

## TRIO-27.6-TL TRIO-20.0-TL

### GENERAL SPECIFICATIONS OUTDOOR MODELS

The latest in Power-One's Aurora Trio range, this new-look three-phase inverter fills a specific niche in the commercial solar market. This new three-phase inverter benefits from the three-phase inverter technology perfected in the PVI-10.0 and 12.5, probably the world's most commonly used three-phase inverter which has led the way in best-in-class efficiency.

Controlling more PV panels than its smaller predecessor, the Trio-27.6 and Trio-20.0 will offer more flexibility and control to installers who have large installations with varying aspects or orientations. This device has two independent MPPTs and efficiency ratings of up to 98.3%. The very wide input voltage range makes the inverter suitable to installations with reduced string size.

The new look inverter has new features including a special built-in heat sink compartment and front panel display system. The unit is free of electrolytic capacitors, leading to a longer product lifetime.

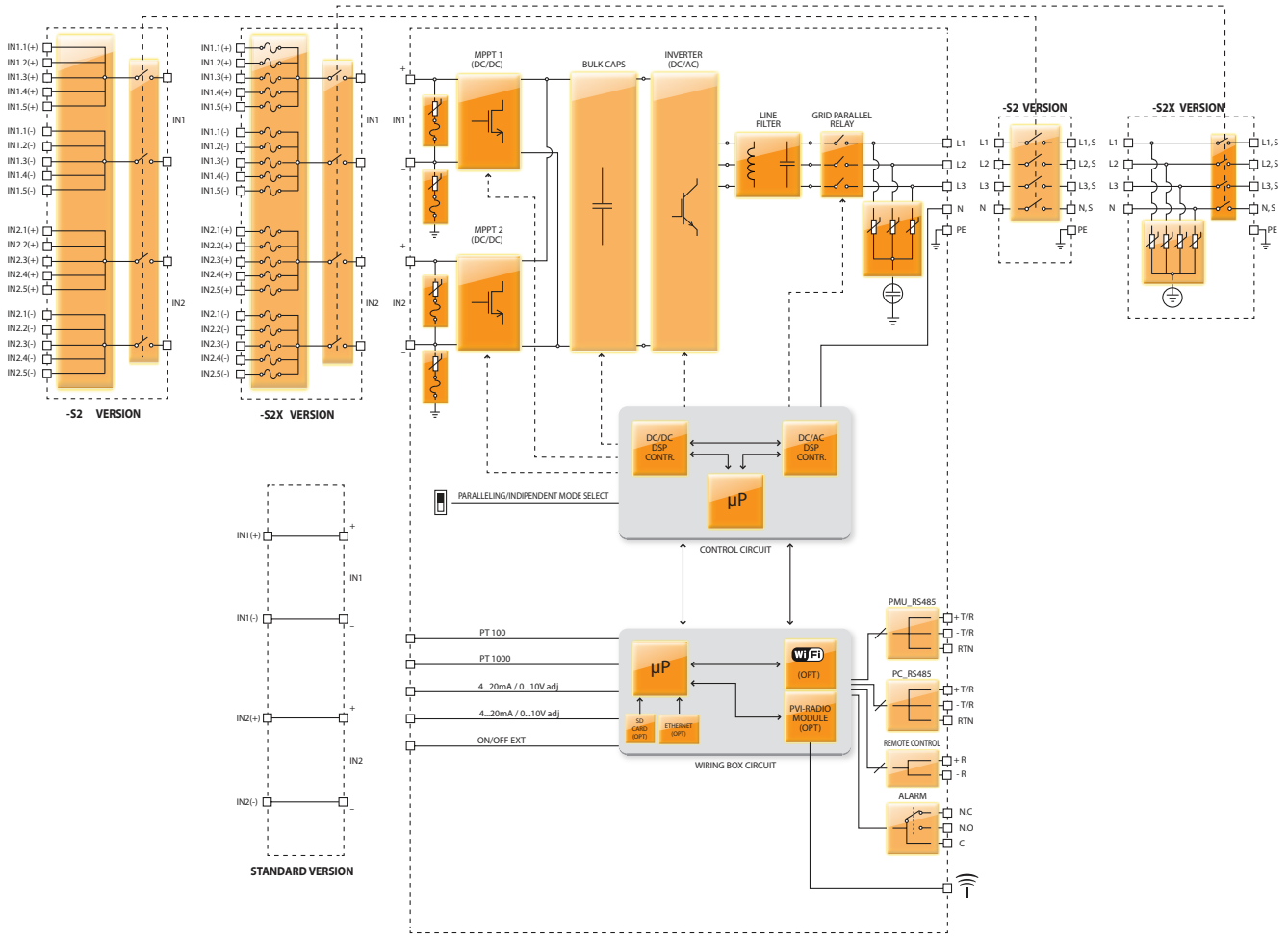


AURORA TRIO

## Features

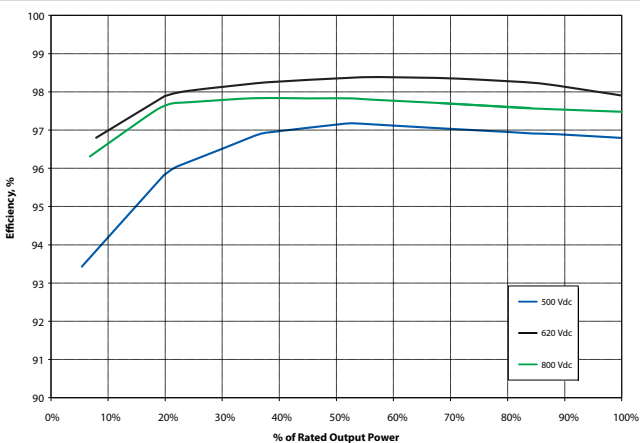
- 'Electrolyte-free' power converter to further increase the life expectancy and long term reliability
- Quiet Rail
- True three-phase bridge topology for DC/AC output converter
- Each inverter is set on specific grid codes which can be selected in the field
- Dual input sections with independent MPP tracking, allows optimal energy harvesting from two sub-arrays oriented in different directions
- Wide input range
- Detachable wiring box to allow an easy installation
- Integrated string combiner with different options of configuration which include DC and AC disconnect switch in compliance with international Standards (-S2 and -S2X version)
- High speed and precise MPPT algorithm for real time power tracking and improved energy harvesting
- Flat efficiency curves ensure high efficiency at all output levels ensuring consistent and stable performance across the entire input voltage and output power range
- Outdoor enclosure for unrestricted use under any environmental conditions

## BLOCK DIAGRAM OF TRIO-27.6-TL-OUT

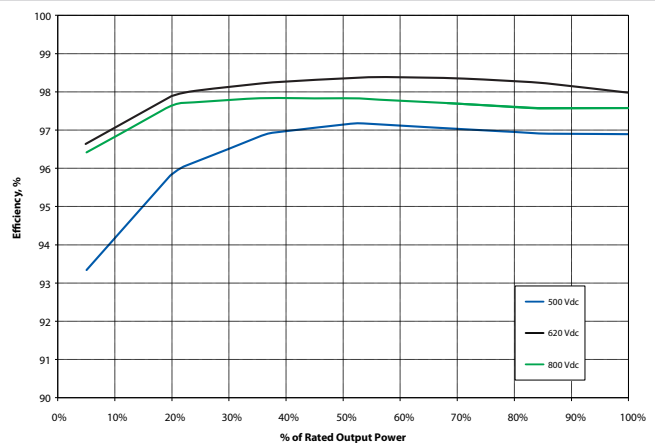


## Block Diagram and Efficiency Curves

TRIO-20.0-TL-OUT



TRIO-27.6-TL-OUT



PARAMETER	TRIO-20.0-TL-OUTD	TRIO-27.6-TL-OUTD
<b>Input Side</b>		
Start-up Input Voltage ( $V_{start}$ )	360 V (adj. 250...500 V)	360 V (adj. 250...500 V)
Operating Input Range ( $V_{dcmin} \dots V_{dcmax}$ )	0.7 x $V_{start} \dots 950$ V	0.7 x $V_{start} \dots 950$ V
MPPT Input Range ( $V_{MPPT min, f} \dots V_{MPPT max, f}$ ) at Full Power	410...800 V	500...800 V
Maximum Input Power for Each MPPT	12000 W	16000 W
Input Voltage Range for Full Power Operation with Parallel Configuration of MPPT	410...800 V	500...800 V
Input Voltage Range for Full Power Operation with Independent Configuration of MPPT	480...800 V (@12000 W) / 340...800 (@8500 W)	500...800 V (@16000 W) / 385...800 (@12200 W)
Absolute Maximum Input Voltage ( $V_{max, abs}$ )	1000 V	1000 V
Number of Independent MPPT	2	2
Maximum Input Current ( $I_{dcmax}$ ) for Each MPPT	25.0 A	32.0 A
Number of DC Inputs Pairs	4 for each MPPT	5 for each MPPT
DC Connection Type	Tool free connector or MC4	Tool free connector or MC4
<b>Input Protection</b>		
Reverse Polarity Protection	Yes	Yes
Input Short Circuit Current	30.0 A	40.0 A
Input Over Voltage Protection - Varistor	2 for each MPPT	2 for each MPPT
Input Over Voltage Protection - DIN Rail Surge Arrester (-S2X Version)	1 (Class II) for each MPPT	1 (Class II) for each MPPT
Photovoltaic Array Isolation Control	According to local standard	According to local standard
DC Switch (-S2 Version)	40 A / 1000 V	40 A / 1000 V
Fuse Size (-S2X Version)	10 A / 1000 V	10 A / 1000 V
<b>Output Side</b>		
AC Grid Connection	Three phase	Three phase
Rated Power ( $P_{ac,r}$ )	20000 W	27600 W
Rated Grid Voltage ( $V_{ac,r}$ )	400 Vac / N / PE	400 Vac / N / PE
AC Voltage Range ( $V_{acmin} \dots V_{acmax}$ )	320...480 Vac <sup>1</sup>	320...480 Vac <sup>1</sup>
Maximum Output Current ( $I_{ac,max}$ )	33.0 A	45.0 A
Rated Frequency ( $f_r$ )	50 Hz	50 Hz
Frequency Range ( $f_{min} \dots f_{max}$ )	47...53 Hz <sup>2</sup>	47...53 Hz <sup>2</sup>
Nominal Power Factor ( $\cos\phi_{ac,r}$ )	> 0.995 (adj. $\pm 0.9$ )	> 0.995 (adj. $\pm 0.9$ )
Total Harmonic Distortion	< 3%	< 3%
AC Connection Type	Cage clamp	Cage clamp
<b>Output Protection</b>		
Anti-islanding Protection	According to local standard	According to local standard
Maximum AC Overcurrent Protection	34.0 A	46.0 A
Output Overvoltage Protection - Varistor	4	4
Output Over Voltage Protection - DIN Rail Surge Arrester (-S2X Version)	2 (Class II)	2 (Class II)
<b>Operating Performance</b>		
Maximum Efficiency ( $\eta_{max}$ )	98.3%	98.3%
Weighted Efficiency (EURO/CEC)	98.0% / 98.1%	98.0% / 98.1%
Feed In Power Threshold	40 W	40 W
Stand-by Consumption	< 8W	< 8W
<b>Communication</b>		
Wired Local Monitoring	1 x RS485 (inc.)	PVI-USB-RS485_232 (opt.), PVI-DESKTOP (opt.)
Remote Monitoring		PVI-AEC-EVO (opt.), AURORA-UNIVERSAL (opt.)
Wireless Local Monitoring		PVI-DESKTOP (opt.) with PVI-RADIOMODULE (opt.)
User Interface	Graphic display	Graphic display
<b>Environmental</b>		
Ambient Temperature Range	-25...+60°C / -13...140°F with derating above 45°C/113°F	-25...+60°C / -13...140°F with derating above 45°C/113°F
Relative Humidity	0...100% condensing	0...100% condensing
Noise Emission	< 50 db(A) @ 1 m	< 50 db(A) @ 1 m
Maximum Operating Altitude without Derating	2000 m / 6560 ft	2000 m / 6560 ft
<b>Physical</b>		
Environmental Protection Rating	IP 65	IP 65
Cooling	Natural	Natural
Dimension (H x W x D)	1060mm x 751mm x 291mm / 41.7" x 29.6" x 11.4"	1060mm x 751mm x 291mm / 41.7" x 29.6" x 11.4"
Weight	< 70.0 kg / 154.3 lb	< 75.0 kg / 165.4 lb
Mounting System	Wall bracket	Wall bracket
<b>Safety</b>		
Isolation Level	Transformerless	Transformerless
Marking	CE	CE
Safety and EMC Standard	EN 50178, AS/NZS3100, AS/NZS 60950, EN61000-6-1, EN61000-6-3, EN61000-3-11, EN61000-3-12	EN 50178, AS/NZS3100, AS/NZS 60950, EN61000-6-1, EN61000-6-3, EN61000-3-11, EN61000-3-12
Grid Standard	Enel Guideline, VDE 0126-1-1, G59, EN 50438, RD1663, AS 4777	Enel Guideline, VDE 0126-1-1, G59, EN 50438, RD1663, AS 4777
<b>Available Products Variants</b>		
Standard	TRIO-20.0-TL-OUTD	TRIO-27.6-TL-OUTD
With DC Switch	TRIO-20.0-TL-OUTD-S2	TRIO-27.6-TL-OUTD-S2
With DC Switch and Fuse	TRIO-20.0-TL-OUTD-S2X	TRIO-27.6-TL-OUTD-S2X

<sup>1</sup> The AC Voltage Range may vary depending on specific country grid standard

<sup>2</sup> The Frequency Range may vary depending on specific country grid standard

# www.power-one.com

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