



# Solar inverter

## PVS-100/120-TL

The PVS-100/120-TL is FIMER's cloud connected three-phase string solution for cost efficient decentralized photovoltaic systems for both ground mounted and large commercial applications.

**From 100 to 120 kW**

## String inverter - PVS-100/120-TL

This platform, for extreme high power string inverters with power ratings up to 120 kW, maximizes the ROI for decentralized ground mounted and large rooftop applications. With up to six MPPT, energy harvesting is optimized even in shading situations.

### Extreme power with high integration level

The extreme high power module up to 120 kW saves installation resources as less units are required. Due to its compact size further savings are generated in logistics and in maintenance. Thanks to the integrated DC/AC disconnection, 24 string connections, fuses and surge protection no additional boxes are required.

### Ease of installation

The horizontal and vertical mounting possibility creates flexibility for both ground mounted and rooftop installations. Covers are equipped with hinges and locks that are fast to open and reduce the risk of damaging the chassis and interior components when commissioning and performing maintenance actions.

Standard wireless access from any mobile device makes the configuration of inverter and plant easier and faster. Improved user experience thanks to a built in User Interface (UI) enables access to advanced inverter configuration settings.

The installer mobile APP, available for Android/iOS devices, further simplifies multi-inverter installations.

The design supports both copper and aluminum cabling even up to 185 mm<sup>2</sup> cross section to minimize the energy losses.

### Fast system integration

Industry standard Modbus/SUNSPEC protocol enables fast system integration. Two ethernet ports enable fast and future proof communication for PV plants.

### Plant portfolio integration

Monitoring your assets is made easy as every inverter is capable to connect to Aurora Vision cloud platform to secure your assets and profitability in long term.

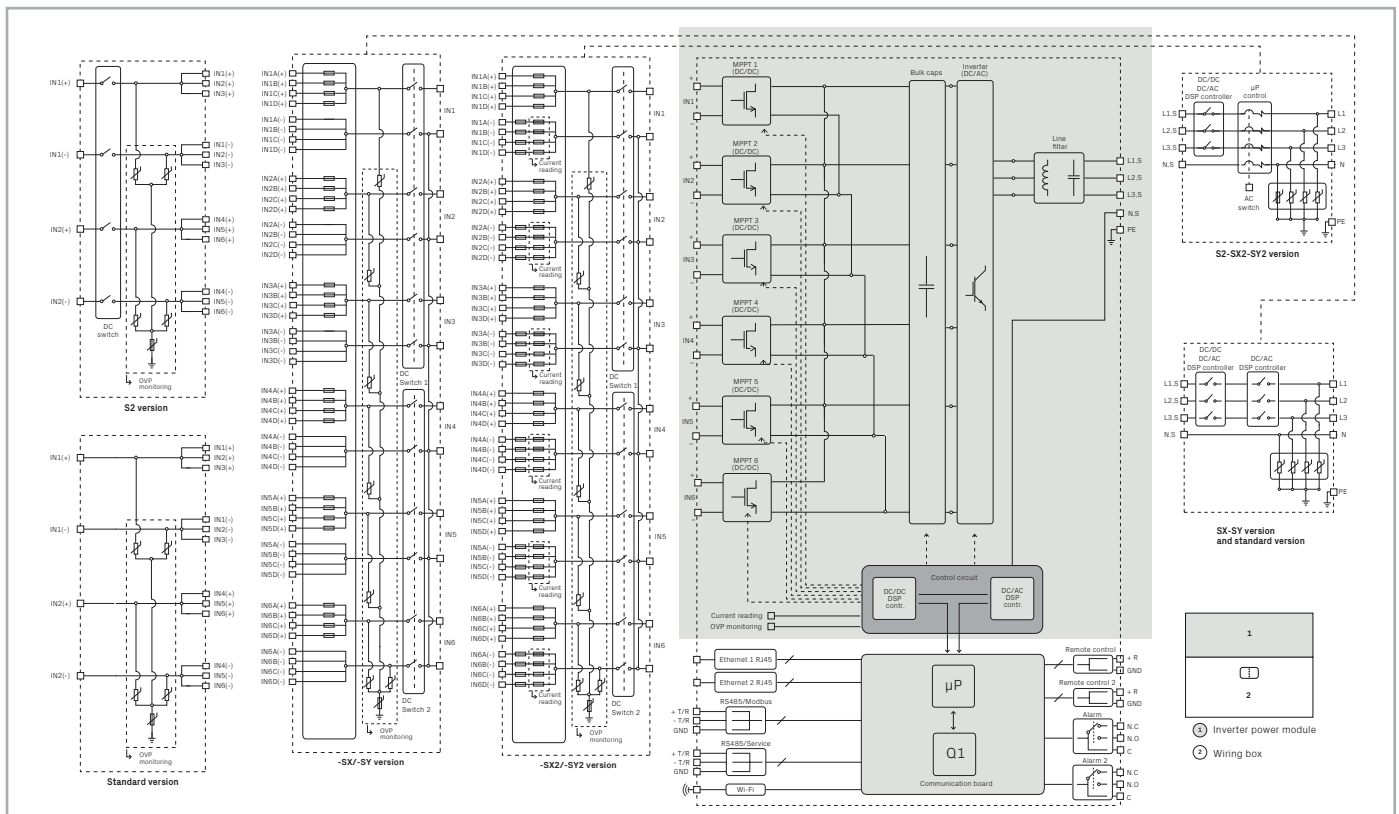
### Design flexibility and shade tolerance

Available in different versions, thanks to the double stage conversion topology and the modular design, PVS-100/120 guarantees maximum flexibility for the system design on rooftops or hilly ground. The separate and configurable wiring compartment, available with six MPPT as well as with two parallelable MPPT, allows the inverter to satisfy any plant condition and any customer need. With this technological choice energy harvesting is optimized even in shading situations.

### Highlights

- Up to 6 independent MPPT
- Transformerless inverter
- 120 kW for 480 Vac and 100 kW for 400 Vac
- Wi-Fi as standard for configuration
- Two ethernet ports for plant level communication
- Large set of specific grid codes available which can be selected directly in the field
- Double stage topology for a wide input range
- Both vertical and horizontal installation
- Separate wiring compartment for fast swap and replacement
- IP66 Environmental protection
- Maximum efficiency up to 98.9%

## PVS-100/120-TL string inverter block diagram



## Technical data and types

Type code	PVS-100-TL			
Wiring Box version	SX, SX2	SY, SY2	Standard	S2
<b>Input side</b>				
Absolute maximum DC input voltage ( $V_{max,abs}$ )	1000 V			
Start-up DC input voltage ( $V_{start}$ )	420 V (400...500 V)			
Operating DC input voltage range ( $V_{dcmin}...V_{dcmax}$ )	360...1000 V			
Rated DC input voltage ( $V_{dcr}$ )	620 V			
Rated DC input power ( $P_{dcr}$ )	102000 W			
Number of independent MPPT	6		2 (Parallelable)	
MPPT input DC voltage range at ( $V_{MPPTmin}...V_{MPPTmax}$ ) at $P_{acr}$	480...850 V (symmetrical load)			
Maximum DC input power for each MPPT ( $P_{MPPT,max}$ )	21000 W [585 V ≤ VMPPT ≤ 850 V]		63000 W [585 V ≤ VMPPT ≤ 850 V]	
Maximum DC input current for each MPPT ( $I_{dcr,max}$ )	36 A		108 A	
Maximum input short circuit current ( $I_{sc,max}$ ) for each MPPT <sup>1)</sup>	50 A		150 A	
Number of DC input pairs for each MPPT	4		1	
DC connection type	PV quick fit connector <sup>2)</sup>		4 x M40 cable glands (Ø 19...28mm) with M10 Cable lugs	
<b>Input protection</b>				
Reverse polarity protection	Yes, from limited current source			
Input over voltage protection for each MPPT-surge arrester with monitoring	Type II	Type I+II	Type II	
Photovoltaic array isolation control	Yes, acc. to IEC 62109-2			
Residual Current Monitoring Unit (leakage current protection)	Yes, acc. to IEC 62109-2			
DC switch rating for each MPPT	50 A-1000 V		Not present	150 A-1000V
Fuse rating (versions with fuses)	20 A / 1000 V <sup>3)</sup>		No fuses inside	
Input current monitoring	Single string level (24ch.): SX2, SY2 / MPPT level: Standard, S2, SX, SY			
<b>Output side</b>				
AC Grid connection type	Three phase 3W+PE or 4W+PE			
Rated AC power ( $P_{acr} @ \cos\phi=1$ )	100000 W			
Maximum AC output power ( $P_{ac,max} @ \cos\phi=1$ )	100000 W			
Maximum apparent power ( $S_{max}$ )	100000 VA			
Rated AC grid voltage ( $V_{acr}$ )	400 V			
AC voltage range	320...480 V <sup>4)</sup>			
Maximum AC output current ( $I_{ac,max}$ )	145 A			
Rated output frequency (f)	50 Hz / 60 Hz			
Output frequency range ( $f_{min}...f_{max}$ )	45...55 Hz / 55...65 Hz <sup>5)</sup>			
Nominal power factor and adjustable range	> 0.995, 0...1 inductive/capacitive with maximum $S_{max}$			
Total current harmonic distortion	< 3%			
Max DC Current Injection (% of $I_n$ )	< 0.5% * $I_n$			
Maximum AC cable	185mm <sup>2</sup> Aluminum and copper			
AC connection type	Provided bar for lug connections M10, single core cable glands 4xM40 and M25, multi core cable gland M63 as option			
<b>Output protection</b>				
Anti-islanding protection	According to local standard			
Maximum external AC overcurrent protection	225 A			
Output overvoltage protection - replaceable surge protection device	Type 2 with monitoring			
<b>Operating performance</b>				
Maximum efficiency ( $\eta_{max}$ )	98.4%			
Weighted efficiency (EURO)	98.2%			
<b>Communication</b>				
Embedded communication interfaces	1x RS485, 2x Ethernet (RJ45), WLAN (IEEE802.11 b/g/n @ 2.4 GHz)			
User interface	4 LEDs, Web User Interface			
Communication protocol	Modbus RTU/TCP (Sunspec compliant)			
Commissioning tool	Web User Interface, Mobile APP/APP for plant level			
Remote monitoring services	Aurora Vision monitoring portal			
Advanced features	Embedded logging, direct telemetry data transferring to ABB cloud			
<b>Environmental</b>				
Operating ambient temperature range	-25...+60°C / -13...140°F with derating above 40°C / 104°F			
Relative humidity	4%...100% condensing			
Sound pressure level, typical	68dB(A)@ 1m			
Maximum operating altitude without derating	2000 m / 6560 ft			

## Technical data and types

Type code	PVS-100-TL			
Wiring Box version	SX, SX2	SY, SY2	Standard	S2
<b>Physical</b>				
Environmental protection rating	IP 66 (IP54 for cooling section)			
Cooling	Forced air			
Dimension (H x W x D)	869x1086x419 mm / 34.2" x 42.7" x 16.5"			
Weight	70kg / 154 lbs for power module ; ~55kg / 121 lbs for wiring box Overall max 125 kg / 276 lbs			
Mounting system	Mounting bracket vertical & horizontal support			
<b>Safety</b>				
Isolation level	Transformer-less			
Marking	CE			
Safety and EMC standard	IEC/EN 62109-1, IEC/EN 62109-2, EN 61000-6-2, EN 61000-6-4			
Grid standard (check your sales channel for availability)	CEI 0-16, CEI 0-21, IEC 61727, IEC 62116, IEC 60068, IEC 61683, JORDAN IRR-DCC-MV, DRRG/DEWA, Chile LV/MV, Belg C10-C11, EN50438 Generic +Ireland, EN50549-1/2, CLC-TS50549-1/2, AS/NZS4777.2, UK G59/3, EREC G99-1, MEA, PEA, ISO-IEC Guide 67 (system 5), NRS 097-2-1, P.O. 12.3, ITC-BT-40, UNE 206006 IN, VDE-AR-N 4105, VDE-AR-N 4110, VDE-AR-N 4120, VDE V 0-126-1-1, VFR 2019, UTE C15-712-1, Taiwan			
<b>Available products variants</b>				
Inverter power module	PVS-100-TL-POWER MODULE			
Input with 24 quick fit connectors pairs + String fuses (both positive and negative pole) + DC disconnect switches + AC disconnect switch + AC and DC overvoltage surge arresters (Type II) + individual string monitoring (24 ch.)	WB -SX2-PVS-100-TL			
Input with 24 quick fit connectors pairs + String fuses (positive pole) + DC disconnect switches + AC and DC overvoltage surge arresters (Type II) + MPPT level input current monitoring (6 ch.)	WB -SX-PVS-100-TL			
Input with 24 quick fit connectors pairs + String fuses (both positive and negative pole) + DC disconnect switches + AC disconnect switch + AC and DC overvoltage surge arresters (Type II for AC and Type I-II for DC) + individual string monitoring (24 ch.)	WB -SY2-PVS-100-TL			
Input with 24 quick fit connectors pairs + String fuses (positive pole) + DC disconnect switches + AC and DC overvoltage surge arresters (Type II for AC and Type I-II for DC) + MPPT level input current monitoring (6 ch.)	WB -SY-PVS-100-TL			
Input with cable gland + DC disconnect switch + AC disconnect switch + AC and DC overvoltage surge arresters (Type II) + MPPT level input current monitoring	WB-S2-PVS-100-TL			
Input with cable gland + AC and DC overvoltage surge arresters (Type II) + MPPT level input current monitoring	WB-PVS-100-TL			
<b>Optional available</b>				
AC Plate, Single Core Cables	Plate with 5 individual AC cable glands: 4 x M40: Ø 19...28mm, 1 x M25: Ø 10...17mm			
AC Plate, Multi Core Cables	Plate with 2 individual AC cable glands: 1 x M63: Ø 37...53mm, 1 x M25: Ø 10...17mm			
PVS-100/120 Pre-Charge Board Kit	Night time operation with restart capability			
PVS-100/120 Grounding Kit <sup>6)</sup>	Allow to connect the negative input pole to ground			

- 1) Maximum number of opening 5 under overloading
- 2) Please refer to the document "String inverters – Product manual appendix" available at [www.fimer.com](http://www.fimer.com) for information on the quick-fit connector brand and model used in the inverter
- 3) Maximum fuse size supported 20A. Additionally two strings input per MPPT supports 30A fuse size for connecting two strings per input
- 4) The AC voltage range may vary depending on country specific country grid standard

- 5) The Frequency range may vary depending on specific country grid standards
- 6) When grounding-kit is installed, Residual Current Monitoring does not fully operate. Inverter must be installed and operate in "restricted areas (access limited to qualified personnel)" according to IEC 62109-2

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

## Technical data and types

Type code	PVS-120-TL			
Wiring Box version	SX, SX2	SY, SY2	Standard	S2
<b>Input side</b>				
Absolute maximum DC input voltage ( $V_{max,abs}$ )	1000 V			
Start-up DC input voltage ( $V_{start}$ )	420 V (400...500 V)			
Operating DC input voltage range ( $V_{dcmin}...V_{dcmax}$ )	360...1000 V			
Rated DC input voltage ( $V_{dcr}$ )	720 V			
Rated DC input power ( $P_{dcr}$ )	123000 W			
Number of independent MPPT	6		2 (Paralleleable)	
MPPT input DC voltage range at ( $V_{MPPTmin}...V_{MPPTmax}$ ) at $P_{acr}$	570...850 V (symmetrical load)			
Maximum DC input power for each MPPT ( $P_{MPPT,max}$ )	25000 W [695 V ≤ VMPPT ≤ 850 V]		75000 W [695 V ≤ VMPPT ≤ 850 V]	
Maximum DC input current for each MPPT ( $I_{dcr,max}$ )	36 A		108 A	
Maximum input short circuit current ( $I_{sc,max}$ ) for each MPPT <sup>1)</sup>	50 A		150 A	
Number of DC input pairs for each MPPT	4		1	
DC connection type	PV quick fit connector <sup>2)</sup>		4 x M40 cable glands (Ø 19...28mm) with M10 Cable lugs	
<b>Input protection</b>				
Reverse polarity protection	Yes, from limited current source			
Input over voltage protection for each MPPT-surge arrester with monitoring	Type II	Type I+II	Type II	
Photovoltaic array isolation control	Yes, acc. to IEC 62109-2			
Residual Current Monitoring Unit (leakage current protection)	Yes, acc. to IEC 62109-2			
DC switch rating for each MPPT	50 A-1000 V		Not present	150 A
Fuse rating (versions with fuses)	20 A / 1000 V <sup>3)</sup>		No fuses inside	
Input current monitoring	Single string level (24ch.): SX2, SY2 / MPPT level: Standard, S2, SX, SY			
<b>Output side</b>				
AC Grid connection type	Three phase 3W+PE or 4W+PE			
Rated AC power ( $P_{acr} @ \cos\phi=1$ )	120000 W			
Maximum AC output power ( $P_{ac,max} @ \cos\phi=1$ )	120000 W			
Maximum apparent power ( $S_{max}$ )	120000 VA			
Rated AC grid voltage ( $V_{acr}$ )	480 V			
AC voltage range	384...576 <sup>4)</sup>			
Maximum AC output current ( $I_{ac,max}$ )	145 A			
Rated output frequency ( $f_r$ )	50 Hz / 60 Hz			
Output frequency range ( $f_{min}...f_{max}$ )	45...55 Hz / 55...65 Hz <sup>5)</sup>			
Nominal power factor and adjustable range	> 0.995, 0...1 inductive/capacitive with maximum $S_{max}$			
Total current harmonic distortion	< 3%			
Max DC Current Injection (% of $I_n$ )	< 0.5%* $I_n$			
Maximum AC cable	185mm <sup>2</sup> Aluminum and copper			
AC connection type	Provided bar for lug connections M10, single core cable glands 4xM40 and M25, multi core cable gland M63 as option			
<b>Output protection</b>				
Anti-islanding protection	According to local standard			
Maximum external AC overcurrent protection	225 A			
Output overvoltage protection - replaceable surge protection device	Type 2 with monitoring			
<b>Operating performance</b>				
Maximum efficiency ( $\eta_{max}$ )	98.9%			
Weighted efficiency (EURO)	98.6%			
<b>Communication</b>				
Embedded communication interfaces	1x RS485, 2x Ethernet (RJ45), WLAN (IEEE802.11 b/g/n @ 2.4 GHz)			
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Environmental protection rating	IP 66 (IP54 for cooling section)			
Cooling	Forced air			
Dimension (H x W x D)	869x1086x419 mm / 34.2" x 42.7" x 16.5"			
Weight	70kg / 154 lbs for power module ; ~55kg / 121 lbs for wiring box Overall max 125 kg / 276 lbs			
Mounting system	Mounting bracket vertical & horizontal support			

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Type code	PVS-120-TL		
Wiring Box version	SX, SX2	SY, SY2	Standard S2
<b>Safety</b>			
Isolation level	Transformer-less		
Marking	CE		
Safety and EMC standard	IEC/EN 62109-1, IEC/EN 62109-2, EN 61000-6-2, EN 61000-6-4 CEI 0-16, IEC 61727, IEC 62116, IEC 60068, IEC 61683, JORDAN IRR-DCC-MV, DRRG/DEWA, Chile MV, Belg C10-C11, EN50438 Generic +Ireland, EN50549-2, UK G59/3, EREC G99-1, PEA, ISO-IEC Guide 67 (system 5), NRS 097-2-1, P.O. 12.3, ITC-BT-40, UNE 206006 IN, VDE-AR-N 4110, VDE-AR-N 4120, VDE V 0-126-1-1,VFR 2019, UTE C15-712-1, Taiwan		
Grid standard (check your sales channel for availability)			
<b>Available products variants</b>			
Inverter power module	PVS-120-TL-POWER MODULE		
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Input with 24 quick fit connectors pairs + String fuses (positive pole) + DC disconnect switches + AC and DC overvoltage surge arresters (Type II) + MPPT level input current monitoring (6 ch.)	WB -SX-PVS-120-TL		
Input with 24 quick fit connectors pairs + String fuses (both positive and negative pole) + DC disconnect switches + AC disconnect switch + AC and DC overvoltage surge arresters (Type II for AC and Type I+II for DC) + individual string monitoring (24 ch.)	WB -SY2-PVS-120-TL		
Input with 24 quick fit connectors pairs + String fuses (positive pole) + DC disconnect switches + AC and DC overvoltage surge arresters (Type II for AC and Type I+II for DC) + MPPT level input current monitoring (6 ch.)	WB -SY-PVS-120-TL		
Input with cable gland + DC disconnect switch + AC disconnect switch + AC and DC overvoltage surge arresters (Type II) + MPPT level input current monitoring	WB-S2-PVS-120-TL		
Input with cable gland + AC and DC overvoltage surge arresters (Type II) + MPPT level input current monitoring	WB-PVS-120-TL		
<b>Optional available</b>			
AC Plate, Single Core Cables	Plate with 5 individual AC cable glands: 4 x M40: Ø 19...28mm, 1 x M25: Ø 10...17mm		
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PVS-100/120 Pre-Charge Board Kit	Night time operation with restart capability		
PVS-100/120 Grounding Kit <sup>6)</sup>	Allow to connect the negative input pole to ground		

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