Solar inverters

ABB string inverters
PVI-5000/6000-TL-OUTD
5 to 6 kW

Designed for residential and small commercial photovoltaic installations, this inverter fills a specific niche in the product line to cater for those installations producing between 5kW and 20kW.

This inverter has a dual input section to process two strings with independent Maximum Power Point Tracking (MPPT), high speed and precise MPPT algorithm for real-time power tracking and energy harvesting, as well as transformerless operation for high performance efficiencies of up to 97.0%.

Suitable for low power installations with reduced string size

The wide input voltage range makes the inverter suitable for low power installations with reduced string size. 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 outdoor inverter has been designed as a completely sealed unit to withstand the harshest environmental conditions.

Highlights

- Single phase output
- Transformerless topology
- Each inverter is set on specific grid codes which can be selected in the field
- Dual input section with independent MPP tracking, allows optimal energy harvesting from two sub-arrays oriented in different directions

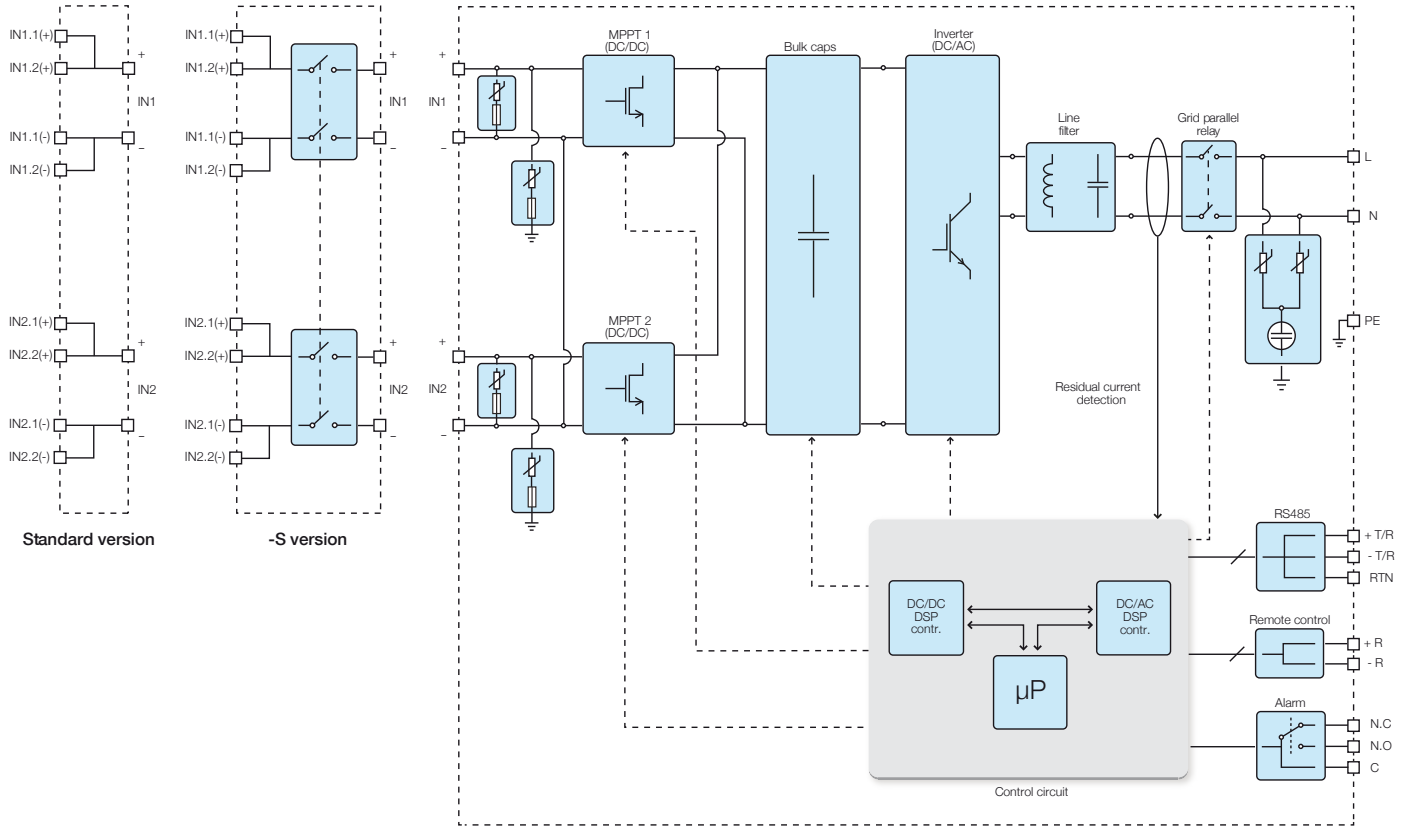
Additional highlights

- Wide input range
- 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)

Technical data and types

Type code	PVI-5000-TL-OUTD	PVI-6000-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	
Rated DC input voltage (V_{dcr})	360 V	
Rated DC input power (P_{dcr})	5150 W	6200 W
Number of independent MPPT	2	
Maximum DC input power for each MPPT ($P_{MPPTmax}$)	4000 W	
DC input voltage range with parallel configuration of MPPT at P_{acr}	150…530 V	180…530 V
DC power limitation with parallel configuration of MPPT	Linear derating from max to null [530V≤V_{MPPT}≤580V]	
DC power limitation for each MPPT with independent configuration of MPPT at P_{acr}, max unbalance example	4000 W [220V≤V_{MPPT}≤530V] the other channel: P_{dcr}-4000W [90V≤V_{MPPT}≤530V]	4000 W [220V≤V_{MPPT}≤530V] the other channel: P_{dcr}-4000W [120V≤V_{MPPT}≤530V]
Maximum DC input current (I_{dcmax}) / for each MPPT ($I_{MPPTmax}$)	36.0 A / 18.0 A	
Maximum input short circuit current for each MPPT	22.0 A	
Number of DC inputs pairs for each MPPT	2	
DC connection type	Tool Free PV connector WM / MC4	
Input protection		
Reverse polarity protection	Yes, from limited current source	
Input over voltage protection for each MPPT - varistor	2	
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)	5000 W	6000 W
Maximum AC output power (P_{acmax} @cosφ=1)	5000 W	6000 W
Maximum apparent power (S_{max})	5560 VA	6670 VA
Rated AC grid voltage ($V_{ac,r}$)	230 V	
AC voltage range	180…264 V (1)	
Maximum AC output current ($I_{ac,max}$)	25.0 A	30.0 A
Contributory fault current	32.0 A	40.0 A
Rated output frequency (f_r)	50 Hz / 60 Hz	
Output frequency range (f_{min}…f_{max})	47…53 Hz / 57…63 Hz(2)	
Nominal power factor and adjustable range	> 0.995, adj. ± 0.9 with P_{acr} =5.0 kW	> 0.995, adj. ± 0.9 with P_{acr} =6.0 kW
Total current harmonic distortion	< 3.5%	
AC connection type	Terminal block, cable glande M32	

Block diagram of PVI-5000/6000-TL-OUTD



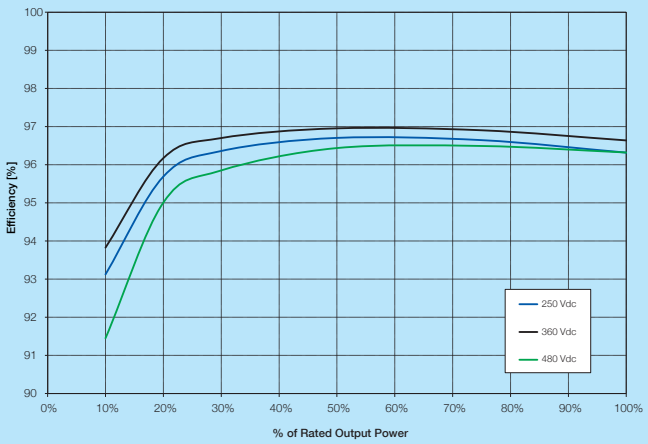
Technical data and types

Type code	PVI-5000-TL-OUTD	PVI-6000-TL-OUTD
Output protection		
Anti-islanding protection	According to local standard	
Maximum AC overcurrent protection	32.0 A	40.0 A
Output overvoltage protection - varistor	2 (L - N / L - PE)	
Operating performance		
Maximum efficiency (η_{max})	97.0%	
Weighted efficiency (EURO/CEC)	96.4% / -	
Feed in power threshold	10.0 W	
Stand-by consumption	< 8.0 W	< 8.0 W
Communication		
Wired local monitoring	PVI-USB-RS232_485 (opt.)	
Remote monitoring	VSN300 Wifi Logger Card[3] (opt.), PVI-AEC-EVO (opt.), VSN700 Data Logger (opt.)	
Wireless local monitoring	VSN300 Wifi Logger Card[3] (opt.)	
User interface	16 characters x 2 lines LCD display	
Environmental		
Ambient temperature range	-25...+60°C (-13...+ 140°F)	-25...+60°C (-13...+ 140°F) with derating above 50°C (122°F)
Relative humidity	0...100% condensing	
Noise emission	<50 dB(A) @ 1 m	
Maximum operating altitude without derating	2000 m / 6560 ft	
Physical		
Environmental protection rating	IP 65	
Cooling	Natural	
Dimension (H x W x D)	810mm x 325mm x 222mmm / 31.9” x 12.8” x 8.7”	
Weight	< 26.0 kg / 57.3 lb	
Mounting system	Wall bracket	
Safety		
Isolation level	Transformerless	
Marking	CE (50 Hz only)	
Safety and EMC standard	EN62109-1, EN62109-2, AS/NZS3100, AS/NZS 60950, EN61000-6-1, EN61000-6-3, EN61000-3-11, EN61000-3-12	
Grid standard (check your sales channel for availability)	CEI 0-21, VDE 0126-1-1, G59/3, EN 50438 (not for all national appendices), RD1699, AS 4777, C10/11, IEC 61727, ABNT NBR 16149, CLC/FprTS 50549, PEA, MEA	CEI 0-21, VDE 0126-1-1, G59/3, EN 50438 (not for all national appendices), RD1699, AS 4777, C10/11, IEC 61727, ABNT NBR 16149, CLC/FprTS 50549
Available products variants		
Standard	PVI-5000-TL-OUTD	PVI-6000-TL-OUTD
With DC switch	PVI-5000-TL-OUTD-S	PVI-6000-TL-OUTD-S

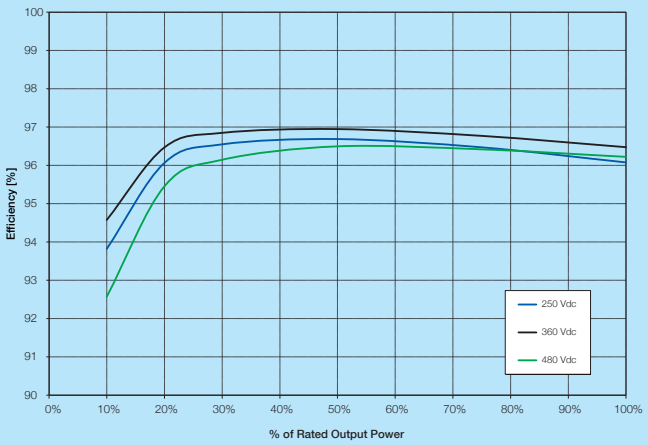
1. The AC voltage range may vary depending on specific country grid standard
2. The Frequency range may vary depending on specific country grid standard
3. Check availability before to order

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

Efficiency curves of PVI-5000-TL-OUTD



Efficiency curves of PVI-6000-TL-OUTD



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