

# ABB string inverters

## PVI-3.0/3.6/4.2-TL-OUTD

### 3 to 4.2 kW



**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.**

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 range
- High speed and precise MPPT algorithm for real time power tracking and improved energy harvesting
- Dual input section with independent MPP tracking, allows optimal energy harvesting from two sub-arrays oriented in different directions

## Additional highlights

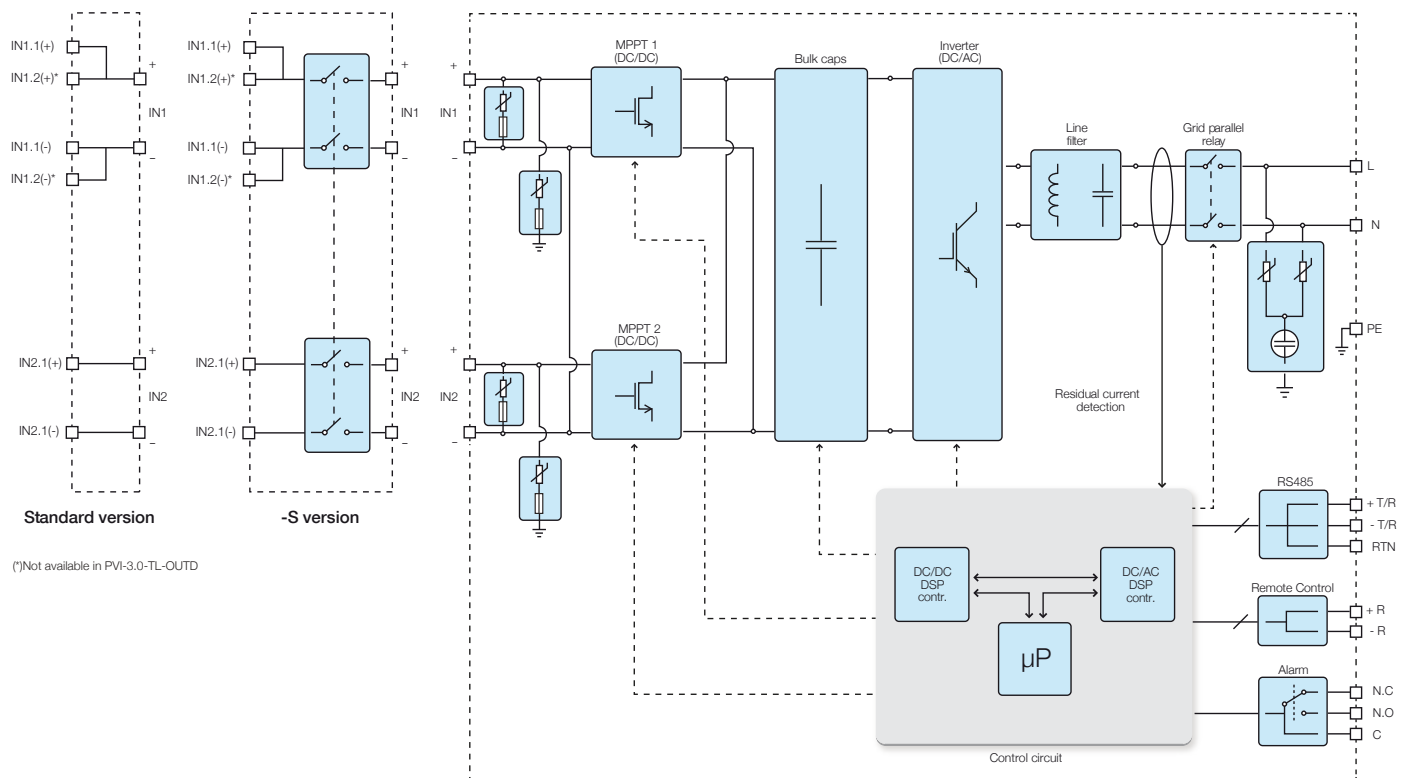
- Flat efficiency curves ensure high efficiency at all output levels ensuring consistent and stable performance across the entire input voltage and output power range
- Integrated DC disconnect switch in compliance with international standards (-S version)
- Natural convection cooling for maximum reliability
- Outdoor enclosure for unrestricted use under any environmental conditions
- RS-485 communication interface (for connection to laptop or datalogger)



## Technical data and types

Type code	PVI-3.0-TL-OUTD	PVI-3.6-TL-OUTD	PVI-4.2-TL-OUTD
<b>Input side</b>			
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 ( $P_{dcr}$ )	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 [ $530V \leq V_{MPPT} \leq 580V$ ]		
DC power limitation for each MPPT with independent configuration of MPPT at $P_{acr}$ , max unbalance example	2000 W [ $200V \leq V_{MPPT} \leq 530V$ ] the other channel: $P_{dcr} = 2000W$ [ $112V \leq V_{MPPT} \leq 530V$ ]	3000 W [ $190V \leq V_{MPPT} \leq 530V$ ] the other channel: $P_{dcr} = 3000W$ [ $90V \leq V_{MPPT} \leq 530V$ ]	
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 inputs pairs for each MPPT	1	1	2 for MPPT1 and 1 for MPPT2
DC connection type	Tool Free PV connector WM / MC4		
<b>Input protection</b>			
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		
<b>Output side</b>			
AC grid connection type	Single phase		
Rated AC power ( $P_{acr} @ \cos\phi=1$ )	3000 W	3600 W	4200 W
Maximum AC output power ( $P_{acmax} @ \cos\phi=1$ )	3300 W <sup>(4)</sup>	4000 W <sup>(5)</sup>	4600 W <sup>(6)</sup>
Maximum apparent power ( $S_{max}$ )	3330 VA	4000 VA	4670 VA
Rated AC grid voltage ( $V_{acr}$ )	230 V		
AC voltage range	180...264 V <sup>(1)</sup>		
Maximum AC output current ( $I_{ac,max}$ )	14.5 A	17.2 A <sup>(2)</sup>	20.0 A
Contributory fault current	16.0 A	19.0 A	22.0 A
Rated output frequency ( $f_i$ )	50 Hz / 60 Hz		
Output frequency range ( $f_{min}...f_{max}$ )	47...53 Hz / 57...63 Hz <sup>(3)</sup>		
Nominal power factor and adjustable range	> 0.995, adj. $\pm 0.9$ with $P_{acr}=3.0$ kW	> 0.995, adj. $\pm 0.9$ with $P_{acr}=3.6$ kW	> 0.995, adj. $\pm 0.9$ with $P_{acr}=4.2$ kW
Total current harmonic distortion	< 3.5 %	< 3.5 %	< 3.5 %
AC connection type	Screw terminal block, cable gland M25		
<b>Output protection</b>			
Anti-islanding protection	According to local standard		
Maximum AC overcurrent protection	16.0 A	19.0 A	22.0 A
Output overvoltage protection - varistor	2 (L - N / L - PE)		

## Block diagram of PVI-3.0/3.6/4.2-TL-OUTD



(\*Not available in PVI-3.0-TL-OUTD)

## Technical data and types

Type code	PVI-3.0-TL-OUTD	PVI-3.6-TL-OUTD	PVI-4.2-TL-OUTD
<b>Operating performance</b>			
Maximum efficiency ( $\eta_{max}$ )		96.8%	
Weighted efficiency (EURO/CEC)		96.0% / -	
Feed in power threshold		10.0 W	
Stand-by consumption		< 8.0 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		16 characters x 2 lines LCD display	
<b>Environmental</b>			
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	
Noise emission		< 50 dB(A) @ 1 m	
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)		618mm x 325mm x 222mm / 24.3" x 12.8" x 8.7"	
Weight		17.5 kg / 38.5 lb	
Mounting system		Wall bracket	
<b>Safety</b>			
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, EN61000-3-2, EN61000-3-3	EN62109-1, EN62109-2, AS/NZS3100, AS/NZS 60950, EN61000-6-1, EN61000-6-3, EN61000-3-11, EN61000-3-12	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, VDE-AR-N 4105, G83/2, EN 50438 (not for all national appendices), RD1699, AS 4777, C10/11, IEC 61727, ABNT NBR 16149, CLC/FprTS 50549	CEI 0-21, VDE 0126-1-1, VDE-AR-N 4105, G83/2, 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, VDE-AR-N 4105, G59/3, EN 50438 (not for all national appendices), RD1699, AS 4777, C10/11, IEC 61727, ABNT NBR 16149, CLC/FprTS 50549
<b>Available products variants</b>			
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 3.68kW.

3. The Frequency range may vary depending on specific country grid standard

4. Limited to 3000 W for Germany

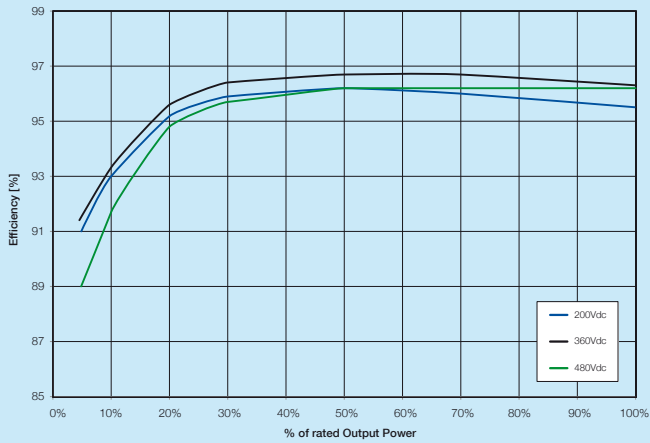
**Remark. Features not specifically listed in the present data sheet are not included in the product**

5. Limited to 3600 W for Germany

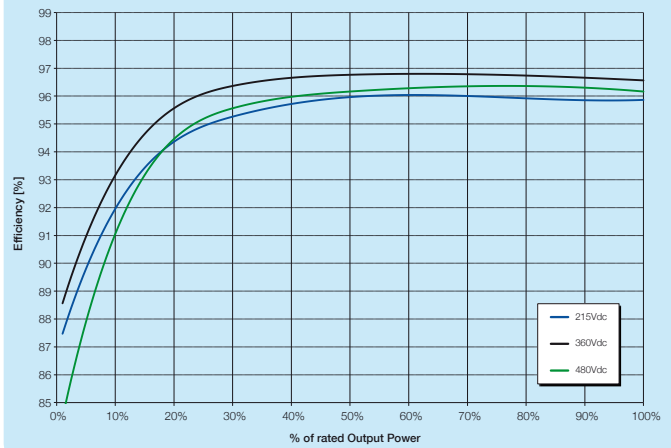
6. Limited to 4200 W for Germany

7. Check availability before to order

Efficiency curves of PVI-3.0-TL-OUTD



Efficiency curves of PVI-4.2-TL-OUTD



**Support and service**

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

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