Additel 221A Multifunction Temperature Calibrator

- Sourcing, simulating and measuring temperature and electrical signals
- Smartphone-like menu and interface make the operation simple and 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 (0.7kg)





CE

OVERVIEW

A highly integrated Multifunction Temperature Calibrator featuring several patented technologies. The 221A is an ultracompact, rugged, and easy to use hand-held device for sourcing, simulating and measuring temperature, and electrical signals. Its smartphone-like menu and interface make the operation simple. The 221A is ideal for calibrating, maintaining, and troubleshooting process instrumentation. Automation and documentation capabilities make the 221A a turnkey solution.

FEATURES

 Sourcing, simulating and measuring temperature and electrical signals

Sources and measures mV, mA, ohms, RTDs, thermocouples, frequency, and pulses
Simulates and measures 13 thermocouples and 11
RTDs to calibrate transmitters
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

(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 ADT221A 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

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 years warranty for the ADT221A, 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.

- NIST Traceable Calibration with data
- 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.

Warranty: 3 years

Additel 221A



APPLICATIONS

The ADT221A multifunction temperature calibrator is a process tool for measuring, sourcing and simulating mA, mV, V, RTDs, thermocouples, ohms, frequency, and pulses, captures switch values and provides 24 V loop power.

Electrical

Resistance measurement / simulation Frequency measurement / generation Switch sensing

Voltage measurement / generation Pulse counting/generation

Current measurement /generation 24 VDC loop supply

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Temperature

RTD measurement /simulation

TC measurement /simulation

Measurement Accuracy

SPECIFICATIONS

Electrical Specifications

Measurement Accuracy					
		Range	Resolution	Accuracy	
Voltage DC		±75.0000 mV	0.1µV	0.01%RD + 3.75 μV	
voltaş	,	±30.0000 V	0.1 mV	0.01%RD + 15 μV	
Curre	nt DC	± 30.0000 mA	0.1µA	0.01%RD + 1.5 μA	
	Two-wire	0 to 400.000 Ω	1mΩ	$0.02\% { m RD} + 0.02~\Omega$	
	Three-wire	0 to 400.000 Ω	1mΩ	$0.02\% { m RD} + 0.02~\Omega$	
Resistance	Four-wire	0 to 400.000 Ω	1mΩ	0.01%RD + 0.02 Ω	
nesisiance	Two-wire	0 to 4000.00 Ω	10mΩ	$0.02\% RD + 0.2 \Omega$	
	Three-wire	0 to 4000.00 Ω	10mΩ	$0.02\% RD + 0.2 \Omega$	
	Four-wire	0 to 4000.00 Ω	10mΩ	$0.01\% \text{RD} + 0.2 \Omega$	
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 Accura	асу		
V-4 DO	-10.000 to 75.000mV	1µV	0.02%RD + 4.25 μV
Voltage DC	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 + $0.4~\Omega$
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 Tempera	ature	-20°C to 60°C			
Humidity		<90%, non-condensing			
Safety Specifications	;				
European Compl	iance	CE Mark			
Mechanical Specifica	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	Battery Life 15 hours uninterrupted use Battery life will be reduced when 24V is appli				
Battery Charge	110	V/220V external power adapter (included)			

Standard Standard Temperature Range(°C) Measure Source	Measurement Accuracy						
S		Standard	Temperat	ure Bange(°C)	Accuracy(°C)		
S IEC 584	and Simulate	Stanuaru	Temperat	ure nange(o)	Measure	Source	
R				-50 to400	1.0	1.1	
R	S	IEC 584		400 to 1000	0.6	0.6	
B				1000 to1768	0.7	0.8	
H IEC 584 1768 500 to 1768 0.6 0.7 50 to 450 3.8 3.8 3.8 3.8 3.8 3.8 3.8 3.8 3.8 3.8		IEC 584		-50 to 200	1.4	1.4	
B IEC 584 0 to 1820 500 to 1768 0.6 0.7 50 to 450 3.8 1.0 1.1	R			200 to 500	0.6	0.6	
B				500 to 1768	0.6	0.7	
R			0 to 1820	50 to 450	3.8	3.8	
K IEC 584	В	IEC 584		450 to 800	0.9	0.9	
N				800 to 1820	0.6	0.7	
N				-250 to -200	1.0	1.1	
T IEC 584 P-270 to 1300 P-270 to 1200 P-270	I/	IEC E04	-270 to	-200 to -100	0.4	0.5	
N IEC 584	ĸ	IEC 584		-100 to 600	0.3	0.3	
N				600 to 1372	0.4	0.5	
E IEC 584 1300 -200 to -100 0.5 0.6 0.7 -250 to -200 0.6 0.7 -250 to -200 0.6 0.7 -200 to -100 0.3 0.3 0.3 -100 to 1000 0.2 0.2 0.4 0.5 0 to 700 0.2 0.2 0.4 0.5 0 to 700 0.2 0.3 0.3 -100 to 1000 0.2 0.4 0.4 0.5 0 to 2315 1.0 1.4 0 to 2315 1.0 1.4 0 to 2000 0.5 0				-250 to -200	1.5	1.6	
E IEC 584	N	IEC 584		-200 to -100	0.5	0.6	
E IEC 584			1300	-100 to 1300	0.4	0.5	
E IEC 584				-250 to -200	0.6	0.7	
T IEC 584		IEC 584		-200 to -100	0.3	0.3	
D ASTM E988 O to 2315	E			-100 to 0	0.2	0.2	
J IEC 584			1000	0 to 700	0.2	0.3	
T IEC 584 1200 -100 to 1200 0.3 0.4 -270 to 400 -200 to 0 0.4 0.4 O to 400 0.2 0.2 ASTM E988 0 to 2315 1.00 1.4 D ASTM E988 0 to 2320 1000 to 1800 0.7 0.9 ASTM E988 0 to 2320 1000 to 100 0.5 0.5 ASTM E1751 0 to 2315 1.00 1.4 O to 100 0.5 0.5 100 to 1100 0.4 0.5 1100 to 1100 0.4 0.5 1100 to 2000 0.6 0.9 2000 to 2320 0.9 1.3 O to 200 2.4 2.4 200 to 400 0.5 0.5 400 to 1400 0.4 0.5 1400 to 2315 0.7 1.0 -200 to 900 1.00 to 400 0.2 0.2 400 to 900 0.2 0.3 -100 to 400 0.2 0.2 400 to 900 0.2 0.3				700 to 1000	0.2	0.4	
T IEC 584		JEO 504		-210 to -100	0.3	0.3	
T IEC 584	J	IEC 584		-100 to 1200	0.3	0.4	
C ASTM E988 0 to 2315 1000 to 1800 0.7 0.9 1800 to 2315 1.0 1.4 0.5 1800 to 2315 1.0 0 to 100 0.5 0.5 0.5 1000 to 1800 0.7 0.9 1800 to 2315 1.0 1.4 0 to 100 0.5 0.5 0.5 100 to 1100 0.5 0.5 100 to 1100 0.4 0.5 1100 to 2000 0.6 0.9 2000 to 2320 0.9 1.3 0 to 200 2.4 2.4 2.4 2000 to 200 0.5 0.5 1000 to 1100 0.4 0.5 1200 to 200 0.5 0.5 1200 to 200 0.2 0.3 1200 to 200 0.4 0.4 0.4 0.4 0.4 1200 to 200 0.4 0.4 0.4 1200 to 200 0.4 0.4 0.4 0.4 1200 to 200 0.2 0.3 1200 to 200 0.2 0.3 1200 to 200 0.2 0.3 1200 to 200 0.4 0.4 0.4 1200 to 200 0.4 0.4 0.4 1200 to 200 0.2 0.3 1200 to 200 0.4 0.4 0.4 1200 to 200 0.4 0.4 0.4 1200 to 200 0.2 0.3 1200 to 200 0.2 0.3 1200 to 200 0.4 0.4 0.4 1200 to 200 0				-250 to -200	0.8	0.9	
G ASTM E1751 0 to 2315	Т	IEC 584		-200 to 0	0.4	0.4	
C ASTM E988 0 to 2315 1000 to 1800 0.7 0.9 1800 to 2315 1.0 1.4 0 to 100 to 100 0.5 0.5 100 to 1100 to 1100 0.4 0.5 1100 to 2000 0.6 0.9 2000 to 2320 0.9 1.3 0 to 2300 2.4 2.4 200 to 400 0.5 0.5 1400 to 2315 0.7 1.0 140				0 to 400	0.2	0.2	
B988 0 to 2315 1000 to 1800 0.7 0.9 1800 to 2315 1.0 1.4 0 to 100 0.5 0.5 100 to 100 0.5 0.5 100 to 1100 to 2000 0.6 0.9 2000 to 2320 0.9 1.3 0 to 200 2.4 2.4 2000 to 2320 0.9 1.3 0 to 200 2.4 2.4 200 to 400 0.5 0.5 1400 to 2315 0.7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0			0 to 2315	0 to 1000	0.5	0.5	
ASTM E988 0 to 2320 100 to 100 0.5 0.5 100 to 100 0.5 0.5 1100 to 2000 0.6 0.9 2000 to 2320 0.9 1.3 0 to 200 2.4 2.4 2.4 200 to 400 0.5 1400 to 2400 0.4 0.5 1400 to 2315 0.7 1.0 1.0 1.0 1400 to 2315 0.7 1.0 1.0 1.0 1400 to 2315 0.7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	С			1000 to 1800	0.7	0.9	
D ASTM E988 0 to 2320 100 to 1100 0.4 0.5 1100 to 2000 0.6 0.9 2000 to 2320 0.9 1.3 0 to 2000 to 2320 0.9 1.3 0 to 200 to 400 0.5 0.5 400 to 1400 0.4 0.5 1400 to 2315 0.7 1.0 -200 to 900 -200 to 400 0.2 0.3 -100 to 400 0.2 0.2 400 to 900 0.2 0.3 0.3 -100 to 400 0.2 0.3 0.3 -200 to 900 0.2 0.3 0.3 -200 to 900 0.2 0.3 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4		2000		1800 to 2315	1.0	1.4	
G ASTM E1751 0 to 2315 1100 to 2000 0.6 0.9 2000 to 2320 0.9 1.3 0 to 2000 to 2320 0.9 1.3 0 to 200 0.5 0.5 0.5 400 to 1400 0.4 0.5 1400 to 2315 0.7 1.0 -200 to 900 -200 to 400 0.2 0.2 400 to 900 0.2 0.3 0.3 0.1 0 to 2015 0.7 0.0 0.2 0.3 0.3 0.0 0.0 0.2 0.2 0.0 0.0 0.2 0.3 0.3 0.0 0.0 0.2 0.2 0.3 0.3 0.0 0.0 0.2 0.2 0.3 0.3 0.0 0.0 0.2 0.3 0.3 0.0 0.0 0.2 0.3 0.3 0.0 0.0 0.2 0.3 0.3 0.0 0.0 0.2 0.3 0.3 0.0 0.0 0.2 0.3 0.3 0.3 0.0 0.0 0.2 0.3 0.3 0.3 0.0 0.0 0.2 0.3 0.3 0.3 0.0 0.0 0.2 0.3 0.3 0.0 0.0 0.0 0.4 0.4 0.4 0.4 0.4 0.4 0.4				0 to 100	0.5	0.5	
G ASTM E1751 0 to 2315	<u> </u>		0 to 2320	100 to 1100	0.4	0.5	
G ASTM E1751 0 to 2315 0 to 200 2.4 2.4 2.4 200 to 400 0.5 0.5 400 to 1400 0.4 0.5 1400 to 2315 0.7 1.0 -200 to 900 -200 to 400 0.2 0.3 1400 to 900 0.2 0.3 0.3 0.2 0.2 0.3 0.3 0.2 0.2 0.3 0.3 0.2 0.2 0.3 0.3 0.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	U			1100 to 2000	0.6	0.9	
G ASTM E1751 0 to 2315 200 to 400 0.5 0.5 400 to 1400 0.4 0.5 1400 to 2315 0.7 1.0 1400 to 2315 0.7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0				2000 to 2320	0.9	1.3	
G E1751 0 to 2315 400 to 1400 0.4 0.5 1400 to 2315 0.7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0				0 to 200	2.4	2.4	
L DIN43710 -200 to U DIN43710 -200 to U DIN43710 -200 to -200 to -200 to 0 0.4 0.4 0.5 0.5 0.7 0.2 0.3 0.2 0.2 0.3 0.3 0.2 0.2 0.3 0.3 0.2 0.2 0.3 0.3 0.2 0.2 0.3 0.3 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	_		0 to 2315	200 to 400	0.5	0.5	
L DIN43710 -200 to 900 -200 to -100 0.2 0.3 -100 to 400 0.2 0.2 400 to 900 0.2 0.3 -200 to -200 to 0 -200 to 0 0.4 0.4	G			400 to 1400	0.4	0.5	
L DIN43710 -200 to 900 -100 to 400 0.2 0.2 400 to 900 0.2 0.3 U DIN43710 -200 to -200 to 0 0.4 0.4				1400 to 2315	0.7	1.0	
U DIN43710 900 -100 to 400 0.2 0.2 400 to 900 0.2 0.3 -200 to -200 to 0 0.4 0.4		DIN43710		-200 to -100	0.2	0.3	
U DIN43710 -200 to -200 to 0 0.4 0.4	L			-100 to 400	0.2	0.2	
U DIN43710 20010				400 to 900	0.2	0.3	
U DIN43/10 000		DINIAGRAG	-200 to	-200 to 0	0.4	0.4	
	U	10 /10אווט		0 to 600	0.2	0.3	

Additel Datasheet 2014 / 2015



SPECIFICATIONS

Measurement Accuracy						
Measure and Simulate Standard		Temperature Range (°C)		Accuracy (°C)		
measure and officiate	ure and Simulate Standard		imperature runge (0)	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
		-200 to 850	-100 to 200	0.15	0.1	0.15
Pt100(385)	IEC 751		200 to 600	0.26	0.16	0.26
			600 to 850	0.34	0.20	0.34
	JIS 1604	-200 to 850	-100 to 200	0.15	0.1	0.15
Pt100(3916)			200 to 600	0.26	0.16	0.26
			600 to 850	0.33	0.20	0.33
	Minco Application Aid #18	-200 to 850	-100 to 200	0.15	0.1	0.15
Pt100(3926)			200 to 600	0.26	0.16	0.26
			600 to 850	0.33	0.20	0.33
		-200 to 850	-100 to 200	0.20	0.16	0.36
Pt500(385)	IEC 751		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 ADT221A

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)			
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			
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 put next to multifunction			
9510	Additel/Cal Task management software for multifunction calibrator			