NMEA 2000 & MFD integration guide

The NMEA 2000 protocol is a plug-and-play communications standard used for connecting marine sensors and display units within ships and boats.

Many Victron Energy products can be integrated into an NMEA 2000 network. On this page, you will find an overview, as well as links to all the detailed information.

Victron Energy is a member of the NMEA 2000 organisation, and we have several of our products certified by NMEA 2000.

1. How to connect to a NMEA 2000 network

1.1 Multis, MultiPlusses and Quattros

Use the VE.Bus to NMEA 2000 interface to connect these devices to an NMEA 2000 network.

Monitoring and controlling these products from both to a NMEA 2000 network and a Color Control GX is possible. In that case, do not connect the Color Control GX to the VE.Bus network. Instead, connect it also to the NMEA2000 network, use our VE.Can to NMEA2000 cable. The CCGX will then read the MultiPlus or Quattro information from the via the NMEA 2000 network.

Schematic diagram of combining a CCGX with NMEA 2000:
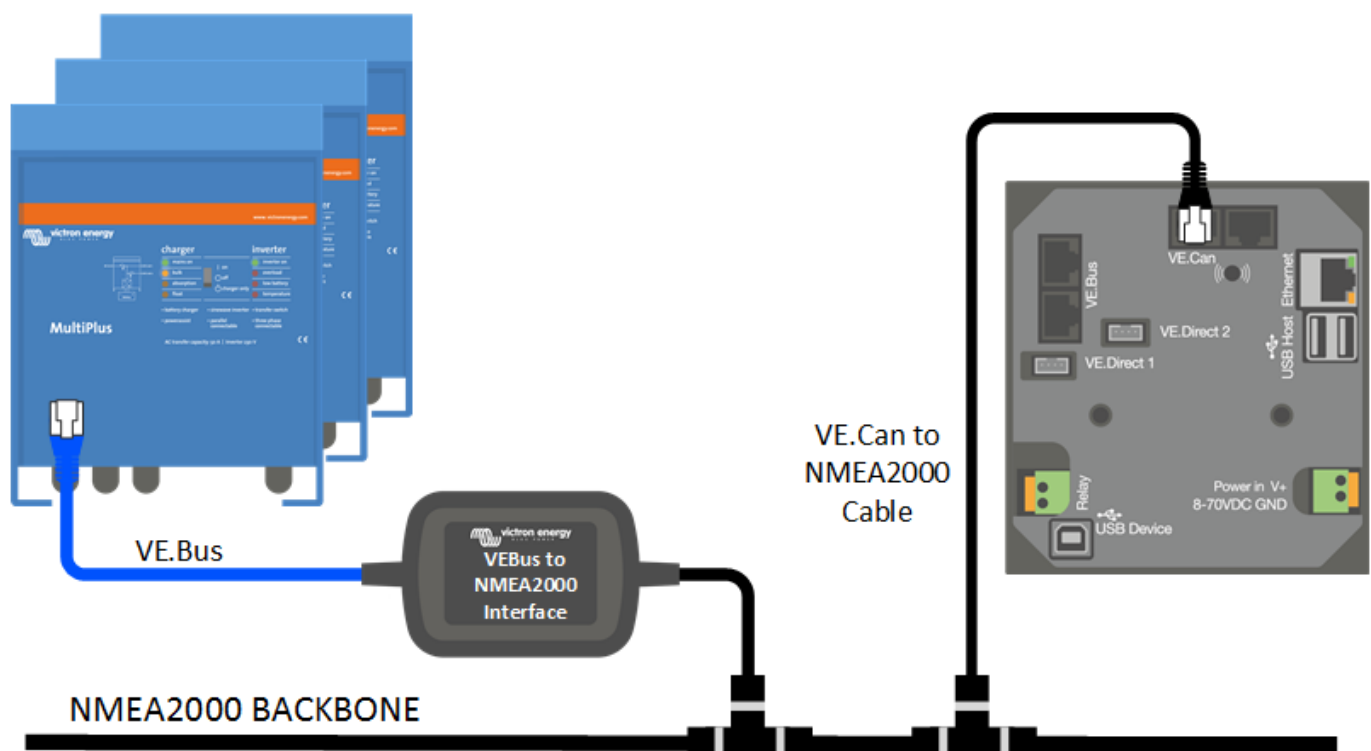
In above example, there needs to be a fuse in the VE.Can to NMEA 2000 cable. Without it, the VE.Can port in the CCGX will be left without power and therefore does not work.

1.2 BMV Battery Monitors

Use the VE.Direct to NMEA 2000 interface to connect a BMV to a NMEA 2000 network.

Combining this with a CCGX on the same network is possible. Connect the CCGX to the NMEA2000 network as well, use our VE.Can to NMEA2000 cable for that. The CCGX will then read the BMV information via the NMEA 2000 network.
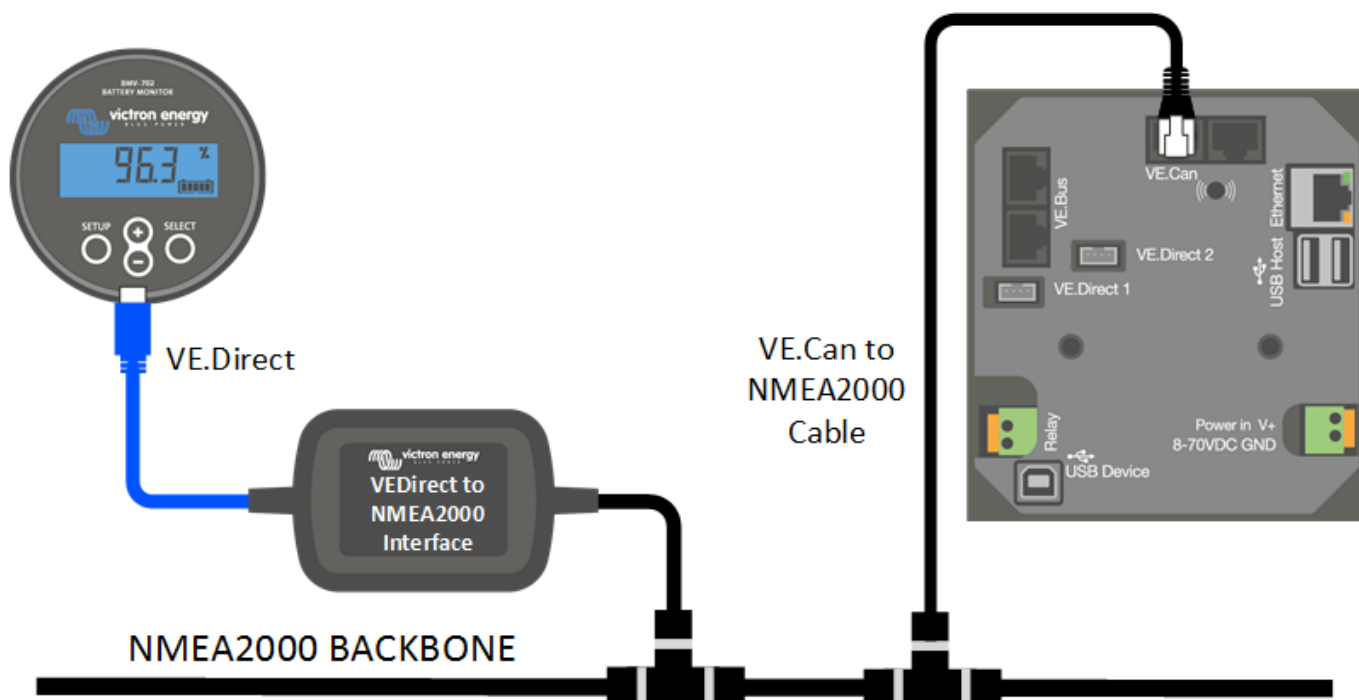
1.3 VE.Can products (Skylla-i, Skylla-IP44, Lynx Shunt, Lynx Ion+Shunt and more)

Since the Victron VE.Can communications protocol is based on NMEA 2000, the following products can all be connected directly to a NMEA 2000 network. The only thing necessary is a plug converter: the VE.Can to NMEA 2000 cable.

- Skylla-i 24V Battery Chargers
- Skylla IP44 Battery Chargers
- Lynx Shunt Battery Monitors
- Lynx Ion + Shunt all models
- BlueSolar MPPT Solar Chargers with VE.Can communications port
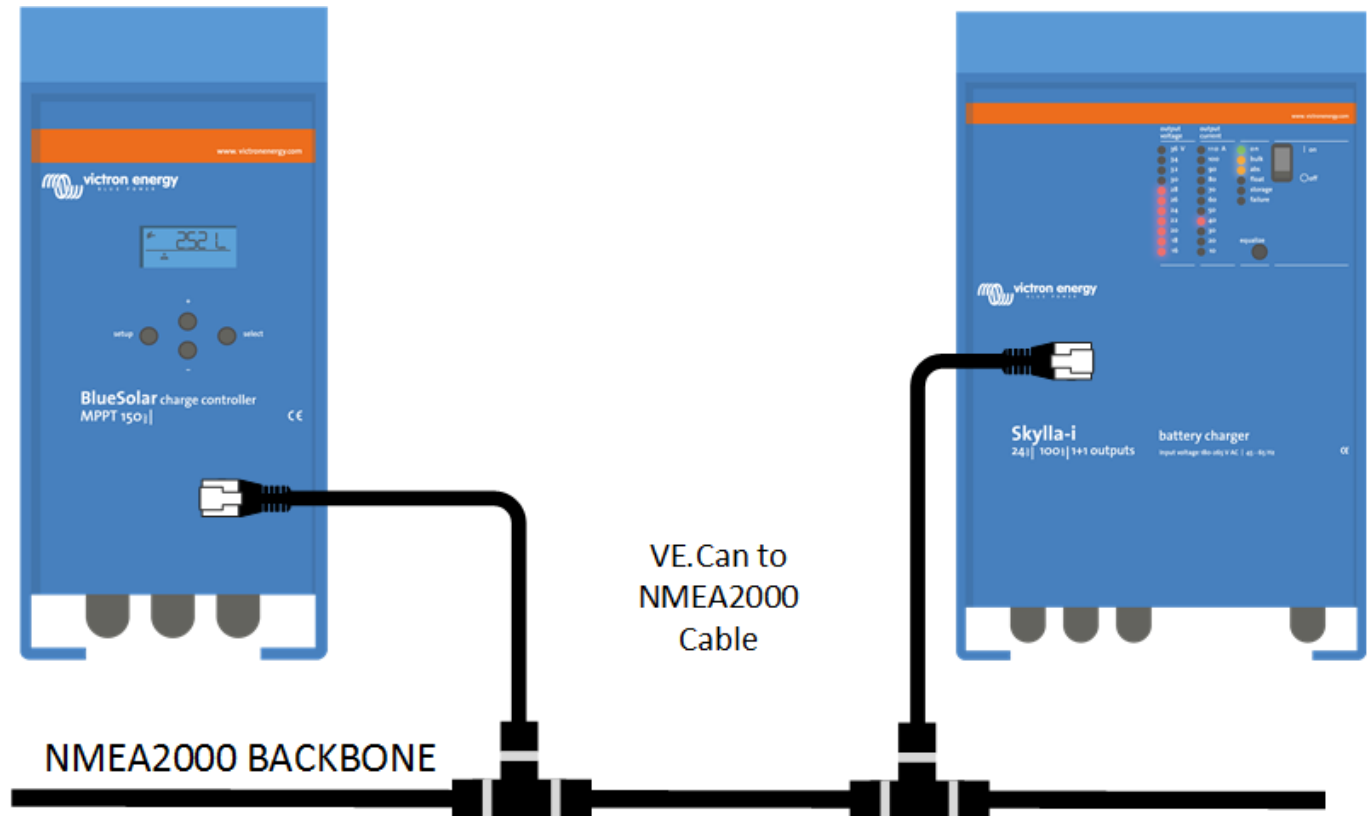
2. MFD integration

Using the NMEA 2000 protocol, Victron equipment can be integrated in many multi function displays. Such as the ones from Maretron, Raymarine, Garmin and many other brands

Note: working on a very large yacht featuring custom Scada and PLC networks? Consider integrating the Victron system with ModbusTCP instead of NMEA 2000.

2.1 Raymarine & EmpirBus

Any integration onto Raymarine MFDs is always done with an Empirbus NXT MCU . In the EmpirBus Studio software you will find dedicated Victron building blocks than can be drawn onto the diagram.

Next, use the EmpirBus Graphical tool to design the pages for on the Raymarine MFDs.

2.2 Maretron

All data sent out by Victron devices can be picked up by the Maretron MFDs & software. See the Maretron N2KView® vessel monitoring and control software.

3. PGN overview

Refer to our Datacommunication whitepaper, page 8 and beyond, for a list of Victron products and their supported PGNs.

4. Color Control GX & NMEA 2000

- The VE.Can port on the CCGX only reads information from the NMEA 2000 network. It does not (yet!) send any data out on the NMEA 2000 network.

5. FAQ

What about instances? Device instances, data instances?

See Changing NMEA2000 instances for details on that.

Can MPPT Solar Chargers with a VE.Direct port also be connected?

No, they cannot be connected. Even though the VE.Direct to NMEA 2000 interface can be physically connected to these solar chargers, it will not work. Use our Solar Chargers with a VE.Can port instead.

Note that there are many more generic frequently asked questions answered in the Data communication white paper.

What about terminators and network layout?

Use the NMEA2000 cable as the back bone. With drop cables to each Victron device. Terminate the NMEA 2000 backbone only, do not terminate on the VE.Can side.

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Last update: **2016-11-22 15:03**