victron energy
BLUE POWER

VE.Net

Energy Unlimited

VE.Net – the intelligent low power communication network

VE.Net
VE.Net stands for Victron Energy Network.

Remain “in contact”
How convenient would it be if you can always remain ”in contact”! A low power network that will monitor all essential equipment and alarms, and keep you informed through automatic e-mails, text messages, and even voice calls. Similarly the wireless connection could be used to access all systems on board remotely. If needed, a generator could be started, and equipment can be shut down or powered up. The boat, coach or home could even be heated or cooled (depending on the climate) before your arrival.

VE.Net Panel
The VE.Net Panel provides a user interface to all connected VE.Net devices. This could be one or more VE.Net Battery Controllers, VE.Net Generator Modules, regular Victron Energy equipment such as inverters and the Multi Inverter/Charger combination, or other third party equipment.

Intuitive user interface
The information available from all the available devices on the network will be displayed in a simple, easy to read format. This format will be the same for all connected devices. Therefore the user only has to become familiar with one user interface.

Plug and play - no setup needed!
To install the panel you have to connect it to the VE.Net network with a standard UTP cable. After power up, the panel searches for all the available VE.Net devices on the network and automatically loads them.

VE.Net Panel	VPN
Power supply voltage range	9 - 35 V DC
Current draw - standby	3 mA at 12 volt
Current draw - backlight off	14 mA at 12 volt
Current draw - backlight on	26 mA at 12 volt
Operating temp. range	-20 - +50°C (0 - 120°F)
Potential free contacts	3A / 30 V DC / 250 V AC / (N/O)
ENCLOSURE	
Measurements front panel (w x h)	12 x 6,5 cm (Standard PROS3 Panel)
Measurements body (w x h)	10 x 4,5 cm
Weight	0,1 Kg

Alarms
The VE.Net Panel has a buzzer and a set of contacts, which both can be setup to activate when there is an alarm on the VE.Net.

User and install mode
To prevent accidental changes in the configuration of the connected devices, the panel can be set to a “user-only-mode”. In this mode the panel will hide all the setup menus from the user.

Remote monitoring and fault finding by a qualified technician
Electric systems are rapidly becoming more complex, making it increasingly difficult for the user or a non qualified technician to identify and correct malfunction. Enabling remote access to all connected systems by a qualified technician is the solution. With the help of VE.Net a technician will be able to remotely access all systems, change settings and update embedded software when needed.

Less cabling, less weight, faster and lower cost installation
Instead of wiring all equipment and lighting to a central distribution panel, power will be tapped on the spot from a DC and/or AC busbar. VE.Net enabled DC and AC switches have been developed for that purpose. Imagine the savings in cable length and weight that can be achieved!

VE.Net	
Maximum number of nodes	256
Maximum cable length	100 meter
Network cable	Standard UTP with RJ-45 jacks
Network type	Mixed (star and ring networks possible)

VE.Net Battery Controller

No more guessing

Identifying exactly how much energy is left in a battery is not easy. A voltmeter is useful but will only indicate that the battery is flat when it is too late. In order to keep an accurate record of what is stored in a battery it is necessary to keep account of all the factors that affect it and this is a complex matter. Once a reliable reading of the state of charge of the battery is available however, life starts to get an awful lot less complicated.
No more nasty surprises with batteries going flat unexpectedly and it becomes possible to manage batteries on fact rather than guess work. It is amazing how much power you can have with a little extra knowledge!

Accurate and reliable

The data used by the VE.Net Battery Controller is monitored with an accuracy better than 0,5% and, employing Peukert's formula, account is taken of the reduction of effective capacity of the battery when the discharge current increases. An optional temperature sensor helps to further improve accuracy where wide temperature variation is expected.

Standard information

- Battery voltage (V)
- Battery charge/discharge current (A)
- Consumed Ampere-hours (Ah)
- State of charge of the battery (%)
- Time to go (until the battery it flat at the present rate of discharge)
- Battery temperature

Start your generator

The VE.Net Battery Controller has a relay that you can use to start your generator or to activate an external alarm for remote monitoring. With the built in and adjustable hysteresis for State of Charge (%) you can program when to close and open the contacts at your desired levels.

Adjustable Alarms

The Battery Controller can generate alarms on:

- Low voltage
- High voltage
- State of charge

Intelligent communication to other VE.Net enabled devices

The data from the Battery monitor will be available to all devices on the VE.Net network. The VE.Net Generator Module can use it to start and stop the generator. VE.Net enabled Battery Chargers can use it to optimize the charge currents to eliminate influences from a varying load.

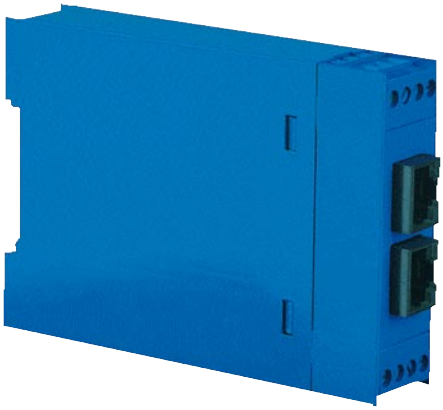
Historic data

To enable you to interrogate;

- Deepest discharge (Ah)
- Depth of last discharge (Ah)
- Number of cycles
- Average discharge (Ah)
- Number of full discharges
- Cumulative Battery Amp Hours (Ah)
- Maximum Battery Volts (V)
- Minimum Battery Volts (V)
- Days since last full charge

Variable shunt parameters

The VE.Net Battery Controller can be used with any shunt as an alternative to the standard 500A/50mv shunt included with the package. In the menu you can setup the full current rating of the shunt (10 - 50000A) and the according voltage in millivolts (10 - 50 mV).



VE.Net Battery Controller	VBC
Power supply voltage range	9 - 35 V DC
Current draw	10 mA at 12V
Input voltage range	9 - 35 V DC
Current range with standard shunt	- 500 A - +500 A
Shunt current	0 - 50000 A
Shunt input voltage range	-50 - +50 mV DC
Battery capacity	20 - 65535 Ah
Operating temp. range	-20 - +50°C (0 - 120°F)
RESOLUTION	
Voltage	± 0,01 V
Current	± 0,1 A
Amp hours	± 0,1 Ah
State of charge (0 - 100 %)	± 1 %
Time to go	± 1 min
Temperature (0 - 50°C or 30 - 120°F)	± 1°C (± 1°F)
Accuracy of voltage measurement	± 0,3 %
Accuracy of current measurement	± 0,4 %
Potential free contacts	3A / 30 V DC / 250 V AC / (N/O)
ENCLOSURE	
Measurements	22 x 105 x 75 mm
Mounting	DIN rail
Weight	0,1 Kg
SHUNT	
Shunt included	500 A / 50 mV

VE.Net Connectivity Module

Monitor and Request information remotely
The VE.Net Connectivity Module uses GPRS technology to allow you to remotely monitor and control the VE.Net.

Secure website
The Connectivity Module can be accessed via a secure, password protected, website that allows easy monitoring and controlling of all the information available on the VE.Net.

Alarms and notifications
All VE.Net alarms are forwarded to the website. The system can be programmed to send a voice, fax, sms or email notification, depending on the severity or type of alarm. This way you will always be in touch!

Inputs and outputs
As well as the VE.Net connection, the gateway also handles the following sensors and outputs that can be monitored and controlled remotely**:**

Sensors
- Voltage measurement (2x) (7-32V)
- Ignition
- Panic
- Auxiliary 1
- Auxiliary 2
- Temperature

Output
- Contactor (normally open)

Power backup
Two internal rechargeable batteries ensure that the gateway continues to function for up to 24 hours in case of disconnection from the main power supply.

GPS Functionality
The VE.Net Connectivity Module is equipped with a GPS that provides position information to the web module. Position information is dynamically updated on the website and users can view current position, trace information or, for fleet management, can view multiple devices on a single map. Geofence alarms can also be programmed.

VE.Net Connectivity Module	
Power supply voltage range	7 – 32 V DC
Maximum current consumption	30 mA / 12 V – 15mA / 24V
Autonomy	24 hours on 2 Internal rechargeable AAA
SENSORS	
Battery Voltage (2x)	7,0 – 32,0V ± 5%
Ignition	N/C input
Panic alarm	N/C input
Auxiliary1	N/C input
Auxiliary2	N/C input
OUTPUTS	
Contactor	1A / 30 V DC / 250 V AC / (N/O)
ENCLOSURE	
Specifics	Water resistant
Measurements	13 x 11,8 x 3,5 cm
Weight	275 g
Connector	Deutsch DTM06-12SA for inputs/outputs RJ45 for VE.Net
ANTENNA GSM AND GPS	
Dimensions	64,5mm (D) x 13,6mm (H) with 3m cable
GSM Frequencies	900MHz/1800MHz
STANDARDS	
Emission	FCC approval pending

VE.Net Generator Module

VE.Net Generator monitoring
The generator control module adds a huge number of features to your on board generator. It monitors AC voltage, current, kilowatts and frequency, DC voltage, oil pressure, water temperature and engine speed. All of this data is transmitted over the network. This allows the generator to be controlled and monitored from a remote location in the event that a GSM web module forms part of the system.

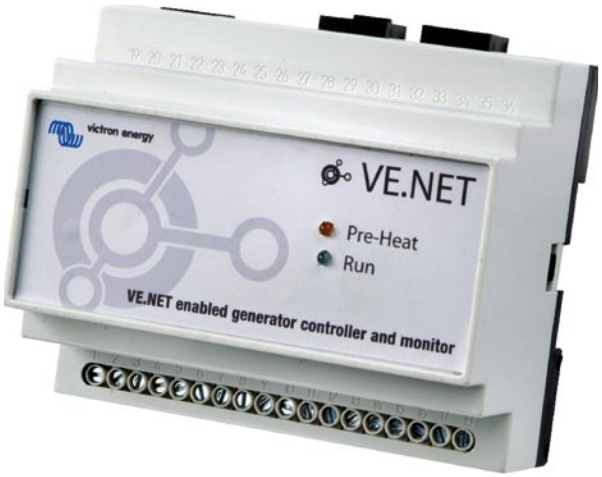
Generator warranty retained
The standard controls on the generator are retained to ensure that your generator warranty is unaffected.

Auto start capability
The VE.Net module adds “auto start” capability.
This means that the generator start up routine of pre-heat and cranking (until the engine fires) are automated.
The module can start the generator from a VE.Net signal or hard-wired momentary or latching contacts.

Alarms
Most of the monitored parameters can be allocated to alarms. These alarms can be configured as VE.Net alarms to alert to user or to alarm and shutdown automatically.

Load shedding
An optional upgraded sensor module incorporates a load shedding contactor. This enables the use of a warm up and cool down period. The sensor module caters for generators up to 50 amps. Above this size an installer will have to use an external contactor.

Supported generator brands
As generator control systems vary there is a list of generator types to select from. This will be extended as more brands are catered for.



VE.Net Generator Module	
Power supply voltage range	7 - 32 V DC
Maximum current consumption	30 mA / 12 V - 15 mA / 24 V
INPUTS	
Battery Voltage	7,0 - 32,0 V
AC Amperage (via external CT)	0 - 100 A
AC Voltage (via external drop down transformer)	0 - 300 V
Engine Coolant Temperature	Determined by engine sender
Engine Oil Pressure	Determined by engine sender
Engine Speed Magnetic Pickup	0 - 30 V pulse
External Start Momentary	N/O input (momentary close to start)
External Stop Momentary	N/O input (momentary close to stop)
External Start/Stop Latching Toggle	N/O input (close to start and run - open to stop)
OUTPUTS	
Preheat Contactor	3A / 30 V DC / 250 V AC / (N/O)
Start Contactor	3A / 30 V DC / 250 V AC / (N/O)
Stop Contactor	3A / 30 V DC / 250 V AC / (N/O)
ENCLOSURE - VE.net module	
Mounting	DIN rail
Measurements	105 x 85 x 57 mm
Weight	200 g
Connector	Screw terminal strip for inputs/ outputs 2 x RJ45 for VE.Net, RJ11 for sensing module connection
ENCLOSURE sensing module	
Mounting	DIN rail
Measurements	180 x 115 x 70 mm
Weight	200 g
Connector	Internal M6 studs for AC connection RJ11 for comms to VE.Net module

victron energy
BLUE POWER

Victron Energy B.V. / De Paal 35
1351 JG Almere / The Netherlands

Phone: +31 (0)36 535 97 00
Fax: +31 (0)36 535 97 40
e-mail: sales@victronenergy.com

www.victronenergy.com