

# Orion-Tr DC-DC converters isolated

100 / 250 / 400 Watt

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



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



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

### 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).

### 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	< 50 mA	< 80 mA	< 40 mA	< 60 mA	< 120 mA	< 50 mA	< 60 mA	< 80 mA
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 <sup>2</sup> 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.

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	+/- 0,2V							
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 %
Off load current	< 80 mA	< 100 mA	< 100 mA	< 80 mA	< 120 mA	< 80 mA	< 80 mA	< 80 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	1,3 kg (3 lb)							
Dimensions hwxwd	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 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)	10-17 V	10-17 V	20-35 V	20-35 V	20-35 V	40-70 V	40-70 V	40-70 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	+/- 0,2V							
Output noise	2 mV rms							
Cont. output current at nominal output voltage and 40°C	30 A	15 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	45 A	25 A	15 A	40 A	25 A	15 A
Short circuit output current	60 A	40 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	480 W	480 W	430 W	430 W	430 W
Cont. output power at 40°C	360 W	360 W	360 W	400 W	400 W	360 W	380 W	380 W
Efficiency	87 %	88 %	88 %	89 %	89 %	87 %	89 %	89 %
Off load current	< 80 mA	< 100 mA	< 100 mA	< 80 mA	< 120 mA	< 80 mA	< 80 mA	< 80 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 hwxwd	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.