



## rCAL

The Ultimate **R**TD **C**alibrator

## RC 12

**rCAL** model **RC 12** is the Ultimate RTD Calibrator for sourcing or measuring RTD/ohms and measuring mA/ V/ mA(24V). It is compact, rugged and easy to use hand held device with graphical user interface.

**RC 12** has Source and Measurement capability with independent parameter and range selection for source and Measure, also the source and measure terminals are isolated from each other

Masibus **RC 12** RTD Calibrator is designed to provide base accuracy of 0.02% of Reading in all modes of operation.

It has been designed to give maximum Battery life on full charge, the backlight is adjustable for power saving and the display can be programmed to automatically switch off when not in use

Automatic step/ramp output with Auto/Man selection, data logging, Max/Min/Average values, scaling to Engineering units and filter settings enhances the use of **RC 12** and makes it multifunctional.

**RC 12** comes with a Mini USB connector for charging, logged data retrieval and firmware upgrade, standard accessories provided patch cables, charger, USB cable, instruction manual, logged data retrieval software CD and calibration certificate, all in a attractive carrying case.

### Features

- Compact, handheld, User friendly menu
- Easy to read Graphical TFT LCD display
- Rechargeable lithium Ion battery with enhanced power control for prolonged battery life
- Simultaneous Measure or Source: RTD/ohms and Measures mA, V, mA(24V)
- 24 VDC Loop power Supply to power transmitters and loops
- Step/Ramp functions with Auto/Man selection
- Universal Serial Bus (USB) communication port for charging, data retrieve and firmware upgrade
- Data Logging to measure long time drift
- Other Features: Max/Min/Average, filter settings, tare facility, adjustable backlight, alarm annunciation (on display and buzzer), automatic Display off.
- Continuity Test (selectable threshold upto 100Ω)
- Compatible to pulsed RTD transmitter
- HART loop resistor

### Applications

- Calibrating and checking temperature indicator / controllers, recorders, temperature transmitters, signal conditioners, etc.
- Laboratory and site calibration purpose
- Drift test of Transmitters and Transducers

# Technical Specifications

Measurement Range			
Parameter	Range	Resolution	Accuracy
V	0...30.00 VDC	0.001 V	±0.02% of reading ± 2 count
mA	0...24.00 mA	0.001 mA	±0.02% of reading ± 2 count

Measurement & Simulation Range			
Parameter	Range	Resolution	Accuracy
Resistance (Ohms)	0...400Ω	0.01Ω	4 Wire Measurement: ±0.02% of reading ± 0.01Ω; Simulation: 0.02% of reading ± 0.02Ω
	400...4000Ω <sup>#</sup>	0.1Ω	4 Wire Measurement: ±0.02% of reading ± 0.015Ω; Simulation: 0.02% of reading ± 0.15Ω
Pt100... Pt1000	-200...200°C	Pt10...Pt400: 0.01°C	4 Wire Measurement: 0.15°C; Simulation*: 0.15°C
	200...600°C	Pt500, Pt1000: 0.1°C	4 Wire Measurement: 0.2°C; Simulation*: 0.25°C
	600...850°C		4 Wire Measurement: 0.3°C; Simulation*: 0.35°C
Ni100	-60...180°C	0.01°C	4 Wire Measurement: 0.1°C; Simulation*: 0.15°C
Ni120	-80...260°C	0.01°C	4 Wire Measurement: 0.1°C; Simulation*: 0.15°C
Cu10	-200...260°C	0.01°C	4 Wire Measurement: 0.2°C; Simulation*: 0.8°C

Note: # For 4 wire Resistance measurement 0.01Ω resolution available in 0 to 1600 ohm range.

\*Accuracy is valid with an excitation current >0.2mA (0...400 ohm), >0.1mA (400...4000 ohm)

Read accuracy is based on 4-wire input. For 3-wire RTD measurements, assuming all three RTD leads are matched, add 1.0°C (Pt10 and Cu10), 0.6°C (Pt50 and Cu50), and 0.4°C (other RTD types) to the specifications.

Compatible RTD Types (α)						
Pt10 (385)	Pt50 (385)	Pt100 (385)	Pt200 (385)	Pt400 (385)	Pt500 (385)	Pt1000 (385)
Pt100 (3926)	Ni100 (672)	Ni100 (618)	Ni120 (672)	Cu10 (427)	Cu50 (427)	Cu100 (427)

General Specifications	
Display Mode	Measure: mA/ V/ Ω/ RTD Source: Ω/ RTD
Supported units for RTD Type	°C/°F/°K
RTD Measurement current	300 uA approx
Maximum Resistance excitation current (simulation)	3 mA (0...650Ω) I <sub>exec</sub> ≤ 2.0V/ R <sub>sim</sub> (650...4000Ω)
Setting time (pulsed currents RTD Simulation)	>1 ms
Max input voltage	30 VDC
Temperature Coefficient	≤30ppm
Input impedance measure	V > 1MΩ; mA = 10Ω
Response time	<100ms (For both Input & Output)
Display update rate	10 readings/sec
Data logging	Logged data is stored in a user defined file in internal memory Periodic logging: 150000 readings max
Communication Interface	USB 2.0

Display & Keys	
Display	2.4" TFT LCD, 262K Color, Graphical, 42.72 mm x 60.26 mm, 240x320 pixels, White LED Backlight
Keys	6 Membrane Keys

Special Features	
Loop Power Output	24V DC, ±10% (24mA maximum)
HART mA Loop resistor	250Ω ±20%
Special Function	Step/Ramp functions: Automatic/Manual. √x, x <sup>2</sup> : for mA/V measure
Continuity Test	Selectable threshold upto 100Ω

Power Supply	
Battery Type	Rechargeable Li-ion battery pack, 2300mAh 3.7V
Charging Time	<5 hours max
Charger supply	100-240 VAC, 50/60 Hz; Output 5V DC@1A
Battery Life on full charge	>15 hours for RTD/Ω measure/source with minimum backlight brightness >8 hours for 12mA (24V) measure mode with minimum backlight brightness
Battery Status Indication	Battery symbol displayed with % power remaining

Physical	
Dimensions (in mm)	161.7 (L) x 82.1 (W) x 39.5 (H)
Housing Material	ABS Plastic
Electrical Terminals	Two nos., 2 mm safety sockets
RTD Terminal	Four nos., 2 mm safety sockets
Weight	<300 grams
Protection	IP20

Environmental	
Operating temperature	0 to 55 °C
Operating temperature while charging batteries	0 to 45 °C
Storage temperature	-20 to 60°C
Relative Humidity	30 to 90% non-condensing
Warm up time	15 minutes

Accessories	
Calibration Certificate	
User Guide	
3 Sets of 2mm to 2mm banana leads	
3 Sets of 2mm Crocodile cable	
3 Sets of connecting plug 4mm to 2mm	
USB A Male to USB mini B Male cable for PC communication & charging	
5 VDC Charging Adaptor	
Carrying Bag	
Data Logging Software CD - mCAL	

## Ordering code

**RC 12**