VictronConnect - Orion Smart DC-DC Charger

Introduction

Thank you for using VictronConnect. This guide will help you get the most out of your Orion Smart DC-DC Charger and it requires a minimum knowledge of this charger that can be found on the Orion Smart manual. The information available here applies to all Orion Smart DC-DC Chargers. To simply the reference to the Orion Smart DC-DC Charger, it will be refer as just Orion Smart in this guide.

More general information about the VictonConnect App - how to install it; how to pair it with your device; and how to update firmware, for example - can be found by referring to the overall victronconnect.

Note: Where input and battery voltage is referred to in these instructions, a 12V input and battery is assumed. Please multiply the given values by 2 to arrive at settings for an installation configured for 24V.

Live Data Information

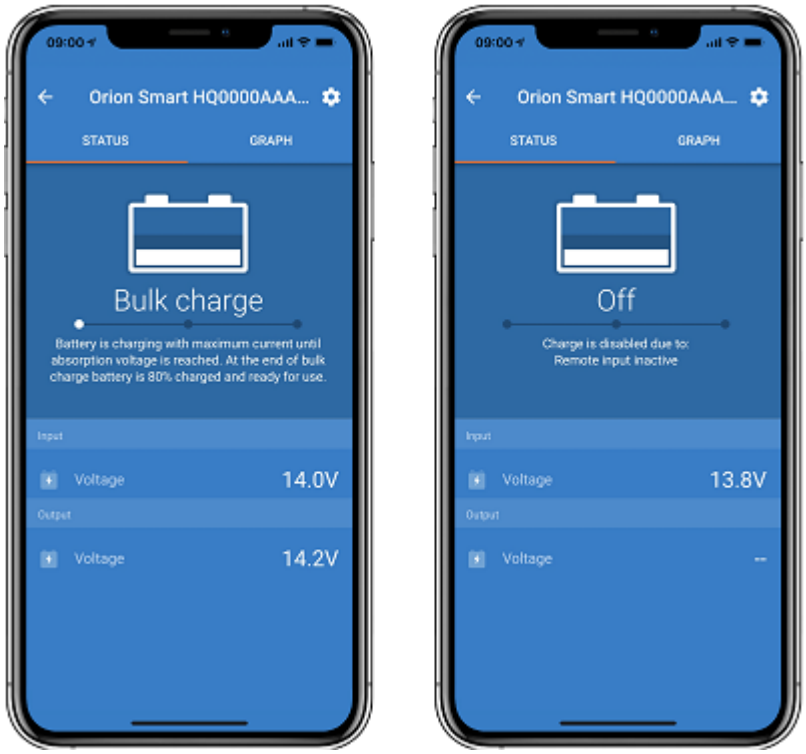
Power Supply Mode



- **Orion Smart [SERIAL NUMBER]** confirms the connected device. A custom name can also be set if desired.
- **Mode icon** shows in which mode the Orion Smart is operating (**Power Supply** in this case)
- **Input Voltage** shows the voltage measured on the input terminals of the device

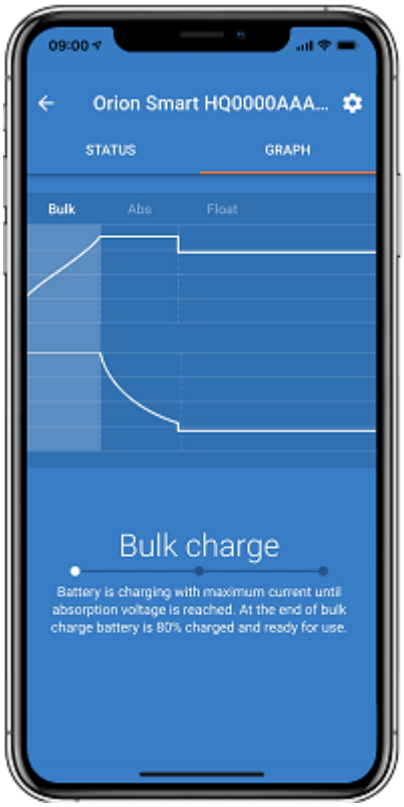
- **Output voltage** shows the voltage measured on the output terminals of the device
  - When the Orion Smart is on Off state, it will not measure the output voltage, so this value will appear as '—'
- **Off Reason** shows the reason why the Orion Smart is disabled (appears under the “Power Supply Mode” text when the Orion Smart is disabled)

Charger Mode - STATUS tab



- **Orion Smart [SERIAL NUMBER]** confirms the connected device. A custom name can also be set if desired.
- **Mode icon** shows in which mode the Orion Smart is operating (**Charger** in this case)
- **Charger State**:
  - Bulk: During this stage the Orion Smart delivers as much charge current as possible to rapidly charge the batteries. When the battery voltage reaches the Absorption voltage setting, the Orion Smart activates the Absorption stage.
  - Absorption: During this stage the Orion Smart switches to the constant voltage mode, where a pre-set absorption voltage, suitable to the battery type (See section XXX below), is applied. When the Absorption time is elapsed, the Orion Smart activates the Float stage.
  - Float: During this stage the float voltage is applied to the battery to maintain a fully-charged state. When the battery voltage drops below Re-bulk voltage during at least 1 minute, a new charge cycle will be triggered.
- **Input Voltage** shows the voltage measured on the input terminals of the device
- **Output voltage** shows the voltage measured on the output terminals of the device
  - When the Orion Smart is on Off state, it will not measure the output voltage, so this value will appear as '—'
- **Off Reason** shows the reason why the Orion Smart is disabled (appears under the “Charger State” text when the Orion Smart is Off)

Charger Mode - GRAPH tab



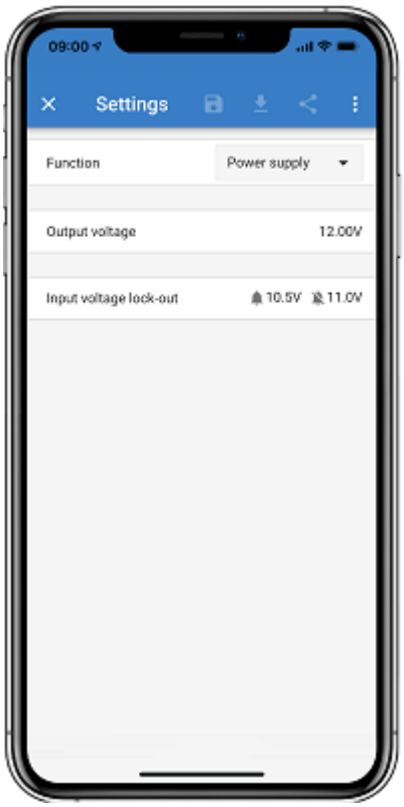
- **Orion Smart [SERIAL NUMBER]** confirms the connected device. A custom name can also be set if desired.
- **Charger State Graph** indicate in which state the charger currently is and show a short description of the current state.

Settings

VictronConnect allows the user to change and adjust several different settings from the Orion Smart. This is done through the settings option that can be accessed by clicking the icon on the right top corner of the screen. The settings options are different according to the operation mode that is selected.

Power Supply Mode

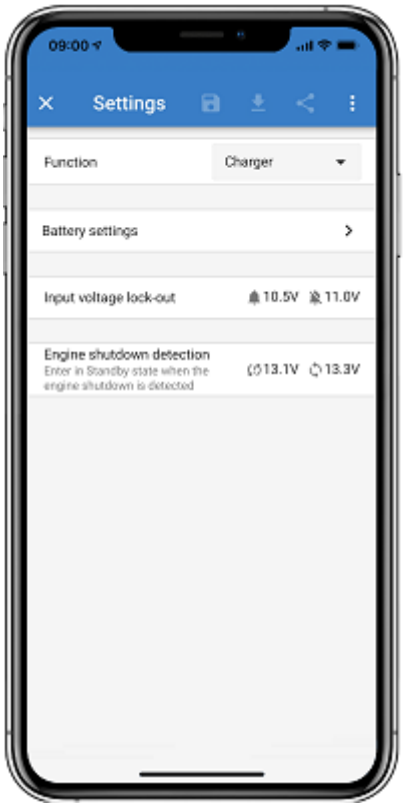
When on Power Supply Mode, the user should see the settings screen as the screenshot below.



- **Function** allow to choose between “Power supply” or “charger”. When power supply mode is selected, the Orion Smart will keep the output voltage as set on the setting.
- **Output voltage** allow to choose the output voltage when power supply mode is selected. Note that the minimum and maximum voltages needs to be within the product limit (i.e.: 10V to 15V for 12V output Orion Smart)
- **Input voltage lock-out** allow to choose between two thresholds. One to set the lock-out and another one to reset it. Normally, a minimum 0.5V (for 12V input Orion Smart) difference is used for a better performance. The protection can still be disabled if desired by the user. For more information about the input voltage lock-out, please read the Orion Smart manual.

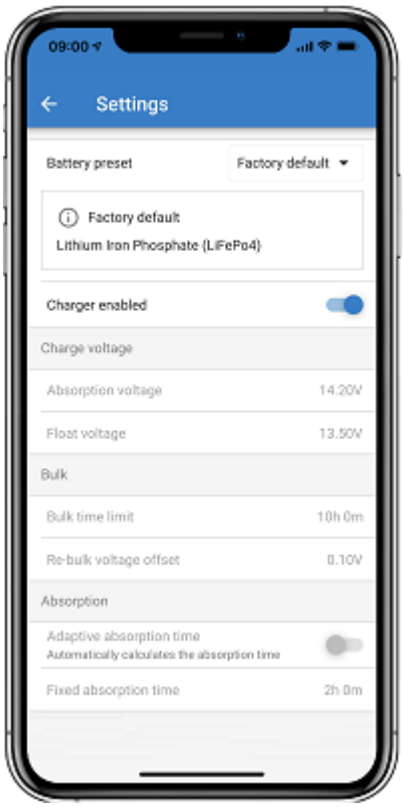
Charger Mode

When on Charger Mode, the user should see the settings screen as the screenshot below.



- **Function** allow to choose between “Power supply” or “charger”. When charger mode is selected, the Orion Smart will follow the three state charge algorithm. For more information about the charge algorithm, please read the Orion Smart manual.
- **Battery settings** allow to change the battery settings in order to adjust the absorption voltage, float voltage and others to fit the battery being charged. The battery setting is explained better on the next item.
- **Input voltage lock-out** allow to choose between two thresholds. One to set the lock-out and another one to reset it. Normally, a minimum 0.5V (for 12V input Orion Smart) difference is used for a better performance. The protection can still be disabled if desired by the user. For more information about the input voltage lock-out, please read the Orion Smart manual.
- **Engine shutdown detection** allow to choose between two thresholds. One to set the detect the engine shutdown and another one to detect when it is running. Normally, a minimum 0.2V (for 12V input Orion Smart) difference is used for a better performance. The engine shutdown detection can still be disabled if desired by the user. For more information about the engine shutdown detection, please read the Orion Smart manual.

Charger Mode - Battery Settings

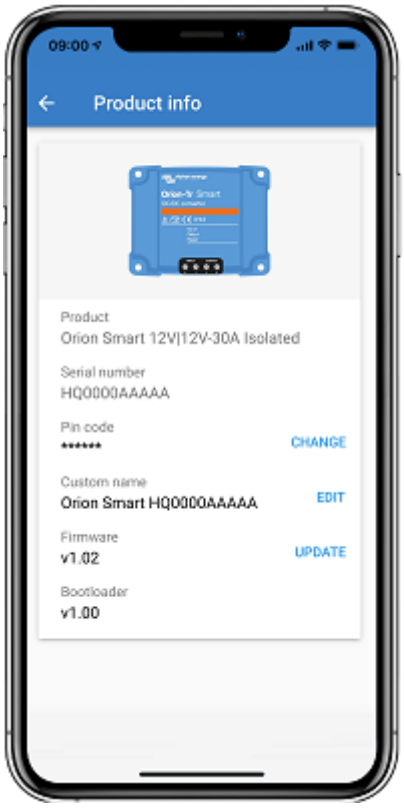


- **Charger enabled**
  - Toggling this setting turns the Orion Smart off. The batteries will not be charged.
- **Charger settings - Battery preset**
  - Battery preset allows to select the battery type; accept factory defaults; or enter your own preset values to be used for the battery charge algorithm. The Absorption voltage, Float voltage, Bulk time limit, Re-bulk voltage offset, Adaptive absorption time and Absorption time, settings are all configured to a preset value - but can be user-defined.
  - User-defined presets can be stored in the preset library - in this way installers will not have to define all the values each time they are configuring a new installation.
  - By selecting Edit Presets, custom parameters can be set as follows:
    - **Absorption voltage**
      - Set the absorption voltage
    - **Float voltage**
      - Set the float voltage
    - **Bulk time limit**
      - Set the maximum bulk time allowed for the charger.
    - **Re-bulk offset voltage**
      - The re-bulk offset voltage determines what is the offset between the float voltage (or absorption if it is lower) and the re-bulk voltage. The re-bulk voltage is the battery voltage threshold that triggers another charge cycle. For example, when the charger cannot maintain the battery voltage due to a high load, the battery voltage will fall and a new charge cycle will be started once the battery voltage drops below the re-bulk voltage.
    - **Absorption time**
      - The absorption time depends on if the **Adaptive absorption time** algorithm will be used or not. If that setting is not set, the charger will use a **Fixed absorption time**, selected by the user. Now, if the adaptive absorption time is set, then the charger will determine the absorption time based on the bulk

elapsed time of that charge cycle, the **Maximum absorption time** in this case is also set by the user.

Product Information

By clicking the button on the top right of the settings menu, it is possible to access the product information screen. See image below.



- **Product** shows the Orion Smart model
- **Serial number** shows the serial number of the unit
- **Pin code** allow the pin code to be changed. This is recommended to be done so settings and information won't be easy to access
- **Custom name** allow the product custom name to be changed to what the user wants. As default, it shows a short product name “Orion Smart” plus the serial number
- **Firmare** shows the current firmware version installed on the device and also allow the user to update the charger if desired
- **Bootloader** shows the bootloader firmware version

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