Saved from manuals.plus.
Open the live page for links to other documents and user manuals.

Comimark MCP73871

Comimark MCP73871 USB DC Solar Lipoly Lithium Ion Polymer Charger Module User Manual

1. Introduction

This manual provides detailed instructions for the Comimark MCP73871 Charger Module. This module is designed for efficient charging of 3.7V/4.2V Li-Ion and Li-Polymer batteries, offering versatile power input options including USB, DC, and solar. It features integrated system load sharing, allowing simultaneous power delivery to a system while charging the connected battery.

2. Key Features

- **Integrated System Load Sharing:** Powers the system and charges the Li-Ion battery simultaneously.
- **Voltage Proportional Current Control (VPCC):** Ensures system load has priority over battery charge current.
- **Low-Loss Power-Path Management:** Features ideal diode operation for efficient power distribution.
- **Complete Linear Charge Management Controller:** Includes integrated pass transistors, current sense, and reverse discharge protection.
- **Multiple Input Power Sources:** Supports USB port, AC-DC wall adapter, and solar panel inputs.
- **High Accuracy Charge Voltage Options:** Preset options for 4.10V, 4.20V, 4.35V, or 4.40V with ±0.5% regulation tolerance.
- **Constant Current / Constant Voltage (CC/CV) Operation:** With thermal regulation for safe charging.
- **Programmable Fast Charge Current:** Resistor-programmable from 50 mA to 1A.
- **Selectable USB Input Current Control:** Absolute maximum of 100 mA (low) / 500 mA (high).
- **Automatic Recharge and End-of-Charge Control:** For optimal battery health.
- **Safety Features:** Safety timer, 0.1C preconditioning for deeply depleted cells, battery cell temperature monitor, undervoltage lockout (UVLO).
- **Status Indicators:** Low Battery Status Indicator (LBO), Power-Good Status Indicator (PG), Charge Status, and Fault Condition Indicators.

3. Setup and Connections

Before connecting the module, ensure all power sources are disconnected. Observe proper polarity for all connections.

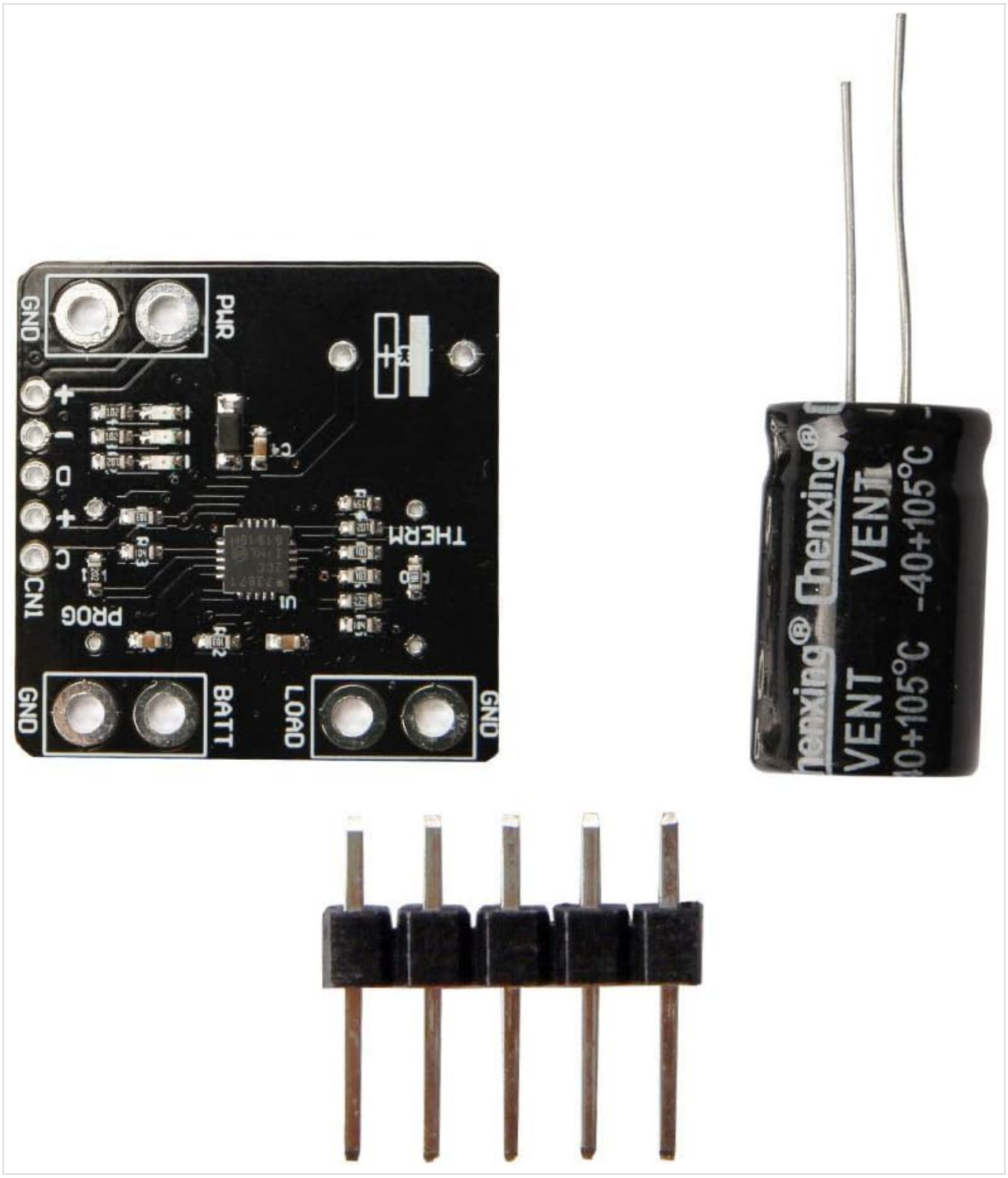


Figure 1: Comimark MCP73871 Charger Module with included capacitor and header pins. This image illustrates the physical layout of the module and its associated components.

3.1 Component Identification

- **Input Power (PWR):** Connect your USB, DC adapter, or solar panel here. Observe polarity.
- **Battery (BATT):** Connect the 3.7V/4.2V Li-Ion/Li-Polymer battery. Ensure correct positive and negative terminals.
- **Load (LOAD):** Connect the device or circuit that the module will power.
- **PROG:** Pin for connecting a resistor to program the fast charge current. Refer to the MCP73871 datasheet for resistor value calculations.

- **THERM:** Input for an NTC thermistor to monitor battery temperature.
- **CN1, CN2:** Control pins for various selectable options. Consult the MCP73871 datasheet for specific configurations.
- **GND:** Ground connections.

3.2 Connection Procedure

1. **Prepare the Battery:** Ensure your Li-Ion/Li-Polymer battery is within the 3.7V/4.2V range.
2. **Connect the Load (Optional):** If you intend to power a system simultaneously, connect your load to the **LOAD** terminals, observing polarity.
3. **Connect the Battery:** Connect the positive terminal of your battery to the**BATT+** terminal and the negative terminal to the **BATT-** terminal on the module.
4. **Connect Input Power:** Connect your chosen power source (USB cable, DC adapter, or solar panel) to the **PWR** input terminals. The module will automatically select the appropriate power source if multiple are connected.
5. **Configure Charge Current (Advanced):** If a specific charge current is required, connect the appropriate resistor to the **PROG** pin as per the MCP73871 datasheet.

4. Operating Instructions

Once all connections are securely made and power is applied, the module will begin operation.

4.1 Charging Process

- The module will automatically detect the battery and initiate the charging cycle.
- It employs a CC/CV (Constant Current/Constant Voltage) charging algorithm.
- If the battery is deeply depleted, the module will first enter a 0.1C preconditioning phase.
- Charging will terminate automatically once the battery reaches its full charge voltage and the charge current drops below the termination threshold.
- The module supports automatic recharge if the battery voltage drops below a certain threshold after termination.

4.2 Status Indicators

The module typically includes LED indicators to provide operational status:

- **Charge Status LED:** Indicates if the battery is currently charging (e.g., ON) or fully charged/not charging (e.g., OFF or different color).
- **Power-Good (PG) LED:** Indicates that a valid input power source is connected and stable.
- **Low Battery Status (LBO) LED:** Indicates when the battery voltage is low.

Refer to the specific markings on your module for exact LED functions.

5. Maintenance

The Comimark MCP73871 module is designed for reliable operation with minimal maintenance. Follow these guidelines to ensure longevity:

- **Keep Clean:** Periodically clean the module with a soft, dry cloth. Avoid using liquids or solvents.
- **Avoid Moisture:** Do not expose the module to water or high humidity.

- **Prevent Physical Damage:** Handle the module carefully to avoid bending pins or damaging components.
- **Proper Storage:** Store in a cool, dry place when not in use.
- **Inspect Connections:** Regularly check all wire connections for looseness or corrosion.

6. Troubleshooting

If you encounter issues with your Comimark MCP73871 module, consider the following troubleshooting steps:

- **Battery Not Charging:**
  - Verify that the input power source (USB, DC, solar) is connected correctly and providing sufficient voltage and current.
  - Check battery connections for correct polarity and secure contact.
  - Ensure the battery itself is functional and not over-discharged to a point where it cannot be recovered by the module.
  - If a PROG resistor is used, verify its value is correct for the desired charge current.
- **Module Overheating:**
  - Ensure adequate ventilation around the module.
  - Check if the charge current setting (PROG resistor) is too high for the module's thermal dissipation capabilities or the battery.
  - Reduce the load if the system is drawing excessive current.
- **No Indicator Lights:**
  - Confirm that input power is present and within the module's operating voltage range.
  - Check for any short circuits on the output or input.
- **Unexpected Behavior:**
  - For advanced configurations or specific issues, consult the official Microchip MCP73871 datasheet for detailed electrical characteristics and application notes.

7. Specifications

Model Number	MCP73871 (LY340)
Input Voltage Range	Typically 3.75V to 6V (for USB/DC/Solar inputs)
Output Voltage (Battery)	4.2 Volts (DC) for 1-cell Li-Ion/Li-Polymer
Max Total Input Current	1.8A
Programmable Fast Charge Current	50 mA to 1A
USB Input Current Control	100 mA (low) / 500 mA (high) selectable
Operating Temperature	-40°C to +85°C
Weight	0.02 Kilograms (approx.)

8. Safety Information

Adhere to the following safety precautions when using the Comimark MCP73871 module:

- **Electrical Safety:** Always disconnect power before making or changing connections. Avoid touching exposed circuitry when powered.
- **Battery Handling:** Use only compatible Li-Ion/Li-Polymer batteries. Do not short-circuit battery terminals. Do not attempt to charge damaged or swollen batteries.
- **Ventilation:** Ensure the module has adequate ventilation during operation, especially when charging at higher currents.
- **Environment:** Do not operate in wet, dusty, or extremely hot environments.
- **Children:** Keep out of reach of children.

9. Warranty and Support

For warranty information or technical support regarding your Comimark MCP73871 Charger Module, please contact the seller or manufacturer directly through your purchase platform. Ensure you have your order details and product model number (MCP73871 or LY340) available when seeking assistance.

Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question

Open the live page

https://manuals.plus/asin/B07V4PHKNX

More documents and user manuals: **https://manuals.plus/**