Touch Screen Display & Communication Box

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Introduction

Welcome to the user manual for the **Touch Screen Display & Communication Box**, part of Epoch Batteries' **Pro Series** battery ecosystem. This guide provides clear instructions on installation, configuration, and operation. By following these guidelines, you can ensure the best possible performance and extend the lifespan of your system.

Overview

The **Touch Screen Display & Communication Box** work together as advanced monitoring devices for **Epoch Pro Series** batteries. With these components, you gain real-time insights into critical battery performance metrics, enabling you to manage your energy storage system safely and effectively.

Key parameters displayed include:

- **State of Charge (SOC):** Indicates the remaining battery capacity as a percentage.
- **Voltage and Current:** Shows the real-time electrical status of your battery system.
- **Remaining Capacity:** Reveals how many ampere-hours (Ah) remain in the battery bank.
- **Temperature:** Monitors internal battery temperature, helping to preserve battery health.
- **Configuration Data:** Displays series/parallel setup details and other system settings.

All communication utilizes an **RS485** interface, delivering reliable data transfer even in complex or noisy electrical environments.

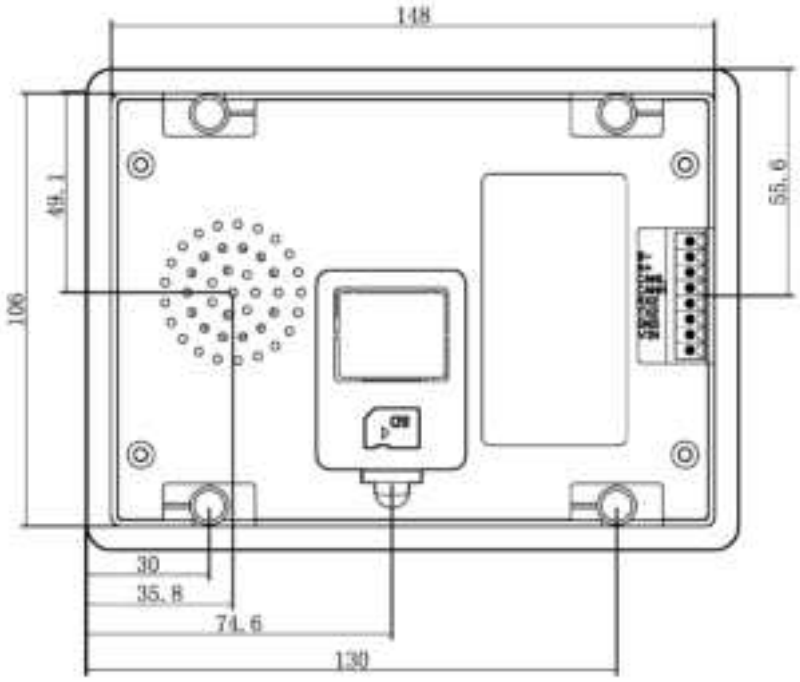
Connection Methods

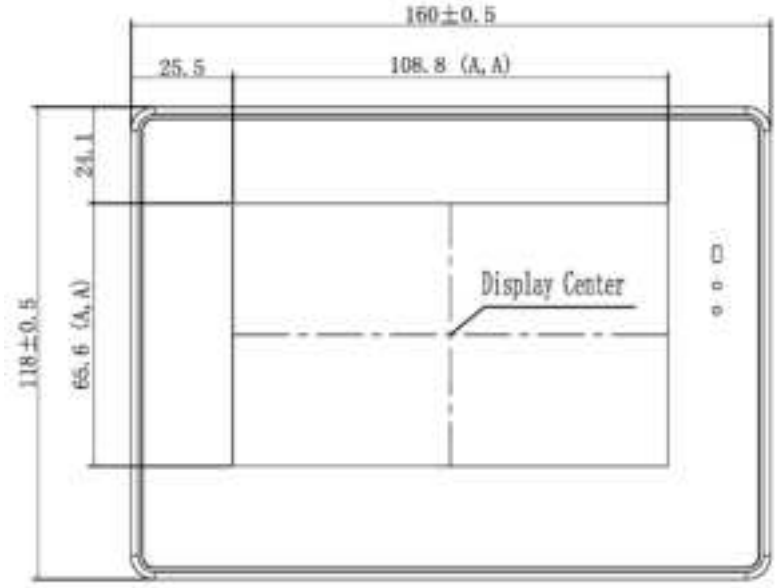
1. **Direct Connection**: Plug the Touch Screen Display directly into the Pro Series battery using the supplied wiring harness. This is ideal for straightforward systems that require minimal setup.
2. **Via Communication Box**: For more advanced communication protocols or complex systems, connect the Touch Screen Display to the **T-monitor** port on the Communication Box. The Communication Box then links to the Pro Series battery bank, creating a flexible networking solution..

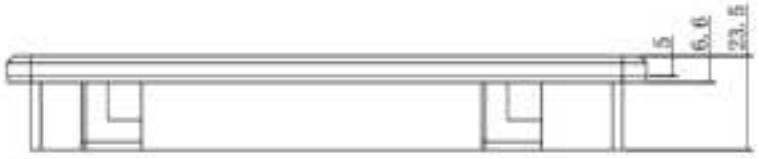
Features

1. **Pro Series Software**
   - **Intuitive Interface:** The included Pro Series software simplifies system monitoring and configuration through graphical menus.
   - **Reliable Performance:** Optimized for real-time data processing without compromising accuracy or speed.
2. **Versatile Connection Options**
   - **Direct to Battery:** Ideal for single-battery or smaller systems.
   - **Through the Communication Box:** Suited for larger, multi-battery setups or advanced communication protocols.
3. **Display**
   - **Screen Size and Quality:** A **5.0-inch IPS LCD** (800 × 480 resolution, 262K true color) provides crisp, vivid visuals and broad viewing angles.
   - **Capacitive Touch Panel:** Ensures a responsive and user-friendly experience when navigating menus and reviewing data.
4. **Built-in Speaker and LED**
   - **Audible Alarms:** Receive immediate alerts for various warnings or when the SOC dips below specified thresholds.
   - **Photosensitive Sensor:** Automatically adjusts screen brightness based on ambient light, improving visibility and reducing power draw.
5. **Robust Construction**
   - **Enhanced Durability:** Anti-UV and conformal protective coatings help guard against environmental stress.
   - **IP65 Front Enclosure:** Provides dust and water resistance, making the device suitable for both indoor and outdoor scenarios.

Dimensions


148
49.1
106
55.6
30
35.8
74.6
130


160±0.5
25.5
108.8 (A.A)
24.1
118±0.5
65.6 (A.A)
Display Center


5
6.6
23.5

Technical Specifications

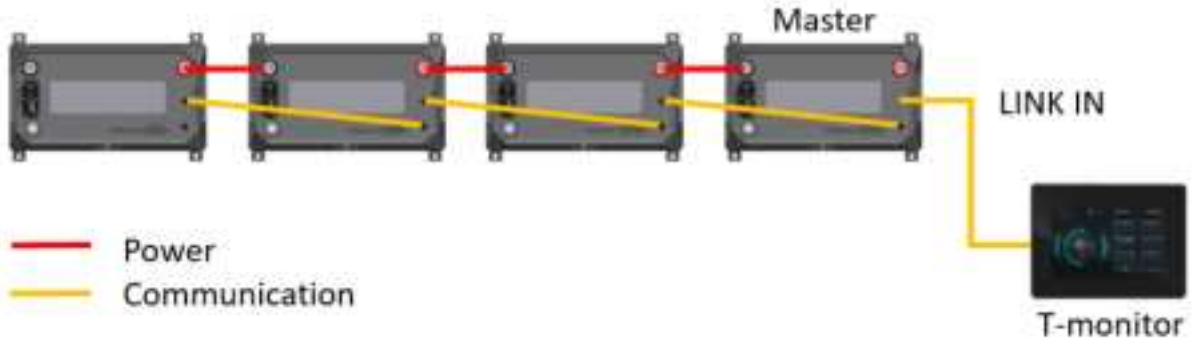
Parameter	Specification
Rated Input Voltage	9–60 V
Rated Power	<5 W
Maximum Operating Current	170 mA (VCC=12 V)
Minimum Operating Current	55 mA (VCC=12 V)
Resolution	800 × 480
Operating Humidity	10%–90% RH
Ingress Protection	IP65 (Front)
Communication Interface	RS485
Operating Temperature	–20 °C to 70 °C
Storage Temperature	–30 °C to 80 °C
Net Weight	340 g
Display Type	LCD
Screen Size	5”

Terminal Block

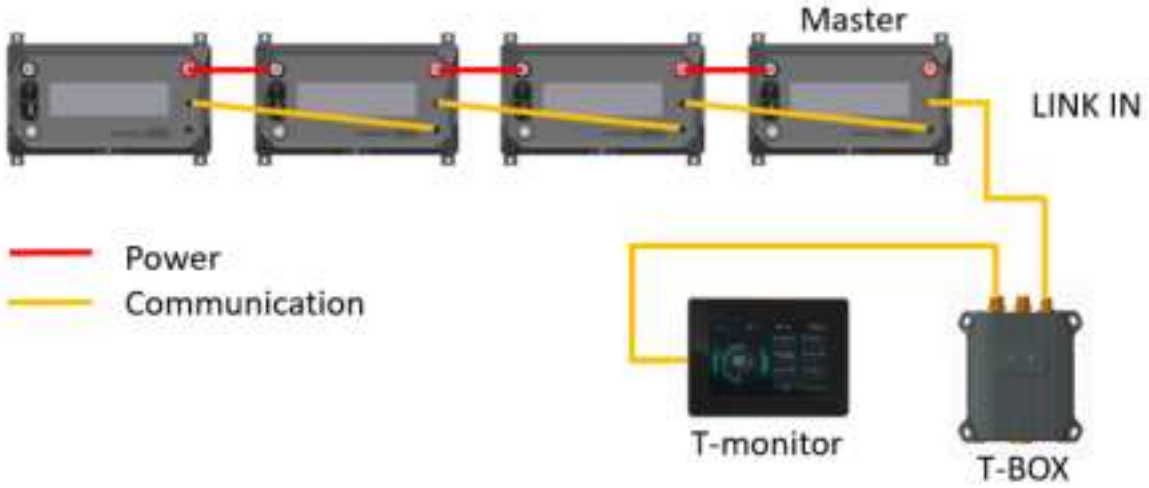
Terminal	Label	Description
1	RS485 B	RS485 communication (low signal)
2	RS485 A	RS485 communication (high signal)
3	CAN L	CAN communication (low signal)
4	CAN H	CAN communication (high signal)
5	RX	RS232 receive
6	TX	RS232 transmit
7	GND	Negative electrode (power)
8	VIN	Positive electrode (9–60 V)

Installation

1. **Connect Power and Communication Cables**
    1. **Power Connection**
        - Ensure correct polarity: **positive to positive, negative to negative**.



    2. **Communication Connection**
        - **Direct to Battery:** Plug the Touch Screen Display's communication cable into the **LINK IN** port of the Pro Series master battery.
        - **Using the Communication Box:** Connect the Touch Screen Display's cable to the **T-monitor** port on the Communication Box, then verify the Communication Box is wired correctly to the Pro Series batteries.



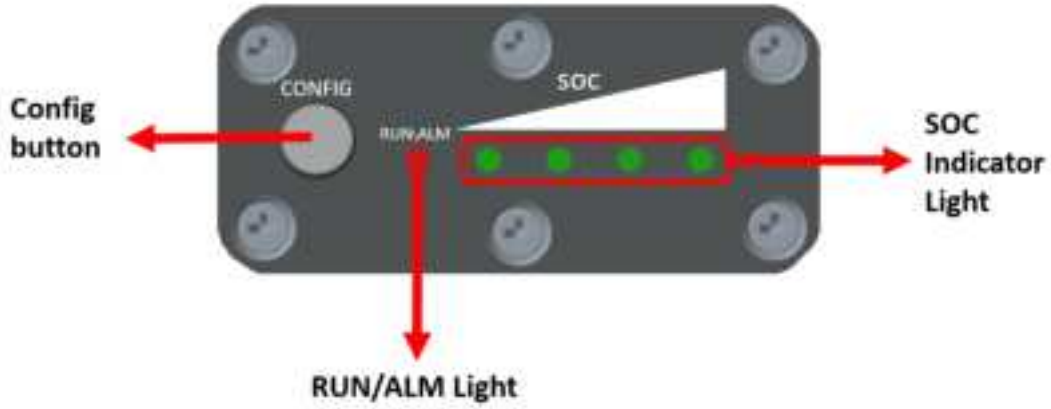
Best Practice: Double-check all connections for security and correctness before powering on the system to avoid communication issues or potential damage.

2. **Enable Communication Networking (with Pro Series Batteries)**

The Touch Screen Display shows battery data only if the Pro Series battery system is in **communication networking mode**.

1. **Link Battery Modules**
    - Connect **LINK OUT** of the first battery to **LINK IN** of the second battery, and so on.
    - Turn on the power switches for every battery.

2. **Enter Disconnected State**



- On the **first Pro Series battery's display panel**, press and hold the **Config** button for **3 seconds**.
- All SOC indicators should flash simultaneously. If not, repeat until successful..

3. **Enter Communication Network Mode**
   - (Skip this step for single-battery systems.)
   - Again, press and hold the **Config** button on the first battery for **10 seconds** or more.
   - The SOC indicators on all batteries will flash alternately for about 2–3 minutes. When complete, they revert to normal display. If not, repeat the process.
4. **System Configuration (via Bluetooth App)**
   - Use the **Epoch Pro** Bluetooth app to create a wired network setup.
   - Enter system information: system name and the number of series/parallel connections.
   - Assign the first battery as the **primary battery** so the Touch Screen Display shows overall system data accurately.

3. Mounting

Interface & Navigation

1. Parameter Page

Displays the essential battery system parameters:

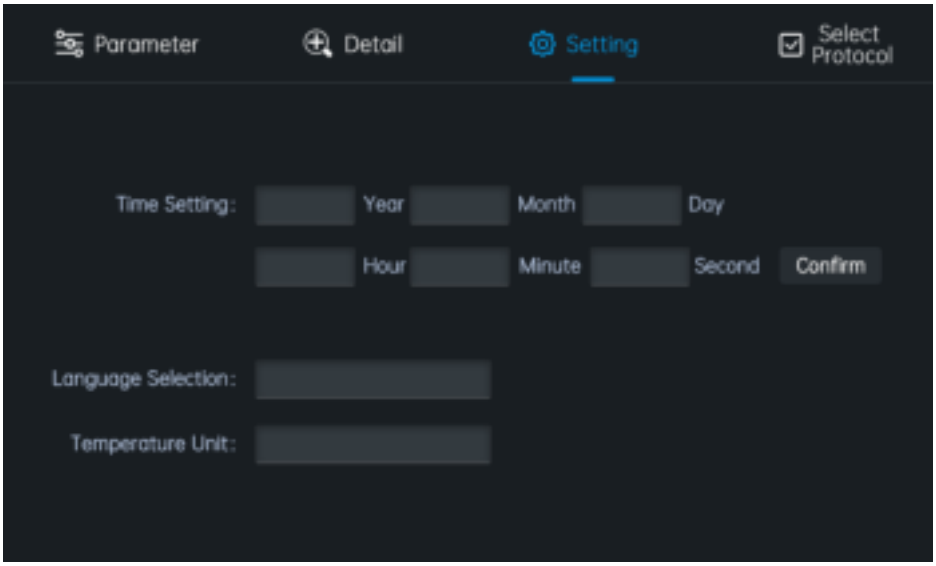
- **SOC (%)**: Overall State of Charge. When SOC ≤10%, the on-screen indicator may change color (e.g., from green to yellow).
- **Voltage (V)**: Total battery system voltage.
- **Current (A)**: Real-time current flow (charging or discharging).
- **Remaining Capacity (Ah)**: Calculated capacity available in the battery system.
- **Max Temp / Min Temp**: Highest and lowest temperatures within the system (°C or °F).
- **Configuration**: Number of series and parallel connections in the system.

2. Detail Page

Allows you to view comprehensive information about a selected battery pack:

- **SOC (%), Voltage (V), Current (A), Capacity (Ah), Temperature, Power (W), and Cycles**

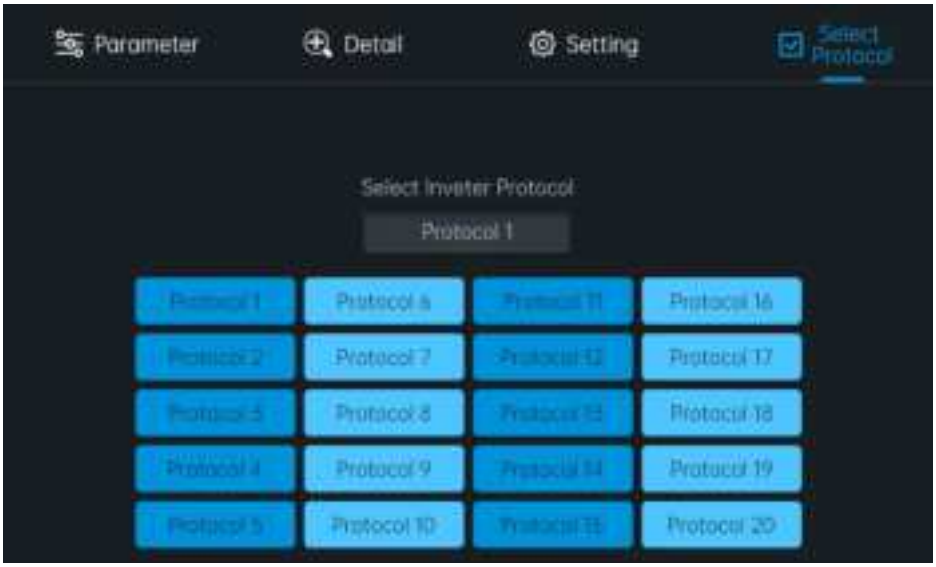
3. Setting Page



- **Time Setting:** Adjust the internal clock for accurate time-stamping of data and alarms. Modify **year, month, day, hour, minute, second**, then press **Confirm** to save.
- **Language Selection**: Toggle between **English** and **Chinese**.
- **Temperature Unit**: Switch the display from **°C** to **°F** (or vice versa).

4. Select Protocol

Choose the correct communication protocol for your particular inverter or equipment:



Protocol ID	Inverter/Equipment Support
Protocol 1	Victron / SMA / Studer Innotec / Sofar

Protocol ID	Inverter/Equipment Support
Protocol 2	Sol-Ark / Solis / Goodwe / Deye / Growatt / SAJ / LUXPOWER / Megarevo / INVT / Sermatec / TBB / MUST / SUNGOLDPOWER SG / Sunsynk
Protocol 3	Schneider
Protocol 4	NMEA-2000
Protocol 5	CIBUS
Protocol 6	RV-C
Protocol 11	Voltronic / SUNGOLDPOWER SPH / RCT / MPP / Alpha Outback / Phocos
Others	Pending

Warnings & Protections

The system displays messages related to battery health, performance, and safety. If any warning or protection message persists, **immediately discontinue use** and contact technical support.

Warning	Protection
Cell under voltage warning	Cell under voltage protection
Cell over voltage warning	Cell over voltage protection
Battery under voltage warning	Battery under voltage protection
Battery over voltage warning	Secondary charge over current protection
Charge over current warning	Secondary discharge over current protection
Discharge over current warning	Short circuit protection
Low ambient temperature warning	Cell failure protection
High ambient temperature warning	Charge over current protection
MOS low temperature warning	Discharge over current protection
MOS high temperature warning	Low ambient temperature protection
Cell charge low temperature warning	High ambient temperature protection
Cell charge high temperature warning	MOS low temperature protection
Cell discharge low temperature warning	MOS high temperature protection
Cell discharge high temperature warning	Cell charge low temperature protection

Warning	Protection
Low capacity warning	Cell charge high temperature protection
Low insulating resistance warning	Cell discharge low temperature protection
Cell disconnected warning	Cell discharge high temperature protection
Cell failure warning	Low capacity protection
Cell heating abnormal warning	Low insulating resistance protection
Cell/System over voltage warning	Cell disconnected protection
Cell/System under voltage warning	MOS failure protection
Discharge high temperature warning	AFE failure protection
Discharge low temperature warning	Cells voltage difference protection
Charge high temperature warning	Cell/System over voltage protection
Charge low temperature warning	Cell/System under voltage protection
Internal communication failure warning	Discharge high temperature protection
Cells unbalance warning	Discharge low temperature protection
	Charge high temperature protection
	Charge low temperature protection
	Discharge over current protection
	Charge over current protection
	System failure protection
	Cells unbalance protection

These warnings and protections are designed to prevent permanent damage to the battery system and ensure user safety. Always address any issues before resuming operation.

Support

For further assistance or inquiries not covered in this guide, please visit: https://www.epochbatteries.com/support