

Orion-Tr DC-DC converters isolated

100 / 250 / 400 Watt

www.victronenergy.com



Orion-Tr 24/12-20 (240 W)



Orion-Tr 24/12-20 (240 W)

Remote on/off terminal

The remote on/off terminal eliminates the need for a high current switch in the input wiring. The remote on/off can be operated with a low power switch or by for example the engine run/stop switch (see manual).

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)

On 12 V and 24 V input models only.

Adjustable output voltage

Not intended for battery charging.
Please consider using an Orion-Tr Smart for battery charging.

| Isolated converters 110 – 120 W | Orion-Tr 12/12-9 (110 W) | Orion-Tr 12/24-5 (120 W) | Orion-Tr 24/12-9 (110 W) | Orion-Tr 24/24-5 (120 W) | Orion-Tr 24/48-2,5 (120 W) | Orion-Tr 48/12-9 (110 W) | Orion-Tr 48/24-5 (120 W) | Orion-Tr 48/48-2,5 (120 W) |
|---|--|--------------------------------|--------------------------------|--------------------------------|----------------------------------|--------------------------------|--------------------------------|----------------------------------|
| Input voltage range (1) | 8-17 V | 8-17 V | 16-35 V | 16-35 V | 16-35 V | 32-70 V | 32-70 V | 32-70 V |
| Under voltage shut down | 7 V | 7 V | 14 V | 14 V | 14 V | 28 V | 28 V | 28 V |
| Under voltage restart | 7,5 V | 7,5 V | 15 V | 15 V | 15 V | 30 V | 30 V | 30 V |
| Nominal output voltage | 12.2 V | 24.2 V | 12.2 V | 24.2 V | 48.2 V | 12.2 V | 24.2 V | 48.2 V |
| Output voltage adjust range | 10-15 V | 20-30 V | 10-15 V | 20-30 V | 40-60 V | 10-15 V | 20-30 V | 40-60 V |
| Output voltage tolerance | +/- 0.2 V | | | | | | | |
| Output noise | 2mV rms | | | | | | | |
| Cont. output current at nominal output voltage and 25 °C | 9 A | 5 A | 9 A | 5 A | 2.5 A | 9 A | 5 A | 2.5 A |
| Maximum output current (10 s) at nominal output voltage | 12.5 A | 6.3 A | 12.5 A | 6.3 A | 3.0 A | 12.5 A | 6.3 A | 3.0 A |
| Short circuit output current | 32 A | 23 A | 39 A | 30 A | 19 A | 27 A | 25 A | 17 A |
| Cont. output power at 25 °C | 110 W | 120 W | 110 W | 120 W | 120 W | 110 W | 120 W | 120 W |
| Cont. output power at 40 °C | 85 W | 110 W | 85 W | 115 W | 115 W | 85 W | 100 W | 85 W |
| Efficiency | 87 % | 88 % | 85 % | 87 % | 88 % | 87 % | 86 % | 89 % |
| No load input current (2) | < 50 mA | < 80 mA | < 40 mA | < 60 mA | < 120 mA | < 50 mA | < 60 mA | < 80 mA |
| Current consumption | < 200uA when disabled via its remote port | | | | | | | |
| Galvanic isolation | 200 V dc 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 | 6 mm ² AWG10 | | | | | | | |
| Weight | 0,42 kg (1 lb) | | | | | | | |
| Dimensions h x w x d | 100 x 113 x 47 mm (4.0 x 4.5 x 1.9 inch) | | | | | | | |
| Standards: Safety Emission Immunity Automotive Directive | EN 60950 EN 61000-6-3, EN 55014-1 EN 61000-6-2, EN 61000-6-1, EN 55014-2 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. | | | | | | | |
| 2) | Current consumption when the Orion-Tr is generating output voltage but no load is applied. | | | | | | | |

See page two for 250 W and 400 W models

| Isolated converters 220 - 280 Watt | Orion-Tr 12/12-18 (220 W) | Orion-Tr 12/24-10 (240 W) | Orion-Tr 24/12-20 (240 W) | Orion-Tr 24/24-12 (280 W) | Orion-Tr 24/48-6 (280 W) | Orion-Tr 48/12-20 (240 W) | Orion-Tr 48/24-12 (280 W) | Orion-Tr 48/48-6 (280 W) |
|---|---|---------------------------------|---------------------------------|---------------------------------|--------------------------------|---------------------------------|---------------------------------|--------------------------------|
| Input voltage range (1) | 8-17 V | 8-17 V | 16-35 V | 16-35 V | 16-35 V | 32-70 V | 32-70 V | 32-70 V |
| Under voltage shut down | 7 V | 7 V | 14 V | 14 V | 14 V | 28 V | 28 V | 28 V |
| Under voltage restart | 7,5 V | 7,5 V | 15 V | 15 V | 15 V | 30 V | 30 V | 30 V |
| Nominal output voltage | 12.2 V | 24.2 V | 12.2 V | 24.2 V | 48.2 V | 12.2 V | 24.2 V | 48.2 V |
| Output voltage adjust range | 10-15 V | 20-30 V | 10-15 V | 20-30 V | 40-60 V | 10-15 V | 20-30 V | 40-60 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 | 6 A | 20 A | 12 A | 6 A |
| Maximum output current (10 s) at nominal output voltage | 25 A | 15 A | 25 A | 15 A | 8 A | 25 A | 15 A | 8 A |
| Short circuit output current | 40 A | 25 A | 50 A | 30 A | 25 A | 50 A | 30 A | 25 A |
| Cont. output power at 25 °C | 280 W | 280 W | 300 W | 320 W | 320 W | 280 W | 320 W | 320 W |
| Cont. output power at 40 °C | 220 W | 240 W | 240 W | 280 W | 280 W | 240 W | 280 W | 280 W |
| Efficiency | 87 % | 88 % | 88 % | 89 % | 89 % | 87 % | 89 % | 89 % |
| No load input current (2) | < 80 mA | < 100 mA | < 100 mA | < 80 mA | < 120 mA | < 80 mA | < 80 mA | < 80 mA |
| Current consumption | < 200uA when disabled via its remote port | | | | | | | |
| 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 ² 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) | | | | | | | |
| Standards: Safety Emission Immunity Automotive Directive | EN 60950 EN 61000-6-3, EN 55014-1 EN 61000-6-2, EN 61000-6-1, EN 55014-2 ECE R10-5 | | | | | | | |

| Isolated converters 360 - 400 Watt | Orion-Tr 12/12-30 (360 W) | Orion-Tr 12/24-15 (360 W) | Orion-Tr 12/48-8 (380 W) | Orion-Tr 24/12-30 (360 W) | Orion-Tr 24/24-17 (400 W) | Orion-Tr 24/48-8,5 (400 W) | Orion-Tr 48/12-30 (360 W) | Orion-Tr 48/24-16 (380 W) | Orion-Tr 48/48-8 (380 W) |
|---|--|---------------------------------|--------------------------------|---------------------------------|---------------------------------|----------------------------------|---------------------------------|---------------------------------|--------------------------------|
| Input voltage range (1) | 8-17 V | 8-17 V | 8-17 V | 16-35 V | 16-35 V | 16-35 V | 32-70 V | 32-70 V | 32-70 V |
| Under voltage shut down | 7 V | 7 V | 7 V | 14 V | 14 V | 14 V | 28 V | 28 V | 28 V |
| Under voltage restart | 7,5 V | 7,5 V | 7,5 V | 15 V | 15 V | 15 V | 30 V | 30 V | 30 V |
| Nominal output voltage | 12.2 V | 24.2 V | 48.2 V | 12.2 V | 24.2 V | 48.2 V | 12.2 V | 24.2 V | 48.2 V |
| Output voltage adjust range | 10-15 V | 18-30 V | 40-60 V | 10-15 V | 18-30 V | 40-60 V | 10-15 V | 18-30 V | 40-60 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 | 8 A | 30 A | 17 A | 8,5 A | 30 A | 16 A | 8 A |
| Maximum output current (10 s) at nominal output voltage minus 20% | 40 A | 25 A | 15 A | 45 A | 25 A | 15 A | 40 A | 25 A | 15 A |
| Short circuit output current | 60 A | 40 A | 25 A | 60 A | 40 A | 25 A | 60 A | 40 A | 25 A |
| Cont. output power at 25°C | 430 W | 430 W | 430 W | 430 W | 480 W | 480 W | 430 W | 430 W | 430 W |
| Cont. output power at 40°C | 360 W | 360 W | 380 W | 360 W | 400 W | 400 W | 360 W | 380 W | 380 W |
| Efficiency | 87 % | 88 % | 89 % | 88 % | 89 % | 89 % | 87 % | 89 % | 89 % |
| No load input current (2) | < 80 mA | < 100 mA | < 220 mA | < 100 mA | < 80 mA | < 120 mA | < 80 mA | < 80 mA | < 80 mA |
| Current consumption | < 200uA when disabled via its remote port | | | | | | | | |
| 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 ² (AWG6) | | | | | | | | |
| Weight | 12 V input and/or 12 V output models: 1.8 kg (4 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) Other models: 130 x 186 x 70 mm (5.1 x 7.3 x 2.8 inch) | | | | | | | | |
| Standards: Safety Emission Immunity Automotive Directive | EN 60950 EN 61000-6-3, EN 55014-1 EN 61000-6-2, EN 61000-6-1, EN 55014-2 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.
- 2) Current consumption when the Orion-Tr is generating output voltage but no load is applied.