

EA008

High Resistance / pA Measurement Adapter

Operation Manual

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 purchaser has caused the fault, 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

THIS GUARANTEE IS THE PURCHASER'S SOLE AND EXCLUSIVE GUARANTEE AND IS IN LEIU OF ANY OTHER GUARANTEE, EXPRESSED OR IMPLIED. TRANSMILLE SHALL NOT BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS.



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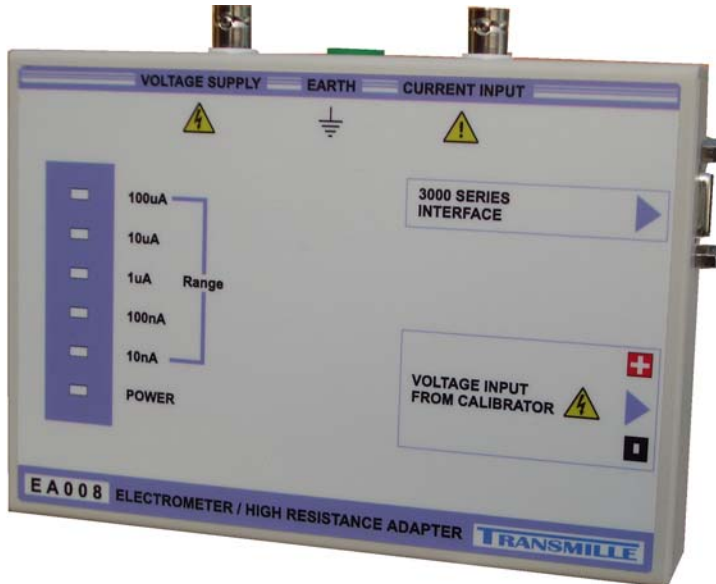
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EA008 High Resistance & pA Measurement Adapter



- Accurate Measurements down to pAmp levels.
- Ideal for High resistance measurements to 1Tohm
- Five measurement ranges
- Supplied with Virtual Front Panel Software for PC.

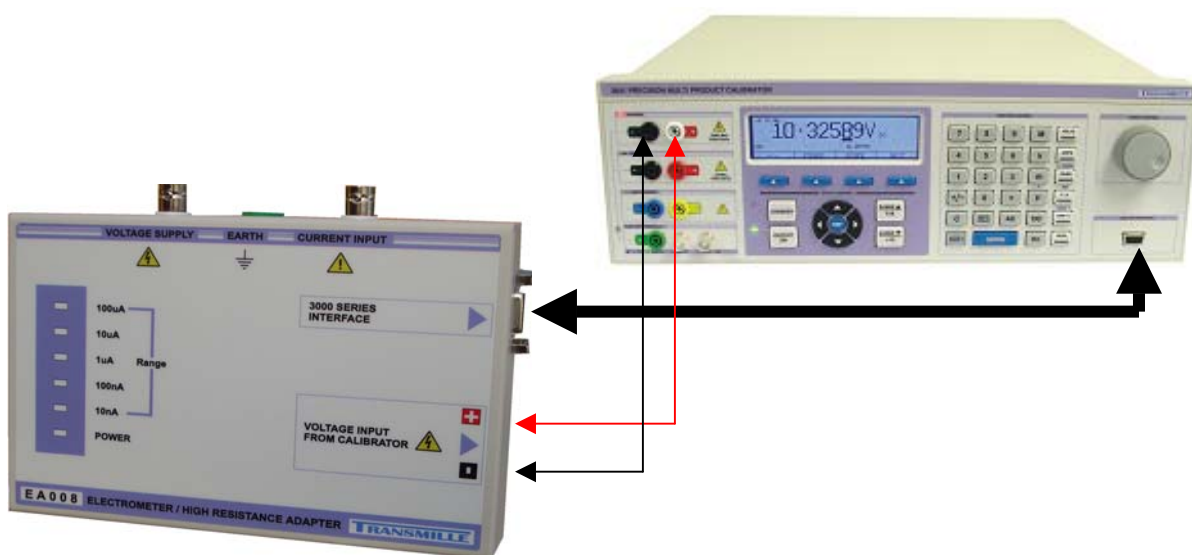
The EA008 adapter for the 3041 & 3010 eliminates the need for a separate electrometer instrument. The low cost EA008 provides 5 current measurement ranges down to 10nA with a resolution of 1pA. The EA008 provides a 'virtual ground' input impedance avoiding errors due to high input impedance often found on DMM's with low current ranges.

By using the accurate high voltage output from the 3000 series calibrator together with the EA008 current measurement capability & the VFP software high value resistance measurements to be made with test voltages up to 1000V.

The virtual front panel program supplied as standard with the adapter provides a familiar user interface with features such as null, filter and auto range.

Connections to the 3000 series Calibrator

The EA008 15 pin d-type connector connects to the 'adaptor interface' connector on the front panel of the 3000 series calibrator using the 15 pin cable supplied. For resistance measurement it is also required to connect the red & black 4mm sockets on the adaptor to the voltage output sockets on the front panel of the 3000 series calibrator. The calibrators RS232 serial interface must also be connected to a PC running the VFP program.



Loading the VFP software onto PC.

Insert the CD supplied into the PC. The CD will auto run. (dependant on PC settings)
Follow on screen instructions.

Basic operation steps and Connection to UUT

Measure pA.

- 1: Connect to calibrator as above.
- 2: Connect the current to be measured into the BMC 'Current input'
- 3: Start the VFP program, select com port as required.
- 4: Click on current range required.
- 5: With no input current 'Null' the EA008 by clicking the null button.

6: Connect current and turn on.

Note 1: EMC interference and pick up can make low current readings unstable. Great care must be Taken to screen all leads and connections for stable readings.

Note 2: The BMC outer shell will be earthed if the calibrator is set 'negative to ground'. This may cause earth loop errors is the current source is also earthed.

Measure High Value resistance.

1: Connect to calibrator as above.

2: Start the VFP program, select com port as required.

3: Click 'resistance' button

4: Click on resistance range required or the 'Auto range' button.

5: With inputs open circuit click the 'Set infinity' button.

7: Using the drop down box select the voltage to measure the resistance at.

6: Connect the resistance to be measured between the 'voltage supply' BMC socket and the 'Input current' BMC socket. Note the outer shield of the BMC is ground to connect to the screen/guard.

7: Click 'Volts on' button

8: Read value on display.

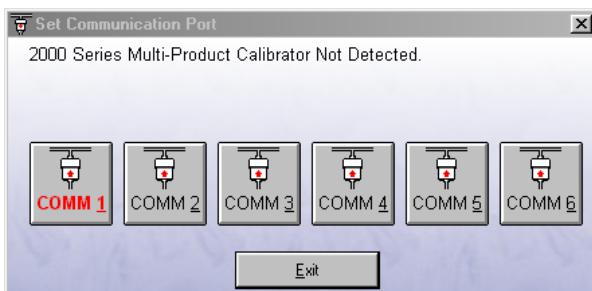
Note 1: EMC interference and pick up can make High Resistance readings unstable. Great care must be taken to screen all leads and connections for stable readings.

WARNING:

The pAmp input of the calibrator is very sensitive and can be damaged by the application of voltages above 50V.

Detailed VFP Operation

Selecting a COM Port



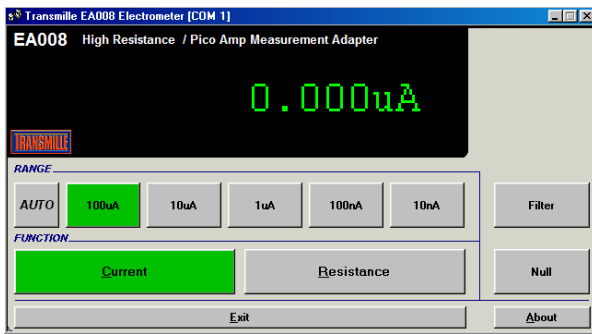
On starting the virtual front panel for the first time, a COM port selection screen will be displayed. Click on the COM port which is connected to your 2000 Series calibrator to continue.




If you are using a laptop to connect to the calibrator, the COM port will usually be COM 1. A desktop computer will usually be COM 2

Operation of the Virtual Front Panel

Once the correct COM port is selected, the calibrator will be detected, and the main screen displayed :



The main screen comprises of a main reading display, range selection buttons and function selection buttons.

Sampling is indicated on the main  display by

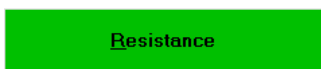
Functions : Current Measurement



The current measurement function provides five ranges to measure current:

100uA • 10uA • 1uA • 100nA • 10nA

Functions: Resistance Measurement



The resistance measurement function provides five ranges. On initial selection of resistance, the program will indicate a voltage should be set and the range buttons will display 'No Volts'.

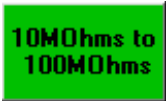
Selecting a test voltage using the voltage selection controls :



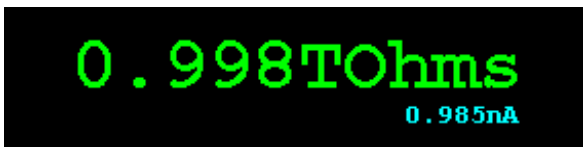
Select a voltage from the drop down list, or by entering a voltage using the keyboard.

Valid voltages are from 20V to 1000V.

Once a voltage is selected the range buttons will display the resistance ranges, for example :



The resistance display will show resistance in green, with a smaller display of current in blue



Auto Range Function



Use the AUTO button to turn on the autoranging function. Click AUTO again or select a range button to turn off autoranging.

Filter Function



Use the filter function to provide a 'walking window' type filtering on the readings (based on 3 samples)


When filter is on, the display will indicate **FILTER**

Null Function (Current Measurement)



The null function allows each current range to be nulled independently.

To set the null, the terminals should be OPEN CIRCUIT.


If auto range  is selected, the virtual front panel will step through each range and perform a null.

Set Infinity Function (Resistance Measurement)



The set infinity function allows
The infinity point of each range to be set independently.

To set the infinity, the terminals should be OPEN CIRCUIT.

If auto range  is selected, the virtual front panel will step through each range and set infinity.

Care & Maintenance

The only maintenance instructions for the adapter is periodic cleaning.
See below for details on the cleaning procedure and precautions for handling.

Cleaning the Adapter

To keep the external enclosure of the adapter in good condition, clean the outer case with a soft cloth. Do not use any liquids in cleaning the enclosure – removal of surface dust is all that is recommended.

CAUTION

Do not use cleaning fluids or solvents for cleaning as these may damage the enclosure and affect the plastic materials used in the adapter.

Handling Precautions

The adapter is designed for mechanical stability, but should not be subjected to excessive shock or be dropped. Transportation is recommended using the original packaging with avoidance of extreme changes of temperature.

Servicing Information

The adapter is provided certified from the factory, and uses precision components and are not user repairable. If the adapter is damaged it should be returned to the factory for repair and recalibration.

EA008

High Resistance & pA Measurement Adapter

Appendix A

Specifications

Ranges..... 10nA - 100nA - 1uA - 10uA - 100uA
Resolution... 1pA - 10pA - 100pA – 1nA – 10nA
Accuracy..... 0.5%