

# ABB small wind inverters

## TRIO-20.0/27.6-TL-OUTD-W

20 to 27.6 kW



The TRIO-20.0/27.6-TL-W wind turbine inverter is designed with ABB's proven high performance technology. This dual stage transformerless wind inverter offers a unique combination of high efficiency, installer-friendly design and very wide input voltage range ensuring high energy harvesting.

TRIO's power export is controlled by an external signal. The inverter has high speed and precise algorithm for following the external signal variations to maximize the total energy harvested.

### Efficiency at all output levels

The inverter has new features including a special built-in heat sink compartment and front panel display system.

TRIO requires an external control signal. This can be made using the 15/25kW-WIND-INTERFACE.

It is a sealed unit to withstand harsh environmental conditions.

### Highlights

- True three-phase bridge topology for DC/AC output converter
- Wide input voltage range
- Transformerless technology
- Field-selectable grid standard settings

### Additional highlights

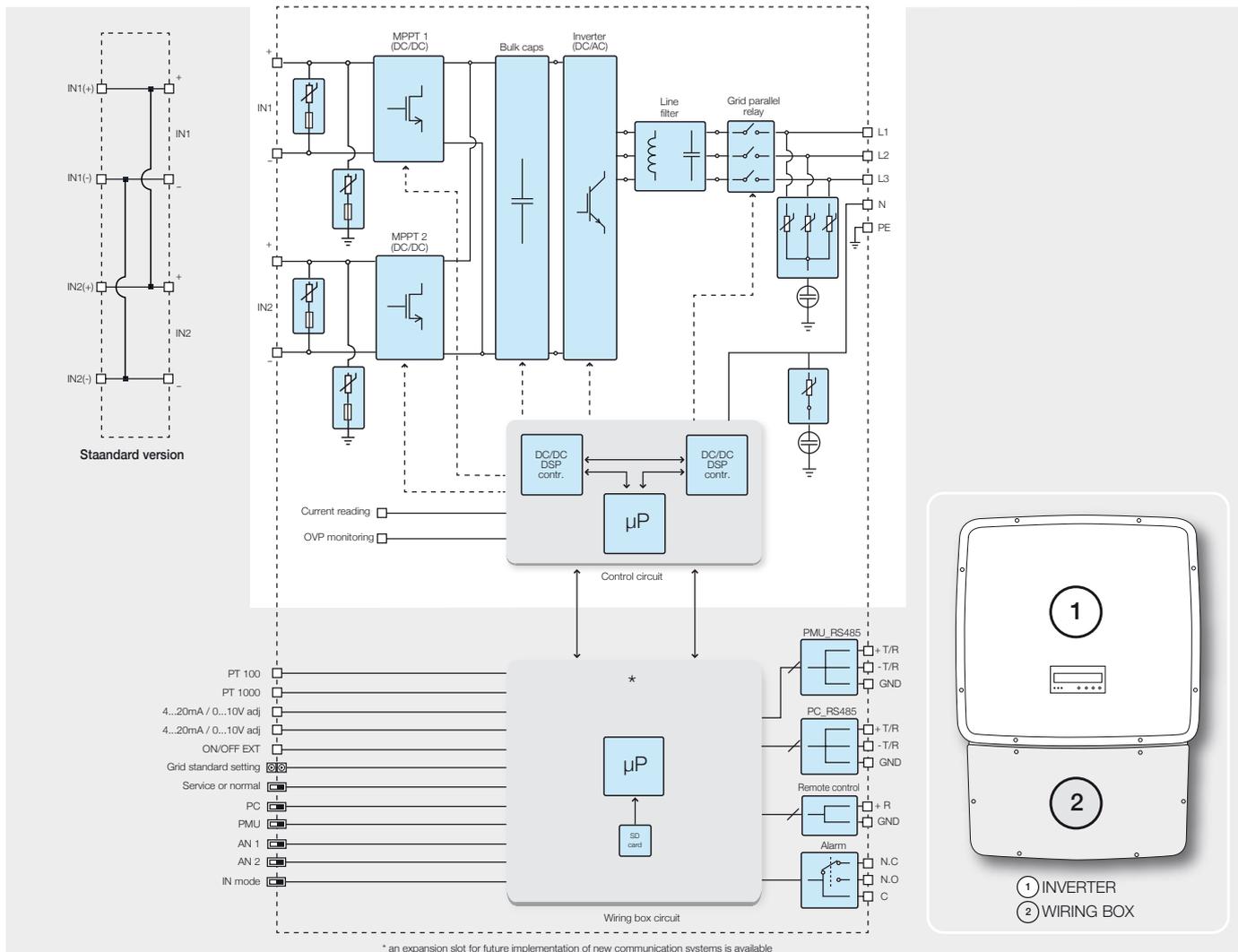
- Flexible data monitoring options to view inverter performance
- Natural convection cooling for maximum reliability
- Compatible with ABB 15/25kW-WIND-INTERFACE



### Technical data and types

Type code	TRIO-20.0-TL-OUTD-W	TRIO-27.6-TL-OUTD-W
<b>Input side</b>		
Maximum absolute DC input voltage ( $V_{max,abs}$ )	1000 V	
Operating DC Input voltage range ( $V_{dcmin}...V_{dcmax}$ )	190...950 V	
DC input voltage range at $P_{acr}$ ( $V_{rp,min}...V_{rp,max}$ )	440...800 V	500...800 V
Rated DC input voltage ( $V_{dcr}$ )	620 V	
Dc power limitation	Linear derating from Max to Null [800V≤Vdc≤950V]	
Maximum DC input current ( $I_{dcmax}$ )	50 A	64 A
Maximum input short circuit current	60 A	80 A
DC connection type	Screw terminal block	
<b>Input protection</b>		
Reverse polarity protection	Yes, from limited current source	
Input over voltage protection - varistor	4	
Generator isolation control	According to local standard	
<b>Output side</b>		
AC grid connection	Three phase 3W or 4W+PE	
Rated AC power ( $P_{acr}@\cos\phi=1$ )	20000 W	27600 W
Maximum AC output power ( $P_{acmax}@\cos\phi=1$ )	22000 W <sup>(3)</sup>	30000 W <sup>(4)</sup>
Maximum apparent power ( $S_{max}$ )	22200 VA	30000 VA
Rated grid AC voltage ( $V_{acr}$ )	400 V	
AC voltage range	320...480 V <sup>(1)</sup>	
Maximum output AC current ( $I_{ac,max}$ )	33.0 A	45.0 A
Contributory fault current	35.0 A	46.0 A
Rated frequency (f)	50 Hz / 60 Hz	
Frequency range ( $f_{min}...f_{max}$ )	47...53 Hz / 57...63 Hz <sup>(2)</sup>	
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 harmonic distortion	< 3%	
AC connection type	Screw terminal block	
<b>Output protection</b>		
Anti-islanding protection	According to local standard	
Maximum AC overcurrent protection	34.0 A	46.0 A
Output over voltage protection - varistor	4	4
<b>Operating performance</b>		
Maximum efficiency ( $\eta_{max}$ )	98,2%	
Stand-by consumption	< 8 W	
Feed in power threshold	40 W	

## Block diagram of TRIO-20.0/27.6-TL-OUTD-W



## Technical data and types

Type code	TRIO-20.0-TL-OUTD-W	TRIO-27.6-TL-OUTD-W
<b>Communication</b>		
Wired local monitoring		PVI-USB-RS232_485 (opt.)
Remote monitoring		VSN300 Wifi Logger Card <sup>®</sup> (opt.), PVI-AEC-EVO (opt.), VSN700 Data Logger (opt.)
Wireless local monitoring		VSN300 WIFI Logger Card <sup>®</sup> (opt.)
User interface		Graphic display
<b>Environmental</b>		
Ambient temperature range		-25...+ 60°C (-13...140°F) with derating above 45°C (113°F)
Noise emission		< 50 dB(A)
Maximum operating altitude without derating		2000 m (6560 ft)
<b>Physical</b>		
Environmental protection rating		IP 65
Cooling		Natural
Dimension (H x W x D)		1061 mm x 702 mm x 292 mm (41.7 in x 27.6 in x 11.5 in)
Weight		< 70 kg (153 lb)
<b>Safety</b>		
Isolation level		Transformerless
Marking		CE (50 Hz only)
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, G59/3, C10/11, EN 50438 (not for all national appendices), RD1699, RD 1565, AS 4777, BDEW, ABNT NBR 16149, NRS-097-2-1, CLC/FprTS 50549, PEA, MEA
<b>Available products variants</b>		
Standard	TRIO-20.0-TL-OUTD-400-W	TRIO-27.6-TL-OUTD-400-W

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

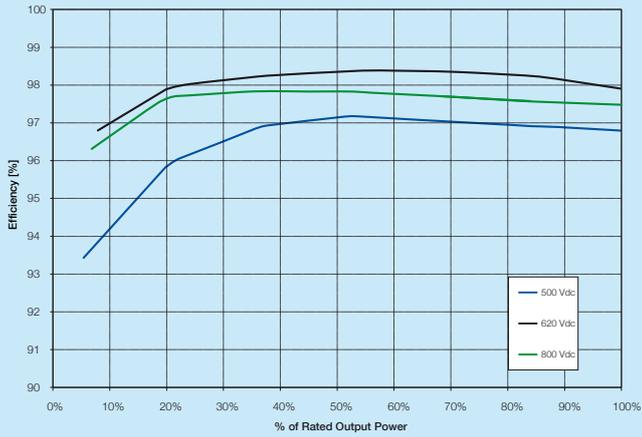
3. Limited to 20000 W for Germany

4. Limited to 27600 W for Germany

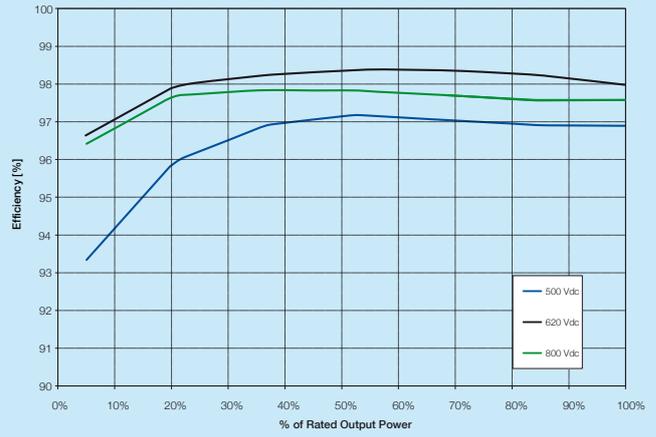
5. Check availability before to order

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

Efficiency curves of TRIO-20.0-TL-OUTD-W



Efficiency curves of TRIO-27.6-TL-OUTD-W



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