



USER MANUAL

With QSense, we are powering a sustainable future through innovation, efficiency, and unwavering reliability, **monitoring watt matters most**. Together, we can transform energy management, **one watt at a time**.



USER MANUAL

Infinix Energy Solutions

QSense Comprehensive User Manual

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1. Introduction

About QSense

QSense is an advanced power quality monitoring solution designed to provide detailed insights into various power quality parameters. It helps businesses maintain optimal power quality, protect equipment, and enhance operational efficiency by tracking voltage stability, current harmonics, and power factor.

Key Features

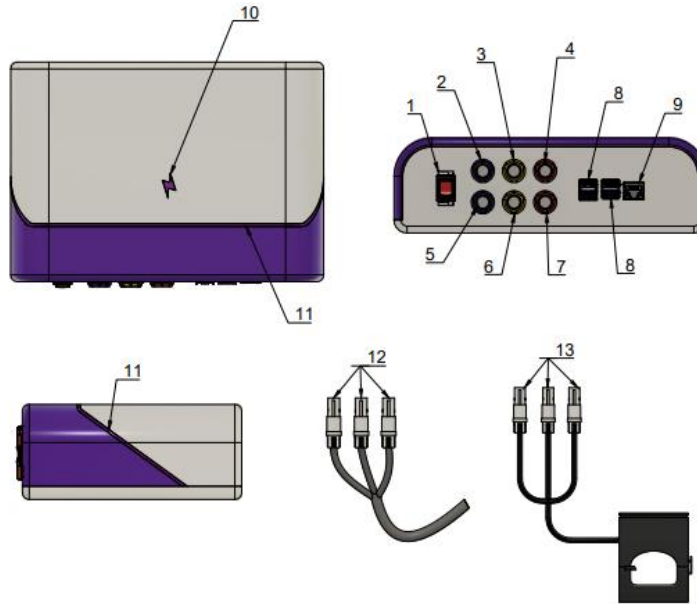
- Granular Power Quality Monitoring
- Real-Time Data Visualization
- Proactive Alerts
- Comprehensive Analytics
- Easy Integration
- Dual Power Modes: Normal Mode and Battery Mode
- Normal Mode
- 3-phase Electrical Energy Measurement

- Voltage RMS Measurement
- Current RMS Measurement
- Active Power Measurement
- Active Energy Measurement
- Reactive Power Measurement
- Reactive Energy Measurement
- Apparent Power Measurement
- Apparent Energy Measurement
- Voltage Total Harmonic Distortion
- Current Total Harmonic Distortion
- Power Factor
- Frequency
- Battery Mode: This feature lets the Raspberry Pi stay active during power outages. This is helpful in continuing measurement after power restoration, which ensures that all energy consumption is measured.
- Connectivity: Wi-Fi and Ethernet

Product Specifications

Item	Parameter	Standard Specification
1	Type of meter	Three-phase, four wire
2	Accuracy Class	1.0
3	Basic Current I_B	$I_B = 50$ A
4	Rated Maximum current I_{max}	$I_{max} = 100$ A
5	Operating Voltage	480 V line to line / 240 V line to neutral
6	Power Factor Range	Zero lag - Unity - Zero lead
7	Operating Frequency	50 - 60 Hz (land based)
8	Operating Temperature	18 to 26°C(Nom)
9	Energy Measurement	Fundamental energy & Harmonics energy
10	Communication	Ethernet, Wi-Fi

Device Parameters



	Minimum	Maximum
Voltage	200 VAC line to line	480 VAC line to line
	100 VAC line to neutral	240 VAC line to neutral
Current	0.5	100 A peak
Frequency	45 Hz * ¹	65 Hz * ²
Operating Temperature	0 °C * ³	55°C

Disclaimer: QSENSE Device is tested on 120 - 240 VAC line to neutral 60 Hz.

Product Overview

1	Power Switch	2	VCP
3	VBP	4	VAP
5	IC	6	IB
7	IA	8	USB Port
9	Ethernet Port	10	Power Indicator
11	Activity Indicator	12	VAP, VBP, VAC male connector
13	IA,IB,IC male connector		

Activity Lights Color Indication

ID	Colour	Activity	Description
1	Blue	Steady	WiFi Setup & User config mode

2	Blue	Fading	Register clearing mode
3	Green	Fading	Measuring data
4	Blue	1x Flash	Sending data
5	Red	Flashing	Communication lost
6	Red	1x Flash	No internet

Power Indicator

ID	Colour	Activity	Description
1	Green	Steady	Connected to AC Power
2	Red	Steady	No AC Power - Running on battery power
3	N/A	Off	No AC power and no battery power

Limitations

Below are the current transformer turns ratio and its equivalent maximum current to be measured.

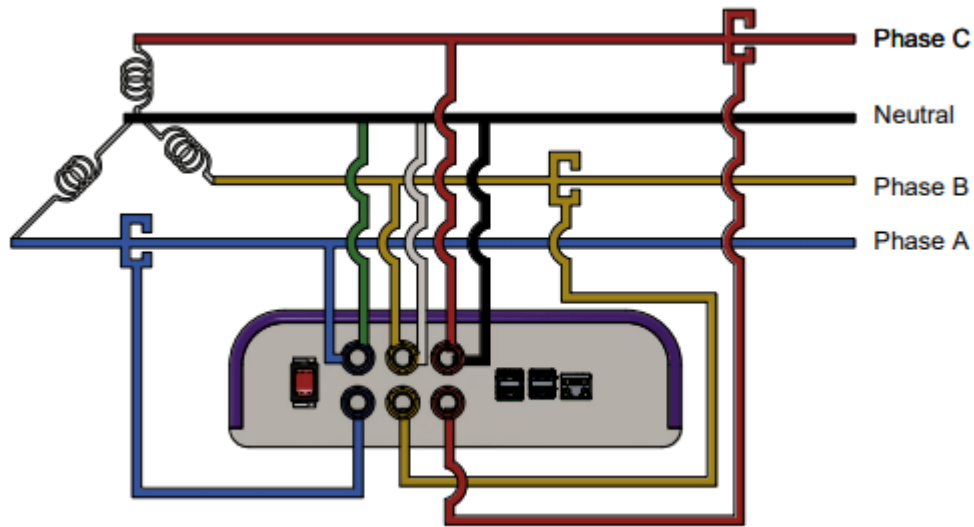
Turns Ratio N	Full scale current I _{fs}
1000	100 A
500	50 A
300	30 A
200	20 A
100	10 A
60	6 A

Therefore, to meet the rated maximum current (100A), transformers with 1000 turns ratio is required.

Note: Secondary current of Current Transformer should not exceed 100 mA.

If the CT ratio input in QSENSE Mobile Application does not match the actual CT sensor, measured data will be inaccurate.

Connection Diagram



Operating Instructions

Before setting up, ensure that QSENSE is OFF. Refer to the CONNECTION DIAGRAM. The current transformer arrow must be facing to the load side.

Safety reminder: The person in-charge of setting-up QSense must be a technician or have experience in electrical parameters.

1. Phase Voltage Grid line connection

1.1. VAP male plug

Connect the red wire to phase A grid

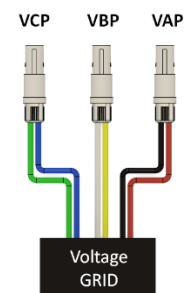
Connect the black to neutral

1.2. VBP male plug

Connect the yellow wire to phase B grid

Connect the white wire to neutral

1.3. VCP male plug



Connect the blue wire to phase C grid
Connect the green wire to neutral

2. Phase Current Grid line clamping

2.1. IA Current Transformer

Clamp the IA CT to the phase A grid, CT arrow must be pointing to the load side.

2.2. IB Current Transformer

Clamp the IA CT to the phase B grid, CT arrow must be pointing to the load side.

2.3. IC Current Transformer

Clamp the IA CT to the phase C grid, CT arrow must be pointing to the load side.



3. Male plugging

- 3.1. Plug the VAP, VBP, VCP male plug to their designated female port on QSENSE device.
- 3.2. Plug the IA, IB, IC male plug to their designated female port on QSENSE device.

Measurement Procedure

Install the QSENSE application provided by the manufacturer.

Turn ON the QSENSE device by clicking the "I" on power switch. Power LED indicator will light up in green color. QSENSE activity lights will light up in steady blue color. This indicates QSENSE is waiting for the user to set-up the configuration in the QSENSE application.

After configuration set-up, QSENSE activity lights will start fading blue. This indicates that the device is booting up.





After booting up, QSENSE activity lights will switch to green fading. This indicates that the device has start measuring.

After measurement, QSENSE activity lights will blink blue. This indicates that the device is sending data.

Note: QSENSE activity lights are disabled in battery mode.

Troubleshooting

If QSENSE activity lights loop in blue fading after configuring set-up procedure, try restarting the device.

If restarting the device does not resolve the issue, report to the manufacturer.

If intermittent data is observed in voltage (VRMS) and current (IRMS), tighten the cable connections as it may be loose.

Maintenance

Store in dry place with a temperature of not greater than 50°C.

Avoid placing the device in dusty and wet environment.

Replace battery pack every 2-3 years.

Do not drop the device as parts may be detach.

Do not connect to voltage higher than 240 VAC.

Do not use the device when measuring higher than 100 A.

Calibration

Calibration of the device should be done by qualified technicians at Infinix Energy Management only.

Calibration cannot be completed by the end user.

The current transformer is not interchangeable. Changing of current transformer may result to inaccurate measurement.

Safety Information



- For safety in operating this instrument, read these instructions completely before using the device and comply fully. Failure to observe these warnings can result in severe injury or death.
- Do not use the device in any manner not specified in the instruction manual.
- Avoid working alone when installing the device.
- Ensure the device is dry and operating correctly.
- Exercise caution when dealing with voltages above 30 VAC rms. These voltages may cause a shock.
- Use personal protective equipment and exercise extreme caution.
- Ensure phase voltage and current configurations match during installation.
- Do not spill water on the device or connect it to voltages higher than 240 VAC.
- Always match the phase voltage and phase current configuration when connecting/clamping to the power grid. Current Transformer is properly labeled and cannot be interchanged.

2. Getting Started

Unpacking QSense

1. Open the QSense packaging and ensure all components are present.
2. Check for any visible damage to the device or accessories.

Hardware Components List

- QSense Device
- Power Cables
- Current Transformers (CTs)

- Voltage Measurement Wires
- USB and Ethernet Cables
- User Manual

Installation Requirements

- Compatible Android device for the QSense Config Application.
 - Access to the local Wi-Fi network for device configuration.
 - Proper personal protective equipment for safe installation.
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3. Hardware Setup

Step-by-Step Setup Guide

1. **Power Off the Device:** Ensure the QSense device is OFF before starting the setup.
2. **Current Transformer Setup:**
 - Ensure the arrow on the CT is facing the load side.
 - Clamp the CTs to the respective phase grid lines (A, B, C).
3. **Voltage Connection:**
 - Connect the red wire of the VAP male plug to phase A grid and black to neutral.
 - Connect the yellow wire of the VBP male plug to phase B grid and white to neutral.
 - Connect the blue wire of the VCP male plug to phase C grid and green to neutral.
4. **Current Transformer Connection:**
 - Connect the IA CT to phase A grid, IB CT to phase B grid, and IC CT to phase C grid.
 - Ensure CT arrows point towards the load side.
5. **Port Connection:**
 - Plug the VAP, VBP, VCP male plugs into their respective female ports on the QSense device.

- Plug the IA, IB, IC male plugs into their respective female ports on the QSense device.
6. **Power On the Device:** Turn on the QSense device using the power switch.
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4. Software Installation

Installation Requirements

- **Operating Systems:** Android (for QSense Config Application)
- **Software Prerequisites:** Internet connection for downloading the application

Detailed Installation Steps with Screenshots

1. **Download the APK:**
 - Obtain the APK file from the website or Google Play Store.
2. **Allow Installation from Unknown Sources:**
 - If prompted, navigate to settings and allow installation from unknown sources.
3. **Install the Application:**
 - Press the APK file to install the QSense Config Application.
4. **Completion:**
 - Once installed, ensure the application appears on your device. Do not open the application until connected to the QSense device access point.

Connecting QSense to Your Network/System

1. **Power on the QSense Device:** Ensure the device is powered on.
2. **Connect to Hotspot:** Connect your device to the QSense Device hotspot (e.g., QSenseDevice-XXXXXX).

3. **Open QSense Config Application:** Open the application and proceed to the Wi-Fi Provision section.
 4. **Enter Wi-Fi Credentials:** Input and confirm the local Wi-Fi credentials.
 5. **Confirm Configuration:** Allow the device to configure the Wi-Fi connection.
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5. Initial Configuration

First-Time Setup Wizard

1. **Open the QSense Config Application:** Follow the prompts to begin the first-time setup.

Configuring Network Settings

1. **Enter Network Details:** Input the necessary network settings to connect QSense to your local network.
2. **Confirm Settings:** Verify and confirm the network settings.

User Account Setup and Login Procedures

1. **Create User Account:** Enter required details such as username, email, and password.
 2. **Login:** Use your credentials to log in to the QSense Config Application.
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6. Dashboard Overview

Detailed Explanation of the Dashboard Interface

1. **Dashboard Layout:** Overview of the main sections of the dashboard.
 2. **Power Quality Monitoring:** Real-time display of power quality parameters.
 3. **Real-Time Alerts:** Section for viewing and managing alerts.
 4. **Historical Data Analysis:** Access and analyze historical power quality data.
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Navigating Different Sections of the Dashboard

1. **Navigation Menu:** Use the menu to access different sections such as monitoring, alerts, and reports.
 2. **Monitoring Section:** View real-time power quality data.
 3. **Alerts Section:** Manage and customize alerts.
 4. **Reports Section:** Generate and view detailed reports.
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7. Using QSense

Monitoring Power Quality

1. **Real-Time Monitoring:** Access real-time data on voltage, current, and power factor.
2. **Data Visualization:** Use charts and graphs to visualize power quality data.

Setting Up and Customizing Alerts

1. **Alert Configuration:** Set thresholds for power quality parameters.
2. **Custom Alerts:** Customize alerts based on specific needs.

Generating and Interpreting Reports

1. **Report Generation:** Create detailed reports on power quality metrics.
2. **Data Analysis:** Analyze report data to identify trends and issues.

Tips for Maintaining Optimal Power Quality

1. **Regular Monitoring:** Continuously monitor power quality parameters.
 2. **Proactive Maintenance:** Address issues as soon as alerts are received.
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8. Maintenance and Troubleshooting

Regular Maintenance Tips

1. **Store Device Properly:** Keep the device in a dry place with temperatures not exceeding 50°C.
2. **Avoid Dust and Moisture:** Ensure the device is not exposed to dust or moisture.
3. **Battery Replacement:** Replace the battery pack every 2-3 years.
4. **Check Connections:** Regularly check and tighten all cable connections.
5. **Calibration:** Ensure regular calibration checks by a qualified technician to maintain accuracy.

9. TECHNICAL SPECIFICATIONS

- Voltage Measurement Range: 0-600V AC
- Current Measurement Range: 0-1000A AC (using external Current Transformers)
- Frequency Range: 50/60Hz
- Harmonic Measurement: Up to the 50th harmonic
- Power Factor Measurement: -1.00 to 1.00
- Sampling Rate: 1024 samples per cycle
- Communication Interface: Ethernet, Wi-Fi
- Operating Temperature: -20°C to 60°C
- Storage Temperature: -40°C to 85°C
- Power Supply: 100-240V AC, 50/60Hz
- Degree Of Protection: IP30
- Pollution Degree: 3
- Dimensions: 251mm * 176mm * 76mm
- Weight: 0.94kg

10. FAQ: Common Issues and Solutions

1. **Device Not Powering On:** Check power connections and ensure the power switch is ON.
2. **No Data Being Received:** Verify connections and confirm configuration settings.
3. **Intermittent Data:** Tighten all cable connections and check for loose connections.
4. **Configuration Errors:** Double-check the entered values against the acceptable ranges and refer to the QSense Device Manual for guidance.
5. **Wi-Fi Connectivity Problems:** Ensure the device is within the range of the Wi-Fi router and that the correct network credentials are entered.

11. How to Contact Support

1. **Customer Support:** Contact our support team for any installation or operational issues:
 - o **Email:** support@infinixenergy.com
2. **Firmware Updates:** Regular firmware updates are provided to ensure optimal performance and new features.

For more information about QSense and its features, visit our website at www.infinixenergy.com or contact us at info@infinixenergy.com.

Infinix Energy Solutions Empowering Efficiency Through Data-Driven Insights; WATT MATTERS MOST.