

# Orion-Tr DC-DC converters isolated

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100 / 250 / 400 Watt



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.

### 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<br>110 – 120W                                 | Orion-Tr<br>12/12-9<br>(110W)   | Orion-Tr<br>12/24-5<br>(120W) | Orion-Tr<br>24/12-9<br>(110W) | Orion-Tr<br>24/24-5<br>(120W) | Orion-Tr<br>24/48-2,5<br>(120W) | Orion-Tr<br>48/12-9<br>(110W) | Orion-Tr<br>48/24-5<br>(120W) | Orion-Tr<br>48/48-2,5<br>(120W) |
|---|---|-------------------------------|-------------------------------|-------------------------------|---------------------------------|-------------------------------|-------------------------------|---------------------------------|
| Input voltage range   | 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 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<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 R10-4 |                               |                               |                               |                                 |                               |                               |                                 |

See page two for 250 W and 400 W models

| Isolated converters<br>220 - 280 Watt                             | Orion-Tr<br>12/12-18<br>(220W)  | Orion-Tr<br>12/24-10<br>(240W) | Orion-Tr<br>24/12-20<br>(240W) | Orion-Tr<br>24/24-12<br>(280W) | Orion-Tr<br>24/48-6<br>(280W) | Orion-Tr<br>48/12-20<br>(240W) | Orion-Tr<br>48/24-12<br>(280W) | Orion-Tr<br>48/48-6<br>(280W) |
|---|---|--------------------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------|--------------------------------|-------------------------------|
| Input voltage range   | 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                                       | 13mm <sup>2</sup> AWG6  |                                |                                |                                |                               |                                |                                |                               |
| Weight  | 1,3kg (3 lb)  |                                |                                |                                |                               |                                |                                |                               |
| Dimensions hwxwd  | 130 x 186 x 70mm (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 R10-4 |                                |                                |                                |                               |                                |                                |                               |

| Isolated converters<br>360 - 400 Watt                             | Orion-Tr<br>12/12-30<br>(360W)   | Orion-Tr<br>12/24-15<br>(360W) | Orion-Tr<br>24/12-30<br>(360W) | Orion-Tr<br>24/24-17<br>(400W) | Orion-Tr<br>24/48-8,5<br>(400W)           | Orion-Tr<br>48/12-30<br>(360W) | Orion-Tr<br>48/24-16<br>(380W) | Orion-Tr<br>48/48-8<br>(380W) |
|---|--|--------------------------------|--------------------------------|--------------------------------|---|--------------------------------|--------------------------------|-------------------------------|
| Input voltage range   | 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                                       | 13mm <sup>2</sup> (AWG6)   |                                |                                |                                |   |                                |                                |                               |
| Weight  | 12V output models: 1,4 kg (3 lb)   |                                |                                |                                | 24V and 48V output models: 1,6kg (3.5 lb) |                                |                                |                               |
| Dimensions hwxwd  | 12V output models: 130 x 186 x 80 mm (5.1 x 7.3 x 3.2 inch)<br>24V and 48V output 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 R10-4  |                                |                                |                                |   |                                |                                |                               |