TECHNICAL DATA

Fluke Calibration 1502A/1504 Thermometer Readout

Key features

- 1502A: accuracy up to ±0.006 °C.
- 1504: accuracy up to ±0.002 °C plus ability to measure thermistor temperature sensors.
- 1502A: covers –200°C to 962°C
- 1504: covers 0 to 100°C
- Can take readings up to twice per second, making the calibration process faster.

Product overview: Fluke Calibration 1502A/1504 Thermometer Readout

1502A Tweener PRT Readout

The Fluke Calibration 1502A Tweener features accuracy up to ±0.006 °C. In addition, it reads 100-ohm, 25-ohm, and 10-ohm probes, has a resolution of 0.001 °C across its entire range, and is the smallest unit in its class. It also has an optional battery pack for completely portable operation.

Each Tweener is programmable to match a probe's constants for maximum linearity and accuracy. All probe constants and coefficients are programmed through simple, front-panel keystrokes. Temperature is displayed in °C, °F, K, or resistance in ohms.

The 1502A accurately measures the resistance of the probe and then converts the resistance to a temperature value using its built-in algorithms.

For convenience, the 1502A reads the common industrial grade IEC-751 or "385 ALPHA RTD without any programming. Enter the actual R0 and ALPHA of the individual probe for increased accuracy. For maximum accuracy, use the ITS-90 formulas. The Tweener accepts the subranges 4 and 6 through 11.

ITS-90 formulas reside in the Tweener's firmware. If your probe has been calibrated for any of the above subranges of the ITS-90, you simply enter the coefficients directly into your Tweener.

Each thermometer comes complete with an RS-232 interface for automation of temperature data collection, calibrations, or process control functions. An IEEE-488 interface is available as an option.

The 1502A is calibrated digitally using the front-panel buttons. You never have to open the box to calibrate it. This calibration protocol further reduces the cost of the 1502A. It goes where you go and works the way you want it to.

1504 Tweener Thermistor Readout

If you need more accuracy in a limited temperature range, the Model 1504 Tweener gives it to you as a thermistor readout. Thermistors are less fragile than PRTs and less likely to be impacted by mechanical shock. Thermistors are more sensitive to temperature, have faster response times, and come in many shapes for different applications.

Typical accuracy of a 1504 is ±0.002 °C with a resolution of 0.0001 °C.

Software

With our 9934 LogWare, both Tweener models may be used for real-time data acquisition. Collect data and analyze it graphically or statistically. Additionally, Tweeners may be used as reference thermometers with our MET/TEMP II software.

Battery pack

Want to take your Tweener on the road? Order Fluke Calibration's 9320A Battery Pack. Our battery gives you 36 hours between charges, allowing you to take your work wherever you need.

Calibration choices

Each Tweener and its accompanying probe (sold separately) have their own individual calibration reports. Overall system error can be calculated from the individual errors, rendering the added cost of system data unnecessary. However, for those requiring it, system data is available at two or more temperatures of your choice. (See Calibration Model 1929-X)

Specifications: Fluke Calibration 1502A/1504 Thermometer Readout

Specifications	1502A	1504
Temperature Range†	−200 °C to 962 °C (−328 °F to 1764 °F)	Any thermistor range
Resistance Range	0 Ω to 400 Ω, auto-ranging	0 Ω to 1 MΩ, auto-ranging
Probe	Nominal RTPW: 10 Ω to 100 Ω RTD, PRT, or SPRT	Thermistors
Characterizations	ITS-90 subranges 4, 6, 7, 8, 9, 10, and 11 IPTS-68: R0, a, d, a4, and c4 Callendar-Van Dusen: R0, a, d, and b	Steinhart-Hart thermistor polynomial Callendar-Van Dusen: R0, a, d, and b
Resistance Accuracy (ppm of reading)	0 Ω to 20 Ω: 0.0005 Ω 20 Ω to 400 Ω: 25 ppm	0 Ω to 5 KΩ: 0.5 Ω 5 KΩ to 200 KΩ: 100 ppm 200 KΩ to 1 MΩ: 300 ppm
Temperature Accuracy†	±0.004 °C at −100 °C ±0.006 °C at 0 °C ±0.009 °C at 100 °C ±0.012 °C at 200 °C ±0.018 °C at 400 °C ±0.024 °C at 600 °C	±0.002 °C at 0 °C ±0.002 °C at 25 °C ±0.004 °C at 50 °C ±0.010 °C at 75 °C ±0.020 °C at 100 °C (Using 10 KΩ thermistor sensor, a=0.04. Does not include probe uncertainty or characterization errors.)
Operating Temperature Range	16 °C to 30 °C	13 °C to 33 °C
Resistance Resolution	0 Ω to 20 Ω: 0.0001 Ω 20 Ω to 400 Ω: 0.001 Ω	0 Ω to 10 KΩ: 0.01 Ω 10 KΩ to 100 KΩ: 0.1 Ω 100 KΩ to 1 MΩ: 1 Ω
Temperature Resolution	0.001 °C	0.0001 °C
Excitation Current	0.5 and 1 mA, user selectable, 2 Hz	2 and 10 µA, automatically selected
Measurement Period	1 second	
Digital Filter	Exponential, 0 to 60 seconds time constant (user selectable)	
Probe Connection	4-wire with shield, 5-pin DIN connector	
Communications	RS-232 serial standard IEEE-488 (GPIB) optional	
Display	8-digit, 7-segment, yellow-green LED; 0.5-inch-high characters	
Power	115 VAC (±10 %), 50/60 Hz, 1 A, nominal 230 VAC (±10 %), 50/60 Hz, 1 A, nominal, specify	
Size (HxWxD)	61 x 143 x 181mm (2.4 x 5.6 x 7.1 in)	
Weight	1.0 kg (2.2 lb.)	
Probes from Fluke Calibration	5615, 5627, 5626, 5628, 5622	5640-44, 5610-65
Calibration	ISO 17025-accredited calibration provided	
†Temperature ranges and accuracy may be limited by the sensor you use.		

Ordering information

Fluke 1502A
Fluke Calibration 1502A-156 Thermometer Readout
−200°C to 962°C (−328°F to 1764°F)

1502A-2506
Tweener PRT Readout, with IEEE-488

Fluke 1504
Fluke Calibration 1504 Thermometer Readouts
Any thermistor range

1504-2506
Tweener Thermistor Readout, with IEEE-488

9934-S
Log*Ware*, Single Channel, Single User

9934-M
Log*Ware*, Single Channel, Multi User

1929-2

System Verification, PRT with Readout, Accredited.

Choose two temperature points, extra points at additional cost. Available temperature points are –197 °C, -80 °C , –39 °C, 0.01°C, 30 °C, 157 °C, 232 °C, 300 °C, 420 °C, 500 °C, 660 °C.

1929-5

System Verification, Thermistor with Readout, Accredited.

Choose two temperature points; extra points at additional cost. Available temperature points are -30 °C, -20 °C, -10 °C, 0 °C, 10 °C, 20 °C, 30 °C, 40 °C, 50 °C, 60 °C, 70 °C, 80 °C, 90 °C, 100 °C.

1930

System Calibration, PRT with Readout, Accredited

Choose PRT temperature range for the calibration. Available temperature ranges are –200 °C to 500 °C, –200 °C to 420 °C, –80 °C to 420 °C, –40 °C to 420 °C, –40 °C to 232 °C, 0 °C to 420 °C.

1935

System Calibration, Thermistor with Readout, NVLAP-accredited

Choose thermistor temperature range for the calibration. Available temperature ranges are 100 °C span (6 points over span), 60 °C span (7 points over span), 100 °C span (11 points over span).

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