DB502 High Speed DC Resistance Bridge

For high speed and very accurate automatic production testing and sorting

Test & Measurement

Danbridge

- **Measuring Speed: < 10msec**
- **Accuracy 0,01% in the main range**
- **Resistance Range: 10mO to 1GO**
- **Hum Rejection Mode**
- **Absolute or Deviation Measurements**
- **Measuring cables: Guarded 4-terminal up to 1m**
- **12 Programmable Limits**
- **LIM Outputs, IEEE & RS232c interfaces as standard**
- **Contact check function**
- **Compatible with DB501/R**

GENERAL

The DB502 bridge is designed by Danbridge for use in the production of resistors, saving production costs through its two main features: Extremely high speed combined with very high accuracy.

The advanced Hum Rejection Mode of the DB502 makes stable readings possible at very high resistance values still keeping the test voltage at only 20 V.

HIGH SPEED

In Trig Mode, a measurement takes less than 10 ms including Limits Output setting. Even in Hum Rejection Mode, the typical throughput for the DB502 is well over 100.000 resistors per hour.

HIGH ACCURACY

The accuracy is 0.01% in the range from 10 Ohm to 10 Mohm. For resistance less than 100 mOhm, the accuracy is 0.5%. In production the high accuracy of the DB502 reduces the rejection of good components: When testing, the pass/reject of limits have to be set to the specification of the resistor less the accuracy of the measuring device. Better instrument accuracy therefore results in less waste.

EASY OPERATION

The DB502 is easily programmable with softkey driven menu and the large LCD display. The front panel is sealed and dustproof for use in tough production environments.
For deviation measurements, nominal resistance values and sorting limits can be entered from the keyboard. Collecting of these data can also take place via one of the standard fitted bus interfaces, IEEE488 and RS232C, even while the DB502 is constantly triggered from a handling machine.

THERMO VOLT. COMPENSATION

Small thermo voltages will always Influence the measurement result of a DC resistance bridge, and the smaller component the more significantly they become to the measured value.

Consequently, thermo voltages have to be compensated. The DB502 offers two types of thermo voltage compensation: Fast and Normal, and thereby enables the user to select the compensation mode which meets his requirements regarding speed and/or accuracy.

CONTACT CHECK FUNCTION

A 4-terminal connection to the DUT (Device under Test) is normally rather invulnerable towards smaller variants in the resistance in the measurements cables, the test fixture etc. But when these resistances exceed a certain level, the performed measurements are no longer valid - although interpreted as valid by the instrument!

However, when using the contact check function a user-defined limit for the maximum allowable contact resistance is stored in the instrument. And if the contact resistance exceeds this value the measurement is aborted, and thereby the reliability of the performed measurements is significantly increased!

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Specifications

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MODE A:
(Deviation from Nominal Value)

Resistance Range and Nominal Value:
Inserted from the keyboard or by remote control.

Nominal Value Range:
1 mΩ - 1.0999 GΩ.

Deviation Range.
± 10% reading to 19.999%
± 100.00%

TEST VOLTAGE					
Resistance Ranges				Deviation 10% Range	Deviation 100% Range
0	-	99.999	mΩ	0-33mV	0-11mV
0,1Ω	-	.99999	Ω	33mV	11mV
1Ω	-	9.9999	Ω	100mV	33mV
10Ω	-	99.999	Ω	130mV	110mV
100Ω	-	.99999	kΩ	1V	330mV
1kΩ	-	9.9999	kΩ	3.3V	1.1V
10kΩ	-	99.999	kΩ	10V	3.3V
100kΩ	-	1100	MΩ	33V	11V

MODE B:
(Direct display of Resistance value)

Resistance Range:
0Ω to 200 MΩ direct reading in 10 decade ranges set by auto-ranging.

Resolution:
5 digits.

OPTIONS:
Jig500 4-terminal test jig with 0,3m leads and adjustablefixtures for axial radial leads
36523 4-terminal SMD fixture for Jig500
25089 Set of 4-terminal Kelvin clips

TEST CURRENT				
Resistance Ranges				Direct Ω Reading Constant Current
0	-	99.999	mΩ	110 mA
0,1Ω	-	.99999	Ω	33 mA
1Ω	-	9.9999	Ω	11 mA
10Ω	-	99.999	Ω	3,3 mA
100Ω	-	.99999	kΩ	1,1 mA
1kΩ	-	9.9999	kΩ	330 µA
10kΩ	-	99.999	kΩ	110 µA
100kΩ	-	.99999	MΩ	11 µA
1MΩ	-	9.9999	MΩ	1,1 µA
10MΩ	-	200	MΩ	110 nA

MODE A & B.

Measuring Speed:
Continuous: 3 measurements per second. Trig mode: In the range 1 Ω - 10 MΩ better than 10 msec, and better than 50 msec in the range 0-0,1 Ω, including display and limit outputs. Special 50/60 Hz hum rejection mode: 25 msec.

Limits:
12 limits are provided with display indication and output signals for LOW, BIN number and HIGH. Channel limits can be selected.

Interface (rear panel):
IEEE 488 with "talker only" and "talker/listener" modes. True sub-set of Standard-protocol. RS232C with Baud rate up to 19200 Baud. Full two-way control/output. Limit output: Open collectors with common protection rail, programmable bin/channel output and common reject pin. Control I/O: TRIG (contact closure or opto-coupler),

MEASURE Signal,
TRIG READY Signal,
DATA READY Signal,
FAULT Signal (out of range signal).

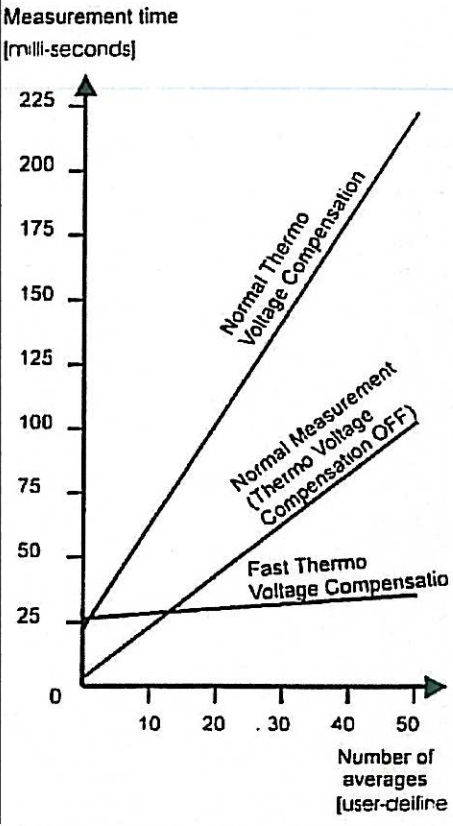
Ambient Temperature:
10° - 40° C.

Power::
90-130 and 200-260 V AC, 50-60 Hz.

Dimensions:
Height. 140mm/ 5.8 inch.
Width: 438mm/17.2 inch.
Dept.: 360mm/14.2 inch.

Weight:
9,5 kg/21 lbs.

Accessories Supplied:
Line power connector.
Four 1.5 m coax cables with BNC connectors.
Two output connectors.
Brackets for 19" rack-mounting.



Accuracy				Long Term Accuracy		
Resistance range		Deviation 10% Full Scale	Deviation 100% F.S. & Resist. Dev.	Direct Ohm Reading	Deviation 10% Full Scale 1 Year	Deviation 10% Full Scale 3 Years	Direct Ohm, 100% F.S. & Resist. Dev. 3 Years
0	- 99.999 mΩ	0.1 mΩ	0.2 mΩ	0.2 mΩ	0.1 mΩ	0.2 mΩ	1 mΩ
0.1 Ω	- 0.99999 Ω	0.1 %	0.2%	0.2%	0.1 %	0.1%	0.2%
1 Ω	- 9.9999 Ω	0.05%	0.1%	0.1%	0.05%	0.05%	0.1%
10 Ω	- 9.9999 MΩ	0.01%	0.05%	0.1%	0.01%	0.02%	0.1%
10 MΩ	- 199.99 MΩ	0.1%	0.2%	0.2%	0.1%	0.1%	0.2%
200 MΩ	- 1.1 GΩ	0.5%	0.5%		0.5%	0.5%	0.5% (in Dev. only)
0	- 19.999 mΩ	30 µΩ*	0.1 mΩ*	0.1 mΩ*	0.1 mΩ*	0.2 mΩ*	0.5 mΩ*
20 mΩ	- 99.999 mΩ	0.3%*	1%*	1%*	0.1 mΩ*	0.2 mΩ*	0.5 mΩ*
Temperature Range		15°C - 35°C			25°C ± 2°C		15°C - 35°C

*) In fast thermo voltage compensation mode, average ≥ 20

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