

# Data Sheet

## Bench LCR Meter Model 891



The 891 is a compact, precise, and versatile LCR meter capable of measuring inductors, capacitors, and resistors at DC or from 20 Hz to 300 kHz. The instrument's 2U half-rack form factor is suitable for the bench or rack mount installation. A large color display with all important parameters and measurements visible on one screen makes this meter easy to operate.

The instrument's convenient bin sorting function enables quick sorting of components in different bins defined by the user. A linear and logarithmic sweep function is also provided to characterize components over any range of frequencies from 20 Hz to 300 kHz.

Standard USB, GPIB, and LAN interfaces enhance your productivity by providing remote control capabilities to perform daily operations in production, quality control, and laboratory environments.

### Features & Benefits

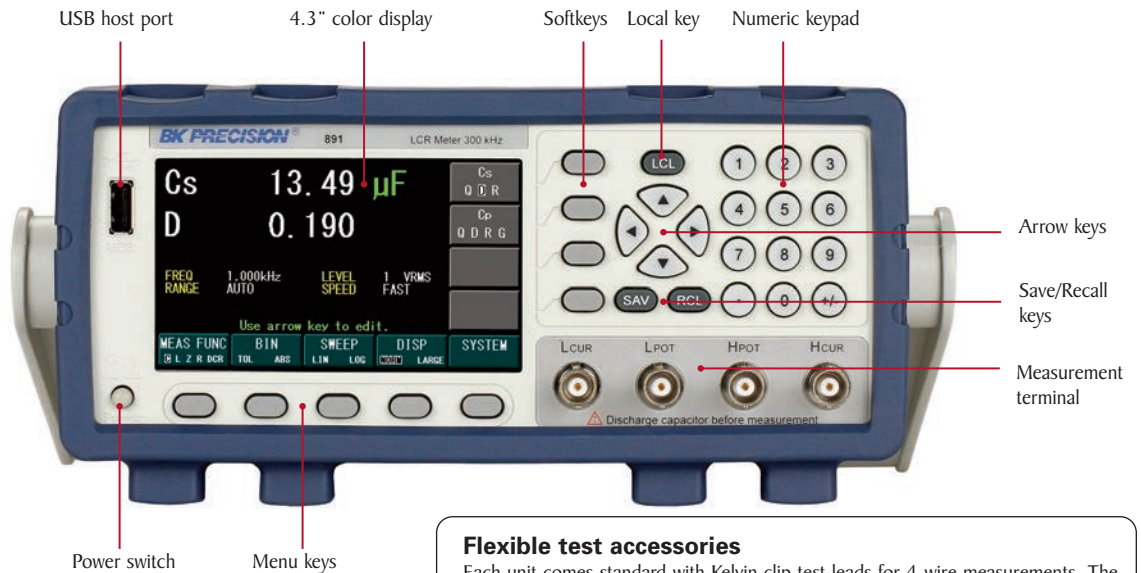
- Compact 2U half-rack form factor with 4.3" color display
- 0.05% best impedance accuracy
- Measurement parameters include: C/L/R/G/B/Y/D/Q/θ/DCR
- Fully adjustable test frequency from 20 Hz to 300 kHz with 4-digit resolution
- 0.5 Vrms and 1 Vrms selectable test levels
- 300-point frequency sweep function
- Bin sorting function - 9 primary bins with a secondary and out-of-spec bin
- Adjustable measurement speed for fast readout or better accuracy
- Standard USB, GPIB, and LAN interface for remote control
- Save/recall up to 100 setups including 1000 measurements and screenshots

| Model                  | 891                            |
|------------------------|--------------------------------|
| Best accuracy          | 0.05%                          |
| Test frequency         | 20 Hz - 300 kHz                |
| Test levels            | 0.5 Vrms and 1 Vrms selectable |
| Measurement parameters | C/L/R/G/B/Y/D/Q/θ/DCR          |

## Front panel

### USB host port

Connect your USB flash drive to conveniently store and recall configurations, measurements, and sweep test results.



### Flexible test accessories

Each unit comes standard with Kelvin clip test leads for 4-wire measurements. The optional test fixture allows users to conveniently measure axial and radial lead type components.



Included Kelvin clips (TL89K1)

Optional Test Fixture (TL89F1)

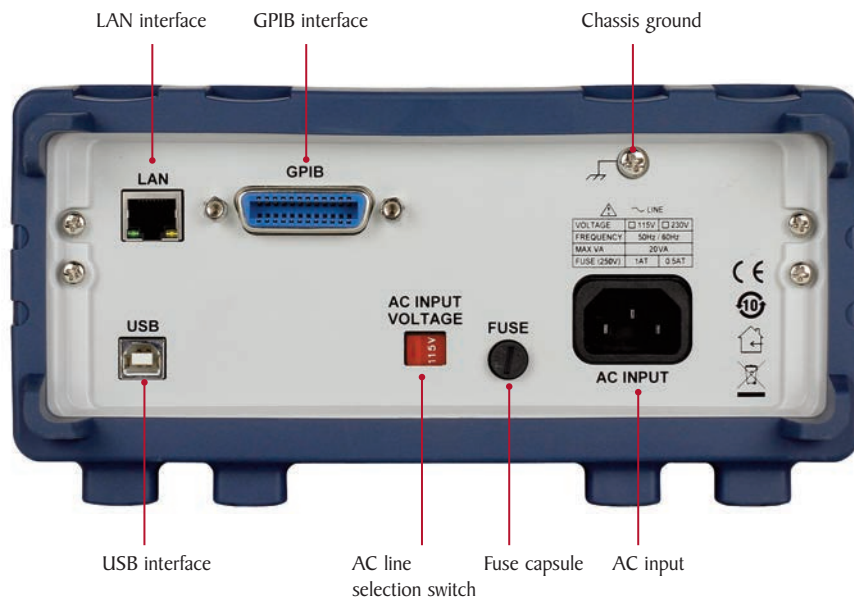
### Intuitive user interface

Easily change test parameters using the menu-driven front panel keypad and easy-to-read color LCD. Convenient function keys let users quickly save/recall up to 100 measurement setups.

## Rear panel

### SCPI-compliant programming

The LCR meter can be programmed remotely via the USB (virtual COM), GPIB, and LAN interface using SCPI commands.



## Flexible operation

### Bin comparator sorting function

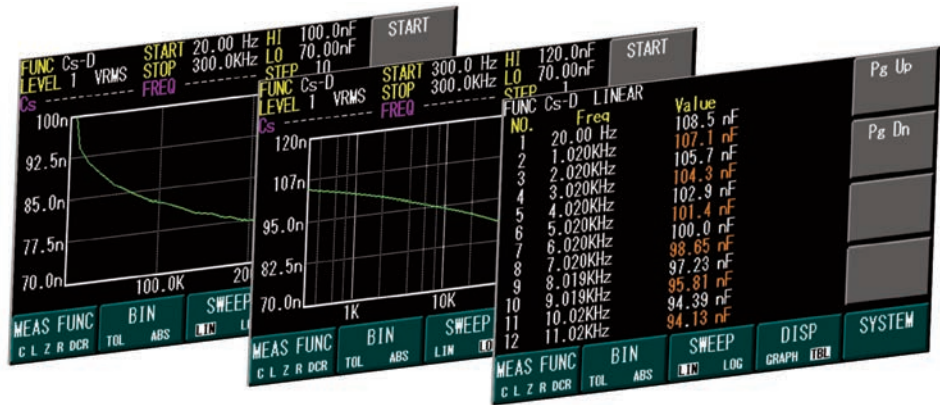
Quickly sort components with the instrument's 9 primary BINs, 1 secondary BIN, and 1 out-of-spec BIN. The results can be displayed on a table or histogram and saved to a USB flash drive. High and low limits for each bin can be set up in absolute or tolerance mode with Pass/Fail beep.



Histogram display, Table display, and Bin display

### Linear and logarithmic sweep function

Characterize components up to 300 kHz using a 300-point linear or logarithmic sweep. Measured values for each frequency point can be read directly on the display. Sweep results can be displayed on a graph or table and then saved to a USB flash drive or read out through the remote interface.



Linear sweep function, Logarithmic sweep function, and Linear & Logarithmic sweep function table

### Built-in web server and LAN interface

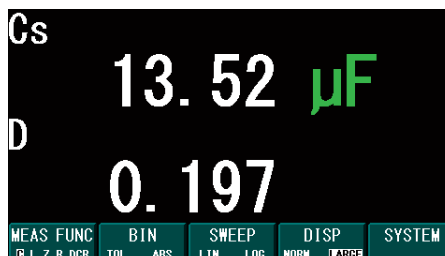
Configure and control basic instrument settings and take measurements from a remote computer using a web browser. The 891 can also be controlled with SCPI commands using a socket or Telnet connection via the LAN interface.



Built-in web server interface

### Display options

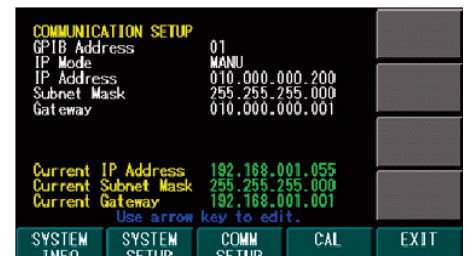
Users have the option to display up to 4 digits resolution on primary and secondary measurements in decimal or scientific notation. Large display mode is also available for easy viewing from a distance.



Large display mode

### Remote PC control

Integrate your LCR meter into an automated test system and control it from a PC using SCPI commands via the standard USB, GPIB, or LAN interface.



Communication setup

## Specifications

| Measurements  | Series mode |           | Parallel mode |             |
|---------------|-------------|-----------|---------------|-------------|
|               | Primary     | Secondary | Primary       | Secondary   |
| Capacitance   | Cs          | Q, D, Rs  | Cp            | Q, D, Rp, G |
| Inductance    | Ls          | Q, D, Rs  | Lp            | Q, D, Rp, G |
| Resistance    | R           | X         | -             | -           |
| Conductance   | -           | -         | G             | B           |
| Impedance     | Z           | $\theta$  | -             | -           |
| Admittance    | -           | -         | Y             | $\theta$    |
| DC Resistance | DCR         | -         | -             | -           |

| Enhanced Measurement Functions |  |
|--------------------------------|--|
| <b>Bin Sorting Comparator</b>  |  |
| Limit Setting Mode             | Tolerance (TOL) value or absolute (ABS) value          |
| Number of Bins                 | 9 primary bins, 1 secondary bin, and 1 out-of-spec bin |
| Bin Counts                     | 0 to 60000   |
| Beep Warning                   | Off, pass with smart tone and fail                     |
| Measurement Trigger            | Manual trigger   |
| Display Format                 | Measurement, table, and histogram                      |
| <b>Sweep</b>                   |  |
| Frequency Range                | 20 Hz to 300 kHz                                       |
| Sweep Modes                    | Linear and logarithmic                                 |
| Sweep Points                   | Up to 300 points                                       |
| Sweep Step                     | 1, 2, 5, and 10 points/step                            |
| Parameters                     | Primary and secondary                                  |
| Display Format                 | Graph and table  |

| Measurement Parameters   |                    |
|--------------------------|--------------------|
| <b>Measurement Speed</b> |                    |
| Slow                     | 800 ms/measurement |
| Fast                     | 200 ms/measurement |
| <b>Measurement Range</b> |                    |
| Range                    | Auto or Hold range |

## Specifications (cont.)

| Test Signal        |   |
|--------------------|---|
| <b>AC</b>          |   |
| Levels             | 0.5 Vrms and 1 Vrms selectable  |
| Level Accuracy     | 5%  |
| Output Impedance   | 100 $\Omega$ (nominal)  |
| Frequency          | 20 Hz to 300 kHz  |
| Resolution         | 0.01 Hz (20.00 Hz to 99.99 Hz)<br>0.1 Hz (100.0 Hz to 999.9 Hz)<br>1 Hz (1.000 kHz to 9.999 kHz)<br>100 Hz (100.0 kHz to 300.0 kHz) |
| Frequency Accuracy | $\pm 0.1\%$   |
| <b>DC</b>          |   |
| Level Range        | 1 VDC   |
| Level Accuracy     | 5%  |
| Output Impedance   | 100 $\Omega$ (nominal)  |

| Impedance Measurement (Z) Accuracy <sup>(1)</sup> |                   |                |                 |                   |                   |
|---|-------------------|----------------|-----------------|-------------------|-------------------|
| Impedance   | Frequency         |                |                 |                   |                   |
|   | DC, 20 Hz – 1 kHz | 1 kHz – 10 kHz | 10 kHz– 100 kHz | 100 kHz – 200 kHz | 200 kHz – 300 kHz |
| 0.1 $\Omega$ – 1 $\Omega$                         | 1% $\pm$ 1        | 1% $\pm$ 1     | 2% $\pm$ 1      | 5% $\pm$ 1        | 10% $\pm$ 1       |
| 1 $\Omega$ – 100 $\Omega$                         | 0.5% $\pm$ 1      | 0.5% $\pm$ 1   | 1% $\pm$ 1      | 2% $\pm$ 1        | 4% $\pm$ 1        |
| 100 $\Omega$ – 1 k $\Omega$                       | 0.2% $\pm$ 1      | 0.2% $\pm$ 1   | 0.5% $\pm$ 1    | 0.5% $\pm$ 1      | 1% $\pm$ 1        |
| 1 k $\Omega$ – 10 k $\Omega$                      | 0.05% $\pm$ 1     | 0.2% $\pm$ 1   | 0.5% $\pm$ 1    | 1% $\pm$ 1        | 2% $\pm$ 1        |
| 10 k $\Omega$ – 100 k $\Omega$                    | 0.2% $\pm$ 1      | 0.2% $\pm$ 1   | 1% $\pm$ 1      | 1% $\pm$ 1        | 2% $\pm$ 1        |
| 100 k $\Omega$ – 1 M $\Omega$                     | 0.5% $\pm$ 1      | 0.5% $\pm$ 1   | 2% $\pm$ 1      | 3% $\pm$ 1        | 4% $\pm$ 1        |
| 1 M $\Omega$ – 10 M $\Omega$                      | 2% $\pm$ 1        | 2% $\pm$ 1     | 5% $\pm$ 1      | 5% $\pm$ 1        | 10% $\pm$ 1       |
| 10 M $\Omega$ – 20 M $\Omega$                     | 4% $\pm$ 1        | 5% $\pm$ 1     | NA              | NA                | NA                |

| Save/Recall                                |                |
|--|----------------|
| <b>Instrument Settings</b>                 |                |
| Internal                                   | 10 locations   |
| External                                   | 90 locations   |
| <b>Measurement Results and Screenshots</b> |                |
| External                                   | 1000 locations |

| General                             |  |
|-------------------------------------|--|
| Remote Interface                    | USB (Virtual COM), GPIB, LAN   |
| Display                             | 4.3" 480 $\times$ 272 color LCD display                                  |
| AC Input                            | 104 V - 126 V, 50/60 Hz<br>207 V - 253 V, 50/60 Hz                       |
| Power Consumption                   | 20 VA max.   |
| Operating Temperature               | 32 °F to 104 °F (0 °C to 40 °C)  |
| Storage Temperature                 | 14 °F to 158 °F (-10 °C to 70 °C)  |
| Relative Humidity                   | up to 80%  |
| Dimension (L $\times$ W $\times$ H) | 10.1" x 4.4" x 15" (258 $\times$ 113 $\times$ 381 mm)                    |
| Weight                              | 7.5 lbs (3.4 kg)   |
| <b>Three-Year Warranty</b>          |  |
| Standard Accessories                | Power cord, Kelvin clips leads, certificate of calibration & test report |
| Optional Accessories                | TL89F1 test fixture (axial and radial)                                   |

<sup>(1)</sup> Accuracy is based on test signal level at 1 Vrms with slow measurement speed.  
At 0.5 Vrms test signal level, multiply Ae by 1.1.

### Measurement Accuracy Chart

