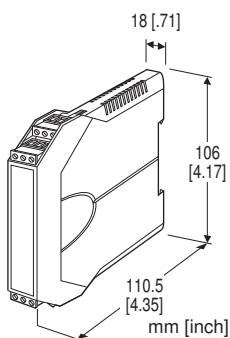


Space-saving Two-wire Signal Conditioners B3-UNIT

2-WIRE UNIVERSAL TEMPERATURE TRANSMITTER (PROFIBUS-PA)

Functions & Features

- Universal input: mV, V, T/C, RTD, resistance and potentiometer
- High accuracy
- PROFIBUS-PA communication
- A wide variety of T/C and RTD types
- Self diagnostics
- Input-output isolated



MODEL: B3PU-0[1]

ORDERING INFORMATION

- Code number: B3PU-0[1]
- Specify a code from below for [1].
(e.g. B3PU-0/Q)
- Specify the specification for option code /Q
(e.g. /C01)

SAFETY APPROVAL

0: None

[1] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q

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

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

RELATED PRODUCTS

- GSD (General Station Description) file
 - EDDL (Electronic Device Description Language) file
- GSD and EDDL files are downloadable at M-System's web site

GENERAL SPECIFICATIONS

Construction: Small-sized front terminal structure

Connection: Euro type connector terminal

(applicable wire size: 0.2 to 2.5 mm², stripped length 8 mm)

Housing material: Flame-resistant resin (gray)

Isolation: Input to output

Cold Junction Compensation (thermocouple input): CJC sensor incorporated

Device address: 0 to 126 (factory set to 126)

Data transmission: MBP (Manchester-coded Bus Powered) Mode

Device profile: PROFIBUS-PA Profile V3.0, Compact Class B

PROFIBUS COMMUNICATION

Digital signal: Manchester-coded signal

(conforms to IEC 61158-2)

Baud rate: 31.25 kbps

Protocol: PROFIBUS-DP-V1

Device profile: PROFIBUS-PA Profile V3.0, Compact Class B

INPUT SPECIFICATIONS

The input is factory set for use with K thermocouple.

See Table 1 for the available input type and the maximum range.

■ DC mV & V

Input resistance: $\geq 1 \text{ M}\Omega$

■ Thermocouple

Input resistance: $\geq 1 \text{ M}\Omega$

Burnout sensing: 130 nA $\pm 10 \%$

■ RTD (2-wire, 3-wire or 4-wire)

Excitation: 0.2 mA $\pm 10 \%$

Allowable leadwire resistance: Max. 20 Ω per wire

■ Resistance (2-wire, 3-wire or 4-wire)

Excitation: 0.2 mA $\pm 10 \%$

Allowable leadwire resistance: Max. 20 Ω per wire

■ Potentiometer

Excitation: 0.2 mA $\pm 10 \%$

Allowable leadwire resistance: Max. 20 Ω per wire

OUTPUT SPECIFICATIONS

Output signal: Digital signals (refer to 'PROFIBUS COMMUNICATION')

Static current consumption: 12 ± 1 mA

INSTALLATION

Supply voltage: 9 - 30 V DC (automatic polarity detection)

Operating temperature: -40 to +85°C (-40 to +185°F)

Operating humidity: 0 to 95 %RH (non-condensing)

Mounting: DIN rail

Weight: 80 g (2.8 oz)

PERFORMANCE

Accuracy: See Table 1.

Cold junction compensation error: $\pm 0.5^{\circ}\text{C}$ ($\pm 0.9^{\circ}\text{F}$)

Temp. coefficient: $\pm 0.015\ \%/^{\circ}\text{C}$ ($\pm 0.008\ \%/^{\circ}\text{F}$) at -5 to +55°C

Start-up time: Approx. 10 sec.

Response time: ≤ 2 sec. (0 - 90 %)

with damping time set to 0

Supply voltage effect: $\pm 0.003\ \%$ / 1 V

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

Dielectric strength: 1500 V AC @1 minute (input to output)

STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

INPUT TYPE, RANGE & ACCURACY

Table 1

INPUT TYPE	MAXIMUM RANGE		ACCURACY			
DC mV & V	-16 to +16mV -32 to +32mV -50 to +64mV -50 to +128mV -50 to +256mV -50 to +500mV -50 to +1000mV		±10µV or ±0.04% of reading, whichever is greater ±15µV or ±0.04% of reading, whichever is greater ±25µV or ±0.04% of reading, whichever is greater ±40µV or ±0.04% of reading, whichever is greater ±60µV or ±0.04% of reading, whichever is greater ±100µV or ±0.04% of reading, whichever is greater ±120µV or ±0.04% of reading, whichever is greater			
Potentiometer	0 to 4000Ω		±0.5% (total resistance ≥10Ω) ±0.2% (total resistance ≥40Ω) ±0.1% (total resistance ≥80Ω)			
Resistance	0 to 200Ω 0 to 500Ω 0 to 1000Ω 0 to 2000Ω 0 to 4000Ω		±0.06Ω or ±0.04% of reading, whichever is greater *1 ±0.1Ω or ±0.04% of reading, whichever is greater *1 ±0.2Ω or ±0.04% of reading, whichever is greater *1 ±0.4Ω or ±0.04% of reading, whichever is greater *1 ±0.6Ω or ±0.04% of reading, whichever is greater *1			
Thermocouple	°C			°F		
	MAXIMUM RANGE	CONFORMANCE RANGE	ACCURACY *2	MAXIMUM RANGE	CONFORMANCE RANGE	ACCURACY *2
K (CA)	-270 to +1370	-150 to +1370	±0.25	-454 to +2498	-238 to +2498	±0.45
E (CRC)	-270 to +1000	-170 to +1000	±0.20	-454 to +1832	-274 to +1832	±0.36
J (IC)	-210 to +1200	-180 to +1200	±0.25	-346 to +2192	-292 to +2192	±0.45
T (CC)	-270 to +400	-170 to +400	±0.25	-454 to +752	-274 to +752	±0.45
B (RH)	100 to 1820	400 to 1760	±0.75	212 to 3308	752 to 3200	±1.35
R	-50 to +1760	200 to 1760	±0.50	-58 to +3200	392 to 3200	±0.90
S	-50 to +1760	200 to 1760	±0.50	-58 to +3200	392 to 3200	±0.90
C (WRe 5-26)	0 to 2315	0 to 2315	±0.80	32 to 4199	32 to 4199	±1.44
N	-270 to +1300	-130 to +1300	±0.30	-454 to +2372	-202 to +2372	±0.54
U	-200 to +600	-200 to +600	±0.20	-328 to +1112	-328 to +1112	±0.36
L	-200 to +900	-200 to +900	±0.25	-328 to +1652	-328 to +1652	±0.45
P (Platinel II)	0 to 1395	0 to 1395	±0.25	32 to 2543	32 to 2543	±0.45
RTD	°C			°F		
	MAXIMUM RANGE		ACCURACY*3	MAXIMUM RANGE		ACCURACY*3
Pt 100 (JIS '97, IEC)	-200 to +850		±0.15	-328 to +1562		±0.27
Pt 200 (JIS '97, IEC)	-200 to +850		±0.15	-328 to +1562		±0.27
Pt 500 (JIS '97, IEC)	-200 to +850		±0.15	-328 to +1562		±0.27
Pt 1000 (JIS '97, IEC)	-200 to +850		±0.15	-328 to +1562		±0.27
Pt 50 Ω (JIS '81)	-200 to +649		±0.30	-328 to +1200		±0.54
Pt 100 (JIS '81)	-200 to +649		±0.15	-328 to +1200		±0.27
Ni 120 (Edison curve No. 7)	-80 to +260		±0.15	-112 to +500		±0.27
Cu 10 @ 25°C	-50 to +250		±1.0	-58 to +482		±1.8

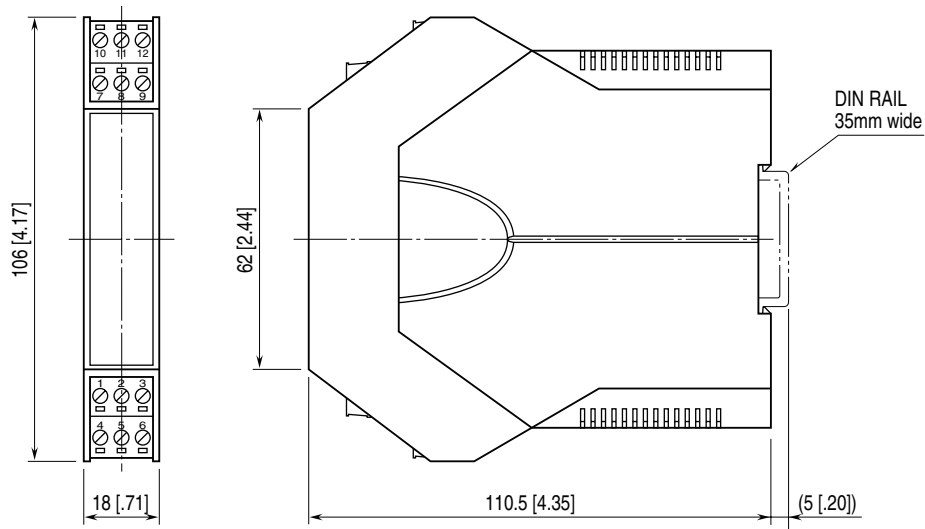
*1. For 2- or 3-wire resistance, the value is valid by the sensor calibration after the wiring.

*2. Or ±0.04% of reading, whichever is greater. Add Cold Junction Compensation Error 0.5°C (0.9°F).

*3. Or ±0.04% of reading, whichever is greater.

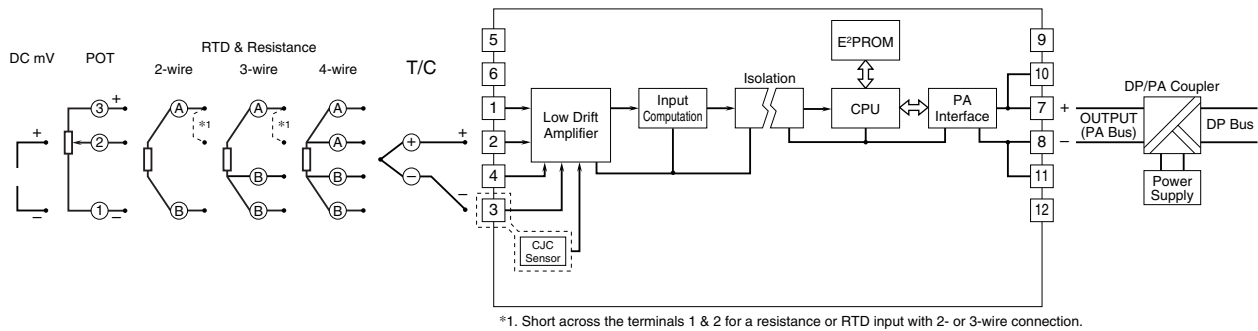
For 2- or 3-wire RTD, the value is valid by the sensor calibration after the wiring.

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.