

LVYUAN ML2440

LVYUAN MPPT 40A Solar Charge Controller ML2440 User Manual

Model: ML2440 | Brand: LVYUAN

INTRODUCTION

The LVYUAN ML2440 MPPT Solar Charge Controller is designed to monitor the power generation of solar panels and continuously track the maximum voltage and current values (VI) to maximize battery charging. It is suitable for off-grid solar power systems, regulating the operation of solar panels, batteries, and loads. This controller features an LCD screen that dynamically displays operating status, parameters, controller logs, and control parameters. Users can easily check parameters and modify control parameters to adapt to various system requirements. The controller uses a standard Modbus communication protocol, allowing users to easily view and modify system parameters. For safety, the controller incorporates electronic self-diagnosis and robust electronic protection functions to prevent component damage due to setup errors or system failures.

KEY FEATURES

- **Dual-Peak/Multi-Peak Tracking Technology:** Accurately tracks the maximum power point even when solar panels are partially shaded or damaged, ensuring maximum power output.
- **High Tracking Efficiency:** Achieves up to 99.9% MPPT tracking efficiency, maximizing power generation and minimizing loss.
- **Comprehensive Protection:** Includes over-temperature protection. When the temperature exceeds a set value, the charging current is proportionally reduced to prevent damage from overheating.
- **Temperature Compensation:** Features automatic temperature compensation to adjust charging and discharging parameters, extending battery life.
- **TVS Lightning Protection:** Equipped with TVS lightning protection for enhanced safety.
- **Versatile Charging Programs:** Supports automatic battery voltage recognition and is compatible with various battery types including Sealed (SLD), Flooded (FLD), User-defined (USER), Lithium (LI), and Gel (GEL) batteries.
- **Current-Limited Charging Mode:** Provides stable voltage to loads and handles instantaneous high current startup for capacitive loads by automatically reducing charging power and current to the rated level when solar panel power exceeds a certain amount.
- **High Capacity:** Maximum charging current of 40A, adjustable maximum input voltage, and maximum input

power of 550W for 12V systems and 1100W for 24V systems.

- **LED LCD Display:** Clear display of charging current, battery voltage, and other statuses. Error codes are displayed for easy troubleshooting.
- **Bluetooth Remote Monitoring & Operation:** Connects to an optional BT-1 Bluetooth module (sold separately) for remote monitoring and parameter adjustment via a smartphone app, eliminating the need for direct device interaction.

PRODUCT OVERVIEW

The LVYUAN ML2440 MPPT Solar Charge Controller is a robust device designed for efficient solar power management. Below are visual representations of the product and its key components.

チャージコントローラー



MPPT

MLシリーズ

Model	ML2440	ML2440
Battery Voltage	12V	24V
Max Solar Power	550W	1100W
Max Load Power	550W	1100W
Max Solar Current	30A	45A
Max Charging Current	40A	40A
Max Load Power	550W	1100W

Temp PV+ PV- BAT+ BAT- LOAD+ LOAD- RS485

**LCD**
ディスプレイ表示

**アルミダイキ**
ャスト設計

**99.9%**
MPPT効率

**12V/24V**
自動認識

**550W/12V**
1100W/24V
PV最大入力

**40A**
DC最大充電電流

Front view of the LVYUAN ML2440 MPPT Solar Charge Controller, highlighting its LCD display, control buttons, and key features like 99.9% MPPT efficiency and 12V/24V auto-recognition.

革新的なMPPT技術

99%という高い追跡効率を誇り、
ソーラーパネルの
特性を最大限に引き出す

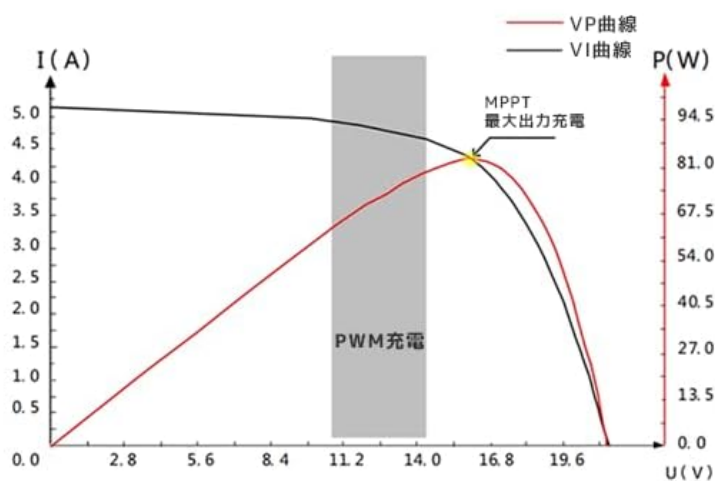


99%



99%

MPPT
CONTROLLER



ソーラーパネル出力特性曲線

Illustration of the innovative MPPT technology, showing how it maximizes power from solar panels with 99% tracking efficiency, including an I-V curve comparison.

BT-1 Bluetoothモジュールは

チャージコントローラーとアプリ（Solar APP）を組み合わせることができます。
ペアリングが完了すると、システムを監視し、
携帯電話から直接パラメータを変更することができます。



Demonstration of connecting the optional BT-1 Bluetooth module to the charge controller, enabling remote monitoring via a smartphone app.

外観・インターフェース



充電インジケータ

バッテリーインジケータ

負荷表示

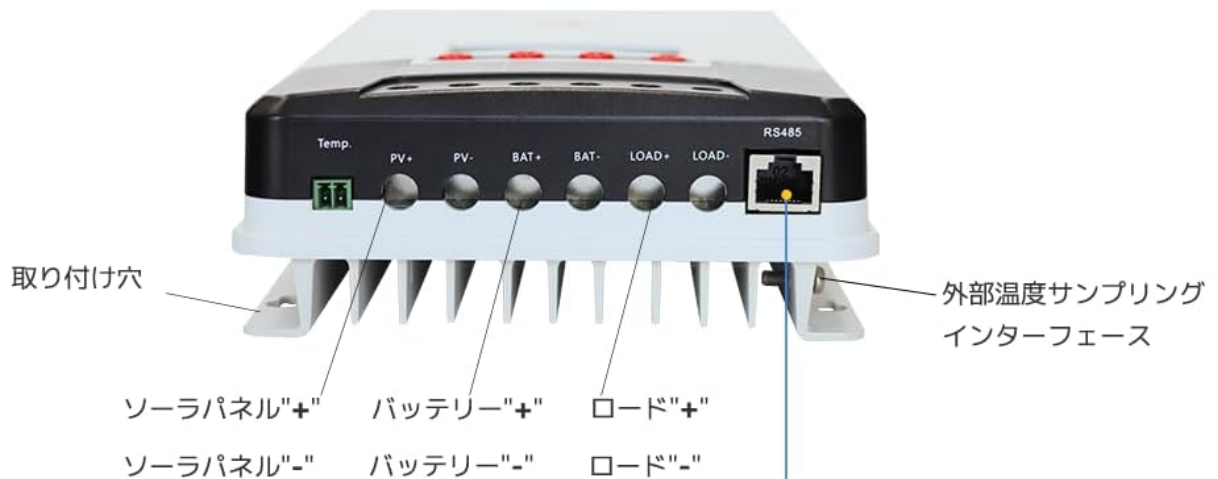
異常値表示



LCDスクリーン

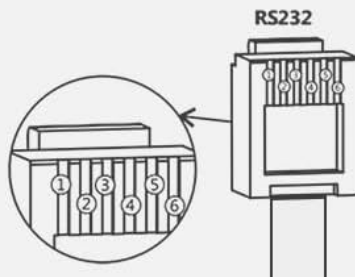


操作キーについて



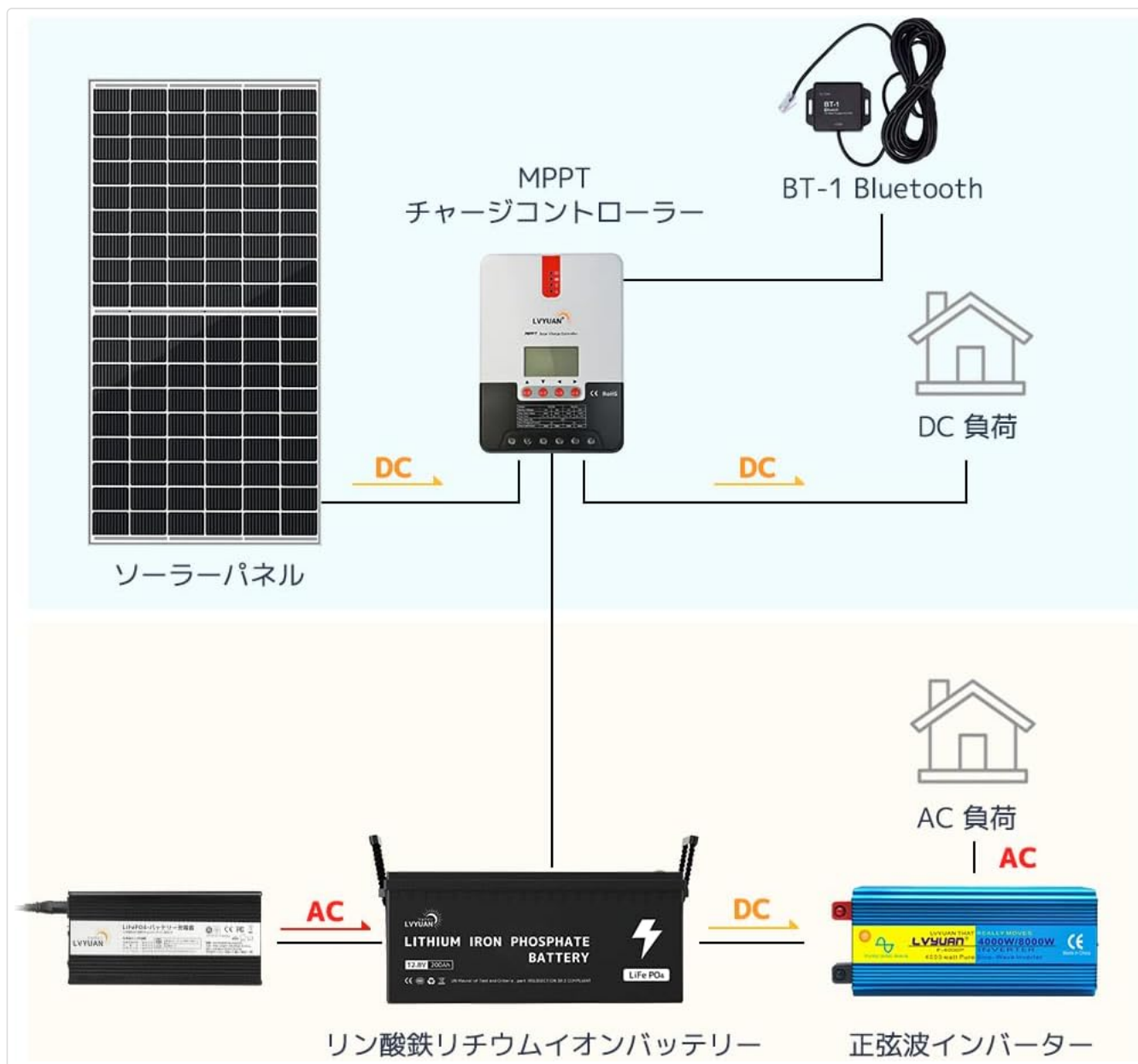
No. 定義

- ① 送信端末 TX
- ② 受信端子 RX
- ③ 電源接地 / 信号接地
- ④ 電源接地 / 信号接地
- ⑤ 電源プラス
- ⑥ 電源プラス



RS232/RS485
通信インターフェース

Close-up of the controller's external interfaces, including charging indicators, battery indicators, load display, error display, operation keys, mounting holes, external temperature sampling interface, and RS232/RS485 communication interface.



A comprehensive diagram illustrating the connection of the MPPT charge controller within a solar power system, showing connections to solar panels, lithium iron phosphate battery, DC load, and a pure sine wave inverter for AC loads.



Detailed product dimensions for the ML2440 model, including front, side, and top views with measurements in millimeters.

SETUP AND INSTALLATION

Proper installation is crucial for the safe and efficient operation of your solar charge controller. Follow these steps carefully.

1. Connecting the Battery

First, connect the charge controller to a 12V or 24V battery. Ensure correct polarity (positive to positive, negative to negative) to prevent damage.

Video demonstrating the connection of a Renogy Rover 40A MPPT Charge Controller to a battery. This process is similar for the LVYUAN ML2440 controller. Ensure to connect the battery first before any other components.

2. Connecting the Solar Panel

After connecting the battery, connect the solar panel to the controller. Use appropriate cables and ensure secure connections. The controller will display the PV voltage once connected.

Video illustrating the connection of a solar panel to an MPPT solar controller. This video provides a visual guide for connecting the solar panel to the charge controller, which is a crucial step in setting up your solar system.



A clear diagram showing the correct wiring sequence for the solar panel, temperature sensor, MPPT charge controller, and battery.
The temperature sensor should be placed near the battery for accurate readings.

OPERATING INSTRUCTIONS

The controller's LCD display provides real-time information and allows for parameter adjustments. Use the UP and DOWN arrow buttons to navigate through the displays and the ENTER button to confirm selections.

LCD Display Overview



The LCD screen cycles through various parameters, including real-time charging data, battery status, load information, and system settings. Use the navigation buttons to view different screens.



Detailed explanation of the LED display indicators, showing icons for day/night, solar panel, charging status, battery, discharge status, load, parameter values, units, battery type, system voltage, settings, serial port, Bluetooth, and warning alerts.

Parameter Settings

To access and modify parameters, navigate to the parameter setting menu. The following video demonstrates how to access and adjust settings.

Video demonstrating the basic function display and parameter settings of an MPPT solar charge controller. This includes navigating menus and adjusting values for various operational parameters.

- **Battery Type Setting:** Select the appropriate battery type (Sealed, Flooded, Gel, Lithium, User-defined) to ensure optimal charging.
- **Rated Battery Voltage Setting:** Configure the system voltage (12V or 24V).
- **Charge Voltage Setting:** Adjust floating charge voltage and equalization charge voltage. Refer to the detailed manual for specific values based on battery type.
- **Charge Current Setting:** Set the maximum charging current.
- **Discharge Limit Setting:** Configure under-voltage recovery, under-voltage protection, over-voltage recovery, and over-voltage protection points for DC output.
- **Time and Date Adjustment:** Set the current time and date for accurate logging.
- **Brightness Adjustment:** Adjust the brightness of the LCD display.
- **Contrast Adjustment:** Adjust the contrast of the LCD display.
- **Sound Setting:** Enable or disable button sounds and alarm sounds.
- **Record Query:** View power generation records, curve records, and fault records.
- **DC Output Setting:** Configure DC output mode (OFF, Automatic, Time Control, PV Control, Telecontrol).
- **Communication Setting:** Adjust baud rate and local address for communication interfaces.
- **Language Setting:** Select the display language (English or Chinese).

SPECIFICATIONS

Specification	Value
Manufacturer	LVYUAN
Product Model Number	ML2440
Package Size	29.2 x 23.1 x 13.2 cm
Item Weight	2.14 Kilograms
Power Source	Solar
Included Components	1.5M Temperature Sensor Cable
Voltage	24 Volts (DC)

Specification	Value
Display Type	LED LCD
UPC	738349478920

WARRANTY AND SUPPORT

For warranty information, technical support, or any inquiries regarding your LVYUAN MPPT 40A Solar Charge Controller ML2440, please refer to the documentation included with your product or contact LVYUAN customer service directly. Ensure to have your product model number and purchase details ready for faster assistance.