

Economy Series Calibrators



**LTM-917 Precision Thermometer
LTP-100 (Pt-100) Temperature Probe**

FEATURES

- Precision thermometer with high accuracy and 0.01°C resolution
- Accepts Platinum Pt-100 Ohm and thermocouple Type K/J/T/E/R probes
- 0.01 degree high resolution both for Platinum & Thermocouple probe input
- Pt-100 probe input compatible with an 0.00385 alpha coefficient, and meets DIN IEC 751
- Compatible with 4-wire Pt-100 Ohm probe
- -100 °C to 1370 °C (Type K) display range
- Built-in front panel °C & °F select button and 0.01/0.1 degree select switch
- Large LCD with unit display
- Data hold function for storing displayed value
- Front panel Sensor Select button provides easy probe change
- Memory function to record the maximum & minimum reading with recall
- Built-in REL button for relative measurement
- Built-in low battery indicator

Specifications (23 °C ±5 °C; tested under the environment RF Field Strength <3 V/M and frequency <30 MHz)

Display	62 mm x 34 mm LCD display (2.4 x 1.3 inch) 13 mm (0.5) digit size
Sensor Type	Platinum Pt-100 Ohm(0.00385 alpha coefficient, meets DIN IEC 751) Thermocouple Type K, Type J, Type T, Type E, Type R
Probe Input Socket	Pt-100 Ohm Probe: DIN 4-pin socket Thermocouple Probe: Standard 2-pin Type K socket
Sampling Time	Pt-100 Ohm Probe: Approx. 1.5 sec Thermocouple Types K/J/T/E/R: Approx. 2.5 sec.

Overload Indication	Displays "----"	
Measurement Range/Resolution/Accuracy	Platinum, Pt-100 Ohm	
	-199.99 to 199.99 °C; 0.01 °C	±0.1% ±0.2°C
	200.0 to 850.0 °C; 0.1 °C	±0.1% ±0.2°C
	-328.0 to 392.00 °F; 0.01 °F	±0.1% ±0.4°F
	392.0 to 1562.0 °F; 0.1 °F	±0.1% ±0.4°F
	Type K Thermocouple	
	-100.00 to 100.00 °C; 0.01 °C	±0.1% ±0.5°C
	100.0 to 1370.0 °C; 0.1 °C	±0.1% ±0.5°C
	-148.00 to 212.00 °F; 0.01 °F	±0.1% ±0.9°F
	212.0 to 2498.0 °F; 0.1 °F	±0.1% ±0.9°F
	Type J Thermocouple	
	-90.00 to 100.00 °C; 0.01 °C	±0.1% ±0.5°C
	100.0 to 900.0 °C; 0.1 °C	±0.1% ±0.5°C
	-130.00 to 212.00 °F; 0.01 °F	±0.1% ±0.9°F
	212.0 to 1652.0 °F; 0.1 °F	±0.1% ±0.9°F
	Type T Thermocouple	
	-100.00 to 100.00 °C; 0.01 °C	±0.1% ±0.5°C
	100.0 to 400.0 °C; 0.1 °C	±0.1% ±0.5°C
	-148.00 to 212.00 °F; 0.01 °F	±0.1% ±0.9°F
	212.0 to 752.0 °F; 0.1 °F	±0.1% ±0.9°F
	Type E Thermocouple	
	-80.00 to 90.00 °C; 0.01 °C	±0.1% ±0.5°C
	90.0 to 779.9 °C; 0.1 °C	±0.1% ±0.5°C
	-112.00 to 194.00 °F; 0.01 °F	±0.1% ±0.9°F
	194.0 to 1435.8 °F; 0.1 °F	±0.1% ±0.9°F
	Type R Thermocouple	
	0 to 600.0 °C; 0.1 °C	±0.1% ±0.5°C
	600 to 1770 °C; 1 °C	±0.1% ±1°C
	32.0 to 112.0 °F; 0.1 °F	±0.1% ±0.9°F
	112 to 3218 °F; 1 °F	±0.1% ±2°F
Operating Temperature	0 to 50 °C (32 to 122 °F)	
Operating Humidity	Less than 80% RH	
Power Supply	DC 9V battery, 006P, MN1604 (PP3) or equivalent Heavy duty or Alkaline type	
Power Consumption	Approx. DC 15 mA	
Weight	285 g/9.9 oz.	
Dimensions (HWD)	180 x 72 x 32 mm (7.1 x 2.8 x 1.3 inch)	

Notes:
1. The accuracy specified is for the meter only and does not include T/C errors.

LPT-100 Probe Specifications	
Curve	Compatible with an 0.00385 alpha coefficient; meets DIN IEC 751
Class A	0 °C Resistance 100 Ohms
Measurement Range	-50 to 400 °C/-58 to 752 °F
Accuracy	(0.15 + (0.002 x T)) °C; T= measuring temperature (1)
Plug	DIN plug, 4-pins/4-wires
Dimensions	
Sensing Head	152 mm tube (6 inch)
Probe Length Overall	245 mm (9.6 inch)

Notes:
1. For example:
Accuracy is 0.15 °C for 0 °C reading.
Accuracy is 0.35 °C for 100 °C reading.
Accuracy is 0.95 °C for 400 °C reading.

Accessories: Case, Model LCA-05A
Type K thermocouple probes also available from Martel.

The Martel Economy Series provides highly reliable performance in a very affordable calibrator. Built for Martel off-shore, the Economy Series provide

many of the features of our high-end calibrators; and of course, Martel stands behind the quality and reliability of every Economy Series calibrator.



The LCC-421 Voltage/Current Calibrator provides an adjustable, precision 0-24 mA current, and ±199.9 mV DC sources. The LCC-421 can power or measure 2-wire current loops, and the current calibrator can drive loads up to 500 Ohms.

The LTC-920 Thermometer/Thermocouple Calibrator provides the functions of both a Type K thermometer and Type K thermocouple calibrator. The LTC-920 features a wide -199 to +1230 °C (-325 to +2246 °F) measurement and calibration range.

The LPM-9100H Manometer provides dual or differential pressure measurements displayed in any one of eight units. The LPM-9100H manometer is intended for measurements in air or non-corrosive and non-ionized gases and liquids.

The LTM-917 Precision Thermometer and LTP-100 (Pt-100) Temperature Probe combination provide a precision thermometer with high accuracy and 0.01 °C resolution. The LTM-917 accepts Platinum Pt-100 Ohm probes, as well as Type K, J, T, E, and R thermocouples.



Martel Electronics, P.O. Box 770, Londonderry, NH 03053
Tel: 800-821-0023, E-mail: sales@martelcorp.com, Web: www.martelcorp.com



LCC-421 Voltage/Current Calibrator

Features

- Portable instrument for calibrating process devices and measuring process signals
- Adjustable precision 0-24 mA current source
- Adjustable ± 199.9 mV DCV source
- Current calibrator drives loads up to 500 Ohms
- Power or measure 2-wire current loop

Specifications (23 °C ± 5 °C; specifications are tested under the environment RF Field Strength of <3 V M and frequency <30 MHz)

Display	LCD display; display counts 1999 max. 13 mm (0.5) digit size
----------------	---

Function Range/Resolution/Accuracy		
Current Source (1) (2)		
0 - 19.99 mA; 0.01 mA	$\pm(0.25\% \text{ FS} + 1 \text{ count})$	
0 - 24 mA; 0.1 mA	$\pm(0.5\% \text{ FS} + 1 \text{ count})$	
Current Measurement		
0 - 19.99 mA; 0.01 mA	$\pm(0.25\% \text{ FS} + 1 \text{ count})$	
0 - 24 mA; 0.1 mA	$\pm(0.5\% \text{ FS} + 1 \text{ count})$	
2-Wire Loop Power/Current Measurement (3)		
0 - 19.99 mA; 0.01 mA	$\pm(0.25\% \text{ FS} + 1 \text{ count})$	
0 - 24 mA; 0.1 mA	$\pm(0.5\% \text{ FS} + 1 \text{ count})$	
DC mV Source (4)		
-199.9 mV to +199.9 mV; 0.1 mV	$\pm(0.5\% \text{ FS} + 1 \text{ count})$	

Sampling Time	Approx. 0.4 seconds
Over Input Indication	'1'
Operating Temperature	0 to 50 °C (32 to 122 °F)
Operating Humidity	Less than 80% RH
Power Supply	006P DC 9V, MN1604/PP3 battery or equiv. Alkaline or heavy duty type

Power Consumption	
Current Measurement	Approx. DC 12 mA
Power & Current Measurement	Approx. DC 12 mA
Current Source (6)	Approx. DC 33 mA
DC mV Source (7)	Approx. DC 33 mA
Dimensions	185 x 78 x 38 mm (7.3 x 3.0 x 1.5 inch)
Weight	265 g/9.2 oz. (with battery)

Notes:

1. Output 0 to 24 mA current for loads up to 500 Ohms.
2. Output >20 mA current for loads up to 400 Ohms.
3. Provides DC 12 V ± 2 V power to the loop and measures current.
4. Measured output load impedance should be >1 kOhms.
5. FS: full scale
6. Under 10 mA signal output
7. Under 100 mV signal output

Accessories:
Case, Model LCA-05A



LPM-9100H Manometer

Features

- Dual & differential inputs
- Measurements in air or non-corrosive and non-ionized gases & liquids
- Integrated sensor
- Single lug for pipe connection
- Push button selectable display units: (mbar, psi, Kg/cm², Thermometer mm Hg, inch Hg, meter H₂O, inch H₂O, Atmosphere)
- Auto shut off
- Front panel offset zero button
- Large LCD display with contrast adjustment for best viewing angle
- Records Maximum & Minimum readings, with Recall
- Data Hold function for storing the displayed value
- Built-in low battery indicator

Specifications (23 °C ± 5 °C)

Display	61 mm x 34 mm LCD display (2.4 x 1.3 inch) 15 mm (0.6) digit size
----------------	---

Display Units	mbar, psi, Kg/cm ² , mm Hg, inch Hg, meter H ₂ O, inch H ₂ O, ATM
----------------------	--

Sampling Time	Approx. 0.8 seconds
----------------------	---------------------

Maximum Measurement Ranges/Resolution/Accuracy		
2000 mbar; 1 mbar	$\pm 2\%$ of full scale	
29 psi; 0.02 psi	$\pm 2\%$ of full scale	
2.040 Kg/cm ² ; 0.001 Kg/cm ²	$\pm 2\%$ of full scale	
1500 mm Hg; 1 mm Hg	$\pm 2\%$ of full scale	
59.05 inch Hg; 0.05 inch Hg	$\pm 2\%$ of full scale	
20.40 meter H ₂ O; 0.01 meter H ₂ O	$\pm 2\%$ of full scale	
802 inch H ₂ O; 0.5 inch H ₂ O	$\pm 2\%$ of full scale	
1.974 Atmosphere; 0.001 Atmosphere	$\pm 2\%$ of full scale	

Operating Temperature	0 to 50 °C (32 to 122 °F)
Operating Humidity	Less than 80% R.H.
Power Supply	006P DC 9V, MN1604/PP3 battery or equiv. Alkaline or heavy duty type
Power Current	Approx. DC 6.0 mA
Weight	345 g/12.1 oz.
Dimensions	180 x 72 x 32 mm (7.1 x 2.8 x 1.3 inch)

Notes:

1. Includes linearity, hysteresis, and repeatability.

Accessories:
Case, Model LCA-05A



LTC-920 Thermometer/Thermocouple Calibrator

Features

- Two-in-one meter – Type K thermometer & Type K thermocouple calibrator
- Wide range: -199 to +1230 °C (-325 to +2246 °F)
- Built-in, high precision, temperature linearity compensation circuit
- °C & °F select & data hold functions for temperature measurement.
- °C & °F button selection for temperature calibration
- Temperature measuring input to meet any standard Type K (NiCr-NiAl) probe
- Fitted with standard Type K mini-plug socket
- Large LCD display
- Operates on 006P DC 9V battery
- RS232 PC serial computer interface
- Uses durable, long-lasting components, including strong, light weight ABS-plastic housing

Specifications (23 °C ± 5 °C; specifications are tested under the environment RF Field Strength < 3V/M and frequency <30 MHz)

Display	LCD display with 13 mm (0.5) digit size
Measure Range	-199 to +1230 °C/ -325 to +2246 °F
Calibration Range	-199 to +1230 °C/ -325 to +2246 °F
Polarity	(-) indicates negative polarity

Thermometer	
Sensor Type	Thermocouple K (NiCr-NiAl)
Input Impedance	10 MegOhm
Sampling Time	Approx. 0.4 seconds
Data Output	RS232 PC serial computer interface
Over Input Indication	Indication of "1"

Type K Thermocouple Calibrator		
Calibrator Range/Resolution/Accuracy		
-199 to 0 °C; 1 °C	$\pm(1\% + 2\text{ °C})$	
0 to 101 °C; 1 °C	$\pm(1\% + 1\text{ °C})$	
101 to 1230 °C; 1 °C	$\pm(0.75\% + 1\text{ °C})$	
-325 to 32 °F; 1 °F	$\pm(1\% + 5\text{ °F})$	
32 to 214 °F; 1 °F	$\pm(1\% + 2\text{ °F})$	
214 to 2246 °F; 1 °F	$\pm(0.75\% + 2\text{ °F})$	

Thermometer		
Thermometer Range/Resolution/Accuracy		
-199 to 0 °C; 1 °C	$\pm(1\% + 2\text{ °C})$	
0 to 101 °C; 1 °C	$\pm(1\% + 1\text{ °C})$	
101 to 1230 °C; 1 °C	$\pm(0.75\% + 1\text{ °C})$	
-325 to 32 °F; 1 °F	$\pm(1\% + 5\text{ °F})$	
32 to 214 °F; 1 °F	$\pm(1\% + 2\text{ °F})$	
214 to 2246 °F; 1 °F	$\pm(0.75\% + 2\text{ °F})$	

Operating Temperature	0 to 50 °C (32 to 122 °F)
Operating Humidity	Less than 80% RH
Power Supply	006P DC 9V, MN1604/PP3 battery or equivalent Heavy duty or Alkaline type
Power Current Drain	Approx. DC 7 mA
Weight	280 g /0.62 LB (with battery)
Dimensions	185 x 78 x 38 mm (7.3 x 3.0 x 1.5 inch)

Notes:

1. The accuracy specification of the thermometer applies only to the instrument itself and does not include T/C errors.

Accessories:
Case, Model LCA-05A
RS232 Cable, Model LUPCB-01
Windows Software, Model LSW-U101-01
Type K thermocouple probes also available from Martel.

Calibration Certificate

This certificate guarantees that the product has been inspected and tested in accordance with the published specifications.

The instrument has been calibrated using equipment which is calibrated traceable to international standards.



All Martel Economy Series calibrators are provided with a Certificate of Calibration.