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Solar inverter
TRIO-5.8/7.5/8.5-TL-OUTD

The all-in-one residential three-phase TRIO-5.8, 7.5 and 8.5 kW inverters deliver performance, ease of use and installation, monitoring and control. With their 98% peak efficiency and wide input voltage range, the residential TRIO inverter means flexible installations and powerful output.

From 5.8 to 8.5 kW

Commercial grade engineering at residential scale

The topology of the larger, commercial TRIO inverters has been redesigned to ensure that the TRIO-5.8/7.5/8.5 models also enjoy high conversion efficiency across a wide range of input voltages. Optional integrated dataloggers and smart grid functionality, remote firmware updating and elegantly simple sliding front covers make these all-in-one devices easy to install and maintain. In short, they are commercial grade engineering at residential scale.

Inverters packed with powerful features

The double maximum power point tracker (MPPT) gives maximum installation flexibility for an optimal energy production (TRIO-7.5/8.5 models). This line of inverters can integrate power control, monitoring functionalities and environmental sensor inputs, without requiring external components.

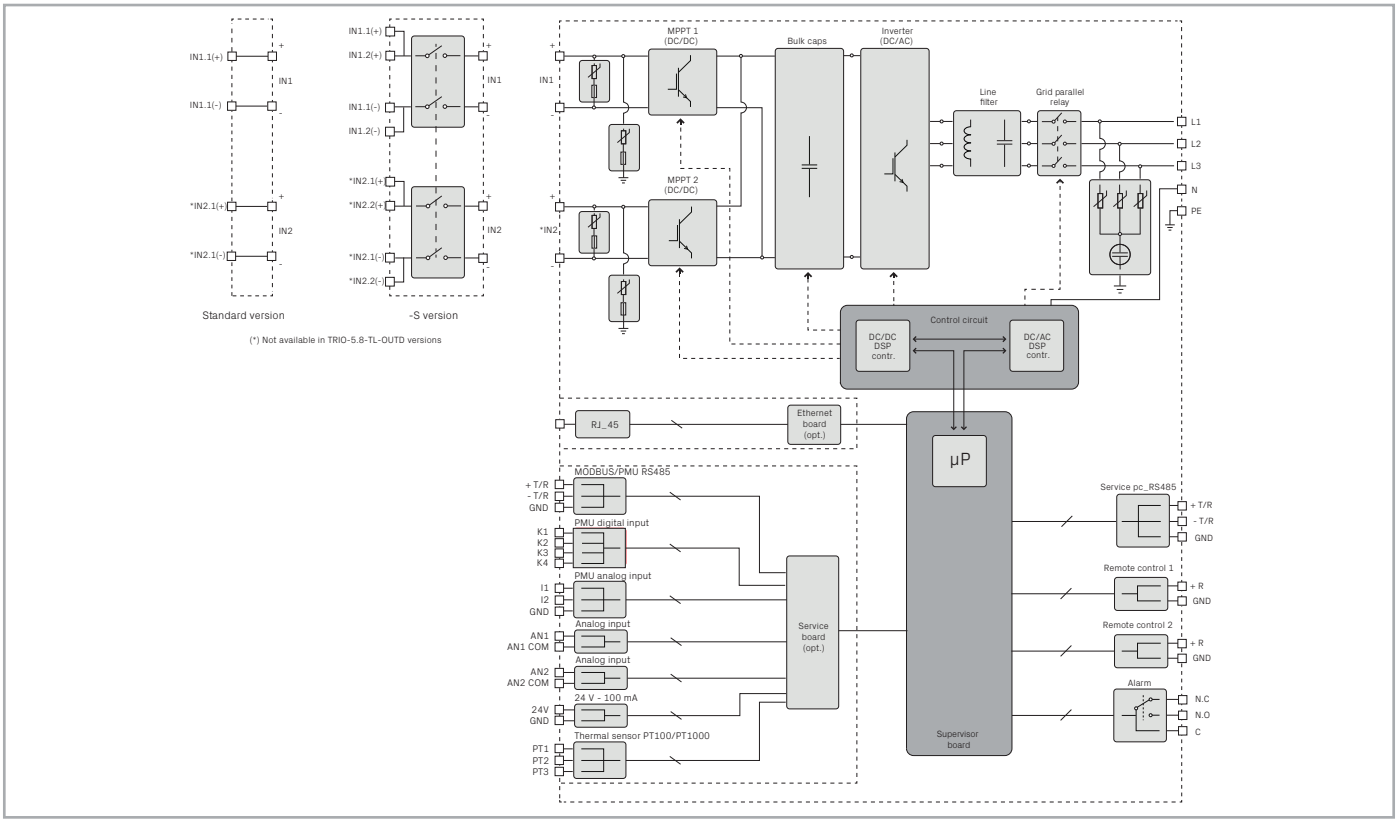
TCP/IP connectivity can be also added by plugging in an optional expansion board (Ethernet or Wi-Fi) for providing data logging functionality for monitoring the main parameters of the plant as well as advanced O&M operations both locally (with the integrated webserver) and remotely (with the AV Plant Portfolio Manager portal), via a LAN connection.

The outer cover with its natural cooling mechanism qualifies at IP65 environmental protection level for external use. It provides maximum reliability and ease of installation, with a sliding front panel giving access to the connection and configuration area without requiring the complete removal of the cover.

Highlights

- Three-phase bridge topology for DC/ AC output converter
- Transformerless topology
- Two independent MPPT channels for TRIO-7.5/8.5 allow optimal energy harvesting from two sub-arrays oriented in different directions (one MPPT channel for TRIO-5.8)
- Flat efficiency curves ensure high efficiency at all output levels enabling consistent and stable performance across the entire input voltage and output power range
- Wide input voltage range
- Remote inverter upgrade
- Reactive power management
- DC switch version available (-S)
- Natural convection cooling for maximum reliability
- Outdoor enclosure for unrestricted use under any environmental conditions (IP65)
- Sliding cover for the easiest installation and maintenance
- Data logger and smart grid functionalities integrated on expansion cards:
  - PMU expansion card option, with external sensor inputs for monitoring environmental conditions and additional RS-485 for Modbus protocol
  - Ethernet or VSN300 Wifi Logger card (optional) with integrated web server
  - Availability of auxiliary DC output voltage (24 V, 100 mA)

TRIO-5.8/7.5/8.5-TL-OUTD string inverter block diagram



Technical data and types

Type code	TRIO-5.8-TL-OUTD	TRIO-7.5-TL-OUTD	TRIO-8.5-TL-OUTD
Input side			
Absolute maximum DC input voltage ($V_{max,abs}$)		1000 V	
Start-up DC input voltage (V_{start})		350 V (adj. 200...500 V)	
Operating DC input voltage range (V_{dcmin}...V_{dcmax})		0.7 x V_{start}...950 V (min 200 V)	
Rated DC input voltage (V_{dcr})		620 V	
Rated DC input power (P_{dcr})	5950 W	7650 W	8700 W
Number of independent MPPT	1	2	2
Maximum DC input power for each MPPT ($P_{MPPTmax}$)	6050 W Linear derating from max to null [800 V≤V_{MPPT}≤950 V]	4800 W	4800 W
MPPT input DC voltage range ($V_{MPPTmin}$ ... $V_{MPPTmax}$) at P_{acr}	320...800 V	-	-
DC input voltage range with parallel configuration of MPPT at P_{acr}	-	320...800 V	320...800 V
DC power limitation with parallel configuration of MPPT	-	Linear derating from max to null [800 V≤V_{MPPT}≤950 V]	
DC power limitation for each MPPT with independent configuration of MPPT at P_{acr}, max unbalance example	-	4800 W [320 V≤V_{MPPT}≤800 V] the other channel: P_{dcr}-4800 W [215 V≤V_{MPPT}≤800 V]	4800 W [320 V≤V_{MPPT}≤800 V] the other channel: P_{dcr}-4800 W [290 V≤V_{MPPT}≤800 V]
Maximum DC input current (I_{dcmax}) / for each MPPT ($I_{MPPTmax}$)	18.9 A	30.0 A / 15.0 A	30.0 A / 15.0 A
Maximum input short circuit current for each MPPT	24.0 A	20.0 A	20.0 A
Number of DC input pairs for each MPPT		2 (-S version)	
DC connection type		PV quick fit connector [1] on -S version / Screw terminal block on standard version	
Input protection			
Reverse polarity protection		Yes, from limited current source	
Input over voltage protection for each MPPT - varistor		Yes, 4	
Photovoltaic array isolation control		According to local standard	
DC switch rating for each MPPT (version with DC switch)		16 A /1000 V, 25 A / 800 V	
Output side			
AC grid connection type		Three-phase 3W+PE or 4W+PE	
Rated AC power (P_{acr} @cosφ=1)	5800 W	7500 W	8500 W
Maximum apparent power (S_{max})	5800 VA	7500 VA	8500 VA
Rated AC grid voltage ($V_{ac,r}$)		400 V	
AC voltage range		320...480 V [2]	
Maximum AC output current ($I_{ac,max}$)	10.0 A	12.5 A	14.5 A
Contributory fault current	12.0 A	14.5 A	16.5 A
Rated output frequency (f_r)		50 Hz / 60 Hz	
Output frequency range (f_{min}...f_{max})		47...53 Hz / 57...63 Hz [3]	
Nominal power factor and adjustable range	> 0.995, adj. ± 0.9 with P_{acr} =5.22 kW, ± 0.8 with max 5.8 kVA	> 0.995, adj. ± 0.9 with P_{acr} =6.75 kW, ± 0.8 with max 7.5 kVA	> 0.995, adj. ± 0.9 with P_{acr} =7.65 kW, ± 0.8 with max 8.5 kVA
Total current harmonic distortion		< 2%	
AC connection type		Screw terminal block, cable gland M32	
Output protection			
Anti-islanding protection		According to local standard	
Maximum external AC overcurrent protection	16.0 A	16.0 A	20.0 A
Output overvoltage protection - varistor		4 plus gas arrester	
Operating performance			
Maximum efficiency (η_{max})		98.0%	
Weighted efficiency (EURO/CEC)	97.4% / -	97.5% / -	97.5% / -
Feed in power threshold	32 W	36 W	36 W
Night consumption		< 3 W	
Communication			
Wired local monitoring		Ethernet card with webserver (opt.), PVI-USB-RS232_485 (opt.)	
Remote monitoring		Ethernet card (opt.), VSN300 Wifi Logger Card (opt.), VSN700 Data Logger (opt.)	
Wireless local monitoring		VSN300 Wifi Logger Card (opt.)	
User interface		Graphic display	

Technical data and types

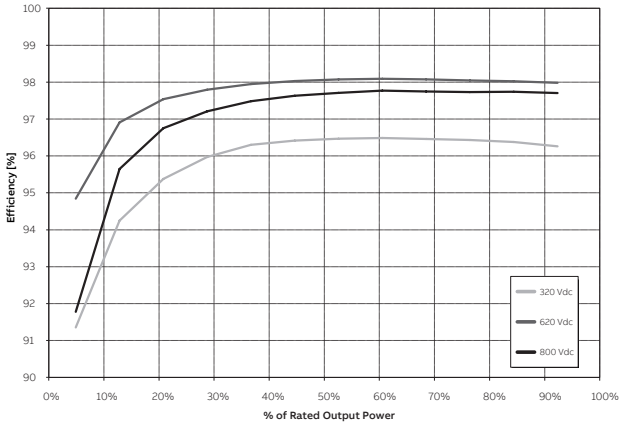
Type code	TRIO-5.8-TL-OUTD	TRIO-7.5-TL-OUTD	TRIO-8.5-TL-OUTD
Environmental			
Ambient temperature range	-25...+60°C /-13...140°F with derating above 50°C/122°F		
Relative humidity	0...100% condensing		
Sound pressure level, typical	50 dBA @ 1 m		
Maximum operating altitude without derating	2000 m / 6560 ft		
Physical			
Environmental protection rating	IP65		
Cooling	Natural		
Dimension (H x W x D)	641mm x 429 mm x 220 mm/ 25.2" x 16.9" x 8.7" (855 mm x 429 mm x 237 mm/ 33.7" x 16.9" x 9.3" with open front cover)		
Weight	25.0 kg / 55.1 lbs	28.0 kg / 61.7 lbs	28.0 kg / 61.7 lbs
Mounting system	Wall bracket		
Safety			
Isolation level	Transformerless		
Marking	CE (50 Hz only), RCM		
Safety and EMC standard	EN 62109-1, EN 62109-2, AS/NZS3100, EN 61000-6-2, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3		
Grid standard (check your sales channel for availability)	CEI 0-21, CEI 0-16, DIN V VDE V 0126-1-1, VDE-AR-N 4105, G83/2, G59/3, RD 1699, RD 413, NRS-097-2-1, AS 4777, IEC 61727, IEC 62116, VFR 2014		
Available products variants			
Standard	TRIO-5.8-TL-OUTD-400	TRIO-7.5-TL-OUTD-400	TRIO-8.5-TL-OUTD-400
With DC switch	TRIO-5.8-TL-OUTD-S-400	TRIO-7.5-TL-OUTD-S-400	TRIO-8.5-TL-OUTD-S-400

1) Please refer to the document "String inverters – Product manual appendix" available at www.fimer.com for information on the quick-fit connector brand and model used in the inverter
2) The AC voltage range may vary depending on specific country grid standard)

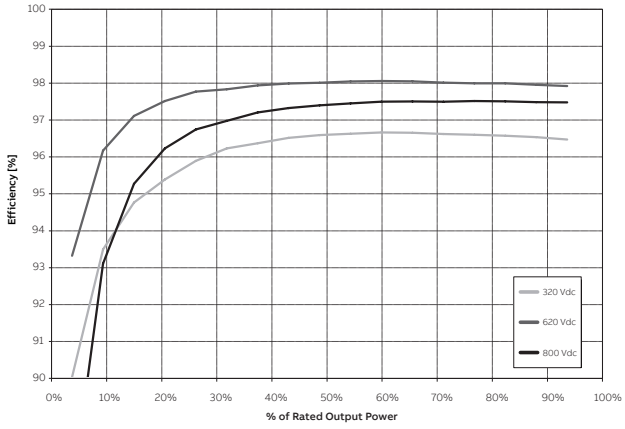
3) The Frequency range may vary depending on specific country grid standard

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

Efficiency curves of TRIO-5.8-TL-OUTD



Efficiency curves of TRIO-8.5-TL-OUTD



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