EARUMZDQ PC321-TY

EARUMZDQ PC321-TY Smart Power Energy Meter User Manual

Model: PC321-TY | Brand: EARUMZDQ

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the EARUMZDQ PC321-TY Tuya App WiFi Smart Power Energy KWh Meter. This device is designed to monitor real-time power consumption, voltage, current, and power factor for both single-phase and three-phase electrical systems, enabling efficient energy management through the Tuya Smart or Smart Life application.

The PC321-TY comes with 80A CT Clamp Sensors (10MM diameter hole) for accurate appliance monitoring and overall energy tracking. It supports 2.4 GHz WiFi connectivity for remote data access and provides data with an accuracy of ±2% every 2 seconds.

Figure 1: EARUMZDQ PC321-TY Smart Power Energy Meter components, including the main unit, three 80A CT clamp sensors, and an external antenna.

The device is suitable for a wide range of applications, including residential homes, commercial markets, factories, and research institutes, allowing users to monitor power consumption of various equipment.

Figure 2: Wide range of applications for the PC321-TY Smart Energy Meter.

2. Important Safety Information

- **Qualified Installation:** The power clamp must be installed and serviced only by a qualified electrician or technician.
- **Power Disconnection:** Always turn off all power supply to the equipment before installing or servicing this device. Failure to do so can result in serious injury or death.
- **Avoid Contact:** Do not touch the terminals of the device during testing or operation when power is applied.
- **Careful Handling:** Exercise extreme caution during installation to prevent electrical hazards.
- **Indoor Use:** This device is intended for indoor use in a dry environment. Avoid exposure to moisture or extreme temperatures outside the specified operating range.

3. Product Components

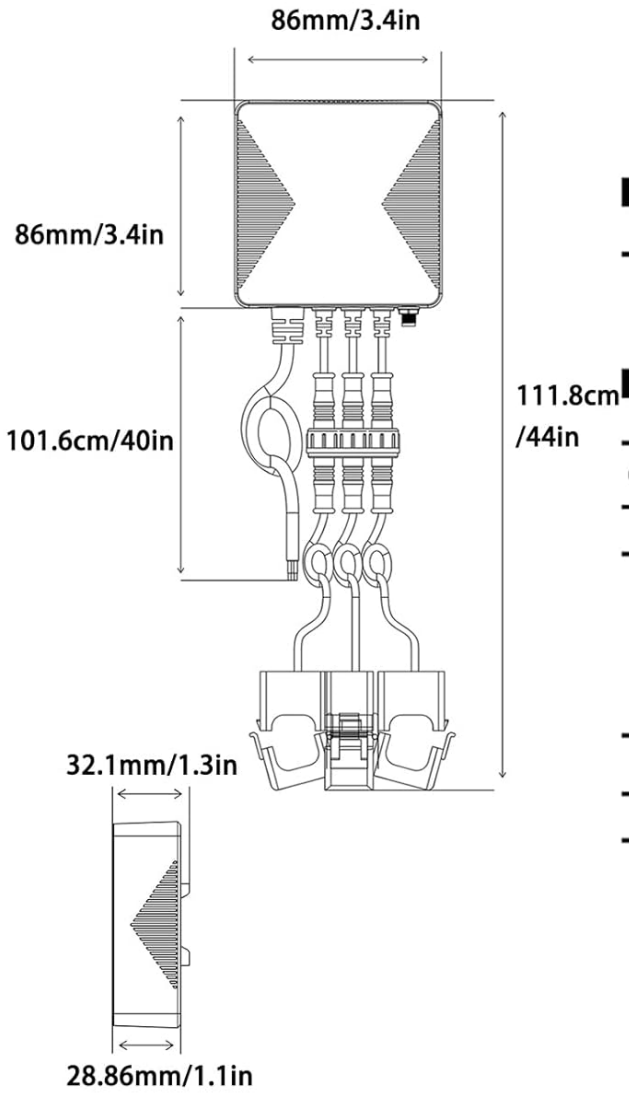
The package includes the following items:

- 1 x PC321 WiFi Smart Energy Meter Main Unit
- 3 x 80A CT Clamp Sensors (10MM Diameter Hole)
- 1 x External Antenna
- Mounting Bracket and Screws

Figure 3: Rear view of the PC321-TY main unit, highlighting the reset button and mounting bracket interface. The serial number is 321112205200241.

4. Specifications

Product Specification



Wireless Connectivity	
WIFI	2.4GHz IEEE 802.15.4
RF Characteristics	Operating frequency:2.4GHz External antenna Output Power:Up to +20dBm
Physical Specifications	
Operating Voltage	100~240 Vac 50/60 Hz
Calibrated Metering Accuracy	⩽100W Within ±2W >100W Within ±2%
Reporting Cycle	Every 3 Seconds
Clamp diameter	80A(default):10.2mm
Operating environment	Temperature:-20℃~+55℃ Humidity:⩽90% non-condensing
Dimension	86 (L) *86(W)*37(H)mm

Figure 4: Detailed product specifications and dimensions of the PC321-TY Smart Energy Meter.

Technical Specifications

Feature	Detail
Model	PC321-TY
Wireless Connectivity	2.4GHz IEEE 802.15.4 (WiFi)
Operating Frequency	2.4GHz
External Antenna	Yes
Output Power	Up to +20dBm
Operating Voltage	AC 100-240V 50/60 Hz
Calibrated Metering Accuracy	< 100W Within ±2W, > 100W Within ±2%

Feature	Detail
Reporting Cycle	Every 2-3 Seconds
CT Clamp Diameter	10MM (for 80A model)
Operating Environment	Temperature: -20°C ~ +55°C, Humidity: ≤90% non-condensing
Dimensions (L*W*H)	86mm * 86mm * 37mm (approx. 3.4 x 3.4 x 1.3 inches)
App Support	Smart Life App & Tuya App

5. Setup and Installation

Before beginning installation, ensure the main power supply to the circuit you intend to monitor is completely turned off at the breaker. Follow all safety guidelines outlined in Section 2.

5.1 Physical Installation of the Main Unit

1. Use the mounting bracket as a template to mark the two screw holes on the wall or desired mounting surface.
2. Screw the mounting bracket onto the wall at the marked locations. Use wall plugs if necessary for secure mounting.
3. Locate the hooks on the mounting bracket and align them with the mounting holes on the Power Clamp main unit. Slide the unit onto the bracket until it clicks into place.

Figure 5: Installation instructions for mounting the main unit and connecting the CT clamps.

5.2 Connecting CT Clamp Sensors

The PC321-TY supports monitoring up to three wires (three-phase power). It can also monitor one or two wires for single-phase power. Install the Current CT Clamp only on the wire you wish to monitor.

1. Attach both ends of the Current Transformer (CT) cables to the corresponding ports on the main unit. Ensure a secure connection by spinning the waterproof latch clockwise until both ends are tightened.
2. Open the CT clamp. Apply it onto the electricity cable you want to monitor.
3. **Important:** Observe the arrow on the CT clamp. The arrow must face the correct direction of electricity current flow (from P1 to P2 or K to L). If the arrow faces the reverse direction, the meter will display 0 or incorrect readings.

5.3 Wiring Diagrams

Refer to the following diagrams for correct wiring configurations for both three-phase and single-phase systems.

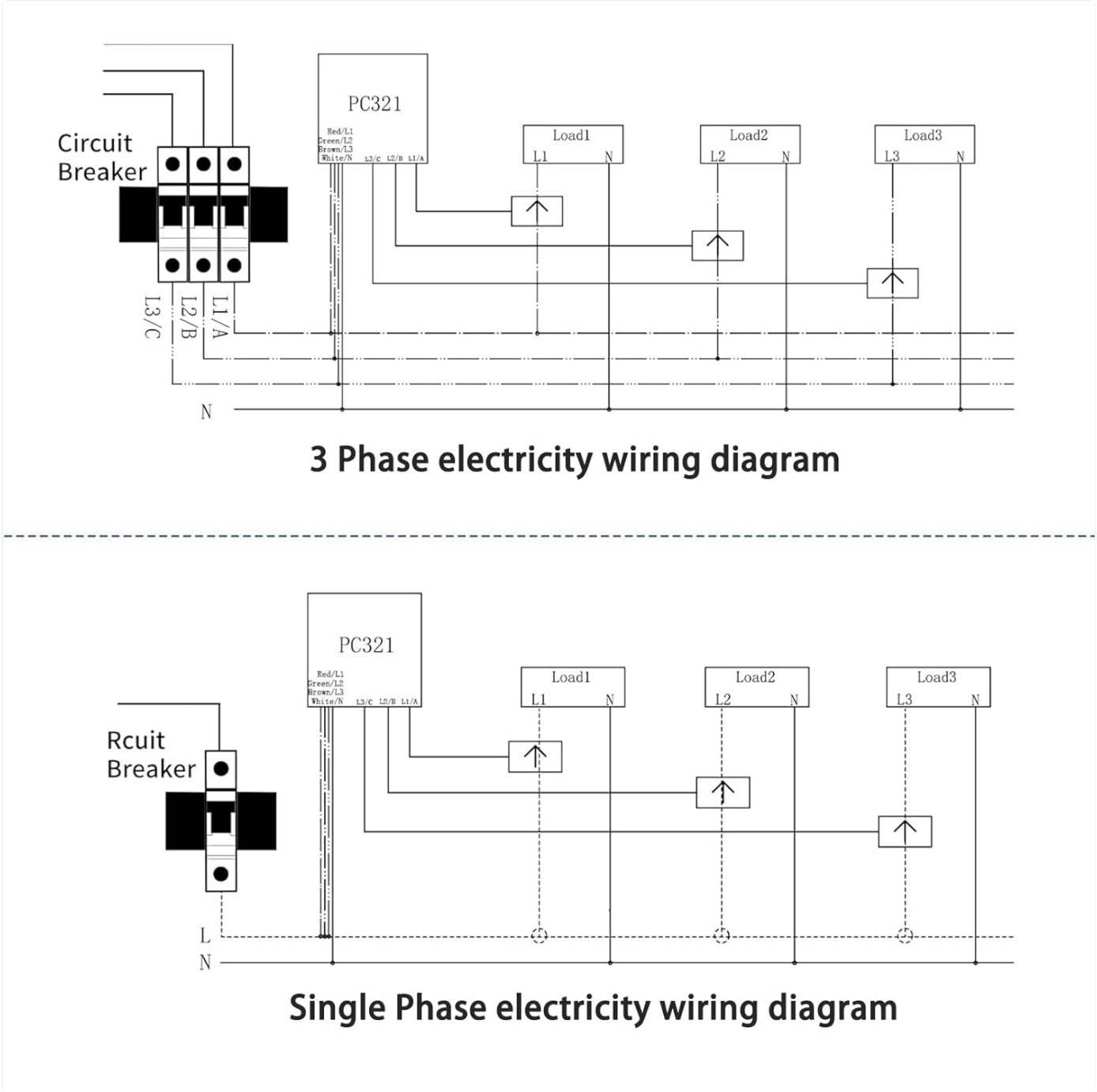


Figure 6: Top diagram illustrates a 3-phase electricity wiring setup. Bottom diagram illustrates a single-phase electricity wiring setup.

- **3 Phase Electricity Wiring:** Connect the main unit's AC input cable to one of the phases (L1, L2, or L3) and Neutral (N) after the circuit breaker. Connect CT1, CT2, and CT3 to the respective phase wires (L1, L2, L3) for monitoring.
- **Single Phase Electricity Wiring:** Connect the main unit's AC input cable to the Live (L) and Neutral (N) wires after the circuit breaker. Connect the required CT clamps (e.g., CT1 for one wire, CT1 and CT2 for two wires) to the Live wires you wish to monitor. The unit powers itself from Phase 1 (or the primary live connection) and will not function if only secondary phases are connected.

6. App Configuration and Operation

The PC321-TY meter integrates with the Tuya Smart or Smart Life application for remote monitoring and control. Ensure your device is powered on and within range of a 2.4 GHz WiFi network (5GHz WiFi is not supported).

6.1 App Download and Device Pairing

1. Download the "Tuya Smart" or "Smart Life" app from your smartphone's app store (iOS App Store or Google Play Store).
2. Register or log in to your account.
3. Add a new device by tapping the "+" icon in the top right corner of the app.
4. Select the appropriate device category (e.g., "Electrical" or "Energy Meter").
5. Follow the in-app instructions to connect the meter to your 2.4 GHz WiFi network. This typically involves putting the device into pairing mode (often by pressing and holding the reset button until an indicator light flashes) and entering your WiFi credentials.
6. Once connected, the device will appear in your app's device list.

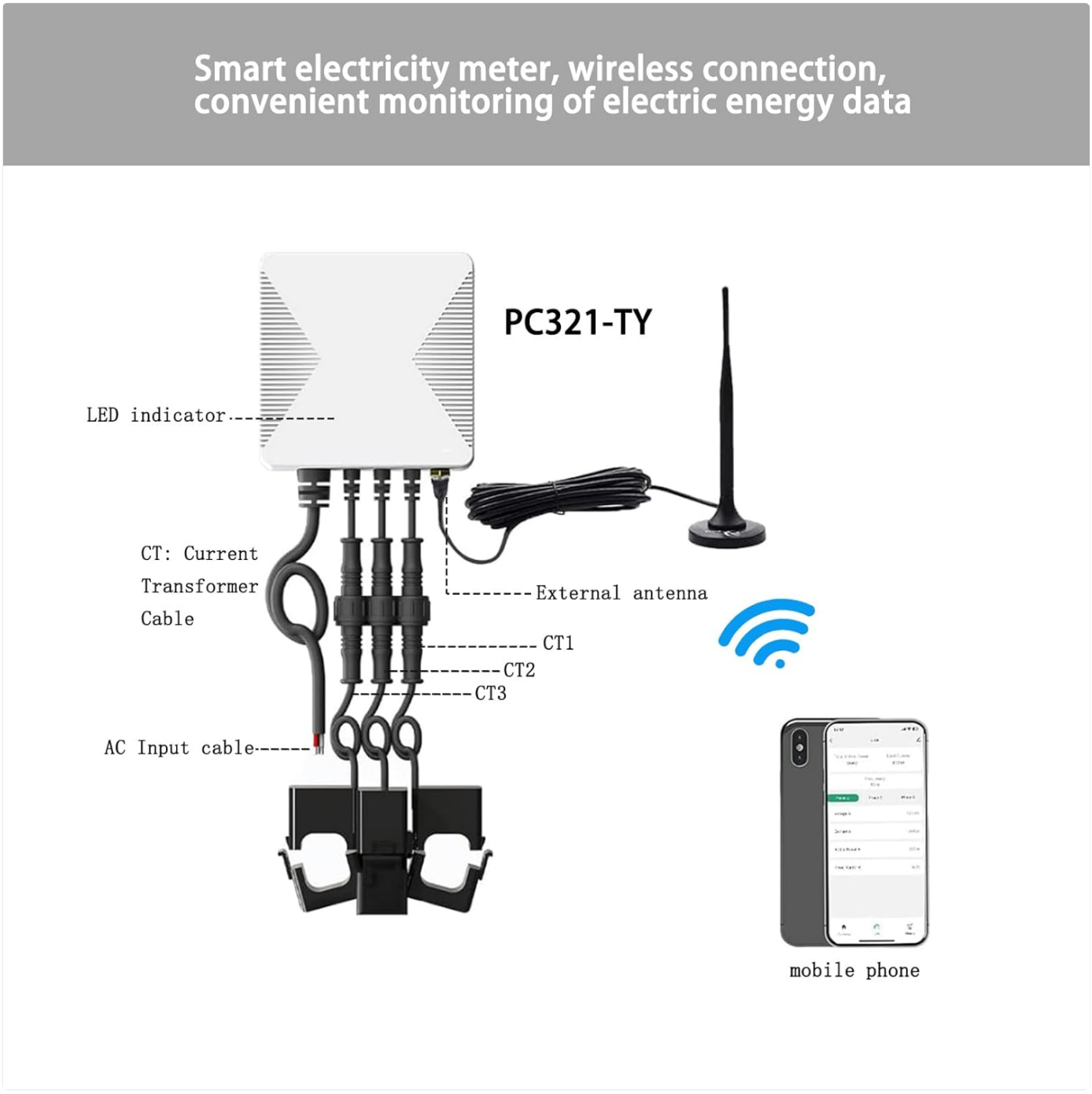


Figure 7: Overview of the PC321-TY system with wireless connection to a mobile phone.

6.2 Monitoring Energy Data

The app provides various interfaces for monitoring energy consumption:

- **Overview:** Displays total energy consumed (kWh) and individual phase consumption if applicable.
- **Live Data:** Shows real-time values for total active power, total current, frequency, and detailed metrics for each phase (Voltage, Current, Active Power, Power Factor). Data is updated approximately every 2 seconds.
- **Usage History:** Provides historical data for energy consumption, typically broken down by day, month, or year, with graphical representations.
- **Energy Saving/Costs:** Some app versions offer features to track energy saving trends and estimate costs based on configured tariffs.

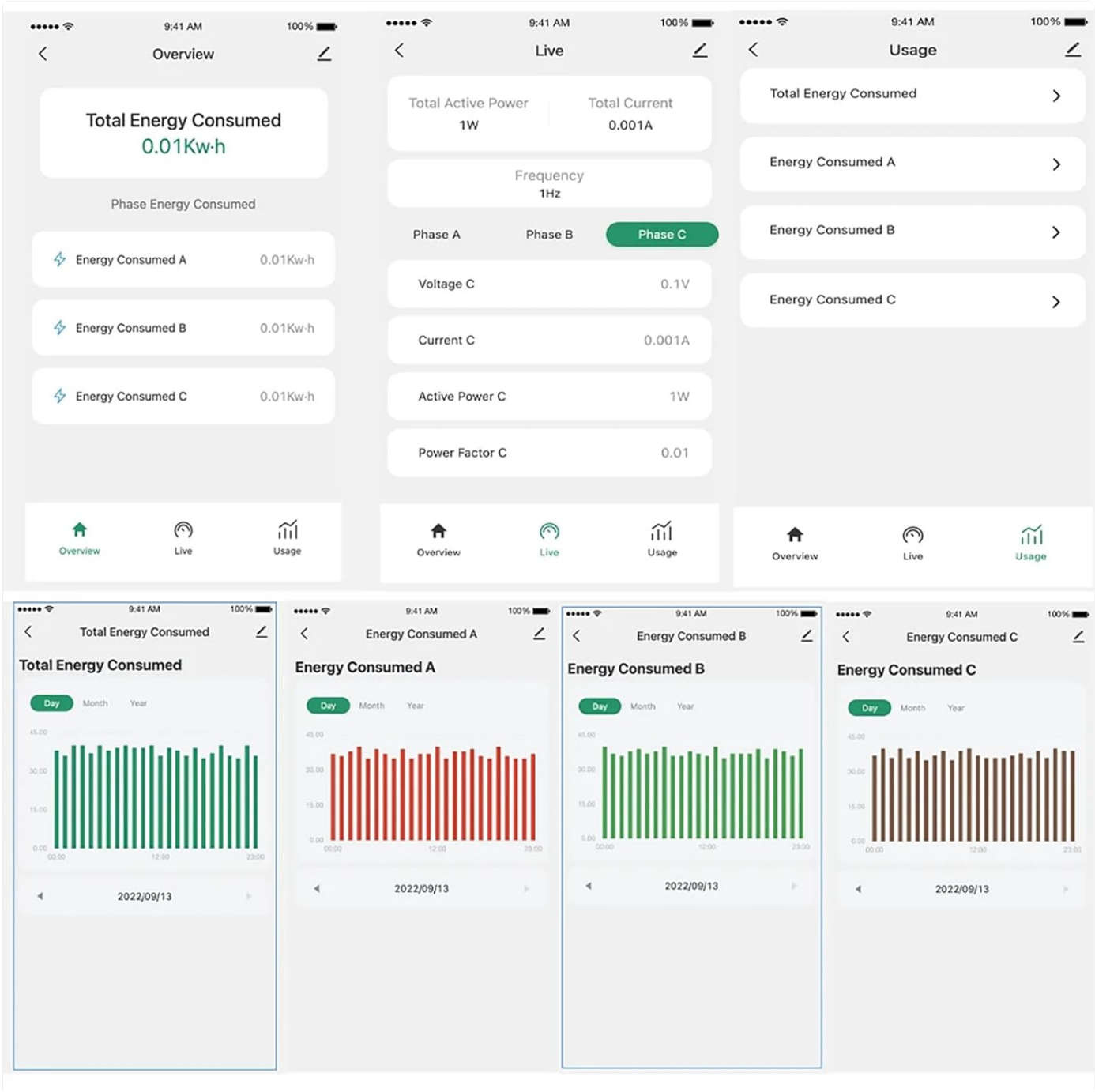


Figure 8: App interface displaying real-time and historical energy consumption data.

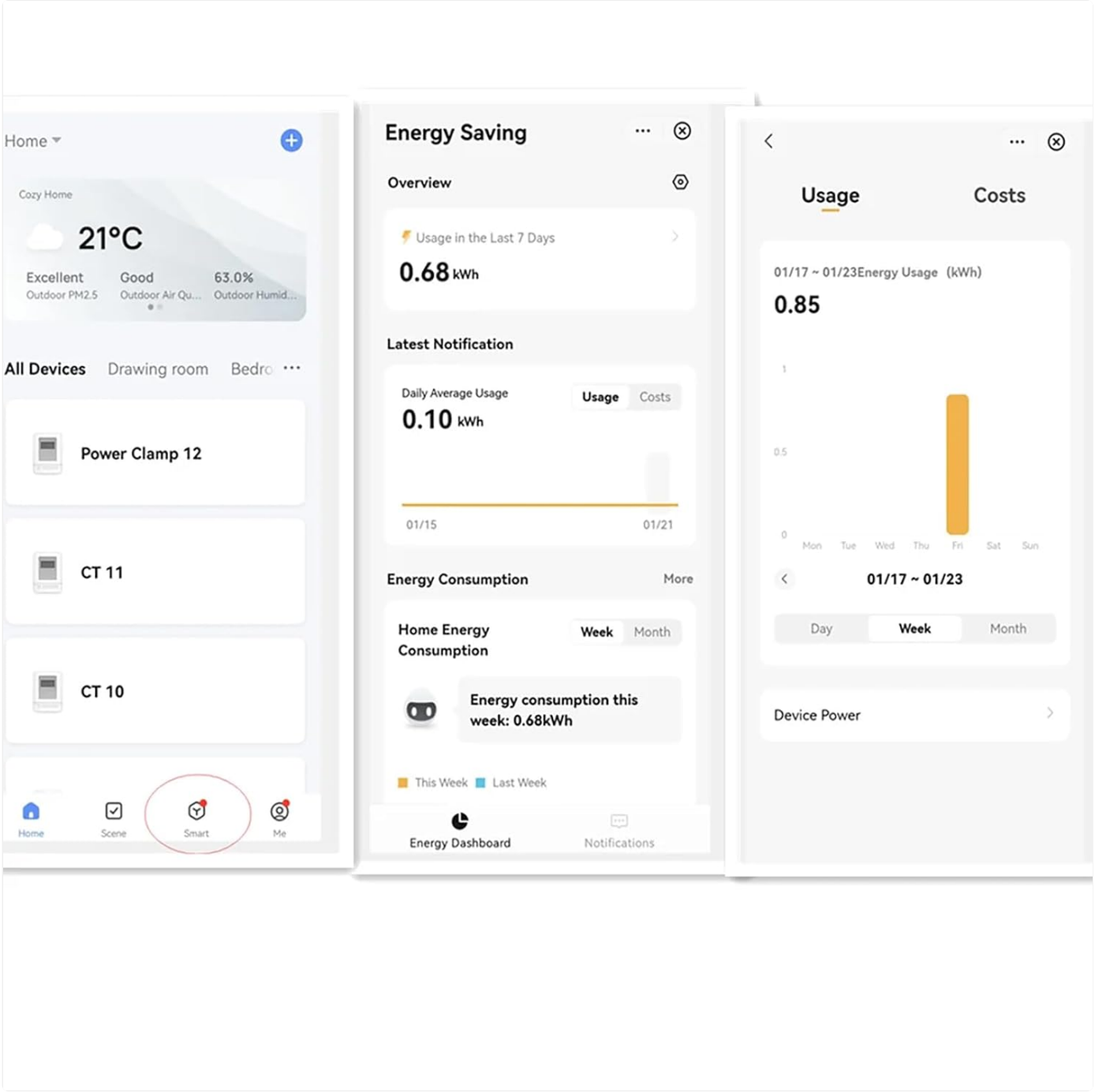


Figure 9: App interface for managing devices, viewing energy saving insights, and tracking usage costs.

The device supports linkage with other Tuya-compatible smart home devices, allowing for advanced automation scenarios based on energy consumption data.

7. Maintenance

- **Cleaning:** Gently wipe the device with a dry, soft cloth. Do not use liquid cleaners or solvents.
- **Firmware Updates:** Periodically check the Tuya Smart or Smart Life app for available firmware updates for the device to ensure optimal performance and security.
- **Connection Check:** Ensure all CT clamp connections and the main unit's power supply remain secure.
- **Reset Button:** The reset button on the back of the unit can be used to factory reset the device or put it into pairing mode if needed for re-configuration.

8. Troubleshooting

Common Issues and Solutions

Problem	Possible Cause	Solution
Device not powering on	No power supply; incorrect wiring; unit powered only from secondary phases.	Ensure AC input cable is correctly connected to a live phase (Phase 1 for single-phase) and neutral. Verify power at the circuit breaker.
Cannot connect to WiFi	Incorrect WiFi band (5GHz); weak signal; incorrect password; device not in pairing mode.	Ensure your router is broadcasting a 2.4 GHz WiFi signal. Move the device closer to the router. Double-check WiFi password. Put the device into pairing mode (refer to app instructions or reset button).
Meter displays 0 or incorrect readings	CT clamp installed backward; loose CT clamp connection; faulty CT clamp.	Verify the arrow on the CT clamp is facing the correct direction of current flow. Ensure CT cables are securely tightened. Check if the CT clamp is fully closed around the wire.
App data not updating	Poor WiFi connection; app issue; device offline.	Check WiFi signal strength. Restart the app. Power cycle the meter. Verify the device is online in the app.
Device frequently disconnects	Unstable WiFi network; interference; device too far from router.	Improve WiFi signal strength (e.g., use a repeater, move router). Reduce interference from other 2.4 GHz devices.

9. Warranty and Support

For warranty information and technical support, please refer to the product's purchase platform or contact EARUMZDQ customer service directly. Keep your purchase receipt as proof of purchase for warranty claims.
Manufacturer: ZHEJIANG EARU ELECTRONICS CO.,LTD
ASIN: B0CM937X73
Serial Number (example): 321112205200241 (Note: Actual serial number is on your device)