



## *Users Manual*

# **DIGITAL MICROVOLTMETER**

**Model: DMV-001**

Manufactured by

**Scientific Equipment & Services**

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ISO 9001 : 2000  
Certified Company



- Very low temperature drift
- Low dc input bias current- 10pA
- Measures voltage down to 1μA
- Automatic polarity indication
- Recorder facility (optional)

Digital Microvoltmeter, DMV-001 is a very versatile multipurpose instrument for the measurement of low dc voltage. It has 5 decade ranges from 1mV to 10V with 100% over-ranging. For better accuracy and convenience, readings are directly obtained on 3½ digits DPM (Digital Panel Meter).

This instrument uses a very well designed chopper stabilized IC amplifier. This amplifier offers exceptionally low offset voltage and input bias parameters, combined with excellent speed characteristics.

Filter circuit is provided to reduce the line pickups of 50Hz. All internal power supplies are IC regulated.

## Applications

DC voltage measurements from high impedance sources; output of photomultiplier tubes, photocells, radiation detector etc.

Very low voltage measurement, direct measurement of thermo-couple output to read temperatures with a resolution of 1/40th of a degree (Chromel-Alumel).

General purpose laboratory instrument for voltages upto 19.99V DC. (Hall Effect, Four Probe, Thermoluminescence, Transistor and Diode characteristics etc.).

## Specifications

<b>Range</b>	: 1mV, 10mV, 100mV, 1V & 10V with 100% over-ranging
<b>Resolution</b>	: 1μV
<b>Accuracy</b>	: ± 0.2% ±1 digit
<b>Stability</b>	: Within ± digit
<b>Input Impedance</b>	: >1000MΩ (10MΩ on 10V range)
<b>Display</b>	: 3½ digit, 7 segment LED with autopolarity and decimal indication
<b>Power Supply</b>	: 220V ±10%, 50Hz
<b>Weight</b>	: 2.5Kg
<b>Dimensions</b>	: 245mm X 280mm X 120mm

## INSTALLATION

When unpacking the instrument inspect for any damage during transit. Any such damage should be intimated to the factory for appropriate action.

This D.C. Microvoltmeter is a portable instrument and does not need any permanent installation. Before connecting the instrument to the mains supply it should be ensured that the mains voltage is 100 - 130 V A.C. with a proper earth connection.

## FUNCTIONS OF CONTROLS AND TERMINALS

1. On - Off : Power On - Off switch
2. Range Selector: Full scale reading of 1mV to 10V in five decades may be selected as required.
3. Input: Amphenol connector and shielded cable for input connection.
4. Zero Adj.: Sets the zero reading in the 1mV and 10mV ranges. For accurate results the 'zero' should be adjusted with equivalent source impedance connected to the instrument. Higher ranges do not require any Zero setting and hence this control has been disconnected for these ranges.

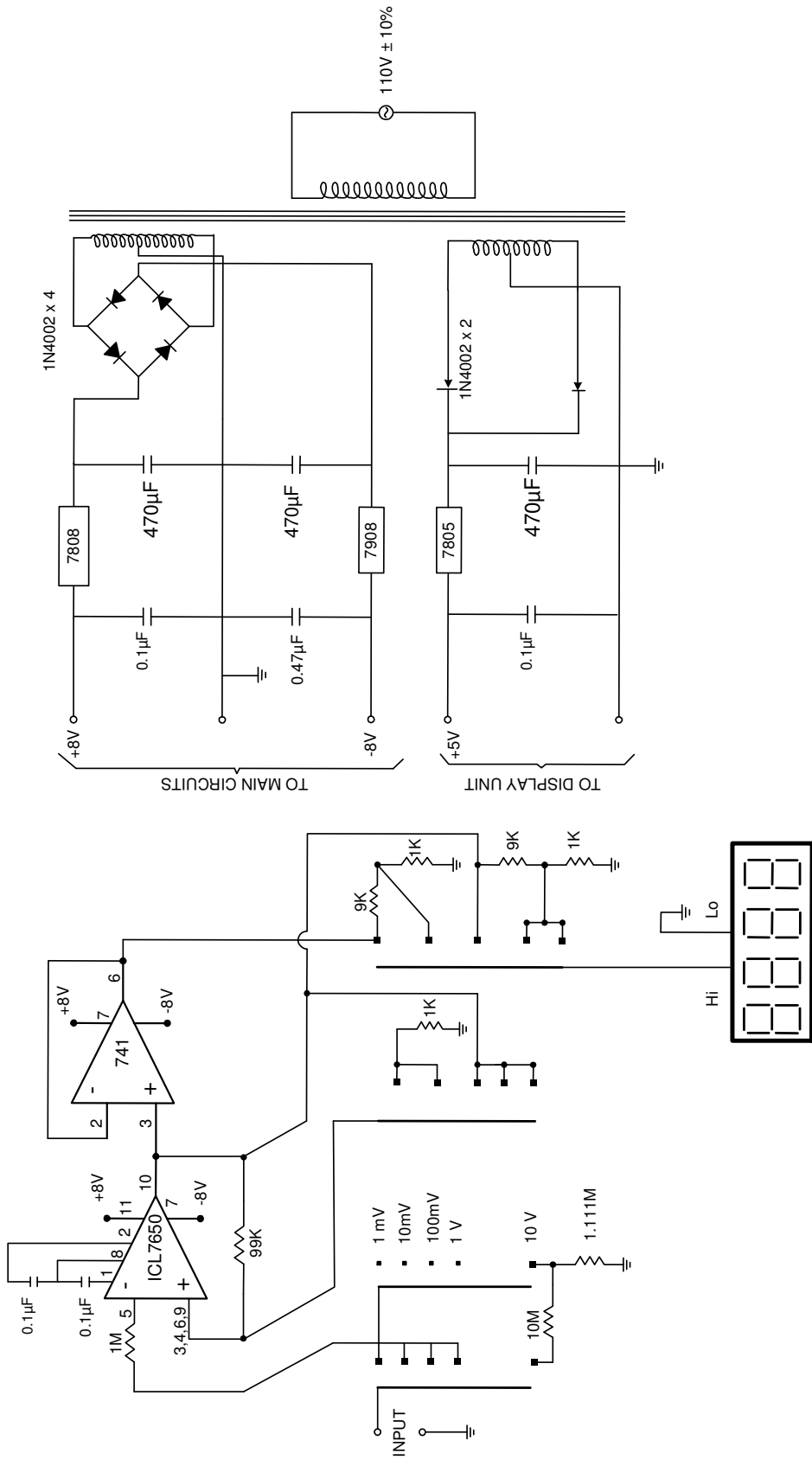
## OPERATING INSTRUCTIONS

1. Select the range in which measurements are likely to be done. In case of any doubt use the next higher range.
2. In case measurement in the 1mV and 10mV are not required, skip this step. For 1mV and 10mV measurements, connect an equivalent / approximate source resistance to the input terminals. Switch on the instrument, wait for 10 minutes and set the zero. Switch off.
3. Connect the source. Switch on the instrument and wait for some-time. The instrument should give a stable reading ( $\pm 1$ digit) indicating the input voltage. Adjust the range switch, if necessary. Excessive flickering of the display indicates improper grounding and / or too much 50Hz pick-up in the source.
4. The position of decimal point could be adjusted with the help of a short-link provided at the back of DPM.

## CAUTION

The input circuit of the IC is internally protected by the manufacturer. Also an external protection has been incorporated in the design. However, the following points should be remembered while handling the instrument.

1. Avoid an 'open' input as far as possible, even while the instrument is switched off.
2. Take extreme care not to apply voltages exceeding the full scale limits to the input.
3. Due to its very high impedance, the instrument can be damaged by static voltage. *The input point must never be touched by hand or connected to an ungrounded source*



**CIRCUIT DIAGRAM OF DIGITAL MICROVOLTMMETER  
MODEL DMV-001**

