

### Transfer ground bond resistance function

For ground bond resistance meters calibration 5320A model is equipped with high power rated resistance decade with 16 fix points in total range to 1.8 kOhm. Best accuracy of the decade is 5 to 8 mOhm in range bellow 500 mOhm. To enable calibration of UUTs with similar accuracy respecting appropriate TUR. Dummy load function has been implemented into 5320A calibrator.

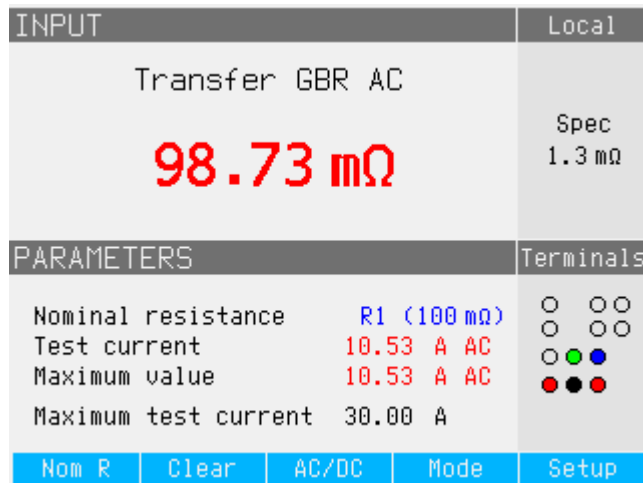
Dummy load function improves GBR calibration accuracy in range bellow 500 mOhm. Dummy load function can be installed in the older serial numbers by uploading new firmware, release 3.12 using standard uploader application SW.

### Principle of operation

Dummy load function is based on active method. Calibrator connects to the output terminals selected partial resistor from GBR bank and measures AC or DC test current and voltage. From the measured values calibrator calculates real resistance.

### Control

Dummy load function is accessible under Ground bond resistance key. When GBR function selected, push soft key MODE and select item "Dummy". Following display is shown:



with following values meaning:

- Main value** shows reading of actual dummy load resistance inserted between terminals. The reading is hidden until minimal test current approx. is detected. Live reading is displayed in red color. If UUT interrupts test current, 5320A keeps the last reading on the display and change color of the reading to black. To reset the reading push the soft key CLEAR.
- Nominal resistance** fix nominal values 65, 90, 120, 170, 420, 550 mOhm can be set. Display shows symbol of selected GBR resistance R1, R2, R3, R4, R5 or "0" when only ammeter current shunt is applied (nominal value 65 mOhm) followed by by calibrator predicted dummy load resistance. The predicted resistance is given by GBR calibration data and internal constants.
- Test current** test current flowing from UUT through 5320A in A DC or AC
- Maximum current** maximal captured test current after switching the 5320A terminals ON

Maximum test current information about limit of maximal test current for selected resistance. The captured max. value can be reset by pushing the soft key CLEAR

Spec. accuracy of dummy load resistance, calculated by calibrator

Beneath display located soft keys have following meaning:

Nom R by pushing the key Nominal resistance value can be changed. Repeat the pushing to move around fix values

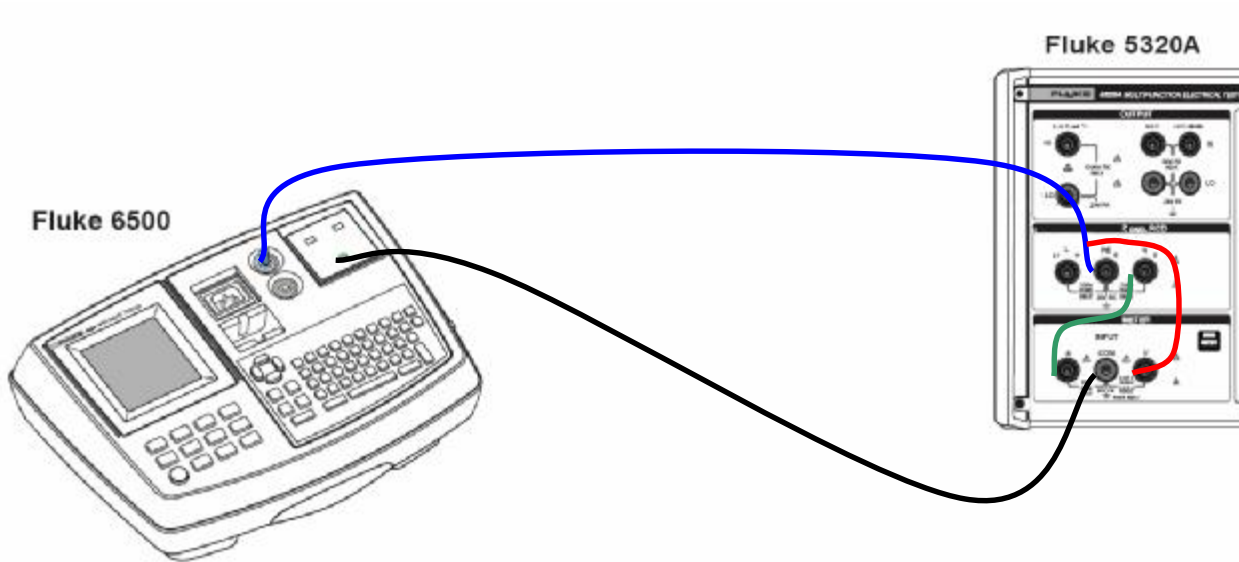
Clear the key enables to clear Maximum value field

AC/DC switch between mode AC and DC Dummy load mode. AC or DC mode has to be selected correctly otherwise wrong reading can be displayed. AC sinusoidal test signal is assumed in AC mode.

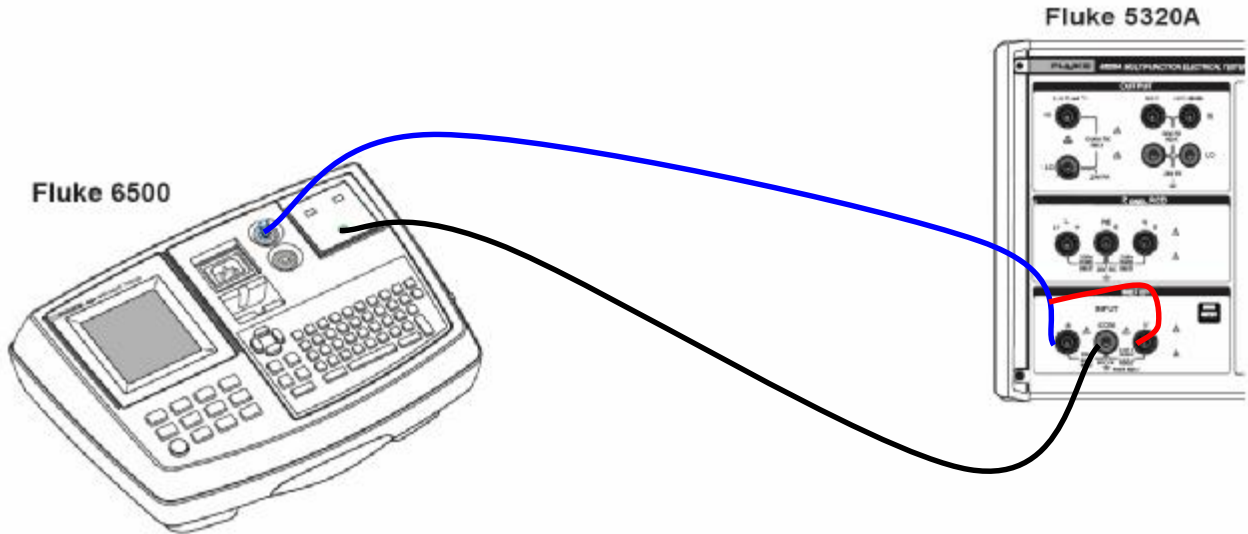
### Connection of UUT to 5320A

5320A connection to UUT requires only test leads. Test leads from 5320A accessory can be applied. Except it, one piece of test lead with stackable end have to be applied. This test lead is not a part of 5320A packing. Suitable lead is type SLK 425, length 25 cm, manufacturer Multi-contact.

For range 90 to 550 mOhm connect UUT and 5320A as shown in the picture:



For single value 65 mOhm connect the instruments as follows:



Stackable lead has to be used on position of blue lead to avoid additional inaccuracies.

*Note:* Depending on resistance of test leads nominal dummy load resistance can change. The green lead in the upper picture is a part of dummy load resistance. The lead should be kept as short as possible, dimensioned to 30 A.

*Note:* Resistance of test leads between UUT and 5320A (black and blue) fully influence precision of calibration. Their resistance is not included in by calibrator specified Transfer GBR. Manual correction of their resistance has to be performed or ZERO function in UUT should be applied to eliminate their influence.

*Note:* Contact resistance between banana ends and front panel terminals fully influence accuracy of calibration. Both terminals and banana plugs have to be kept clean and pliable.

*Note:* All accessible terminals in Transfer GBR mode are floating. This configuration is suitable for those UUTs which have one test terminal connected to PE in power supply socket. The UUTs which have floating test terminal may require to ground the circuit in one point to obtain reliable and stable readings. In this case connect COM terminal on 5320A front panel to grounding bind post on the 5320A rear panel by external lead.

### Range of application, specification

Dummy load function is useful for those applications where calibration of low ground bond resistance measured by UUT with test current between 3 and 30 A is requested. Calibrator accuracy depends on value of measured current and voltage. The lower the test current is, the worse accuracy is achieved. On the other side maximal allowed test current is limited depending on set-up resistance. Table below gives better view of application range and expected accuracies.

#### Accuracy in mOhm

Test current (A)		30	28	25	20	14	10	8	3
Transfer GBR (Ohm)	Marking on display								
0,065	0	0,8	0,8	0,8	0,9	1,0	1,2	1,3	2,6
0,095	R1	0,9	1,0	1,0	1,0	1,2	1,4	1,5	2,9
0,12	R2	--	1,1	1,1	1,2	1,3	1,5	1,7	3,1
0,17	R3	--	--	1,4	1,4	1,6	1,8	2,0	3,6
0,42	R4	--	--	--	--	3,0	3,3	3,6	6,0
0,55	R5	--	--	--	--	--	4,1	4,4	7,2

Maximum and minimum applicable test current is shown in the table

<b>Transfer GBR (Ohm)</b>	<b>Minimum test current AC/DC (A)</b>	<b>Maximum test current AC/DC (A)</b>
0,065	3	30
0,095	3	30
0,12	3	28
0,17	3	25
0,42	3	14
0,55	3	10

Range of test current indication:

0.05 A to maximum current with selected resistance

Range of dummy load resistance indication:

test current over 3 A