



# INFORMATION & SPECIFICATIONS DATA SHEET

TEMPERATURE & PROCESS INSTRUMENTS - INC

## MC1200 High Accuracy Multifunction Process Calibrator with HART® Compatibility

The MC-1200 provides a feature set unmatched in high accuracy, hand-held calibrators in its price range. The MC-1200 Calibrator provide the functions and accuracy associated with fixed-installation, laboratory instrument, and has everything needed for virtually any calibration task. Measure and source thermocouples, RTDs, current, voltage, and frequency, and source pulse trains.

A built-in 250 Ohm resistor for HART™ compatibility, compatibility with smart transmitters and PLCs, full fuseless protection, are just some of the additional features that make the MC-1200 the single most indispensable tool available for virtually any calibration task.

### Features

- ▶ Measure and source T/Cs (13 types), RTDs (13 types), Ohms, current, voltage, frequency; source pulse trains
- ▶ Isolated mA/V read-back circuit for complete transmitter calibration
- ▶ Communication port compatible with both Fluke 700 Series and Beta Calibrator pressure modules
- ▶ Built-in 24V supply can drive 4 to 20mA loops up to 1000 Ohms
- ▶ Direct entry of custom RTD coefficients (Ro, A, B, C)
- ▶ All source modes can be programmed with dedicated setpoints to speed calibration and linearity tests
- ▶ Highest accuracy in class to 0.015% of reading
- ▶ Meets CE requirements and is designed to IEC 1010 safety standards
- ▶ RS-232 interface

### Environmental Specifications

**Operating Temperature:** -10°C to +50°C (-14°F to 122°F)

**Storage Temperature:** -20°C to +70°C (-4°F to 158°F)

**Stability:** ±0.005% of reading/°C outside of 23 °C ± 5°C

**Power Requirements:** 6Vdc; Batteries 4 AA alkaline (supplied) or optional Nicad rechargeable

### Mechanical

**Dimensions:** 8.7" H x 4.2" W x 2.3" D (220.9 x 106.6 x 58.4 mm)

**Weight:** 30.5 ounces (863 gms)

### Signal Specifications

**Thermocouple:** Types and Ranges: See table below

**Accuracy:** See Table Below

**RTD's:** Types and Ranges: See table below

**Accuracy:** See Table Below

### Voltage Read and Source

**Source:** 0.000 to 20.000 Vdc

**Read:** Isolated 0.000 to 30.000 Vdc; Non-Isolated 0.000 to 20.000 VDC

**mV:** Read/Source: -10.000 to +75.000 mV

### Current (mA)

**Source:** 0.000 to 24.000 mA

**Read:** Isolated: 0.000 to 24.000 mA; Non-Isolated: 0.000 to 24.000 mA

**Frequency:** (1 to 20 V selectable amplitude)

**CPM Source and Read:** 2.0 to 600.0 CPM

**Hz Source and Read:** 1.0 to 1000.0 Hz

**kHz Source and Read:** 1.0 to 10.00 kHz

**Pulse (Source only):** 1 to 20 V selectable amplitude)

**Pulses:** 1 to 30,000.0 - 2 CPM to 10 kHz

### Ohms

**Source:** 5.0 to 4000 Ohms

**Read:** 0.00 to 4000.0 Ohms



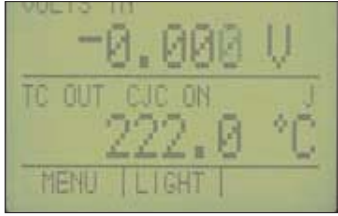
Each instrument includes Instruction Manual, Test Leads, Rubber Boot and NIST Certificate.



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MC1200 features a large easy to read dual display. The upper display is used for the measurement of volts, current, and pressure. The lower display can be used to measure volts, current, pressure, resistance temperature detectors (RTDs), thermocouples, frequency, and resistance, and to source pulse trains.



Thermocouple Read and Source (All errors included)		
Type	Min/Max Temperature Range	Accuracy
J	-210.0 to 0.0°C (-346 to 32°F)	0.4°C (0.7°F)
	0 to 800.0°C (32 to 1472°F)	0.2°C (0.4°F)
	800.0 to 1200.0°C (1472 to 2192°F)	0.3°C (0.5°F)
K	-200.0 to 0.0°C (-328 to 32°F)	0.6°C (1.1°F)
	0 to 1000°C (32 to 1832°F)	0.3°C (0.5°F)
	1000.0 to 1372.0°C (1832 to 2502°F)	0.5°C (0.9°F)
T	-250.0 to 0.0°C (-418 to 32°F)	0.6°C (1.1°F)
	0 to 400.0°C (32 to 752°F)	0.2°C (0.4°F)
E	-250.0 to -100.0°C (-418 to 212°F)	0.6°C (1.1°F)
	-100.0 to 1000.0°C (-148 to 1832°F)	0.2°C (0.4°F)
R/S	0 to 1767.0°C (32 to 3212°F)	1.2°C (2.2°F)
B	600.0 to 800.0°C (1112 to 1472°F)	1.2°C (2.2°F)
	800.0 to 1000.0°C (1472 to 1832°F)	1.3°C (2.4°F)
	1000.0 to 1820.0°C (1832 to 3308°F)	1.5°C (2.7°F)
C	0 to 1000.0°C (32 to 1832°F)	0.6°C (1.1°F)
	1000.0 to 2316.0°C (1832 to 3320°F)	2.3°C (4.2°F)
XK	-200.0 to 800.0°C (-328 to 1472°F)	0.2°C (0.4°F)
BP	0 to 800.0°C (32 to 1472°F)	0.9°C (1.6°F)
	800.0 to 2500.0°C (1472 to 4532°F)	2.3°C (4.2°F)
L	-200.0 to 0.0°C (-328 to 32°F)	0.25°C (0.45°F)
	0 to 900.0°C (32 to 1652°F)	0.2°C (0.4°F)
U	-200.0 to 0.0°C (-328 to 32°F)	0.5°C (0.9°F)
	0 to 600.0°C (32 to 1112°F)	0.25°C (0.45°F)
N	-200.0 to 0.0°C (-328 to 32°F)	0.8°C (1.4°F)
	0 to 1300.0°C (32 to 2370°F)	0.4°C (0.7°F)
mV Read/Source	-10.00 to 75.00 mV	0.015% ±0.02 mV

\*All TC errors include CJC errors CJC error outside of 23 ± 5°C is 0.05°C/°C (In °C add .2 for cold junction compensation error.)

Process Signal Type	Read Accuracy	Source Accuracy
Current (mA)	±0.015% of reading, ±2 µA	±0.015% of reading, ±2 µA
CPM	±0.05% of reading, ±1 LSD	±0.05% of reading
Hz	±0.05% of reading, ±1 LSD	±0.05% of reading
kHz	±0.05% of reading, ±1 LSD	±0.125% of reading
Ohms works with all pulsed transmitters down to 5 ms		
400 Ohm Range	±0.025% of reading, ±0.05	±0.025% of reading, ±0.05
4000 Ohm Range	±0.025% of reading, ±0.5	±0.025% of reading, ±0.5



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RTD Read and Source		
Type	Min/Max Temperature Range	Accuracy
Pt100 (385)	-200.0 to 100.0°C (-328 to 212°F)	0.2°C (0.4°F)
	100.0 to 300.0°C (212 to 572°F)	0.3°C (0.5°F)
	300.0 to 600.0°C (572 to 1112°F)	0.4°C (0.7°F)
	600.0 to 800.0°C (1112 to 1472°F)	0.5°C (0.9°F)
Pt200 (385)	-200.0 to 100.0°C (-328 to 212°F)	0.8°C (1.4°F)
	100.0 to 300.0°C (212 to 572°F)	0.9°C (1.9°F)
	300.0 to 630.0°C (572 to 1166°F)	1.0°C (1.8°F)
Pt500 (385)	-200.0 to 100.0°C (-328 to 212°F)	0.4°C (0.7°F)
	100.0 to 300.0°C (212 to 572°F)	0.5°C (0.9°F)
	300.0 to 630.0°C (572 to 1166°F)	0.6°C (1.1°F)
Pt1000 (385)	-200.0 to 100.0°C (-328 to 212°F)	0.2°C (0.4°F)
	100.0 to 300.0°C (212 to 572°F)	0.3°C (0.5°F)
	300.0 to 630.0°C (572 to 1166°F)	0.4°C (0.7°F)
Pt385-10	-200.0 to 100.0°C (-328 to 212°F)	1.4°C (2.5°F)
	100.0 to 300.0°C (212 to 572°F)	1.6°C (2.9°F)
	300.0 to 600.0°C (572 to 1112°F)	1.8°C (3.2°F)
	600.0 to 800.0°C (1112 to 1472°F)	2.0°C (3.6°F)
Pt385-50	-200.0 to 100.0°C (-328 to 212°F)	0.4°C (0.7°F)
	100.0 to 300.0°C (212 to 572°F)	0.5°C (0.9°F)
	300.0 to 600.0°C (572 to 1112°F)	0.6°C (1.1°F)
	600.0 to 800.0°C (1112 to 1472°F)	0.7°C (1.3°F)
Pt100 (3926)	-200.0 to 100.0°C (-328 to 212°F)	0.2°C (0.4°F)
	100.0 to 300.0°C (212 to 572°F)	0.3°C (0.5°F)
	300.0 to 630.0°C (572 to 1166°F)	0.4°C (0.7°F)
Pt100 (3916)	-200.0 to 100.0°C (-328 to 212°F)	0.2°C (0.4°F)
	100.0 to 300.0°C (212 to 572°F)	0.3°C (0.5°F)
	300.0 to 630.0°C (572 to 1166°F)	0.4°C (0.7°F)
Ni120 (672)	-80.0 to 260.0°C (-112 to 500°F)	0.2°C (0.4°F)
Cu10	-100.0 to 260.0°C (-148 to 500°F)	1.4°C (2.5°F)
Cu50	-180.0 to 200.0°C (-292 to 392°F)	0.4°C (0.7°F)
Cu100	-180.0 to 200.0°C (-292 to 392°F)	0.3°C (0.5°F)
YSI400	15.00 to 50.00 (59 to 122°F)	0.1°C (0.2°F)

Order Information		
Part Number	Description	Price
MC1200	Multifunction Calibrator, Each instrument includes Instruction Manual, Test Leads, Protective Rubber Boot and NIST Calibration Certificate.	<b>\$1995.00</b>
Accessories	Description	
80000	AC Adapter/Charger	<b>\$23.00</b>
10077	AA Nicad Battery (4 required)	<b>\$9.00 ea</b>
80029	T/C wire kit J, K, T, E with mini plug	<b>\$105.00</b>
80036	T/C wire kit R, S, N, B with mini plug	<b>\$120.00</b>

\* Price Subject to change without notice, please visit our web site for the latest pricing and specifications

Ordering is easy, fast and secure just go to our web site at:

<http://www.tnp-instruments.com>

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