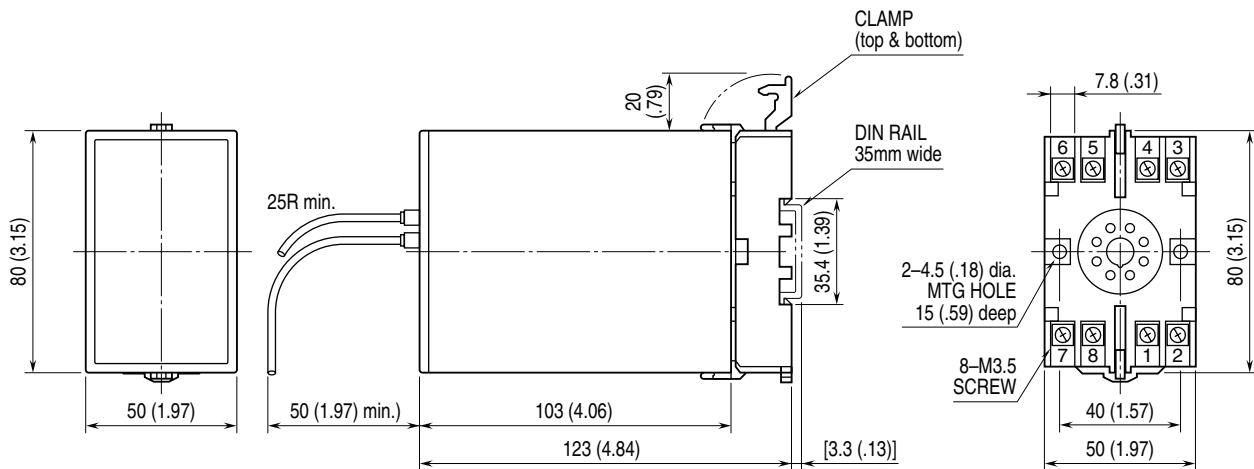
(input or temp. control output to power to ground)



EXTERNAL VIEW



DIMENSIONS unit: mm (inch)



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

TERMINAL ASSIGNMENTS unit: mm (inch)

