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Victron Energy NT-858

Victron Energy Cyrix-Li-Load 12/24-Volt 120 amp Intelligent Load Relay User Manual

1. INTRODUCTION

The Victron Energy Cyrix-Li-Load is a microprocessor-controlled intelligent load relay designed to manage power distribution in 12/24-Volt systems. It automatically connects batteries in parallel when one reaches a preset voltage, indicating it is being charged, and disconnects when the voltage drops below a float level, signaling discharge. This device is an effective alternative to diode isolators, offering virtually no voltage loss, which means the output voltage of alternators or battery chargers does not need to be increased.

This manual provides essential information for the safe and efficient installation, operation, and maintenance of your Cyrix-Li-Load relay.

2. SAFETY INFORMATION

- Always disconnect power before installing or servicing the device.
- Ensure proper ventilation around the unit.
- Use appropriate wire gauges and fuses as specified in the installation guidelines to prevent overheating and damage.
- This device is intended for use with 12V or 24V battery systems. Verify your system voltage before installation.
- Consult a qualified professional if you are unsure about any part of the installation or operation.

3. PRODUCT OVERVIEW

The Cyrix-Li-Load is an intelligent battery combiner that ensures optimal charging and protection for your battery system. It features over-current and over-temperature protection, enhancing the safety and longevity of your electrical setup.

The Cyrix Battery Combiner is a microprocessor controlled heavy duty relay that automatically connects batteries in parallel when one of them has reached a pre-set voltage (indicating that the battery is being charged), and disconnects when the voltage decreases below float level (indicating that one or more batteries are being discharged). Cyrix Battery Combiners are an excellent replacement for diode isolators. The main feature is that there is virtually no voltage loss so that the output voltage of alternators or battery chargers does not need to be increased. 12/24 Volt auto ranging.

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Figure 1: Victron Energy Cyrix-Li-Load 12/24-Volt 120 amp Intelligent Load Relay.

Key features include:

- **Microprocessor Controlled:** Ensures precise and reliable operation.
- **Automatic Battery Combining:** Connects batteries when a charging source is detected.
- **Load Disconnection:** Disengages loads when battery voltage drops to protect the battery.
- **Over-current/Over-temperature Protection:** Safeguards the device and system from damage.

Video 1: An overview of Victron Energy products used in a 1930s boat electrical overhaul, demonstrating real-world application and reliability.

4. SETUP

Proper installation is crucial for the optimal performance and safety of your Cyrix-Li-Load relay. Follow these steps carefully:

1. The Cyrix-Li-Load is designed for 12V, 24V, or 48V installations with a negative common.
2. Disconnect the negative terminals from all batteries before proceeding.
3. Place the Cyrix-Li-Load as close as possible to the smallest battery, typically the starter battery.
4. Connect the positive terminals of the batteries to the brass bolts of the Cyrix-Li-Load, marked with '30' and '87' respectively. Install a fuse in series with each connection. The fuse should be sized according to the wire cross-section used, but not exceed 120A.
5. Connect the negative terminal of the Cyrix-Li-Load (terminal '86') and reconnect the negative terminals of both batteries.
6. An emergency start push button can be wired to the 'start assist' connection (terminal '85') if required. This will engage the relay for 30 seconds. Alternatively, a parallel connect switch can be used to engage the relay as long as the switch remains closed.

QUICK GUIDE

Installation

- The Cyrix can only be used in 12V, 24V or 48V installations with a negative common.
- Disconnect the minus batteries.
- Place the Cyrix closest to the smallest battery (in general the starter battery).
- Connect the plus of the batteries to the brass bolts of the Cyrix, marked with no 30 resp. 87. Install a fuse in series (see fig). The fuse should be sized in accordance with the wire cross section used, but not exceed 120A.
- Connect the minus of the Cyrix "battery -" (86) and reconnect the minus of both batteries.
- An emergency start push button can be wired to "start assist" connection (85) if required. The relay will engage during 30 seconds after "start assist" has been momentarily connected to the battery plus. Alternatively, a parallel connect switch can be used to engage the relay as long as the switch remains closed.

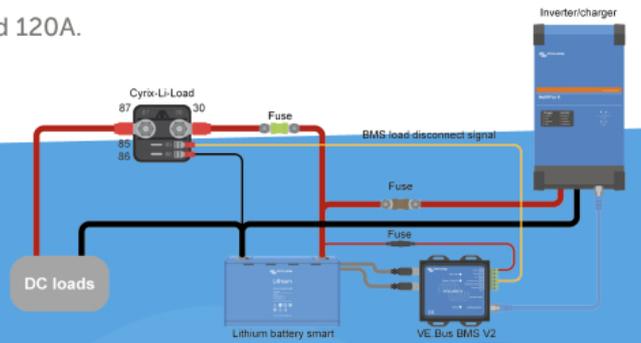


Figure 2: Typical wiring diagram for the Cyrix-Li-Load in a dual battery system with an inverter/charger and DC loads.

5. OPERATING INSTRUCTIONS

The Cyrix-Li-Load operates automatically to manage your battery system:

- The Cyrix-Li-Load will disengage when its control input becomes free floating.
- If the battery voltage recovers after disconnecting (e.g., when no other loads are connected to the battery), the output of the Battery Management System (BMS) will become high, and the Cyrix-Li-Load will re-engage after 30 seconds.
- After 3 attempts to re-engage, the Cyrix-Li-Load will remain disengaged until the battery voltage has increased to more than 13V (or 26V for 24V systems, 52V for 48V systems) for at least 30 seconds. This indicates that the battery is actively being recharged.

CHARGING

Functionality of the Cyrix-Li-Load

The Cyrix-Li-load will disengage when its control input becomes free floating.

- If the battery voltage recovers after disconnecting, the output of the BMS will become high and the Cyrix will reengage after 30 seconds.
- After 3 attempts to reengage, the Cyrix will remain disengaged until battery voltage has increased to more than 13V during at least 30 seconds.



Figure 3: Illustration of Cyrix-Li-Load functionality, demonstrating how it manages battery charging and load disconnection.

6. MAINTENANCE

The Victron Energy Cyrix-Li-Load is designed for reliable operation with minimal maintenance. However, regular checks are recommended to ensure continued performance:

- Periodically inspect all wiring connections for tightness and corrosion.
- Ensure the unit is free from dust, dirt, and moisture. Clean with a dry cloth if necessary.
- Verify that the fuses are correctly rated and in good condition.
- Monitor battery voltage levels to ensure proper charging and discharge cycles.

7. TROUBLESHOOTING

If you encounter issues with your Cyrix-Li-Load, consider the following:

- **Relay not engaging:** Check if the control input is free floating. Ensure the battery voltage is above the re-engagement threshold (e.g., 13V for a 12V system) for at least 30 seconds. Verify that the charging source (alternator/charger) is active and providing sufficient voltage.
- **Frequent disengagement/re-engagement:** This could indicate an issue with the battery's state of charge or the charging source. Check battery health and the output of your charging device.
- **No power to loads:** Confirm that the Cyrix-Li-Load is engaged. Check all fuses and wiring connections for continuity and proper installation.

For persistent issues, refer to the detailed troubleshooting guide available on the Victron Energy website or contact customer support.

8. SPECIFICATIONS

The following table outlines the key specifications for the Victron Energy Cyrix-Li-Load 12/24-Volt 120 amp Intelligent Load Relay:



Figure 4: Physical dimensions of the Cyrix-Li-Load relay.

Specification	Value
Model Name	Victron Energy Cyrix-Li-load 12/24-Volt 120 amp Intelligent Load Relay

Specification	Value
Part Number	NT-858
Current Rating	120 Amps
Maximum Switching Voltage	24 Volts
Connector Type	Screw
Contact Material	Silver
Contact Type	Normally Open
Mounting Type	DIN Rail Mount
Operation Mode	Automatic
Wattage	14.4 watts
Item Dimensions LxWxH	3.15 x 1.81 x 1.81 inches
Item Weight	0.9 Ounces
Material	Plastic

9. WARRANTY AND SUPPORT

This Victron Energy product comes with a standard manufacturer's warranty. For specific details regarding the warranty period and coverage, please refer to the warranty documentation included with your product or visit the official Victron Energy website.

For technical support, product inquiries, or warranty claims, please contact Victron Energy customer service through their official website or authorized distributors. Ensure you have your product model number (NT-858) and purchase information available when seeking support.