

# 3000ZR

PRECISION VOLTAGE REFERENCE



**3000 PRECISION SERIES**

**LABORATORY REFERENCE STANDARDS**

# 3000ZR Series

## Precision Voltage 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 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**

**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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## 3000ZR Precision Voltage Standard

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The 3000ZR is an integrated 1.018V and 10V reference standard using a multi cell zener reference. Power is supplied via a 15V DC power supply, with internal rechargeable battery backup. The instrument provides indication of power, reference ready and low battery conditions.

### Main Features

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- Multi cell zener references for inter-comparison
- Reference cells with integrated temperature controlled environment
- Robust solid state design
- Outputs can sustain short circuit without damage
- Lightweight and transportable

### Unpacking / Inspection

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When unpacking the reference for the first time, ensure there are no signs of external damage. Check the case, terminals and connectors on both the front and the rear of the instrument.

## Power Input

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The 3000ZR operates on a supplied 15V DC power supply. This is connected to the rear of the unit using the designated socket, shown above with lead attached.

## Initial Power Up and Stabilisation

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On initial unpacking the reference will be set to the OFF condition. Ensure the DC power supply is connected and switch to the ON position – the ON LED should illuminate.

After a period of stabilisation the READY LED will illuminate to indicate the references have reached a stable condition and are ready.

If at any time the LOW BATTERY LED illuminates, check power is available from the DC power supply.

## Design Notes

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The 3000ZR is built using multi cell zener reference technology with integrated temperature controlled environments for each individual cell. This allows a robust solid state design with the ability to sustain short circuit without damage, which retains a lightweight and transportable form factor.

## Features

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Functions of the terminal post connections :

Zener Bank Terminal Configuration	
10V Output	Red Terminal (Top)
1.018V Output	Red Terminal (Middle)
0V (Common) Connection	Black Terminal (Bottom)
Earth Connection	Green Terminal (Far Right)

Front Panel Indicators :

Status Indicators	
On	Power switch to ON position - Voltage reference powered up
Ready	References stabilised
Low Battery	Internal 4-hour battery charge low (no DC power available)

## 3000ZR PRECISION VOLTAGE STANDARD OPERATION MANUAL

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Label Reference	Information
Model Number	Model number reference for product
Serial Number	Unique serial number for product

Rear Panel Connection	Description
Power In 15V DC	External 15V DC power input (for supplied DC mains adapter)
External Battery 12V	12V input for external backup battery
RS232 Interface	RS232 communications port for unlocking reference Using security code (supplied by Transmille)

## Operating Notes

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This section details operational and environmental considerations for the 3000ZR precision voltage reference. Follow these instructions when operating or storing the voltage reference.

## Connecting to the 3000ZR

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### CAUTION

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Do not apply voltage to the 3000ZR voltage reference as this will cause damage and affect the performance of the reference.



## Connection Recommendations

For optimum results use a set of low thermal test leads. Measurements should be taken using a combination of normal and reversal connections to further eliminate thermal EMFs introduced by interconnections.

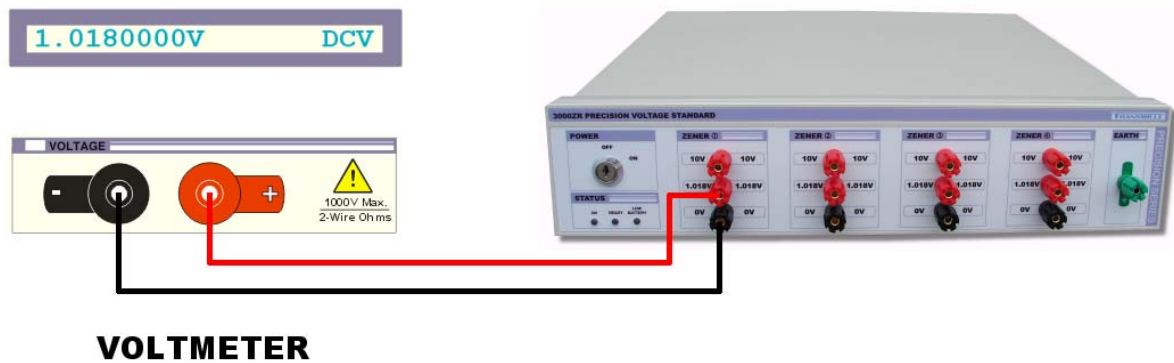


Fig. 1 : 1.018V Reference Connection (Normal) Example

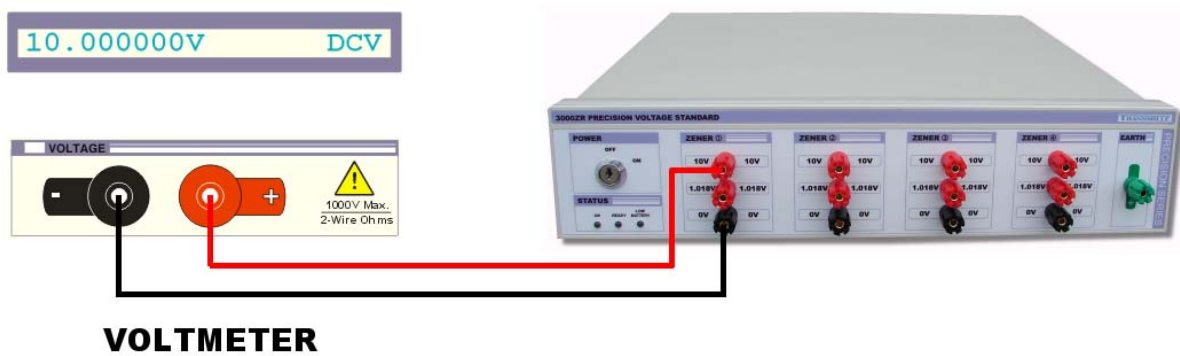


Fig. 2 : 10V Reference Connection (Normal) Example

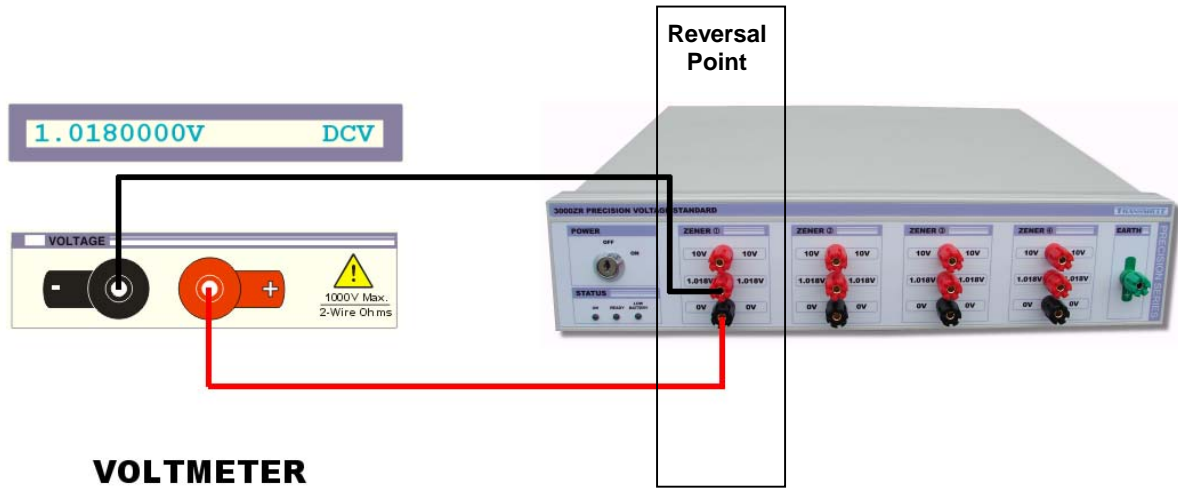


Fig. 3 : 1.018V Reference Connection (Reversal) Example

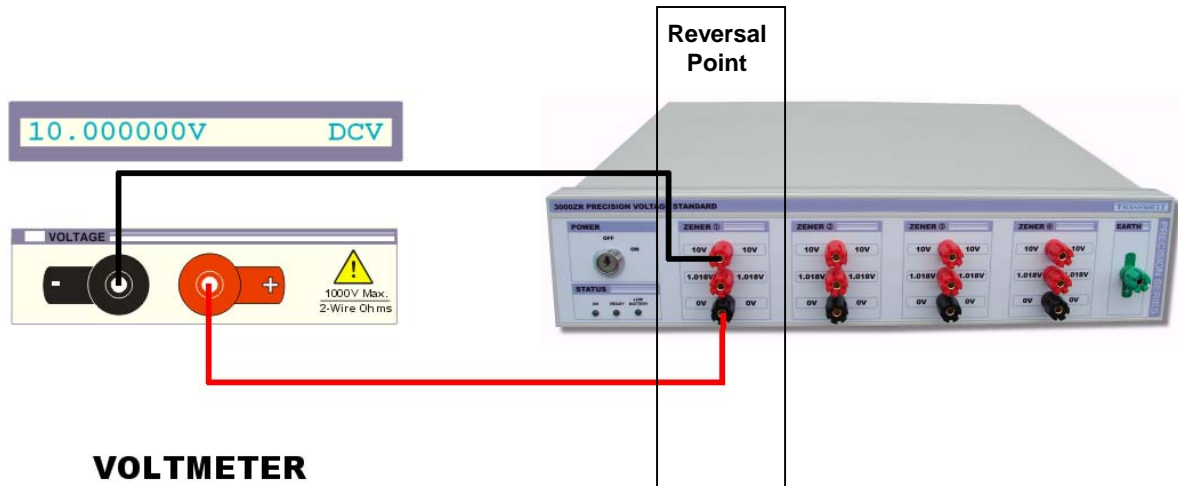


Fig. 4 : 10V Reference Connection (Reversal) Example

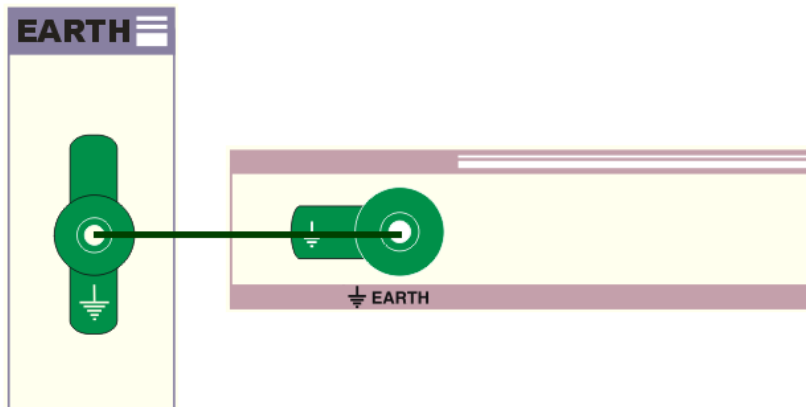


Fig. 5 : Earth Connection Example

## **Specifications**

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A high performance 4-bank voltage reference with 1.018V and 10V outputs per bank.

GENERAL SPECIFICATIONS	
<b>DESCRIPTION</b>	Precision zener voltage reference
<b>POWER</b>	Mains powered with internal battery backup supply
<b>OUTPUTS</b>	1.018V and 10V outputs - separate terminals for each voltage
<b>DIMENSIONS</b>	45cm x 44cm x 9cm

PERFORMANCE SPECIFICATIONS	
<b>OUTPUT</b>	<b>ACCURACY</b>
<b>1.018V</b>	0.8ppm/Month • 2ppm/Year
<b>10V</b>	0.8ppm/Month • 2ppm/Year

## **Care & Maintenance**

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

### **Cleaning the 3000ZR**

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To keep the external enclosure of the 3000ZR 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**

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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**

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The 3000ZR 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**

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The 3000ZR is provided certified from the factory, and uses high precision voltage references and are not user repairable. If the instrument is damaged it should be returned to the factory for repair and recalibration.