

## Data Sheet

# 40,000 Count Dual-Display Handheld LCR Meters 878B and 879B



### Features & Benefits

- 40,000 counts resolution on primary and 10,000 counts resolution on secondary display
- L, C, R and Z (879B only) primary measurements
- Automatic calculation of secondary parameters D, Q,  $\theta$ , ESR ( $\theta$ /ESR for 879B only)
- 0.5% basic accuracy
- Fast auto range design for rapid, easy component measurements
- Relative mode
- Visible and audible tolerance mode
- Data Hold and Min/Max/Average recording
- USB (Virtual COM) interface
- SCPI compliant commands for remote communication
- Software for datalogging and front panel emulation available as free download
- Selectable auto-power-off options
- Configurable power-up-states
- 3 year warranty

### Applications

- Passive component trouble shooting
- Electronic assembly
- Quality control (component sorting)

### Full Featured Handheld LCR Meters

B&K Precision's 878B and 879B 40,000-count handheld LCR meters measure inductance, capacitance, and resistance quickly and precisely. Additionally, the 879B can calculate impedance, Theta, and ESR, features typically found in bench LCR meters only.

Fast auto ranging and quick measurement configuration such as measurement parameter and test frequency selection make the 878B and 879B very simple to operate. The meters also include handy functions such as data hold, Min/Max/Average recording, tolerance sorting, and relative mode.

Measurement data can continuously transfer to a PC via the meter's mini USB interface, using either the provided data logging software or SCPI commands sent from a custom program.

### ESR Measurements

Model 879B has the ability to measure the ESR (Equivalent Series Resistance) of capacitors. ESR is the sum of in-phase AC resistance of a capacitor and used to rate a capacitor's quality. An ideal capacitor would be lossless and have an ESR of zero. A capacitor could measure the correct capacitance value, yet still be defective, due to the component's excessive in-phase AC resistance. The 879B would be able to detect this faulty component.

Specifications	878B	879B
Measurements	L, C, R, D, Q	L, C, R, Z, D, Q, $\theta$ , ESR
Test frequency	120 Hz, 1 kHz	100Hz, 120 Hz, 1 kHz, 10 kHz
Backlit display	No	yes
Tolerance mode	1%, 5%, 10%	1%, 5%, 10%, 20%

### ▲ Versatile Configuration

#### Flexible Operation

A tilt stand provides position flexibility for viewing and operating the meter. The over-molding rubber case protects the meter for better durability. A single 9V battery or the included DC 12V power adapter (with model 879B) can be used to power the meter, giving the user options for portable or bench-top use.

#### Faster Auto Range

The advanced auto range circuit design means you get faster measurements without the need to manually select ranges.

#### Dual Display

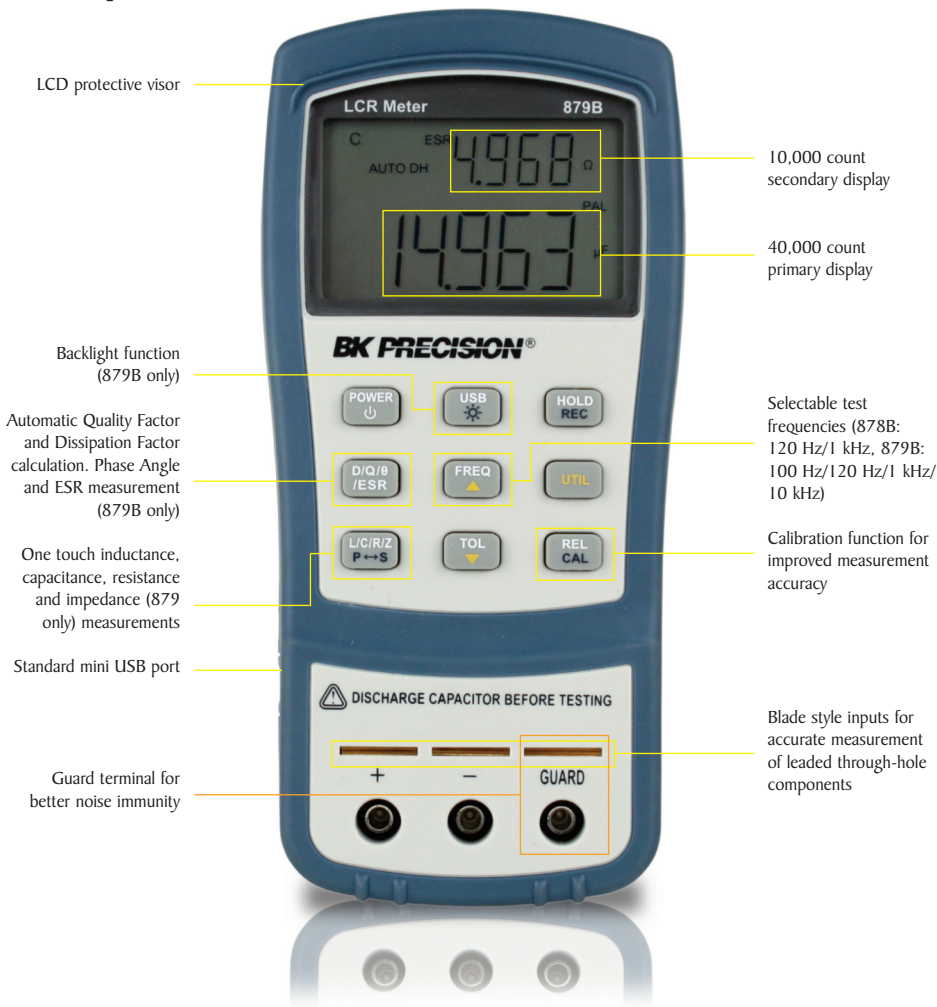
The 878B and 879B's dual display allows multiple measurements to be conveniently displayed at once.

#### Increase Productivity with PC Connectivity

Free downloadable software is available for your handheld LCR meter. View and log measurements and setup and configure the instrument's measurement parameters.



### ▲ Easy Front Panel Operation



# Specifications

## General

Model	878B	879B
Measurement Parameters	L/C/R/D/Q	L/C/R/Z/D/Q/θ/ESR
Test Frequency	120 Hz, 1 kHz (Test setting)	100 Hz, 120 Hz, 1 kHz, 10 kHz (Test setting)
Accuracy is 0.02% of actual test frequency	120.048 Hz, 1 kHz (Actual frequency)	100 Hz, 120.048 Hz, 1 kHz, 10 kHz (Actual frequency)
Tolerance Mode	1%, 5%, 10%	1%, 5%, 10%, 20%
Backlit Display	None	Yes
Test Signal Level	≈ 0.6 Vrms	
Measuring Circuit Mode	Series mode / Parallel mode	
Basic Accuracy	0.5%	
Ranging Mode	Auto	
Measuring Terminals	3 terminals with sockets	
Measurement Rate	1.5 reading/second (range auto search not included)	
Response Time	≈ 680 ms/DUT	
Auto Power-Off	5, 15, 30, 60 minutes, None	
Operation Temperature	32° F to 104° F (0° to 40° C); 0-70 % R.H.	
Storage Temperature	-4° F to 122 °F (-20° to +50° C); 0-80 % R.H.	
Low Battery Indication	≈ 6.8 V	
Battery Life	≈ 16 hours using Alkaline Battery @ 1 kHz with 100 Ω DUT, with backlight off	
Power Consumption	≈ 28 mA (under full power battery) for operation/ 2 μA after Power-off.	
Power Requirements	1) DC 9V Battery, 2) Ext. DC Adapter*: DC 12 Vmin –15 Vmax. (Load 50 mA Min.)	
Dimensions (L/W/H)	7.5" x 3.5" x 1.6" (190 x 90 x 41) mm	
Weight	0.7 lbs (330 grams)	
<b>Three-Year Warranty</b>		
Standard Accessories	Banana to Alligator Test Leads, 9V Battery, Mini USB Interface Cable, Manual, AC Adapter* (879B only)	
Optional Accessories	BE800 120 VAC Wall Adapter, BE802 230 VAC European Two Prong Wall Adapter	

\* The 879B includes a 120 V AC adapter. For a 230 V AC adapter, order model 879B EXD. The AC adapters are optional accessories for the 878B.

## Accuracy Specifications

Accuracy is expressed as ±(% of reading + number of last significant digits) and based within 10% to 100% of full scale of range  
Valid after 30 minutes of warm up time and operation at 23 °C + 5 °C, <75% R.H.

	Range	Max Display	Lx Accuracy	DF (Dx <0.5)	Measurement Mode
100 Hz*/120 Hz	1000 H	1000.0 H	1.5% + 3 digits	1.5% + 50 digits	Parallel
	400 H	399.99 H	0.7% + 2 digits	0.7% + 50 digits	Parallel
	40 H	39.999 H	0.7% + 2 digits	0.7% + 50 digits	Series/ Parallel
	4000 mH	3999.9 mH	0.5% + 1 digits	0.5% + 50 digits	Series
	400 mH	399.99 mH	0.6% + 2 digits	0.6% + 50 digits	Series
	40 mH	39.999 mH	0.9% + 2 digits	0.9% + 50 digits	Series
	4 mH	3.9999 mH	2.8% + 3 digits	2.8% + 50 digits	Series
1 kHz	100 H	100.00 H	1.5% + 3 digits	1.5% + 50 digits	Parallel
	40 H	39.999 H	0.7% + 2 digits	0.7% + 50 digits	Parallel
	4000 mH	3999.9 mH	0.7% + 2 digits	0.7% + 50 digits	Series/ Parallel
	400 mH	399.99 mH	0.5% + 1 digits	0.5% + 50 digits	Series
	40 mH	39.999 mH	0.6% + 2 digits	0.6% + 50 digits	Series
	4000 μH	3999.9 μH	0.9% + 2 digits	0.9% + 50 digits	Series
	400 μH	399.99 μH	2.8% + 3 digits	2.8% + 50 digits	Series
10 kHz*	1000 mH	1000.0 mH	1.5% + 3 digits	1.5% + 50 digits	Parallel
	400 mH	399.99 mH	0.7% + 2 digits	0.7% + 50 digits	Series/ Parallel
	40 mH	39.999 mH	0.5% + 1 digits	0.5% + 50 digits	Series
	4000 μH	3999.9 μH	0.6% + 2 digits	0.6% + 50 digits	Series
	400 μH	399.99 μH	0.9% + 2 digits	0.9% + 50 digits	Series
	40 μH	39.99 μH	2.8% + 3 digits	2.8% + 50 digits	Series

## Specifications (cont.)

		Range	Max Display	Cx Accuracy	DF (Dx <0.5)	Measurement Mode
Capacitance	100 Hz*/120 Hz	20 mF	20.000 mF	8% + 3 digits	8% + 50 digits	Series
		4000 µF	3999.9 µF	2% + 2 digits	2% + 50 digits	Series
		400 µF	399.99 µF	0.7% + 2 digits	0.7% + 50 digits	Series
		40 µF	39.999 nF	0.5% + 1 digits	0.5% + 50 digits	Series
		4000 nF	3999.9 nF	0.5% + 1 digits	0.5% + 50 digits	Series/ Parallel
		400 nF	399.99 nF	0.5% + 2 digits	0.5% + 50 digits	Series/ Parallel
		40 nF	39.999 nF	0.7% + 1 digits	0.7% + 50 digits	Parallel
		4 nF	3.9999 nF	2.5% + 2 digits	2.5% + 50 digits	Parallel
Capacitance	1 kHz	1000 µF	1000.0 µF	3.7% + 3 digits	3.7% + 50 digits	Series
		400 µF	399.99 µF	2% + 2 digits	2% + 50 digits	Series
		40 µF	39.999 µF	0.7% + 2 digits	0.7% + 50 digits	Series
		4000 nF	3999.9 nF	0.5% + 1 digit	0.5% + 50 digit	Series
		400 nF	399.99 nF	0.5% + 2 digits	0.5% + 50 digits	Series/ Parallel
		40 nF	39.999 nF	0.5% + 2 digits	0.5% + 50 digits	Series/ Parallel
		4000 pF	3999.9 pF	0.7% + 2 digits	0.7% + 50 digits	Parallel
		400 pF	399.9 pF	2.5% + 2 digits	2.5% + 50 digits	Parallel
Capacitance	10 kHz*	100 µF	100.00 µF	3.9% + 5 digits	3.9% + 50 digits	Series
		40 µF	39.999 µF	3.7% + 3 digits	3.7% + 50 digits	Series
		4000 nF	3999.9 nF	0.7% + 2 digits	0.7% + 50 digits	Series
		400 nF	399.99 nF	0.5% + 2 digits	0.5% + 50 digits	Series
		40 nF	39.999 nF	0.5% + 1 digit	0.5% + 50 digit	Series/ Parallel
		4000 pF	3999.9 nF	0.5% + 2 digits	0.5% + 50 digits	Series/ Parallel
		400 pF	399.99 pF	0.7% + 2 digits	0.7% + 50 digits	Parallel
		40 pF	39.99 pF	2.5% + 2 digits	2.5% + 50 digits	Parallel

		Range	Max Display	R/Zx Accuracy	θ Accuracy*	Measurement Mode
Resistance/Impedance*	100 Hz/120 Hz/ 1 kHz/10 kHz*	10 MΩ	10.000 MΩ	5.5% + 3 digits	±3.2°	Parallel
		4000 kΩ	3999.9 kΩ	2.5% + 2 digits	±1.5°	Parallel
		400 kΩ	399.99 kΩ	0.7% + 2 digits	±0.4°	Parallel
		40 kΩ	39.999 kΩ	0.5% + 2 digits	±0.3°	Series/ Parallel
		4000 Ω	3999.9 Ω	0.5% + 2 digits	±0.3°	Series/ Parallel
		400 Ω	399.99 Ω	0.5% + 2 digits	±0.3°	Series
		40 Ω	39.999 Ω	0.7% + 2 digits	±0.4°	Series
		4 Ω	3.9999 Ω	2.0% + 2 digits	±1.2°	Series

		Range	Max Display	ESR Accuracy	Measurement Mode
ESR*	100 Hz/120 Hz/ 1 kHz/ 10 kHz	1000 Ω	999.9 Ω	0.5% + 2 digits	Series
		100 Ω	99.99 Ω	0.5% + 2 digits	Series
		10 Ω	9.999 Ω	0.7% + 2 digits	Series
		1 Ω	.9999 Ω	2.0% + 2 digits	Series

\* = Model 879B only