

TECHNICAL DATA



Features

- Rugged design stands up to field use
- Measures/Sources volts, mA, RTDs, thermocouples, frequency, and ohms
- 0.02% output and measurement accuracy
- Easy-to-read measure/source screen lets you view input and output simultaneously
- Perform fast linearity tests with auto step and auto ramp features
- Powers transmitters during the test using a loop supply with simultaneous mA measurement
- Measures and outputs 10 types of RTDs and 12 types of TC signals
- Rechargeable Ni-MH battery
- Adjustable brightness provides better visibility in poor light
- Store frequently-used test setups for later use
- Low battery indicator and auto shut-off
- Includes test leads, test clips, type K thermocouple wire probe, USB cable, power adapter, carrying case

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Specifications

Measure Function

Function	Range	Resolution	Accuracy
DC Voltage	50, 500mV, 30V (upper display), 50V (lower display)	0.001, 0.01, 1mV, 0.001V	50mV: $\pm(0.02\% +10)$ 500mV: $\pm(0.02\% +5)$ 30V (upper display): $\pm(0.02\% +2)$ 50V (lower display): $\pm(0.02\% +2)$
DC Current	20mA at 0 to 24mA	0.001mA	$\pm(0.02\% +2)$
Loop Current	20mA (loop) at 0 to 24mA		
Resistance	500, 5000 Ω	0.01, 0.1 Ω	$\pm(0.05\% +10)$
Frequency	100Hz, 1, 10, 100kHz	0.01, 0.1, 1Hz	$\pm(0.01\% +1)$

Thermocouples

Thermocouple	Range	Resolution	Accuracy
Type R	32 to 3212.6°F (0 to 1767°C)	1°F/°C	32 to 932°F (0 to 500°C): $\pm 3.24^\circ\text{F}$ ($\pm 1.8^\circ\text{C}$)
Type S			932 to 3212.6°F (500 to 1767°C): $\pm 2.7^\circ\text{F}$ ($\pm 1.5^\circ\text{C}$)
Type B	1112 to 3308°F (600 to 1820°C)	1°F/°C	1112 to 1472°F (600 to 800°C): $\pm 3.96^\circ\text{F}$ ($\pm 2.2^\circ\text{C}$) 1472 to 1832°F (800 to 1000°C): $\pm 3.24^\circ\text{F}$ ($\pm 1.8^\circ\text{C}$) 1832 to 3308°F (1000 to 1820°C): $\pm 2.52^\circ\text{F}$ ($\pm 1.4^\circ\text{C}$)
Type E	-58 to 1832°F (-50 to 1000°C)	0.1°F/°C	-58 to 32°F (-50 to 0°C): $\pm 1.62^\circ\text{F}$ ($\pm 0.9^\circ\text{C}$) 32 to 1832°F (0 to 1000°C): $\pm 2.7^\circ\text{F}$ ($\pm 1.5^\circ\text{C}$)
Type K	-148 to 2501.6°F (-100 to 1372°C)	0.1°F/°C	-148 to 32°F (-100 to 0°C): $\pm 2.16^\circ\text{F}$ ($\pm 1.2^\circ\text{C}$) 32 to 2501.6°F (0 to 1372°C): $\pm 1.44^\circ\text{F}$ ($\pm 0.8^\circ\text{C}$)
Type J	-76 to 2192°F (-60 to 1200°C)		-76 to 32°F (-60 to 0°C): $\pm 1.8^\circ\text{F}$ ($\pm 1^\circ\text{C}$) 32 to 2192°F (0 to 1200°C): $\pm 1.26^\circ\text{F}$ ($\pm 0.7^\circ\text{C}$)
Type T	-148 to 752°F (-100 to 400°C)	0.1°F/°C	-148 to 32°F (-100 to 0°C): $\pm 1.8^\circ\text{F}$ ($\pm 1^\circ\text{C}$) 32 to 752°F (0 to 400°C): $\pm 1.26^\circ\text{F}$ ($\pm 0.7^\circ\text{C}$)
Type N	-328 to 2372°F (-200 to 1300°C)		-328 to 32°F (-200 to 0°C): $\pm 2.7^\circ\text{F}$ ($\pm 1.5^\circ\text{C}$) 32 to 2372°F (0 to 1300°C): $\pm 1.62^\circ\text{F}$ ($\pm 0.9^\circ\text{C}$)
Type L	-328 to 1652°F (-200 to 900°C)	0.1°F/°C	-328 to 32°F (-200 to 0°C): $\pm 1.53^\circ\text{F}$ ($\pm 0.85^\circ\text{C}$) 32 to 1652°F (0 to 900°C): $\pm 1.26^\circ\text{F}$ ($\pm 0.7^\circ\text{C}$)
Type U	-328 to 752°F (-200 to 400°C)	0.1°F/°C	-328 to 32°F (-200 to 0°C): $\pm 1.98^\circ\text{F}$ ($\pm 1.1^\circ\text{C}$) 32 to 752°F (0 to 400°C): $\pm 1.35^\circ\text{F}$ ($\pm 0.75^\circ\text{C}$)
Type XK	-328 to 1472°F (-200 to 800°C)		-328 to -148°F (-200 to -100°C): $\pm 0.9^\circ\text{F}$ ($\pm 0.5^\circ\text{C}$) -148 to 1472°F (-100 to 800°C): $\pm 1.08^\circ\text{F}$ ($\pm 0.6^\circ\text{C}$)
Type BP	32 to 4532°F (0 to 2500°C)	0.1°F/°C	32 to 1472°F (0 to 800°C): $\pm 2.16^\circ\text{F}$ ($\pm 1.2^\circ\text{C}$) 1472 to 4532°F (800 to 2500°C): $\pm 4.5^\circ\text{F}$ ($\pm 2.5^\circ\text{C}$)

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RTDs

RTD	Range	Resolution	Accuracy
Pt100 (2-wire/3-wire)	-328 to 1562°F (-200 to 850°C)	0.1°F/°C	±0.72°F (±0.4°C)
Pt100 (4-wire)			±0.54°F (±0.3°C)
Pt200 (2-wire/3-wire)	-328 to 1166°F (-200 to 630°C)		-328 to 482°F (-200 to 250°C): ±0.54°F (±0.3°C) 482 to 1166°F (250 to 630°C): ±2.88°F (±1.6°C)
Pt200 (4-wire)			-328 to 482°F (-200 to 250°C): ±0.36°F (±0.2°C) 482 to 1166°F (250 to 630°C): ±1.44°F (±0.8°C)
Pt500 (2-wire/3-wire)			-328 to 932°F (-200 to 500°C): ±1.08°F (±0.6°C) 932 to 1166°F (500 to 630°C): ±1.62°F (±0.9°C)
Pt500 (4-wire)			-328 to 932°F (-200 to 500°C): ±0.54°F (±0.3°C) 932 to 1166°F (500 to 630°C): ±0.72°F (±0.4°C)
Pt1000 (2-wire/3-wire)	-328 to 1202°F (-200 to 650°C)		±0.54°F (±0.3°C)
Pt1000 (4-wire)			±0.27°F (±0.15°C)
Cu10	-148 to 500°F (-100 to 260°C)		±3.24°F (±1.8°C)
Cu50 (2-wire/3-wire)	-58 to 302°F (-50 to 150°C)		±1.44°F (±0.8°C)
Cu50 (4-wire)			±0.9°F (±0.5°C)
Cu100 (2-wire/3-wire)			±0.72°F (±0.4°C)
Cu100 (4-wire)			±0.45°F (±0.25°C)
Pt100-392 (2-wire/3-wire)	-328 to 1166°F (-200 to 630°C)		±0.9°F (±0.5°C)
Pt100-392 (4-wire)	-328 to 1166°F (-200 to 630°C)		±0.54°F (±0.3°C)
Pt100-JIS (2-wire/3-wire)			±0.9°F (±0.5°C)
Pt100-JIS (4-wire)			±0.54°F (±0.3°C)
Ni120 (2-wire/3-wire)	-112 to 500°F (-80 to 260°C)		±0.54°F (±0.3°C)
Ni120 (4-wire)			±0.36°F (±0.2°C)

Source Function

Function	Range	Resolution	Accuracy
DC Voltage	100mV, 1, 10V	0.001, 0.01mV, 0.0001V	$\pm(0.02\% +10)$
DC Current	20mA at 0 to 24mA 20mA (SIM) at 0 to 24mA	0.001mA	$\pm(0.02\% +2)$
Resistance	400, 4000 Ω , 40k Ω	0.01, 0.1, 1 Ω	$\pm(0.02\% +8)$ $\pm(0.05\% +10)$ $\pm(0.1\% +40)$
Frequency	200, 2000Hz, 20, 100kHz	0.01, 0.1, 1, 10Hz	$\pm(0.01\% +1)$ (± 3 dgt.), 100kHz: ± 5 dgt.
Pulse	100Hz, 1, 10kHz	1 cyc	± 2 dgt.
Switch Quantity	100Hz, 1, 10, 100kHz	0.01, 0.1, 1, 10Hz	

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Thermocouples

Thermocouple	Range	Resolution	Accuracy
Type R	32 to 3212.6°F (0 to 1767°C)	1°F/°C	32 to 212°F (0 to 100°C): ±2.7°F (±1.5°C)
Type S			212 to 3212.6°F (100 to 1767°C): ±2.16°F (±1.2°C)
Type B	1112 to 3308°F (600 to 1820°C)	1°F/°C	1112 to 1472°F (600 to 800°C): ±2.7°F (±1.5°C) 1472 to 3308°F (800 to 1820°C): ±1.98°F (±1.1°C)
Type E	-328 to 1832°F (-200 to 1000°C)		-328 to -148°F (-200 to -100°C): ±1.08°F (±0.6°C) -148 to 1112°F (-100 to 600°C): ±0.9°F (±0.5°C) 1112 to 1832°F (600 to 1000°C): ±0.72°F (±0.4°C)
Type K	-328 to 2501.6°F (-200 to 1372°C)	0.1°F/°C	-328 to -148°F (-200 to -100°C): ±1.08°F (±0.6°C) -148 to 752°F (-100 to 400°C): ±0.9°F (±0.5°C) 752 to 2192°F (400 to 1200°C): ±1.26°F (±0.7°C) 2192 to 2501.6°F (1200 to 1372°C): ±1.62°F (±0.9°C)
Type J	-328 to 2192°F (-200 to 1200°C)		-200 to -148°F (-200 to -100°C): ±1.08°F (±0.6°C) -148 to 1472°F (-100 to 800°C): ±0.9°F (±0.5°C) 1472 to 2192°F (800 to 1200°C): ±1.26°F (±0.7°C)
Type T	-418 to 752°F (-250 to 400°C)	0.1°F/°C	±1.08°F (±0.6°C)
Type N	-328 to 2372°F (-200 to 1300°C)		-328 to -148°F (-200 to -100°C): ±1.8°F (±1°C) -148 to 1652°F (-100 to 900°C): ±1.26°F (±0.7°C) 1652 to 2372°F (900 to 1300°C): ±1.44°F (±0.8°C)
Type L	-328 to 1652°F (-200 to 900°C)	0.1°F/°C	-328 to 32°F (-200 to 0°C): ±1.53°F (±0.85°C) 32 to 1652°F (0 to 900°C): ±1.26°F (±0.7°C)
Type U	-328 to 752°F (-200 to 400°C)		-328 to 32°F (-200 to 0°C): ±1.98°F (±1.1°C) 32 to 752°F (0 to 400°C): ±1.35°F (±0.75°C)
Type XK	-328 to 1472°F (-200 to 800°C)	0.1°F/°C	-328 to -148°F (-200 to -100°C): ±0.9°F (±0.5°C) -148 to 1472°F (-100 to 800°C): ±1.08°F (±0.6°C)
Type BP	32 to 4532°F (0 to 2500°C)		32 to 1472°F (0 to 800°C): ±2.16°F (±1.2°C) 1472 to 4532°F (800 to 2500°C): ±4.5°F (±2.5°C)

RTDs

RTD	Range	Resolution	Accuracy
Pt100-385	-328 to 1472°F (-200 to 800°C)	0.1°F/°C	±0.6°F (±0.33°C)
Pt100-392			±0.54°F (±0.3°C)
Pt200-385			-328 to 482°F (-200 to 250°C): ±0.36°F (±0.2°C) 482 to 1166°F (250 to 630°C): ±1.44°F (±0.8°C)
Pt100-JIS			±0.54°F (±0.3°C)
Pt500-385			-328 to 932°F (-200 to 500°C): ±0.54°F (±0.3°C) 932 to 1166°F (500 to 630°C): ±0.72°F (±0.4°C)
Pt1000-385			±0.36°F (±0.2°C)
Cu10	-148 to 500°F (-100 to 260°C)		±3.24°F (±1.8°C)
Cu50	-58 to 302°F (-50 to 150°C)		±0.9°F (±0.5°C)
Cu100			±0.45°F (±0.25°C)
Ni120	-112 to 500°F (-80 to 260°C)		±0.36°F (±0.2°C)

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Function Specifications

Ramp Functions:	Source functions: Voltage, Current, Resistance, Frequency, Temperature Ramps: Slow ramp, fast ramp, 25% step-ramp
Loop Power Function:	Voltage: 24V Accuracy: 10% Maximum current: 22mA, short circuit protected
Step Functions:	Source functions: Voltage, Current, Resistance, Frequency, Temperature Steps: 25% of range, 100% of range

General Specifications

Display:	20,000 count TFT color LCD display
Kick Stand:	Yes
Power Supply:	1.2V x 6 AA rechargeable batteries
Auto shut-off:	Yes
Low Battery Indicator:	Yes
Replaceable Test Leads:	Yes
Product Certifications:	CE, RoHS
Operating Temperature:	14 to 131°F (-10 to 55°C)
Operating Humidity Range:	≤95%
Storage Temperature:	-4 to 158°F (-20 to 70°C)
Max Operating Altitude:	6561' (2000m)
Dimensions:	7.7 x 3.7 x 2.3" (195 x 95 x 58mm)
Weight:	22.92oz (650g)

Model	Description
R5850	Multifunction Process Calibrator
TP-01	Type K Beaded Wire Probe
R1000	Safety Test Lead Set
R1020	Fused Test Lead Set
R2920	Type K Surface Probe
R2930	Type K Right Angle Surface Probe
R2940	Type K Air/Gas Probe
R2950	Type K Immersion Probe
R2960	Type K Needle Tip Probe
R8888	Medium Hard Carrying Case
R1050-KIT2	Deluxe Safety Test Lead Kit
R5850-NIST	Multifunction Process Calibrator & NIST