



General

The DB233 Component Tester is specially designed for manual as well as automatic high-speed high accuracy testing of capacitors or other CLR applications. The instrument is reliable, user-friendly and easy to set up to any test application on production lines, in quality control departments or in laboratories.

The DB233 is well suited for mounting on sorting machines or other automatic test applications where the distance between the front panel of the DB233 and the Jig is less than 50 cm, 19.6 inch. When the distance is longer, the DB232 should be preferred to provide maximum accuracy.

The DB233 performs capacitance and loss factor tests at any of the 4 standard frequencies. Dual, triple and quadro frequency tests are popular to give an immediate presentation of capacitance and loss factor measurements over a range of frequencies.

As standard the instrument has a built-in comparator for deviation measurements, IEEE488 (GPIB) and RS232C data interfaces as well as handler interface (opto-coupler type) with 12+4 bins for

production sorting. The high-speed data interfaces may be used for an external computer in order to control the system, or for collection of data for statistics and analysis.

Bin sorting with up to 12 bins for capacitance for 1st frequency and up to 4 bins for $\tan \delta$ using 2nd frequency. Or $\tan \delta$ may be measured at several frequencies using the 4 bins for different levels of the dissipation factor.

The standard fitted PCMCIA card is the smart way of storing set-ups. Fail-safe loading of set-ups to several instruments will be done fast and efficient.

The test cables are as standard connected to the front panel of the instrument. Another possibility is to order the DB233 in the version MCR in order to have the test cables connected to the rear panel only. Optional protection box PB10 protecting the instrument against charged capacitors is available.

4 measuring frequencies: 100kHz, 10kHz, 1kHz and 100Hz

Overall accuracy better than 0.05% and 2×10^{-4} for loss factor

Especially suitable for film, foil, tantalum and electrolytic capacitors, as well as all other CLR applications

Built-in contact check function, additional 2-6 ms

High measuring speed: 20 to 180ms from trig to end of measurement, depending on frequency

Input protection: 2 Joule up to 1kV

Measuring ranges: 0.1pF to 3mF depending on frequency

Measures up to 9 μ F (0.2%) @ 100kHz

Measuring cables: 1m or 39.3 inch (supplied as standard)

Internal bias voltage: Up to ± 3 VDC on generator terminal, set in 0.1V steps

Average: 1 to 99 measurements

Display readings: Direct or deviation capacitance and $\tan \delta$ or ESR for loss measurements and L/Q, Rs, Rp, Z

Focused strategy on component testing for more than 50 years

Optional Jig32 for 4-terminal manual component testing of axial, radial and SMD components

Optional version of DB233 with the test frequencies: 100kHz, 10kHz 1kHz and 120Hz

Specifications for DB233

Measured Parameters	C, L, R, Z (serial or parallel) $\tan \delta$, ESR, Rs, Rp, L/Q, R-X, Z- θ (deg or rad)
Measuring Frequencies	100k, 10k and 1kHz and 100 Hz with multiple frequency facility

Measuring Voltages	1 V RMS up to 100 μ F at 100Hz
	1 V RMS up to 10 μ F at 1kHz
	1 V RMS up to 1 μ F at 10kHz
	1 V RMS up to 0.1 μ F at 100kHz

Above: (linearly decreasing with the impedance) Programmable in 0.1V steps (maximum 1.5V RMS)

Measuring Speed		100Hz	1kHz	10kHz	100kHz
		From trig to end of measurement*	180ms	20ms	20ms
	From trig to data ready*	190ms	28ms	28ms	28ms
	Additional time per measurement by average	160ms	16ms	16ms	16ms

*) allowing 3ms contact bouncing or 1 range change

Multiple measurements (average): The sum of each measurement (from trig to end of measurement) + 8ms for calculation time

Measuring Cables	1m (39.3 inch) from front panel to fixture	(cables supplied by Danbridge)
Input Protection	2 Joule up to 1kV or 4 μ F charged 1000V	
Bias Voltage internal	Up to \pm 3.0VDC on generator terminal, set in 0.1V steps	(internally generated)

Capacitance	Frequency		Accuracy \pm 1 digit	Average \geq 2
	100Hz	1kHz	Capacitance	Tan δ
	300pF- 3nF	1pF- 39pF	0.5%*	\pm .0010
	-	40pF- 3.9 μ F	0.05%*	\pm .0002
	3nF- 30 μ F	4 μ F- 399 μ F	0.1%	\pm .0007
	30 μ F- 300 μ F	-	0.1%	\pm .0010
	300 μ F- 3mF	400 μ F- 1mF	1%	\pm .0020
	10kHz	100kHz		
	0,1pF- 3.9pF	.03pF- .9pF	0.1%	\pm .0010
	4pF- 3.9 μ F	1pF- .9 μ F	0.05%**	\pm .0002
	4 μ F- 39 μ F	-	0.1%	\pm .0007
	-	1 μ F- 9 μ F	0.2%	\pm .0010
	40 μ F- 400 μ F	10 μ F- 40 μ F	1%	\pm .0020

*) Accuracy \pm 0.2pF **) Accuracy \pm 0.1pF. The above specifications require a stable jig with capacitance lower than 30pF

Inductance	100Hz	1kHz	10kHz	100kHz	Accuracy
	10 μ H- 100H	1 μ H- 10H	0.1 μ H- 1H	0.1 μ H- 1H	1 parameter 0.1% - 2 parameter \pm (0.1%+0.05xQ)

Resistance	0.4 Ω - 40 Ω	0.1%			
	40 Ω - 4M Ω	40 Ω - 4M Ω	40 Ω - 4M Ω	0.4 Ω - 1M Ω	0.05%

The above specifications are valid for measurements with constant voltage

Bin sorting	Up to 12 limits for 1st parameter and 4 limits for 2nd parameter by opto-couplers	
Interfaces	Rear panel	IEEE 488-2 (GPIB) and RS232C
	Control	Measure end, data ready, trig ready, fault and status
	Trig input	DC, AC and contact closure
	Front panel	PC card for set-ups, save and loading
Environment	Ambient temperature	10-30 degrees Celsius
	Warm-up time	Minimum 30 minutes
	Power	90-130 and 200-260 V AC, 50-60 Hz
Calibration interval	Minimum	Every 12 months

Dimensions		Mainframe	Export Packing Europe:	Export Packing Overseas:
		Height	140 mm or 5.5 inch	30 cm or 11.7 inch
	Width	438 mm or 17.2 inch	51 cm or 20 inch	52 cm or 20.4 inch
	Depth	360 mm or 14.2 inch	56 cm or 22 inch	55 cm or 21.6 inch
	Weight	total 16 kg or 36 lb.	20 kg or 45 lb.	22 kg or 49.5 lb.

