Portable Dynamometer Wattmeter

Elliott Brothers (London) Ltd.

- **Dynamometer Wattmeter:**
  - Measures electrical power (watts).
  - Operates via interaction of fixed and movable coils.
  - Torque generated is proportional to measured power.
- **Historical Context:**
  - Developed during the growth of electrical engineering (late 19th/early 20th centuries).
  - Addressed the need for accurate electrical measurement tools.
- **Elliott's Portable Dynamometer Wattmeters:**
  - Known for accuracy and robustness.
  - Used in laboratories and fieldwork.
  - Popular in early to mid-20th century for testing/maintenance.
  - Portable design for measurements in diverse locations.
- **Legacy:**
  - Analog wattmeters retain historical significance.
  - Recognized despite the rise of digital instruments.

How to Use It:

1. Understand the Wattmeter Connections:
   - The wattmeter typically has four terminals: two for voltage (potential) and two for current.
   - The voltage terminals are often labeled as "V" or "Potential Coil."
   - The current terminals are labeled as "A" or "Current Coil."

2. Ensure Safety Precautions:
   - Ensure that the power to the circuit is off before making any connections.
   - Verify that the wattmeter's range is appropriate for the voltage and current you intend to measure.
   - Use proper protective gear and ensure the setup is safe from accidental short circuits.

3. Connect the Wattmeter:
   - Voltage Connection:
     - Connect the voltage terminals across the load where you want to measure power. One terminal should be connected to the phase (live) and the other to the neutral or another phase if measuring in a three-phase system.
   - Current Connection:
     - Connect the current terminals in series with the load. This means the current flowing through the load also passes through the current coil of the wattmeter.
     - Ensure that the connections are tight and secure to prevent arcing or loose connections.

4. Set the Wattmeter Range:
   - Set the wattmeter to the appropriate range if it has selectable ranges. This step is crucial to avoid damaging the instrument or getting inaccurate readings.

5. Power On the Circuit:
   - Once all connections are verified and secure, power on the circuit.
   - The pointer on the analog scale will deflect, indicating the power being consumed by the load.

6. Read the Wattmeter:
   - Observe the reading on the wattmeter scale. The pointer will indicate the power in watts.
   - If the wattmeter has a mirrored scale, ensure you read it straight on to avoid parallax error.

7. Record the Measurement:
   - Note down the power reading. If the wattmeter has multiple ranges, remember to apply the appropriate multiplier to the reading based on the range setting.

Lifetime at VJTI: Dynamometer Portable Type Analog Wattmeter has been a part of the VJTI laboratory since the mid-20th century, playing a key role in the training of thousands of electrical engineering students. It has been retired from active use but remains on display as a historical piece of educational equipment.

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References:

1. https://www.mhs.ox.ac.uk/exhibits/elliott-brothers/
1. https://americanhistory.si.edu/collections/nmah_904290
1. https://www.gracesguide.co.uk/Elliott_Brothers