MC-1200 Multi-Function Calibrator

Description

The MC-1200 Multi-Function Calibrator provides a feature set unmatched in high accuracy, hand-held calibrators in its price range. The MC-1200 provides the functions and accuracy associated with fixedinstallation, laboratory instruments, and has everything needed for virtually any calibration task. Measure and source thermocouples, RTDs, current, voltage, and frequency, and source pulse trains. A communications port compatible with both Fluke 700 Series and BETA pressure modules is provided, as is an isolated mA/V read-back circuit. Arrow keys, direct numeric keypad entry, and three software-driven function buttons, plus a large backlit, menu-driven graphics display combine to provide a highly intuitive, simple yet powerful operator interface. Built-in 250 Ohm resistor for HartTM compatibility, compatibility with smart transmitters and PLCs, full fuseless protection, and a serial communications port for full control with ASCII commands, are just some of the additional features that make the MC-1200 the single, most indispensable tool available for virtually any calibration task. The MC-1200 is supplied in a tough, rubber boot; a carrying case is also available as an option.

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
- Pressure module communication port compatible with BETA pressure modules
- Built-in 24 V supply can drive 4 – 20 mA loops up to 1000 Ohms
- Direct entry of custom RTD coefficients (R0, 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
- Supplied in full rubber boot

The MC-1200 At A Glance

READ-BACK DISPLAY
The top half of the display is dedicated to read-back from the device-under-test, or a pressure module.

MAIN DISPLAY
The lower half of the display is for all input and output combinations.

FUNCTION KEYS
Three software-controlled function keys; functions displayed over each button at bottom of display.

POWER ON/OFF
Turns power on/off. Auto shut-off function.

HOME KEY
HOME key displays main operating screen.

CLEAR ENTRY KEY
Allows clearing of entry.

NUMERIC KEYPAD
Rapid numeric entry of data values.

ENTER KEY
Accepts entries into memory and updates outputs.

CURRENT (mA)
Input/output for current.

PRESSURE MODULE COMMUNICATIONS PORT
Pressure module connector; compatible with BETA pressure modules (not shown). Pressure measurements from 1" H_2O to 10,000 PSI, module dependent.

ARROW KEYS
Arrow keys allow rapid movement of cursor and setting of output values.

COMPUTER COMMUNICATION CONNECTION
Mini-jack (stereo) serial communcations connection. Allows full remote control.

VOLTAGE/OHMS/HERTZ
Input/output for voltage, Ohms, and frequency.

THERMOCOUPLE
Input/output for thermocouple.

ISOLATED READ-BACK JACKS
Volts, mA, and mA with loop power.

MC-1200 Specifications (23 °C ±5 °C unless otherwise noted)

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
Thermocouple 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
Thermocouple Read and Source	
J Thermocouple	-200.0 to +1200.0 °C
K Thermocouple	-200.0 to +1370.0 °C
T Thermocouple	-200.0 to +400.0 °C
E Thermocouple	-200.0 to +950.0 °C
R Thermocouple	-20.0 to +1750.0 °C
S Thermocouple	-20.0 to +1750.0 °C
B Thermocouple	+600.0 to +1800.0 °C
C Thermocouple	0 to +2316.0 °C
XK Thermocouple	-200.0 to +800.0 °C
BP Thermocouple	0 to +2500.0 °C
L Thermocouple	-200.0 to +900.0 °C
U Thermocouple	-200.0 to +400.0 °C
N Thermocouple	-200.0 to +1300.0 °C
RTD Read and Source	
Ni120 (672)	-80.0 to +260.0 °C
Pt100 (385)	-200.0 to +800.0 °C
Pt100 (3926)	-200.0 to +630.0 °C
Pt100 (3916)	-200.0 to +630.0 °C
Pt200 (385)	-200.0 to +630.0 °C
Pt500 (385)	-200.0 to +630.0 °C
Pt1000 (385)	-200.0 to +630.0 °C
Cu10	-100.0 to +260.0 °C
YSI400	+15.00 to +50.00 °C
Cu50	-180.0 to +200.0 °C
Cu100	-180.0 to +200.0 °C
Pt385-10	-200.0 to +800.0 °C
Pt385-50	-200.0 to +800.0 °C

Environmental	
Operating Temperature	-10 °C to +50 °C
Storage Temperature	-20 °C to +70 °C
Stability	±0.005% of reading/°C outside of 23 °C ± 5°C
Power Requirements	6 VDC
Batteries	4 AA; alkaline or optional 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)
Accessories Included	Test leads, 4 AA alkaline batteries, NIST Certificate, instruction manual
Optional Accessories	Carrying Case, Model CC572

Accuracy

Voltage	±0.015% of reading, ±2 mV
Thermocouple mV	±0.02% of reading, ±10 µV

Thermocouple Errors (in °C; add 0.2 for Cold Junction Compensation error)

Type J	0.2 °C
Type K	0.3 °C
Type T	0.2 °C
Type E	0.2 °C
Type R	1.2 °C
Type S	1.2 °C
Type B	1.2 °C
Type C	0.6 °C
Type XK	0.2 °C
Type BP	0.9 °C
Type L	0.2 °C
Type U	0.25 °C
Type N	0.4 °C

RDT Read and Source

Ni120 (672)	0.2 °C
Pt100 (385)	0.2 °C
Pt100 (3926)	0.2 °C
Pt100 (3916)	0.2 °C
Pt200 (385)	0.8 °C
Pt500 (385)	0.4 °C
Pt1000 (385)	0.2 °C
Cu10	1.4 °C
YSI400	0.1 °C
Cu50	0.4 °C
Cu100	0.3 °C
Pt385-10	1.4 °C
Pt385-50	0.4 °C

	Read	Source
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, ±0.05Ω	±0.025% of reading, ±0.05Ω
4000 Ohm Range	±0.025% of reading, ±0.5Ω	±0.025% of reading, ±0.5Ω

Measuring Pressure with the MC-1200

The MC-1200 is compatible with both Fluke 700 Series and BETA pressure modules, with the use of an adapter kit.* Please refer to the separate Pressure Modules data sheet for module ranges and model numbers, as well as information about the adapter kit.

*BetaPort Pressure Adapter, Model BPPA-100.

Martel Electronics Corporation
PO Box 770
Londonderry, NH 03053 USA
Tel: 800-821-0023
Email: sales@martelcorp.com
Web: www.martelcorp.com

Distributed by:

050502R0/OEMM/2.5M
P/N 6800046, 5/05 Rev. A