masibus

LC 12 LC 11

iCAL

The Ultimate Loop Calibrator

LC 12
LC 11

iCAL model **LC 12** and **LC 11** are the Ultimate Loop Calibrator for sourcing, measuring and simulating Loop current, mV and V. It is compact, rugged and easy to use hand held device with graphical user interface.

LC 12 has simultaneous Source and Sense capability with independent parameter and range selection for source and sense, also the source and sense circuits are isolated from each other

LC 11 has either Measure only or Source only feature.

Masibus **LC 12** and **LC 11** Loop Calibrator is designed to provide base accuracy of 0.02% of Reading in all modes of operation. 2W simulate and Read/Power are unique features for Loop testing and calibration.

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 LC 12 & LC 11 and makes it multifunctional. LC 12 has additional Automatic Switch test feature.

LC 12 & LC 11 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

- Easy to read Color Graphical TFT LCD display
- Rechargeable lithium ion battery with enhanced power control for prolonged battery life
- Simultaneously Measure and Source: mA, mV and V with dual readings on display of LC 12
- Measure or Source: mA, mV and V readings on display of LC 11
- 24 VDC Loop power Supply to power transmitters and loops
- 2W simulate and Read/Power mode for in-situ Loop checking and calibration
- Step/Ramp functions with Auto/Man selection
- Switch test with condition (open/closed) indicator (available in LC 12 model only)
- 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.

Applications

- Loop Check and calibration
- Calibration of Transmitters and Transducers
- Switch Test and calibration
- Drift test of Transmitters and Transducers

Technical Specifications

Measurement Range

Parameter	Range	Resolution	Accuracy
mV	0-250.00 mV	0.01 mV	±0.02% of reading ± 2 counts
V	0-30.000 VDC	0.001 V	±0.02% of reading ± 2 counts
mA	0-24.000 mA	0.001 mA	±0.02% of reading ± 2 counts

Source Range

Parameter	Range	Resolution	Accuracy
mV	0-250.00 mV	0.01 mV	±0.02% of reading ± 2 counts
V	0-12.000 VDC	0.001 V	±0.02% of reading ± 2 counts
mA	0-24.000 mA	0.001 mA	±0.02% of reading ± 2 counts

General Specifications

Display Mode	**LC 12:** Measure + Source, Measure Only, Source Only, Switch Test + Source **LC 11:** Measure Only or Source Only
Max. input voltage	30 V DC
Temperature Coefficient	30 ppm
Input Impedance Measure	V, mV >1MΩ mA =10 Ω
Response time	Input <100ms Output <100ms
Load impedance	>10 KΩ for mV/V <750 Ω for mA
Display update rate	10 readings / sec
Isolation (LC 12 model only)	500VDC between Measure & Source
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 and 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	250 Ω ± 20%
Special Function	Step/Ramp functions: Automatic/ Manual, $\sqrt{x}$, x^2: for measure & source
Switch Test *(available in LC 12 model only)*	• Potential free contacts Trigger level : 24V, 24mA (2V) • Voltage level detection Trigger level : 0 to 30V in 1V steps Input impedance : >1 MΩ

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	**LC 12:** >18 hours max for mA, mV, V measurement with minimum backlight brightness. > 8 hours max for 12mA generation with minimum backlight brightness **LC 11:** >20 hours max for mA, mV, V measurement with minimum backlight brightness. > 10 hours max for 12mA generation 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	**LC 12:** Four nos., 2 mm safety sockets **LC 11:** Two nos., 2 mm safety sockets
Weight	<300 grams
Protection	IP20

Environmental

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

Accessories

With LC 12	With LC 11
Calibration Certificate	Calibration Certificate
User Guide	User Guide
2 Sets of 2mm to 2mm banana cable	1 Set of 2mm to 2mm banana cable
2 Sets of 2mm Crocodile cable	1 Set of 2mm Crocodile cable
2 Sets of connecting plug 4mm to 2mm	1 Set of connecting plug 4mm to 2mm
USB A Male to USB mini B Male cable for PC communication and charging	USB A Male to USB mini B Male cable for PC communication and charging
5 VDC Charging Adapter	5 VDC Charging Adapter
Carrying Bag	Carrying Bag
Data Logging Software CD-mCAL	Data Logging Software CD-mCAL

Ordering Code

LC 12
LC 11

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