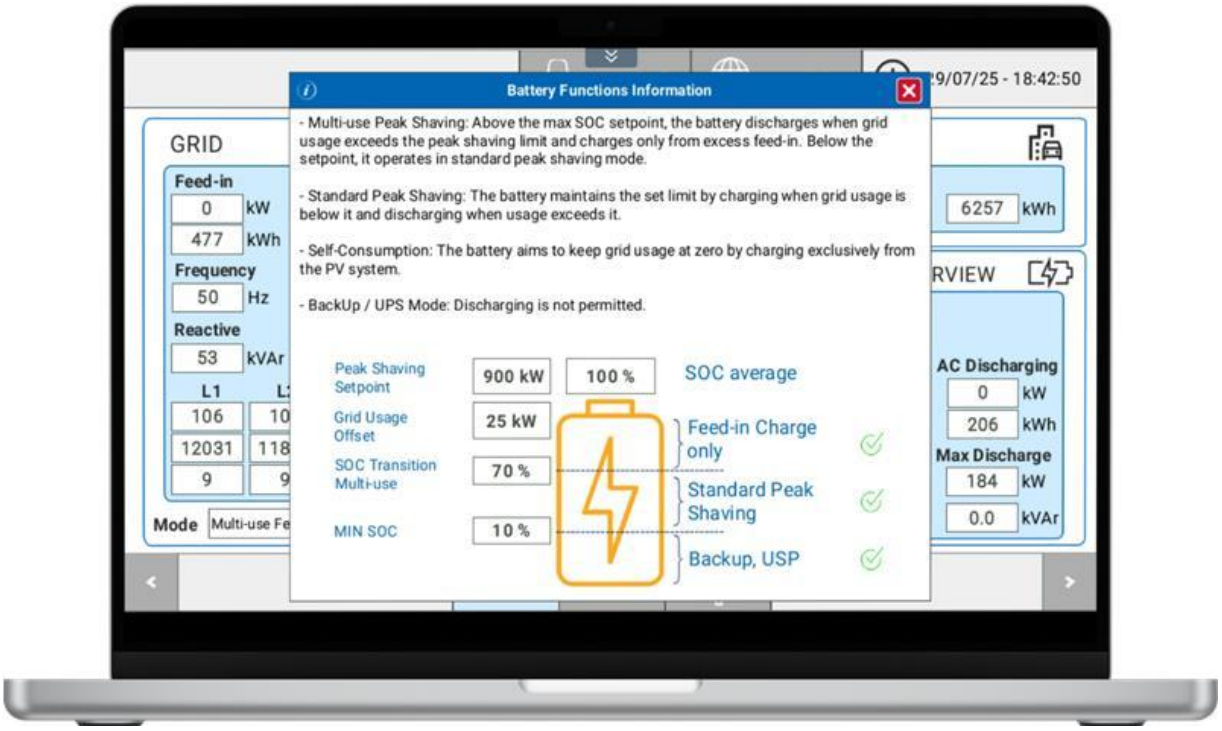
# ArchiteX

# User Interface

USER MANUAL VERSION 1.1



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# 1. The Architex User Interface

## 1.1. Introduction

This manual provides a comprehensive guide to the Architex User Interface (UI), a web-based HMI hosted locally on the Architex hardware. The UI manages the entire energy installation, ensuring seamless communicatiion between system components and executing automated algorithms to ensure optimal operation. It also supports remote access for real-time monitoring of detailed component data and enables parameter adjustments for configuration and control purposes. Additionally, advanced functionalities such as energy trading and dynamic tariff integration that require integration of external components are also incorporated within the Architex UI.

## 1.2. Accessing the Architex UI

Access to the Architex UI can be established via two main methods:

- **Offline Access:**
  - **Physical Connection:** Connect to the Architex network by plugging a laptop to an available switch port. In case no switch port is available, please contact support@birdtical.com to be adviced which ethernet can be unplugged.
  - **Web Access:** Open a browser (Chrome or Firefox recommended) and enter the following IP address: 192.168.1.5.
    - Ensure your laptop has a static IP address within the same range which is not conflicting with the components IP addresses.
      *(Tip: Select IP addresses above .150 to avoid conflicts)*
  - **Login:** The UI requires valid user credentials to log in. Make sure the correct user role is assigned to perform the required actions (see the section below for role definitions).
  - **Session Timeout:** For security, the UI will automatically log out after 5 minutes of inactivity.

- **Online access via Connex IOT Portal (Dashboard VNC)**
  - Log in to your Connex account
  - Navigate to the dashboard for your installation
  - Click the **Real-Time widget** within the Overview dashboard to launch the VNC session.


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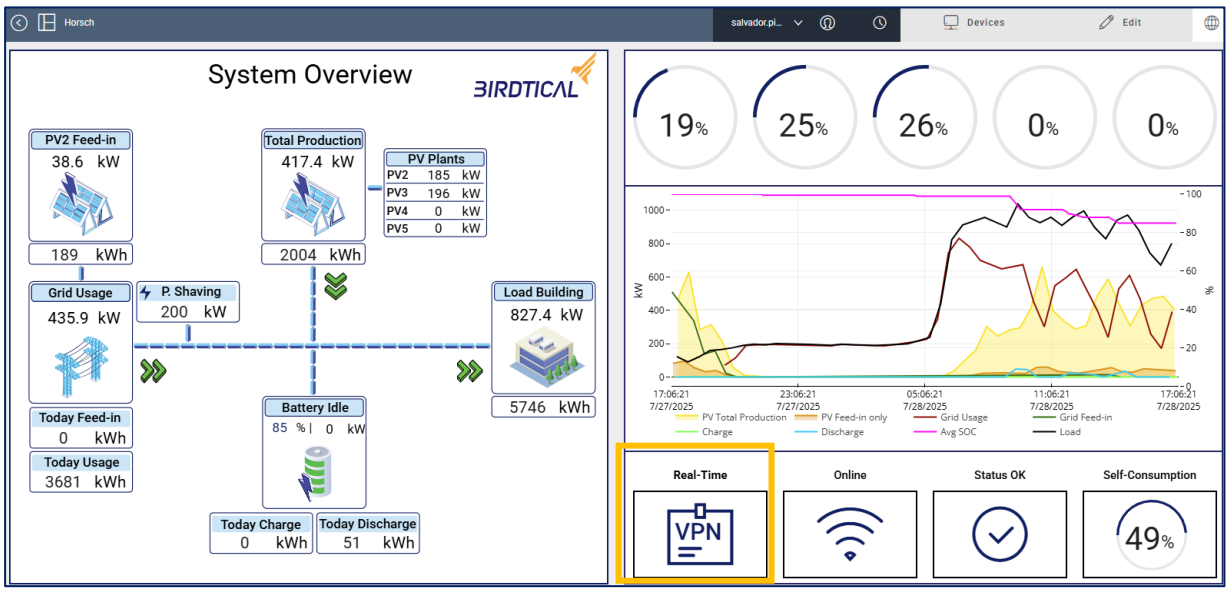


**Picture1: Example of access to Architex UI via Dashboard in Connex IOT Portal**

- **Online access via Connex IoT Portal: VPN**
  - Navigate to the Device / VPN section
  - Select the relevant installation
  - Log in to the VPN
  - Connect to the Gateway
  - Copy the Virtual IP address to assigned to the device
  - Paste the IP address into the web browser (Chrome or Firefox recommended)
  - Enter the user credentials on the login page to access the Architex UI.

**Note:** The user interface will automatically log out after 5 minutes of inactivity for security purposes.

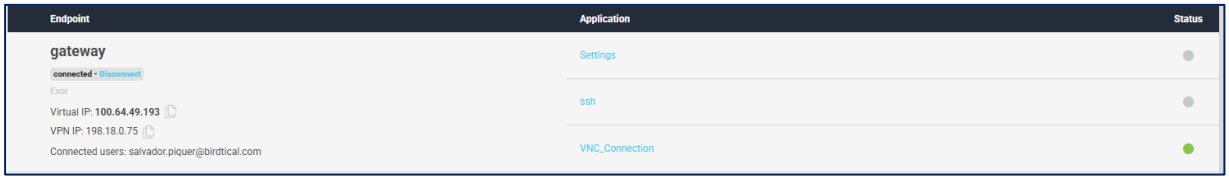


**Figure 2: VPN access of Architex.**

For more information, refers to the Connex IoT Portal user manual.


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## 1.3. User Types / User Management

The Architex UI supports multiple user roles, each with different levels of access:

- **Admin User:** Reserved for manufacturer operators. Grants full system access, including advanced configurations and diagnostics.
- **Advanced User**: Allows modifications of system settings for configuration and control purposes.
- **Standard User:** View-only access with restrictions on settings and control functions.

To switch to the user roles

1. Click on the user icon located in the top navigation bar
2. Select the desired user type
3. Enter the appropriate credentials to complete the switch

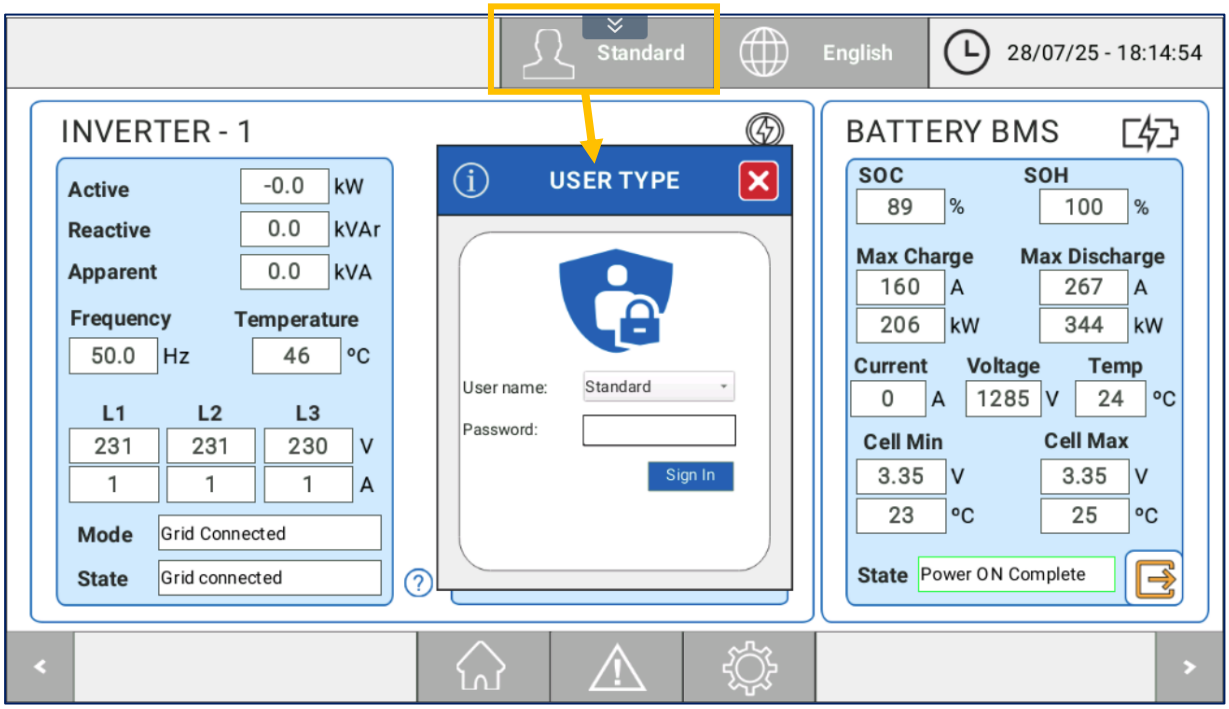


**Figure 3: Change the type of user**


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## 1.4. Multi-language Support

To change the interface language, click the globe icon in the top navigation bar and select your preferred language from the list, indicated by its corresponding flag.

**Figure 4: Change the language to german**

# 2. Pages

## 2.1. Components

The Components page, accessible via the home icon, typically includes multiple subpages, beginning with the main home view. From this central interface, users can access real-time, detailed data for each individual component within the energy system.

This section is designed to monitor the status and performance of all components, both at a system-wide level and for each specific element. All user types have access to these tabs, as they are view-only.

Navigation between component tabs is done using the left and right arrows located at the corners of the bottom bar.


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Below are some examples of component setup from a commercial energy application:

1. A commercial and Industrial (C&I) installation featuring rooftop solar panels, an energy storage system (ESS) and a DC charger, designed to support peak shaving and energy trading.

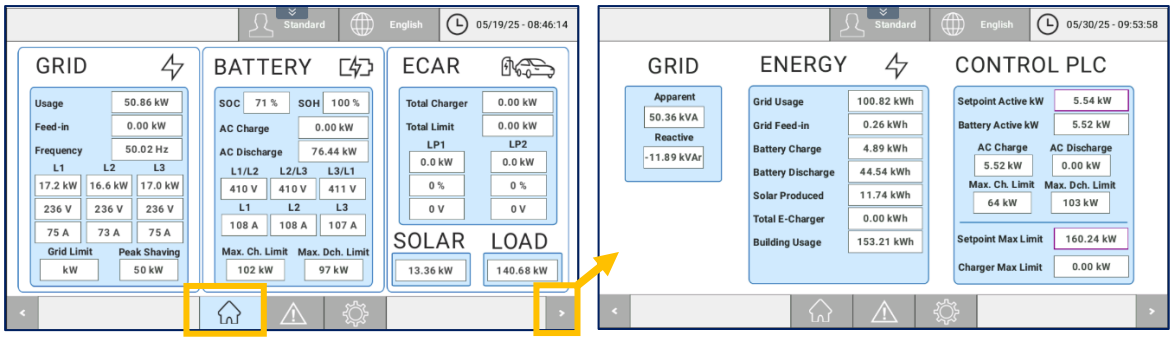


**Figure 5 & 6: Example of component pages from a C&I small application**

2. An eMobility installation equipped with multiple DC chargers, operating under an intelligent load management strategy to optimize energy distribution.

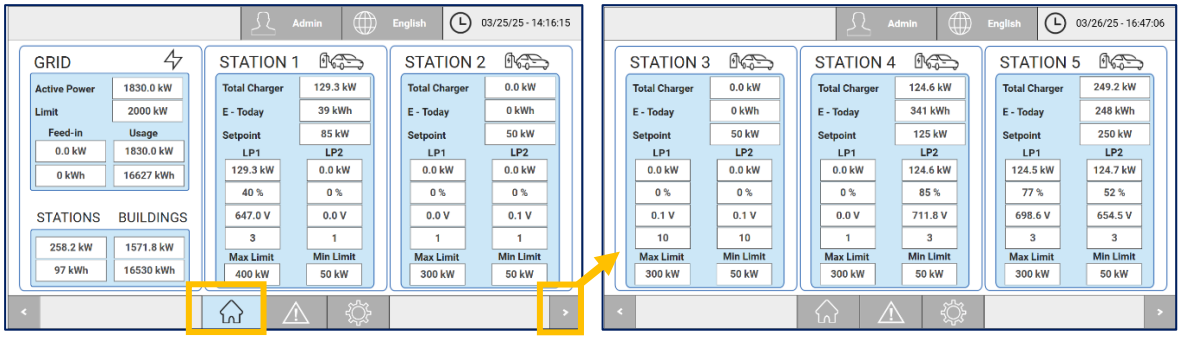


**Figure 7 & 8: Example of component pages from an emobility application**

3. A C&I installation installation comprising multiple solar parks and clustered battery systems, executing multi-use peak shaving strategies (see section 2.3.3 for more details).

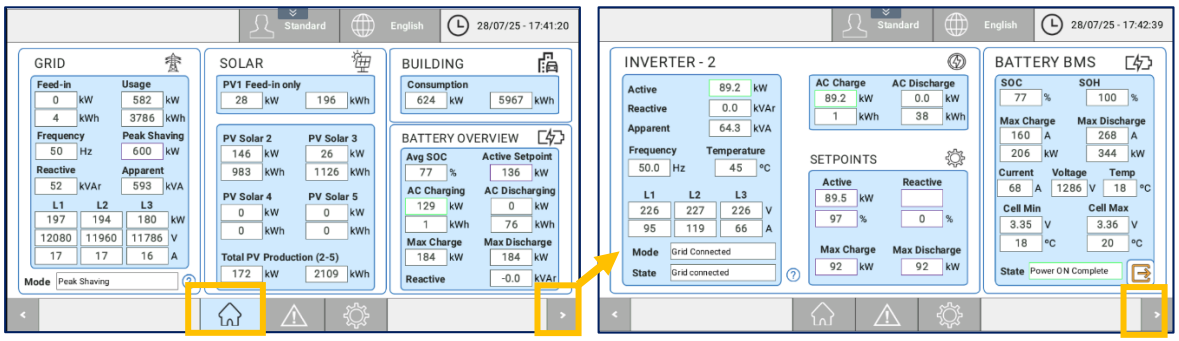


**Figure 9 & 10: Example of component pages from a medium C&I application**


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Info buttons may be available the interface, providing helpful descriptions of the displayed content. For example, the info button bellow illustrates how the battery is configured in a storage-enabled installation (see section 2.3.3 for more details).

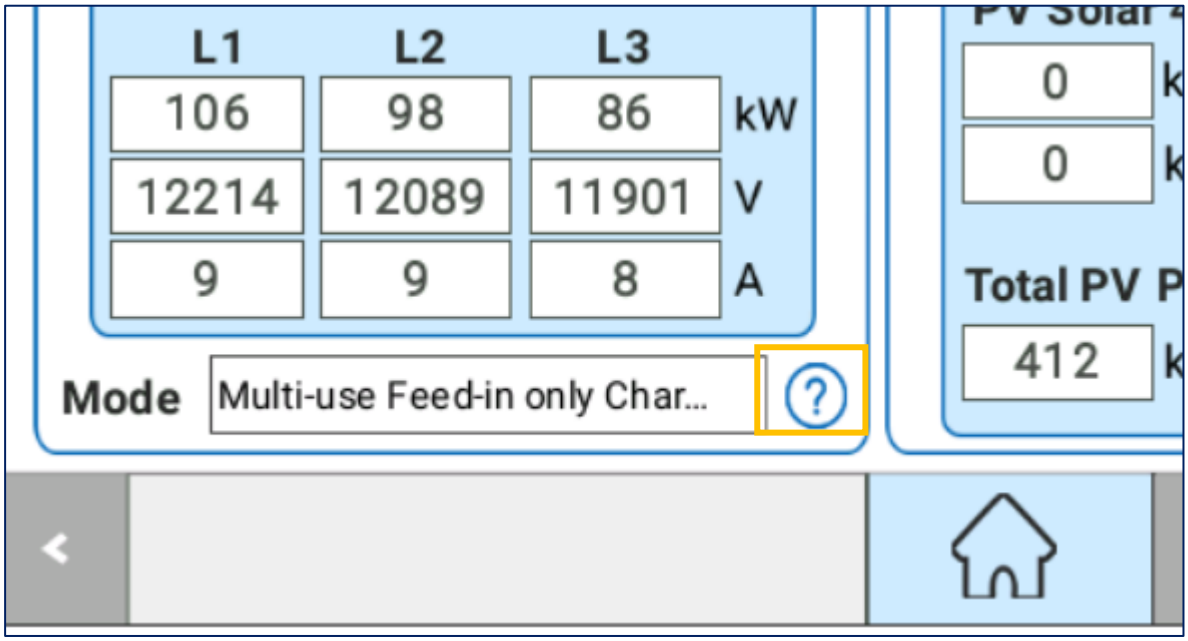


**Figure 11: Example of information button**

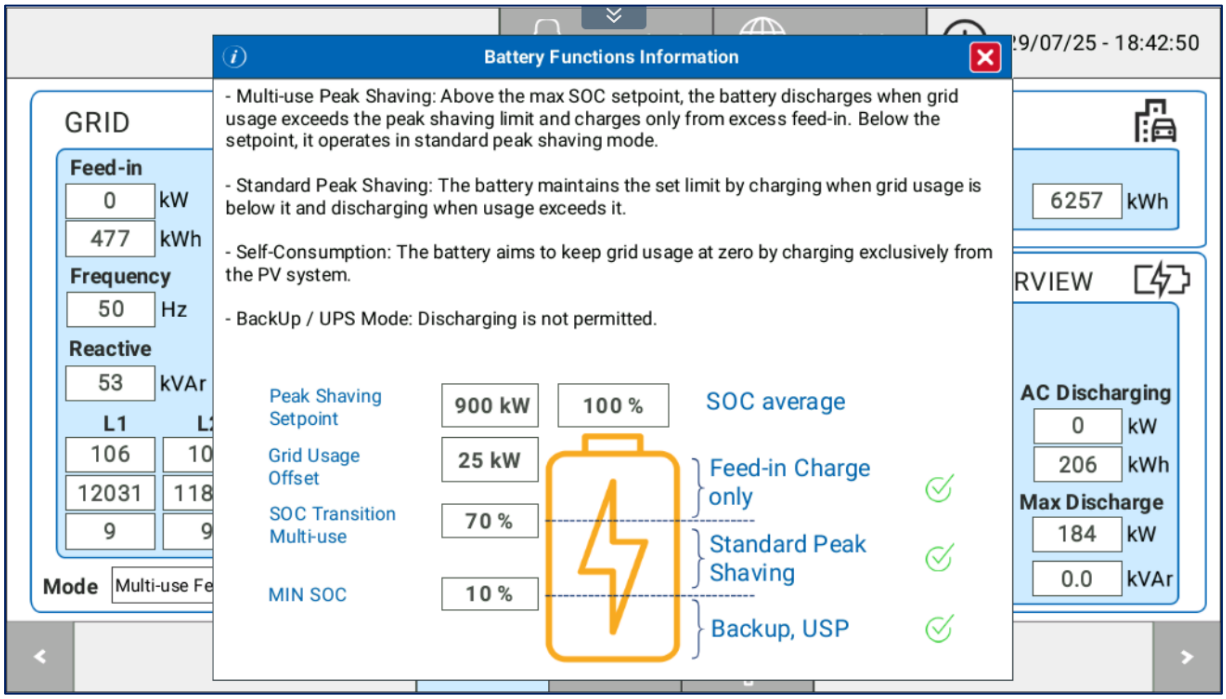


**Figure 12: Example of battery configuration from an C&I installation.**


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## 2.2. Alarms

The **Alarm** tab serves as a central hub for real-time monitoring, management, and troubleshooting of warnings and alarm notifications, enabling users to maintain operational efficiency and minimize system discruptions.

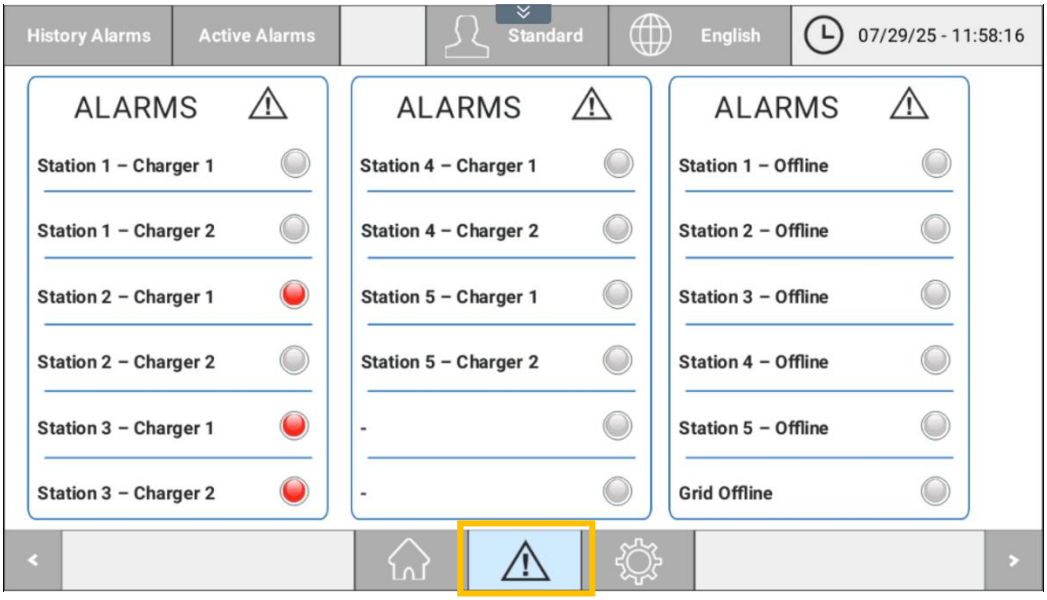


**Figure 13: Example of alarm tab from an emobility application**

Certain alarms may include information tabs that provide detailed descriptions to help users identify the alarm or assist with troubleshooting.

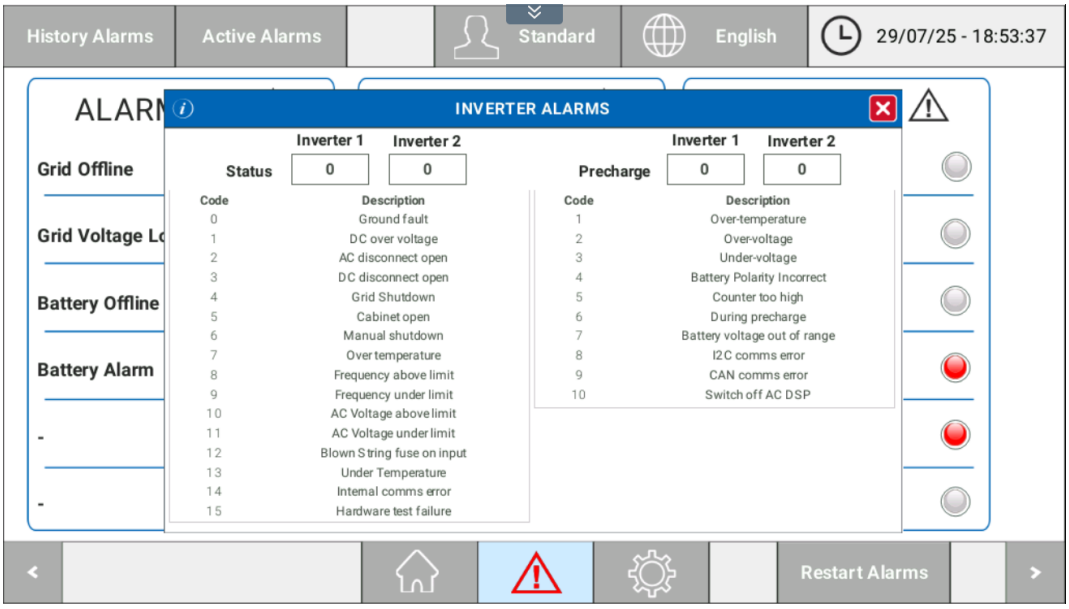


**Figure 14: Example of an info tab which displays detailed description about the inverters alarms**


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Additionally, the Alarm tab includes several key functions:

- **Active Alarms**: Located in the top-left corner, this feature displays real-time active alarms, including the time of activation and detailed descriptions to assist users in diagnosing and resolving issues effectively.

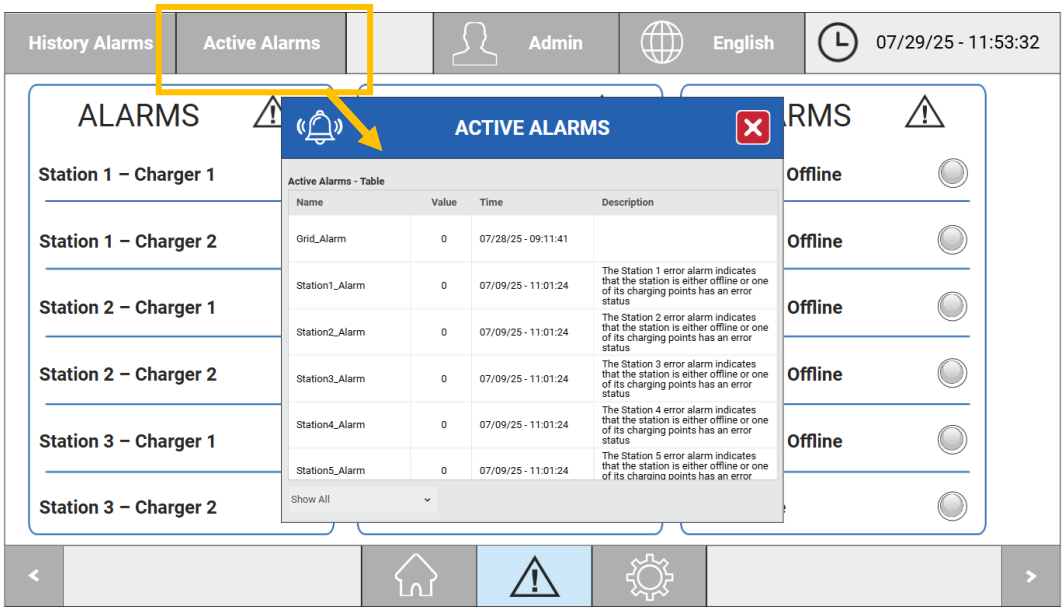


**Figure 15: Example of an active alarm tab.**

- **History Alarms**: Located in the top-left corner, this feature allows users to view historical alarms within a selected time range.

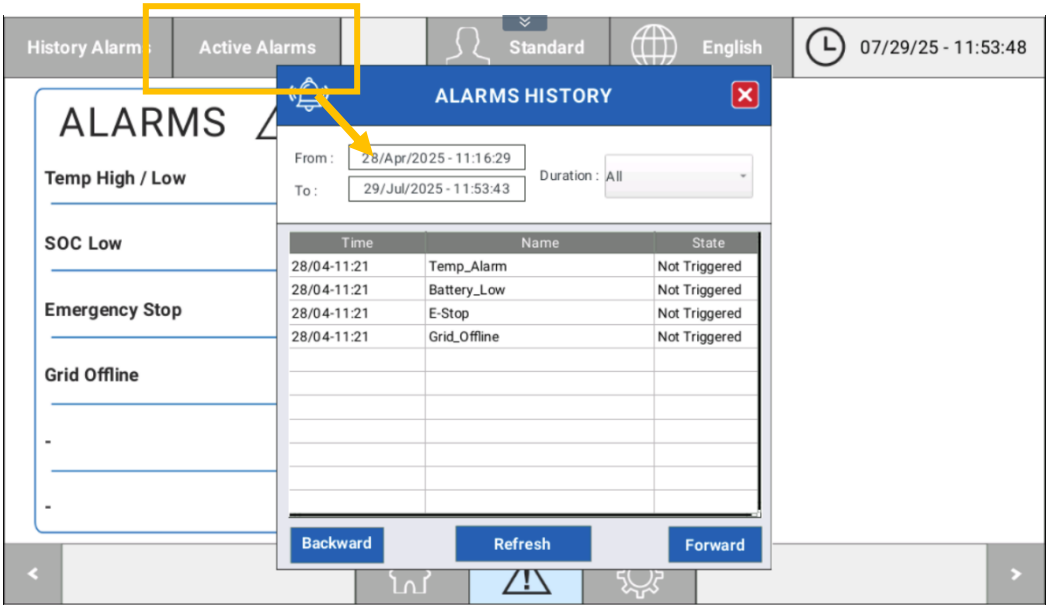


**Figure 16: Example of a history alarms tab.**


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- **Restart Alarms**: Located in the bottom-right corner, this function allows to restart all active alarms. If the alarm condition remains after a configured delay, the alarms will be reactivated.

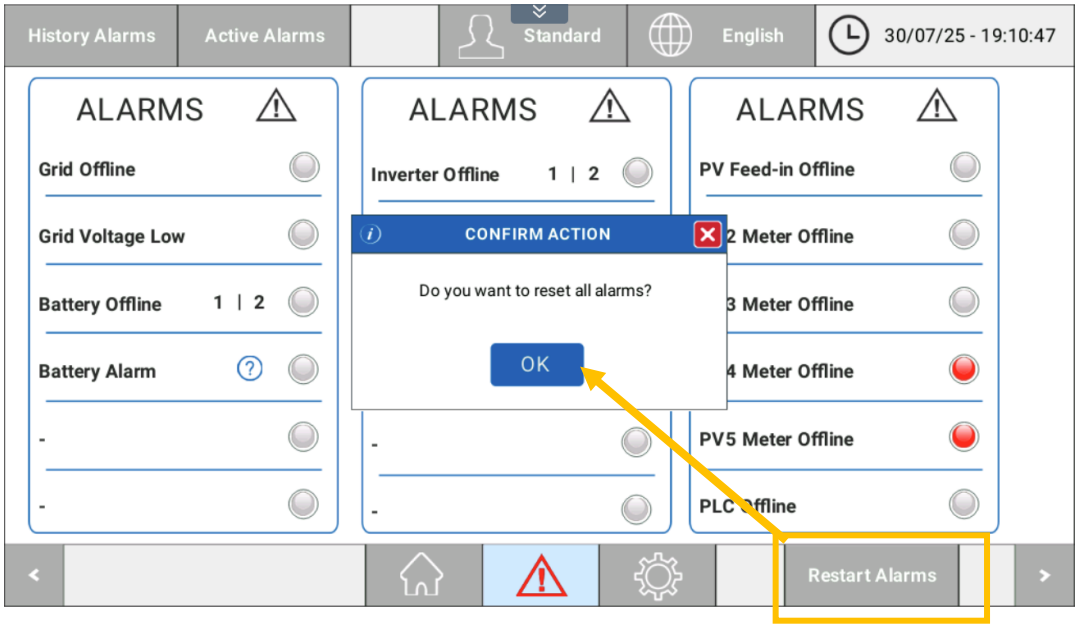


**Figure 17: Example of a history alarms tab.**

## 2.3. Settings

The **Settings tab** provides access to advanced features and configuration options, enabling users to edit, enable, or disable both standard and additional operating modes, as well as adjust internal parameters. This flexibility allows the system tob e customized to meet specific needs of each applicaton.

**Access Control:** Access to the Settings tab is restricted to Advanced Users. Standard Users do not have permission to modify any settings. **Note:** The options available within the Settings tab may vary depending on the components and requirements of each installation. For example, if your system does not include charging stations, related settings will not be shown. Additionally, some installations may include project-specific settings, which are not covered in this manual.

This section focuses on the most common and essential settings. Any available settings will appear within the relevant module under the Settings tab. To support user understanding, the interface includes multiple info icons that provide helpful explanations of each setting's purpose and functionality.


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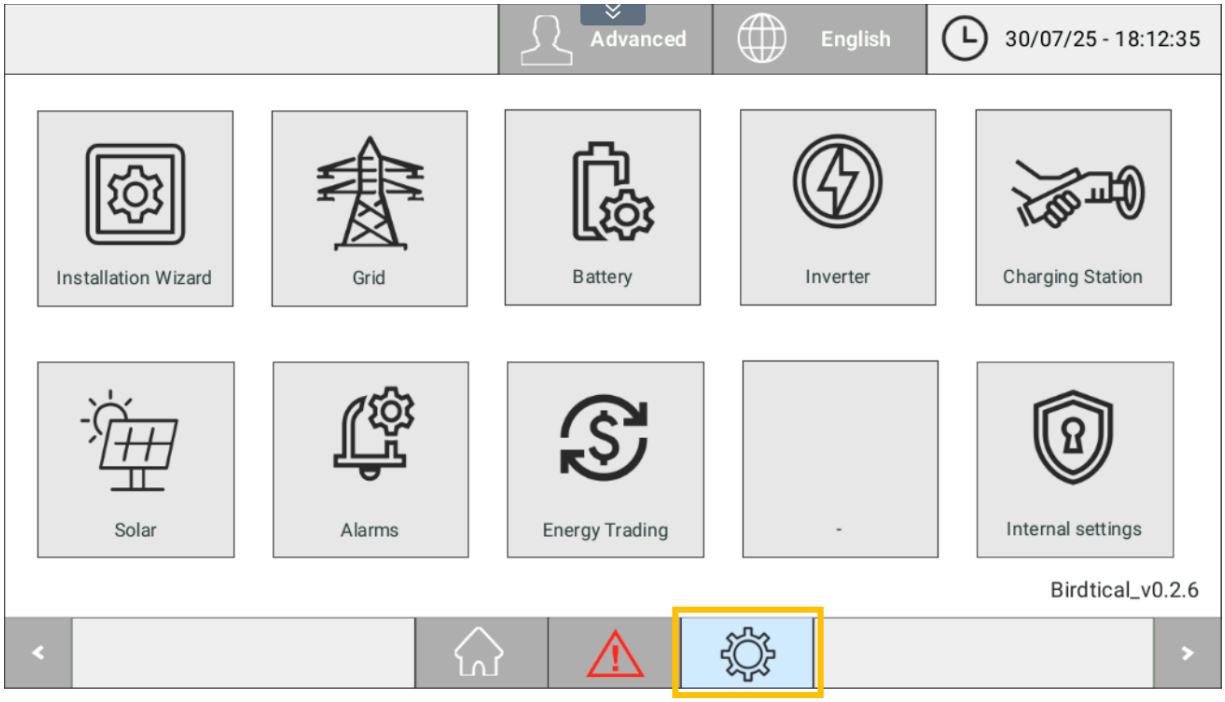


**Figure 18: Screenshot of the Settings tab**

### 2.3.1. Installation Wizard

The **Installation Wizard** is a step-by-step guided setup tool designed to simplify the initial configuration of the system. It assists users in completing the essential setup tasks in a logical and user-friendly sequence, ensuring that all critical parameters are correctly defined before the system becomes operational.

### 2.3.2. Grid

The **Grid Settings** module contains configuration options related to grid-specific functionalities and communication with the grid operator. These settings are essential for ensuring that the system operates in compliance with local grid regulations and is properly integrated into the broader energy infrastructure.

The specific options available within this module may vary depending on the system's components and project requirements. Common configuration options include:

- **Grid Certification Area Selection**: Allows the user to select the appropriate grid compliance profile (e.g. country or region-specific certification) to ensure compatibility with local grid codes and regulatory standards.
- **Interface Settings (DI, AI, Modbus)**: Configure digital inputs (DI), analog inputs (AI), or Modbus communication parameters to enable grid operator control or monitoring. These settings are often used when the grid operator requires the system to respond to external power adjustment commands or provide real-time status updates.


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- **Power Limitation and Control Functions**: Depending on the grid operator's requirements, the system may offer settings to limit export power, support reactive power control (e.g., Q(U), cos ϕ(P)), or follow other predefined power control curves.
- **Communication Protocols**: Adjust protocol parameters (e.g. baud rate, slave ID, or communication timeouts) to ensure proper data exchange between the system and external grid control equipment.

**Note:** The availability of settings in the Grid module depends on your system's configuration and specific project scope. For example, if the installation does not require direct grid operator communication, some settings may be hidden or disabled. Additionally, project-specific or customized settings may be included and may fall outside the scope of this manual.

### 2.3.3. Battery

The Battery Settings section provides configuration options for managing battery behavior within the energy system. These settings are essential to ensure the battery operates according to the specific requirements of the installation, optimizing performance, safety, and energy efficiency.

**Multi-Use Function**:
Defines the operating mode of the battery. The following modes are available:

- **Multi-Use Peak Shaving**:
  Allows users to set a peak shaving threshold.
  - When the battery's State of Charge (SOC) is below a defined **SOC transition point**, the battery behaves similarly to standard peak shaving. In other words, charging when grid usage is below the threshold and discharging when it is above.
  - When the SOC exceeds the transition threshold (SOC Transition Multi-Use), the battery will only charge using excess power (i.e., grid feed-in) while still maintaining peak shaving by limiting grid usage.
- **Standard Peak Shaving**:
  The battery charges when grid usage is below the threshold and discharges when it is above.
- **Self-Consumption**:
  The battery aims to keep grid power usage at zero by discharging to supply load demand and reduce grid consumption. It charges using excess power not consumed by the load (i.e., power that would otherwise be fed into the grid).

**Peak Shaving Threshold**:
Sets the desired power threshold for peak shaving, applicable in both Multi-Use and Standard Peak Shaving modes.

**Grid Usage Offset**:
Applies an offset to the peak shaving threshold or self-consumption behavior. For instance, in self-consumption mode, the battery will charge using both excess power and the defined offset value.


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**Minimum SOC for Discharge**:
Defines a minimum SOC level below which the battery will not discharge. This can serve as an additional protection or as a reserve for backup systems.

**SOC Transition Multi-Use**:
Sets the SOC threshold that defines the transition behaviour in Multi-Use Peak Shaving mode.

**Battery Voltage Limits**:
Allows configuration of the maximum and minimum voltage limits for battery operation.

**SOC Calibration**:
This function ensures the battery periodically reaches a full 100% charge for accurate SOC (State of Charge) readings. If the battery has not been fully charged within a defined timeframe, it will initiate a full charge cycle while still respecting the configured peak shaving limits.

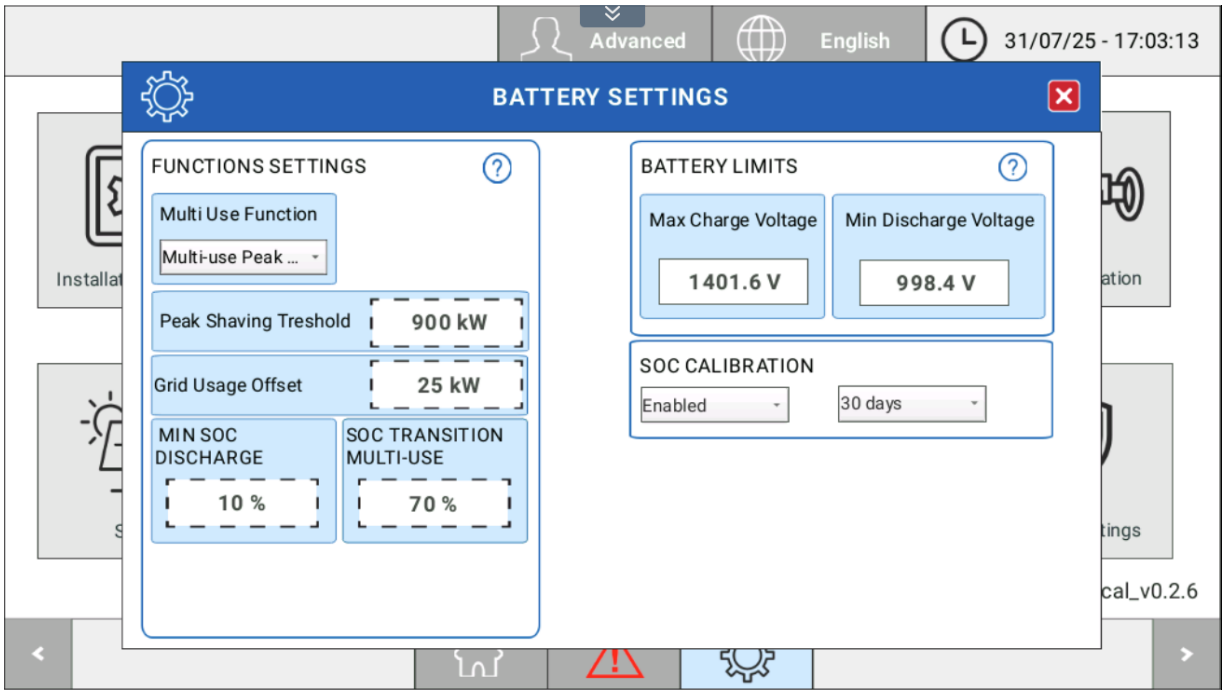


**Figure 19: Screenshot of the Settings tab**

A visual diagram illustrating the selected modes and setpoints, along with detailed explanations of the available functions, is available via the info tab within the function settings. This helps users verify their configuration, ensures the battery is set up as intended, and serves as a helpful reference for understanding the system's features.


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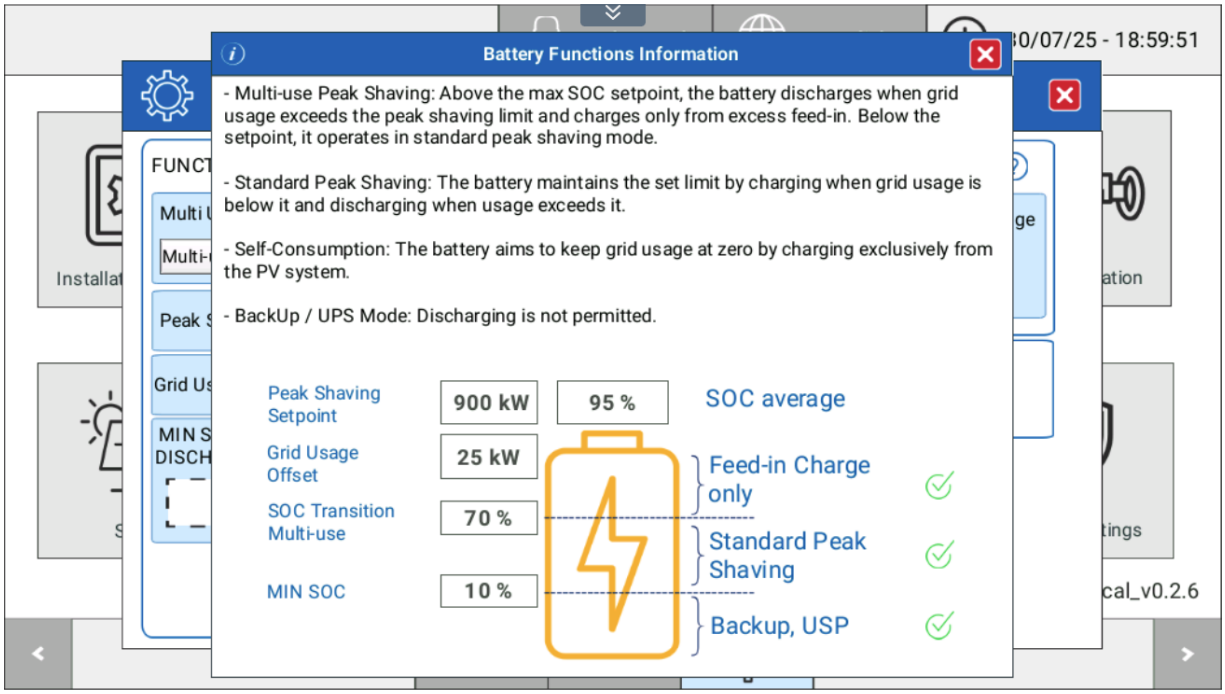


**Figure 20: Screenshot of the Settings tab diagram**

### 2.3.4. Inverter

The Inverter Settings section allows users to manage the operational state of the inverters, including switching them on, off, or setting them to standby mode. It also provides options to manually configuring both active and reactive power setpoints, making it especially useful for testing charging, discharging, and reactive power behavior.

## Operational Modes

**Active Power Setpoint**:

- **Auto Mode**:
    - The active power setpoint is automatically managed by the system based on the selected battery function and other parameters.
- **Manual Mode**:
    - Positive values indicate battery charging.
    - Negative values indicate battery discharging.
    - Users can set a value between -100% (maximum discharge) and +100% (maximum charge).
    - The corresponding active power in kW is displayed alongside the percentage setpoint.


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**Reactive Power Setpoint**:

- **Auto Mode**: The inverter automatically manages reactive power.
- **Manual Mode**:
    - Positive values indicate the inverter is **supplying** reactive power to the grid (overexcited operation).
    - Negative values indicate the inverter is **absorbing** reactive power from the grid (underexcited operation).

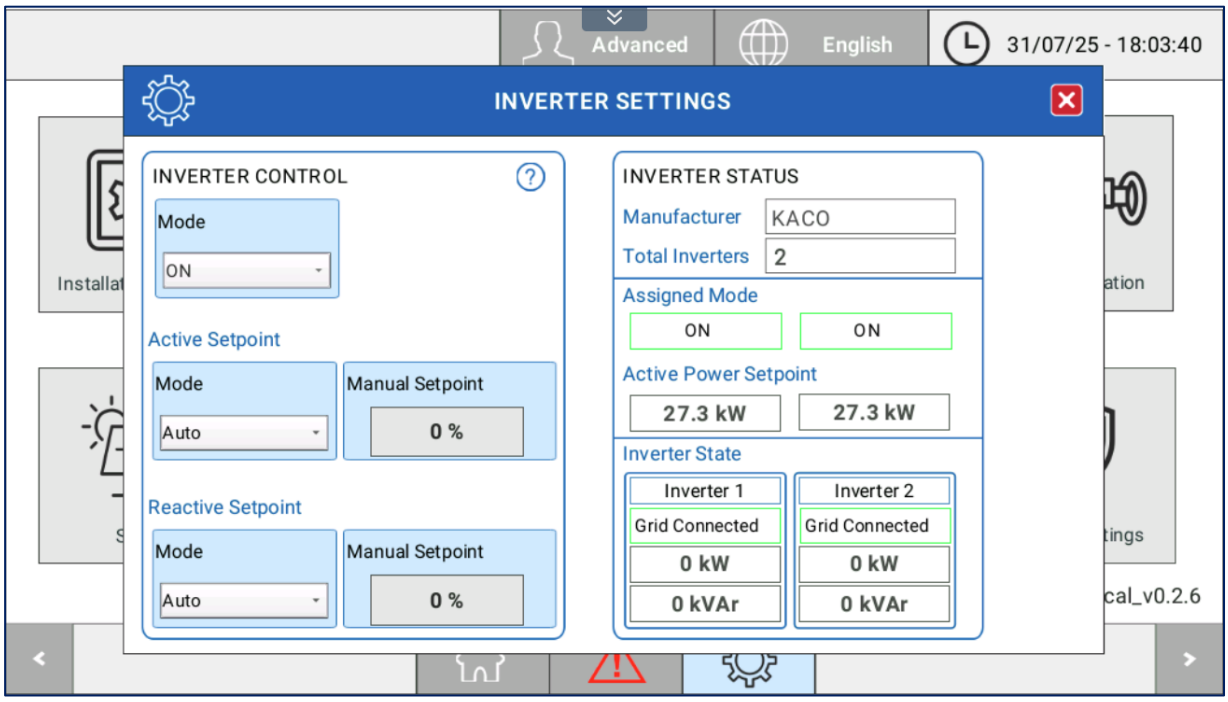


**Figure 21: Inverter settings**

## 2.3.5. Charging Stations

The **Charging Station Settings** section enables users to configure both DC and AC charging stations according to their installation´s specific requirements and the connected chargers within the system. Key available settings include:

**Minimum Power Limit**:
Defines the minimum charging power (in kW) for all connected stations. Each station will deliver at least this power level when a vehicle is connected.


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**Maximum Power Limit & Priority**:
Allows users to set the maximum charging power for individual stations and assign a priority level (*High* or *Standard*) to manage power distribution.

**Fallback**:
In the event of a grid outage, this setting ensures all charging stations automatically reduce their charging power to a predefined limit after a configured delay.

**Station Alarm Delay**:
Allows users to configure a delay period before an alarm is triggered for any charging station, helping to prevent false alarms from brief interruptions.

**Peak Shaving Exceeded**:
Sets a global power limit for all charging stations to activate when the system detects that the peak shaving threshold has been surpassed.

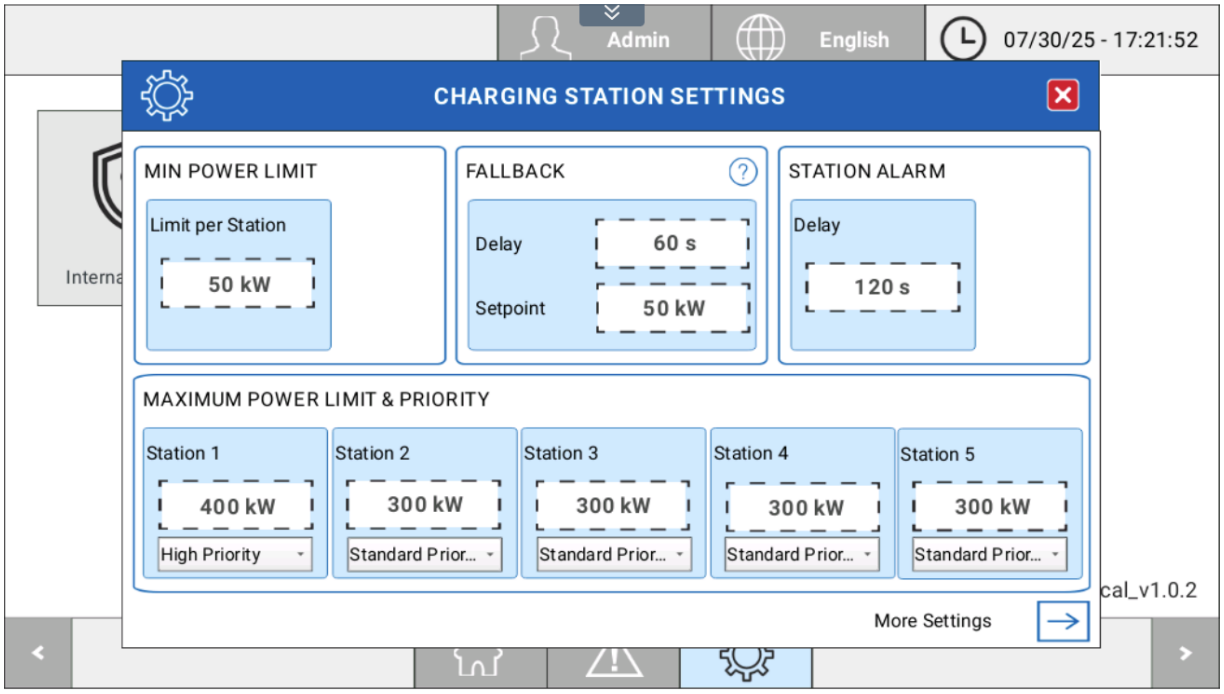


**Figure 22: First tab of the charging station settings in an installation with 5 DC Chargers.**


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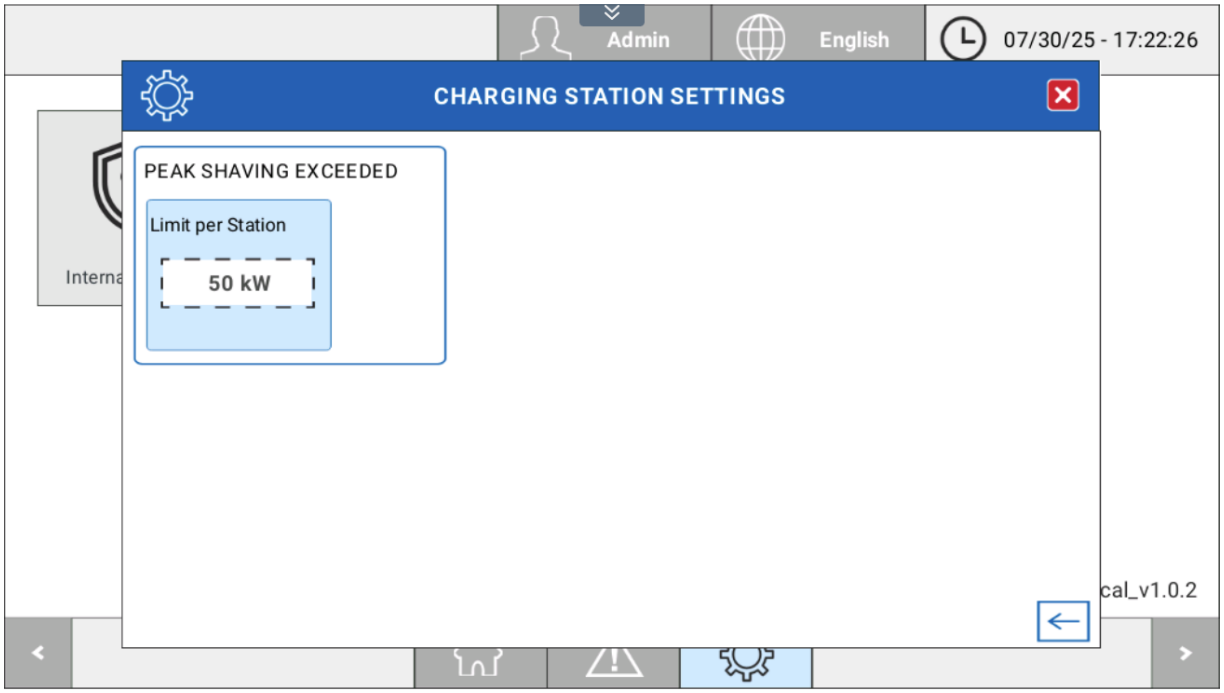


**Figure 23: Second tab of the charging station settings.**

### 2.3.6. Solar

The **Solar Settings** tab allows users to configure various solar-related features. This includes integrating available PV loggers, managing control signals for PV inverters, connection to direct marketing service providers, and adjusting other solar system parameters.


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### 2.3.7. Alarms

The alarm tab allows users to set a trigger delay for forwarding alarms to the Connex portal.

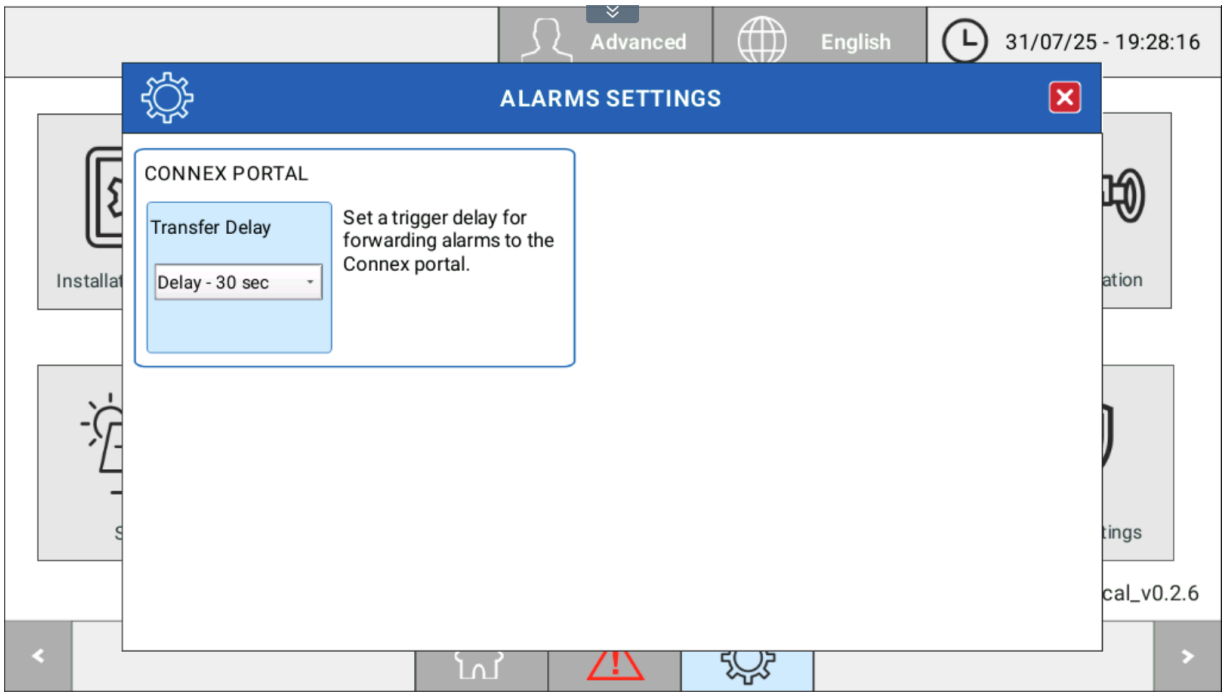


**Figure 24: Second tab of the charging station settings.**

### 2.3.8. Energy Tradings

The **Trading Energy Settings** section offers the following features:

- **Trading Activation**:
  Enables users to activate or deactivate energy trading functionality.
- **Low Battery Protection**:
  Defines a minimum SOC threshold to prevent the trading system from discharging the battery when the actual SOC falls below the defined limit.

Additionally, this section provides real-time monitoring of fperformance and communication with the trading system, including:

- The **active power setpoint** currently controlled by the trader.
- The **trading status** (active or inactive).
- Data related to **multi-market trading**, including PRL, SRL, and SOC values.


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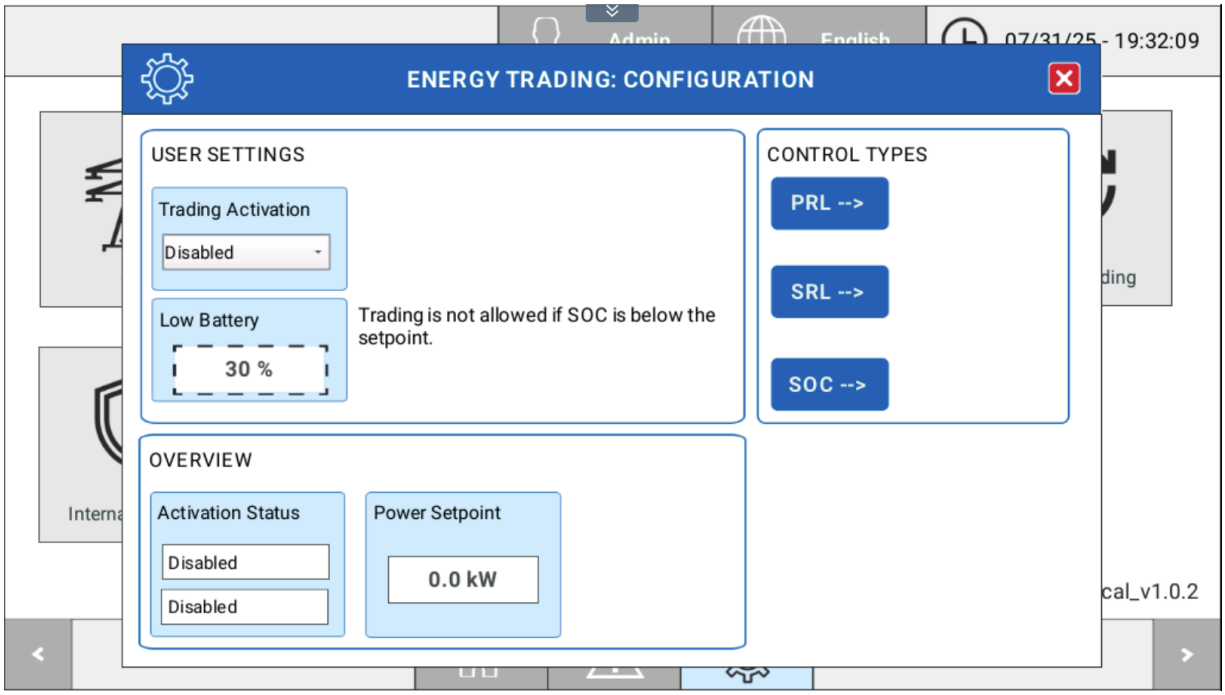


**Figure 25: Main page of the energy trading settings.**

# 3. Contact

Questions for technical details or concerning the ArchiteX UI via service@birdtical.com

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