

Solar inverters

ABB central inverters

PVI-500.0-CN

500 kW



This product offers high performance with affordable capital expenditure and has been specifically designed for the fast growing Chinese market.

ABB's new 500kW utility-grade central inverters have a number of key features.

It offers high efficiency with electrolytic capacitor-free leading to longer MTBF (mean time between failures).

This product design is the result of the experience we have acquired with more than 100MW of installation in the challenging Chinese market.

Maximum input voltage up to 1000 Vdc, high design flexibility and reduced DC distribution losses for large scale PV plants.

Reverse-polarity protection minimizes potential damage caused by array mis-wiring

Transformerless inverter for direct connection to MV transformer leading to longer MTBF (mean time between failures).

Highlights

- Integrated DC and AC distribution and protection
- Fully equipped for connection, additional accessories not required
- High efficiencies deliver more energy
- Two independent RS-485 communication interfaces for inverter and intelligent string combiner monitoring

Power and productivity
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Additional highlights

- A compact size and weight
- Touch screen display
- 1000 Voc (open circuit voltage) rating



Technical data and types

Type code

PVI-500.0-TL-CN

Input side

Absolute maximum DC input voltage ($V_{max,abs}$)	1000 V
MPPT input DC voltage range ($V_{MPPTmin} \dots V_{MPPTmax}$) at V_{acr}	465...900 V @300V 495...900 V @320V 500...900 V @340V 550...900 V @360V Linear derating from max to null [850< V_{MPPT} <900V]
MPPT input DC range ($V_{MPPTmin} \dots V_{MPPTmax}$) at P_{acr} and V_{acr}	465...850 V @300V 495...850 V @320V 500...850 V @340V 550...850 V @360V
Number of independent MPPT multi-master	2
Number of independent MPPT master/slave	1
Maximum combined DC input current (I_{dcmaxc})	1100 A
Maximum DC input current for each module ($I_{dcmax,m}$)	550 A
Number of DC inputs pairs	10
DC connection type	20 x 70 mm ² (M10)

Input protection

Reverse polarity protection	Yes, from limited current source
Input overvoltage protection - varistor	1 for each input, Class II
Photovoltaic array leakage control, floating neutral, floating panels	No; Proprietary control available ⁽³⁾
Residual current protection, grounded neutral, floating panels	Not included
Fuse size for each input pair	125/160 A

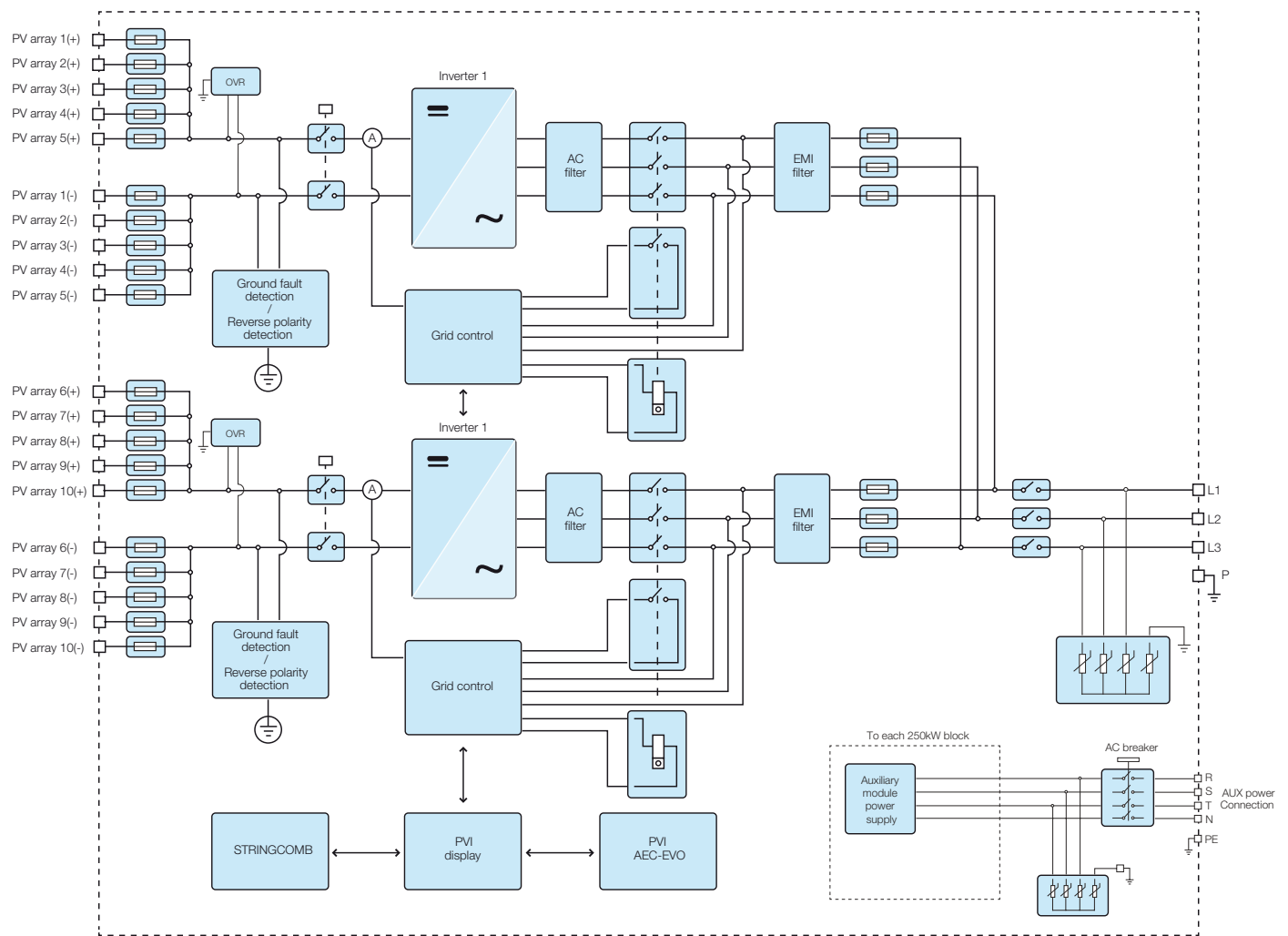
Output side

AC grid connection type	Three phases 3W+PE
Rated AC power (P_{acr} @ $\cos\phi=1$)	470 kW@300V / 500kW@320V / 530kW@340V / 560 kW@360V
Maximum AC output power (P_{acmax} @ $\cos\phi=1$)	470 kW@300V / 500kW@320V / 530kW@340V / 560 kW@360V
Maximum apparent power (S_{max})	522 kVA@300V / 555 kVA@320V / 588 kVA@340V / 620 kVA@360V
Rated grid voltage (V_{acr})	300/320/340/360 V ⁽⁵⁾
AC voltage range ($V_{acmin} \dots V_{acmax}$)	255...345 / 272...368 / 289...391 / 306...414 V ⁽¹⁾
Maximum output current (I_{acmax})	900 A
Rated frequency (f)	50/60 Hz
Frequency range ($f_{min} \dots f_{max}$)	47...53 / 57...63 Hz ⁽²⁾
Nominal power factor and adjustable range	> 0.995 (adj. \pm 0.90)
Total harmonic distortion	< 3% (@ $P_{ac,r}$)
AC connection type (for each phase)	3 x 240 mm ² (M10)

Output protection

Anti-islanding protection	According to local standard
Output overvoltage protection (varistor)	Yes, Class II
Night time disconnect	Yes
AC circuit breaker	690 V / 1kA (T6)

Block diagram of PVI-500.0-TL-CN



Technical data and types

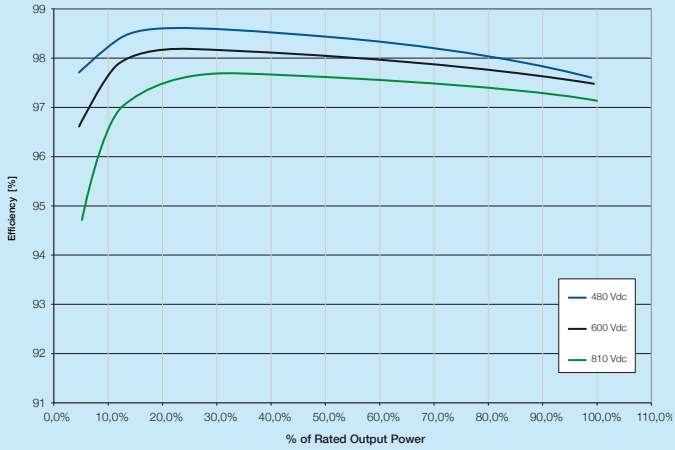
Operating performance	
Maximum efficiency (η_{max})	98.5% ⁽⁴⁾
Weighted efficiency (η_{EURO} / η_{CEC})	98.2% / - ⁽⁴⁾
Stand-by consumption/night-time power loss	< 66 W
AC auxiliary supply	3 x 400 Vac +N, 50/60 Hz
Auxiliary supply consumption	< 810 W
Auxiliary supply consumption without cooling	< 220 W
Inverter switching frequency	9 kHz
Communication	
Wired local monitoring	PVI-USB-RS232_485 (opt.)
Remote monitoring	PVI-AEC-EVO (opt.), VSN700 Data Logger (opt.)
String Combiner	PVI-STRINGCOMB (opt.)
User interface	TFT LCD 5.7"
Environmental	
Ambient temperature range	-20...+ 50°C/-4...122°F with derating above 45°C/113°F
Relative humidity	0...95% non condensing
Noise emission	<62 dB(A) @ 1 m
Maximum operating altitude without derating	1000 m / 3280 ft
Physical	
Environmental protection rating	IP 20
Cooling	Air forced
Required air cooling flow	8000 m ³ /h - 4720 CFM
Dimension (H x W x D)	2280mm x 2000mm x 800mm / 89.8" x 78.7" x 31.5"
Weight	< 1200 kg / 2645 lb
Safety	
Transformer	No
Marking	CQC
Safety and EMC standard	EN 50178, EN 61000-3-12, EN61000-6-2, EN61000-6-4
Grid standard (check your sales channel for availability)	CNCA/CTS0004-2009A, GB/T 19939, IEC 62116

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
5. Adjustable by factory

3. Missing symmetry with respect to ground results in AC disconnection (disabled function by default)
4. Power consumption of the auxiliary services not included

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

Efficiency curves of PVI-500.0-TL-CN



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.

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

www.abb.com/solarinverters

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