

# **3000RS Series**

## **Precision Resistance Standard**

### **Operation Manual**

## **Guarantee and service**

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Transmille Ltd. guarantees this instrument to be free from defects under normal use and service for a period of 3 years 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**

**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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## 3000RS Precision Resistance Standard

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The 3000RS is a dedicated precision resistance standard. The standards do not require temperature controlled air or an oil bath making the 3000RS suitable as working standards, transfer standards as well as calibration support for the 3000 series range of multi product calibrators.

The stability and temperature co-efficients of the 3000RS is designed for a working environment of 18-23°C and the standard is supplied complete with a calibration certificate.

### Main Features

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- 1 Ohms Reference (4 Wire connections)
- 10 Ohm Reference (4 Wire connections)
- 100 Ohm Reference (4 Wire connections)
- 1 kOhm Reference (4 Wire connections)
- 10 kOhm Reference (4 Wire connections)
- 100 kOhm Reference (4 Wire connections)
- 1 MegaOhm Reference (2 Wire connections)
- Separate Earth terminal to case ground

## Design Notes

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The 3000RS is built using oil filled hermetically sealed ultra high precision foil resistors from 1 Ohm to 100kOhm, and oil filled hermetically sealed ultra high precision wire wound for the 1 MOhm – no adjustable resistors are employed within the design of this reference.

## Features

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Functions of the terminal post connections :

3000RS Terminal Post	Function
CURRENT HI	Input for the current source from an ohmmeter
CURRENT LO	Input for the current source from an ohmmeter
VOLTAGE HI	Measurement point for a four-wire ohmmeter
VOLTAGE LO	Measurement point for a four-wire ohmmeter
EARTH	Connected to the case



<b>Label Reference</b>	<b>Information</b>
Model Number	Model number reference for product
Serial Number	Unique serial number for product

## **Operating Notes**

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This section details operational and environmental considerations for the 3000RS precision resistance standard. Follow these instructions when operating or storing the resistance standard.

### **Connecting to the 3000RS**

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#### **CAUTION**

Do not apply voltages above the maximum ratings details below. Excessive voltage can cause permanent damage and affect the nominal resistance values of the reference.

The specifications for connections with CURRENT and VOLTAGE (SENSE) require four wire connections as standard. Use these terminal posts are detailed in the section below.

For the case to act as a shield the EARTH terminal must be connected to earth ground or instrument guard at some point in a calibration configuration. When connecting two or more instruments with guards, the use of a single common earth point avoids earth loops.

## Connection Recommendations

For optimum results use two sets of low thermal test leads which are designed to reduce errors caused by thermal EMFs.

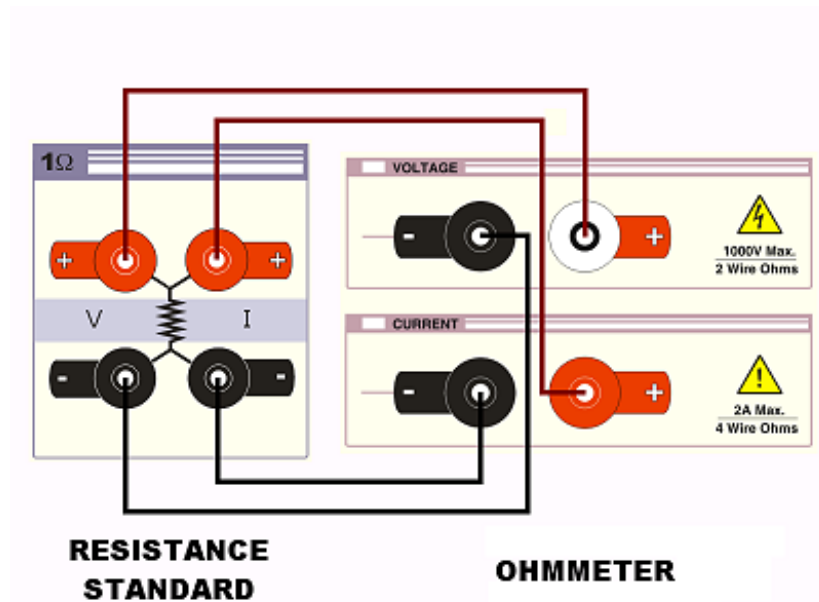


Fig. 1 : 4-Wire Connection Example

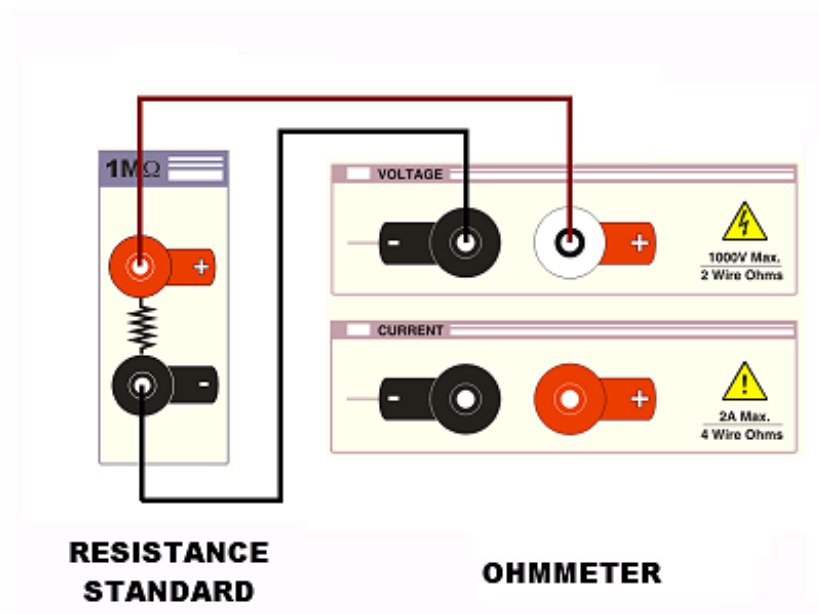
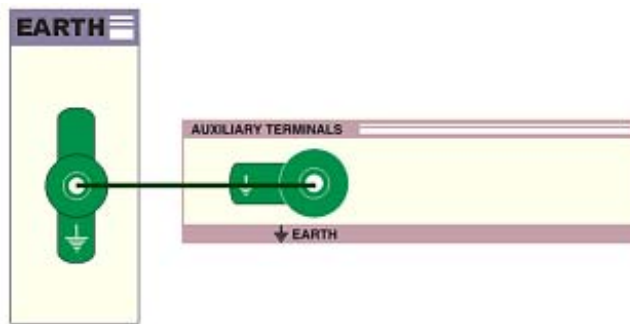


Fig. 2 : 2-Wire Connection Example



**RESISTANCE  
STANDARD  
EARTH**

**OHMMETER  
EARTH**

Fig. 3 : Earth Connection Example

## Specifications

GENERAL SPECIFICATIONS	
<b>DESCRIPTION</b>	Precision decade resistance reference
<b>OUTPUTS</b>	Decade resistances from 1 Ohm to 1MOhm – separate terminals for each resistor
<b>DIMENSIONS</b>	45cm x 44cm x 9cm

PERFORMANCE SPECIFICATIONS			
VALUE	T/C (ppm/°C)	STABILITY/YEAR (ppm)	CONNECTION
1 Ohm	0.5	10	4-Wire
10 Ohms	0.6	5	4-Wire
100 Ohms	0.1	5	4-Wire
1kOhm	0.1	5	4-Wire
10kOhms	0.1	5	4-Wire
100kOhms	0.1	5	4-Wire
1MOhm	0.6	5	2-Wire



## **Care & Maintenance**

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The only maintenance instructions for the 3000RS precision resistance reference is periodic cleaning. See below for details on the cleaning procedure and precautions for handling.

### **Cleaning the 3000RS**

To keep the external enclosure of the 3000RS 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 precision resistance standard.

### **Handling Precautions**

The 3000RS 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 3000RS provided certified from the factory, and uses high precision non-adjustable resistance standards and are not user repairable. If the instrument is damaged it should be returned to the factory for repair and recalibration.