

MODEL 2080

17th EDITION ELECTRICAL TEST BOX

OPERATION MANUAL



2080

17th Edition Electrical Test Box

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Safety and Warnings

1: For operator safety please read this manual before using the test box.



IMPORTANT NOTE:

DANGEROUS VOLTAGES ARE PRESENT ON THE MAINS SOCKETS - TESTERS WHICH HAVE DAMAGED CABLES ETC. SHOULD NOT BE TESTED BEFORE BEING REPAIRED.

2: Only a competent person with an understanding of electrical testing should use the Transmille test box.

3: The calibration and servicing of the test box must only be carried out by an authorised agent, appointed by Transmille Ltd. Unauthorised servicing will invalidate the warranty.

4: When using the test box the operator must take all necessary safety precautions to ensure that there is no risk of shock when testing. If in doubt about how to safely check an electrical tester then advice must be taken before proceeding.

5: Safety markings on the front Panel :



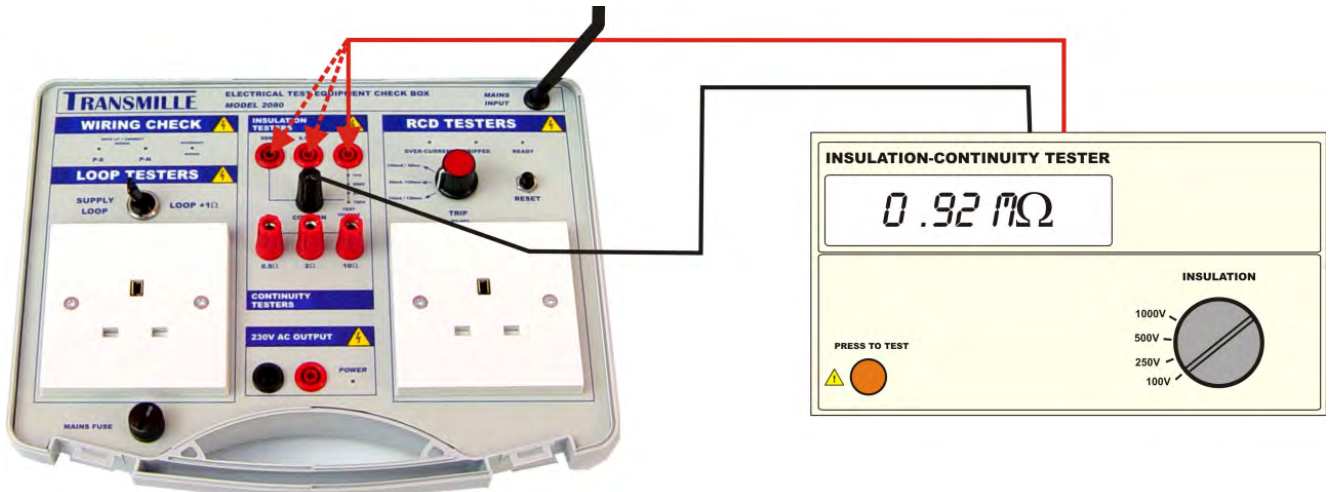
THIS WARNING INDICATES HIGH VOLTAGES MAY BE PRESENT ON THE SOCKET(S) OF THE TEST BOX AND SUITABLE PRECAUTIONS SHOULD BE TAKEN.

Testing an Insulation / Installation Tester

The insulation measurement function of a tester measures high value resistance using a high voltage. A high voltage is used to test that the insulation does not break down, and is an essential requirement to this type of test. To check the insulation measurement function of a tester it is necessary to check **both** the applied test voltage and also the accuracy of the resistance measurement.

Checking for the Correct Applied Test Voltage

1: To check the applied test voltage, connect the 2080 'Common' & '1 MOhm' terminals to the insulation tester as shown below, and plug in 2080 to mains power.



2: Select the lowest test voltage range on the tester, 100V or 250V, and press test button on the tester. Note the corresponding Voltage LED on the 2080 lights. Record result as pass on the check sheet. Check the other test voltage ranges in the same way.



NOTE : FOR THE LEDS TO LIGHT THE RED TERMINAL ON THE 2080 MUST BE POSITIVE. ON SOME TESTERS (EG. ROBIN) THE RED LEAD IS NEGATIVE, AND THE LEADS MUST BE REVERSED.

Checking the Reading Accuracy

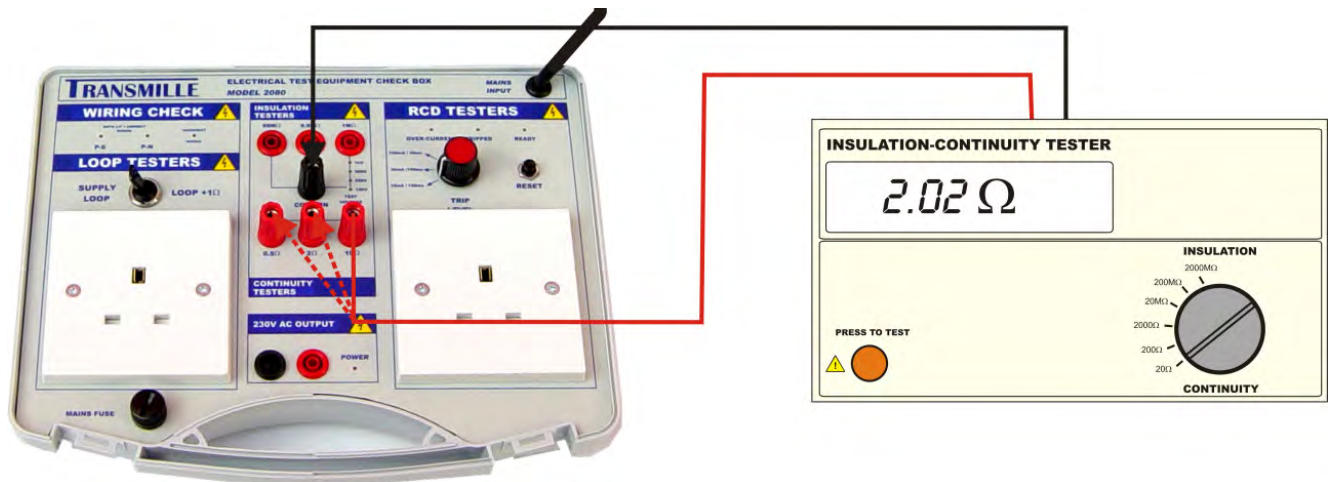
- 1: Connected as above, select 500V test voltage range and record the reading on the tester.
Allow from 0.95 MOhms to 1.05 MOhms ± 1 digit *
- 2: Connect the tester to the 9.9M terminal on the 2080, Starting with the lowest voltage range, record the displayed reading on each range.
Allow from 9.4 MOhms to 10.4 MOhms ± 1 digit *
- 3: Connect the tester to the 99M terminals on the 2080, select the 500V range and record the reading. **Allow from 94 MOhms to 104 MOhms.***

Common Problems	Solution
Test voltage LED's do not light up	1: 2080 not plugged in 2: Tests leads reversed (see section 2 above) 3: Test leads open circuit – try shorting leads together to read zero 4: Tester Faulty or low batteries
Only the lower Test Voltage LED on	Low batteries in tester
Tester reads over range all the time	Test leads open circuit. Note some testers require the correct test leads to be used.

Testing the Continuity Measurement Function

The Continuity, or low resistance function measures low resistance, measured in ohms. To check the accuracy of this function the 2080 has 3 precision low value resistors. Note that the tester will also measure the resistance of the test leads and connections as well. Many testers have a null function to 'zero' out this lead resistance before making a measurement. Please see the instructions for your tester on how to use this function.

1: First Null out test leads. If your tester does not have a null function note the reading obtained with the test leads shorted together and take this reading off all other readings.



2: Connect the test leads to the 'common' and the '0.5 Ohms' terminals as shown above. Select the lowest range on the tester & record the reading displayed on the tester.

Allow readings from 0.4 Ohms to 0.6 Ohms ± 1 digit.*

3: Connect the test leads to the 'common' and the '2 Ohms' terminals. Select the range**, and record the reading.

Allow readings from 1.85 Ohms to 2.15 Ohms ± 1 digit.*

4: Connect the test leads to the 'common' and the '10 Ohms' terminals. Select the range**, and record the reading.

Allow readings from 9.75 Ohms to 10.25 Ohms ± 1 digit.*

**** Select the range on the tester so as to take one reading from each range on the tester.**

For example if the tester had a 2 Ohm, 20 Ohm & 200 Ohm range use the 2 Ohm to measure 0.5 Ohm, the 20 Ohm range to measure 2 Ohm & the 200 Ohm range to measure 10 Ohm.

Common Problems	Solution
Tester reads over range	The test leads are open circuit. Note some test leads are fused and some use special connectors. Check leads are OK
Reading unstable	Check connections are clean and tight in the sockets
Reading High	Checked Tester is zeroed correctly with leads shorted together. Poor leads will give a high zero

Testing the AC Voltage Measurement Function

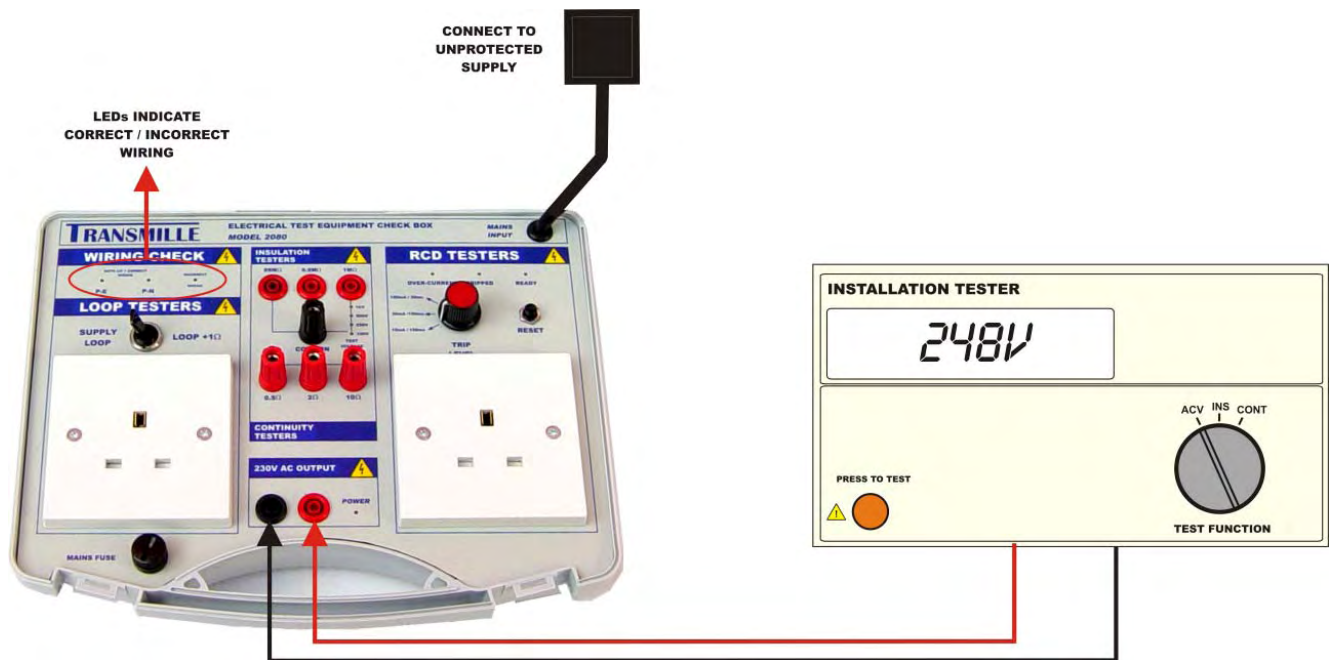
Some insulation, multi function and installation testers can measure AC volts.

This can be simply checked as shown below.



WARNING : MAINS VOLTAGES ARE PRESENT DURING THIS TEST AND CARE MUST BE TAKEN TO AVOID ELECTRIC SHOCK.

1: With the 2080 unplugged connect up the tester to the 2080 as shown below and select the AC voltage measurement function on the tester.



2: Plug in the 2080.

3: Record voltage displayed on meter. **Allow 220V to 250V***

Common Problems	Solution
No voltage displayed	1: Test leads Open circuit 2: 2080 not plugged in to mains supply, check Power LED on 2080 next to AC output sockets 3: Fuse blown on 2080

Testing an RCD Tester

RCD testers simulate a fault current between live and earth, this causes the RCD to trip. The time taken for the RCD to disconnect the supply is shown on the Testers display usually in mill-seconds. To test, it is necessary to check that firstly the tester is taking the correct current and also that the display shows the correct time.

Usually testers have several current ranges plus a '5I' function, which multiplies the current range set by 5.

It is important to check more than one current range, as switches can get broken, leaving the instrument stuck on one range. Good practice would be to check the 10mA and 30mA ranges and also the **operation of the 5 I switch** on the 30mA range (150mA).

It is also very important to check the tester is not taking too much current as an RCD will still trip, for example you could be testing a circuit which should have a 30mA RCD, however due to a faulty range switch on your tester is on the 300mA range and of course this will open any trip up to 300mA.

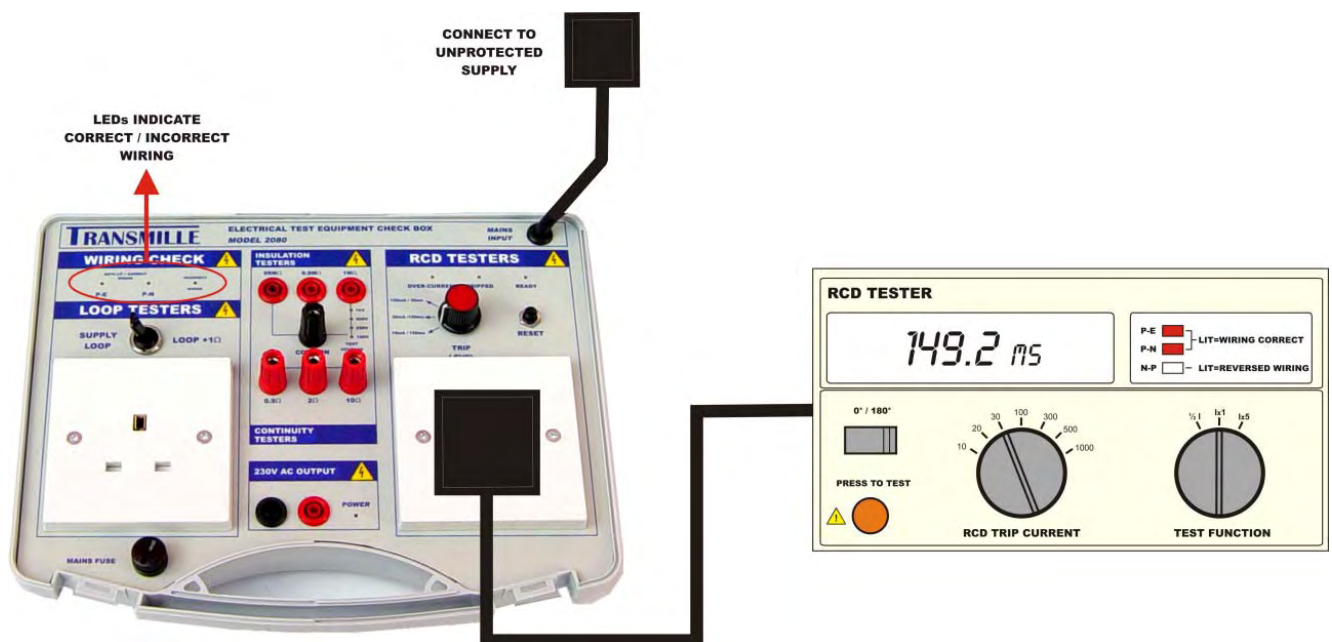
The timing measurement should also be **tested with both a long and a short trip time** to be sure that it is reading correctly. It is of less importance but if the tester has a 'positive/negative' cycle switch it would be good practice to test this as well.

The unique features of the electronic trip built into 2080 allow all the above to be tested quickly and easily. **Accurate timing** is ensured as the time period is not dependant on the current drawn, and an LED warns of over current. Even the positive/negative switch can be checked, as the time period will be 10mS longer for starting on the negative cycle.

Simply checking that a tester can trip an RCD is almost no check of the correct operation of the tester at all, there is no indication of over current and the timing accuracy is poor and varies with current.

Checking RCD Test Time & Current

1: Plug the 2080 into an Unprotected supply (no RCD trip) and plug the RCD tester into the right-hand socket marked 'RCD TESTERS' on the 2080 as shown below.



2: Select the 10mA range and the 0° setting if available on the tester, and the 10mA/150ms range on the 2080. Press the reset button on the 2080, wait for the tester to be ready then press test on the tester. The 2080 'tripped' LED will light and the 'Over Current' LED should be off. Record the time displayed on the tester.

Allow from 135ms to 166ms.*

3: Repeat above for the testers 30mA range.

4: If the tester has a 'x5I' button select this and the 30mA range. Set the 2080 to 150mA/30ms and press 'test' button. Record the displayed time.

Allow from 25ms to 35ms.*

5: If the Tester has a 0°/180° switch select the 180° position and 30mA range, Set the 2080 to 30mA/150ms. The timing period displayed should be 10ms more than with the 180° selected as read in test 3 above.

<i>Common Problems</i>	<i>Solution</i>
No power to RCD tester	1: 2080 not plugged in 2: Fuse blown in 2080
Time period 10ms too long	Tester set to 180° (negative cycle)
Mains Power Switches Off	2080 not connected to unprotected supply

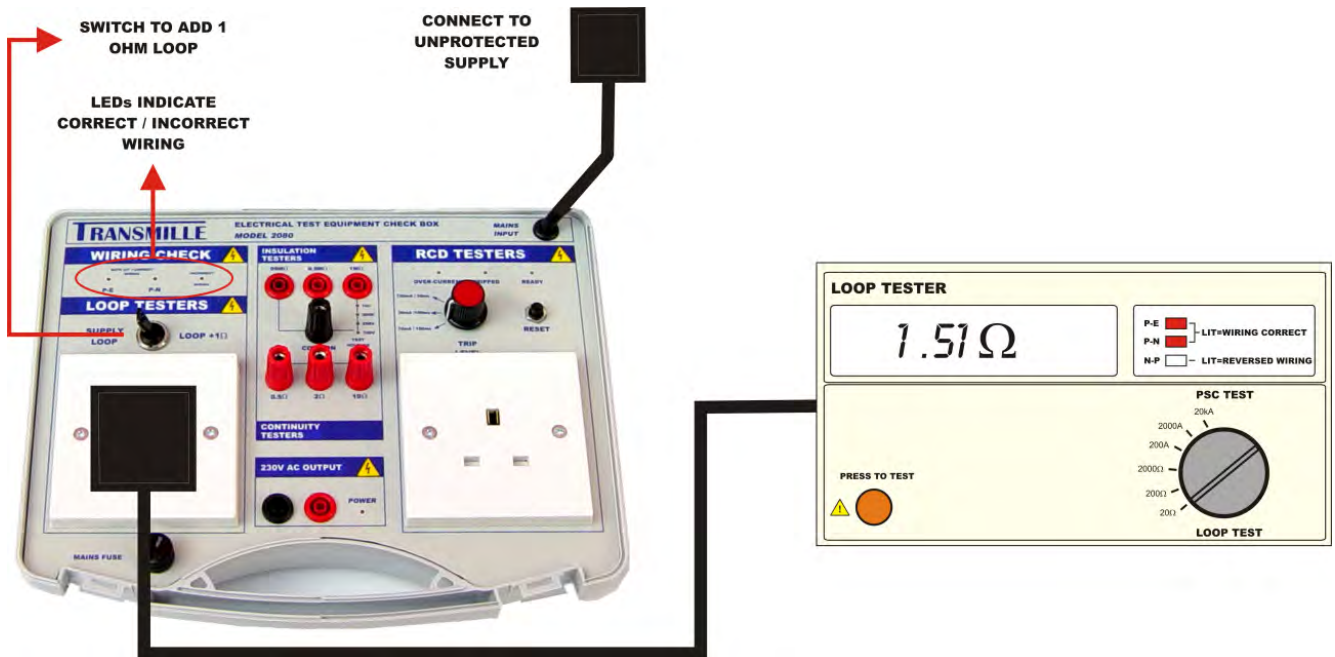
Testing a Loop Tester

Loop testers measure the resistance of the mains supply - the measurement is made in Ohms.

1: Plug the 2080 into an Unprotected supply (no RCD trip) and plug the loop tester into the left-hand socket marked 'LOOP TESTERS' on the 2080 as shown below.



NOTE IF A LOOP TEST IS PERFORMED WHILE PLUGGED INTO THE RCD SOCKET THEN THE FUSE ON THE FRONT OF THE 2080 WILL BLOW.



2: Set Loop Test switch to the 'SUPPLY LOOP' position (LEFT) on the 2080. Select the Lowest range on the tester and press the test button on the loop tester. Note the reading.

3: Switch to the 'LOOP + 1R' position on the 2080, and press test again on the tester. Record the difference from the reading above.

Allow readings from 0.9 Ohms to 1.1 Ohms \pm 1 digit.

** Many testers have both a normal measurement mode, and a 'no trip' mode. Readings should be taken for both modes.

Common Problems	Solution
No Power to Loop Tester	1: 2080 not plugged into supply 2: Faulty loop tester mains lead
Unstable reading on tester	Noise on mains supply - try a different mains socket for the 2080
Supply trips out when test button pressed	2080 must be used on unprotected supply

2080 Specifications Summary

Continuity Ranges	:	0.5Ohms • 2 Ohms • 10Ohms
Continuity Accuracy	:	1% ± 20mOhms
Continuity Current (Max.)	:	300mA
Insulation Ranges	:	1MOhms • 9.9MOhm • 99MOhms
Insulation Accuracy	:	1%
Insulation : Maximum Voltage	:	1.2kV
RCD Ranges	:	10mA (Nominal) @ 150ms
		30mA (Nominal) @ 150ms
		150mA (Nominal) @ 30ms
LOOP Resistance Ranges	:	Supply Loop
		Supply Loop + 1 Ohm
LOOP Resistance Accuracy	:	5%

The allowance figures given in this manual are based on a typical 'working' accuracy for a tester when used with the 2080, and are given as guidelines for the purpose of checking for correct operation of a 16th / 17th Edition instrument. Many testers may give better accuracy, which will be tested against manufacturers specification on a full calibration.

Guarantee and Service

Transmille Ltd. guarantees this instrument to be free from defects under normal use and service for a period of 1 year from purchase. This guarantee applies only to the original purchaser and does not cover fuses, or any instrument which, in Transmille's opinion, has been modified, misused or subjected to abnormal handling or operating conditions.

Transmille's obligation under this guarantee is limited to replacement or repair of an instrument which is returned to Transmille within the warranty period. If Transmille determines that the fault has been caused by the purchaser, Transmille will contact the purchaser before proceeding with any repair.

To obtain repair under this guarantee the purchaser must send the instrument in its original packaging (carriage prepaid) and a description of the fault to Transmille at the address shown below. The instrument will be repaired at the factory and returned to the purchaser, carriage prepaid.

Note :

TRANSMILLE ASSUMES NO RESPONSIBILITY FOR DAMAGE IN TRANSIT

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