victron energy
BLUE POWER

VE.Bus to E-plex protocol Converter
VEC

1　Introduction

Victron Energy has established an international reputation as a leading designer and manufacturer of energy systems. Our R&D department is the driving force behind this reputation. It is continually seeking new ways of incorporating the latest technology in our products. Each step forward results in value-added technical and economical features.

1.1　The VE.Bus to E-plex protocol Converter (VEC)

The purpose of the VEC is to combine the powerful control of the VE Configure software, with the interface of the E-plex control module and additional modules. With the VEC, you can control and view status information of your VE.Bus device from an E-plex control module.

2   Supported Devices

The VEC works with all VE.Bus devices with software version 19xx111 and higher.
This includes the following products:

Phoenix Multi
Phoenix Multi Plus
Phoenix Multi Compact
Phoenix Inverter
Phoenix Inverter Compact
Quattro

3 Installation and setup of your VEC

3.1 Requirements

To install your VEC, you will need:

- A Cat5 cable, with two RJ45 connectors
- E-plex control module (type 400ECM, 450ECM or 500CCM) see http://www.e-plex.co
- E-plex connection cable

3.2 Wiring and jumper
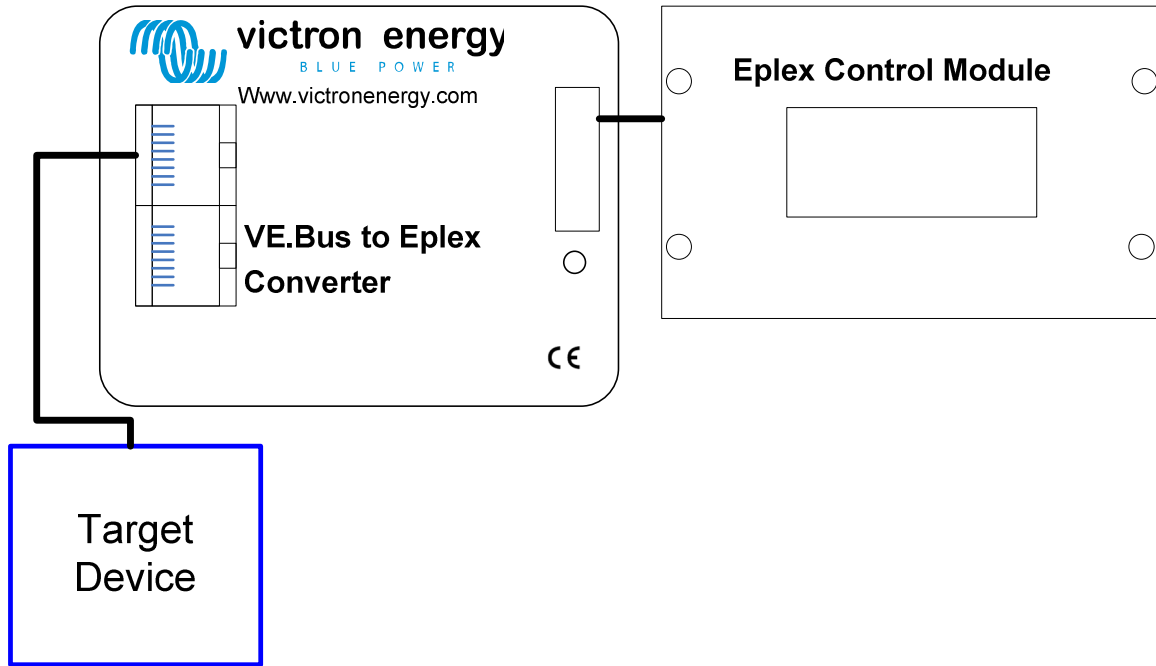
Figure 3-1 - Wiring diagram

3.2.1 VE.Bus

Connect one of the sockets on the VEC labelled VE.Bus to your target VE.Bus system. The total length of Cat5 cables in a VE.Bus network should not exceed 100 meters.
Refer to the manual of the target device for more detailed instructions regarding the cabling requirements.

Note: Never connect a MultiControl panel, an MK2 or a VVC when connected to an E-plex network because then the system will not work correctly.

3.2.2 E-plex bus

Connect the E-plex sockets on the VEC to one of the sockets on the E-plex control module. The documentation of this module describes the details.

3.2.3 Jumper

Depending on how you want to configure your system JP1 may need to be removed. When the VEC is connected, the VE.Bus system's internal switch and shore current limit settings are overridden by E-plex. When the VEC is disconnected, the VE.Bus system will revert to its internal settings. If E-plex is powered off whilst still connected to the VE.Bus system, the system will continue to use the last settings sent by E-plex. However, if E-plex is not powered when the VE.Bus system is switched on, the system will not start until E-plex is running.

There may be situations where you want the device to be on when E-plex power is switched off. This can be done by removing the JP1. When JP1 is removed, switching off E-plex has the same effect as disconnecting the converter from VE.Bus; the system will revert to its internal settings. For more information refer to chapter 6.

Example: if the device is set to 'charger only' (switch on the front) and default current limit to 10A, this can be overridden by E-plex. It can be set to 'ON mode' and 'shore current limit' 25A. Now it will operate based on it input voltages with a 25A AC shore current limit.

When the E-plex is switched off or the converter is disconnect the settings will be 'charger only' and 10A AC shore current limit.

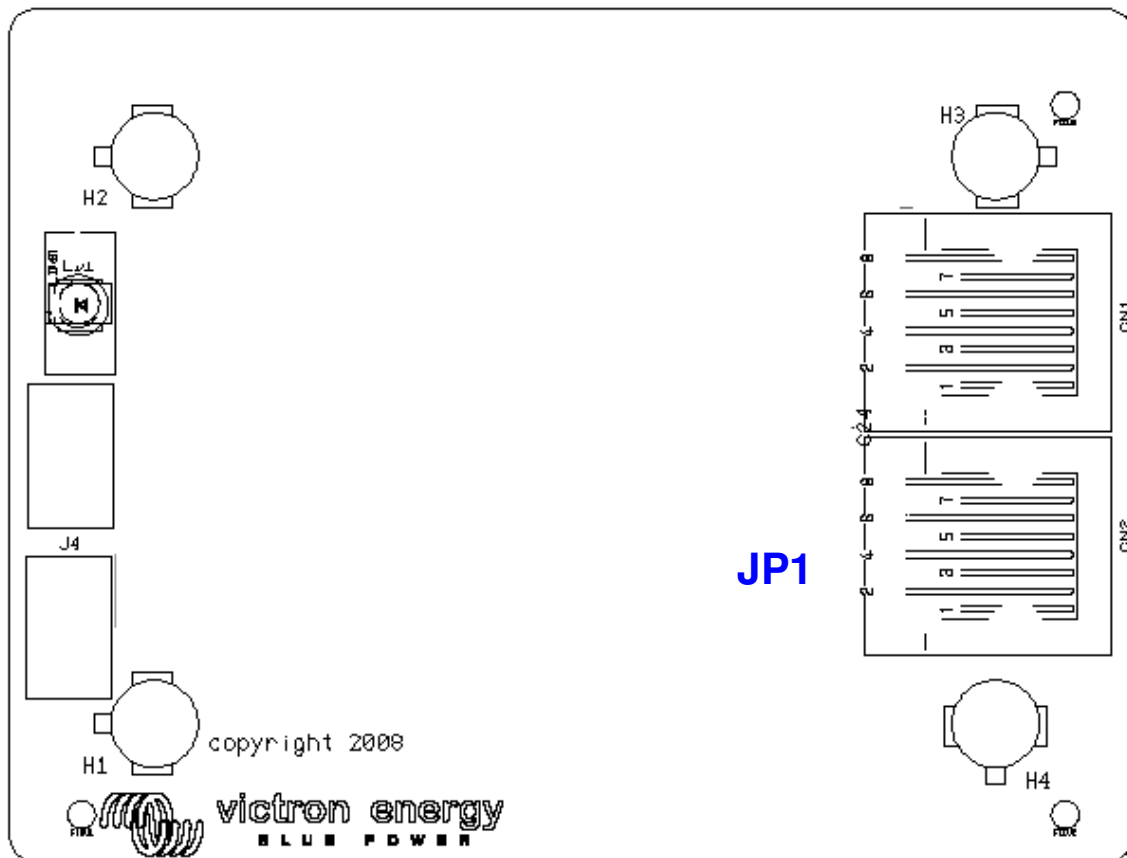**Note:** JP1 is placed by default.

Figure 3-2 – Position of jumper

4 Using the VEC

After the wires are connected to the VEC, it can be powered up. Remember to power down the system before making any changes to the wiring.

4.1 VE.Bus

The device can't be configured using the E-plex system. If you want to do this the VE.Bus System Configurator should be used (available as a free download from www.victronenergy.com).

4.2 E-plex bus

Whenever there is communication on the E-plex bus, the status LED will blink. When there is much communication it will look like it is on all the time.

To use the E-plex bus you need the E-logic software to program it. If you do not have this it can be downloaded from: http://www.e-plex.co
Or contact your dealer.

4.2.1 E-logic software

E-logic is used to design your system using schematic entry. This manual will only describe the Victron Energy Interface object. For more information on the E-logic software or other E-plex interfaces refer to the documentation of the software of the device.

4.2.2 Victron Energy Interface object

The Victron Energy Interface object is a representation of the in- and outputs available using a VEC.

To add the Victron Energy Interface object.
Click 'Place Object' a popup window will appear.
In the object group select: E-plex interfaces.
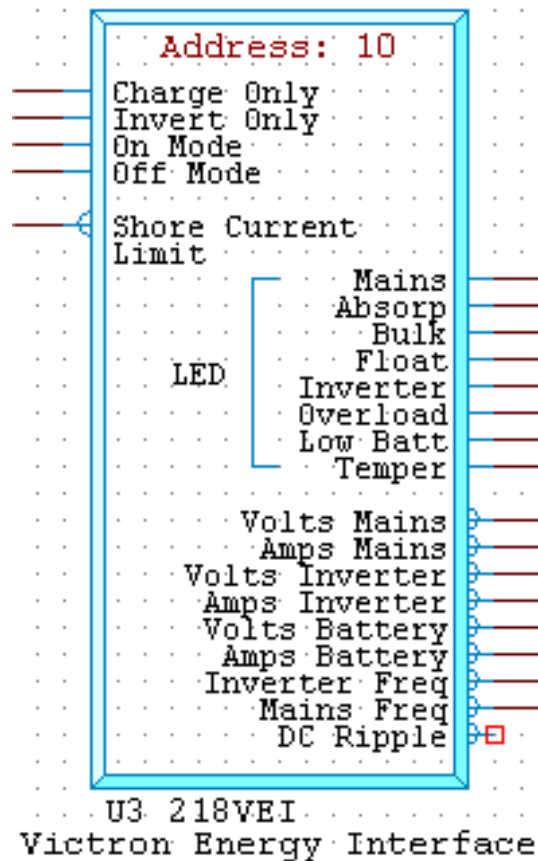In the list select 218VEI Victron Energy Interface.
The symbol looks like this

Figure 4-1 – Victron Energy Interface object

Place the symbol on the schematic.

The pins on the left are the Input pins, the pins on the right are the outputs.

Table 4-1 - 218VEI object summary

Inputs		
Name	Type	Details
Charge Only	Only one of these may be active at the time. The pin that is set high will determine the state	Use this to set the system to charger only.
Invert Only		Use this to set the system to inverter only.
On Mode		Use this to turn the system on.
Off Mode		Use this to turn the system off.
Shore current Limit	VE.Bus 0-255. VE.9bit 0-160	The maximum current to draw from the shore supply Use this to set the system current limit.

Note: If you use the touch screen to set the different modes the pin on the object must be held to 1 using a latch. Also keep in mind that only 1 pin can have the value 1 at the time.

Shore current limit
This setting determines the maximum value that can be used for the shore current limit. The value used is a representation of the actual current. For example a range of 0 to 16A. When you want to set 10A you need to set a value of 159.

The maximum current depends on the configuration of the devices, and the size of the mains relay in each device. The size of the mains relay depends on the type of device used.

VE.Bus

The maximum current that can be drawn is equal to the sum of the size of the mains relay in each device.

Table 4-2 - 218VEI object summary

Outputs		
Name	Type	Details
LED Mains	Value 0 = off 1 = on	State of the Mains ON LED
LED Absorp	Value 0 = off 1 = on	State of the Absorption charge LED
LED Bulk	Value 0 = off 1 = on	State of the Bulk charge LED
LED Float	Value 0 = off 1 = on	State of the Float charge LED
LED Inverter	Value 0 = off 1 = on	State of the Inverter ON LED
LED Overload	Value 0 = off 1 = on	State of the Overload LED
LED Low Batt	Value 0 = off 1 = on	State of the Low battery LED
LED Temper	Value 0 = off 1 = on	State of the Temperature LED
Volt Mains	value 3 digit	The voltage of the mains power supply.

Name	Type	Details
Amps Mains	value 3 digit Decimal	The current being drawn from the mains supply.
Volts Inverter	value 3 digit	The voltage being produced by the inverter.
Amps Inverter	value 3 digit Decimal	The current drawn from the inverter.
Volts Battery	value 3 digit Decimal	The battery voltage.
Amps Battery	value 3 digit Negative (signed)	The DC current flow between the battery and the target system.
Inverter Freq	value 3 digit Decimal	The frequency of the inverter output.
Mains Freq	value 3 digit Decimal	The frequency of the mains supply.
DC Ripple	value 3 digit Decimal	Displays the measured ripple voltage of the D.C. input.

Note: In the E-logic software values which are displayed with a decimal are internally represented without a decimal. Example: 11.4V is represented as 114. This is important to know when using these values in calculations or comparisons before displaying.

5   Parallel and multi-phase systems

5.1 VE.Bus

The VEC will automatically detect the parallel configuration of a VE.Bus system, and outputs the system-wide AC / DC information.

6 Shore current control

When using a Multi or Quattro (this does not apply to inverters), it is often the case that the system is capable of drawing more current than is actually available from the shore or generator supply. It is possible to limit the amount of current that the system will actually draw, preventing the supply from becoming overloaded
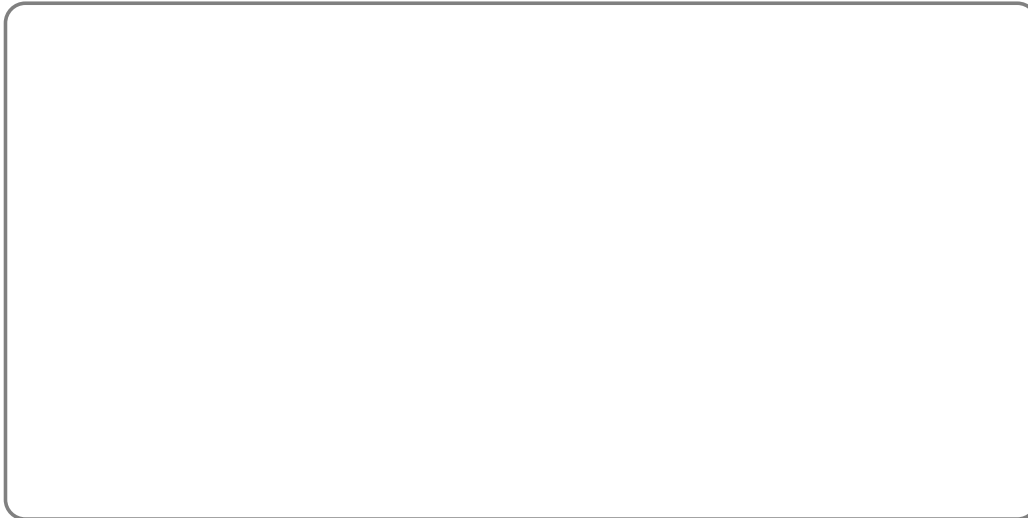
6.1 Shore current limit

When a VEC is connected the default shore current limit is overruled by this setting.
If the VEC is removed, the device will revert to the default current limit.

Note: For some devices it is possible to disable setting of an external shore current limit. This can be configured using VE.Configure. On the 'General' tab in the 'Internal transfer switch' box there may be one or two checkboxes named 'Overruled by remote' depending on the device. If this box is not checked, this property will be ignored, and the default current limit will be used instead.

Victron Energy Blue Power

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