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Comimark PZEM-004T

Comimark AC Digital Multifunction Meter PZEM-004T User Manual

Comprehensive instructions for installation, operation, and maintenance.

1. Introduction

This manual provides detailed instructions for the safe and effective use of the Comimark AC Digital Multifunction Meter, model PZEM-004T. This device is designed to measure various electrical parameters in AC circuits. Please read this manual thoroughly before installation and operation to ensure proper functionality and safety.

2. Product Overview

The Comimark PZEM-004T is an AC digital multifunction meter capable of measuring voltage, current, active power, and energy consumption. It is a compact module suitable for integration into various electrical systems for monitoring purposes. The meter operates within a specified voltage and current range, providing accurate measurements for AC power systems.



Figure 2.1: The Comimark PZEM-004T module and its accompanying current transformer. The module is a green circuit board with various electronic components, and the current transformer is a black toroidal coil with red and black wires.

3. Features

- **Multifunction Measurement:** Measures AC voltage, current, active power, and energy.
- **Wide Operating Voltage:** Supports 80V to 260V AC input.
- **High Current Capacity:** Rated for up to 100A with the included current transformer.
- **High Accuracy:** Measurement accuracy of ±1.0%.
- **Compact Design:** Small board size for easy integration.
- **Digital Display Output:** Designed for connection to a display unit (not included, typically via serial communication).

4. Specifications

Parameter	Value
Working Voltage	80 ~ 260VAC
Test Voltage	80 ~ 260VAC
Rated Power	100A / 22000W
Working Frequency	45-65Hz
Measurement Accuracy	±1.0%
Board Size	Approx. 7.4 × 3 × 1.5 cm (2.91 × 1.18 × 0.59 inches)
Item Weight	Approx. 45 g (0.099 pounds)

5. Setup and Installation

Proper installation is crucial for accurate measurements and safe operation. This meter requires connection to the AC power source and integration of the current transformer into the circuit being monitored.

5.1 Safety Precautions

- Ensure all power is disconnected before attempting any wiring.
- Installation should be performed by qualified personnel if you are unfamiliar with electrical wiring.
- Do not exceed the specified voltage and current ratings.
- Avoid touching live terminals during operation.

5.2 Wiring Diagram (Conceptual)

The PZEM-004T module typically has terminals for AC input voltage and a connector for the current transformer (CT). The CT is used to measure current without breaking the circuit.

1. **Connect the Current Transformer (CT):**

   Pass the live wire of the load circuit through the hole of the current transformer. Ensure the direction is correct if specified (some CTs are directional). Connect the two wires from the CT to the designated CT input terminals on the PZEM-004T module. These are usually labeled P1 and P2 or similar.



Figure 5.1: The current transformer (CT) used for non-invasive current measurement. The main load wire passes through the center of this ring.

2. **Connect AC Voltage Input:**

   Connect the AC power supply (80-260VAC) to the voltage input terminals of the PZEM-004T module. These terminals are typically labeled L and N or AC IN. This powers the module and allows it to measure the voltage.



Figure 5.2: Detailed view of the PZEM-004T module's circuit board, highlighting the terminal blocks for connections and various components like capacitors and resistors.

3. **Connect to Display/Microcontroller (Optional):**

   The PZEM-004T typically communicates via a serial interface (e.g., TTL serial or RS485). Connect the module's TX/RX pins to a compatible display unit or microcontroller for reading measurement data. Refer to the specific communication protocol documentation for detailed connection and data retrieval instructions.

After all connections are made, double-check wiring for correctness and safety before applying power.

6. Operating Instructions

Once the PZEM-004T module is correctly installed and powered, it will begin measuring the electrical parameters of the connected circuit. The module itself does not have a built-in display; it outputs data via its serial interface.

1. **Power On:** Apply AC power to the module's voltage input terminals.
2. **Data Acquisition:** Use a compatible serial communication device (e.g., Arduino, Raspberry Pi, or a dedicated display) to read data from the module's serial output. The module continuously updates its measurements.
3. **Parameter Reading:**
   - **Voltage:** Read the instantaneous AC voltage.
   - **Current:** Read the instantaneous AC current flowing through the CT.
   - **Active Power:** Read the instantaneous active power consumed by the load.
   - **Energy:** Read the accumulated energy consumption (kWh). This value is typically non-volatile and retains its state even after power loss.
4. **Resetting Energy (if applicable):** Some versions of the PZEM-004T may support a software command to reset the accumulated energy value. Refer to the specific communication protocol documentation for your module version.

The module is designed for continuous monitoring. Ensure the connected display or data logger is configured to correctly interpret the serial data stream.

7. Maintenance

The Comimark PZEM-004T is a low-maintenance device. Adhering to the following guidelines will help ensure its longevity and reliable operation:

- **Keep Dry:** Protect the module from moisture and humidity.
- **Cleanliness:** Keep the module free from dust and debris. Use a soft, dry cloth for cleaning if necessary. Do not use liquid cleaners.
- **Stable Environment:** Operate the device within its specified temperature and humidity ranges.
- **Inspect Connections:** Periodically check all wiring connections to ensure they are secure and free from corrosion. Disconnect power before inspection.
- **Avoid Physical Shock:** Handle the module carefully to prevent damage from drops or impacts.

8. Troubleshooting

If you encounter issues with your PZEM-004T module, consider the following troubleshooting steps:

- **No Power/No Readings:**
  - Verify that the AC voltage input is correctly connected and within the 80-260VAC range.
  - Check all wiring for loose connections or breaks.
  - Ensure the power source is active.
- **Incorrect Current Readings:**
  - Confirm that the load wire passes correctly through the current transformer.
  - Ensure the CT wires are securely connected to the module.
  - Check if the CT is installed in the correct direction (if applicable for your CT type).
- **Communication Issues (No Data Output):**
  - Verify the serial connection (TX/RX, GND) between the module and your display/microcontroller.
  - Ensure the baud rate and communication protocol settings match between the module and the receiving device.
  - Check if the receiving device's software is correctly configured to read data from the PZEM-004T.
- **Inaccurate Readings:**
  - Ensure the module is operating within its specified voltage and current limits.
  - Verify that the load is purely AC and not a mixed AC/DC signal.

If problems persist after following these steps, contact customer support for further assistance.

9. Warranty and Support

This product is covered by a standard return policy, typically allowing for refunds or replacements within 30 days of purchase, subject to the retailer's terms and conditions. For specific warranty details, please refer to your purchase documentation or the retailer's website.

For technical support, troubleshooting assistance beyond this manual, or inquiries regarding product defects, please contact Comimark customer service or your point of purchase. Providing your product model number (PZEM-004T) and a detailed description of the issue will help expedite support.

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Model: PZEM-004T

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