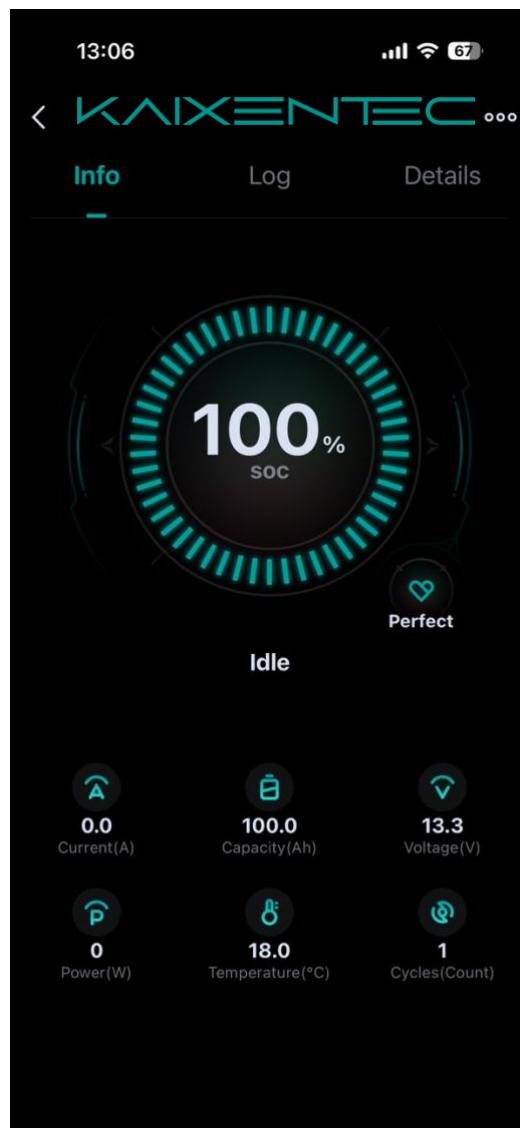




APPLICATION USER MANUAL

KAIXENTEC VOYAGER

SOFTWARE PLATFORM FOR LITHIUM BATTERY MANAGEMENT

Version 1.0

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2. LEGAL NOTICE & INTENDED USE

© Kaixentec B.V. All rights reserved. No part of this manual may be reproduced, stored, or transmitted in any form without prior written permission from Kaixentec. This manual describes the Kaixentec Voyager software platform, developed by Kaixentec for monitoring, management, and control of lithium battery systems. It provides detailed instructions for connecting and operating smart batteries, Motive Power Modules, and R-Sync communication devices, as well as guidance on system configuration, monitoring and firmware updates. The product is intended **exclusively** for use with Kaixentec **Ranger Series lithium battery systems** and compatible inverters listed in this document.

3. GENERAL PRODUCT INFORMATION

Kaixentec Voyager is a software platform developed by Kaixentec for the monitoring and management of lithium battery systems. It integrates Bluetooth communication technology with advanced battery management software, enabling users to view, supervise, and control smart lithium battery systems.

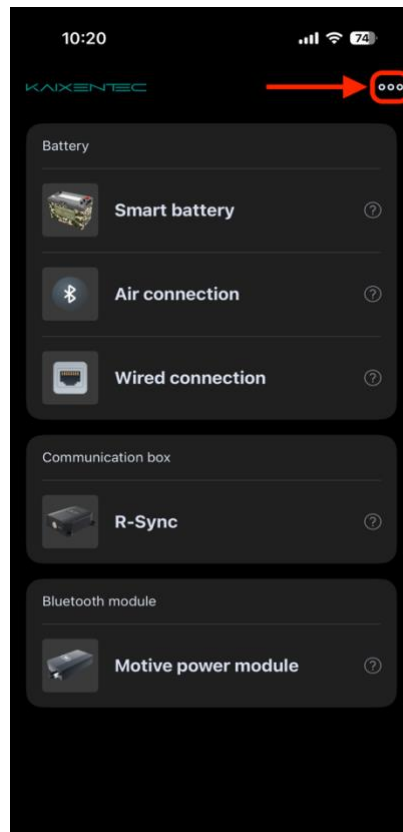
Designed for professionals who rely on portable and mobile power solutions, Kaixentec Voyager offers advanced tools for battery monitoring, system configuration, and real-time diagnostics. The application provides comprehensive visibility into system performance, allowing users to efficiently supervise and operate their energy storage solutions.

The application is available free of charge on the [Apple Store](#) (iOS) and [Google Play Store](#) (Android) for smartphones.

4. APPLICATION OVERVIEW AND SETTINGS

4.1 Home Screen

Upon launching Kaixentec Voyager, the Home Screen provides immediate access to all connected devices and key system information. Users can select devices, review system information, and access configuration options directly from this interface.



4.2 Device Classification

The application supports multiple device types, each serving specific functions within the battery management ecosystem.

Device category	Specific model
Battery	Smart Battery
	Air connection
	Wired connection
Communication box	R-Sync
Bluetooth module	Motive power module

Device descriptions

- **Smart battery:** This variant allows users to connect to a single battery and obtain detailed information, including State of Charge (SOC), voltage, current, and temperature, etc. It is suitable for monitoring individual battery performance.
- **Air connection:** This option enables multiple batteries to connect wirelessly, forming a system where the app automatically calculates and displays summary information, such as SOC, voltage, current, system composition, and detailed metrics for each battery in the network.
- **Wired connection:** This variant is used when multiple batteries need to be composed into a battery system and need to communicate with external devices or connect to an inverter for communication (e.g., Victron inverters without R-Sync). Batteries are connected via communication wires, allowing the app to retrieve system-level summary information from the master battery, including SOC, voltage, current, and system composition.
- **R-Sync:** The R-Sync allows users to connect multiple inverters and manage communication with the battery system. It enables protocol configuration and intelligent communication between the master battery and multiple inverters.
- **Motive power module:** Dedicated for the Ranger Motive battery series, this module provides system-level monitoring, displaying key parameters such as SOC, voltage, current, and temperature, etc.

4.3 Additional options

The More [°°°] page provides access to support information, system details, application settings, and documentation.

- **Company Information:** Includes telephone, email, website, and company address.
- **Document:** Access the user manual for Kaixentec Voyager.
- **Language Settings:** The default language is automatically detected based on the smartphone's language. Users can manually select from English, German, French, Italian, Spanish, or Swedish.
- **Temperature Unit:** Default is °C. Users can switch between °C and °F.
- **App Version:** Displays the current version of Kaixentec Voyager.

4.4 Pop-Up notifications

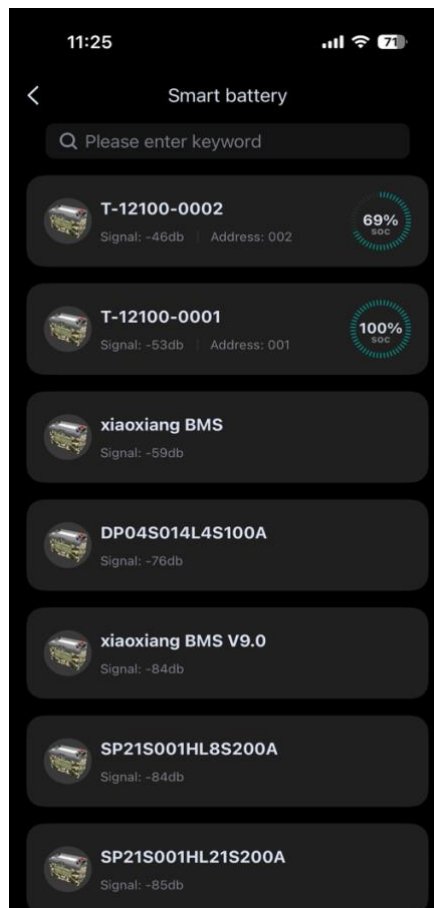
The application may display pop-up messages to guide users during system configuration, troubleshooting, or when certain conditions are detected.

Pop-Up message	Explanation
Please connect to the correct device.	Ensure the connection to the Kaixentec battery .
Battery numbers mismatch.	The number of batteries in the network does not match the configured number. Verify that the app settings correspond to the actual battery count.
Error, please connect the Master battery.	Press the config button on the first battery's display panel for more than 10 seconds, then try again.
System configuration does not match the current setup.	A network already exists. Locate and release the existing network, or press the config button for more than 3 seconds to reset before re-networking
Network has been released. Delete it?	Confirms whether to delete the released network.
System changed, data has been updated.	Latest system data has been summarised and updated in the app.

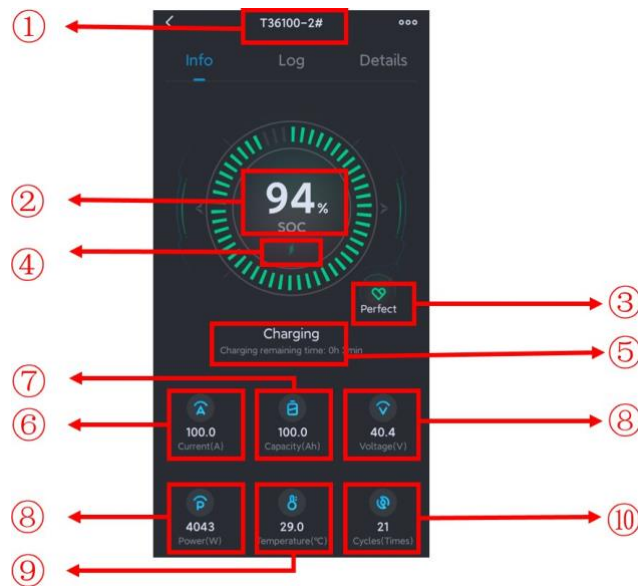
5. BATTERY

5.1 Smart Battery

Turn on the battery switch and enter the Smart Battery interface. The app displays the battery name and signal strength. (For batteries with SOC and address information, BMS parameters can be viewed and modified via the More... menu, and the battery software version is also displayed.) Users can locate the desired battery in the list and tap to establish the connection.



5.1.1 Basic information



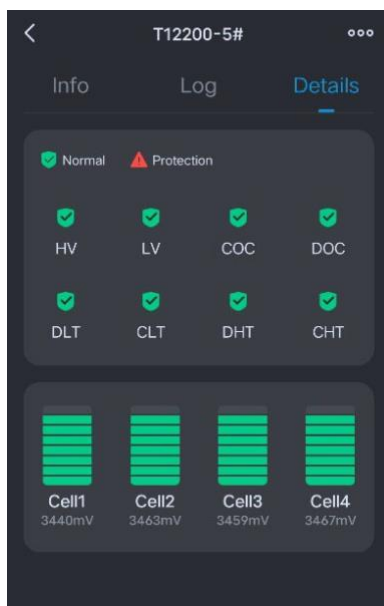
1	Battery Name	Name of the connected battery
2	State of Charge (SOC)	≤ 20% - RED ≤ 20% - GREEN
3	Health Status	Perfect/ Good
4	Status Indicator	
	Standby	No indicator
	Charging	Flashing lightning symbol
	Discharging	The lightning symbol remains on
	Heating	Heating icon
5	Operational Status	
	Standby	Idle
	Charging	Shows remaining charging time
	Discharging	Shows remaining discharging time
	Heating	Heating icon
6	Current (A)	Positive for charging, negative for discharging
7	Capacity (Ah)	Battery design capacity
8	Voltage (V)	Current battery voltage
9	Power (W)	Calculated as Voltage × Current
10	Temperature (°C / °F)	Battery average temperature
11	Cycle Count	Number of full charge/discharge cycles

5.1.2 Logs

Slide right or tap **Log** to view alarms, protection events, and recovery records for the connected battery. Only current records are displayed; historical faults are not retained after exiting the app.

5.1.3 Details

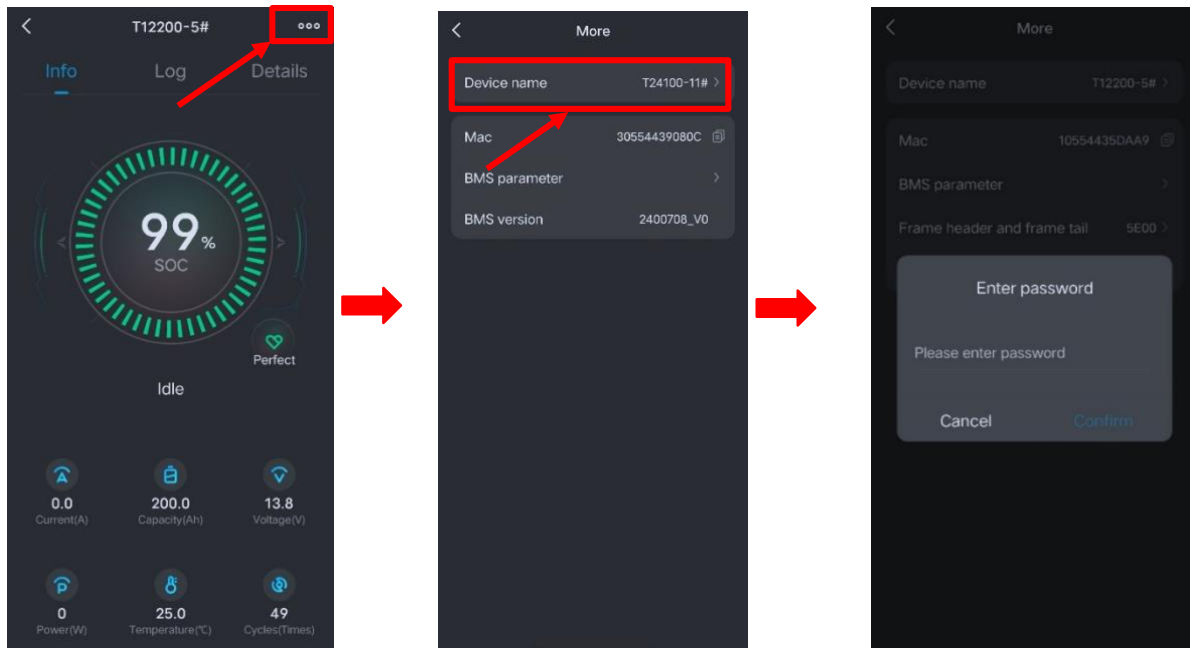
Slide right or tap **Details** to view the single cell voltage in millivolts [mV] and the protection status, which shows whether any of the listed protections are active.



Protection	Explanation
HV	High Voltage
LV	Low Voltage
COC	Charge Overcurrent
DOC	Discharge Overcurrent
DLT	Discharge Low Temperature
CLT	Charging Low Temperature
DHT	Discharge High Temperature
CHT	Charge High Temperature

5.1.4 Additional information

Tap **More** (⋮) in the upper-right corner to access additional information, including the device name, which displays the battery name and can be modified by entering the password “**1234**”, and the MAC address of the battery.

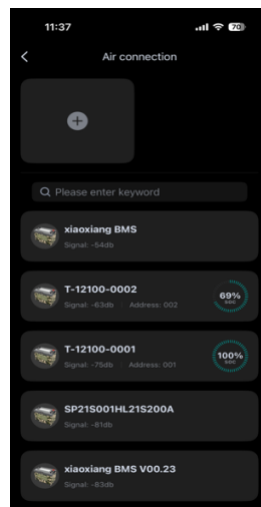


For selected batteries, BMS parameters can be configured, including discharge cut-off voltage (2.5~3.0V), charge cut-off voltage (3.65~3.85V), charge and discharge MOS switches, and sleep mode, and the parameter file can be viewed or updated using the password “**A1234**”.

Additionally, the battery software version is displayed, and when a new version is detected, a pop-up notification and a red dot indicate that an update is available.

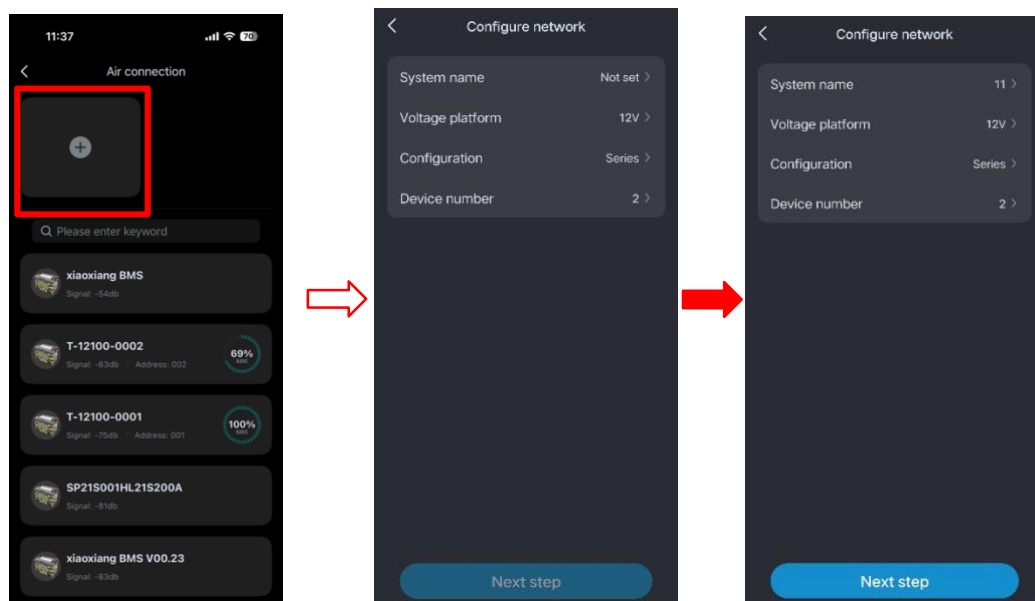
5.2 AIR CONNECTION - MULTI-BATTERY SYSTEM

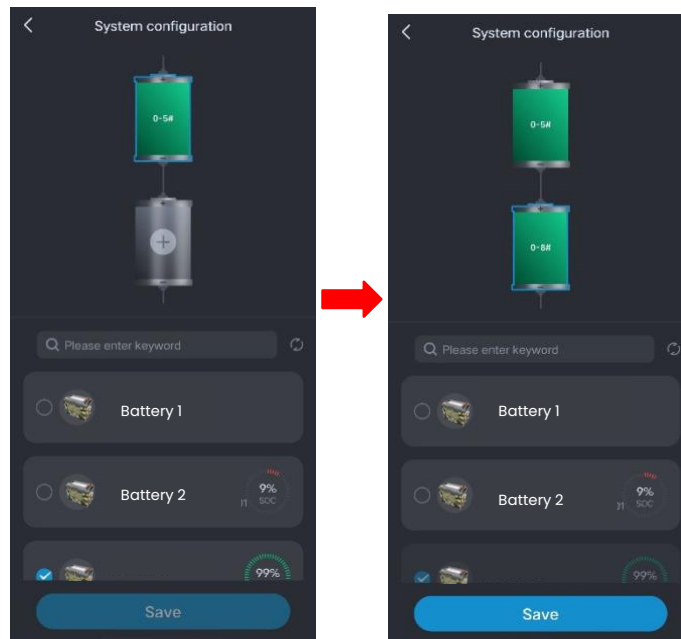
The Air Connection interface supports fuzzy search to locate batteries and provides access to both system and battery information. The **System List** displays saved systems, including their name, voltage, and current. Users can configure new systems by tapping +, with up to two systems saved, and switches allow connection or disconnection. The **Battery List** shows each battery's Bluetooth name, signal strength, address, and SOC. Selecting a battery automatically redirects to its single battery information interface.



5.2.1 Network Configuration

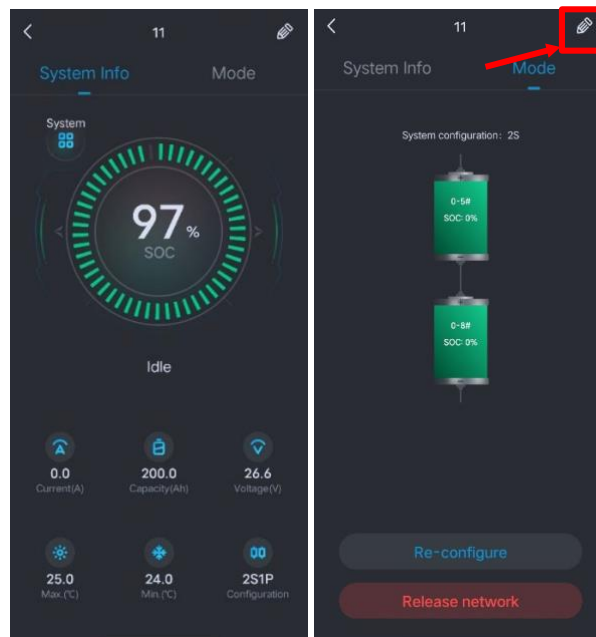
To configure a wireless system, tap + and enter the system name, voltage platform [set to the single battery voltage], configuration details, and number of devices. Next, assign each battery to its corresponding position within the app. Finally, tap Save to complete the network configuration. The app allows up to two systems to be saved.





5.2.2 System Information

1	Battery Name	Name of the currently connected battery
2	State of Charge (SOC)	$\leq 20\%$ - RED $\leq 20\%$ - GREEN
3	Status Indicator	
	Standby	No indicator
	Charging	Flashing lightning symbol
	Discharging	The lightning symbol remains on
	Heating	Heating icon
4	Operational Status	
	Standby	Idle
	Charging	Shows remaining charging time
	Discharging	Shows remaining discharging time
	Heating	Heating icon
5	Current (A)	Positive for charging, negative for discharging
6	Capacity (Ah)	Battery design capacity
7	Voltage (V)	Current battery voltage
8	Temperature (°C / °F)	The maximum and minimum temperature of battery in the system.
9	Configuration	Series/parallel relationships and battery quantity



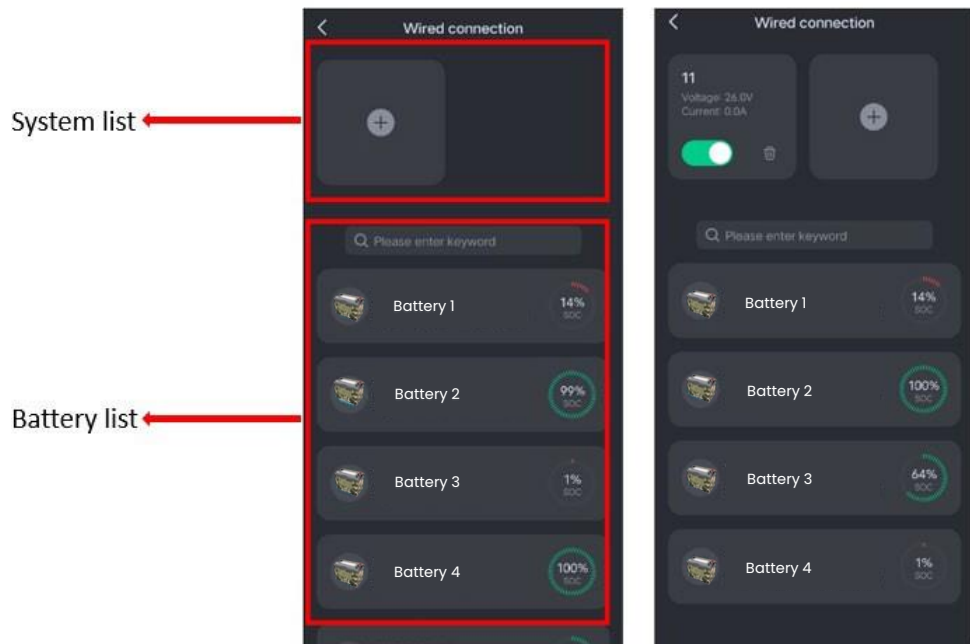
Swipe right or tap **Mode** to access the corresponding page. Tap the  icon to modify the system name by entering the password “**1234**”. This page displays the system configuration, including the series-parallel arrangement and the number of batteries, as well as the name and SOC of each battery in the system. It also provides options to reconfigure the system by reconnecting the batteries and saving the updated configuration, or to release the network to remove the system configuration. In addition, selecting a single battery icon opens the single-battery information page, where detailed battery information can be viewed.

5.3 WIRED CONNECTION – MULTI-BATTERY SYSTEM

This page displays both the **System List** and the **Battery List**.

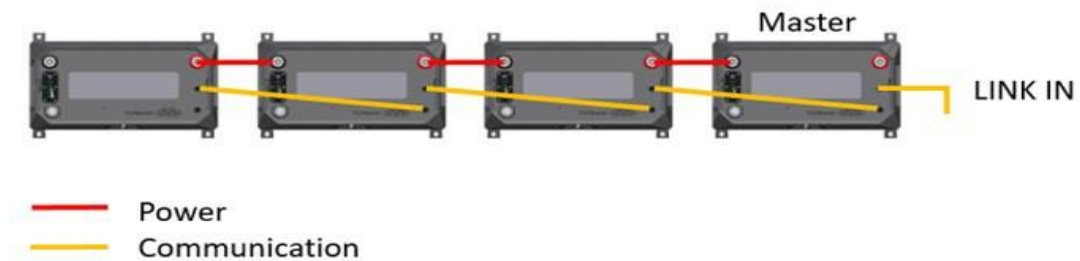
The **System List** shows connected systems, including their name, voltage, and current, and allows users to configure new systems by tapping +, with support for up to six systems. Systems can also be grouped or deleted. However, deleting a system within the app removes only the configuration stored in the application. To completely remove the system configuration, the **Release Network** option must be selected in the **Mode** page.

The **Battery List** displays each device's Bluetooth name, signal strength, device address, and state of charge (SOC), and selecting a battery automatically verifies whether it belongs to an existing system configuration.

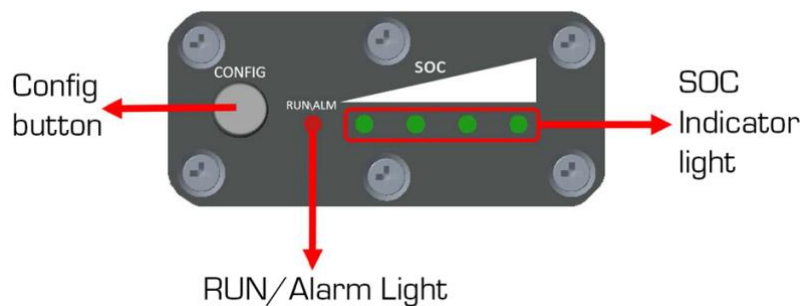


5.3.1 Network Setup

1. Connect batteries in series using LINK OUT → LINK IN from the first to the last unit.



2. Power on all Ranger batteries.

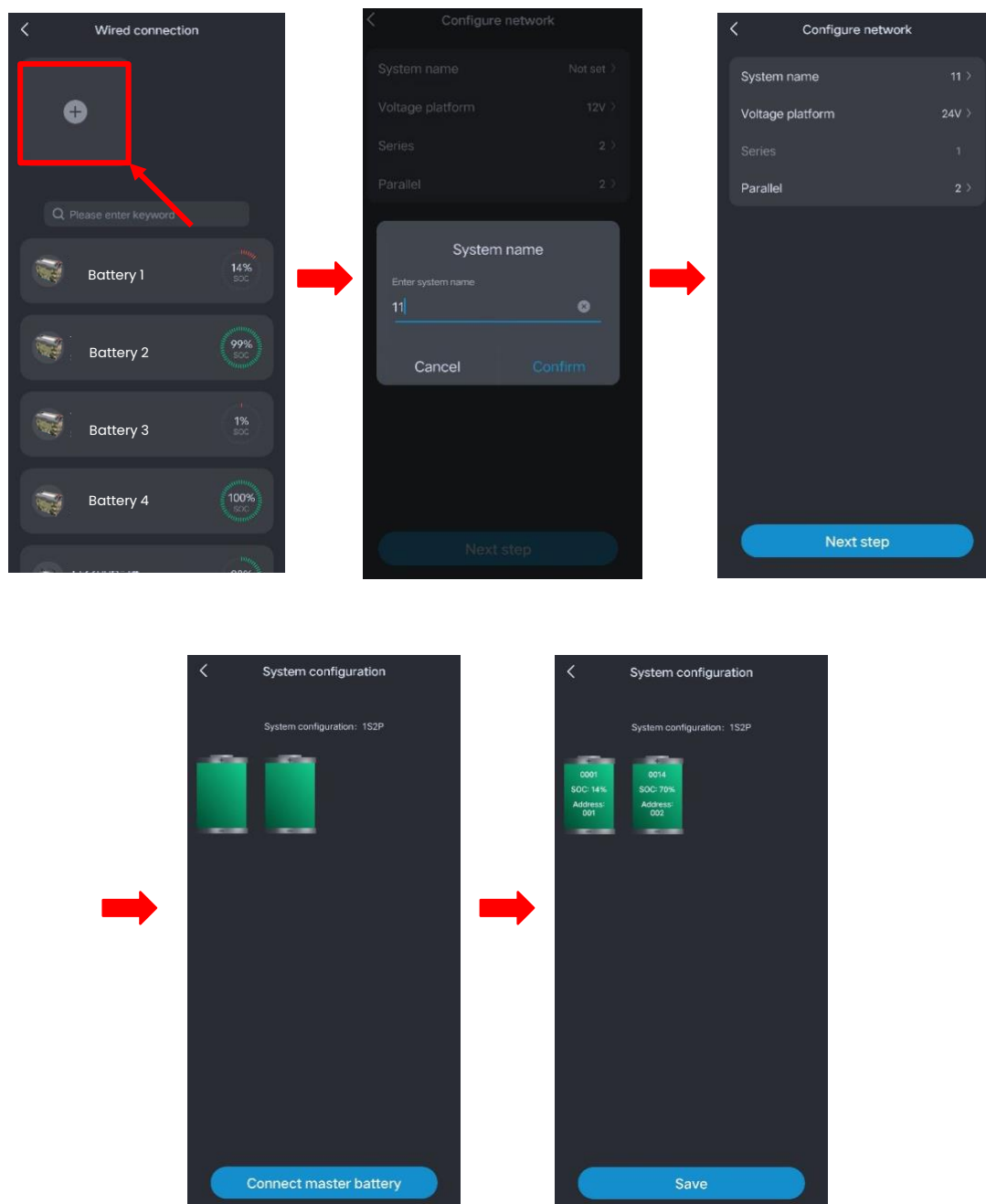


3. On the first (master) battery, press the CONFIG button for >3 seconds to enter disconnected state (SOC LEDs flash simultaneously; otherwise, a failure is indicated).

4. Press CONFIG for >10 seconds to initiate network formation.
5. Wait approximately 2–3 minutes until LEDs stop alternating and SOC is displayed.
6. In the app, tap +, set system name, voltage, series/parallel numbers, and connect the master battery. Up to six systems can be saved. Other devices can access the saved systems.

System Limits:

- 12V system: Maximum 16P at 1S, maximum 4P at 2/3/4S
- 24V/36V systems: Maximum 16P; series connections not supported



5.3.2 System information

The interface provides an overview of the connected battery system, including its status, operating parameters, and configuration. Tap the  icon to modify the system name by entering the password “1234”.



1	Battery Name	Name of the currently connected battery
2	State of Charge (SOC)	≤ 20% - RED ≤ 20% - GREEN
3	Status Indicator	
	Standby	No indicator
	Charging	Flashing lightning symbol
	Discharging	The lightning symbol remains on
4	Heating	Heating icon
	Operational Status	
	Standby	Idle
	Charging	Shows remaining charging time
5	Discharging	Shows remaining discharging time
	Heating	Heating icon
6	Current (A)	Positive for charging, negative for discharging
7	Capacity (Ah)	Battery design capacity
8	Voltage (V)	Current battery voltage
9	Temperature (°C / °F)	The maximum and minimum temperatures of the battery in the system.
10	Configuration	Series/parallel relationships and battery quantity

Slide right or tap **Log** to view alarms, protection events, and recovery records.

Swipe right or tap **Mode** to access the system configuration, including the series – parallel arrangement and the number of batteries, as well as the system name, SOC, and address of each battery in the system. It also provides an option to reconfigure the system by reselecting the master battery and saving the updated configuration. In addition, selecting a single battery icon opens the single-battery information page, where detailed battery parameters can be viewed.

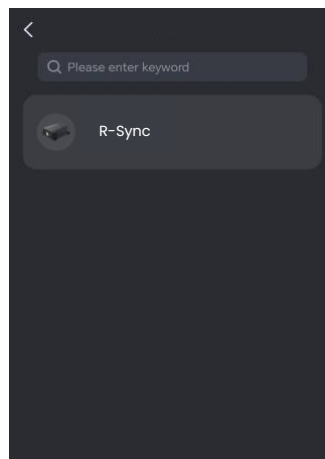
6. COMMUNICATION BOX

6.1 R-SYNC

The **R-Sync** serves as the central communication gateway for the battery system, enabling real-time monitoring, configuration, and inverter synchronisation via Bluetooth.

6.1.1 Establishing a connection

- Switch on R-Sync.
- Open the R-View interface on your mobile device. The system will automatically scan and display available R-Sync units, showing their unique Bluetooth identifiers and signal strength.
- Locate the specific R-Sync ID from the list and select **Connect** to initialise the connection.



6.1.2 System Information & Configuration

The System Information page provides an overview of the entire battery network. To customise device settings, tap the  icon to rename the R-Sync module by entering the password “1234”.

1	Battery Name	Name of the currently connected battery
2	State of Charge (SOC)	≤ 20% - RED ≤ 20% - GREEN
3	Status Indicator	
	Standby	No indicator
	Charging	Flashing lightning symbol
	Discharging	The lightning symbol remains on
	Heating	Heating icon
4	Operational Status	
	Standby	Idle
	Charging	Shows remaining charging time
	Discharging	Shows remaining discharging time
	Heating	Heating icon
5	Current [A]	Positive for charging, negative for discharging
6	Capacity [Ah]	Battery design capacity
7	Voltage [V]	Current battery voltage
8	Temperature [°C / °F]	The maximum and minimum temperatures of the battery in the system.
9	Configuration	Series/ parallel relationships and battery quantity

Swipe right or tap **Mode** to access the page, where the system configuration (series-parallel arrangement) and the name, SOC, and address of each device are displayed. Selecting a single battery icon opens its detailed information page.

Swipe right or tap **Discover** to view and configure the protocol of the current system. The corresponding inverter protocol is displayed based on the Protocol ID. The R-Sync software version is also shown, and when a new version is detected, a pop-up notification and a red dot indicate that an update is required.

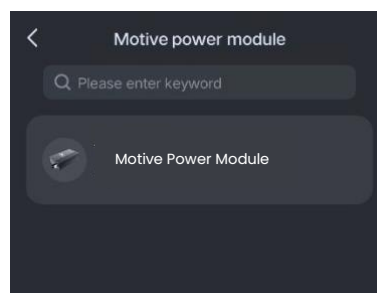
Protocol ID	Inverter Brands
1	Victron, SMA, Studer Innotec, Sofar
2	Sol-Ark, Solis, GoodWe, Deye, Growatt, SAJ, LuxPower, Megarevo, INVT, Sermatec, TBB, Must, SunGoldPower, SG, Sunsynk
3	Schneider
4	NMEA-2000 (on request)
5	CIBUS
6	RV-C (on request)
11	Voltronic, SunGoldPower SHP, RCT, MPP Solar, Alpha Outback, Phocos
Others	On Request

7. BLUETOOTH MODULE

7.1 Motive Power Module

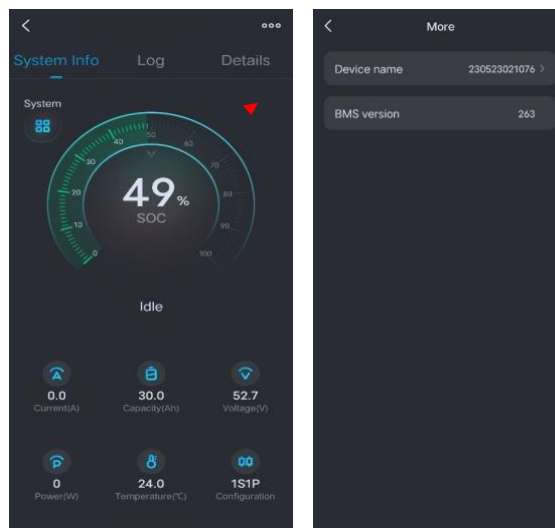
7.1.1 Establishing a connection

- Navigate to the Motive Power Module section within the application. The system will display a list of available modules, including their Bluetooth names and signal strengths.
- Use the search bar at the top for fuzzy searching to quickly locate a specific module by name.
- Select the appropriate Motive Power Module from the list and click to establish a connection.



7.1.2 System Information

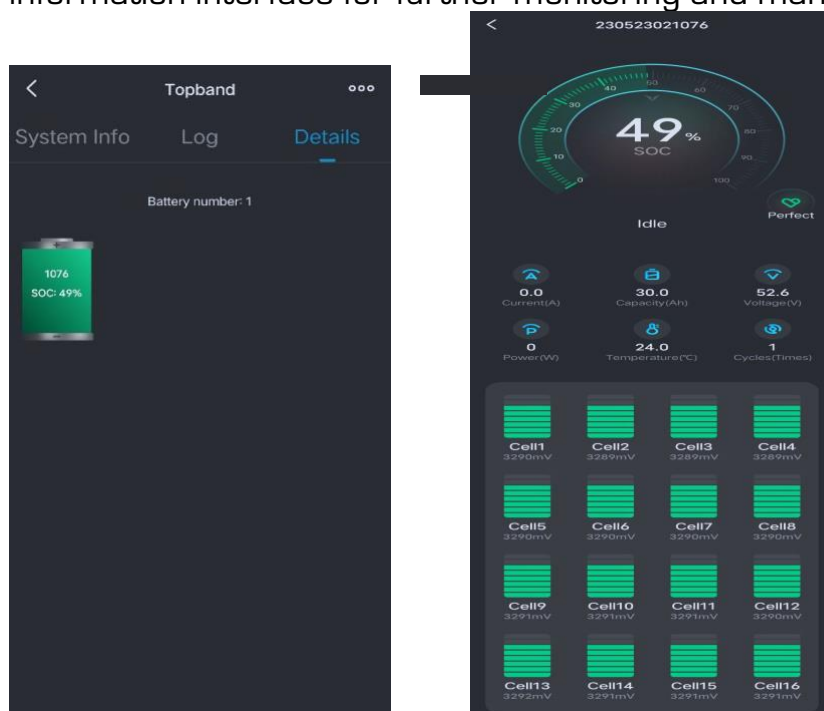
Tap [⋮] in the upper-right corner to access the **More** menu, where the device name can be modified using the password **1234**.



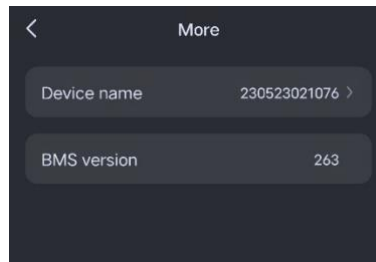
1	Battery Name	Name of the currently connected battery
2	State of Charge (SOC)	≤ 20% - RED ≤ 20% - GREEN
3	Status Indicator	
	Standby	No indicator
	Charging	Flashing lightning symbol
	Discharging	The lightning symbol remains on
	Heating	Heating icon
4	Operational Status	
	Standby	Idle
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6	Capacity (Ah)	Battery design capacity
7	Voltage (V)	Current battery voltage
8	Temperature (°C / °F)	The maximum and minimum temperatures of the battery in the system.
9	Configuration	Series/parallel relationships and battery quantity

Swipe right or tap **Logs** to view alarm, protection, and recovery records for the system and individual batteries.

Swipe right or tap **Details** to view the number of batteries in the system, as well as the name and SOC of each battery. Selecting a single battery icon opens its detailed information interface for further monitoring and management.



Tap [⋮] in the upper-right corner to access additional settings. The **Device Name** displays the connected Bluetooth module's name, which can be changed using the password "**1234**" for easier identification. The **BMS Version** shows the current software version of the BMS, and when a new version is available, a pop-up notification and red dot indicate that an update is required.



8. UPDATE NOTICE

Please read the following instructions carefully before initiating a firmware update via the Motive Power Module to prevent system downtime.

1. When performing a system upgrade on a Ranger Motive battery using the Motive Power Module, the battery will automatically suspend all external power output. Therefore, an additional power supply is required for the Bluetooth module. The auxiliary power supply must be **Direct Current (DC)** within a voltage range of **24V – 70V**.
2. For most sections of the application, an interrupted, incomplete, or forced exit from the update process will **NOT** affect the battery's functionality. The system will simply retain the previous firmware version. However, when upgrading a Ranger Motive battery using the Motive Power Module, any incomplete upgrade may render the battery **inoperable**. To ensure proper functionality, the upgrade process must be completed fully. In case of interruption, app exit, or freezing during the upgrade, reconnect and resume the process until the update is fully completed.

9. MAINTENANCE & SERVICE

- R-Sync is maintenance-free under normal operating conditions.
- Inspect wiring annually for damage or corrosion.
- Firmware updates are performed via Kaixentec tools only.

10. DISPOSAL & ENVIRONMENTAL COMPLIANCE

This product complies with EU RoHS requirements. Dispose of electronic components in accordance with WEEE Directive (2012/19/EU).

11. CONTACT & SUPPORT

Kaixentec B.V.

Ridderkerk, The Netherlands

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