power-one®
Renewable Energy Solutions

AURORA®

TRIO-20.0-TL
TRIO-27.6-TL

GENERAL SPECIFICATIONS
OUTDOOR MODELS

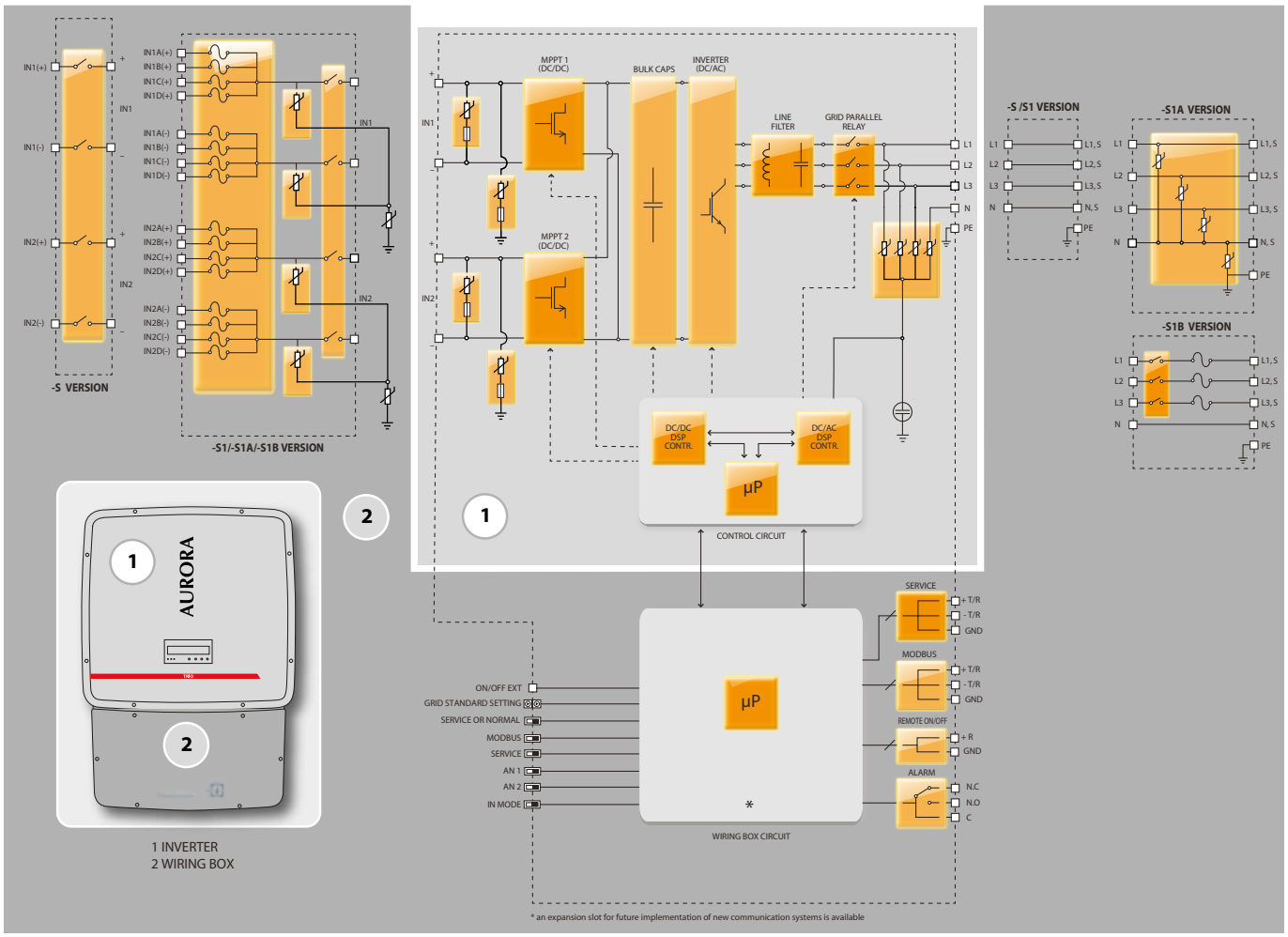
Introducing the latest innovation from the world-wide leader in three-phase string inverters, the TRIO-20.0-TL and TRIO-27.6-TL. The TRIO is a powerful, flexible and dependable three phase string inverter with innovative features to lower system LCOE and improve ROI on commercial solar installations.

The first 1000Vdc string inverter certified to UL1741, a commercial PV system using a TRIO based modular architecture can reduce BOS costs by as much as 40%. With two independent MPP trackers and peak efficiency ratings of 98.3%, these inverters offer superior energy harvest. Employing fan-less convection cooling and no electrolytic capacitors, TRIO is designed for long service life. Equipped with integrated Modbus and utility interactive controls including adjustable power factor and curtailment, these inverters provide the monitoring and controls features required in today's commercial solar installations.

Features

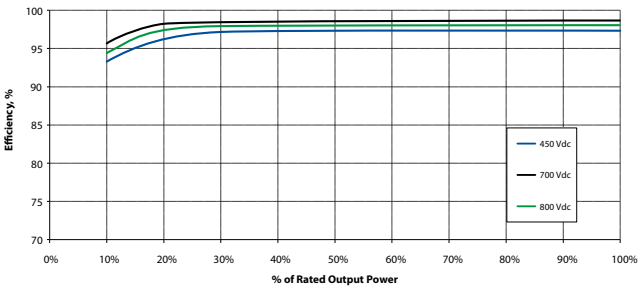
- Maximize energy production with 97.5% CEC efficiency and industry leading MPPT algorithm
- Fully utilize available roof space and maximize harvest with dual independent MPP trackers
- Wall mountable design and 1000Vdc input voltage lower installation costs
- Wide DC input voltage and operating temperature range enable greater PV array design flexibility
- Improve system uptime and eliminate single point of failure with a modular design using TRIO
- Utility interactive control features and Modbus protocol integrates with monitoring and control systems
- Design uses natural convection cooling and no electrolytic capacitors for segment leading reliability
- Standard 10 year warranty

BLOCK DIAGRAM OF TRIO-20.0/27.6-TL-OUTD-US

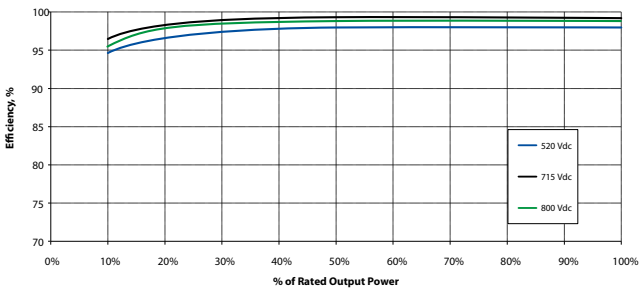


Block Diagram and Efficiency Curves

TRIO-20.0-TL-OUTD-US



TRIO-27.6-TL-OUTD-US



TECHNICAL DATA	VALUES	TRIO-20.0-TL-OUTD-US	TRIO-27.6-TL-OUTD-US
Nominal Output Power	W	20000	27600
Maximum Output Power	W	22000*	30000*
Rated Grid AC Voltage	V	480	480
Input Side (DC)			
Number of Independent MPPT Channels		2	2
Maximum Usable Power for Each MPPT Channel	W	12000	16000
Absolute Maximum Voltage (Vmax)	V	1000	1000
Start- Up Voltage (Vstart)	V	360 (adj. 250-500)	360 (adj. 250-500)
Full Power MPPT Voltage Range	V	450-800	520-800
Operating MPPT Voltage Range	V	200-950	200-950
Maximum Usable Current per MPPT Channel	A	25.0	30.9
Maximum Short Circuit Current Limit per MPPT Channel	A	30.0	36.0
Number of Wire Landing Terminals per MPPT Channel		-S version: 2; -S1, -S1A, -S1B version: 8	-S version: 2; -S1, -S1A, -S1B version: 4
Array Wiring Termination Type		-S version: Terminal Block, Screw Terminal, Cop-per Only 12AWG-2AWG	-S version: Terminal Block, Screw Terminal, Cop-per Only 12AWG-2AWG
Output Side (AC)			
Grid Connection Type		3Ø/3W or 4W+Ground	3Ø/3W or 4W+Ground
Default Voltage Range	V	422-528	422-528
Nominal Grid Frequency	Hz	60	60
Adjustable Grid Frequency Range	Hz	57-63	57-63
Maximum Current (Iac max)/phase	A_{RMS}	27.0	36.0
Power Factor		> 0.995 (adj. ± 0.8, or ± 0.9 for active power >20kW)	> 0.995 (adj. ± 0.8, or ± 0.9 for active power >27.6kW)
Total Harmonic Distortion At Rated Power	%	<3	<3
Grid Wiring Termination Type		Pass-through Terminal. Tension clamp. Copper 8AWG-4AWG	Pass-through Terminal. Tension clamp. Copper 6AWG-4AWG
Protection Devices			
Input			
Reverse Polarity Protection		Yes. Passive inverter protection only. **	
Supplementary Over-Voltage Protection Type For Each MPPT		-S1, -S1A, -S1B version: Plug-in Class II Modular Surge Arrestor	
PV Array Ground Fault Detection		Meets UL1741/NEC 690.5 requirements	
Output			
Anti-Islanding Protection		Meets UL1741/IEEE1547 requirements	Meets UL1741/IEEE1547 requirements
Supplementary Over-Voltage Protection Type		-S1A version: Plug-in Class II Modular Surge Arrestor	
Efficiency			
Maximum Efficiency	%	98.2	98.2
CEC Efficiency	%	97.5	97.5
Operating Parameters			
Feed-In Power Threshold	W_{RMS}	65	70
Communication			
User-Interface (Display)		5.5" x 1.25" Graphic Display	
Standard Integrated Monitoring Cards		(1) RS485 Connection, Can be configured for Aurora Protocol or Modbus RTU. Support for optional monitoring expansion cards.	
Optional Remote Monitoring Logger		AURORA Logger Commercial (optional)	
Environmental			
Ambient Air Operating Temperature Range	F(°C)	-22 to +140 (-30 to +60) Derating above +113 (45)	
Ambient Air Storage Temperature Range	F(°C)	-40 to +185 (-40 to +85)	-40 to +185 (-40 to +85)
Relative Humidity	%RH	0-100 condensing	0-100 condensing
Acoustic Noise Emission Level	db (A) @1m	<50	<50
Maximum Operating Altitude without Derating	ft(m)	6560 (2000)	6560 (2000)
Mechanical Specifications			
Enclosure rating		NEMA 4X	NEMA 4X
Cooling		Natural Convection	Natural Convection
Dimensions (H x W x D)	in/mm	41.7 x 27.6 x 11.5/ 1061 x 702 x 292	41.7 x 27.6 x 11.5/ 1061 x 702 x 292
Unit Weight	lbs(kg)	157 (71)	168 (76)
Conduit Connections		Bottom: (2) 1" plugged openings with 1, 1-1/2" EKO, (2) ½" plugged openings, (1) 1" plugged opening	
Mounting System		Wall Bracket	Wall Bracket
Optional AC Fused Disconnect Current Rating (Per Contact)	A	35	45
Safety			
Isolation Level		Transformerless Floating Array	Transformerless Floating Array
Safety and EMC Standard		UL 1741, IEEE 1547, IEEE1547.1, CSA C22.2 107.1-01-2001, FCC Part 15 Sub-part B Class B Limits	
Safety Approval		cCSAus	cCSAus
Warranty			
Standard Warranty	Years	10	10
Extended Warranty	Years	15 & 20	15 & 20
Available Models			
Standard with DC Switch		TRIO-20.0-TL-OUTD-S-US-480	TRIO-27.6-TL-OUTD-S-US-480
With DC Switch, DC Fuses and DC Surge Protection		TRIO-20.0-TL-OUTD-S1-US-480	TRIO-27.6-TL-OUTD-S1-US-480
With DC Switch, DC Fuses, DC Surge Protection and AC Surge Protection		TRIO-20.0-TL-OUTD-S1A-US-480	TRIO-27.6-TL-OUTD-S1A-US-480
With DC Switch, DC Fuses, DC Surge Protection and AC Fused Disconnect		TRIO-20.0-TL-OUTD-S1B-US-480	TRIO-27.6-TL-OUTD-S1B-US-480

*Capability enabled within maximum input current, maximum input power, maximum output current and ambient operating temperature limits.

** In -S1, -S1A and -S1B models, the string polarity must be verified before connection. Please refer to installation manual for the correct installation procedure.

www.power-one.com

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