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ningdefly mppt-60A

ningdefly 60A MPPT Solar Charge Controller Instruction Manual

Model: MPPT-60A

1. Introduction

Thank you for choosing the ningdefly 60A MPPT Solar Charge Controller. This device is designed to efficiently manage power from your solar panels to charge various battery types, ensuring optimal performance and longevity for your solar power system. This manual provides essential information for safe installation, operation, and maintenance.

Safety Precautions

- Read all instructions carefully before installation and operation.
- Ensure all connections are correct and secure to prevent damage or injury.
- Always disconnect power from solar panels and batteries before installing or adjusting the controller.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- This device is for indoor use only. Avoid exposure to rain, moisture, or extreme temperatures.

2. Product Features

- **High Efficiency:** MPPT technology maximizes energy harvesting from solar panels, converting higher voltage to a lower voltage suitable for your system, ensuring optimized power output.
- **Wide Battery Compatibility:** Automatically detects 12V, 24V, 36V, and 48V battery systems. Compatible with LiFePO4, Gel, Sealed, Flooded, and AGM batteries.
- **Real-time LCD Display:** Built-in LCD provides real-time charging status, battery voltage, and system performance at a glance for easy monitoring and control.
- **Multifunctional Protection:** Includes overcharge, over-discharge, short circuit, reverse polarity, and over-temperature safeguards to protect your solar system and extend battery life.
- **RS485 Communication:** Supports RS485 communication for advanced monitoring and control (optional).
- **Efficient Heat Dissipation:** Scientific layout and fan design ensure long-term stable operation even under high temperature or long-term charging.



Image: The ningdefly 60A MPPT Solar Charge Controller, showcasing its compact design and highlighting features such as 3-stage charging, RS485 communication, and its weight of 4.63 lbs.

3. Product Overview

Familiarize yourself with the main components and interfaces of your solar charge controller:

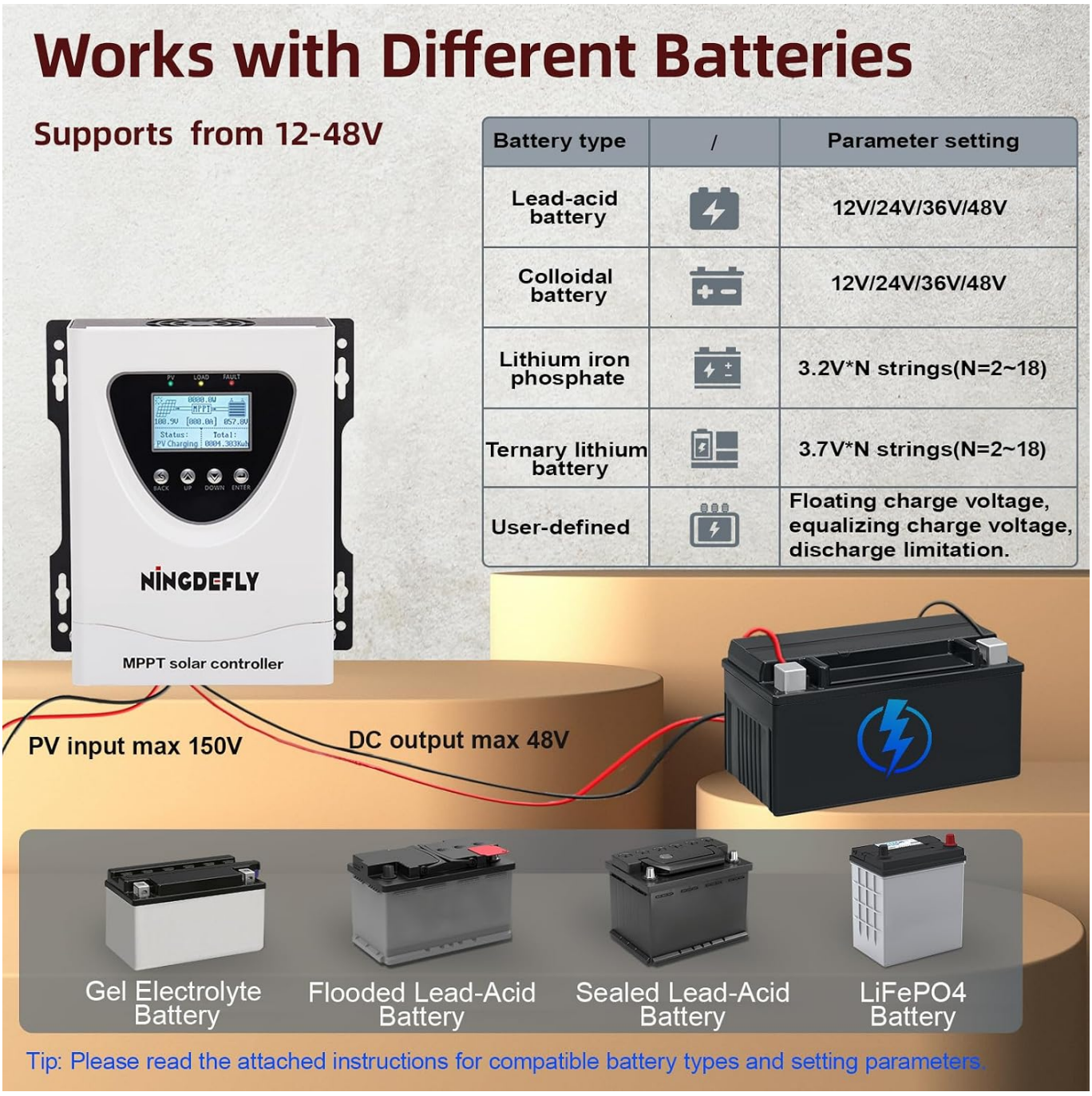


Image: A detailed view of the controller's front panel and bottom connections, indicating the HD LCD screen, button keys, terminal box cover plate, RS485 interface, DC load, battery, and solar panel connection points.

Components:

- **LCD Display:** Shows real-time system data and settings.
- **Control Buttons:** BACK, UP, DOWN, ENTER for navigation and setting adjustments.
- **PV Terminals:** Connect to solar panels (+PV, -PV).
- **Battery Terminals:** Connect to battery bank (+BATT, -BATT).
- **Load Terminals:** Connect to DC loads (+LOAD, -LOAD).
- **RS485 Interface:** For external communication and monitoring.
- **Cooling Fan:** Internal fan for heat dissipation.

4. Setup Instructions

Follow these steps carefully to install your MPPT solar charge controller. Ensure all power sources are disconnected

before making any connections.

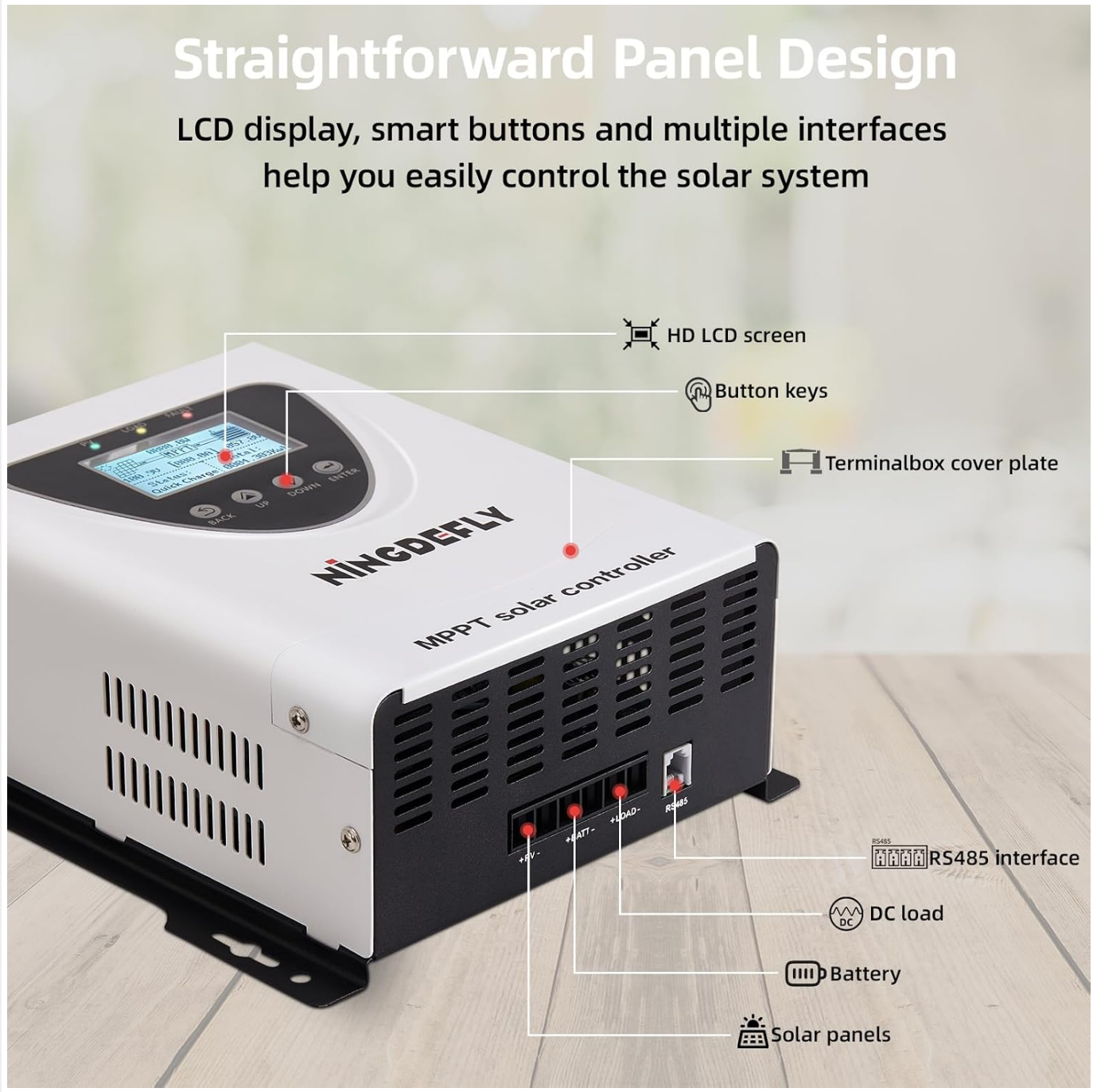


Image: A clear wiring diagram illustrating how to connect solar panels to the controller, the controller to the battery, and the battery to an inverter for various household appliances. The RS485 interface is also shown.

Wiring Sequence:

1. **Connect the Battery:** First, connect the battery to the controller's battery terminals (+BATT, -BATT). Ensure correct polarity. The controller will automatically detect the battery voltage.
2. **Connect the Solar Panel:** Next, connect the solar panels to the controller's PV terminals (+PV, -PV). Ensure correct polarity.
3. **Connect the DC Load (Optional):** Finally, connect your DC loads to the controller's load terminals (+LOAD, -LOAD). Ensure correct polarity.

Important: Always connect the battery first, then the solar panel, and finally the load. Reverse the sequence when disconnecting: disconnect the load first, then the solar panel, and finally the battery.

5. Operating Instructions

The built-in LCD display and control buttons allow for easy monitoring and configuration of your solar system.

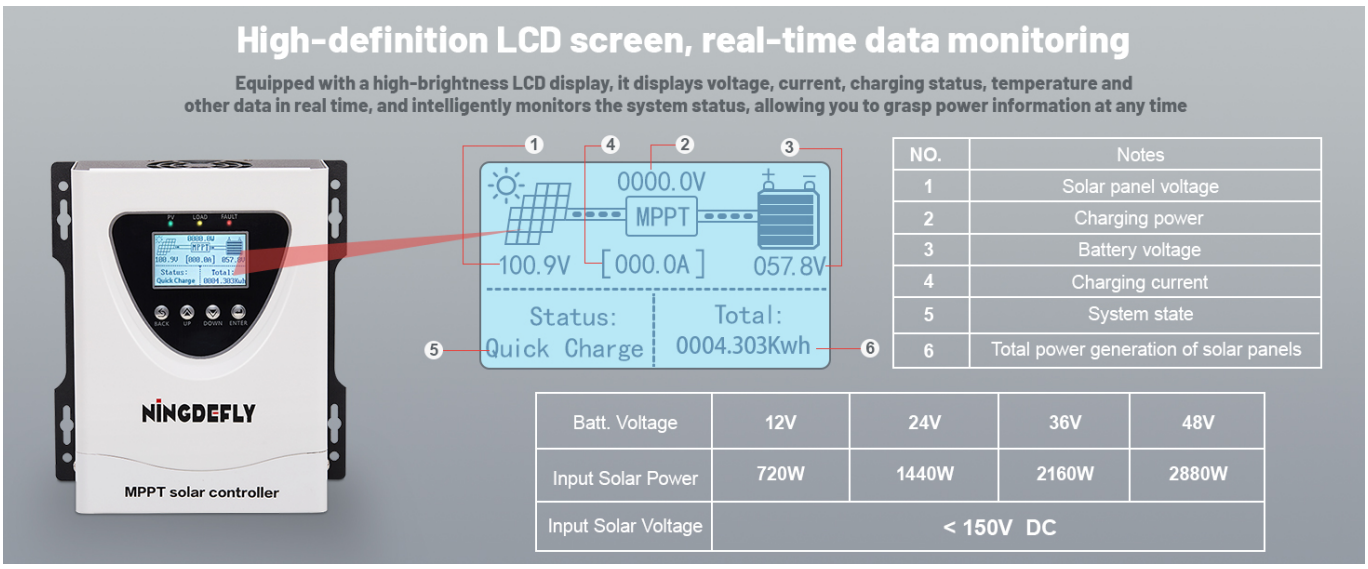


Image: A diagram detailing the high-definition LCD screen, showing real-time data monitoring points such as solar panel voltage, charging power, battery voltage, charging current, system state, and total power generation of solar panels.

LCD Display Navigation:

- Use the **UP** and **DOWN** buttons to scroll through different display screens and settings.
- Press the **ENTER** button to confirm a selection or enter a setting menu.
- Press the **BACK** button to return to the previous screen or exit a menu.

Setting Battery Type:

To ensure proper charging, select the correct battery type in the controller's settings:

1. From the main screen, hold the **ENTER** button to access the settings menu.
2. Navigate to 'Battery Type' using the **UP**/**DOWN** buttons and press **ENTER**.
3. Select your battery type (e.g., LiFePO4, Gel, Lead-Acid) and press **ENTER** to confirm.
4. The controller will automatically adjust charging parameters for the selected battery type.

6. Battery Compatibility

The ningdefly 60A MPPT Solar Charge Controller supports a variety of battery types and automatically adjusts to 12V, 24V, 36V, or 48V systems.



Image: A visual guide showing the controller's compatibility with various battery types, including Gel Electrolyte, Flooded Lead-Acid, Sealed Lead-Acid, and LiFePO4 batteries, along with their respective voltage settings.

Supported Battery Types:

- LiFePO4 (Lithium Iron Phosphate)
- Gel Battery
- Sealed Lead-Acid Battery
- Flooded Lead-Acid Battery
- AGM Battery
- User-defined settings for custom battery types.

7. Maintenance

Regular maintenance ensures the optimal performance and longevity of your solar charge controller.

- **Cleaning:** Periodically clean the controller's exterior with a dry cloth. Ensure ventilation openings are free from dust and

debris.

- **Connection Check:** Regularly inspect all wiring connections (solar panel, battery, load) to ensure they are tight and free from corrosion.
- **Environmental Check:** Ensure the installation environment remains within the specified operating temperature range (-20°C to 50°C) and is free from excessive moisture.
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates to ensure your controller has the latest features and bug fixes.



Image: An illustration demonstrating the scientific layout and efficient heat dissipation design of the controller, including its internal components and cooling fan, ensuring stable operation across a wide temperature range (-4°F to 122°F).

8. Troubleshooting

If you encounter issues with your ningdefly 60A MPPT Solar Charge Controller, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No display/Controller not powering on	Battery not connected or low voltage; reverse polarity.	Check battery connections and voltage. Ensure correct polarity. Charge battery if voltage is too low.
No charging from solar panels	Solar panel not connected; low sunlight; reverse polarity; PV voltage too low/high.	Check solar panel connections and polarity. Ensure sufficient sunlight. Verify PV voltage is within acceptable range (DC150V max input).
Load not working	Load not connected; over-discharge protection active; short circuit.	Check load connections. Verify battery voltage is above over-discharge threshold. Check for short circuits in the load wiring.
Over-temperature warning	Poor ventilation; excessive ambient temperature; heavy load.	Ensure adequate ventilation around the controller. Reduce load if possible. Relocate controller to a cooler environment.

9. Specifications

Detailed technical specifications for the ningdefly 60A MPPT Solar Charge Controller:

Specification	Value
Model	mppt-60A
Rated Current	60A
System Voltage	12V/24V/36V/48V Auto
Max PV Input Voltage	DC150V
Display Type	LCD
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Item Weight	4.63 Pounds
Product Dimensions	9.65"L x 8.66"W x 3.94"H
Material	Metal
Included Components	Controller Body

10. Warranty and Support

The ningdefly 60A MPPT Solar Charge Controller comes with a **2-year warranty**. For any technical assistance or inquiries, please contact our customer support team. We offer **24/7 technical support** to ensure your satisfaction and assist with any operational questions or issues you may encounter.

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