



General

The DB232 Component Tester is especially designed for high accuracy testing of capacitors on production lines, not least for integration with sorting machines in a production environment. The instrument is reliable, user-friendly and easy to set up to any test.

The DB232 utilises an external bridge module allowing the user to install the measuring bridge very close to the measuring Jig. This ensures high measuring accuracy. Especially when measuring at 100kHz cables are main causes to noise. When installing an LCR bridge on a production line, some distance between the instrument and the Jig is unavoidable. With the DB232, total cable length of up to 4m (157 inches) is supplied.

The DB232 utilises a well-proven input protection system to protect the bridge module from damages owing to exposure to charged capacitors. This secures that the DB232 does not break down as easily as other LCR bridges, when exposed to charged capacitors. The DB232 can perform dual frequency tests at any combination of

frequencies. A popular configuration is to test capacitance at 1kHz and loss factor at 100kHz. As standard, it can sort capacitors into bins according to the measured parameters at two frequencies simultaneously.

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.

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) All measured data are collectable from the data interfaces.

Via the PCMCIA slot it possible to easily store set-ups to distribute to other instruments quickly, without operator mistakes.

Measuring frequencies: 100kHz, 10kHz, 1kHz and 100Hz

Overall accuracy better than 0,05% and 2×10^{-4} for loss factor

External bridge module for long cables (3m or 118 inch) between the instrument and the bridge module

Measuring cables: 1m or 39,3 inch (supplied as standard)

Input protection against charged capacitors at 2 Joule up to 1kV. This feature can be extended by an optional Protection Box, PB11

Built-in contact check function ensures that the contact to the device is good, additional 2-6 ms0

High measuring speed: 20 to 180ms from trig to end of measurement

Measuring ranges: 0,1pF to 3mF depending of frequency

Measures up to 9µF (0,2%) @ 100kHz

Internal bias voltage: Up to ±3VDC on generator terminal, set in 0,1V steps

External bias voltage: Up to ±48VDC

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

Optional version of DB232 with the test frequencies: 100kHz, 10kHz 1kHz and 120Hz

Specifications for DB232

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 1k 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	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 bridge module 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)
Bias Voltage external	Up to \pm 48V DC	

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

The above specifications are valid for measurements with constant voltage

Bin sorting Interfaces	Up to 12 limits for 1st parameter and 4 limits for 2nd parameter by opto-couplers
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
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Dimensions		Mainframe	Bridge module	Export Packing Europe:	Export Packing Overseas:
		Height	140 mm or 5.5 inch	35 mm or 1.4 inch	30 cm or 11.7 inch
Width	438 mm or 17.2 inch	192 mm or 7.5 inch	51 cm or 20 inch	52 cm or 20.4 inch	
Depth	360 mm or 14.2 inch	205 mm or 8.1 inch	56 cm or 22 inch	55 cm or 21.6 inch	
Weigh	total 16 kg or 36 lb.	1 kg or 2.3 lb.	21 kg or 47.3 lb.	23 kg or 51.8 lb.	



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