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.

**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 Ω.

### 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.

### 1900 Rear Connectors
Measure Parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measurement Range</th>
<th>Basic Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Ls, Lp</td>
<td>0.001 nH to 99.999 kH</td>
<td>±0.5%</td>
</tr>
<tr>
<td>Cs, Cp</td>
<td>1 pF to 9.9999 F</td>
<td>±0.5%</td>
</tr>
<tr>
<td></td>
<td>0.0001 to 99.999 mΩ</td>
<td>±0.5%</td>
</tr>
<tr>
<td>Y, Gp, Bp</td>
<td>10 nS to 9999.9 S</td>
<td>±0.5%</td>
</tr>
<tr>
<td>D</td>
<td>0.000001 to 99.999</td>
<td>±0.005</td>
</tr>
<tr>
<td>θ</td>
<td>-180.00 to 179.99°</td>
<td>±1.8°</td>
</tr>
<tr>
<td>DCR</td>
<td>0.1 mΩ to 100 kΩ</td>
<td>±0.5%</td>
</tr>
<tr>
<td>DUT AV Voltage</td>
<td>20 mV to 1.0 V</td>
<td>±(2% + 5 mV) @1kHz</td>
</tr>
<tr>
<td>DUT AC Current</td>
<td>1 µA to 150 mA</td>
<td>±(2% + 5 µA) @1kHz</td>
</tr>
<tr>
<td>DUT DC Voltage</td>
<td>20 mV to 1.0 V</td>
<td>±(2% + 5 mV)</td>
</tr>
<tr>
<td>DUT DC Current</td>
<td>1 µA to 150 mA</td>
<td>±(2% + 5 µA)</td>
</tr>
</tbody>
</table>

For more detailed accuracy information, see instruction manual.

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)

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)

Ranging:
- Automatic, Range Hold or user-selectable

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

Format 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

For more detailed accuracy information, see instruction manual.

Measurement Speed:

<table>
<thead>
<tr>
<th>Speed</th>
<th>Accuracy Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 meas/sec</td>
<td>Low, No Display</td>
</tr>
<tr>
<td>25 meas/sec</td>
<td>Low</td>
</tr>
<tr>
<td>10 meas/sec</td>
<td>Medium</td>
</tr>
<tr>
<td>1 meas/sec</td>
<td>High</td>
</tr>
</tbody>
</table>

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

DC measurements take 2x as long as AC measurements.

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
- **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
# 1900 Series

## 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
- Alligator Clip Leads 7000-04
- bnc-bnc Extender Cable, 1 m 1689-9602
- bnc-bnc Extender Cable, 2 m 1689-9602-2

### Also available:
- SMD Test Fixture 7000-07
- Calibration Kit 7000-09
- Rack Mount Kit 2000-16
- RS232-to-USB Adapter 630250