



Datasheet

RS PRO

Temperature Calibrator (RTD + TC)

Stock number: 200-1423

EN



FEATURES:

1. High precision and combination of RTD and Thermocouple (TC) calibration
2. Source and measure 14 types of RTD and resistance
3. Source and measure 11 types of thermocouples (TC)
4. 4W, 3W, and 2W connections for RTD simulation and measurement
5. Current calibration of 4 fixed values (100 μ A, 250 μ A, 1mA, and 2mA)

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6. High precision and combination of RTD and Thermocouple (TC) calibration
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8. Source and measure 11 types of thermocouples (TC)
9. 4W, 3W, and 2W connections for RTD simulation and measurement
10. Current calibration of 4 fixed values (100 μ A, 250 μ A, 1mA, and 2mA)
11. and selectable
12. Accept wide range of excitation current (0.05mA to 5mA) for RTD simulation
13. Individual Thermocouple cold junction compensation (CJC) for simulation and measurement of thermocouples. CJC can be used to fine tune temperature calibration.
14. Easy 0% and 100% setup and operation
15. Easy 25% (up) and 25 (down) for temperature calibration.
16. Individual memory of 0% and 100% setup for different RTD types and thermocouple types
17. Auto step and auto ramp for easy linear calibration
18. Detection of too low or too high excitation current (LO or HI) from the measurement device
19. Warning of exceeding calibrator driving current (IEX)
20. Memory of last setup when power off
21. Easy numerical keypad for input
22. Dot Matrix LCD with backlight
23. Very low power consumption of 30mA with backlight off
24. 15 minutes smart auto-power-off. 15 minutes timer resets itself when any input changes
25. 2 minutes smart auto-backlight-off. 2 minutes timer resets itself when any input changes

ELECTRICAL SPECIFICATIONS:

Specifications apply from +18 °C to +28 °C unless stated otherwise. All specifications assume a 5-minute warm-up period.

Ohm Measure:

Range ()	Resolution ()
0.000 to 100.00	0.001
100.00 to 1000.0	0.01
1000.0 to 7000.0	0.1
Range ()	Accuracy (% of Reading + Floor)
0.000 to 400.00	0.015%+0.05
400.00 to 4000.0	0.015%+0.5
4000.0 to 7000.0	0.03%+1.0

Read accuracy is based on 4-wire input. For 3-wire ohm measurements, assuming all three leads are matched, add 0.05 Ω (0.00 Ω ~400.00 Ω), 0.2 Ω (400.0 Ω ~4000.0 Ω), and 1 Ω (4000.0 Ω ~7000.0 Ω) to the specifications. Temperature coefficient : (\pm 0.002% of reading \pm 0.002% of range)/°C (<18°C or >28°C)



Ohm Resolution (Source):

Range ()	Resolution ()
1.0 to 7000.0	0.1

Ohm Source (Accuracy is based upon 4W connection):

Range ()	Excitation Current from Measurement Device	Accuracy (% of Output + Floor)
1.0 to 400.0	0.5mA to 5mA	0.015%+0.1
400.0 to 1500.0	0.05mA to 5mA	0.015%+0.5
1500.0 to 4000.0	0.05mA to 5mA	0.015%+0.5
4000.0 to 7000.0	0.05mA to 5mA	0.03%+1

For 3W ohm source, assuming all three test leads are matched, add 0.05 Ω (0.00 Ω ~400.00 Ω), 0.2 Ω (400.0 Ω ~4000.0 Ω), and 1 Ω (4000.0 Ω ~7000.0 Ω) to the specifications.

Driving voltage<1.7V; Temperature coefficient : $\pm(0.002\%$ of reading + 0.002% of range)/ $^{\circ}\text{C}$ (<18 $^{\circ}\text{C}$ or >28 $^{\circ}\text{C}$)

RTD resolution in $^{\circ}\text{C}$:

Range	Resolution (measure)	Resolution (source)
-200 $^{\circ}\text{C}$ to 0 $^{\circ}\text{C}$	0.1 $^{\circ}\text{C}$	0.1 $^{\circ}\text{C}$
0 $^{\circ}\text{C}$ to 800 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$	0.1 $^{\circ}\text{C}$

RTD measure in $^{\circ}\text{C}$:

(RTD Sensor inaccuracies not included; Temperature coefficient : $\pm 0.05^{\circ}\text{C}/^{\circ}\text{C}$ for measure, $\pm 0.05^{\circ}\text{C}/^{\circ}\text{C}$ (<18 $^{\circ}\text{C}$ or >28 $^{\circ}\text{C}$) for source)

RTD Type (α)	Measure ($^{\circ}\text{C}$)		Source Current
	Range	Accuracy	
10 Pt(385)	-200 to 100	1.5	2mA
	100 to 800	1.8	
50 Ω Pt(385)	-200 to 100	0.4	2mA
	100 to 800	0.5	
100 Ω Pt(385)	-200 to 100	0.2	1mA
	100 to 800	0.015%+0.18	
200 Ω Pt(385)	-200 to 100	0.2	1mA
	100 to 630	0.015%+0.18	
500 Ω Pt(385)	-200 to 100	0.3	250 μ A
	100 to 630	0.015%+0.28	
1000 Ω Pt(385)	-200 to 100	0.2	100 μ A
	100 to 630	0.015%+0.18	
100 Ω Pt(3902)	-200 to 100	0.2	1mA
	100 to 500	0.015%+0.18	
100 Ω Pt(3916)	-200 to 100	0.2	1mA
	100 to 630	0.015%+0.18	
100 Ω Pt(3926)	-200 to 100	0.2	1mA
	100 to 630	0.015%+0.18	
10 Ω Cu(427)	-100 to 260	1.5	2mA
120 Ω Ni(672)	-80 to 260	0.15	1mA
50 Ω Cu(427)	-180 to 200	0.4	2mA
100 Ω Cu(427)	-180 to 200	0.2	2mA
YSI400	15 to 50	0.2	100 μ A

Read accuracy is based on 4-wire input. For 3-wire RTD measurements, assuming all three RTD leads are matched, add 1.0 $^{\circ}\text{C}$ (Pt10 and Cu10), 0.6 $^{\circ}\text{C}$ (Pt50 and Cu50), 0.4 $^{\circ}\text{C}$ (Other RTD types) to the specifications

RTD source in °C:

Accuracy is based upon 4W connection, driving voltage is less than 1.7V and the excitation current is based upon 0.5mA to 5mA (0 to 400Ω) and 0.05mA to 5mA (400Ωto 7000Ω). For 3-wire RTD source, assuming all three RTD leads are matched, add 1.0 °C (Pt10 and Cu10), 0.6 °C (Pt50 and Cu50), 0.4 °C (Other RTD types) to the specifications.

RTD Type (α)	Source (°C)	
	Range	Accuracy
10 Pt(385)	-200 to 100	1.5
	100 to 800	1.8
50Ω Pt(385)	-200 to 100	0.4
	100 to 800	0.5
100Ω Pt(385)	-200 to 100	0.2
	100 to 800	0.015%+0.18
200Ω Pt(385)	-200 to 100	0.2
	100 to 630	0.015%+0.18
500Ω Pt(385)	-200 to 100	0.3
	100 to 630	0.015%+0.28
1000Ω Pt(385)	-200 to 100	0.2
	100 to 630	0.015%+0.18
100Ω Pt(3902)	-200 to 100	0.2
	100 to 500	0.015%+0.18
100Ω Pt(3916)	-200 to 100	0.2
	100 to 630	0.015%+0.18
100Ω Pt(3926)	-200 to 100	0.2
	100 to 630	0.015%+0.18
10Ω Cu(427)	-100 to 260	1.5
120Ω Ni(672)	-80 to 260	0.15
50Ω Cu(427)	-180 to 200	0.4
100Ω Cu(427)	-180 to 200	0.2
YSI400	15 to 50	0.2

Temperature coefficient : (± 0.002% of reading ±0.002% of range)/°C (<18°C or >28°C)

RTD Resolution in °F:

Range	Resolution (measure)	Resolution (source)
-328°F to 32°F	0.1°F	0.1°F
32°F to 1472°F	0.1°F	0.1°F

RTD measure in °F:

RTD Type (α)	Measure (°F)		Source Current
	Range	Accuracy	
10 Pt(385)	-328 to 212	2.7	2mA
	212 to 1472	3.24	
50Ω Pt(385)	-328 to 212	0.72	2mA
	212 to 1472	0.9	
100Ω Pt(385)	-328 to 212	0.36	1mA
	212 to 1472	0.015%+0.324	
200Ω Pt(385)	-328 to 212	0.36	1mA
	212 to 1166	0.015%+0.324	
500Ω Pt(385)	-328 to 212	0.54	250 μ A
	212 to 1166	0.015%+0.504	
1000Ω Pt(385)	-328 to 212	0.36	100 μ A
	212 to 1166	0.015%+0.324	
100Ω Pt(3902)	-328 to 212	0.36	1mA
	212 to 932	0.015%+0.324	
100Ω Pt(3916)	-328 to 212	0.36	1mA
	212 to 1166	0.015%+0.324	
100Ω Pt(3926)	-328 to 212	0.36	1mA
	212 to 1166	0.015%+0.324	
10Ω Cu(427)	-148 to 500	2.7	2mA
120Ω Ni(672)	-112 to 500	0.27	1mA
50Ω Cu(427)	-292 to 392	0.72	2mA
100Ω Cu(427)	-292 to 392	0.36	2mA
YSI400	59 to 122	0.36	250 μ A

Read accuracy is based on 4-wire input. For 3-wire RTD measurements, assuming all three RTD leads are matched, add 1. 8°F (Pt10 and Cu10), 1.08 °F (Pt50 and Cu50), 0.72 °F (Other RTD types) to the specifications.

RTD source in °F

Accuracy is based upon 4W connection, driving voltage is less than 1.7V and the excitation current is based upon 0.5mA to 5mA (0 to 400Ω) and 0.05mA to 5mA (400Ωto 7000Ω). For 3-wire RTD source, assuming all three RTD leads are matched, add 1.8 °F (Pt10 and Cu10), 1.1 °F(Pt50 and Cu50), 0.7 °F (Other RTD types) to the specifications .

RTD Type (α)	Source (°F)	
	Range	Accuracy
10 Pt(385)	-328 to 212	2.7
	212 to 1472	3.24
50Ω Pt(385)	-328 to 212	0.72
	212 to 1472	0.9
100Ω Pt(385)	-328 to 212	0.36
	212 to 1472	0.015%+0.324
200Ω Pt(385)	-328 to 212	0.36
	212 to 1166	0.015%+0.324
500Ω Pt(385)	-328 to 212	0.54
	212 to 1166	0.015%+0.504
1000Ω Pt(385)	-328 to 212	0.36
	212 to 1166	0.015%+0.324
100Ω Pt(3902)	-328 to 212	0.36
	212 to 932	0.015%+0.324
100Ω Pt(3916)	-328 to 212	0.36
	212 to 1166	0.015%+0.324
100Ω	-328 to 212	0.36

Pt(3926)	212 to 1166	0.015%+0.324
10Ω Cu(427)	-148 to 500	2.7
120Ω Ni(672)	-112 to 500	0.27
50Ω Cu(427)	-292 to 392	0.72
100Ω Cu(427)	-292 to 392	0.36
YSI400	59 to 122	0.36

Temperature coefficient : ($\pm 0.002\%$ of reading $\pm 0.002\%$ of range)/ $^{\circ}\text{C}$ ($<18^{\circ}\text{C}$ or $>28^{\circ}\text{C}$)

DC Output Current in the OHM measurement Manual mode (Operating Voltage<2.5V , Open Circuit:3.7V)

DC Current	Accuracy of reading
100 μA	$\pm 0.015\%$ $\pm 0.05 \mu\text{A}$
250 μA	$\pm 0.015\%$ $\pm 0.05 \mu\text{A}$
1mA	$\pm 0.015\%$ $\pm 0.05 \mu\text{A}$
2mA	$\pm 0.015\%$ $\pm 0.05 \mu\text{A}$

Temperature of Thermocouples

Source and measure, 0.1°C & 0.1°F Resolution, Internal Cold Junction Compensation, thermocouples accuracy is not included, and 3 minutes after plugging in thermocouples.

	$^{\circ}\text{C}$		$^{\circ}\text{F}$	
	Range	Accuracy	Range	Accuracy
K	-200 to -150	0.7	-382 to -238	1.26
	-150 to 0	0.6	-238 to 32	1.08
	0 to 1000	0.5	32 to 1832	0.90
	1000 to 1370	0.7	1832 to 2498	1.26
J	-200 to -150	1.0	-382 to -238	1.80
	-150 to 0	0.6	-238 to 32	1.08
	0 to 1050	0.7	32 to 1922	1.26
E	-200 to -150	0.8	-382 to -238	1.44
	-150 to 0	0.5	-238 to 32	0.90
	0 to 850	0.4	32 to 1562	0.72
	850 to 1000	0.4	1562 to 1832	1.26
T	-200 to -150	0.7	-382 to -238	1.44
	-150 to 0	0.6	-238 to 32	1.26
	0 to 400	0.5	32 to 752	0.54
R	0 to 500	1.5	32 to 932	2.70
	500 to 1760	1.0	932 to 3200	1.80
S	0 to 500	1.5	32 to 932	2.70
	500 to 1760	1.0	932 to 3200	1.80
N	-200 to 0	1.0	-328 to 32	1.80
	0 to 1300	0.6	32 to 2372	1.08
L	-200 to 0	0.8	-328 to 32	1.44
	0 to 900	0.6	32 to 1652	1.08
U	-200 to 0	1.1	-328 to 32	1.98
	0 to 600	0.5	32 to 1112	0.90
B	600 to 800	1.3	1112 to 1472	2.34
	800 to 1000	1.0	1472 to 1832	1.80
	1000 to 1820	0.9	1832 to 3308	1.62
C	0 to 1800	0.8	32 to 3272	1.44
	1800 to 2310	1.2	3272 to 4190	2.16

GENERAL SPECIFICATIONS:

Dimension:	214.0(L) x 98.7(W) x 56.0(H) mm 8.4" (L) x 3.9" (W) x 2.2" (H)
Battery Type	1.5V LR6 AA x 5
Power Consumption	30mA with backlight off
Battery Life	60 Hours with backlight off (Alkaline type)
Weight:	630g / 22.2oz (Batteries included)
Operation Environment:	0 ~ 50 , < 85% RH
Storage Environment:	-20 ~ 60 , < 75% RH
Accessories:	Carrying case x 1 User manual x 1 1.5V SUM-3 AA x 5 Test leads with prods and alligator clips x 2 sets (black and red) Test leads with banana plugs and alligator clips x 1 set (black and red) Stackable test leads for short circuit x1 (10 cm, black) K-type thermocouple (dual plugs) x 1 K-type thermocouple (single plug) x 1