# Orion-Tr DC-DC converters isolated

## 100 / 250 / 400 Watt

www.victronenergy.com




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



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

### Remote on-off

The remote on-off 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).

### Adjustable output voltage: can also be used as a battery charger

For example to charge a 12 Volt starter or accessory battery in an otherwise 24V system.

### 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 12V and 24V input models only.

| Isolated converters 110 – 120W | Orion-Tr 12/12-9 (110W) | Orion-Tr 12/24-5 (120W) | Orion-Tr 24/12-9 (110W) | Orion-Tr 24/24-5 (120W) | Orion-Tr 24/48-2,5 (120W) | Orion-Tr 48/12-9 (110W) | Orion-Tr 48/24-5 (120W) | Orion-Tr 48/48-2,5 (120W) |
|---|---|---|---|---|---|---|---|---|
| Input voltage range (1) | 8-17V | 8-17V | 16-35V | 16-35V | 16-35V | 32-70V | 32-70V | 32-70V |
| Under voltage shut down | 7V | 7V | 14V | 14V | 14V | 28V | 28V | 28V |
| Under voltage restart | 7,5V | 7,5V | 15V | 15V | 15V | 30V | 30V | 30V |
| Nominal output voltage | 12,2V | 24,2V | 12,2V | 24,2V | 48,2V | 12,2V | 24,2V | 48,2V |
| Output voltage adjust range | 10-15V | 20-30V | 10-15V | 20-30V | 40-60V | 10-15V | 20-30V | 40-60V |
| Output voltage tolerance | +/- 0,2V | | | | | | | |
| Output noise | 2mV rms | | | | | | | |
| Cont. output current at nominal output voltage and 25°C | 9A | 5A | 9A | 5A | 2,5A | 9A | 5A | 2,5A |
| Maximum output current (10 s) at nominal output voltage | 12,5A | 6,3A | 12,5A | 6,3A | 3,0A | 12,5A | 6,3A | 3,0A |
| Short circuit output current | 32A | 23A | 39A | 30A | 19A | 27A | 25A | 17A |
| Cont. output power at 25°C | 110W | 120W | 110W | 120W | 120W | 110W | 120W | 120W |
| Cont. output power at 40°C | 85W | 110W | 85W | 115W | 115W | 85W | 100W | 85W |
| Efficiency | 87% | 88% | 85% | 87% | 88% | 87% | 86% | 89% |
| Off load current | < 50mA | < 80mA | < 40mA | < 60 mA | < 120mA | < 50mA | < 60mA | < 80mA |
| Galvanic isolation | 200V 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 mm² AWG10 | | | | | | | |
| Weight | 0,42 kg (1 lb) | | | | | | | |
| Dimensions hxwxd | 100 x 113 x 47 mm (4.0 x 4.5 x 1.9 inch) | | | | | | | |
| Standards: Safety<br>Emission<br>Immunity<br>Automotive Directive | EN 60950<br>EN 61000-6-3, EN 55014-1<br>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.

See page two for 250 W and 400 W models

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| Isolated converters 220 - 280 Watt | Orion-Tr 12/12-18 (220W) | Orion-Tr 12/24-10 (240W) | Orion-Tr 24/12-20 (240W) | Orion-Tr 24/24-12 (280W) | Orion-Tr 24/48-6 (280W) | Orion-Tr 48/12-20 (240W) | Orion-Tr 48/24-12 (280W) | Orion-Tr 48/48-6 (280W) |
|---|---|---|---|---|---|---|---|---|
| Input voltage range (1) | 8-17V | 8-17V | 16-35V | 16-35V | 16-35V | 32-70V | 32-70V | 32-70V |
| Under voltage shut down | 7V | 7V | 14V | 14V | 14V | 28V | 28V | 28V |
| Under voltage restart | 7,5V | 7,5V | 15V | 15V | 15V | 30V | 30V | 30V |
| Nominal output voltage | 12,2V | 24,2V | 12,2V | 24,2V | 48,2V | 12,2V | 24,2V | 48,2V |
| Output voltage adjust range | 10-15V | 20-30V | 10-15V | 20-30V | 40-60V | 10-15V | 20-30V | 40-60V |
| Output voltage tolerance | +/- 0,2V | | | | | | | |
| Output noise | 2mV rms | | | | | | | |
| Cont. output current at nominal output voltage and 40°C | 18A | 10A | 20A | 12A | 6A | 20A | 12A | 6A |
| Maximum output current (10 s) at nominal output voltage | 25A | 15A | 25A | 15A | 8A | 25A | 15A | 8A |
| Short circuit output current | 40A | 25A | 50A | 30A | 25A | 50A | 30A | 25A |
| Cont. output power at 25°C | 280W | 280W | 300W | 320W | 320W | 280W | 320W | 320W |
| Cont. output power at 40°C | 220W | 240W | 240W | 280W | 280W | 240W | 280W | 280W |
| Efficiency | 87% | 88% | 88% | 89% | 89% | 87% | 89% | 89% |
| Off load current | < 80mA | < 100mA | < 100mA | < 80mA | < 120 mA | < 80mA | < 80mA | < 80mA |
| Galvanic isolation | 200V 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 | 16 mm² AWG6 | | | | | | | |
| Weight | 1,3 kg (3 lb) | | | | | | | |
| Dimensions hxwxd | 130 x 186 x 70 mm (5.1 x 7.3 x 2.8 inch) | | | | | | | |
| Standards: Safety<br>Emission<br>Immunity<br>Automotive Directive | EN 60950<br>EN 61000-6-3, EN 55014-1<br>EN 61000-6-2, EN 61000-6-1, EN 55014-2<br>ECE R10-5 | | | | | | | |

| Isolated converters 360 - 400 Watt | Orion-Tr 12/12-30 (360W) | Orion-Tr 12/24-15 (360W) | Orion-Tr 24/12-30 (360W) | Orion-Tr 24/24-17 (400W) | Orion-Tr 24/48-8,5 (400W) | Orion-Tr 48/12-30 (360W) | Orion-Tr 48/24-16 (380W) | Orion-Tr 48/48-8 (380W) |
|---|---|---|---|---|---|---|---|---|
| Input voltage range (1) | 10-17V | 10-17V | 20-35V | 20-35V | 20-35V | 40-70V | 40-70V | 40-70V |
| Under voltage shut down | 7V | 7V | 14V | 14V | 14V | 28V | 28V | 28V |
| Under voltage restart | 7,5V | 7,5V | 15V | 15V | 15V | 30V | 30V | 30V |
| Nominal output voltage | 12,2V | 24,2V | 12,2V | 24,2V | 48,2V | 12,2V | 24,2V | 48,2V |
| Output voltage adjust range | 10-15V | 20-30V | 10-15V | 20-30V | 40-60V | 10-15V | 20-30V | 40-60V |
| Output voltage tolerance | +/- 0,2V | | | | | | | |
| Output noise | 2mV rms | | | | | | | |
| Cont. output current at nominal output voltage and 40°C | 30A | 15A | 30A | 17A | 8,5A | 30A | 16A | 8A |
| Maximum output current (10 s) at nominal output voltage minus 20% | 40A | 25A | 45A | 25A | 15A | 40A | 25A | 15A |
| Short circuit output current | 60A | 40A | 60A | 40A | 25A | 60A | 40A | 25A |
| Cont. output power at 25°C | 430W | 430W | 430W | 480W | 480W | 430W | 430W | 430W |
| Cont. output power at 40°C | 360W | 360W | 360W | 400W | 400W | 360W | 380W | 380W |
| Efficiency | 87% | 88% | 88% | 89% | 89% | 87% | 89% | 89% |
| Off load current | < 80mA | < 100mA | < 100mA | < 80mA | < 120 mA | < 80mA | < 80mA | < 80mA |
| Galvanic isolation | 200V 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 | 16 mm² (AWG6) | | | | | | | |
| Weight | 12V input and/or 12V output models: 1,8 kg (3 lb) Other models: 1,6 kg (3.5 lb) | | | | | | | |
| Dimensions hxwxd | 12V input and/or 12V 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) | | | | | | | |
| Standards: Safety<br>Emission<br>Immunity<br>Automotive Directive | EN 60950<br>EN 61000-6-3, EN 55014-1<br>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.