

# ABB string inverters

## TRIO-27.6-TL-OUTD-S2X-400/JP

### 27.6 kW



**The three-phase commercial inverter offers more flexibility and control to installers who have large installations with varying aspects or orientations.**

The dual input section containing two, independent Maximum Power Point Tracking (MPPT), allows optimal energy harvesting from two sub-arrays oriented in different directions.

The TRIO features a high speed and precise MPPT algorithm for real power tracking and improved energy harvesting.

**High efficiency at all output levels**

Flat efficiency curves ensure high efficiency at all output levels ensuring consistent and stable performance across the entire input voltage and output power range.

This device has an efficiency rating of up to 98.2%.

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

In addition to its new look, this 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.

**Highlights of the improved design – first time shown at Intersolar 2014**

- True three-phase bridge topology for DC/AC output converter
- Transformerless topology
- Each inverter is set on specific grid codes which can be selected in the field
- Detachable wiring box to allow an easy installation
- Wide input range
- 'Electrolyte-free' power converter to further increase the life expectancy and long term reliability

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## Additional highlights

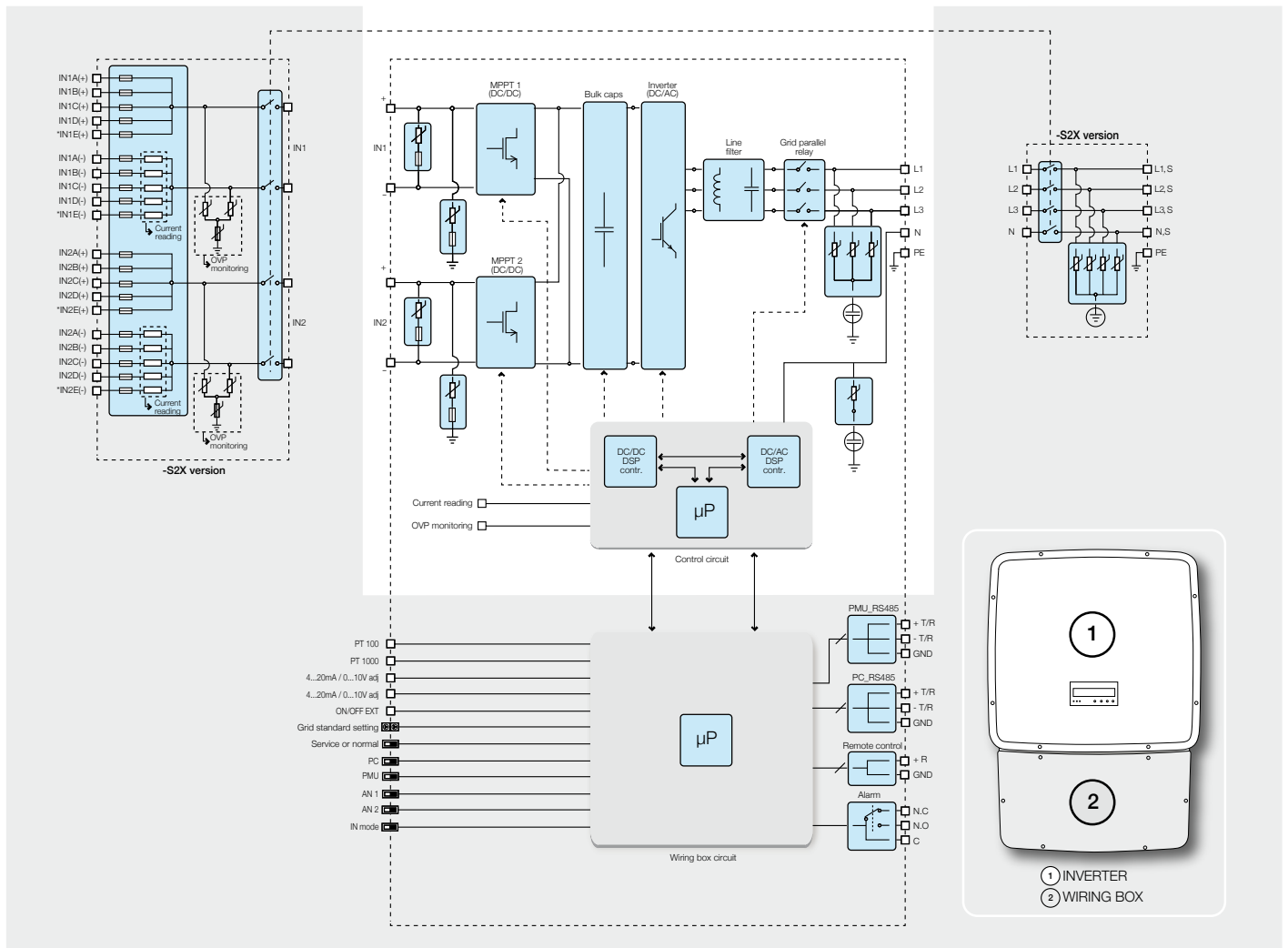
- Integrated string combiner with different options of configuration which include DC and AC disconnect switch in compliance with international standards
- Natural convection cooling for maximum reliability
- Outdoor enclosure for unrestricted use under any environmental conditions
- Capability to connect external sensors for monitoring environmental conditions
- Availability of auxiliary DC output voltage (24V, 300mA)



## Technical data and types

Type code	TRIO-27.6-TL-OUTD-S2X-400/JP
<b>Input side</b>	
Absolute maximum DC input voltage ( $V_{max,abs}$ )	1000 V
Start-up DC input voltage ( $V_{start}$ )	430 V (adj. 250...500 V)
Operating DC input voltage range ( $V_{dcr,min}...V_{dcr,max}$ )	$0.7 \times V_{start}...950$ V
Rated DC input voltage ( $V_{dcr}$ )	620 V
Rated DC input power ( $P_{dcr}$ )	28600 W
Number of independent MPPT	2
Maximum DC input power for each MPPT ( $P_{MPPT,max}$ )	16000 W
DC input voltage range with parallel configuration of MPPT at $P_{dcr}$	500...800 V
DC power limitation with parallel configuration of MPPT	Linear derating from max to null [ $800V \leq V_{MPPT} \leq 950V$ ]
DC power limitation for each MPPT with independent configuration of MPPT at $P_{dcr}$ , max unbalance example	16000 W [ $500V \leq V_{MPPT} \leq 800V$ ] the other channel: $P_{dcr} - 16000W$ [ $400V \leq V_{MPPT} \leq 800V$ ]
Maximum DC input current ( $I_{dcr,max}$ ) / for each MPPT ( $I_{MPPT,max}$ )	64.0 A / 32.0 A
Maximum input short circuit current for each MPPT	40.0 A
Number of DC inputs pairs for each MPPT	5
DC connection type	Tool Free PV connector WM / MC4
<b>Input protection</b>	
Reverse polarity protection	Protection for inverter only, from current limited source, with max 2 string 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)
DC switch rating for each MPPT (version with DC switch)	40 A / 1000 V
Fuse rating (versions with fuses)	15 A / 1000 V
<b>Output side</b>	
AC grid connection type	Three Phase 3W+PE or Three phase 3W+N+PE
Rated AC power ( $P_{acr} @ \cos\phi=1$ )	27600 W
Maximum AC output power ( $P_{ac,max} @ \cos\phi=1$ )	27600 W
Maximum apparent power ( $S_{max}$ )	30000 VA
Rated AC grid voltage ( $V_{acr}$ )	400 V
AC voltage range	320...480 V
Maximum AC output current ( $I_{ac,max}$ )	45.0 A
Contributory fault current	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
Nominal power factor and adjustable range	>0.995 Adj $\pm$ 0.8 with max 30kVA
Harmonic Distortion of Current	each <3%, total <5%
AC connection type	Screw terminal block, cable gland PG36

## Block diagram of TRIO-27.6-TL-OUTD-S2X-400/JP

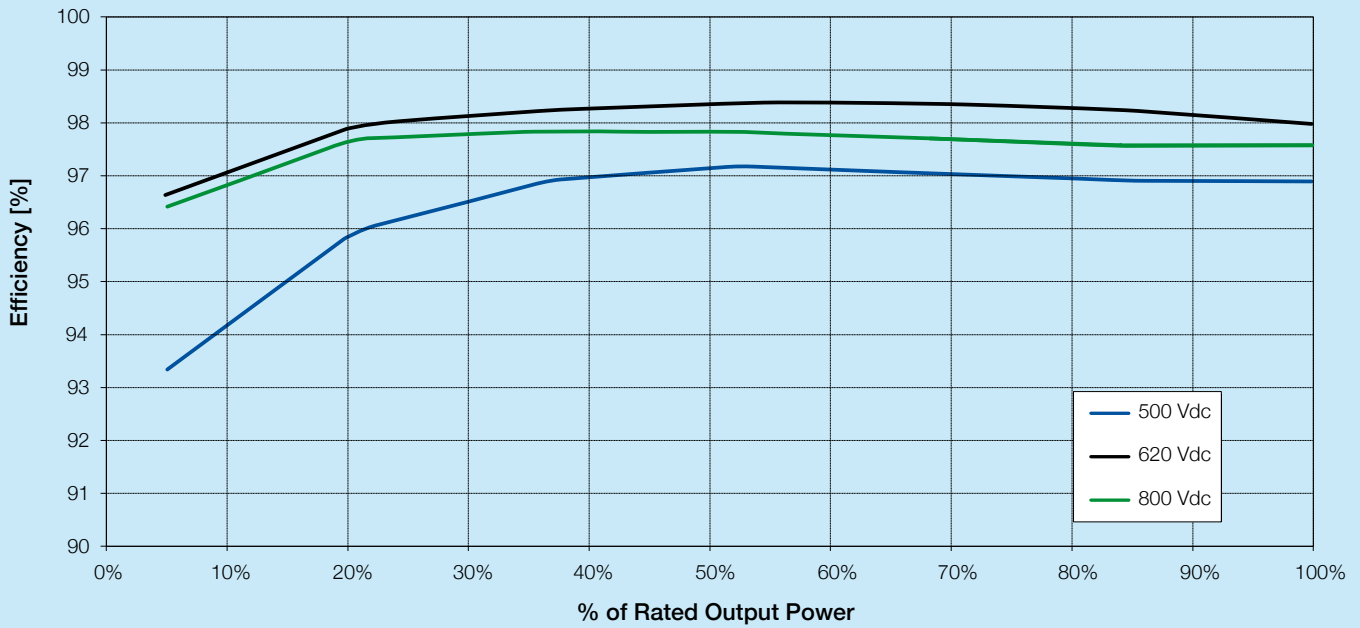


## Technical data and types

Type code	TRIO-27.6-TL-OUTD-S2X-400/JP
<b>Output protection</b>	
Anti-islanding protection	Passive, Active
Maximum AC overcurrent protection	46.0 A
Output overvoltage protection - varistor	4
Output overvoltage protection - plug in modular surge arrester (-S2X version)	4 (Class II)
<b>Operating performance</b>	
Maximum efficiency ( $\eta_{max}$ )	98.2%
Weighted efficiency (EURO/CEC)	98.0% / 98.0%
Feed in power threshold	40 W
Stand-by consumption	< 8W
<b>Communication</b>	
Wired local monitoring	PVI-USB-RS232_485 (opt.)
Remote monitoring	VSN700 Data Logger (opt.)
User interface	Graphic display
<b>Environmental</b>	
Ambient temperature range	-25...+60°C / -13...140°F with derating above 45°C/113°F
Relative humidity	0...100% condensing
Sound Power Level in accordance with ISO3741	<53 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
Weight	65 kg inverter + 15 Kg wiring box
Mounting system	Wall bracket
<b>Safety</b>	
Isolation level	Transformerless

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

Efficiency curves of TRIO-27.6-TL-OUTD-S2X-400/JP



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