

OPERATING INSTRUCTIONS

Multi-Range DC Milliammeter No. 82448

1. Introduction

The 82448 Multi-Range DC Milliammeter is a compact and versatile instrument designed for measuring currents up to 50 milliamperes in five ranges. The basic range of the meter with no shunt is 1 milliampere DC. For measuring currents of higher values, four shunts are supplied that provide measuring ranges of 1.5, 5, 15, and 50 milliamperes DC. The scale is marked in three ranges — 0-1, 0-1.5, and 0-5 — for easy reference.

2. Description

Each unit consists basically of a d'Arsonval meter movement and associated circuitry, mounted within an impact-resistant case.

The components of the d'Arsonval meter — magnet assembly, moving coil, leads, springs, etc. — are designed to withstand severe overloads without damage and to have a long-time linear accuracy of 5% of full scale.

An alnico permanent magnet, with its machined pole pieces of soft iron and a well-centered soft-iron core fixed between them, provides a uniform air gap for the moving coil. The carefully-balanced coil is fitted with steel pivots and selected jewel bearings. Counter-torque and current leads for the coil are provided by two phosphor-bronze spiral springs.

The meter is mounted on the inclined front of the case so that the scale can be easily read from above or from in front. The five current ranges are shown on the single-face scale of the meter. The knife-edge pointer is constructed so as to resist bending by the bumpers. A zero-adjustment screw protruding from the case permits the user to adjust the pointer to zero setting.

Meter connections are brought out to three binding posts mounted at the base of the unit. The binding posts are color-coded and clearly identified according to function and polarity.

The four shunts supplied with each meter have low temperature coefficients of resistance, and they develop negligible thermal electromotive forces (EMF). The shunts are interchangeable, and their ranges are clearly marked.

Specifications:

| | |
|--------------------|--------|
| Current Ranges, mA | 0 -1.0 |
| | 0 -1.5 |
| | 0 -5 |
| | 0 -15 |
| | 0 -50 |

| | |
|----------------------------|-----|
| Basic Movement | |
| Meter Sensitivity, mA | 1.0 |
| Meter Resistance, ohms | 60 |
| Meter Accuracy, full scale | ±5% |
| Resistance of Shunts, ohms | |
| 1.5 mA shunt | 120 |
| 5.0 mA shunt | 15 |
| 15 mA shunt | 4.3 |
| 50 mA shunt | 1.2 |
| Shunt Accuracy | ±1% |

3. Operation

Before connecting current of unknown value to the meter, see if the mechanical zero setting of the meter pointer is accurate. If necessary, reset the zero setting by turning the zero-adjustment screw in the direction which brings the meter pointer to the zero mark.

To measure current of 1 milliamperes or less, connect the input directly to the binding posts.

To avoid damage to the unit, always use a shunt for measuring current of more than 1 milliamperes.

Select the shunt appropriate for the current range. Plug the shunt in the binding posts, and then connect the input at the binding posts or at the shunt, whichever is more convenient.

When in doubt as to the approximate range of the current to be measured, start the measurements with the 5-milliamperes shunt and, by process of elimination, find the shunt which will provide the proper current reading.

Do not use this meter to measure currents above 50 milliamperes.

4. Maintenance

The Multi-Range DC Milliammeter needs no special maintenance. If trouble develops, a qualified technician should attempt to service the instrument. If the difficulty cannot be corrected immediately, contact Central Scientific Company, giving all symptoms of the malfunction, and wait for further instructions. To ensure better service, please do not return any apparatus to Central Scientific Company until we have sent you authorization.

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