SOLAR INVERTERS

ABB string inverters

PVI-3.0/3.6/4.2-TL-OUTD
3.6 to 4.2 kW



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ABB's UNO family of single-phase string inverters complements the typical number of rooftop solar panels, allowing home owners to get the most efficient energy harvesting for the size of the property.

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PVI-3.0/3.6/4.2-TL-OUTD outdoor string inverter

The dual input section processes two strings with independent Maximum Power Point Tracking (MPPT). This is particularly useful for rooftop installations with two different orientations (e.g. East and West). The high speed MPPT offers real-time power tracking and improved energy harvesting.

Efficiency of up to 96.8%
The transformerless (TL) operation gives the highest efficiency of up to 96.8%. The wide input voltage range makes the inverter suitable for low power installations with reduced string size.

This rugged outdoor inverter has been designed as a completely sealed unit to withstand the harshest environmental conditions.

Our most common residential inverter is the ideal size for an average-sized family home.

Highlights
- Single-phase output
- Transformerless topology
- Each inverter is set on specific grid codes which can be selected in the field
- Wide input voltage range
- High speed and precise MPPT algorithm for real time power tracking and improved energy harvesting
- Dual input section with independent MPPT, allows optimal energy harvesting from two sub-arrays
- Flat efficiency curves ensure high efficiency at all output levels ensuring consistent and stable performance across the entire input voltage and output power range
- Integrated DC disconnect switch in compliance with international standards (-S version)
- Natural convection cooling for maximum reliability
- Outdoor enclosure for unrestricted use under any environmental conditions
- RS-485 communication interface (for connection to laptop or datalogger)

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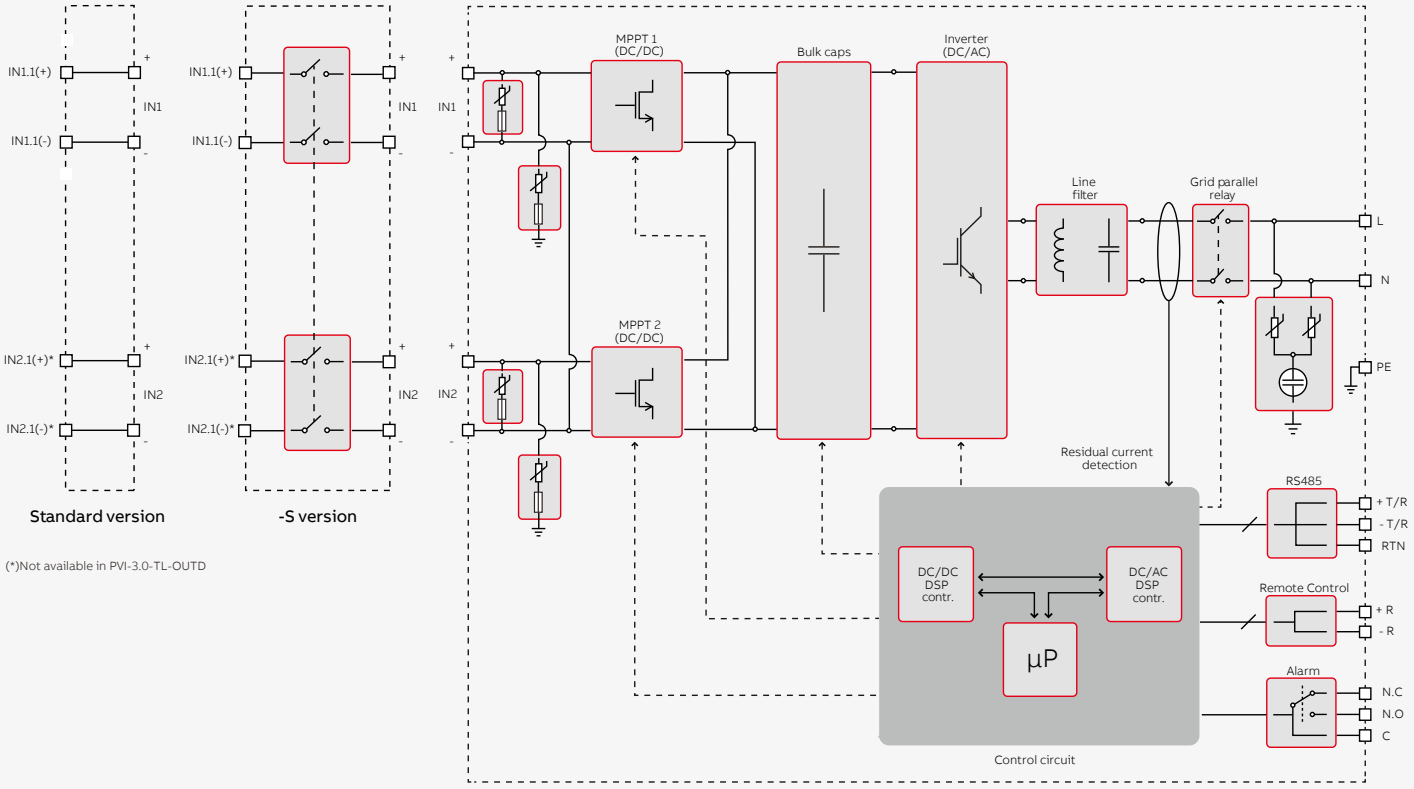


Technical data and types

Type code	PVI-3.0-TL-OUTD	PVI-3.6-TL-OUTD	PVI-4.2-TL-OUTD
Input side			
Absolute maximum DC input voltage ($V_{max,abs}$)		600 V	
Start-up DC input voltage (V_{start})		200 V (adj. 120...350 V)	
Operating DC input voltage range (V_{dcmin}...V_{dcmax})		0.7 x V_{start}...580 V (min 90 V)	
Rated DC input voltage (V_{dcr})		360 V	
Rated DC input power (P_{dcr})	3120 W	3750 W	4375 W
Number of independent MPPT		2	
Maximum DC input power for each MPPT ($P_{MPPTmax}$)	2000 W	3000 W	3000 W
DC input voltage range with parallel configuration of MPPT at P_{acr}	160...530 V	120...530 V	140...530 V
DC power limitation with parallel configuration of MPPT		Linear derating from max to null [530 V≤V_{MPPT}≤580 V]	
DC power limitation for each MPPT with independent configuration of MPPT at P_{acr}, max unbalance example	2000 W [200 V≤V_{MPPT}≤530 V] the other channel: P_{dcr}-2000 W [112 V≤V_{MPPT}≤530 V]		3000 W [190 V≤V_{MPPT}≤530 V] the other channel: P_{dcr}-3000 W [90 V≤V_{MPPT}≤530 V]
Maximum DC input current (I_{dcmax}) / for each MPPT ($I_{MPPTmax}$)	20.0 A / 10.0 A		32.0 A / 16.0 A
Maximum input short circuit current for each MPPT	12.5 A		20.0 A
Number of DC input pairs for each MPPT	1	1	1
DC connection type		PV quick fit connector [3]	
Input protection			
Reverse polarity protection		Yes, from limited current source	
Input over voltage protection for each MPPT - varistor		Yes	
Photovoltaic array isolation control		According to local standard	
DC switch rating for each MPPT (version with DC switch)		25 A / 600 V	
Output side			
AC grid connection type		Single-phase	
Rated AC power (P_{acr} @cosϕ=1)	3000 W	3600 W	4200 W
Rated AC power (P_{acr} @cosϕ=±0.9)	3000 W	3600 W	4200 W
Maximum AC output power (P_{acmax} @cosϕ=1)	3300 W [5]	4000 W [6]	4600 W [7]
Maximum apparent power (S_{max})	3330 VA	4000 VA	4670 VA
Rated AC grid voltage ($V_{ac,r}$)		230 V	
AC voltage range		180...264 V [1]	
Maximum AC output current ($I_{ac,max}$)	14.5 A	17.2 A [2]	20.0 A
Contributory fault current	16.0 A	19.0 A	22.0 A
Rated output frequency (f_r)		50 Hz / 60 Hz	
Output frequency range (f_{min}...f_{max})		47...53 Hz / 57...63 Hz [4]	
Nominal power factor and adjustable range		> 0.995, adj. 0.8 inductive to 0.8 capacitive	
Total current harmonic distortion		< 3.5%	
AC connection type		Screw terminal block, cable gland M25	
Output protection			
Anti-islanding protection		According to local standard	
Maximum external AC overcurrent protection	20.0 A	25.0 A	25.0 A
Output overvoltage protection - varistor		2 (L - N / L - PE)	
Operating performance			
Maximum efficiency (η_{max})		96.8%	
Weighted efficiency (EURO/CEC)		96.0% / -	
Feed in power threshold		10.0 W	
Night consumption		< 0.4 W	

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ABB PVI-3.0/3.6/4.2-TL-OUTD string inverter block diagram



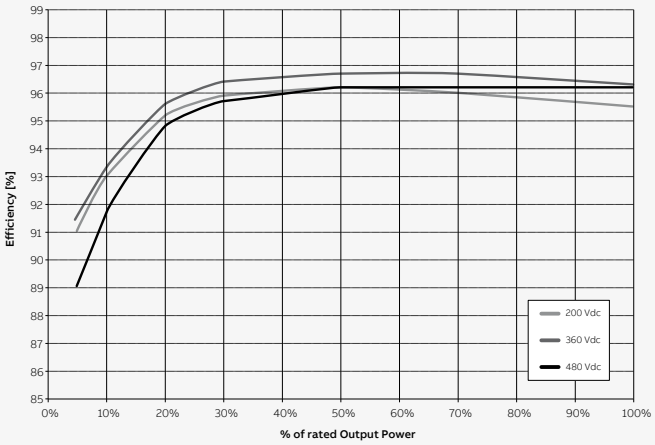
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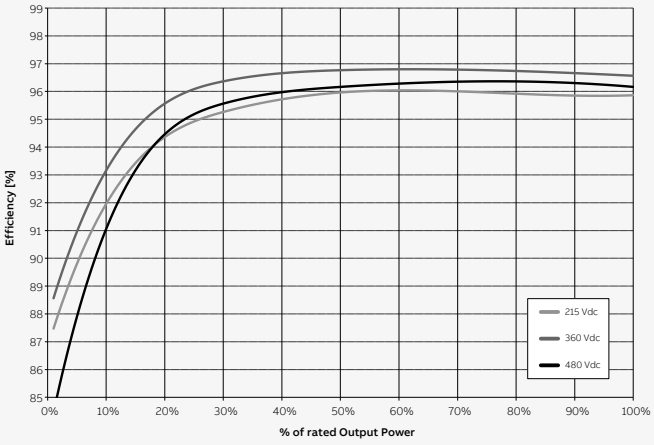
Type code	PVI-3.0-TL-OUTD	PVI-3.6-TL-OUTD	PVI-4.2-TL-OUTD
Communication			
Wired local monitoring	PVI-USB-RS232_485 (opt.)		
Remote monitoring	VSN300 Wifi Logger Card (opt.), VSN700 Data Logger (opt.)		
Wireless local monitoring	VSN300 Wifi Logger Card (opt.)		
User interface	16 characters x 2 lines LCD display		
Environmental			
Ambient temperature range	-25...+60°C /-13...140°F with derating above 50°C/122°F	-25...+60°C /-13...140°F with derating above 55°C/131°F	-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)	618 mm x 325 mm x 222 mm / 24.3” x 12.8” x 8.7”		
Weight	17.5 kg / 38.5 lbs		
Mounting system	Wall bracket		
Safety			
Isolation level	Transformerless		
Marking	CE (50 Hz only), RCM		
Safety and EMC standard	EN 50178, IEC/EN 62109-1, IEC/EN 62109-2, AS/NZS 3100, EN 61000-6-1, EN 61000-6-3, EN 61000-3-11, EN 61000-3-12		
Grid standard (check your sales channel for availability)	CEI 0-21, DIN V VDE V 0126-1-1, VDE-AR-N 4105, G83/2, G59/3, EN 50438 (not for all national appendices), RD 1699, RD 413, ITC-BT-40, AS 4777, IEC 61727, IEC 62116		
Available products variants			
Standard	PVI-3.0-TL-OUTD	PVI-3.6-TL-OUTD	PVI-4.2-TL-OUTD
With DC switch	PVI-3.0-TL-OUTD-S	PVI-3.6-TL-OUTD-S	PVI-4.2-TL-OUTD-S

[1] The AC voltage range may vary depending on specific country grid standard
[2] For UK G83/2 setting, maximum output current limited to 16A up to a maximum output power of 3.68 kW
[3] Please refer to the document “String inverters – Product manual appendix” available at www.abb.com/solarinverters for information on the quick-fit connector brand and model used in the inverter
[4] The Frequency range may vary depending on specific country grid standard
[5] Limited to 3000 W for Germany
[6] Limited to 3600 W for Germany
[7] Limited to 4200 W for Germany
Remark. Features not specifically listed in the present data sheet are not included in the product

Efficiency curves of PVI-3.0-TL-OUTD



Efficiency curves of PVI-4.2-TL-OUTD



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

www.abb.com/solarinverters
www.abb.com

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BCD.00374_EN REV G 08.05.2017