

# ABB string inverters

## TRIO-50.0-TL-OUTD

### 50kW



The most powerful ABB string inverter available today, the TRIO-50.0 has been designed to maximize the ROI in large systems. It has all the advantages of a decentralized configuration for both rooftop and ground-mounted installations.

The new TRIO-50.0 inverter is ABB's three-phase string solution for cost efficient large decentralized photovoltaic systems for both commercial and utility applications.

#### Modular design

TRIO-50.0 has a landscape modular design to guarantee maximum flexibility.

The separate and configurable AC and DC compartments increase the ease of installation and maintenance with their ability to remain separately wired from the inverter module inside the system.

The TRIO comes with the most complete wiring box configurations available including 12 or 16 DC inputs, AC and DC disconnect switches and monitored type II AC and DC surge arresters.

#### Flexibility of installation

The TRIO 50's forced air cooling system over an external heatsink, designed for a simple and fast installation, enables for the maximum flexibility of installation. The option of horizontal or vertical mounting brackets enables the best use of space available beneath or behind the solar modules.

#### Design flexibility

The double stage conversion topology offers the advantage of a wide input voltage range for maximum flexibility of the system design.

#### Highlights:

- Modular landscape design to guarantee maximum flexibility
- Separate and configurable AC and DC compartments increase the ease of installation and maintenance
- Complete wiring box configurations; including, 12 or 16 inputs, AC and DC disconnect switches
- Forced air cooling system over external heat sink
- Mounting supports for both horizontal or vertical positions allowing 90 degrees of installation
- Wide input voltage range for maximum flexibility of the system design

## Additional highlights

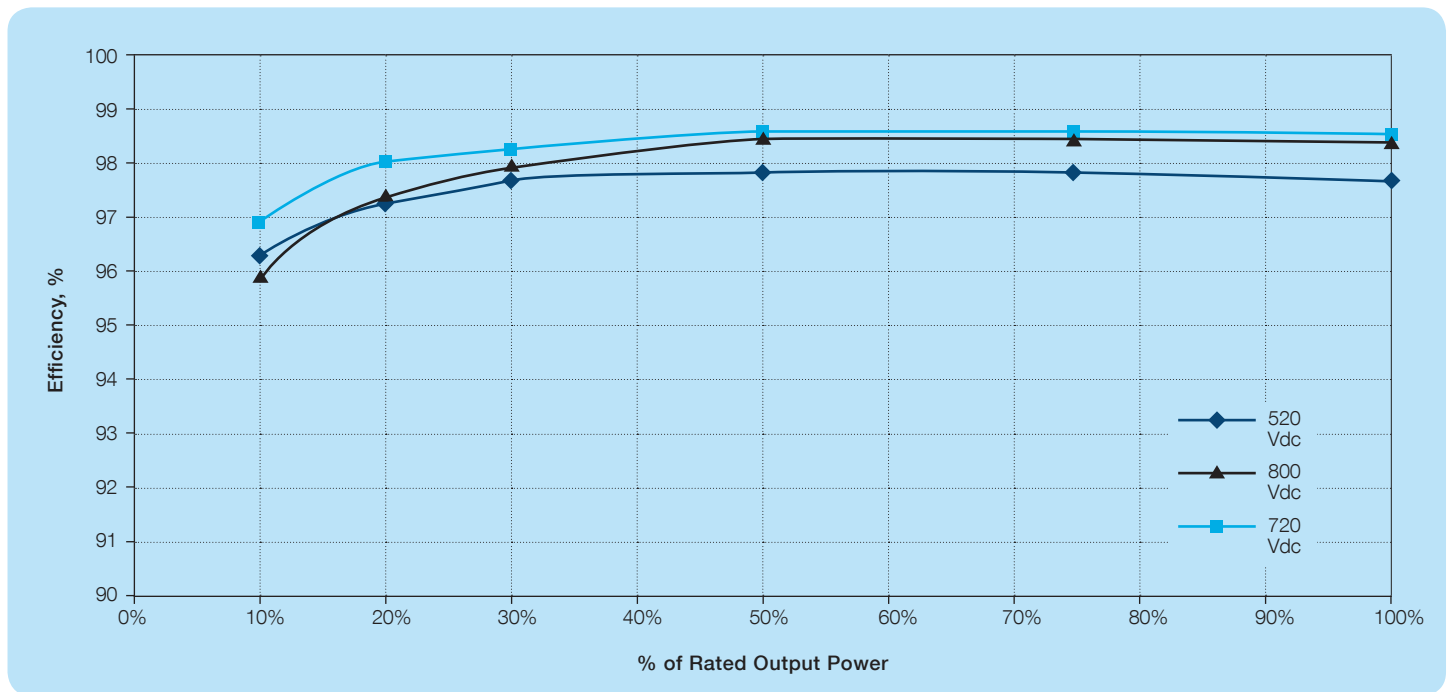
- Transformerless topology
- Each inverter is set on specific grid codes which can be selected directly in the field
- Lockable wiring boxes



## Technical data and types

Type code	TRIO-50.0-TL-OUTD
<b>Input side</b>	
Absolute maximum DC input voltage ( $V_{max,abs}$ )	1000 V
Start-up DC input voltage ( $V_{start}$ )	300...500 V (Default 360)
Operating DC input voltage range ( $V_{dcmin}...V_{dcmax}$ )	$0.7 \times V_{start} ... 950$ V (min 250 V)
Rated DC input voltage ( $V_{dcr}$ )	715 Vdc
Rated DC input power ( $P_{dcr}$ )	51250 W
Number of independent MPPT	1
MPPT input DC voltage range ( $V_{MPPTmin} ... V_{MPPTmax}$ ) at $P_{dcr}$	520-800 Vdc
Maximum DC input current ( $I_{dcmax}$ )	100 A
Maximum input short circuit current	144 A
Number of DC inputs string / pairs	12 or 16 string combiner version available / standard version 2
DC connection type	Input lugs (type 1), 12/16 string field wired fuse holders (type 2), 12/16 string quick connectors (type 3)
<b>Input protection</b>	
Reverse polarity protection	Yes, from limited current source; type 3: reverse polarity indicators
Input over voltage protection - varistor	Yes
Input over voltage protection - plug in modular surge arrester (optional 12 and 16 string DC combiner option)	Type 2
Photovoltaic array isolation control	According to local standard
DC switch rating	200 A / 1000 V
<b>Output side</b>	
AC Grid connection type	3Ø, Y / 3W+GND or 4W+GND
Rated AC power ( $P_{acr} @ \cos\phi=1$ )	50000 W
Maximum AC output power ( $P_{acmax} @ \cos\phi=1$ )	50000 W
Maximum apparent power ( $S_{max}$ )	50000 VA
Rated AC grid voltage ( $V_{acr}$ )	480 V
AC voltage range	422-528
Maximum AC output current ( $I_{ac,max}$ )	61 A
Contributory fault current	66 A
Rated output frequency ( $f_r$ )	60 Hz
Output frequency range ( $f_{min}...f_{max}$ )	57...63 Hz
Nominal power factor and adjustable range	> 0.995, 0...± 1 with max $S_{max}$
AC connection type	Screw terminal block
<b>Output protection</b>	
Anti-islanding protection	According to local standard
Maximum external AC overcurrent protection	90 A
Output overvoltage protection - varistor	Yes
<b>Operating performance</b>	
Maximum efficiency ( $\eta_{max}$ )	98.6%
Weighted efficiency (CEC)	98.0%
<b>Safety</b>	
Isolation level	Transformerless
Marking	TUV
Safety and EMC standard	UL1741, UL1699B, IEEE1547, IEEE1547.1, CSA C22.2 107.1-01-2001, FCC Part 15 Sub-part B Class B Limits

CEC efficiency = 98.0 percent



### Technical data and types (preliminary)

Type code		TRIO-50.0-TL-OUTD
<b>Communication</b>		
Remote monitoring	VSN300 Wifi Logger Card (opt.), VSN700 Data Logger (opt.)	
Wireless local monitoring	VSN300 Wifi Logger Card (opt.)	
User interface	LEDs / No display; Aurora Manager Lite software required	
Available port	2 RS485	
<b>Environmental</b>		
Ambient temperature range	-13...+144°F (-25...+60°C) with derating > 122°F (50°C)	
Relative humidity	0...100 % condensing	
Maximum operating altitude without derating	2000 m / 6560 ft	
<b>Physical</b>		
Environmental protection rating	NEMA 4X (NEMA 3R for fan tray)	
Cooling	Forced air over external heatsink	
Dimension (H x W x D)	28.5" x 58.7" x 12.4" / 725 mm x 1491 mm x 315 mm	
Weight	209 lbs overall; 145 lbs power module, 33 lbs AC wiring box (Full options), 31 lbs DC wiring box (Full options)	
Mounting system options	Wall bracket, horizontal support	



DC Wiring Box Model Number	Description
DCWB-1-TRIO-50.0-TL-OUTD-US-480	Input lugs for use with external combiner, DC disconnect switch, conduit entry
DCWB-2-TRIO-50.0-TL-OUTD-US-480/12	Touch-safe fuse holder 12 string combiner, DC disconnect switch, AFCI, DC SPD, conduit entry
DCWB-2-TRIO-50.0-TL-OUTD-US-480/16	Touch-safe fuse holder 16 string combiner, DC disconnect switch, AFCI, DC SPD, conduit entry
DCWB-3-TRIO-50.0-TL-OUTD-US-480/12*	Board mounted fused 12 string combiner, DC disconnect switch, AFCI, DC SPD, Amphenol connector
DCWB-3-TRIO-50.0-TL-OUTD-US-480/16*	Board mounted fused 16 string combiner, DC disconnect switch, AFCI, DC SPD, Amphenol connector

\*Available late 2016



AC Wiring Box Model Number	Description
ACWB-TRIO-50.0-TL-OUTD-US-480	AC output lugs, conduit entry
ACWB-A-TRIO-50.0-TL-OUTD-US-480	AC output lugs, conduit entry and AC SPD
ACWB-B-TRIO-50.0-TL-OUTD-US-480	AC output lugs, conduit entry, AC SPD and AC disconnect switch

Power Module Model Number	Description
TRIO-50.0-TL-OUTD-US-480-POWER MODULE	Inverter section / power module

Bracket Model Number	Description
TRIO-50.0-BRACKET-VERTICAL	Wall mounting bracket; 90 to 16 degrees from horizontal
TRIO-50.0-BRACKET-HORIZONTAL	Mounting bracket; 15 to 0 degrees horizontal



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### Support and service

ABB supports its customers with a dedicated, global service organization in more than 60 countries, with strong regional and national technical partner networks providing a complete range of life cycle services.

For more information please contact your local ABB representative or visit:

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