

The 1900 series consists of high-performance LCR Meters designed to perform fast, automated impedance measurements on a variety of electronic components and materials. These meters have a basic accuracy specification of 0.1% for accurate test results over a wide frequency range, from 20 Hz to 1 MHz. Besides their 15 impedance parameters, the 1900 meters are also capable of measuring dc resistance as well as monitoring the voltage or current in the device under test. The units incorporate a distinctive sequence test mode, allowing up to 6 uniquely different tests to be performed quickly on a single start command. Additionally, these meters include IEEE-488, RS-232, and handler interfaces, all standard.



1900 Series Precision LCR Meter

### 1910 Model

The 1910 Inductance Analyzer adds bias current capability from 1mA to 1A. The addition of bias current makes the 1910 ideal for measuring inductance of power inductors under actual operating conditions.

### 1920 Model

The 1920 Precision LCR Meter adds bias voltage capability from 1mV to 2V. The bias voltage feature is used for testing capacitors or providing reverse bias for testing junction capacitance of diodes and similar components.

### Features:

- 20 measurement parameters
- Frequency range: 20 Hz to 1 MHz
- Basic measurement accuracy: 0.1%
- Measurement speeds up to 40/sec
- Displays voltage and current measurements
- Wide measurement range with 5-digit measurement resolution
- Four-terminal kelvin connections to maintain measurement integrity
- Programmable dc bias voltage, 0-2V
- Constant voltage (voltage leveling)
- Automatic test sequencing: up to 6 individual tests in one pass
- Menu-driven interface for user-friendly operation
- Autoranging measurements or manual hold
- Averaging measurements: up to 1000
- Interfaces: IEEE-488.2, RS-232, and Handler
- Open/Short zeroing and cable-compensation
- 14 Pass/Fail bins
- Load correction

### 20 Measurement Parameters

The 1900 series can measure and display any two of its 15 impedance parameters simultaneously with a basic accuracy of 0.1%. Additionally, these meters can measure the DC resistance, or display the current through or voltage across a test device ensuring the operator of the real test conditions.

### Wide Frequency Range

The 1900 series offers over 27,000 user-programmable test frequencies to fully characterize devices over the range of 20 Hz to 1 MHz.

### Automated Test Sequencing

For increased productivity and throughput, up to six different tests in sequence can be performed with a single push of the start button. Each test can have different measurement parameters, test conditions, and limits.

### Programmable Source Impedance

Measurement results can vary substantially based solely on the source impedance of the test instrument being used. To compare measurements made on other test instruments, the 1900 series can have its source impedance set at 5, 25, 50 or 100  $\Omega$ .



1900 Rear Connectors



## SPECIFICATIONS

## Measure Parameters:

Parameter	Measurement Range	Basic Accuracy		
		Low	Medium	High
Ls, Lp	0.001 nH to 99.999 kH	±0.5%	±0.25%	±0.1%
Cs, Cp	1 pF to 9.9999 F	±0.5%	±0.25%	±0.1%
Z , Rs, Rp, Xs, ESR	0.0001 mΩ to 99.999 MΩ	±0.5%	±0.25%	±0.1%
Y, Gp, Bp	10 nS to 9999.9 S	±0.5%	±0.25%	±0.1%
D	0.00001 to 99.999	±0.005	±0.0025	±0.001
Q	0.00001 to 99.999	±0.005	±0.0025	±0.001
θ	-180.00 to 179.99°	±1.8°	±0.9°	±0.18°
DCR	0.1 mΩ to 100 kΩ	±0.5%	±0.25%	±0.2%
DUT AV Voltage	20 mV to 1.0 V	±(2% + 5 mV) @ 1kHz		
DUT AC Current	1 μA to 150 mA	±(2% + 5 μA) @ 1kHz		
DUT DC Voltage	20 mV to 1.0 V	±(2% + 5 mV)		
DUT DC Current	1 μA to 150 mA	±(2% + 5 μA)		

For more detailed accuracy information, see instruction manual

## Measurement Speed:

Speed	Accuracy Setting
40 meas/sec	Low, No Display
25 meas/sec	Low
10 meas/sec	Medium
1 meas/sec	High

The speed is slower at lower frequency settings and may be affected by test conditions

DC measurements take 2x as long as AC measurements

## Ranging:

Automatic, Range Hold or user-selectable

## Test Frequency:

Range: 20 Hz to 1 MHz

Resolution from 20 Hz to 1 kHz: 1 Hz

Resolution from >1 kHz: 4 digits

Accuracy: ±(0.02% + 0.02 Hz)

## Trigger:

Internal (automatic)

External (via RS-232, IEEE-488.2, or

Handler)

Manual

## Source Impedance:

5 Ω, 25 Ω, 50 Ω, or 100 Ω

## AC Test Signal:

20 mV to 1.0 V (open circuit) in 5 mV steps

## DC Test Signal:

20 mV to 1.0 V (open circuit) in 5 mV steps,  
5 Ω source impedance

## DC Bias Current: (1910 only)

Internal: 0 to 1 Amp in 1 mA steps

## DC Bias Voltage: (1920 only)

Internal: 0 to 2.0 V in 1 mV steps

## Power:

100 to 240 Vac

50 - 60 Hz

100 W max

## Formats for Results:

Engineering or scientific format

Deviation from nominal of primary parameter

%Deviation from nominal of primary

parameter

Pass/Fail

No display mode for maximum throughput

## Sequencing:

Displays up to 6 sequential test results,

primary and/or secondary

## Display:

LCD Display with backlight

Pass/Fail and Status indicators

## Standard Interfaces:

IEEE-488, RS-232, Handler I/O

## Measurement Delay:

Programmable from 0 to 1000 ms in 1 ms steps

## Averaging:

1 to 1000, programmable

## Median Value:

Averaged over the last three measurements

## Setup Storage:

30 Single Tests

10 Sequential (6 tests in each)

## Self-Test:

Verifies critical instrument operation at power-up or when selected from a menu

## Other Features:

Constant-voltage mode

Cable compensation (1 m, 2 m, no cable)

Open/Short zeroing

Distortion check

## Test Terminals:

Four bnc connection terminals are located

on the front panel

Optional test fixture available

## Mechanical:

Dimensions: 43.2 W x 13.3 H x 40.6 D cm  
(17" x 5.25" x 16")

Weight: 8 kg (17.6 lbs)

## Environmental Conditions:

Operating temperature: 0 to 50°C, <75% RH

Storage temperature: -40 to 71°C

Altitude: < 2000 m



### ORDERING INFORMATION

#### 1910 Model Standard Set:

- Inductance analyzer
- AC Power Cord
- Instruction Manual
- Calibration Certificate traceable to SI

#### 1920 Model Standard Set:

- Precision LCR Meter
- AC Power Cord
- Instruction Manual
- Calibration Certificate traceable to SI

### OPTIONAL ACCESSORIES:



Remote Test Fixture 1689-9600



Kelvin Test Leads 1700-03



Chip Component Tweezers 7000-05



SMD Test Fixture 7000-07



bnc-bnc Extender Cable, 1 m 1689-9602  
bnc-bnc Extender Cable, 2 m 1689-9602-2



Calibration Kit 950038

#### Also available:

- Rack Mount Kit 2000-16
- RS232-to-USB Adapter 630250



Alligator Clip Leads 7000-04