

4½ Digit Thermocouple Meters

⅛ DIN



2002-KC1 shown smaller than actual size.

2002B-J, -K, -T



- ✓ J, K or T Thermocouple Input
- ✓ 0.05 deg/deg Cold-Junction Error
- ✓ -138 to 1248°C Range
- ✓ Five-Segment Linearization
- ✓ 0.1°C or 0.1 °F Resolution, Jumper-Selectable
- ✓ 1 mV/deg Linearized Recorder Output
- ✓ 120 dB CMR, 70 dB NMR
- ✓ Bright, 14 mm (0.56") LED Display
- ✓ Display Hold and Test
- ✓ 115/230 Vac Power
- ✓ EMI/RFI Filter for AC Power
- ✓ Screw-Terminal Barrier Strip
- ✓ Short 104 mm (4.1") deep ⅛ DIN case

Options

- ✓ Isolated 9 to 32 Vdc Power
- ✓ Isolated 26-56 Vdc Power
- ✓ NEMA 4 (IP65) Splash-Proof Lens Cover

The 2002-J, -K and -T are low-cost 4½ digit ($\pm 19,999$ count) thermocouple meters with 0.1°C or 0.1°F resolution for indication-only applications. High accuracy is provided by five-segment linearization and matched, graded components for each T/C type.

Standard Features

Mechanical features include a bright 14 mm (0.56") display, a screw-terminal barrier strip for signal and power, and a compact ⅛ DIN case that requires less than 104 mm (4.1") behind the panel. Electrical features include cold-junction compensation, jumper selection of °C or °F, and a linearized recorder output of 1 mV per degree.

Options

Power options include isolated 9 to 32 Vdc and 26 to 56 Vdc. A splash-proof lens cover which meets NEMA 4 (IP65) requirements allows the 2002 to be used in harsh industrial environments.

Specifications

Input

Thermocouple:

Type J: (Iron-Constantan, Fe-CuNi)

Type K: (Chromel-Alumel, NiCr-NiAl)

Type T: (Copper-Constantan, Cu-CuNi)

Calibration: IEC 584-1 (IPTS-68)

Configuration: Single-ended
(-TC lead tied to ANA GND)

Polarity: Bipolar

Zero: Adjustable $\pm 20^{\circ}\text{C}$ ($\pm 36^{\circ}\text{F}$)

Cold-Junction Tempco: ± 0.05 deg/deg

Sensor-Wire Resistance Effect Per

Conductor:

Type J: 40 $\mu\text{deg/deg}/\Omega$,
up to 2500 Ω

Type K: 50 $\mu\text{deg/deg}/\Omega$,
up to 2000 Ω

Type T: 50 $\mu\text{deg/deg}/\Omega$,
up to 2000 Ω

Sensor-Break Current: 300 nA

Sensor-Break Indication:
Positive overrange (upscale)

Digital Inputs

Level: TTL or 5V CMOS compatible

Noise Rejection

NMR, SIG HI to SIG LO:

70 dB, 50/60 Hz

CMR, ANA GND to PWR GND:

120 dB, DC to 60 Hz

CMV, ANA GND to PWR GND:

1500 Vp per HV test, 354 Vp per IEC
spacing

Accuracy at 25°C

Range for Rated Accuracy:

Type J: -138.0 to 760.0°C
(-216.0 to 1400.0°F)

Type K: -105.0 to 1248.0°C
(-157.0 to 1999.9°F)

Type T: -112.0 to 400.0 °C
(-170.0 to 752.0°F)

Maximum Error: $\pm 1.5^{\circ}\text{C}$ ($\pm 2.7^{\circ}\text{F}$) ± 5 cts

Span Tempco:

$\pm 0.01\%$ of reading/ $^{\circ}\text{C}$

Resolution: 0.1°C or 0.1°F
(jumper-selectable)

Full-Scale Step Response: 1 s

Warmup to Rated Accuracy: 20 min

Analog Output

Voltage: 1 mV/deg

Calibration Error: ± 1.5 mV on $^{\circ}\text{C}$,
 ± 2.7 mV on $^{\circ}\text{F}$

Current: 1 mA max

Source Resistance: 68 Ω

Analog-to-Digital Conversion

Technique: Dual-slope, average value

Signal-integration period: 100 ms

Read Rate: 2.5/s

Display

Type: 7-segment, red LED

Height: 14.2 mm (0.56")

Symbols: -1.8.8.8.8

Decimal Points: Four positions
programmable by jumpers behind the
lens or at connector

Overrange Indication:

Four least-significant digits flash

Power

AC Voltages: 115 or 230 Vac, $\pm 15\%$

AC Frequency: 49 to 440 Hz

DC Voltages: 9 to 32 Vdc, isolated to
300 Vp; 26 to 56 Vdc, isolated to 300 Vp

Power Consumption: 3.7 W nominal

Output Voltages:

4.7 Vdc and -4.7 Vdc $\pm 5\%$, 10 mA max

Environmental

Operating Temperature: 0 to 60°C

Storage Temperature: -40 to 85°C

Relative Humidity: 95% at 40°C
(non-condensing)

Mechanical

Bezel: 96 W x 48 H x 5.1 mm D
(3.78 x 1.89 x 0.20")

Depth Behind Bezel: 104 mm (4.09")

Panel Cutout: 92 W x 45 mm H
(3.62 x 1.77")

Weight: 15 oz (425 g)

Case Material: 94V-0 UL-rated
polycarbonate

To Order Visit newportUS.com/2002a-j for Pricing and Details

Model No.					Description
2002B					4½ digit thermocouple meters
	-JC1				-138 to 760°C
	-JF1				-216 to 1400°F
	-KC1				-105 to 1248°C
	-KF1				-157 to 1999°F
	-TC1				-112 to 400°C
	-TF1				-170 to 752°F
		*			(Nothing, leave field blank) 115 Vac, 50/60 Hz power
		,C1			230 Vac, 50/60 Hz
		,C3C			Isolated 9-32 Vdc
		,C3E			Isolated 26-56 Vdc
			*		(Nothing, leave field blank) red LED display
			,G		Green LED display
				,BL	Lens without Newport logo

NOTE: All combinations may not be valid, check spec sheet for valid part numbers.

Ordering Examples: 2002-KC1, 4½ digit Type K thermocouple meter, 115 Vac power, -105 to 1248°C input range.