

TRIO-20.0-TL-OUTD TRIO-27.6-TL-OUTD

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 98.2%. The very wide input voltage range makes the inverter suitable to installations with reduced string size.

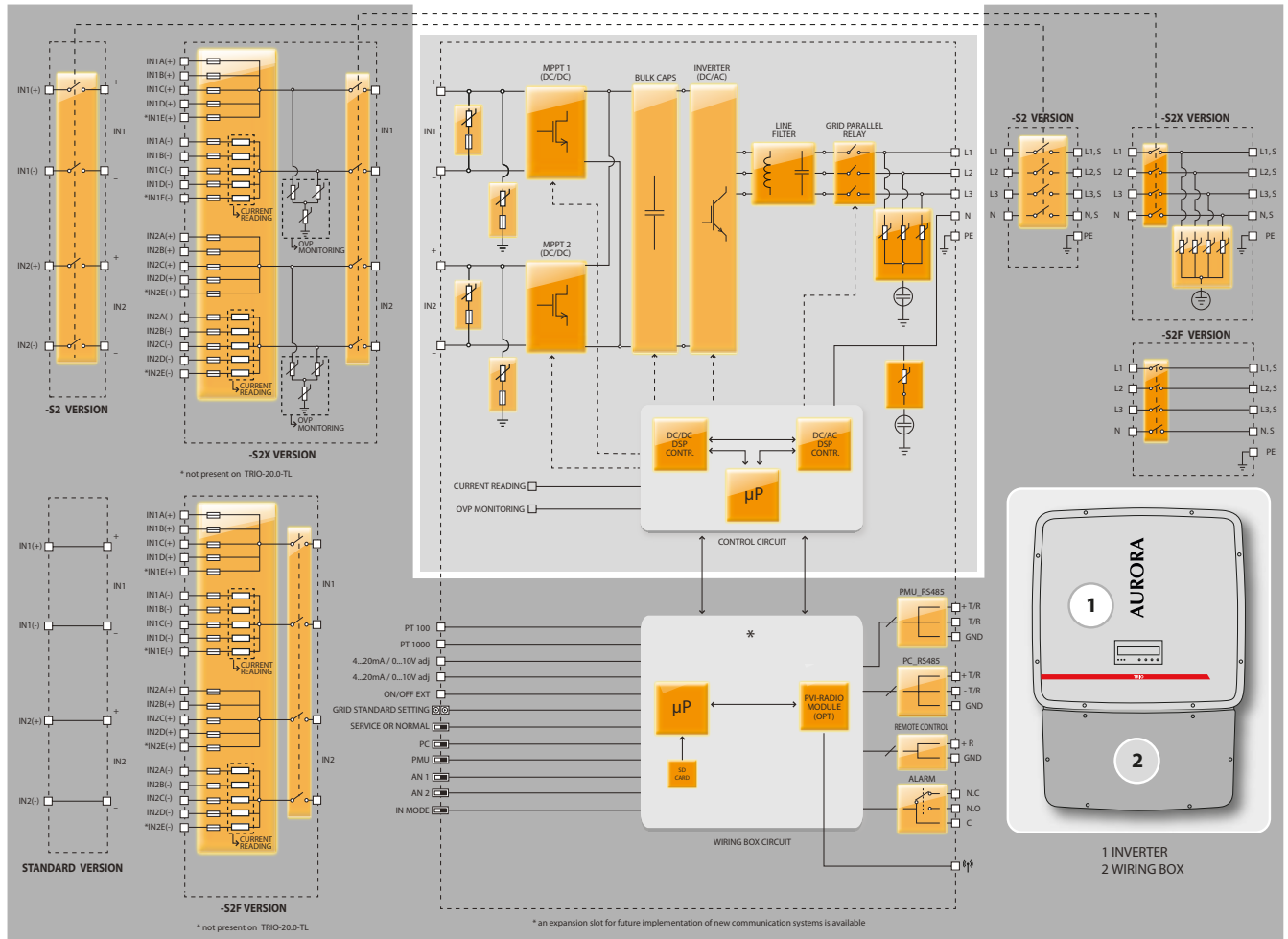
The new look inverter has new features including a special built-in heat sink compartment and front panel display system. The unit is free of electrolytic capacitors, leading to a longer product lifetime.



Features

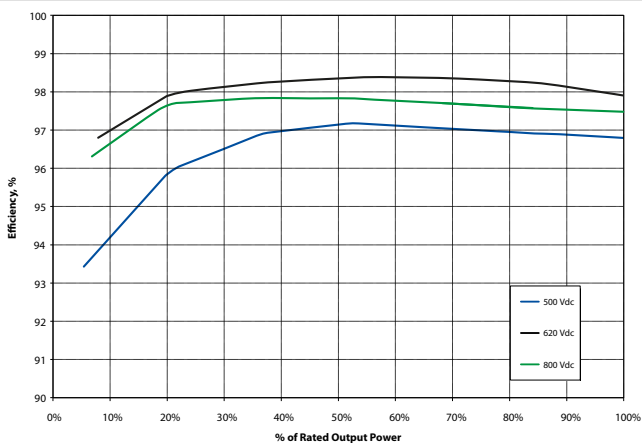
- 'Electrolyte-free' power converter to further increase the life expectancy and long term reliability
- Quiet Rail
- True three-phase bridge topology for DC/AC output converter
- Each inverter is set on specific grid codes which can be selected in the field
- Dual input sections with independent MPP 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, -S2F and -S2X versions)
- 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
- Capability to select via display the Active Power reduction and the Reactive Power regulation (fixed $\cos(\phi)$), standard $\cos(\phi)=f(P)$ curve, Fixed Q (Q/Pn))
- Capability to connect external sensors for monitoring environmental conditions
- Availability of auxiliary DC output voltage (24V, 300mA)

BLOCK DIAGRAM OF TRIO-27.6-TL- OUTD

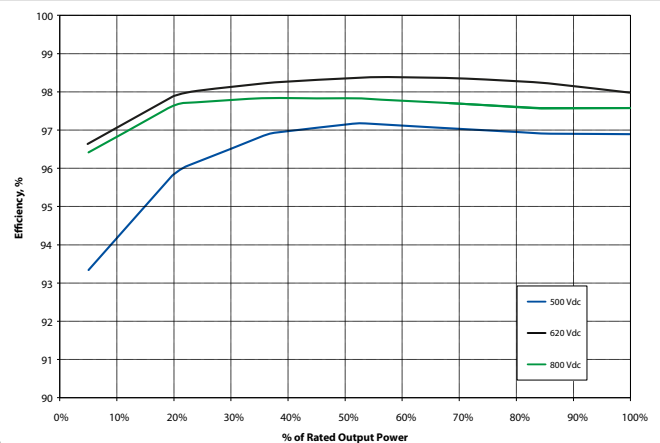


Block Diagram and Efficiency Curves

TRIO-20.0-TL-OUTD



TRIO-27.6-TL-OUTD



PARAMETER	TRIO-20.0-TL-OUTD	TRIO-27.6-TL-OUTD
Input Side		
Absolute Maximum DC Input Voltage (V _{max,abs})	1000 V	
Start-up DC Input Voltage (V _{start})	360 V (adj. 250...500 V)	
Operating DC Input Voltage Range (V _{dcmín...V_{dcmax}})	0.7 x V _{start} ...950 V	
Rated DC Input Power (P _{dcr})	20750 W	28600 W
Number of Independent MPPT	2	
Maximum DC Input Power for each MPPT (P _{MPPTmax})	12000 W	16000 W
DC Input Voltage Range with Parallel Configuration of MPPT at P _{acr}	440...800 V	500...800 V
DC Power Limitation with Parallel Configuration of MPPT	Linear Derating From MAX to Null [800V≤V _{MPPT} ≤950V]	
DC Power Limitation for each MPPT with Independent Configuration of MPPT at P _{acr} , max unbalance example	12000 W [480V≤V _{MPPT} ≤800V] the other channel: P _{dcr} -12000W [350V≤V _{MPPT} ≤800V]	16000 W [500V≤V _{MPPT} ≤800V] the other channel: P _{dcr} -16000W [400V≤V _{MPPT} ≤800V]
Maximum DC Input Current (I _{dcmáx}) / for each MPPT (I _{MPPTmax})	50.0 A / 25.0 A	64.0 A / 32.0 A
Maximum Input Short Circuit Current for each MPPT	30.0 A	40.0 A
Number of DC Inputs Pairs for each MPPT	1 (4 in -S2X and -S2F Versions)	1 (5 in -S2X and -S2F Versions)
DC Connection Type	Tool Free PV Connector WM / MC4 (Screw Terminal Block on Standard and -S2 versions)	
Input Protection		
Reverse Polarity protection	Inverter protection only, from limited current source, for standard and -S2 versions, and for fused versions when max 2 strings are connected	
Input Over Voltage Protection for each MPPT - Varistor	2	
Input Over Voltage Protection for each MPPT - Plug In Modular Surge Arrester (-S2X Version)	3 (Class II)	
Photovoltaic Array Isolation Control	According to local standard	
DC Switch Rating for each MPPT (Version with DC Switch)	40 A / 1000 V	
Fuse Rating (Versions with fuses)	15 A / 1000 V ⁽⁵⁾	
Output Side		
AC Grid Connection Type	Three phase 3W or 4W+PE	
Rated AC Power (P _{acr} @cosφ=1)	20000 W	27600 W
Maximum AC Output Power (P _{acmax} @cosφ=1)	22000 W ⁽³⁾	30000 W ⁽⁴⁾
Maximum Apparent Power (S _{max})	22200 VA	30000 VA
Rated AC Grid Voltage (V _{acr})	400 V	
AC Voltage Range	320...480 V ⁽¹⁾	
Maximum AC Output Current (I _{ac,max})	33.0 A	45.0 A
Contributory fault current	35.0 A	46.0 A
Rated Output Frequency (f _r)	50 Hz / 60 Hz	
Output Frequency Range (f _{min} ...f _{max})	47...53 Hz / 57...63 Hz ⁽²⁾	
Nominal Power Factor and adjustable range	> 0.995, adj. ± 0.9 with P _{acr} =20.0 kW, ± 0.8 with max 22.2 kVA	> 0.995, adj. ± 0.9 with P _{acr} =27.6 kW, ± 0.8 with max 30 kVA
Total Current Harmonic Distortion	< 3%	
AC Connection Type	Screw terminal block	
Output Protection		
Anti-Islanding Protection	According to local standard	
Maximum AC Overcurrent Protection	34.0 A	46.0 A
Output Overvoltage Protection - Varistor	4	
Output Over Voltage Protection - Plug In Modular Surge Arrester (-S2X Version)	4 (Class II)	
Operating Performance		
Maximum Efficiency (η _{max})	98.2%	
Weighted Efficiency (EURO/CEC)	98.0% / 98.0%	
Feed In Power Threshold	40 W	
Stand-by Consumption	< 8W	
Communication		
Wired Local Monitoring	PVI-USB-RS232_485 (opt.), PVI-DESKTOP (opt.)	
Remote Monitoring	PVI-AEC-EVO (opt.), AURORA LOGGER (opt.)	
Wireless Local Monitoring	PVI-DESKTOP (opt.) with PVI-RADIOMODULE (opt.)	
User Interface	Graphic display	
Environmental		
Ambient Temperature Range	-25...+60°C /-13...140°F with derating above 45°C/113°F	
Relative Humidity	0...100% condensing	
Noise Emission	< 50 dB(A) @ 1 m	
Maximum Operating Altitude without Derating	2000 m / 6560 ft	
Physical		
Environmental Protection Rating	IP 65	
Cooling	Natural	
Dimension (H x W x D)	1061 mm x 702 mm x 292 mm/ 41.7" x 27.6" x 11.5"	
Weight	< 70.0 kg / 154.3 lb (Standard version)	< 75.0 kg / 165.4 lb (Standard version)
Mounting System	Wall bracket	
Safety		
Isolation Level	Transformerless	
Marking	CE	
Safety and EMC Standard	EN 50178, EN62109-1, EN62109-2, AS/NZS3100, AS/NZS 60950, EN61000-6-2, EN61000-6-3, EN61000-3-11, EN61000-3-12	
Grid Standard	CEI 0-21, CEI 0-16, VDE 0126-1-1, VDE-AR-N 4105, G59/2, C10/11, EN 50438 (not for all national appendices), RD1699, RD 1565, AS 4777, BDEW, ABNT NBR 16149, NRS-097-2-1	
Available Products Variants		
Standard	TRIO-20.0-TL-OUTD-400	TRIO-27.6-TL-OUTD-400
With DC+AC Switch	TRIO-20.0-TL-OUTD-S2-400	TRIO-27.6-TL-OUTD-S2-400
With DC+AC Switch and Fuse	TRIO-20.0-TL-OUTD-S2F-400	TRIO-27.6-TL-OUTD-S2F-400
With DC+AC Switch, Fuse and Surge Arrester	TRIO-20.0-TL-OUTD-S2X-400	TRIO-27.6-TL-OUTD-S2X-400

1. The AC voltage range may vary depending on specific country grid standard

2. The Frequency range may vary depending on specific country grid standard

3. Limited to 20000 W for Germany

4. Limited to 27600 W for Germany

5. Since April 2013

Remark. Features not specifically listed in the present data sheet are not included in the product



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