



iCAL

LC 12

LC 11

The Ultimate Loop Calibrator

iCAL model LC 12 and LC 11 are the Ultimate Loop Calibrator for sourcing, measuring and simulating Loop current, mA 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				Power supply	
Parameter	Range	Resolution	Accuracy	Battery Type	Rechargeable Li-ion battery pack, 2300mAh 3.7V
mV	0-250.00 mV	0.01 mV	$\pm 0.02\%$ of reading ± 2 counts	Charging Time	<5 hours max
V	0-30.000 VDC	0.001 V	$\pm 0.02\%$ of reading ± 2 counts	Charger supply	100-240 VAC, 50/60 Hz; Output 5V DC@1A
mA	0-24.000 mA	0.001 mA	$\pm 0.02\%$ of reading ± 2 counts		
Source Range					LC 12:
Parameter	Range	Resolution	Accuracy		>18 hours max for mA, mV, V measurement with minimum backlight brightness.
mV	0-250.00 mV	0.01 mV	$\pm 0.02\%$ of reading ± 2 counts		> 8 hours max for 12mA generation with minimum backlight brightness
V	0-12.000 VDC	0.001 V	$\pm 0.02\%$ of reading ± 2 counts		>20 hours max for mA, mV, V measurement with minimum backlight brightness.
mA	0-24.000 mA	0.001 mA	$\pm 0.02\%$ of reading ± 2 counts	Battery Life on full charge	> 10 hours max for 12mA generation with minimum backlight brightness
General Specifications				Battery Status Indication	Battery symbol displayed with % power remaining
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 >1M Ω mA =10 Ω				
Response time	Input <100ms Output <100ms				
Load impedance	>10 K Ω 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, $\pm 10\%$ (24mA maximum)				
HART mA Loop Resistor	250 Ω $\pm 20\%$				
Special Function	Step/Ramp functions: Automatic/ Manual, \sqrt{x} , x^2 : for measure & source				
Switch Test (available in LC 12 model only)	<ul style="list-style-type: none"> Potential free contacts Trigger level : 24V, 24mA (2V) Voltage level detection Trigger level : 0 to 30V in 1V steps Input impedance : >1 MΩ 				
				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°C
				Storage temperature	-20° to 60°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	