

# 3½ Digit (Pt100) RTD Meters

1/8 DIN

202A-M, -R



- ✓ Platinum 100 Ω RTD Input
- ✓ 1 mA Excitation Current
- ✓ 2-, 3- or 4-Wire Connection
- ✓ -200 to 820°C in 1°C Steps (-M)
- ✓ -199.9 to 199.9°C in 0.1°C Steps (-R)
- ✓ °C or °F, Jumper-Selectable
- ✓ Platinum Curve Linearization
- ✓ 120 dB CMR, 70 dB NMR
- ✓ 1 or 10 mV/deg Linearized Recorder Output
- ✓ 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 1/8 DIN Case

## Options

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

The 202-M and -R are low-cost 3½ digit ( $\pm 1999$  count) temperature indicators for use with platinum 100 Ω RTD's with alpha of 0.00385. They are complete with 1 mA sensor excitation, sensor-break detection, and platinum curve linearization. Resolution is 1° (-M) or 0.1° (-R). Readout can be in °C or °F, as selected by push-on jumpers. The electrical connection can be by 2-, 3-, or 4-wires. High accuracy is provided by positive current feedback and matched, graded components.

## Standard Features

Mechanical features include a bright 14 mm (0.56") display, a screw-terminal barrier strip for signal and power, and a compact 1/8 DIN case that requires less than 104 mm (4.1") behind the panel. Electrical features include jumper selection of °C or °F, a linearized recorder output of 1 or 10 mV per degree, and 1 mA current excitation. The current source is tied to the reference of the A/D converter for true ratiometric operation and immunity to changes in line voltage.



202-M shown actual size.

## Options

Options are isolated 9 to 32 Vdc or 26 to 56 Vdc power, a PCB edge connector for display control and output of 4.7 Vdc and -4.7 Vdc power, and a splash-proof lens cover which meets NEMA 4 (IP65) requirements.

## Specifications

### Input

**RTD Type:** 100-platinum with alpha of 0.00385

**Calibration:** IEC 751 (IPTS-68)

**Configuration:** 2-, 3- or 4-wire connection

**Polarity:** Bipolar

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

**Zero Tempco:**  $\pm 0.05$  degree/degree (-M),  $\pm 0.01$  degree/degree (-R)

**Sensor-Wire Resistance Tempco Effect Per Conductor:**

**2-Wire:** 20 mdeg/Ω/deg, up to 3.8 Ω

**3-Wire:** 50 μdeg/Ω/deg, up to 100 Ω

**4-Wire:** 5.0 μdeg/Ω/deg, up to 100 Ω

**Sensor-Excitation Current:** 1 mA

**Sensor-Break Indication:** Meter displays overrange

**Overvoltage Protection:** 25 Vp

## Noise Rejection

**NMR, SIG HI to SIG LO:**  
70 dB, 50/60 Hz

**CMR, ANA GND to POWER GND:**  
120 dB DC to 60 Hz

**CMV, ANA GND to ANA GND:**  
1500 Vp per HV test, 354 Vp per IEC spacing

## Accuracy at 25°C

**Span Tempco:** ±0.005% R/°C on all models plus ±0.05°C/°C for -RC from -200 to 130°C

**Celsius/Fahrenheit:** Jumper-selectable

**Full-Scale Step Response:** 1 s

**Warmup to Rated Accuracy:** 10 min

## Analog Output (Linearized)

**Voltage:** 1 mV/deg (-M); 10 mV/deg (-R)

**Calibration Error:** Same as given under accuracy

**Current:** 1 mA maximum

**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

**Decimal Points:** XXXX(-M); XXX.X (-R)

**Overrange Indication:**

Three least-significant digits blank

## Digital Inputs

**Level:** TTL or 5V CMOS compatible

## Power

**AC Voltages:** 115 or 230 Vac, ±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

**Output voltages:** 4.7 Vdc and -4.7 Vdc ±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

Model	Range	Error	Resolution
202A-MC	-200 to 820°C	±0.3°C ±0.2%R	1°C
202A-MF	-328 to 1508°F	±0.5°F ±0.2%R	1°F
202A-RC	-199.9 to -130°C	±0.1°C ±0.2%R	0.1°C
	-129.9 to -199.9°C	±0.1°C ±0.1°R	0.1°C
202A-RF	-199.9 to -199.9°F	±0.2°F ±0.1%R	0.1°F

## To Order Visit [newportUS.com/202a-m](http://newportUS.com/202a-m) for Pricing and Details

Model No.				Description
202A				3½ digit (Pt100) RTD meters
	-MC			1° resolution °C, -200 to 820°C
	-MF			1° resolution °F, -328 to 1508°F
	-RC			0.1° resolution °C, -199.9 to 199.9°C
	-RF			0.1° resolution °F, -199.9 to 199.9°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
			*	(Nothing, leave field blank) No Option
			,BL	Lens without Newport logo

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

**Ordering Examples:** 302-MF,C1, 3½ digit (Pt100) RTD meter, 230 Vac power, -328 to 1508°F input range.