

## PowerEye - User Manual

**Version:** 0.9.4+28 | **Official Site:** [admin.powereye.co](https://admin.powereye.co)

### 1. System Overview

**PowerEye** is a modular industrial monitoring and control platform designed for high reliability and vendor neutrality. The system is composed of several key services that work together to collect, store, and visualize your data.

#### 1.1 Core Components

To ensure 24/7 operation, PowerEye separates the data collection engine from the user interface:

- **PowerEye Service:** The "engine" of the system. It runs silently in the background on your server to:
  - Communicate with hardware devices (Modbus/MQTT).
  - Log data into the secure local database.
  - Monitor thresholds to trigger real-time alarms.
  - Distribute live data to the Application and Gateway.
- **PowerEye Application:** The primary user interface for PCs and laptops. This is where you:
  - Monitor live dashboards, diagrams, and trends.
  - Configure new devices, models, and system rules.
  - Generate and export analytical reports.

## 1.2 Expansion Services (Optional)

Depending on your project requirements and licensing, you may deploy these additional modules:

- **PowerEye Gateway:** A secure middleware service that acts as a bridge between the server and the outside world. It is required to enable **Mobile App** access for remote users.
- **PowerEye Broker:** A built-in, high-performance MQTT broker. This allows IoT devices to push data directly to PowerEye without needing a third-party broker (like Mosquitto or EMQX).

## 1.3 System Architecture

The PowerEye architecture ensures that even if the **Application** (UI) is closed, the **Service** continues to collect data and trigger alarms in the background, providing a robust "Always-On" industrial solution.

**Note:** For optimal performance, it is recommended to install the Service and Application on a dedicated industrial PC or server that remains powered on at all times.

## 2. Installation & Hardware Requirements

The installation process varies depending on the components required for your specific project. Follow these steps to ensure all services are correctly deployed.

### 2.1 Installing the PowerEye Application and Service

This is the core setup required for every system.

- **Installer file:** PowerEye-Setup.exe (Download from [admin.powereye.co](https://admin.powereye.co)).
- **Step-by-Step Instructions:**
  1. **Run the Installer:** Double-click PowerEye-Setup.exe.

2. **Browser Security:** If Chrome or Edge flags the file as "unsafe," click **Keep** or **Keep anyway**. This is a standard warning for industrial executable files downloaded from our official portal.
3. **Windows SmartScreen:** If "Windows protected your PC" appears, click **More Info** -> **Run anyway**.
4. **Wizard:** Follow the on-screen prompts to complete the installation.
5. **Service Startup:** Once installed, open the installation folder and read README.txt for specific commands to initialize the background Service.

**Critical Note:** To ensure uninterrupted data collection, configure your computer's power settings to **Disable Sleep Mode**. The PowerEye Service must run 24/7.

## 2.2 Optional Components (Gateway & Broker)

If your license includes remote access or IoT capabilities, install these additional services:

- **PowerEye Gateway (Remote Access):** Use PowerEyeGateway-Setup.exe. This allows mobile apps to communicate with the server.
- **PowerEye Broker (IIoT/MQTT):** Use PowerEyeBroker-Setup.exe. This runs as an independent background service, providing an MQTT endpoint for direct IoT device integration.

*Both follow the same installation and security bypass steps as the main Application (Section 2.1).*

## 2.3 Hardware Specifications

Choosing the right hardware is essential for system responsiveness and database longevity.

<b>Component</b>	<b>Minimum Requirement</b>	<b>Recommended (Large Systems)</b>
<b>CPU</b>	4-core x86 (e.g., Intel i3 10300)	Intel Xeon or AMD EPYC (6+ cores)
<b>RAM</b>	8 GB	32 GB ECC
<b>Storage</b>	256 GB SSD	512 GB SSD (High Endurance)
<b>OS</b>	Windows 11 Pro x64	Windows Server 2022 x64
<b>Display</b>	Full HD (1920x1080)	40-inch+ Monitor/TV (Ops Rooms)

**Pro Tip:** For industrial environments with high electrical noise, we recommend using the **Recommended** specs with **ECC RAM** to prevent data corruption and ensure 99.9% system uptime.

## 3. License Activation

PowerEye uses a flexible, modular licensing system. Depending on your project scale, you may need a combination of different license types to unlock specific features.

### 3.1 Understanding License Types

Each license key is unique and must be kept secure. Below is a breakdown of what each license enables:

<b>License Type</b>	<b>Functionality</b>
<b>Software License</b>	The core "Master" key that activates all standard software features.

License Type	Functionality
<b>Device License</b>	Determines the maximum number of Modbus devices allowed to collect data.
<b>Control License</b>	Grants permission for the system to send write commands (Remote Control).
<b>Remote License</b>	Defines the total number of concurrent mobile app users allowed.
<b>IIoT License</b>	Unlocks advanced connectivity: <b>MQTT Broker</b> and <b>Device Stations</b> (Gateways).

**Licensing Example:** To set up a system with 10 meters, 2 Remote Gateways, and 5 Mobile App users, you would need:

- **Device License** (set for 10 devices)
- **IIoT License** (to enable the 2 Gateways)
- **Remote License** (set for 5 users)

### 3.2 First-Time System Activation

When you launch PowerEye for the first time on a new server, follow these steps:

1. **Start Services:** Ensure both the **PowerEye Service** and **Application** are running.
2. **Activation Prompt:** The system will automatically display the activation screen if no license is detected.
3. **Upload Key:** Click "**Activate using a license key**".
4. **Select File:** Browse your computer for the license key file provided by your distributor.
5. **Confirm:** Follow the final on-screen prompt to complete the activation.

## 3.3 Adding or Upgrading Licenses

If you need to add more devices or enable new features later, you can add additional licenses without reinstalling the software:

1. **Navigate:** Go to Settings -> Other -> License.
2. **Initiate:** Click the **Activate New License** button.
3. **Upload:** Select your new license key file and follow the instructions to merge it with your existing setup.

**Pro Tip:** Always keep a backup copy of your license files in a secure location. If you need to migrate the software to a different server, you will need these files to re-authorize the installation.

## 4. User Accounts & Security

PowerEye uses a hierarchical account system to ensure that only authorized personnel can modify system configurations.

### 4.1 Creating the Root Account

The **Root Account** is the most powerful account in the system and is **required** immediately after software activation.

#### Setup Steps:

1. **Automatic Prompt:** Once the license is activated, the system will automatically display the Root creation screen.
2. **Input Details:** \* **Username:** Choose a secure administrative name.
  - o **Password:** Enter a strong, unique password.
  - o **Confirm:** Re-enter the password to verify.
3. **Submit:** Click **Submit** to finalize.

**Warning:** The Root account holds **absolute system privileges**. Keep these credentials secure, as they are required to manage all other users and licenses.

## 4.2 Managing Sub-Accounts

To create additional accounts for your team, navigate to:

Settings -> User & Account -> Account -> click the + (Add) button.

### **Available Account Types:**

#### **Account Type**

#### **Permissions & Capabilities**

<b>Admin</b>	Full access to configure devices, models, dashboards, alarms, and reports. Permissions can be restricted by the Root user.
<b>User</b>	View-only access. Ideal for operators who need to monitor data but should not change system settings.

### **Important Notes:**

- **Root Authorization:** You must be logged in as **Root** to create or modify an **Admin** account.
- **Security Best Practice:** Assign the "User" role to most staff members and only grant "Admin" rights to lead engineers who manage the system configuration.

**Pro Tip:** For mobile-specific users, refer to **Section 16 (Guest User)** for managing accounts that connect via the smartphone application.

## 5. Basic System Customization

Personalizing the system display name allows you to identify the specific site, plant, or project within the PowerEye interface. This name will appear prominently in the application header.

## 5.1 Setting the System Display Name

To change the title of your monitoring system:

1. **Navigate:** Go to Settings -> Other -> Information.
2. **Edit:** Locate the **Title** field and click the **pencil icon** (Edit) next to it.
3. **Input:** Enter the desired name for your system (e.g., *Hải Nam Factory - Phase 1* or *MTECVIET Solar Plant*).
4. **Save:** Click the **Save** button to apply the changes.

**Pro Tip:** Keep the display name concise and descriptive. This name is often synced with reports and mobile notifications, helping users quickly identify which site is sending data.

## 6. Model Configuration

Model defines the Modbus register structure.

PowerEye provides built-in models. You can create additional models via UI or config files.

### 6.1 Model Folders

- **Default:** C:\Program Files\Power Eye\resource\model\Default (Do not edit).

Built-in models provided with the application. Do not edit directly.

- **User:** C:\Program Files\Power Eye\resource\model\User (For custom models).

Put user-created model config files here for app recognition.

### 6.2 Load / Unload (v1.1+)

Users must choose which models are active: (instead of auto-loading all models).

- Settings -> Device & model -> Model -> Click Load/Unload.

#### **Important:**

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- If a model is unloaded, the associated device stops collecting data (remains in error state). Use **Reload** to refresh edited files without restarting.

## 6.3 Adding a New Model via UI

Follow these steps to create a custom Modbus model directly within the application:

1. **Navigate:** Go to Settings -> Device & model -> Model.
2. **Initiate:** Click the + (Add) button.
3. **Basic Information:** Fill in the general model details:
  - **Name:** Unique name for the model (e.g., *PowerMeter\_Gen2*).
  - **Type:** Select category (e.g., *Electricity meter, Sensor, Inverter*).
  - **Icon:** Choose a visual icon for the model.
  - **Vendor:** Manufacturer name.
  - **Swap/Normal:** Default byte order mode.
  - **Timeout:** Response Timeout (ms) for a response from the device.
  - **Delay scan interval:** Pause time between consecutive scans.
4. **Configure Registers:** Define the data points (refer to **Section 6.4** below).
5. **Save:** Click **Save** to store the model.
6. **Validate:** Create a new device using this model and use the **Read/Test Configuration** icon to ensure data is being parsed correctly.

## 6.4 Register Configuration Details

When adding registers to your model, you must define the following properties for each parameter:

Field	Description	Example
<b>Parameter</b>	The name of the data point.	IA, VB, Total_kWh
<b>Unit</b>	The measurement unit.	V, A, kWh, %

Field	Description	Example
<b>Register Type</b>	Modbus function code type.	Input Register or Holding Register
<b>Address</b>	The starting Modbus register address.	30001, 40001
<b>Length</b>	Number of registers/addresses to read.	1 or 2
<b>Data Type</b>	Format of the incoming data.	Float 32-bit, Int 16-bit
<b>Swapping Type</b>	Byte order adjustment (Endianness).	Big Endian, Little Endian
<b>Multiplier</b>	Scale factor for unit conversion.	0.001 (to convert <b>W</b> to <b>kW</b> )

**Quick Tip:** Always refer to your hardware's **Modbus Map manual** to ensure the **Address** and **Data Type** match the manufacturer's specifications.

## 7. Device Configuration

Before using dashboards or monitoring features, you must configure your devices. PowerEye supports **Modbus devices**(RTU via RS485 or TCP/IP) and **MQTT devices**.

### 7.1 Adding a New Device

Follow these steps to register a device in the system:

1. **Navigate:** Go to Settings -> Device & model -> Device.
2. **Initiate:** Click the + (Add) button.
3. **Complete the Form:**
  - o **Display Name:** The name shown in the monitoring interface.

- **Icon:** Choose a visual representation for the device.
  - **Device ID:** A unique internal ID for the PowerEye Service.
  - **Address:** The Modbus Slave ID/Address.
  - **License:** Assign an activated **Device License** to this unit.
  - **Model:** Select the specific model configuration created in **Section 6**.
  - **To (Connection Target):** \* Select **Host** if the device connects directly to the server (via local Serial/TCP).
    - Select a **Device Station** if the device connects through a remote gateway.
  - **Connection:** Choose **Serial (RS485)** or **TCP/IP** (provide IP:Port).
  - **Timing:** Define **Timeout**, **Delay scan interval**, and **Store Interval** (logging frequency).
4. **Save:** Click **Save**.
  5. **Test:** Click the **Read icon** on the device card to verify the connection.

## 7.2 Editing / Deleting Devices

- To modify settings or remove a device, simply click the **Edit** (pencil) or **Delete** (trash) icon on the specific device card.

## 7.3 Device Station (Remote Gateway)

A **Device Station** is a physical gateway provided by PowerEye. It collects local data and syncs it to the central server via the internet, featuring local storage to prevent data loss during outages.

### Requirements: IIoT License

#### Setup Steps:

1. **Create in App:** Go to Settings -> Device & model -> Device Station -> click **+ Add device station**.
2. **Details:** Enter **Display Name**, **Icon**, and an optional description. **Save**.
3. **Export Config:** Click **Download** on the station card to get the configuration file.

4. **Hardware Setup:** \* Log into the gateway's web management page using its local IP.
  - o **Upload** the downloaded config file.
  - o The gateway will automatically connect to the PowerEye server.
5. **Wiring:** Connect Modbus devices to the gateway via its **RS485 port** or local **TCP/IP** network.
6. **Assignment:** When adding a device (Section 7.1), ensure the **To** field is set to this specific **Device Station**.

## 7.4 MQTT Device Setup

MQTT devices use the PowerEye MQTT protocol to push data to the built-in broker.

**Requirements: IIoT License + PowerEye Broker** installed.

### Setup Steps:

1. **Add Device:** Follow the same flow as Section 7.1 in the **Device** section.
2. **Get Config:** Click **Download** on the MQTT device card to retrieve the configuration file.
3. **Hardware Sync:** Load this config file directly into your hardware device.
4. **Connection:** Once loaded, the device will auto-connect to the **PowerEye Broker** and start transmitting data.

**Note:** Unlike the Device Gateway, MQTT devices currently do not have a web UI. Configuration must be imported directly into the hardware firmware/software.

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## 8. Service Settings

This section covers the configuration of external communication channels for mobile users and IoT devices.

## 8.1 Mobile Gateway

The **Mobile Gateway** enables the PowerEye mobile application to access system data securely over the internet.

### Configuration Steps:

1. **Navigate:** Go to Settings -> Services -> Mobile Gateway.
2. **Configure Fields:**
  - **Host:** Enter the public address used by the mobile app.
    - Include the scheme (http:// or https://), domain, and port.
    - *Example:* https://monitor.yourcompany.com:443
    - **Note:** If using a **Reverse Proxy** with SSL, enter only the domain (e.g., https://yourdomain.com) and let the proxy handle SSL termination.
  - **Local Port:** The port that the local PowerEye Gateway service listens on within your internal network.
  - **SSL:** Use this section to set up certificates for a direct secure connection if you are **not** using an external reverse proxy.

## 8.2 IoT Hub

The **IoT Hub** manages the settings for the integrated **PowerEye Broker**, allowing MQTT-enabled devices to transmit data.

### Configuration Steps:

1. **Navigate:** Go to Settings -> Services -> IoT Hub.
2. **Configure Fields:**
  - **Host:** The MQTT broker address for your IoT devices.
    - Enter the **Domain and Port only**.
    - *Example:* cloud273.com:8883
    - **Important: Do not** add a scheme prefix (like mqtt://). The system handles the protocol automatically.
  - **Local Port:** The internal port that the local PowerEye Broker service listens on.
    - *Default/Example:* 8883 (standard for secure MQTT).

## Summary Table for Network Setup

Service	Protocol	Key Requirement	Common Use Case
<b>Mobile Gateway</b>	HTTP/HTTPS	Public IP or Domain	Remote monitoring via Smartphone App
<b>IoT Hub</b>	MQTT/MQTTS	Port Forwarding (8883)	Wireless sensors and IIoT devices

**Pro Tip:** When configuring the **Host**, ensure your router or firewall has the corresponding **Port Forwarding** rules set up to point to the server running the PowerEye services.

## 9. Dashboard Configuration

Dashboards allow you to visualize real-time and historical data through various chart types.

### 9.1 Prerequisites

- **Enable Configuration Mode:** You must toggle the **Enable Configuration** switch located in the window title bar before making any changes.
- **Permissions:** Ensure your account has the necessary configuration permissions (typically an **Admin** or **Root** account).

### 9.2 Organizing with Folders

Folders are used to group dashboards by physical area, workshop, or department.

1. Click **Add Folder** (located at the bottom-left of the sidebar).
2. Enter a **Name** and choose an **Icon**.
3. Click **Save**.

## 9.3 Creating a Dashboard

1. Select a folder from the sidebar.
2. Click **Add Item**.
3. Enter a **Name** (e.g., *Main Workshop Energy*) and choose an **Icon**.
4. Click **Save**.

## 9.4 Creating and Customizing Boards

A **Board** is a specific widget (chart) that displays data on your dashboard.

### Step-by-Step Setup:

1. Inside your dashboard, click **Add Board**.
2. **Select Chart Type:** Choose between **Text**, **Line chart**, **Column chart**, or **Pie chart**.
3. **General Configuration:**
  - **Name:** Title of the board.
  - **Monitor Type:** Select **Value** (real-time instant data) or **Consumption** (accumulated total usage).
  - **Size:** Define **Height (%)** and **Width (%)** relative to the dashboard grid.
  - **Fraction Digits:** Set the number of decimal places to display.
4. **Style Tab:** Use this tab to define colors, fonts, and sizes. Changes are shown in a **Live Preview** with real data.

## 9.5 Adding Monitoring Parameters

To link a board to actual device data, click the **+** in the **Monitoring** section:

- **Name:** Display name for the specific data line/slice.
- **Device:** Select the source device.
- **Parameter:** Choose the specific parameter to display (e.g., *Voltage*, *Power*).
- **Icon:** Choose a visual icon for this parameter.

## 9.6 Specifics for Pie Charts

Pie charts require these additional considerations:

- **Monitors:** Each added monitor represents one slice of the pie.
- **Custom Colors:** You can assign specific colors to each slice in the **Style tab** to differentiate between different devices or areas.

## 9.7 Managing Layout

- **Rearrange:** Toggle the **Organize board** switch. You can now **drag and drop** to move boards or pull the corners to **resize** them.
- **Modify:** Click the **Edit icon** on any board to update its settings, **Duplicate** it for quick setup, or **Delete** it.

**Pro Tip:** Use the **Consumption** monitor type for energy or water meters to automatically calculate usage over time, while **Value** is best for parameters like Temperature or Amperage.

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## 10. Diagram Configuration

The Diagram feature allows you to overlay real-time monitoring data onto custom images, such as floor plans, electrical single-line diagrams, or machine photos.

### 10.1 Getting Started

The setup flow is identical to the Dashboard:

1. **Enable Configuration:** Toggle the switch in the top title bar.
2. **Create Folder:** Group your diagrams by site or project.
3. **Create Diagram:** Add a new item within your folder.

### 10.2 Adding and Managing Background Images

Your diagram requires a visual base to place data points on:

- **Upload Image:** Click **Add Diagram Image** and select a **PNG** or **JPG** file from your computer.
- **Update/Replace:** To change the background later, click **Update Image** at the top-right of the screen.

## 10.3 Placing Monitoring Boards on the Diagram

Monitoring Boards on a diagram are floating widgets that display live data at specific physical locations.

### How to add a Board:

- **Quick Add: Double-tap** any location on the diagram to place a board exactly at that spot.
- **Menu Add:** Click the **Add Board** button at the top-right.

### Board Configuration Fields:

- **Name:** Title for the specific data point.
- **Layout:** Customize the **background color** and **border** of the widget to ensure it is visible against your background image.
- **Read Interval:** Define how often the data refreshes (e.g., every 1 second or 5 seconds).
- **Fraction Digits:** Decimal precision for the numerical values.
- **Monitoring:** Select the **Device** and **Parameter** (IA, VB, Temp, etc.) just like in the Dashboard setup.

## 10.4 Customization & Positioning

- **Style Tab:** Define the text size, font, and colors. Use the **Centralized Preview** to see how the board looks before finalizing.
- **Movement:** Simply **drag and drop** any board to reposition it on the diagram.
- **Management: Right-click** on any existing board to **Edit**, **Delete**, or **Duplicate** it (useful for creating multiple similar sensors quickly).

**Pro Tip:** Use transparent or semi-transparent background colors in the **Layout** settings to keep your background image visible while still making the data easy to read.

## 11. Remote Control Configuration

The Control feature allows you to interact with your hardware directly from the PowerEye interface, such as turning motors on/off or adjusting setpoints.

### 11.1 Getting Started

The setup flow follows the Diagram logic:

1. **Enable Configuration:** Toggle the switch in the top title bar.
2. **Create Folder & Control Item:** Group your control interfaces.
3. **Add Background Image:** Upload a photo or technical drawing of the equipment you wish to control.
4. **Place Control Board: Double-tap** the target location on your image and select **Add Board**.

### 11.2 Binary Control (On/Off)

Use this for simple two-state actions, such as starting a pump or switching a breaker.

#### Configuration Fields:

- **Name:** The label for the control function (e.g., *Main Pump Start*).
- **Style:** Choose between **Single** (momentary) or **Toggle** (latched).
- **Device & Parameter:** Select the hardware and the specific Modbus/MQTT register to control (e.g., *Power*, *Run\_Cmd*).
- **Values:**
  - **On Value:** The numerical value sent to the device for **ON** (e.g., 1).
  - **Off Value:** The numerical value sent to the device for **OFF** (e.g., 0).

- **Icon:** Choose a visual icon to represent the button.

## 11.3 Value Control (Analog/Setpoints)

Use this for precise adjustments, such as changing a VFD frequency or setting a temperature threshold.

### Configuration Fields:

- **Name:** The label for the adjustment (e.g., *Speed Setpoint*).
- **Device & Parameter:** The target hardware and register.
- **Range Settings:**
  - **Min/Max Value:** Define the safe operating range (e.g., 0 to 60 Hz).
  - **Step Value:** The increment for each adjustment (e.g., 0.1).
- **Input Mode:**
  - **Slider:** Drag to change values quickly.
  - **Manual Input:** Type the exact number for high precision.
- **Show Unit:** Toggle to display the measurement unit (e.g., *Hz*, *°C*) next to the value.

## 11.4 Centralized Styling

- **Style Tab:** Just like the Dashboard and Diagram, the Control Board features a **Style Tab**. This allows you to customize button colors, font sizes, and board borders with a **Live Preview**.
- **Safety Note:** Ensure the **On/Off Values** match your device's Modbus map exactly to avoid unintended operations.

**Pro Tip:** For critical operations, use the **Manual Input** mode in Value Control to prevent accidental "sliding" to an incorrect value.

## 12. Trending & Data Logging

The Trending feature allows you to record and visualize historical data over time, helping you analyze patterns, troubleshoot issues, and monitor long-term performance.

## 12.1 Creating a Trending Item

To start tracking a specific parameter, follow these steps:

1. **Enable Configuration:** Toggle the switch in the top title bar.
2. **Create Folder:** Group your trends (e.g., *Power Quality*, *Temperature Logs*).
3. **Add Item:** Click **Add Item** within your folder and configure the following:
  - **Name:** Title for the trend chart (e.g., *Phase A Voltage Trend*).
  - **Style / Icon:** Choose a visual representation for the trend line.
  - **Read Interval:** Define how often the system should log a data point (e.g., every **5 seconds**).
  - **Fraction Digits:** Set the decimal precision for the trend values.
  - **Monitoring:** Select the **Device** and **Parameter** you wish to track.

## 12.2 How to Use the Trending Chart

Once your trend is created, you can interact with the data using these controls:

- **Data Recording:** Use the **Enable/Disable** switch located on each chart card.
  - **Enable:** Starts recording and plotting live channel data.
  - **Disable:** Stops the recording for that specific item.
- **Navigation & Analysis:**
  - **Zoom In/Out:** Hold the **Shift** key while using your mouse **Scroll** wheel.
  - **Pan Left/Right:** Hold the **Shift** key and **Scroll** (or click and drag) to move along the timeline.
- **Real-time View:** The chart will automatically scroll as new data points arrive while the recording is enabled.

**Pro Tip:** Set a shorter **Read Interval** (e.g., 1-2 seconds) for critical motor parameters and a longer interval (e.g., 60 seconds) for environmental sensors like room temperature to optimize database storage.

## 13. Alarm & Notifications

The Alarm system provides real-time alerts when your equipment operates outside of safe limits or exceeds predefined consumption targets.

### 13.1 Alarm Monitoring and Operations

The system automatically monitors and collects alarms based on your custom rules.

- **Activation:** Alarms only become active when **Configuration Mode** is set to **Disable** (switched off).
- **Active Notifications:** View the "Active Notifications" table to see all alerts triggered within the last **24 hours**.
- **Management (Email-style):** \* Alarms have **Read/Unread** statuses.
  - Click a specific alarm to mark it as **Read**, or use the **Read All** button.
- **Alerts:** You can enable an **Alarm Sound** to ensure immediate attention during critical events.
- *Note: The Alarm UI has been significantly updated in version 1.1 for better visibility.*

### 13.2 Range Alarm (Threshold-based)

Use this to monitor real-time values like Voltage, Temperature, or Pressure.

#### Configuration Fields:

- **Name:** The label for the alarm rule.
- **Device & Parameter:** The specific hardware and data point to watch.
- **Severity Levels (Min/Max):**
  - **Warning (Level 1):** Initial notification of a deviation.
  - **Critical (Level 2):** Serious deviation requiring attention.

- **Danger (Level 3):** Immediate risk; requires urgent action.
- **Fraction Digits & Icon:** Visual settings for the alert display.

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## 13.3 Usage Limit Alarm (Consumption-based)

Use this to track and limit utility usage (Energy, Water, Gas) over specific time periods.

### Configuration Fields:

- **Device & Parameter:** Typically an energy or flow meter.
- **Type:** Select the tracking period: **Hourly**, **Daily**, or **Weekly**.
- **Time Range:** Define the specific calculation period (especially for Daily/Weekly cycles).
- **Thresholds:** Set **Warning**, **Critical**, and **Danger** limits for the total consumption within that time frame.
- **Fraction Digits:** Numerical precision for the consumption values.

**Pro Tip:** Set your **Warning** thresholds slightly inside your actual equipment limits to give your team enough time to react before the system reaches a **Danger** state.

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## 14. Report Generation

The Report feature allows you to aggregate historical data into structured documents for analysis, auditing, or billing purposes.

### 14.1 Getting Started

The setup flow follows the standard organizational logic:

1. **Enable Configuration:** Toggle the switch in the top title bar.
2. **Create Folder:** Group your reports (e.g., *Monthly Billing*, *Equipment Health*).
3. **Create Report Item:** Choose from **Monitor**, **Usage**, or **Cost** report types.

## 14.2 Monitor Report (General Data)

Use this for a standard log of device parameters over time.

- **Device & Parameter:** Select the hardware and one or multiple parameters to include.
- **Type:** \* **Summary:** Provides an overview (e.g., Min/Max/Avg).
  - **Detail:** Lists every recorded data point within the period.
- **Fraction Digits:** Set the numerical precision for the values.

## 14.3 Usage Report (Consumption Tracking)

Use this to calculate total consumption (e.g., total kWh or total m<sup>3</sup>) over a specific period.

- **Device & Parameter:** Typically linked to an energy or flow meter.
- **Accuracy:** Define the allowed error margin for time-based calculations to ensure data integrity.
- **Fraction Digits:** Numerical precision for totalized values.

## 14.4 Cost Report (Financial Analysis)

Use this to convert consumption data into monetary costs.

- **Currency:** Set your preferred symbol (e.g., **VND, USD, EUR**).
- **Price:** Enter the default unit price (Base Rate).
- **Additional Price (Advanced):** Configure **Time-of-Use (TOU)** pricing, such as:
  - **Peak / Off-Peak** hours.
  - **Multiple Tiers** (e.g., pricing that increases after a certain threshold).
- **Accuracy:** Ensures the financial calculation matches the recorded usage precision.

## 14.5 Exporting Data

Once your report is configured and the data is generated in the App:

- **Format:** All reports are exported as **Microsoft Excel (.xlsx)** files.
- **Action:** Click the **Export icon** located on the report interface to download the file to your local computer.

**Pro Tip:** Use the **Cost Report** with "Additional Price" settings to accurately simulate utility bills by matching your local energy provider's peak and off-peak rate schedules.

## 15. Backup and Restore

Regularly backing up your configuration is highly recommended to protect your settings against hardware failure or to migrate your setup to a new server.

### 15.1 Backing Up Your Configuration

Follow these steps to create a secure copy of your PowerEye setup:

1. **Navigate:** Go to Settings -> Other -> Backup.
2. **Select Categories:** Choose which parts of the system you want to include in the backup file:
  - **Configuration:** Model, Device, Dashboard, Diagram, Control, Trend, Alarm, Report.
  - **Security:** User, Account.
3. **Initiate:** Click **Continue**.
4. **Save:** Choose a safe destination folder on your computer or an external drive to save the backup file.

### 15.2 Restoring Your Configuration

Follow these steps to revert to a previous setup or apply settings to a new installation:

1. **Navigate:** Go to Settings -> Other -> Restore.
2. **Select File:** Locate and select your previously saved PowerEye backup file.

3. **Select Categories:** You can choose to restore the entire backup or only specific parts (e.g., just the **Models** and **Devices**).
4. **Initiate:** Click **Continue** to finalize the restoration.

**Pro Tip:** It is a best practice to perform a **full backup** (selecting all categories) at least once a month or immediately after making significant changes to your Dashboards or Device configurations.

## 16. Guest User (Mobile User)

Mobile users are specific accounts created for the **PowerEye Mobile App**. These users are managed through the system and require the **PowerEye Gateway** for remote access.

### 16.1 Creating a Guest User

Follow these steps to grant mobile access to a client or team member:

1. **Navigate:** Go to Settings -> User & account -> User.
2. **Initiate:** Click the + (Add) button.
3. **General Information:** Fill in the user profile details:
  - o **Name:** Full name of the user.
  - o **Email:** This will serve as their **Login Email**.
  - o **License Type:** Select **Remote License**.
  - o **Additional Info:** Phone (optional), Company, and other identifying details.
4. **Configure Permissions:** Navigate through the tabs to grant access to specific system items:
  - o **Tabs:** Device, Dashboard, Diagram, Control, Trend, Alarm, and Report.
  - o *Only items selected here will be visible to the user on their mobile device.*
5. **Notification Settings:** Go to the **Notification tab** to select which alert types the user receives as **Push Notifications**:
  - o **Connection:** Alerts for device disconnections.
  - o **Severity Levels:** Information, Warning, Critical, and Emergency.

6. **Save:** Click **Save** to finalize the account.

## 16.2 Mobile Login

- **Access:** Once the account is saved, the user can log in to the **PowerEye App** using their assigned **Email** and **Password**.
- **Security:** Ensure the **Mobile Gateway** (Section 8.1) is correctly configured for the user to reach the server from outside the local network.

**Pro Tip:** Use the **Permissions** tabs to create "View-Only" mobile profiles by granting access to Dashboards and Diagrams while excluding Control permissions.

## 17. Troubleshooting

This section helps you identify and resolve common issues encountered during installation and daily operation.

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### 18.1 Connectivity Issues (Modbus/MQTT)

Issue	Possible Cause	Recommended Action
<b>Device status shows "Error"</b>	Incorrect physical wiring or network settings.	Check RS485 polarity (A/B) or ping the device IP.
	The associated Model is "Unloaded".	Ensure the model is loaded in <b>Settings -&gt; Device &amp; Model</b> .
<b>No data from MQTT device</b>	Slave ID or Register Address mismatch.	Verify settings against the manufacturer's Modbus Map.
	Broker Service is not running.	Verify the <b>PowerEye Broker</b> service is started.

Issue	Possible Cause	Recommended Action
	Incorrect Host/Port in device.	Ensure the device is pointing to the correct IoT Hub address.

## 18.2 System & Service Issues

Issue	Possible Cause	Recommended Action
<b>Data logging has gaps</b>	Computer entered Sleep Mode.	Disable "Sleep" and "Hibernate" in Windows Power Settings.
	Hardware resources are exhausted.	Check CPU/RAM usage; upgrade hardware if it exceeds 80% consistently.
<b>"Configuration Mode" won't toggle</b>	Current user lacks Admin/Root rights.	Log in with an account that has configuration permissions.

## 18.3 Mobile & Remote Access

Issue	Possible Cause	Recommended Action
<b>Mobile app cannot connect</b>	PowerEye Gateway is not running.	Ensure the <b>Gateway</b> service is active on the server.
	Port Forwarding is not configured.	Check router settings to ensure the Mobile Gateway port is open.
	Incorrect Host URL in Mobile app.	Ensure the URL includes the correct scheme (http/https) and port.
<b>No Push Notifications</b>	Notifications disabled in App settings.	Check the <b>Notification tab</b> in the User profile.

## 18.4 Licensing Errors

Issue	Possible Cause	Recommended Action
<b>"License Expired/Invalid"</b>	Hardware ID has changed (e.g., new NIC).	Contact support to re-host your license key.
	Feature limit reached (e.g., too many devices).	Upgrade your Device or Remote License to increase capacity.

## Pro Tips for Diagnostics

- **Use the Read Icon:** Before building complex dashboards, always use the **Read/Test Configuration** icon on the Device card to verify live data flow.
- **Check the Logs:** Refer to the logs folder in the PowerEye installation directory for detailed error reports from the background Service.
- **Service Priority:** If the application UI is slow, ensure the **PowerEye Service** is given high priority in Windows Task Manager to guarantee data collection.

**Note:** If an issue persists after following these steps, please export your system log and contact our technical support team via **contact@powereye.vn**.

## Continuous Development & Support

**PowerEye** is a dynamic platform that is constantly evolving. To better serve real-world industrial needs, our engineering team regularly updates the software with new features, enhanced security, and optimized performance.

- **Ongoing Updates:** Please note that this manual may not reflect the very latest features of the current software version. We are continuously updating our documentation to match the latest releases.
- **Stay Updated:** For the most recent software versions, technical whitepapers, and updated manuals, please visit our official website: <https://powereye.vn>
- **Custom Features:** If your project requires specific integrations or features not currently covered in this manual, please reach out to our development team. We value your feedback and often prioritize new features based on actual user requirements.

### Contact Information

For technical support, licensing inquiries, or feedback, please contact us:

- **Website:** <https://powereye.vn>
- **Email:** [contact@powereye.vn](mailto:contact@powereye.vn)
- **Technical Support:** +84 967 349 239
- **Headquarters:** No 52, Str.No11, Quarter 2, Tan Hung Ward, Ho Chi Minh City, Viet Nam.

*Thank you for choosing PowerEye to power your industrial automation and energy management systems.*