Introduction

Smart Battery Sense is a wireless battery voltage and temperature sensor; it can be used for stand-alone monitoring with a mobile phone or tablet (via Bluetooth) or to also communicate this information to compatible Victron solar chargers and mains chargers (refer to the VE.Smart Networking manual on the Victron website to confirm compatibility).

The connection between **Smart Battery Sense** and one or more Victron charger(s) is via VE.Smart Network - a wireless technology based on Bluetooth Smart; multiple chargers can be connected to a single **Smart Battery Sense**.

With accurate battery voltage and temperature sense data, charging-efficiency is improved and battery life is prolonged.

By measuring voltage at the battery bank terminals, errors arising from voltage-loss due to cable resistance are avoided - guaranteeing the correct charge-voltage.

For lead batteries, battery temperature data is used to adjust the charge-voltages: cold batteries require an increased charge-voltage, whereas hot batteries require a decreased charge-voltage.

For lithium batteries, temperature data is used to disable charging when they are too cold: charging lithium batteries near or below freezing causes permanent damage to the cells.

ENGLISH

Safety Instructions

- Ensure that the DC system is fully shut down (all DC loads and charge sources off/isolated) prior to disconnection of existing cabling and connection of the Smart Battery Sense to the battery terminals.
- To avoid an accidental short circuit, disconnect the DC cable connected to the chassis first and connect the DC cable connected to the chassis last.
- Ensure a T1A fuse is installed as close as practical to the battery (fuse holder and fuse included - do not remove).
- Ensure that there are no sparks or ignition sources near the battery; batteries can emit explosive gasses.
- Battery acid is corrosive; if battery acid comes into contact with skin immediately rinse with water.

Installation

Connect the two eyelets to the battery terminals of the battery or battery bank and attach the unit directly onto the battery-body using its self-adhesive strip.

When connecting **Smart Battery Sense** to a battery bank (multiple batteries wired together):

- Series wired batteries - DC cables may be connected to the end terminals (positive of first battery and negative of last battery) of the battery string or any individual battery string (when multiple strings exist, with all strings wired in parallel).
- Parallel wired batteries - DC cables may be connected to the terminals of any individual battery.

For the most accurate battery temperature measurement it's normally best to adhere the unit to one of the central batteries in a battery bank (since they are typically the warmest), and approximately mid way up the side of the battery body.

If the length of the DC cables provided are insufficient they may be extended, providing the wire gauge used is equal or greater than the existing cables.

If the DC voltage exceeds 60V, the device is classified as a "built in product". Installation should be in in such a way that the user cannot touch the terminals.

Setup

Monitoring and VE.Smart Networking with a Victron charger is setup using the VictronConnect app, follow these steps:

1. Open the VictronConnect app, locate the **Smart Battery Sense** in the LOCAL page, and connect to the device.
2. For stand alone monitoring only, the battery voltage and temperature will be displayed on the STATUS page and no further setup is required (skip steps #3 to #8).
3. To create a VE.Smart Network, access the settings menu by selecting the 'settings' icon (gear) in the top right corner.
4. Select 'VE.Smart Networking' then select 'Create Network'; give the network a name and select OK.
5. Exit from the **Smart Battery Sense** device in VictronConnnect, locate the Victron charger you wish to pair in the LOCAL page, and connect to the device.
6. Access the settings menu by selecting the 'settings' icon (gear) in the top right corner.

7. Select 'VE.Smart Networking' then select 'Join Existing', now select the VE.Smart Network just created (or another network if necessary) and select OK.
8. Verify operation - once successfully setup the Victron charger VE.Smart Networking menu will show what data is being received; also the network icon will be shown in the top right corner of the main STATUS page.

Smart Battery Sense has two LEDs: a Bluetooth status LED (blue), and an Error LED (red), which can be used to determine the units state; refer to the table below:

Blue LED	Red LED	State	Connection	Notes
Illuminated	Illuminated	Not functional	Disabled	Hardware error
Slow blinking	Off	Measuring Voltage / Temp	Not connected	Ready to accept a Bluetooth connection
Illuminated	Off		Connected	Contributing V/T to the VE.Smart Network
Fast blinking	Fast blinking		Not connected	Red and Blue LED alternating
Illuminated	Slow blinking	Firmware update	Connected	
Illuminated	Fast blinking		Programming	

ENGLISH

Technical specifications

Specification	Value
Dimension h x w x d (mm)	14 x 38 x 38
Cable length	45cm
Eyelet hole size	10mm (M10)
Fuse rating	T1A 250V
Operating temperature range	-10°C to +60°C
Operating voltage range	8V to 60V
Absolute maximum voltage	65V
Bluetooth Frequency	2402-2480MHz
Bluetooth Power	-4dBm
Power consumption - Not connected	12V: 0.3mA, 24V: 0.2mA, 48V: 0.2mA
Power consumption - While joining VE.Smart network	12V: 0.5mA, 24V: 0.3mA, 48V: 0.3mA
Power consumption - Connected to VE.Smart network	12V: 1.6mA, 24V: 0.9mA, 48V: 0.6mA

Compliance

EU DECLARATION OF CONFORMITY

Manufacturer:	Victron Energy B.V
Address:	PO Box 50016, 1305 AA Almere, The Netherlands
Product:	Victron Energy - Smart Battery Sense
Model:	SBS050150200
Directive:	**2014/53/EU**

The latest manual and the official EU Declaration of Conformity can be downloaded from the Smart Battery Sense product page, under 'Downloads' > 'Manuals' / 'Certificates': https://www.victronenergy.com/accessories/smart-battery-sense