OWON 80A-1clamp

OWON Wi-Fi Bi-directional Home Energy Monitor (80A, Single Phase, 1 Clamp) User Manual

Model: 80A-1clamp

1. Introduction

The OWON Wi-Fi Bi-directional Home Energy Monitor (Model: 80A-1clamp) is designed to provide real-time monitoring of your home's electricity consumption and generation. This device supports single-phase electricity systems and includes one 80A current clamp for measurement. It is compatible with the Tuya Smart Life application, allowing for remote monitoring and integration with other smart home devices.
Key features include:

- **Bi-directional Measurement:** Monitors both energy consumption (from grid) and energy production (to grid), supporting daily, weekly, and monthly trend tracking.
- **Real-time Monitoring:** Displays voltage, current, power factor, active power, and frequency with an accuracy of ±2%.
- **App Control:** Connects via 2.4 GHz Wi-Fi for monitoring and automation through the Tuya Smart Life app.
- **Easy Installation:** Lightweight design with a current clamp (PC311-TY) for straightforward connection to power cables.

Image 1.1: OWON Wi-Fi Bi-directional Home Energy Monitor (80A-1clamp) and its mobile application interface.

2. Safety Information

WARNING: Electrical installation and maintenance should only be performed by a qualified professional. Failure to follow these instructions may result in electric shock, fire, or other serious injury.

- Always turn off all power supplies at the main circuit breaker before attempting any installation or wiring to ensure safety.
- Do not touch terminals or live wires during testing or operation.
- Ensure the device is installed in a dry environment, away from moisture and extreme temperatures.

- Verify that the voltage and current ratings of your electrical system are within the device's specifications (90-250VAC, 80A).

3. Product Components

The OWON Energy Monitor package typically includes:

- OWON Wi-Fi Bi-directional Home Energy Monitor unit (PC311-TY)
- One 80A Current Clamp Transformer (CT)
- User Manual (this document)

Image 3.1: Detail of the 80A Current Clamp Transformer (CT) with P1-P2 direction marking.

4. Setup and Installation

Follow these steps for safe and correct installation of your energy monitor.

4.1 Pre-installation Checklist

- Ensure you have basic electrical knowledge or consult a qualified electrician.
- Confirm your electrical system is single-phase.
- Have necessary tools: screwdriver, wire strippers, multimeter (optional).
- Ensure a stable 2.4 GHz Wi-Fi network is available at the installation location.

4.2 Physical Installation

1. **Power Off:** Locate your main circuit breaker and turn off the power to the circuit where you intend to install the monitor. Verify power is off using a voltage tester.
2. **Mount the Monitor:** The OWON Energy Monitor is designed to fit on standard 35mm DIN rails. Securely attach the monitor unit to the DIN rail within your electrical panel.

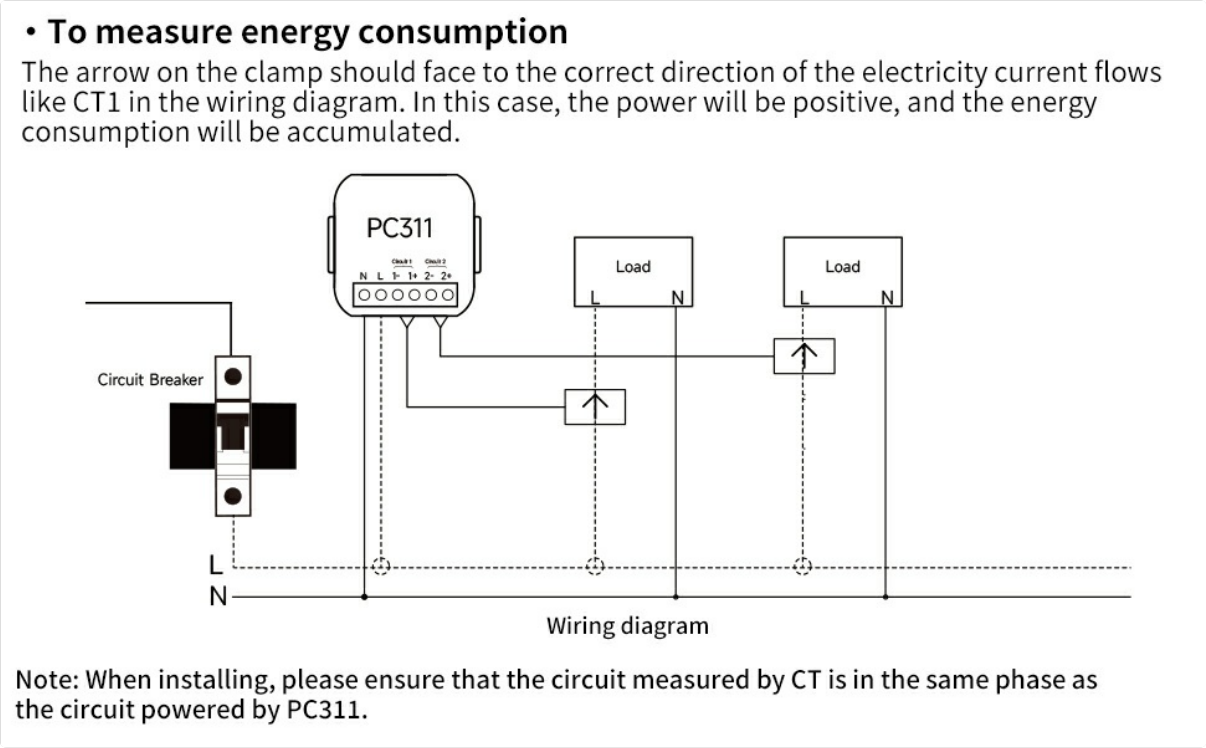


Image 4.1: The energy monitor unit designed for 35mm DIN rail mounting.

3. **Wire the Power Supply:** Connect the Live (L) and Neutral (N) wires from your circuit breaker to the corresponding L and N terminals on the energy monitor. Input voltage range is 90-250VAC.
4. **Install the Current Clamp (CT):**
    - The CT must only be clamped around the **Live wire** of the circuit you wish to monitor. Do not clamp it around both live and neutral wires, or only the neutral wire.

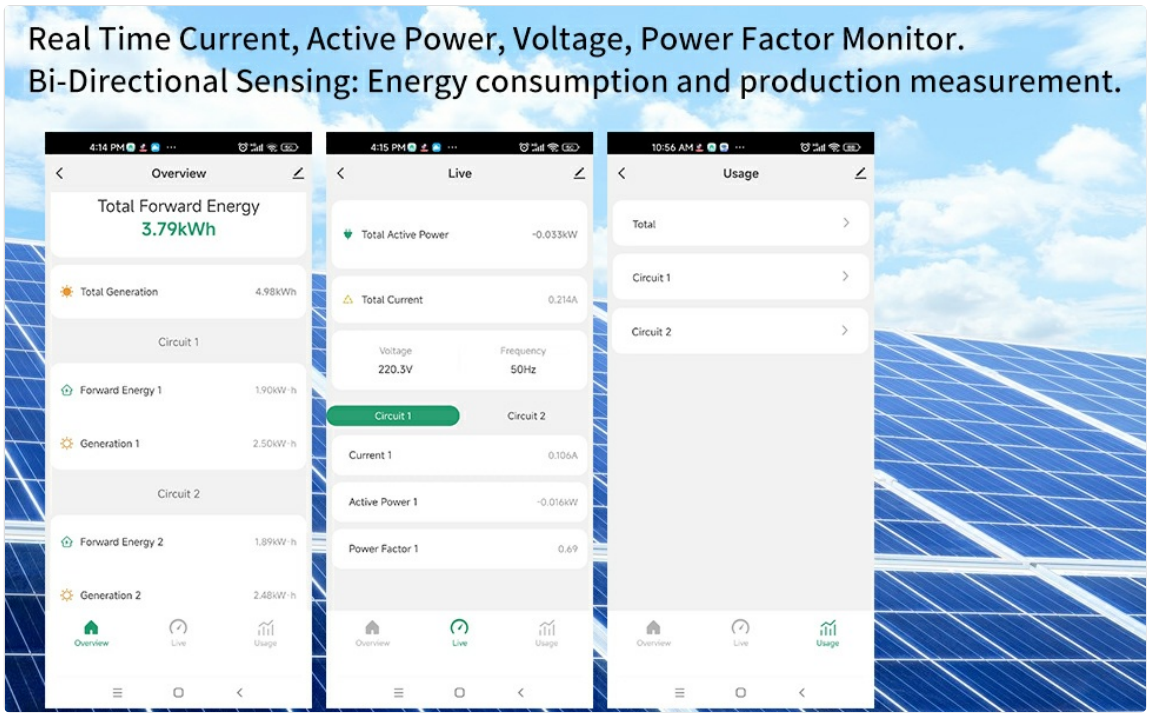


Image 4.2: Correct CT clamp placement on the live wire only.

- Connect the CT's output wires to the 'Circuit 1' terminals (1- and 1+) on the energy monitor.
- **Direction of Current Flow:** The arrow on the CT clamp indicates the direction of current flow. For measuring energy consumption, the arrow should point in the direction of the current flow (e.g., from grid to load). For measuring energy generation, the arrow should point opposite to the current flow (e.g., from inverter to grid).

5. **Wiring Diagrams:** Refer to the following diagrams for specific wiring scenarios. Ensure the circuit measured by the CT is in the same phase as the circuit powering the PC311 monitor.

Wiring for Energy Consumption Measurement

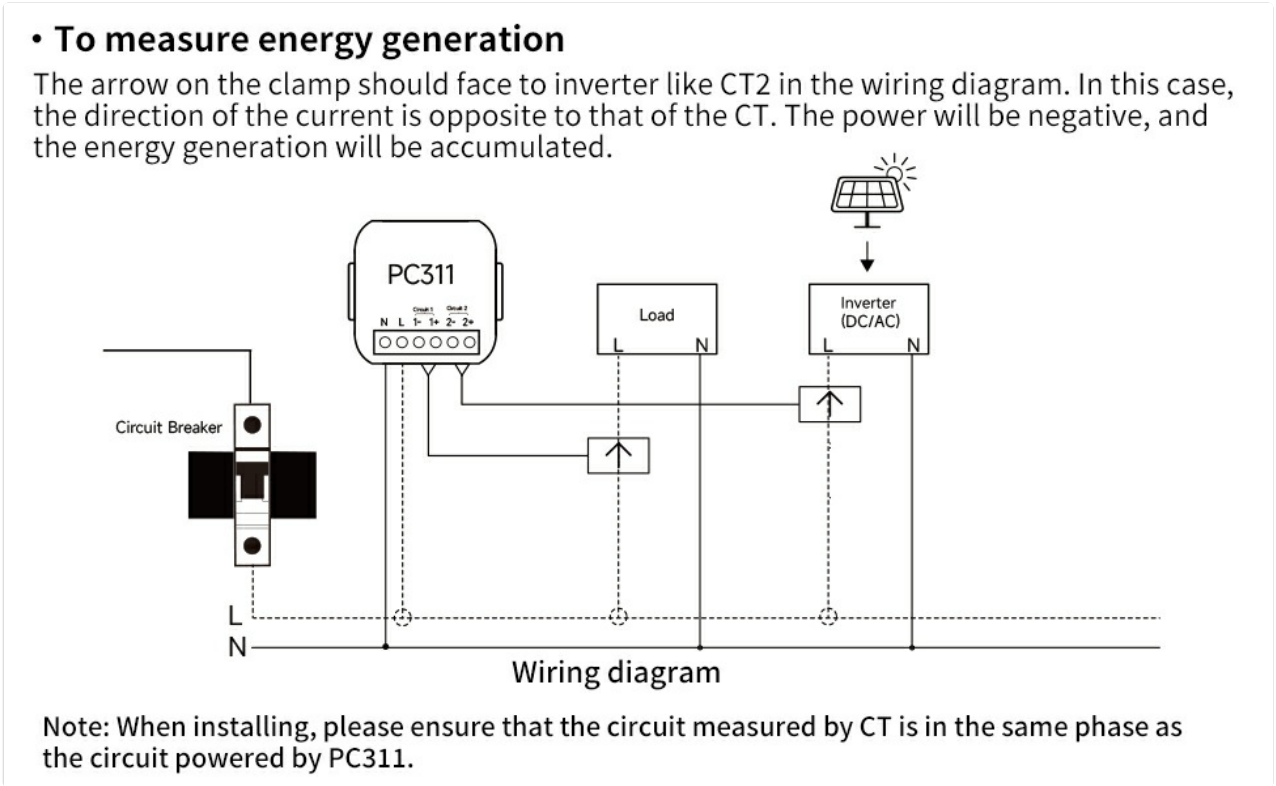


Image 4.3: Wiring diagram for monitoring energy consumption. The CT arrow should follow the current direction (P1→P2).

Wiring for Energy Generation Measurement

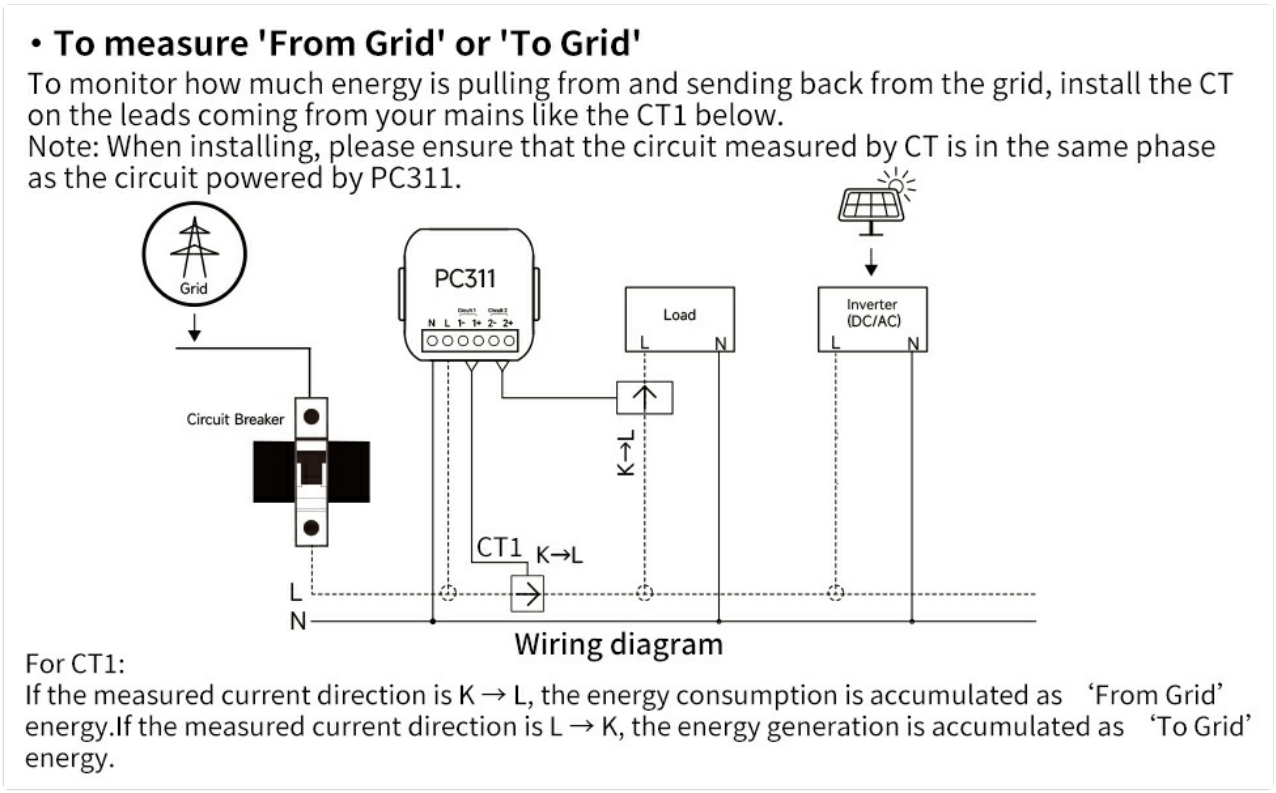
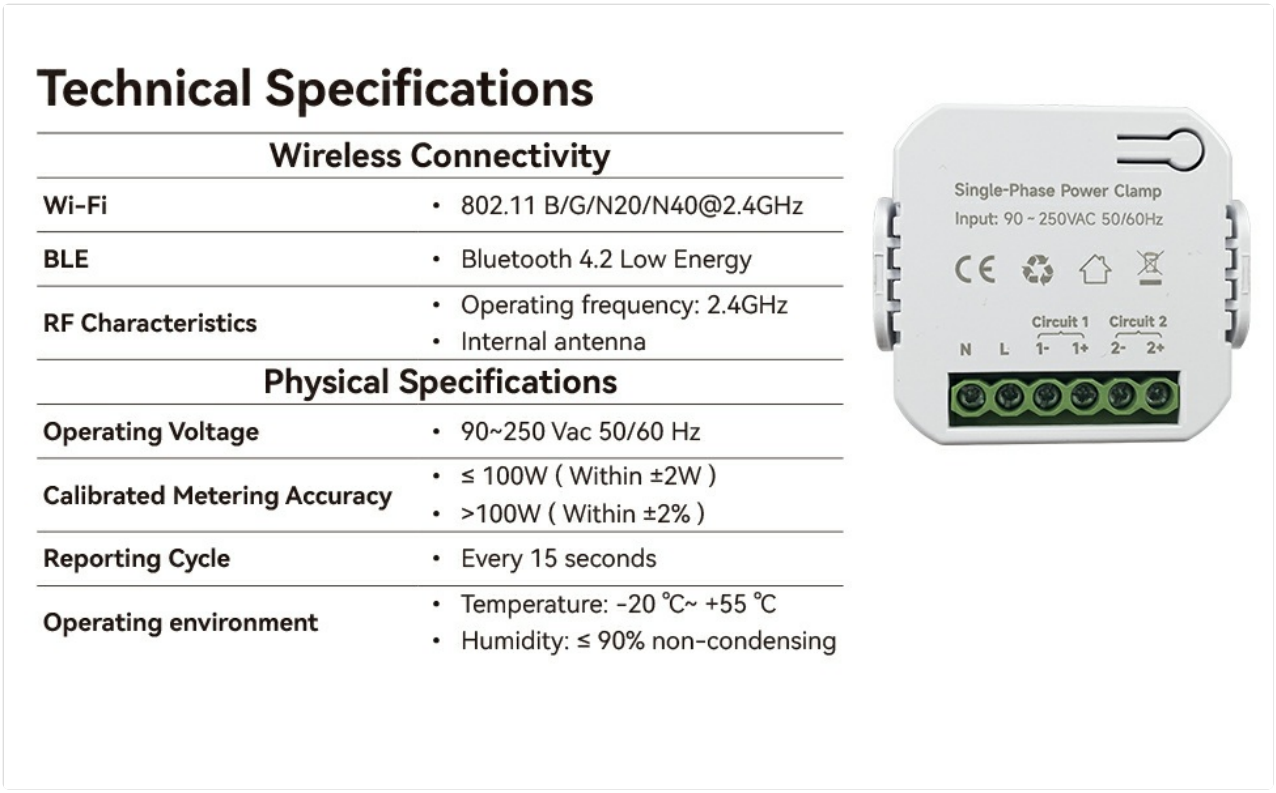


Image 4.4: Wiring diagram for monitoring energy generation. The CT arrow should face the inverter (P2→P1).

Wiring for 'From Grid' or 'To Grid' Measurement (Bi-directional)



Technical Specifications

Wireless Connectivity	
Wi-Fi	• 802.11 B/G/N20/N40@2.4GHz
BLE	• Bluetooth 4.2 Low Energy
RF Characteristics	• Operating frequency: 2.4GHz • Internal antenna
Physical Specifications	
Operating Voltage	• 90~250 Vac 50/60 Hz
Calibrated Metering Accuracy	• ≤ 100W (Within ±2W) • >100W (Within ±2%)
Reporting Cycle	• Every 15 seconds
Operating environment	• Temperature: -20 ℃~ +55 ℃ • Humidity: ≤ 90% non-condensing

Image 4.5: Wiring diagram for bi-directional energy monitoring (from/to grid). The CT is installed on the main incoming leads.

4.3 App Setup (Tuya Smart Life)

1. **Download App:** Download the 'Tuya Smart' or 'Smart Life' app from your mobile device's app store.

2. **Register/Login:** Create an account or log in to your existing account.
3. **Add Device:** Restore power to the circuit. The monitor should enter pairing mode (usually indicated by a blinking LED). In the app, tap '+' to add a new device. Select 'Electrical' > 'Power Clamp' or 'Energy Monitor'.
4. **Connect to Wi-Fi:** Follow the in-app instructions to connect the monitor to your 2.4 GHz Wi-Fi network. You will need to enter your Wi-Fi password.
5. **Configuration:** Once connected, you can name the device and assign it to a room. The app will then display real-time energy data.

5. Operating Instructions

Once installed and configured with the Tuya Smart Life app, your OWON Energy Monitor will begin collecting data.

5.1 Real-time Monitoring

Open the Tuya Smart Life app and select your OWON Energy Monitor device. You will see a dashboard displaying:

- Total Forward Energy (consumption)
- Total Generation (production)
- Real-time Voltage
- Real-time Current
- Active Power
- Power Factor
- Frequency

Image 5.1: App interface displaying real-time electrical parameters.

5.2 Historical Data and Trends

The app provides historical data views, allowing you to analyze energy consumption and production trends over different periods (day, week, month, year). This helps in identifying usage patterns and optimizing energy efficiency.

Image 5.2: App graphs illustrating energy consumption and production trends over time.

5.3 Automation and Smart Scenes

Leverage the Tuya Smart Life app's automation features to create smart scenes based on your energy data. For example, you can set up notifications for unusual power consumption or integrate with other Tuya-compatible devices.

6. Maintenance

The OWON Energy Monitor is designed for minimal maintenance. However, periodic checks are recommended:

- **Visual Inspection:** Periodically inspect the device and wiring for any signs of damage, loose connections, or overheating.
- **Firmware Updates:** Check the Tuya Smart Life app for any available firmware updates for the device. Install updates to ensure optimal performance and security.
- **Cleaning:** If necessary, gently wipe the exterior of the device with a dry, soft cloth. Do not use liquid cleaners or solvents.
- **Professional Check:** For any concerns regarding electrical connections or device functionality, consult a qualified electrician.

7. Troubleshooting

If you encounter issues with your OWON Energy Monitor, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Device not powering on	No power to L/N terminals; incorrect wiring.	Check circuit breaker. Verify L/N wiring connections. Ensure power is restored.
Cannot connect to Wi-Fi / App	Incorrect Wi-Fi password; 5GHz Wi-Fi network; weak Wi-Fi signal; device not in pairing mode.	Ensure correct 2.4 GHz Wi-Fi password. Move device closer to router. Reset device to enter pairing mode (refer to app instructions for reset method).

Problem	Possible Cause	Solution
No energy data displayed	CT clamp not installed correctly; CT wires loose; no current flowing through monitored wire.	Verify CT clamp is securely attached to the live wire only. Check CT wire connections to the monitor. Ensure there is active power consumption/generation in the monitored circuit.
Inaccurate readings	CT clamp direction incorrect; CT clamp not fully closed; interference.	Check the CT arrow direction relative to current flow. Ensure the CT clamp is fully closed. Relocate if possible to avoid strong electromagnetic interference.

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

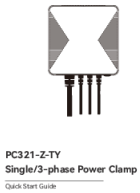
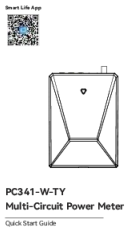
8. Specifications

Feature	Detail
Model Number	80A-1clamp
Manufacturer	OWON
Product Dimensions	6 x 9 x 12 cm; 200 grams
Wireless Connectivity	Wi-Fi 802.11 B/G/N/N40@2.4GHz, Bluetooth 4.2 Low Energy
RF Characteristics	Operating frequency: 2.4GHz, Internal antenna
Operating Voltage	90-250 Vac 50/60 Hz
Max Current (with clamp)	80A
Calibrated Metering Accuracy	≤ 100W (Within ±2W), >100W (Within ±2%)
Reporting Cycle	Every 15 seconds
Operating Environment	Temperature: -20°C ~ +55°C, Humidity: ≤ 90% non-condensing
Country of Origin	China

9. Warranty and Support

OWON products are manufactured to high-quality standards. For warranty information, please refer to the documentation included with your purchase or visit the official OWON website. Typically, warranty covers defects in materials and workmanship under normal use.
For technical support, troubleshooting assistance, or warranty claims, please contact OWON customer service through their official website or the contact information provided in your product packaging. When contacting support, please have your product model number (80A-1clamp) and purchase details ready.
OWON Official Website: www.owon.com

Related Documents - 80A-1clamp

	PC321-TY Single/3-phase Power Clamp Quick Start Guide Quick start guide for the PC321-TY Single/3-phase Power Clamp, detailing safety handling, technical specifications, installation, network configuration, mounting, and troubleshooting.
	PC321-TY Single/3-phase Power Clamp Quick Start Guide | OWON Comprehensive quick start guide for the OWON PC321-TY Single/3-phase Power Clamp. Learn about safety, technical specifications, installation, network configuration, and troubleshooting.
	Owon PC321-Z-TY Single/3-phase Power Clamp Quick Start Guide Quick start guide for the Owon PC321-Z-TY Single/3-phase Power Clamp, covering safety, technical specifications, installation, and network configuration for ZigBee connectivity.
	Owon PC341-W-TY Multi-Circuit Power Meter Quick Start Guide | Electrical Monitoring Comprehensive quick start guide for the Owon PC341-W-TY Multi-Circuit Power Meter. Learn about installation, technical specifications, network configuration, and safety handling for your smart energy monitoring device.
	Owon PCT523-W-TY Wi-Fi Smart Thermostat Quick Start Guide A quick start guide for installing and setting up the Owon PCT523-W-TY Wi-Fi Smart Thermostat, covering safety, installation steps, wiring diagrams, app setup, and basic thermostat operation.
	Owon SPF-1010-WB-TY Smart Pet Feeder Quick Start Guide Get started with the Owon SPF-1010-WB-TY Smart Pet Feeder. This guide provides setup instructions, features, and technical specifications for automated pet feeding.