

# Cyrix Li-ion 230 A series

## www.victronenergy.com



LED status indicator Cyrix-Li-load 12/24-230



Cyrix-Li-Charge 12/24-230



Cyrix-Li-ct 12/24-230



Control cable for Cyrix 12/24-230 Length: 1 m

The LiFePO4 battery: preventing cell under voltage, overvoltage and over temperature

The first line of protection is cell balancing. All Victron LiFePO4 batteries have integrated cell balancing.

- The second line of protection consists of:
  - shut down of the load in case of imminent cell under voltage, and
  - shut down or reduction of the charging current in case of imminent cell over voltage, high temperature (>50°C) or low temperature (<0°C).
- The VE.Bus BMS is the core of the second protection line.

However, not all loads or chargers can be controlled directly by the VE.Bus BMS.

In order to shut down such loads or chargers several VE.Bus BMS controllable Cyrix switches are available.

### Cyrix-Li-load

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

If the battery voltage recovers after disconnection (which will happen when no other loads are connected to the battery), 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 13 V (resp. 26 V or 52 V) during at least 30 seconds (which is a sign that the battery is being recharged). Alternatively, a BatteryProtect can be used (advantage: very low power consumption).

## Cvrix-Li-Charge

The Cyrix-Li-Charge will connect a battery charger with 3 seconds delay:

- if the charge disconnect output of the VE.Bus BMS is high, and
  - if it senses 13,0 V (resp. 26,0 V or 52,0 V) or more on its battery charger connection terminal, and
  - if it senses 2 V or more on its battery terminal
  - (the Cyrix will remain open if not connect to the battery).

The Cyrix-Li-Charge will disengage immediately whenever its control input becomes free floating, signalling cell over voltage or cell over temperature.

In general, a cell over voltage alarm will reset shortly after charging has been stopped. The Cyrix will then reconnect the charger after a delay 3 seconds

When the Cyrix-Li-Charge is engaged (charger connected to battery) it will disengage after 1 hour to check if the charger is still enabled.. If, after the Cyrix has disengaged, the output of the battery charger immediately increases to 13,0 V or more, the Cyrix will reengage, with a 3 seconds delay.

Note: In case of zero discharge current, or a small discharge current, the Cyrix will not disengage shortly after the charger has been switched off and/or disconnected, because battery voltage will remain higher than 13,5 V.

### Cyrix-Li-ct

The functionality of the Cyrix-Li-ct is analogous to the Cyrix-ct.

- The Cyrix-Li-ct will parallel connect a lead acid starter battery and a LiFePO4 battery:
  - if the charge disconnect output of the VE.Bus BMS is high, and
    - if it senses 13,4 V (resp. 26,8 V) or more on one of its power terminals.
- The Cyrix will disengage immediately:
  - when its control output becomes free floating, signalling cell over voltage or cell over temperature, and/or
    - when battery voltage drops below 13,2 V.

Start assist function: a short negative pulse will close the relay during 30 seconds (see figure on page 2).

A built-in transient voltage suppressor will limit the voltage spike that may occur when the Cyrix suddenly disengages due to cell overvoltage or over temperature.

#### LED status indication LED on: engaged

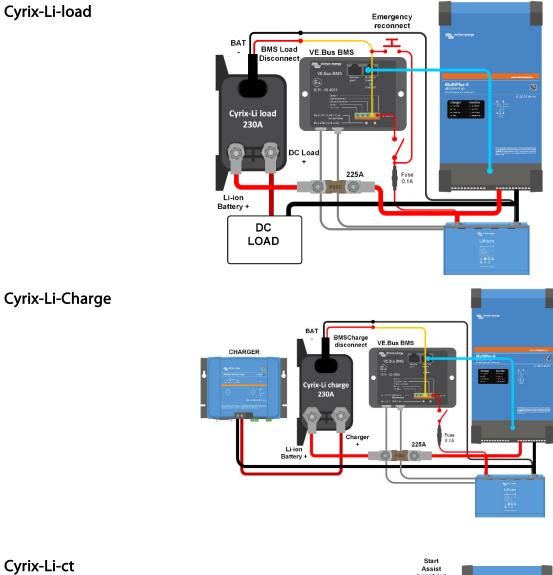
LED 10 s flash: disengaged

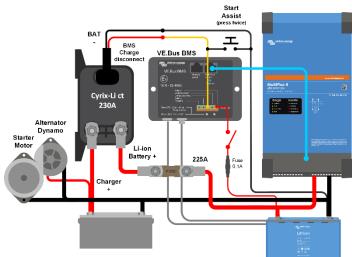
LED 2 s flash: connecting LED 2 s blink: disconnecting LED 0,25 s blink: alarm (over temperature; voltage > 16 V; both batteries < 10 V; one battery < 2 V) (multiply by two for 24 V)

Cyrix-Li-load 12/24-230	Cyrix-Li-Charge 12/24-230	Cyrix-Li-ct 12/24-230	
Cyrix-Li-load 24/48-230	Cyrix-Li-Charge 24/48-230	12 V system	24 V system
230 A	230.A	230 A	
80 A	80 A	n. a.	
Yes			
Included (length 1 meter)			
The Cyrix engages when the control input is high (appr. Battery voltage) The Cyrix disengages when the control input is left free floating or pulled low			
See text	13,0 V / 26,0 V / 52,0 V	13,4 V < V < 13,7 V: 120 s 13,7 V < V < 13,9 V: 30 s V > 13,9 V: 4 s	26,8 V < V < 27,4 V: 120 s 27,4 V < V < 27,8 V: 30 s V > 27,8 V: 4 s
See text	11.5V < V < 11.0V: 10s V < 10.5V: immediate	13,3 V < V < 13,2 V: 10 s V < 13,2 V: immediate	26,6 V < V < 26,4 V: 10 s V < 26,4 V: immediate
<4 mA			
IP54			
0,27 (0.6)			
65 x 100 x 50			
	Cyrix-Li-load 24/48-230 230 A 80 A T The See text	Cyrix-Li-load 24/48-230         Cyrix-Li-Charge 24/48-230           230 A         230.A           80 A         80 A           Yes           Included (length 1           The Cyrix engages when the control input           The Cyrix disengages when the control input           See text           13,0 V/26,0 V/52,0 V           See text           11.5V < V < 11.0V: 10s	Cyrix-Li-load 24/48-230         Cyrix-Li-Charge 24/48-230         12 V system           230 A         230.A         23           80 A         80 A         80 A           Yes           Included (length 1 meter)           The Cyrix engages when the control input is high (appr. Battery voltage) The Cyrix disengages when the control input is left free floating or pulled low           See text $13,0 \vee / 26,0 \vee / 52,0 \vee$ See text $11,5 \vee < 11.0 \vee : 10s$ See text $11.5 \vee < \vee < 11.0 \vee : 10s$ See text $11.5 \vee < \vee < 11.0 \vee : 10s$ See text $11.5 \vee < \vee < 11.0 \vee : 10s$ See text $12 \vee s mediate$ $V < 13,2 \vee : 10 s$ $V < 10.5 \vee : immediate$ $V < 13,2 \vee : 10 s$ $V < 13,2 \vee : 10 s$ $V < 13,2 \vee : 10 s$ $V < 10,27 (0.6)$



# **Connection diagrams**





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