

# Orion-Tr Smart DC-DC charger isolated

250 / 400 Watt

With 3-stage battery charge algorithm

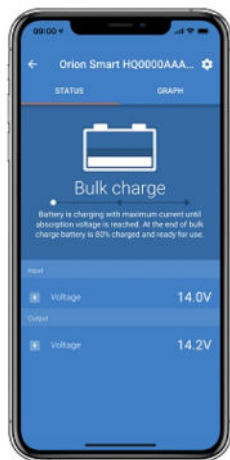
[www.victronenergy.com](http://www.victronenergy.com)



Orion-Tr Smart 12/12-30



Orion-Tr Smart 12/12-30



## Bluetooth Smart enabled

- Any Bluetooth enabled smart phone, tablet or other device can be used to monitor, to change settings and to update the charger when new software features become available.
- Instant Readout: The [VictronConnect App](#) can display key data, including warnings and alarms, on the Device list page without the need to connect to the product.

## Fully programmable

- Battery charge algorithm (configurable) or fixed output.
- Smart alternator compatibility: engine running detection mechanism.

## Adaptive 3-stage charge algorithm: bulk – absorption – float

- For lead acid batteries it is important that during shallow discharges the absorption time is kept short in order to prevent overcharging of the battery. After a deep discharge the absorption time is automatically increased to make sure that the battery is completely recharged.
- For lithium batteries absorption time is fixed, default 2 hours.
- Alternatively, a fixed output voltage can be chosen.

## Suitable for use in vehicles with a smart alternator (Euro 5 and Euro 6 engines)

The built-in engine shutdown detection will stop the converter when the engine is not running. This prevents unwanted discharge of the starter battery (see manual for details).

## Remote on/off

A remote on/off switch or relay contact can be connected to a two-pole connector. Alternatively, the H terminal (right) of the two-pole connector can be switched to battery plus, or the L terminal (left) of the two pole connector can be switched to battery minus (or the chassis of a vehicle, for example).

## All models are short circuit proof and can be paralleled to increase output current

An unlimited number of units can be connected in parallel.

## High temperature protected

The output current will reduce at high ambient temperature.

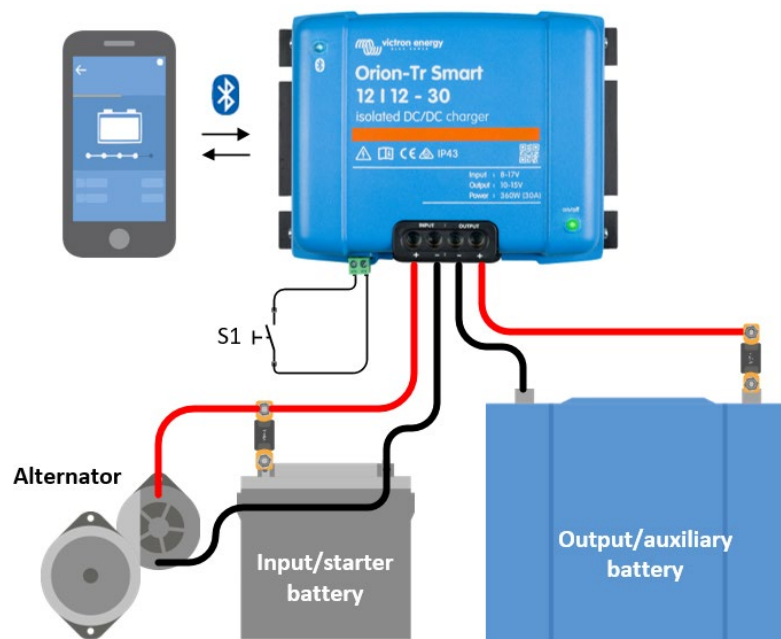
## IP43 protection

When installed with the screw terminals oriented downwards.

## Screw terminals

No special tools needed for installation.

## Input fuse (not replaceable)



| Orion-Tr Smart Chargers Isolated<br>220 - 280 Watt                 | 12/12-18<br>(220 W)  | 12/24-10<br>(240 W) | 24/12-20<br>(240 W) | 24/24-12<br>(280 W) |
|--|--|---------------------|---------------------|---------------------|
| Input voltage range <sup>(1)</sup>                                 | 8-17 V   | 8-17 V              | 16-35 V             | 16-35 V             |
| Under voltage shut down  | 7 V  | 7 V                 | 14 V                | 14 V                |
| Under voltage restart  | 7,5 V  | 7,5 V               | 15 V                | 15 V                |
| Nominal output voltage   | 12,2 V   | 24,2 V              | 12,2 V              | 24,2 V              |
| Output voltage adjust range  | 10-15 V  | 20-30 V             | 10-15 V             | 20-30 V             |
| Output voltage tolerance   | +/- 0,2 V  |                     |                     |                     |
| Output noise   | 2 mV rms   |                     |                     |                     |
| Cont. output current at nominal output voltage and 40 °C           | 18 A   | 10 A                | 20 A                | 12 A                |
| Maximum output current (10 s) at nominal output voltage minus 20 % | 25 A   | 15 A                | 25 A                | 15 A                |
| Short circuit output current                                       | 40 A   | 25 A                | 50 A                | 30 A                |
| Cont. output power at 25 °C  | 280 W  | 280 W               | 300 W               | 320 W               |
| Cont. output power at 40 °C  | 220 W  | 240 W               | 240 W               | 280 W               |
| Efficiency   | 87 %   | 88 %                | 88 %                | 89 %                |
| No load input current  | < 80 mA  | < 100 mA            | < 100 mA            | < 80 mA             |
| Standby current  | Less than 1mA  |                     |                     |                     |
| Galvanic isolation   | 200 VDC between input, output and case   |                     |                     |                     |
| Operating temperature range  | -20 to +55 °C (derate 3 % per °C above 40 °C)  |                     |                     |                     |
| Humidity   | Max. 95 % non-condensing   |                     |                     |                     |
| DC connection  | Screw terminals  |                     |                     |                     |
| Maximum cable cross-section  | 16 mm <sup>2</sup> AWG6  |                     |                     |                     |
| Weight   | 1,3 kg (3 lb)  |                     |                     |                     |
| Dimensions h x w x d   | 130 x 186 x 70 mm (5.1 x 7.3 x 2.8 inch)   |                     |                     |                     |
| Protection category  | IP43 (electronic components), IP22 (connection area)                                       |                     |                     |                     |
| Standards: Safety<br>Emission / Immunity<br>Automotive Directive   | EN 60950<br>EN 61000-6-3, EN 55014-1 / EN 61000-6-2, EN 61000-6-1, EN 55014-2<br>ECE R10-5 |                     |                     |                     |

| Orion-Tr Smart Chargers Isolated<br>360 - 400 Watt  | 12/12-30<br>(360 W)  | 12/24-15<br>(360 W) | 24/12-30<br>(360 W)           | 24/24-17<br>(400 W) |
|---|--|---------------------|-------------------------------|---------------------|
| Input voltage range <sup>(1)</sup>  | 10-17 V  | 10-17 V             | 20-35 V                       | 20-35 V             |
| Under voltage shut down   | 7 V  | 7 V                 | 14 V                          | 14 V                |
| Under voltage restart   | 7,5 V  | 7,5 V               | 15 V                          | 15 V                |
| Nominal output voltage  | 12,2 V   | 24,2 V              | 12,2 V                        | 24,2 V              |
| Output voltage adjust range   | 10-15 V  | 20-30 V             | 10-15 V                       | 20-30 V             |
| Output voltage tolerance  | +/- 0,2 V  |                     |                               |                     |
| Output noise  | 2 mV rms   |                     |                               |                     |
| Cont. output current at nominal output voltage and 40 °C  | 30 A   | 15 A                | 30 A                          | 17 A                |
| Maximum output current (10 s) at nominal output voltage minus 20 %  | 40 A   | 25 A                | 45 A                          | 25 A                |
| Short circuit output current  | 60 A   | 40 A                | 60 A                          | 40 A                |
| Cont. output power at 25 °C   | 430 W  | 430 W               | 430 W                         | 480 W               |
| Cont. output power at 40 °C   | 360 W  | 360 W               | 360 W                         | 400 W               |
| Efficiency  | 87 %   | 88 %                | 88 %                          | 89 %                |
| No load input current   | < 80 mA  | < 100 mA            | < 100 mA                      | < 80 mA             |
| Standby current   | Less than 1 mA   |                     |                               |                     |
| Galvanic isolation  | 200 VDC between input, output and case   |                     |                               |                     |
| Operating temperature range   | -20 to +55 °C (derate 3 % per °C above 40 °C)  |                     |                               |                     |
| Humidity  | Max. 95 % non-condensing   |                     |                               |                     |
| DC connection   | Screw terminals  |                     |                               |                     |
| Maximum cable cross-section   | 16 mm <sup>2</sup> (AWG6)  |                     |                               |                     |
| Weight  | 12 V input and/or 12 V output models: 1,8 kg (3 lb)  |                     | Other models: 1,6 kg (3.5 lb) |                     |
| Dimensions h x w x d  | 12 V input and/or 12 V output models: 130 x 186 x 80 mm (5.1 x 7.3 x 3.2 inch)<br>Other models: 130 x 186 x 70 mm (5.1 x 7.3 x 2.8 inch) |                     |                               |                     |
| Protection category   | IP43 (electronic components), IP22 (connection area)   |                     |                               |                     |
| Standards: Safety<br>Emission / Immunity<br>Automotive Directive  | EN 60950<br>EN 61000-6-3, EN 55014-1 / EN 61000-6-2, EN 61000-6-1, EN 55014-2<br>ECE R10-5   |                     |                               |                     |
| 1) If set to nominal or lower than nominal, the output voltage will remain stable within the specified input voltage range (buck-boost function). If the output voltage is set higher than nominal by a certain percentage, the minimum input voltage at which the output voltage remains stable (does not decrease) increases by the same percentage.<br>Note 1) The VictronConnect App will not display current in or current out.<br>Note 2) The Orion-Tr Smart is not equipped with a VE.Direct port. |  |                     |                               |                     |