PROVA 136

Temperature Calibrator (RTD + TC)

CE

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

Ohms Measure

Range (Ω)	Accuracy (% of Reading + Floor)
0.00Ω to 400.00Ω	0.015%+0.05Ω
400.0Ω to 4000.0Ω	0.015%+0.5Ω
4000.0Ω to 7000.0Ω	0.03%+1.0Ω

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(4000.0Ω~7000.0Ω) to the specifications. Temperature coefficient：(± 0.002% of reading ±0.002% of range)/°C (<18°C or >28°C)

Ohm Source (Accuracy is based upon 4W connection)

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

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 (4000.0Ω~7000.0Ω) to the specifications. Driving voltage<1.7V; Temperature coefficient：±(0.002% of reading + 0.002% of range)/℃ (<18℃ or >28℃)

Ohms Resolution (Source)

Range (Ω)	Resolution (Ω)
1.0Ω to 7000.0Ω	0.1Ω

RTD resolution in ℃

Range	Resolution (measure)	Resolution (source)
-200°C to 0°C	0.1°C	0.1°C
0°C to 800°C	0.01°C	0.1°C

RTD measure in ℃ (RTD Sensor inaccuracies not included; Temperature coefficient：± 0.05 ° C/ ° C for measure, ± 0.05 ° C/ ° C(<18 ° C or >28 ° C) for source)

RTD Type (α)	Measure (°C)		Source Current
	Range	Accuracy	
10Ω Pt(385)	-200 to 100	1.5	2mA
	100 to 800	1.8	
50Ω Pt(385)	-200 to 100	0.4	2mA
	100 to 800	0.5	
100Ω Pt(385)	-200 to 100	0.2°C	1mA
	100 to 800	0.015%+0.18°C	
200Ω Pt(385)	-200 to 100	0.2°C	1mA
	100 to 630	0.015%+0.18°C	
500Ω Pt(385)	-200 to 100	0.3°C	250 μA
	100 to 630	0.015%+0.28°C	
1000Ω Pt(385)	-200 to 100	0.2°C	100 μA
	100 to 630	0.015%+0.18°C	
100Ω Pt(3902)	-200 to 100	0.2°C	1mA
	100 to 500	0.015%+0.18°C	
100Ω Pt(3916)	-200 to 100	0.2°C	1mA
	100 to 630	0.015%+0.18°C	

100Ω Pt(3926)	-200 to 100	0.2°C	1mA
	100 to 630	0.015%+0.18°C	
10Ω Cu(427)	-100 to260	1.5°C	2mA
120Ω Ni(672)	-80 to 260	0.15°C	1mA
50Ω Cu(427)	-180 to 200	0.4°C	2mA
100Ω Cu(427)	-180 to 200	0.2°C	2mA
YSI400	15 to 50	0.2°C	100 μA

Read accuracy is based on 4-wire input. For 3-wire RTD measurements, 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 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
10Ω 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°C
	100 to 800	0.015%+0.18°C
200Ω Pt(385)	-200 to 100	0.2°C
	100 to 630	0.015%+0.18°C
500Ω Pt(385)	-200 to 100	0.3°C
	100 to 630	0.015%+0.28°C
1000Ω Pt(385)	-200 to 100	0.2°C
	100 to 630	0.015%+0.18°C
100Ω Pt(3902)	-200 to 100	0.2°C
	100 to 500	0.015%+0.18°C
100Ω Pt(3916)	-200 to 100	0.2°C
	100 to 630	0.015%+0.18°C
100Ω Pt(3926)	-200 to 100	0.2°C
	100 to 630	0.015%+0.18°C
10Ω Cu(427)	-100 to260	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 ℉

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 ℉

RTD Type (α)	Measure (°F)		Source Current
	Range	Accuracy	
10Ω 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°F	1mA
	212 to 1472	0.015%+0.324°F	
200Ω Pt(385)	-328 to 212	0.36°F	1mA
	212 to 1166	0.015%+0.324°F	
500Ω Pt(385)	-328 to 212	0.54°F	250 μA
	212 to 1166	0.015%+0.504°F	
1000Ω Pt(385)	-328 to 212	0.36°F	100 μA
	212 to 1166	0.015%+0.324°F	
100Ω Pt(3902)	-328 to 212	0.36°F	1mA
	212 to 932	0.015%+0.324°F	
100Ω Pt(3916)	-328 to 212	0.36°F	1mA
	212 to 1166	0.015%+0.324°F	
100Ω Pt(3926)	-328 to 212	0.36°F	1mA
	212 to 1166	0.015%+0.324°F	
10Ω Cu(427)	-148 to500	2.7°F	2mA
120Ω Ni(672)	-112 to 500	0.27°F	1mA
50Ω Cu(427)	-292 to 392	0.72°F	2mA
100Ω Cu(427)	-292 to 392	0.36°F	2mA
YSI400	59 to 122	0.36°F	250 μA

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 ℉

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 ℉ (Pt10 and Cu10), 1.1 ℉(Pt50 and Cu50), 0.7 ℉ (Other RTD types) to the specifications.

RTD Type (α)	Source (°F)	
	Range	Accuracy
10Ω 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°F
	212 to 1472	0.015%+0.324°F
200Ω Pt(385)	-328 to 212	0.36°F
	212 to 1166	0.015%+0.324°F
500Ω Pt(385)	-328 to 212	0.54°F
	212 to 1166	0.015%+0.504°F
1000Ω Pt(385)	-328 to 212	0.36°F
	212 to 1166	0.015%+0.324°F
100Ω Pt(3902)	-328 to 212	0.36°F
	212 to 932	0.015%+0.324°F
100Ω Pt(3916)	-328 to 212	0.36°F
	212 to 1166	0.015%+0.324°F
100Ω Pt(3926)	-328 to 212	0.36°F
	212 to 1166	0.015%+0.324°F
10Ω Cu(427)	-148 to500	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：(± 0.002% of reading ±0.002% of range)/°C (<18°C or >28°C)

Temperature of Thermocouples

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

	°C		°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

Output Current in the OHM measurement Manual mode

(Operating Voltage < 2.5V, Open Circuit: 3.7V)

Current	Accuracy of reading
100 μA	±0.015% ±0.05 μA
250 μA	±0.015% ±0.05 μA
1mA	±0.015% ±0.05 μA
2mA	±0.015% ±0.05 μA

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 x 1 (10 cm, black) K-type thermocouple (dual plugs) x 1 K-type thermocouple (single plug) x 1

PROVA INSTRUMENTS INC.

Add: 6F-2, No. 129, Lane 235, Pao-Chiao Road, Shin-Tien District, New Taipei City 23145, TAIWAN

Tel: 886-2-89191255 **Fax:** 886-2-89191489

E-mail: prova@ms3.hinet.net **Website:** www.prova.com.tw