

ADT-222A Multifunction Process Calibrator



- Sourcing, simulating and measuring pressure, temperature and electrical signals
- Smartphone-like menu and interface make the operation simple
- The internal cold junction compensation sensor can be re-calibrated at ice point by users
- Ultra-compact, 3.9" x 7.6" x 2.0", and 1.6 lb (0.7 kg)

OVERVIEW

A highly integrated multifunction calibrator featuring several patented technologies. The ADT-222A is an ultra-compact, rugged, and easy to use hand-held device for sourcing, simulating and measuring pressure, temperature, and electrical signals. Its smartphone-like menu and interface make the operation simple. The ADT-222A is ideal for calibrating, maintaining, and troubleshooting process instrumentation. Automation and documentation capabilities make the ADT-222A a turnkey solution.

FEATURES

- **Sourcing, simulating and measuring pressure, temperature and electrical signals**
Sources and measures mV, mA, ohms, RTDs, thermocouples, frequency, and pulses
Simulates and measures 13 thermocouples, 11 RTDs, and pressure to calibrate transmitters
Measures and sources pressure using A... 160 series Intelligent Digital Pressure Modules from -15 psi to 10,000 psi (-1 bar to 700 bar)
24V loop power supply
Simultaneous dual reading capability
Automatic switch test
Supports square root transmitter
Pulse frequency output for the calibration of flow totalizer
- **Easy to use**
Smartphone-like menu and interface make the operation simpler and easier
Ultra-compact, size 3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm), and weight 1.6 lb (0.7 kg)
One hand operation
- **Calibrated cold junction compensation (Patented)**
Cold junction equivalent block in the calibrator
A calibrated PRT element with flexible leads is installed in the equivalent block for thermocouple cold junction compensation
This PRT element can be pulled out from the calibrator and re-calibrated and corrected at ice point by users
- **Built-in temperature readout**
CVD coefficients of a calibrated PRT can be input into the calibrator for accurate temperature measurement.
- **Multi lingual interface**
English, German, French, Italian, Spanish, Portuguese, Simplified Chinese (Traditional Chinese, Japanese and Russian are available per request)
- **Documenting and automated procedure capability**
Manage the information of the device under test
Set up automated calibration procedures, and the ADT-222A performs the test, calculates the errors, displays and/or stores the results in the memory, and highlights the out-of-tolerance points.
As-found and As-left functions allow recording and documenting results for quality control.
Download tasks and upload the results
Snapshots allow you to capture and save work.
- **Build-in unit conversion tool**
Build-in converters for pressure units, temperature units, temperature vs. resistance (RTDs), and temperature vs. millivolt (thermocouples)
- **Display**
3.5 inch TFT color screen
- **Rugged**
Rugged design for harsh environments.
Passed a 1-meter drop test
Three year warranty for the ADT-222A, and one year for the battery pack
- **Misuse protection**
Up to 30V voltage on any two sockets and up to 1A current on current sockets will not damage the calibrator. The calibrator will return to normal condition as soon as the voltage or current is removed.
- **Rechargeable battery**
Rechargeable Li-ion battery for 15 hours uninterrupted use.
Battery life will be reduced when 24V is applied
The rechargeable battery is replaceable.
- **NIST Traceable Calibration with data**
- **Warranty: 3 years**

APPLICATIONS

The ADT-222A multifunction calibrator is a process tool for measuring, sourcing and simulating mA, mV, V, RTDs, thermocouples, ohms, frequency, pulses and pressure, captures switch values and provides 24 V loop power.

Electrical

Resistance measurement / simulation
 Voltage measurement / generation
 Current measurement / generation
 Frequency measurement / generation
 Pulse counting/generation
 24 VDC loop supply
 Switch sensing

Temperature

RTD measurement /simulation
 TC measurement /simulation

Pressure

Gauge pressure measurement
 Absolute pressure measurement

SPECIFICATIONS

Electrical Specifications

| Measurement Accuracy | | | |
|----------------------|---|----------------|-------------------|
| | Range | Resolution | Accuracy |
| Voltage DC | ±75.0000 mV | 0.1µV | 0.01%RD + 3.75 µV |
| | ±30.0000 V | 0.1 mV | 0.01%RD + 15 µV |
| Current DC | ± 30.0000 mA | 0.1µA | 0.01%RD + 1.5 µA |
| Resistance | Two-wire | 0 to 400.000 Ω | 1mΩ |
| | Three-wire | 0 to 400.000 Ω | 1mΩ |
| | Four-wire | 0 to 400.000 Ω | 1mΩ |
| | Two-wire | 0 to 4000.00 Ω | 10mΩ |
| | Three-wire | 0 to 4000.00 Ω | 10mΩ |
| | Four-wire | 0 to 4000.00 Ω | 10mΩ |
| Frequency | 1 to 50000.0 Hz | 0.1Hz | 0.005%RD + 1 Hz |
| Pulse | 0 to 999999 | 1 | N/A |
| Limit Switch | For the contact with potential, the voltage within the range 3V to 24V. | | |

| Source Accuracy | | | |
|-----------------|---------------------|------------|-------------------|
| | Range | Resolution | Accuracy |
| Voltage DC | -10.000 to 75.000mV | 1µV | 0.02%RD + 4.25 µV |
| | 0 to 12.0000 V | 0.1mV | 0.02%RD + 0.6 mV |
| Current DC | 0 to 22.000 mA | 1µA | 0.02%RD + 1.1 µA |
| Resistance | 1 to 400.00 Ω | 10mΩ | 0.02%RD + 0.02 Ω |
| | 1 to 4000.0 Ω | 100mΩ | 0.03%RD + 0.4 Ω |
| Frequency | 0 to 50000.0 Hz | 0.1Hz | 0.005%RD + 1 Hz |
| Pulse | 0 to 999999 | 1 | N/A |
| DC24V | N/A | N/A | 0.5V |

General Specifications

| Environmental Specifications | |
|------------------------------|----------------------|
| Operating Temperature | -10°C to 50°C |
| Storage Temperature | -20°C to 60°C |
| Humidity | <90%, non-condensing |

| Safety Specifications | |
|-----------------------|---------|
| European Compliance | CE Mark |

| Mechanical Specifications | |
|---------------------------|--|
| Display | 3.5 inch TFT color screen |
| Electrical Connection | Ø4mm sockets and flat mini-jack thermocouple socket |
| RS232 Interface | Standard RS232-DB9 socket |
| Size | 3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm) |
| Weight | 1.6 lb (0.7 kg) |
| Power Supply | Polymer Li-ion rechargeable battery, or 10V DC adaptor |
| Battery | Rechargeable Li-ion battery (included) |
| Battery Life | 15 hours uninterrupted use Battery life will be reduced when 24V is applied |
| Battery Charge | 110V/220V external power adapter (included) |

Safety Specifications
 The 160 series Intelligent Digital Pressure Modules are available for gauge, vacuum and absolute pressure from -15 psi to 10,000 psi (-1 bar to 700 bar). Accuracy from 0.025% FS includes operation over 14°F to 122°F (-10°C to 50°C), one year stability and calibration uncertainty. For detail specification refer to pressure modules datasheet.

Temperature Specification

| Thermocouple Measurement and Source Accuracy | | | | | |
|--|------------|-----------------------|--------------|--------|-----|
| Measure and Simulate | Standard | Temperature Range(°C) | Accuracy(°C) | | |
| | | | Measure | Source | |
| S | IEC 584 | -50 to 1768 | -50 to 400 | 1.0 | 1.1 |
| | | | 400 to 1000 | 0.6 | 0.6 |
| | | | 1000 to 1768 | 0.7 | 0.8 |
| R | IEC 584 | -50 to 1768 | -50 to 200 | 1.4 | 1.4 |
| | | | 200 to 500 | 0.6 | 0.6 |
| | | | 500 to 1768 | 0.6 | 0.7 |
| B | IEC 584 | 0 to 1820 | 50 to 450 | 3.8 | 3.8 |
| | | | 450 to 800 | 0.9 | 0.9 |
| | | | 800 to 1820 | 0.7 | 0.7 |
| K | IEC 584 | -270 to 1372 | -250 to -200 | 1.0 | 1.1 |
| | | | -200 to -100 | 0.4 | 0.5 |
| | | | -100 to 600 | 0.3 | 0.3 |
| N | IEC 584 | -270 to 1300 | 600 to 1372 | 0.4 | 0.5 |
| | | | -250 to -200 | 1.5 | 1.6 |
| | | | -200 to -100 | 0.5 | 0.6 |
| E | IEC 584 | -270 to 1000 | -100 to 1300 | 0.4 | 0.5 |
| | | | -250 to -200 | 0.6 | 0.7 |
| | | | -200 to -100 | 0.3 | 0.3 |
| J | IEC 584 | -270 to 1200 | -100 to 0 | 0.2 | 0.2 |
| | | | 0 to 700 | 0.2 | 0.3 |
| | | | 700 to 1000 | 0.2 | 0.4 |
| T | IEC 584 | -270 to 400 | -210 to -100 | 0.3 | 0.3 |
| | | | -100 to 1200 | 0.3 | 0.4 |
| | | | -250 to -200 | 0.8 | 0.9 |
| C | ASTM E988 | 0 to 2315 | -200 to 0 | 0.4 | 0.4 |
| | | | 0 to 400 | 0.2 | 0.2 |
| | | | 0 to 1000 | 0.5 | 0.5 |
| D | ASTM E988 | 0 to 2320 | 1000 to 1800 | 0.7 | 0.9 |
| | | | 1800 to 2315 | 1.0 | 1.4 |
| | | | 0 to 100 | 0.5 | 0.5 |
| G | ASTM E1751 | 0 to 2315 | 100 to 1100 | 0.4 | 0.5 |
| | | | 1100 to 2000 | 0.6 | 0.9 |
| | | | 2000 to 2320 | 0.9 | 1.3 |
| L | DIN43710 | -200 to 900 | 0 to 200 | 2.4 | 2.4 |
| | | | 200 to 400 | 0.5 | 0.5 |
| | | | 400 to 1400 | 0.4 | 0.5 |
| U | DIN43710 | -200 to 600 | 1400 to 2315 | 0.7 | 1.0 |
| | | | -200 to -100 | 0.2 | 0.3 |
| | | | -100 to 400 | 0.2 | 0.2 |
| U | DIN43710 | -200 to 600 | 400 to 900 | 0.2 | 0.3 |
| | | | -200 to 0 | 0.4 | 0.4 |
| | | | 0 to 600 | 0.2 | 0.3 |

ADT-222A

Multifunction Process Calibrator



SPECIFICATIONS

| Measurement Accuracy | | | | | | |
|-----------------------------|---------------------------|------------------------|-------------|-----------------|--------------|--------|
| Measure and Simulate | Standard | Temperature Range (°C) | | Accuracy (°C) | | |
| | | | | Measure (2W/3W) | Measure (4W) | Source |
| Pt10(385) | IEC 751 | -200 to 850 | -100 to 200 | 0.65 | 0.60 | 0.65 |
| | | | 200 to 600 | 0.82 | 0.72 | 0.82 |
| | | | 600 to 850 | 0.96 | 0.82 | 0.96 |
| Pt100(385) | IEC 751 | -200 to 850 | -100 to 200 | 0.15 | 0.1 | 0.15 |
| | | | 200 to 600 | 0.26 | 0.16 | 0.26 |
| | | | 600 to 850 | 0.34 | 0.20 | 0.34 |
| Pt100(3916) | JIS 1604 | -200 to 850 | -100 to 200 | 0.15 | 0.1 | 0.15 |
| | | | 200 to 600 | 0.26 | 0.16 | 0.26 |
| | | | 600 to 850 | 0.33 | 0.20 | 0.33 |
| Pt100(3926) | Minco Application Aid #18 | -200 to 850 | -100 to 200 | 0.15 | 0.1 | 0.15 |
| | | | 200 to 600 | 0.26 | 0.16 | 0.26 |
| | | | 600 to 850 | 0.33 | 0.20 | 0.33 |
| Pt500(385) | IEC 751 | -200 to 850 | -100 to 200 | 0.20 | 0.16 | 0.36 |
| | | | 200 to 600 | 0.32 | 0.22 | 0.54 |
| | | | 600 to 850 | 0.40 | 0.27 | 0.67 |
| Pt1000(385) | IEC 751 | -200 to 850 | -100 to 200 | 0.1 | 0.05 | 0.25 |
| | | | 200 to 600 | 0.2 | 0.10 | 0.42 |
| | | | 600 to 850 | 0.27 | 0.14 | 0.54 |
| Cu10(427) | Minco Application Aid #18 | -100 to 260 | -100 to 260 | 0.61 | 0.56 | 0.61 |
| Cu50(428) | GOST 6651-94 | -50 to 150 | -50 to 150 | 0.17 | 0.13 | 0.17 |
| Cu100(428) | GOST 6651-94 | -50 to 150 | -50 to 150 | 0.12 | 0.09 | 0.12 |
| Ni120(672) | Edison curve #7 | -100 to 260 | -100 to 260 | 0.07 | 0.05 | 0.07 |
| Ni100(618) | DIN 43760 | -100 to 260 | -100 to 260 | 0.08 | 0.06 | 0.08 |

ORDERING INFORMATION

Model Number ADT-222A

| Accessories (included) | |
|--|---------------|
| 110V/220V external power adapter | 1 pc |
| Chargeable Li-ion battery | 1 pc |
| Test leads | 3 sets(6 pcs) |
| Short circuit cable | 1 sets(2 pcs) |
| 9060 Pressure module connection cable | 1 pc |
| Manual | 1 pc |
| NIST traceable calibration certificate | 1 pc |

* Additel/Land software can be downloaded for free at www.additel.com

| Optional Accessories | |
|-----------------------------|--|
| Model number | Description |
| ADT160 | Intelligent Digital Pressure Modules |
| 9060 | Pressure module connection cable |
| 9050 | USB to RS232 (DB-9 Male) Adapter |
| 9080 | Cable kit (including TC plug, compensation cable, S,R,B,K,J,T,E,N) |
| 9712 | Spare chargeable Li-ion battery for multifunction calibrator |
| 9816 | 110V/220V external power adapter for multifunction calibrator |
| 9906 | Carrying case for multifunction calibrator |
| 9510 | Additel/Cal Task management software for multifunction calibrator |