

Fluke 712B and 714B Temperature Calibrators

Accuracy and Simplicity

For the temperature calibration professional that wants a highly accurate, easy-to-use, single function temperature calibrator the 712B and 714B are ideal test tools.



Technical Data

Product Highlights

- The 712B can measure and simulate (13) different RTD types and resistance
- The 714B can measure and simulate (17) different thermocouple types and millivolts
- Measure 4 to 20 mA signals while simultaneously sourcing a temperature signal
- Hanging tool designed in and included with every unit
- Configurable 0% and 100% source settings for quick 25% linearity checks
- Linear ramp and 25% step auto ramp based on 0% and 100% settings
- Dual inputs and backlit display for easy interpretation of measurements
- Power down settings remembered at power up for easy restart of tests
- 1-year and 2-year specifications and traceable certificate of calibration

Specifications

Specifications are based on a one year calibration cycle and apply from +18 °C to +28 °C unless stated otherwise. All specifications assume a 5-minute warmup period.

General specifications

| | |
|---|---|
| Maximum voltage applied between any terminal and earth ground or between any two terminals: | 30 V |
| Operating temperature | -10 °C to 50 °C |
| Storage temperature | - 30 °C to 60 °C |
| Operating altitude | 2,000 meters |
| Storage altitude | 12,000 meters |
| Relative humidity (% RH operating without condensation) | Non condensing 90 % (10 °C to 30 °C) 75 % (30 °C to 40 °C) 45 % (40 °C to 50 °C) (Without condensation) |
| Vibration requirements | MIL-T-28800E, Class 2 |
| Drop test requirements | 1 meter |
| IP Rating | IEC 60529: IP52 |
| Electromagnetic environment | IEC 61326-1, Portable |
| Safety | IEC 61010-1, Max 30 V to earth, Pollution Degree 2 |
| Power supply | 4 AA NEDA 1.5A IEC LR6 batteries |
| Size (H x W x L) | 52.5 mm x 84 mm x 188.5 mm |
| Weight | 515 g |

DC mA measurement

| Resolution | Range | Accuracy (% of reading + counts) |
|---|----------|----------------------------------|
| 0-24 mA | 0.001 mA | 0.010 % + 2 µA |
| Temperature coefficient: ± (0.002 % of reading + 0.002 % of range) /°C (<18 °C or >28 °C) | | |

Ohms measurement (Fluke 712B)

| Ohms range | Accuracy (% of reading + counts) |
|---|----------------------------------|
| 0.00 Ω to 400.00 Ω | 0.015 % + 0.05 Ω |
| 400.0 Ω to 4000.0 Ω | 0.015 % + 0.5 Ω |
| Note: 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) to the specifications. Temperature coefficient: ± (0.002 % of reading + 0.002 % of range) /°C (<18 °C or >28 °C) | |

Millivolt measurement and source (Fluke 714B)

| Resolution | Range | Accuracy (% of reading + counts) |
|---|---------|----------------------------------|
| -10 mV to 75 mV | 0.01 mV | 0.015 % + 10 µA |
| Temperature coefficient: ± (0.002 % of reading + 0.002 % of range) /°C (<18 °C or >28 °C) | | |

Ohms source (Fluke 712B)

| Ohms range | Excitation current from measurement device | Accuracy (% of reading + counts) |
|--|--|----------------------------------|
| 1.0 Ω to 400.0 Ω | 0.1 mA to 0.5 mA | 0.015 % + 0.1 Ω |
| 1.00 Ω to 400.00 Ω | 0.5 mA to 3 mA | 0.015 % + 0.05 Ω |
| 400.0 Ω to 1500.0 Ω | 0.05 mA to 0.8 mA | 0.015 % + 0.5 Ω |
| 1500.0 Ω to 4000.0 Ω | 0.05 mA to 0.4 mA | 0.015 % + 0.5 Ω |
| Resolution | | |
| 0.00 Ω to 400.00 Ω | 0.01 Ω | |
| 400.0 Ω to 4000.0 Ω | 0.1 Ω | |
| Temperature coefficient: ± (0.002 % of reading + 0.002 % of range) /°C (<18 °C or >28 °C) Supports pulsed transmitters and PLCs with pulse times as short as 5 ms | | |

RTD input and output (Fluke 712B)









| RTD Type (α) | Range (°C) | Measure (°C) | | | Source (°C) | |
|-------------------|----------------|-----------------|----------------|----------------|-----------------|----------------|
| | | 1-year | 2-year | Source current | 1-year | 2-year |
| 10Ω Pt(385) | -200 to 100 °C | 1.5 °C | 3 °C | 1 mA | 1.5 °C | 3 °C |
| | 100 to 800 °C | 1.8 °C | 3.6 °C | 1 mA | 1.8 °C | 3.6 °C |
| 50Ω Pt(385) | -200 to 100 °C | 0.4 °C | 0.7 °C | 1 mA | 0.4 °C | 0.7 °C |
| | 100 to 800 °C | 0.5 °C | 0.8 °C | 1 mA | 0.5 °C | 0.8 °C |
| 100 Ω Pt(385) | -200 to 100 °C | 0.2 °C | 0.4 °C | 1 mA | 0.2 °C | 0.4 °C |
| | 100 to 800 °C | 0.015 %+0.18 °C | 0.03 %+0.36 °C | | 0.015 %+0.18 °C | 0.03 %+0.36 °C |
| 200 Ω Pt(385) | -200 to 100 °C | 0.2 °C | 0.4 °C | 500 μA | 0.2 °C | 0.4 °C |
| | 100 to 630 °C | 0.015 %+0.18 °C | 0.03 %+0.36 °C | | 0.015 %+0.18 °C | 0.03 %+0.36 °C |
| 500 Ω Pt(385) | -200 to 100 °C | 0.3 °C | 0.6 °C | 250 μA | 0.3 °C | 0.6 °C |
| | 100 to 630 °C | 0.015 %+0.28 °C | 0.03 %+0.56 °C | | 0.015 %+0.28 °C | 0.03 %+0.56 °C |
| 1000 Ω Pt(385) | -200 to 100 °C | 0.2 °C | 0.4 °C | 250 μA | 0.2 °C | 0.4 °C |
| | 100 to 630 °C | 0.015 %+0.18 °C | 0.03 %+0.36 °C | | 0.015 %+0.18 °C | 0.03 %+0.36 °C |
| 100 Ω Pt(3916) | -200 to 100 °C | 0.2 °C | 0.4 °C | 1 mA | 0.2 °C | 0.4 °C |
| | 100 to 630 °C | 0.015 %+0.18 °C | 0.03 %+0.36 °C | | 0.015 %+0.18 °C | 0.03 %+0.36 °C |
| 100 Ω Pt(3926) | -200 to 100 °C | 0.2 °C | 0.4 °C | 1 mA | 0.2 °C | 0.4 °C |
| | 100 to 630 °C | 0.015 %+0.18 °C | 0.03 %+0.36 °C | | 0.015 %+0.18 °C | 0.03 %+0.36 °C |
| 10 Ω Cu(427) | -100 to 260 °C | 1.5 °C | 3 °C | 1 mA | 1.5 °C | 3 °C |
| 120 Ω Ni(672) | -80 to 260 °C | 0.15 °C | 0.3 °C | 1 mA | 0.15 °C | 0.3 °C |
| 50 Ω Cu(427) | -180 to 200 °C | 0.4 °C | 0.7 °C | 1 mA | 0.4 °C | 0.7 °C |
| 100 Ω Cu(427) | -180 to 200 °C | 0.2 °C | 0.4 °C | 1 mA | 0.2 °C | 0.4 °C |
| YSI400 | 15 to 50 °C | 0.2 °C | 0.4 °C | 250 μA | 0.2 °C | 0.4 °C |

- Sensor inaccuracies not included.
- Resolution: 0.1 °C.
- 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.
- Source Accuracy in source mode is based on 0.5 mA~3 mA (1.00 Ω~400.00 Ω), 0.05 mA~0.8 mA (400.0 Ω~1500.0 Ω), 0.05 mA~0.4 mA (1500.0 Ω ~4000.0 Ω), excitation current (0.25 mA for Pt1000 range).
- Temperature Coefficient: ±0.05 °C /°C for measure, ± 0.05 °C /°C (<18 °C or >28 °C) for source.
- Supports pulsed transmitters and PLCs with pulse times as short as 5 ms.






Thermocouple input and output (Fluke 714B)

| TC Type | Range (°C) | Measure (°C) | | Source (°C) | |
|---------|-----------------|--------------|--------|-------------|--------|
| | | 1 year | 2 year | 1 year | 2 year |
| E | -250 to 200 °C | 1.3 | 2.0 | 0.6 | 0.9 |
| | -200 to -100 °C | 0.5 | 0.8 | 0.3 | 0.4 |
| | -100 to 600 °C | 0.3 | 0.4 | 0.3 | 0.4 |
| | 600 to 1000 °C | 0.4 | 0.6 | 0.2 | 0.3 |
| N | -200 to -100 °C | 1.0 | 1.5 | 0.6 | 0.9 |
| | -100 to 900 °C | 0.5 | 0.8 | 0.5 | 0.8 |
| | 900 to 1300 °C | 0.6 | 0.9 | 0.3 | 0.4 |
| J | -210 to -100 °C | 0.6 | 0.9 | 0.3 | 0.4 |
| | -100 to 800 °C | 0.3 | 0.4 | 0.2 | 0.3 |
| | 800 to 1200 °C | 0.5 | 0.8 | 0.3 | 0.3 |
| K | -200 to -100 °C | 0.7 | 1.0 | 0.4 | 0.6 |
| | -100 to 400 °C | 0.3 | 0.4 | 0.3 | 0.4 |
| | 400 to 1200 °C | 0.5 | 0.8 | 0.3 | 0.4 |
| | 1200 to 1372 °C | 0.7 | 1.0 | 0.3 | 0.4 |
| T | -250 to -200 °C | 1.7 | 2.5 | 0.9 | 1.4 |
| | -200 to 0 °C | 0.6 | 0.9 | 0.4 | 0.6 |
| | 0 to 400 °C | 0.3 | 0.4 | 0.3 | 0.4 |
| B | 600 to 800 °C | 1.3 | 2.0 | 1.0 | 1.5 |
| | 800 to 1000 °C | 1.0 | 1.5 | 0.8 | 1.2 |
| | 1000 to 1820 °C | 0.9 | 1.3 | 0.8 | 1.2 |
| R | -20 to 0 °C | 2.3 | 2.8 | 1.2 | 1.8 |
| | 0 to 100 °C | 1.5 | 2.2 | 1.1 | 1.7 |
| | 100 to 1767 °C | 1.0 | 1.5 | 0.9 | 1.4 |
| S | -20 to 0 °C | 2.3 | 2.8 | 1.2 | 1.8 |
| | 0 to 200 °C | 1.5 | 2.1 | 1.1 | 1.7 |
| | 200 to 1400 °C | 0.9 | 1.4 | 0.9 | 1.4 |
| | 1400 to 1767 °C | 1.1 | 1.7 | 1.0 | 1.5 |
| C | 0 to 800 °C | 0.6 | 0.9 | 0.6 | 0.9 |
| | 800 to 1200 °C | 0.8 | 1.2 | 0.7 | 1.0 |
| | 1200 to 1800 °C | 1.1 | 1.6 | 0.9 | 1.4 |
| | 1800 to 2316 °C | 2.0 | 3.0 | 1.3 | 2.0 |
| L | -200 to -100 °C | 0.6 | 0.9 | 0.3 | 0.4 |
| | -100 to 800 °C | 0.3 | 0.4 | 0.2 | 0.3 |
| | 800 to 900 °C | 0.5 | 0.8 | 0.2 | 0.3 |
| U | -200 to 0 °C | 0.6 | 0.9 | 0.4 | 0.6 |
| | 0 to 600 °C | 0.3 | 0.4 | 0.3 | 0.4 |
| BP | 0 to 1000 °C | 1.0 | 1.5 | 0.4 | 0.6 |
| | 1000 to 2000 °C | 1.6 | 2.4 | 0.6 | 0.9 |
| | 2000 to 2500 °C | 2.0 | 3.0 | 0.8 | 1.2 |
| XK | -200 to 300 °C | 0.2 | 0.3 | 0.2 | 0.5 |
| | 300 to 800 °C | 0.4 | 0.6 | 0.3 | 0.6 |
| G | 100 to 300 °C | 1.6 | 2.4 | 1.2 | 1.8 |
| | 300 to 1500 °C | 1.0 | 1.5 | 1.0 | 1.5 |
| | 1500 to 2320 °C | 2.0 | 3.0 | 1.6 | 2.4 |
| D | 0 to 300 °C | 1.6 | 2.4 | 1.2 | 1.8 |
| | 300 to 1500 °C | 1.0 | 1.5 | 1.0 | 1.5 |
| | 1500 to 2315 °C | 2.0 | 3.0 | 1.6 | 2.4 |
| P | 0 to 1000 °C | 1.6 | 2.4 | 0.6 | 0.9 |
| | 1000 to 1395 °C | 2.0 | 3.0 | 0.8 | 1.2 |
| M | -50 to 100 °C | 1.0 | 1.5 | 0.4 | 0.6 |
| | 100 to 1000 °C | 1.6 | 2.4 | 0.6 | 0.9 |
| | 1000 to 1410 °C | 2.0 | 3.0 | 0.8 | 1.2 |

Thermocouple Probes

| | Bead | HVAC | Immersion | Surface | Air | Piercing | General purpose | Industrial surface |
|----------------------------|---|---|---|---|--|---|---|---|
| |  |  |  |  |  |  |  |  |
| | 80PK-1 80PJ-1 | 80PK-11 | 80PK-22 | 80PK-3A | 80PK-24 | 80PK-25 80PT-25 | 80PK-26 | 80PK-27 |
| Lowest temperature | -40 °C | -30 °C | -40 °C | 0 °C | -40 °C | K Type: -40 °C T Type: -196 °C | -40 °C | -127 °C |
| Highest temperature | 260 °C | 105 °C | 1090 °C | 260 °C | 816 °C | 350 °C | 816 °C | 600 °C |
| Probe material | Type K wire with PTFE insulation | Hook-and-loop | Inconel 600 | Type K sensor with PTFE body | Inconel | 316 Stainless Steel | 304 Stainless Steel | |
| Probe length | 1 m lead wire | 48.26 cm Hook-and-loop cuff | 21.27 cm | 9.525 cm | 21.59 cm | 10.16 cm | 21.57 cm | 20.32 cm |
| Cable length | 1 m | | | 1.3 m | 1 m | | | |
| Connection | Molded thermocouple plug | | | | | | | |
| SureGrip handle | No | No | Yes | No | Yes | Yes | Yes | Yes |
| Key feature | Ideal for initial troubleshooting. Can be secured in place with a magnet. | Hook-and-loop probe allows hands free temperature measurement. | For use in liquids or in gels. | Exposed junction for direct contact with flat or slightly convex surfaces. | Perforated baffle for air and non-caustic gas measurements. | Probe material safe for use in foods. Sharp tip pierces solid surfaces. | Use for general purpose air or surface measurements. | Low conductivity stainless steel minimizes thermal shunting. Extra rugged. |
| Thermocouple types | K, J | K | K | | | K, T | K | |
| Typical use | | | | | | | | |
| General purpose | • | • | • | • | • | • | • | • |
| HVAC | • | • | • | • | • | — | • | • |
| Food service | — | — | • | — | — | • | — | — |
| Industrial | • | • | — | — | — | — | — | • |
| Residential | • | — | — | • | • | • | — | — |
| Commercial | • | • | • | • | • | • | • | • |

Thermocouple kits and accessories

| | | | |
|---|---|--|--|
| <p>Thermocouple Plug Kits</p> |  | <p>700TC1 A kit of ten mini-plug connectors. One each of the following: Type J (black) Type K (yellow) Type T (blue) Type E (purple) Type R/S (green) Type B or Cu (white) Type L (J-DIN) (blue) Type U (T-DIN) (brown) Type C (red) Type N (orange)</p> | <p>700TC2 A kit of seven mini-plug connectors. Type J (black), two Type K (yellow), two Type E (purple), one Type T (blue), one Type R/S (green), one</p> |
| <p>80PK-8, 80PK-10, Pipe Clamp Temperature Probes</p> |  | <ul style="list-style-type: none"> • Type K thermocouples clamp securely onto pipes for fast temperature and superheat measurements • Durable ribbon sensors • 1 m lead • Measure from -29 °C to 149 °C • 80PK-8 for 6.4 mm to 34.9 mm • 80PK-10 for 32 mm to 64 mm | |
| <p>80CK-M and 80CJ-M Type K and J Male Mini-Connectors</p> |  | <ul style="list-style-type: none"> • Isothermal screw terminal for K or J wire • Suitable for up to 20 gauge thermocouple wire • Color coded to industry standards (K-yellow, J-black) • Two per package | |
| <p>80PJ-EXT, 80PK-EXT, 80PT-EXT Thermocouple Wire Extension Kits</p> |  | <p>For extending and repairing type J, K or T thermocouple wires.</p> <ul style="list-style-type: none"> • Kit includes 3 m of thermocouple wire and 1 pair of male/female mini-connectors • Maximum continuous exposure temperature: 260 °C • 80PK-EXT is compatible with type K thermometers; 80PJ-EXT is designed for type J thermometers, and 80PT-EXT is designed for type T thermometers | |
| <p>5627A-6-J, 5627A-9-J and 5627A-12-J Industrial RTD probes</p> |  | <p>5627A-6-J, 5627A-9-J and 5627A-12-J Industrial RTD probes for Fluke-712B</p> <ul style="list-style-type: none"> • 15.24 cm and 22.86 cm (6 and 9 inch) models measure to 300 °C, 30.48 cm model (12 inch) measures up to 420 °C • Accuracy to ± 0.025 °C. • NVLAP-accredited calibration included • Uses IEC standard PT-100-385 RTD curve • Each probe is individually calibrated and includes a NVLAP-accredited report of calibration • Terminated with (4) Banana plugs for 4-wire temperature measurement with the 712B • Add 2601 (22.86 cm, 9 in) or 2609 (63.5 cm, 25 in) protective case to protect the probe | |

Ordering information

FLUKE-712B Temperature Calibrator

FLUKE-714B Temperature Calibrator

Included equipment

Magnetic hanging tool, batteries, manual, traceable calibration certificate, and test leads

Fluke. The Most Trusted Tools in the World.

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 **S J ELECTRONICS**
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