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CEMELI CEMELI

CEMELI RS485 Modbus-RTU 3 Phase Multifunction Panel Meter Instruction Manual

Model: CEMELI (AC0-30A)

1. Introduction

This manual provides essential instructions for the safe and efficient installation, operation, and maintenance of your CEMELI RS485 Modbus-RTU 3 Phase Multifunction Panel Meter. Please read this manual thoroughly before using the device and retain it for future reference. Adherence to these instructions will ensure optimal performance and longevity of the product.

2. Product Overview

The CEMELI RS485 Modbus-RTU 3 Phase Multifunction Panel Meter is designed for precise measurement and display of various electrical parameters in a three-phase, four-wire system. It integrates an LCD display and RS485 communication for data acquisition and monitoring.

Key Features:

- Measures and displays three-phase current, voltage, line voltage, active power, reactive power, apparent power, power factor, frequency, and energy (kWh).
- Equipped with RS485 communication using Modbus-RTU protocol.
- User-settable current ratio for connection with external Current Transformers (CTs) to measure higher ampere values.
- Compact design for panel mounting.

Product Components:



Figure 2.1: The CEMELI 3 Phase Multifunction Panel Meter shown with its accompanying 3-phase ampere sensor. This image provides a general view of both main components included in the package.



Figure 2.2: Front view of the panel meter, highlighting the LCD display and control buttons. The display shows various electrical parameters such as voltage, current, power, and frequency.



Figure 2.3: The 3-phase ampere sensor, designed to measure current flow. This sensor connects to the main meter unit to provide current readings.

3. Setup and Installation

Proper installation is crucial for the accurate and safe operation of the meter. Ensure all power is disconnected before proceeding with any wiring.

3.1 Wiring Diagram and Terminals



Figure 3.1: Detailed view of the meter's wiring terminals. This diagram indicates connections for voltage input (UN, UC, UB, UA), current input (IB*, IA*, IC*), auxiliary power (L, N), and RS485 communication (A, B).



Figure 3.2: Side view of the panel meter showing the terminal block for wiring connections. This perspective helps in understanding the physical layout for installation.

Note: The terminals labeled with an asterisk (*) indicate the input for the current sensor. The QR code visible on the terminal block (refer to Figure 3.1) links to additional detailed instructions. For comprehensive wiring guidance, please scan the QR code or visit http://qr61.cn/o5xINV/qzdqpDr.

3.2 Connection Steps:

1. **Power Supply:** Connect the auxiliary power supply (220VAC) to terminals L and N.
2. **Voltage Input:** Connect the three-phase voltage lines to terminals UA, UB, UC, and UN (neutral).
3. **Current Input:** Connect the 3-phase ampere sensor to the current input terminals (IA, IB, IC, and their respective return paths IA*, IB*, IC*). Ensure correct polarity. The meter is designed for an AC0-5A input from the sensor. If using external CTs for higher currents, ensure the CT secondary output is within this range.
4. **RS485 Communication:** Connect the RS485 communication lines to terminals A and B for Modbus-RTU protocol integration.

Safety Warning: All wiring should be performed by qualified personnel in accordance with local electrical codes and regulations. Failure to do so may result in electric shock, equipment damage, or fire.

4. Operating Instructions

Once the meter is correctly installed and powered on, the LCD display will illuminate, showing various electrical parameters. The meter features four control buttons for navigation and settings.

4.1 Display Navigation:

- The display cycles through different parameters automatically or can be manually navigated using the arrow buttons.
- Use the '>>' button to scroll forward through the displayed parameters.
- Use the '^' button to scroll backward or adjust values during settings.
- The 'SET' button is used to enter the settings menu and confirm selections.
- The 'L' button typically serves as an escape or return function.

4.2 Parameter Display:

The meter displays the following parameters:

- **A:** Three-phase current (Amperes)
- **V:** Three-phase voltage (Volts)
- **W:** Active power (Watts)
- **kWh:** Energy consumption (Kilowatt-hours)
- **cos:** Power factor
- **Hz:** Frequency (Hertz)
- **VAR:** Reactive power (Volt-Ampere Reactive)
- **KVA:** Apparent power (Kilovolt-Ampere)

4.3 Setting Current Ratio:

The meter allows users to set the current ratio internally to accommodate external Current Transformers (CTs) for measuring higher ampere values. Refer to the detailed instructions accessed via the QR code for specific steps on how to enter the settings menu and adjust the CT ratio.

5. Maintenance

The CEMELI Panel Meter is designed for reliable operation with minimal maintenance. Regular checks can help ensure its continued accuracy and performance.

- **Cleaning:** Use a soft, dry cloth to clean the display and casing. Do not use abrasive cleaners or solvents, as these can damage the plastic and display.
- **Connections:** Periodically inspect all wiring connections to ensure they are secure and free from corrosion. Loose connections can lead to inaccurate readings or operational issues.
- **Environment:** Ensure the meter is operated within its specified environmental conditions (temperature, humidity) to prevent damage.

6. Troubleshooting

If you encounter issues with your CEMELI Panel Meter, refer to the following common problems and solutions:

- **No Display:**
  - Check the auxiliary power supply (220VAC) connection to terminals L and N.
  - Ensure the power source is active.
- **Incorrect Readings:**
  - Verify all voltage and current input wiring for correct polarity and secure connections.
  - Check the CT ratio setting if external Current Transformers are used. Ensure it matches your CTs.
  - Confirm the ampere sensor is correctly installed and functioning.
- **RS485 Communication Failure:**
  - Check the RS485 wiring to terminals A and B for correct polarity and secure connections.
  - Verify the Modbus-RTU settings (baud rate, parity, slave ID) on both the meter and the master device. The default baud rate is 9600 (as per back label).
- **Buttons Unresponsive:**
  - Power cycle the device by disconnecting and reconnecting the auxiliary power.

If the problem persists after attempting these solutions, please contact customer support.

7. Specifications

The following table outlines the technical specifications for the CEMELI RS485 Modbus-RTU 3 Phase Multifunction Panel Meter (AC0-30A model):



Figure 7.1: Back label of the panel meter, displaying key specifications such as model, ampere range, voltage, communication protocol, and baud rate.

Parameter	Value
Model	PD-3S13
Ampere Measurement Range	AC0-5A (User can set current ratio for external CTs)
Voltage Measurement Range	AC0-450V (3x220V/380V)
Power Supply	220VAC
Communication	RS485 Modbus-RTU protocol
Baud Rate	9600 bps
Accuracy Class	0.5

Parameter	Value
Package Dimensions	1.18 x 0.79 x 0.39 inches
Item Weight	1.76 ounces (50 Grams)
Manufacturer	CEMELI

8. Warranty and Support

For warranty information, technical support, or service inquiries, please contact your point of purchase or the manufacturer directly. Keep your purchase receipt as proof of purchase.
Manufacturer: CEMELI

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