



- **Measuring range: Capacitance, Resistance and Inductance as well as second parameters**
- **Measuring frequencies: 100kHz, 10kHz, 1kHz, 100Hz and 120Hz**
- **Overall accuracy better than 0,05%**
- **Good measuring speed: 100ms from trig to end of measurement, 1kHz, 10kHz, 100kHz**
- **Input protection: 4 $\mu$ F up to 1kV**
- **Measuring cables: 1m or 39.3 inch (supplied as standard)**
- **Average: 1 to 99 measurements**
- **IEEE, GPIB & RS232c interfaces as standard**
- **Ethernet connector for browser PC control**

## General

The Danbridge DB210 is a fast and accurate CLR-Bridge offering the Component users the speed, accuracy and reliability required to test and sort a wide spectrum of passive components.

The DB210 can be used as stand-alone-instrument by using the display and keyboard. Further is the instrument suitable for remote controlled, integrated test system. The instrument has IEEE 488 and RS232C interfaces as well as Ethernet connector for easy PC control via a standard Web Browser. External trig and BIN outputs are part of the standard design as well.

Four BNC sockets on the front panel will accept up to 1meter long interconnections to an external 4-terminal Kelvin Type test fixture. JIG10 or a set of Kelvin Clips can be supplied.

The DB210 is an attractive, cost-saving solution for manual testing or automatic production lines of CLR components and is supplied in a 19" cabinet for rack mounting.

Sockets for Ethernet, IEEE, RS232C, external trig and bin sorting are located on the rear panel.

## Reliability and Serviceability

The DB210 is microprocessor-controlled which, among other advantages, makes the instrument self calibrating.

Besides that, the reference components in the bridge circuit are extremely stable with respect to long-term drift.

## Effective Input Protection.

The DB210 is equipped with an effective input protection of 2 Joule up to 1kV, i.e. 100V at 400uF, and 500V at 16uF or 600V at 10uF.

If such a capacitor by accident has not been discharged before reaching the test fixture, no damage to the DB210 will occur. Consequently a costly production stop can be avoided.

## Why is High Accuracy so Important?

If you are producing components with  $\pm 1\%$  tolerance using a bridge with 0.25 accuracy, you will have to set the limits to  $\pm 0.75\%$  in order to compensate for the measuring error. Consequently your production line will reject some components, which actually are within the specifications. The DB210 has an accuracy of 0.05% over the main range. This means that you can set your limits to  $\pm 0.95\%$  and reduce the loss of non-faulty components considerably.

## Test Fixture

A 4-terminal (Kelvin) test fixture JIG32 can be supplied in case that the DB210 should be used as a bench instrument.

The 4-terminal test fixture will effectively cancel all errors due to contact resistance and connecting cable impedance.

The JIG32 has gold plated contacts, and up to 1meter long cables can be connected between the test fixture and the DB210 without any deterioration of the accuracy.

# Specification for DB210

## PRELIMINARY SPECIFICATIONS:

**Measured Parameters:** C, L, R, (serial or parallel) Tan d, ESR, Rs, Rp, L/Q,  
**Measuring Frequencies:** 100kHz, 10kHz, 1kHz, 100Hz and 120Hz selectable from the keyboard or by data-link

<b>Measuring Voltages:</b>	1 V RMS down to 40 Ohm
	0,3 V RMS from 40 Ohm to 4 Ohm
	Linear reduction at lower impedance values

		100Hz	120Hz	1kHz	10kHz	100kHz
<b>Measuring Speed:</b>	From trig to end of measurement *	180ms	180ms	38ms	38ms	38ms
	From trig to data ready: *	190ms	190ms	46ms	46ms	46ms
	Add. time per meas. by average	160ms	160ms	34ms	34ms	34ms

\*) Allowing 3ms contact bouncing or 1 range change

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

**Measuring Cables:** 1m (39.3 inch) from bridge to fixture (Cables supplied by Danbridge)  
**Input Protection:** 2 Joule up to 1kV or 4µF charged 1000V  
**Bias Voltage External:** Up to ±48V DC

<b>Accuracy C &amp; tan δ:</b>	Frequency	100Hz & 120Hz	1kHz	Accuracy ±1 digit	
				Capacitance	Tan δ
		100pF - 300µF	1pF - 99pF 100pF - 389pF 390pF - 3µF 3µF 30uF	0,5pF* 0,1% 0.05% 0.1%	± .0010 ± .0005 ± .0005 ± .0010
		>3mF C: (C measured / 0.3mF) * 0.1%		Tan d: (C measured / 0.3mF) * 0.005	
<b>Accuracy ESR:</b>		10kHz	100kHz	*) Accuracy ± 0,2pF	
		39pF - 3µF	39pF - .3µF	0,05%	± .0005
		ESR = $\frac{\tan d}{2 \pi f Cs}$			

**Bin Sorting:** Up to 12 limits for 1<sup>st</sup> parameter and 4 limit for 2<sup>nd</sup> parameter by opto-couplers

**Interfaces:** Rear panel: IEEE 488 (GPIB), RS232C and Ethernet connector  
 Control: Measure end, data ready, trig ready, fault and status  
 Trig input: DC, AC and contact closure

**Keyboard & Display:** Front panel: For manual settings, etc.

**Environment:** Ambient temp.: 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

<b>Dimensions:</b>		Mainframe:	Export Packing	
			Europe	Overseas
	Height:	44mm	30cm	32cm
	Width:	435mm	51cm	52cm
	Depth:	280mm	56cm	55cm
	Weight:	5kg	11kg	13kg



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