VE.Bus Smart Dongle - manual

Work in progress. This page contains input for the user manual

Introduction

The Ve.Bus Smart dongle is a Bluetooth Smart enabled Ve.Bus interface, battery temperature and voltage sensor.

In combination with Multi inverter/chargers the dongle adds on-battery temperature and battery voltage sensing capabilities for compensating possible cable losses during charging. On MultiPlus-II models this is the only option to add the “on-battery” sensing capability.

The dongle sends the battery temperature/voltage to the Multi every second. The Multi uses the voltage data to compensate its fast internal voltage measurement.

The dongle can be applied to systems with or without a Venus device - such as the CCGX. In systems with a Venus device, the Venus device is the “primary” device, and the dongle will operate in “secondary” mode. If the Venus device supplies the Multi with battery voltage and/or temperature data the dongle will back off and stop supplying the sense data as it is already being supplied by the Venus device. In secondary mode the available data is limited.

VictronConnect can be used for data readout, and dongle firmware updates.

Two temperature sources are available. The default source is the dongle's on board temperature sensor. If the dongle is mounted on the battery the dongle will register the outside temperature of the battery-housing. For improved battery temperature sensing an optional battery-terminal mounted sensor is available. Once connected the dongle will automatically detect this sensor, and use its temperature readings instead.

What's in the box

1. VE.Bus Smart Dongle
2. Red battery (+) connection wire with 10mm eyelet and inline fuse.
3. Black battery (-) connection wire with 10mm eyelet
4. Connector block with screw terminals.

Optional accessories :

1. External battery-terminal mounted temperature sensor (ASS000100000). *(NOTE: Currently the temperature sensor is shipped with a label “CAUTION: BMV702 only!”. This caution can be ignored for the VE.Bus Smart dongle)*

Installation

Installation without battery sensor:

1. Connect the red connection wire to the B+ input on the connection block
2. Connect the black connection wire to the B- input on the connection block
3. Connect the two eyelets to your battery terminal. Red wire eyelet on bat+ , black wire eyelet on bat-
4. Mount the dongle on or near the battery using the dongle's adhesive mounting. If mounted near the battery, screws can be used.
5. Plug the connector block into the dongle.
6. Connect the dongle to the Multi's Ve.Bus interface, using a standard RJ45 UTP cable

Installation with battery terminal temperature sensor:
The battery temperature sensor replaces the included red battery(+) connection wire.

1. Connect the temperature sensor's red connection wire to the B+ input on the connection block
2. Connect the temperature sensor's black connection wire to the T- input on the connection block
3. Connect the black connection wire to the B- input on the connection block
4. Connect the two eyelets to your battery terminal. Red wire eyelet on bat+ , black wire eyelet on bat-
5. Mount the dongle on or near the battery using the dongle's adhesive mounting. If mounted near the battery, screws can be used.
6. Plug the connector block into the dongle.
7. Connect the dongle to the Multi's Ve.Bus interface, using a standard RJ45 UTP cable

System requirements

Multi firmware versions before 415 are not supported

Function	Minimum Multi firmware version	Note
Battery voltage and temperature sense	419	
Input current limit and on/off/charger only control	415	Not supported when a DMC and/or VeBus BMS is installed

LED Status codes

Ve.Bus Smart has two LEDs: a Bluetooth status LED (blue), and an Error LED (red).

On power-up, the Bluetooth LED will be slow-blinking - indicating that the device is ready to accept a Bluetooth connection.

If both LEDs remain illuminated, something is wrong with the *Ve.Bus Smart* unit (Hardware error).

When the LEDs are alternating quickly for more than 30 seconds, the *Ve.Bus Smart* is in firmware update mode and will need to complete the update before it can be used. Firmware updates are

performed (where necessary) after connecting to VictronConnect.

Blue LED	Red LED	Ve.Bus Smart dongle state	Connection State	Remark
On	On	Not functional	Disabled	Hardware error. *Ve.Bus Smart* will not be visible in VictronConnect and it will not transmit battery temperature and voltage data to the Multi
Slow blinking	Off	Operational	Not connected	
On	Off	Operational	Connected	
Fast blinking	Fast blinking	Firmware update	Not connected	Red and Blue LED Alternating
On	Slow blinking	Firmware update	Connected	
On	Faster blinking	Firmware update	Uploading	
Fast blinking	Off	Firmware update	Programming	

Modes of operation

As indicated in the introduction the dongle can operate in “primary” or “secondary” mode. The mode depends on the availability of a Venus device. Due to restrictions in the VeBus communication protocol only one device can access data such as power readings.A Venus device has priority over the dongle and should always be able to access all data. When power is applied to the dongle or after a firmware update the dongle will startup in “secondary” mode. VeBus communication will be monitored for 30 seconds. If during this time no Venus device is detected the dongle will switch to “primary” mode and all supported data will be available. While switching modes VictronConnect will temporarily indicate an “unknown” VeBus state. The dongle continuously monitors Venus device activity on the VeBus. As soon as Venus device is detected it will switch back to “secondary” mode.

Likewise the dongle also monitors VeBus communication in order to discover if a Venus device supplies the multi with battery voltage and temperature data. It takes around 4 minutes after power on or reset before the dongle decides to transmit the battery voltage and temperature.

When no Multi is connected the dongle will be advertise as VeBus Smart dongle only. In this case the dongle can be used as a Voltage/Temperature sensor. VictronConnect will display the dongle in the device list. It takes a bit of time before a Multi is detected. When the dongle detects a Multi, it will advertise the Multi product ID. VictonConnect will than show the Multi in the Device list. Shortly after updating the firmware in VictronConnect the dongle only will show up in the device list. If connected a re-scan will reveal the Multi.

Troubleshooting

See both the VictronConnect manual and the VE.Smart Network manual.

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