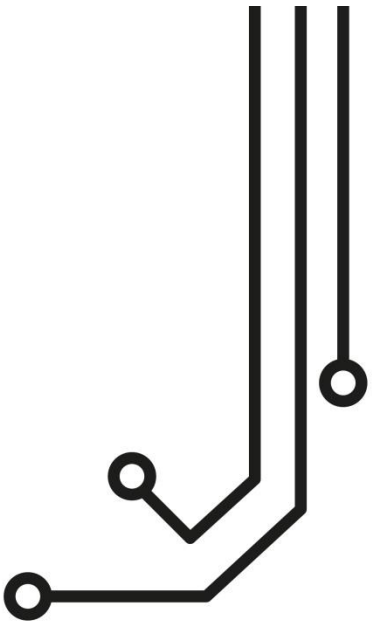
DIGITAL YACHT

# BM100 Battery Monitor

**Installation and instruction Manual**

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# 1. Introduction

Congratulations on the purchase of your BM100 Battery Monitor System. This product is designed to monitor the voltage and current of the boat's battery bank and communicate this data on an NMEA 2000 network. The system consists of a Victron SmartShunt and a Digital Yacht veKonvert NMEA 2000 gateway. This Product Guide, primarily covers the inter-connection of the system components and how to connect to an NMEA 2000 network.

**Please refer to the included Victron SmartShunt Manual for more information about installing and configuring the Victron SmartShunt**

# 2. Before you start

To install and test your BM100 Battery Monitor System you will need:

- M3 or M4 screws or other fixings appropriate to the mounting location of the veKonvert
- A spare NMEA 2000 network connection (T-Piece) to allow the BM100 to connect to the NMEA 2000 network*
- Any additional items listed in the Victron SmartShunt manual
- An NMEA 2000 compatible MFD that will display the NMEA 2000 that BM100 will transmit

* NOTE – if you require any additional NMEA 2000 networking components or cables please visit our website.

# 3. veKonvert Installation

Before starting installation select a suitable location for the veKonvert. The unit is water resistant; however it should be installed below deck in a dry location. When locating the unit you should consider:

- Routing of the integral VE.Direct cable to the Victron SmartShunt and the NMEA 2000 cable to the network
- Provision of sufficient space around the unit for comfortable cable routing.
- Maintaining the compass safe distance of 0.5m

## 3.1 Connecting to NMEA2000 Network

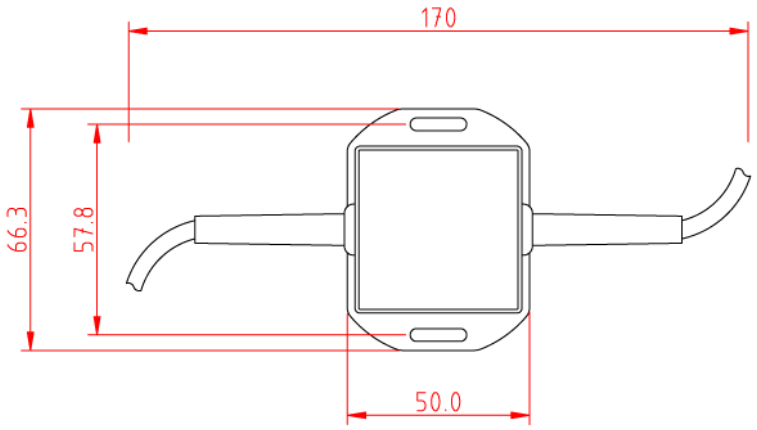
- The veKonvert, has an integral NMEA2000 cable terminated with a male connector to plug in to a standard NMEA2000 network via a spare "T-Piece". If you are creating a new NMEA2000 network, you may wish to consider Digital Yacht's NMEA2000 Starter Kit, that includes everything needed for a basic NMEA2000 network.

- If you are connecting BM100 to a non-standard NMEA2000 network, then a suitable adaptor cable will need to be sourced from the relevant manufacturer;

    - SeaTalkNG (Raymarine P/No A06045)
    - Simnet (Simrad P/No 24006199)

## 3.2 Mounting

The veKonvert has two slotted 4mm Diameter fixing holes. Use suitable fixings (not supplied) to fix the converter to a flat surface – using the dimensions and details shown. Note that the unit may be installed in any orientation.



## 3.3 VE.Direct Connection

The veKonvert has an integral VE.Direct cable that can be plugged directly in to the VE.Direct connector on the Victron SmartShunt. The 4 way connector is the small, white plastic socket located on the bottom left corner of the SmartShunt as shown in the image below…

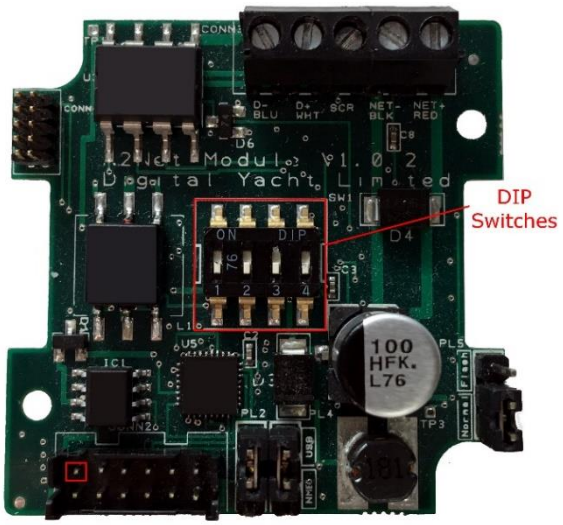

The veKonvert will automatically detect the presence of the Victron SmartShunt and start outputting the applicable NMEA 2000 PGNs as detailed below…

| | |
|---|---|
| PGN 127506 DC Detailed Status | (DC Type set to Battery, SOC and A/h consumed) |
| PGN 127508 Battery Status | (Output Voltage and Current) |

If you are using the AUX wire of the Victron SmartShunt to measure a second Starter Battery or the Mid-Voltage of a battery bank, then an additional 127508 Battery Status PGN will be transmitted that just includes the voltage measured on the AUX connection.

If you are using the AUX wire with a Victron temperature sensor, then the Battery Case Temperature field of the Battery Status PGN will be populated with the measured temperature.

## 3.4 Setting the BM100 Device Instance




By default, the BM100 will have a Device Instance of 0, which is fine when just one BM100 is on the NMEA 2000 network. For multiple BM100 installations, each BM100 must have a different Device Instance, set by changing the DIP switches inside the veKonvert.

To change the DIP switches, open the veKonvert by unscrewing the two cross head screws in the base of the unit. Then set the DIP switches to create a four bit binary number as follows…

| | | | |
|---|---|---|---|
| 0 = 0000 | 4 = 0100 | 8 = 1000 | 12 = 1100 |
| 1 = 0001 | 5 = 0101 | 9 = 1001 | 13 = 1101 |
| 2 = 0010 | 6 = 0110 | 10 = 1010 | 14 = 1110 |
| 3 = 0011 | 7 = 0111 | 11 = 1011 | 15 = 1111 |

Once you have set the DIP switches, power cycle the veKonvert unit for the new Device Instance to be applied.

If you are using the AUX function of the Victron SmartShunt to measure a second Starter Battery or the Mid-Voltage of a battery bank, then the additional 127508 Battery Status PGN will be transmitted with a Battery Instance equal to the Device Instance (set by DIP switches) + 1.

# 4.0 Operation

Once the BM100 has been configured and installed, it will automatically operate with no additional interaction. At power up, all of the veKonvert's LEDs will flash briefly and then after it has initialised and claimed an NMEA 2000 address, it will start converting the VE.Direct data in to NMEA 2000 PGNs. The VE.Dir LED will flash every 1.5 seconds and the N2K LED will continuously flash/flicker depending on the amount of data being received.

## 4.1 LED Behaviour

The veKonvert has four LEDs, which behave as follows;

| LED | State | Meaning |
|---|---|---|
| Power | ON | veKonvert is powered up |
| N2K | FLASH | NMEA 2000 data being received |
| VE.Dir | FLASH | VE.Direct data being received |
| Error | ON | Serious Error condition contact Digital Yacht |


## 4.2 Further Information

For BM100 technical support please email support@digitalyacht.co.uk