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Solar inverter PVS-350-TL

The new PVS-350-TL by FIMER is designed to satisfy the growing demand of multi-MPPT string inverters for utility PV systems, offering record-high AC capacity combined with a DC front-end optimized for the latest PV modules to maximize the ROI of ground mounted systems based on a decentralized architecture.

350 kW

High power density
This new multi-MPPT string inverter with a record-high capacity and power-to-weight ratio exceeding 3kW/kg, delivers up to 350 kVA at 800 Vac. This does not only reduce the logistics and installation costs but also the Electrical Balance of System costs for free field utility-scale ground mounted PV installations. MV stations of up to 15% higher capacity can be combined with PVS-350, increasing the single power block capacity and reducing the overall number of stations per MWac of installed power.

Future-proof Multi-MPPT 1500 Vdc platform
The inverter comes equipped with 12 MPPTs, each rated 45A Impp and 60A Isc. The MPPT design has been specifically optimized for the connection of 2 strings of the latest ultra-high power PV modules based on M10 (182x182mm) and G12 (210x210mm) cells. The DC/AC ratio can be optimized to fully exploit the benefits of this new module formats while offering maximum system yields (η_{MAX} > 99%), enabling additional cost savings on trackers compared to traditional 166mm modules.

Installer friendly design
Quick and easy installation, the existing PV module's mounting systems can be used to install the inverters, thus saving time and costs on site preparation and hire of plant. The fuse and combiner free design avoids the need for external components, such as separate DC combiner boxes and AC first level combiners. This is also possible thanks to the integrated DC disconnect switch and to the segregated AC wiring compartment supporting both Al and Cu cables up to 400mm^2.

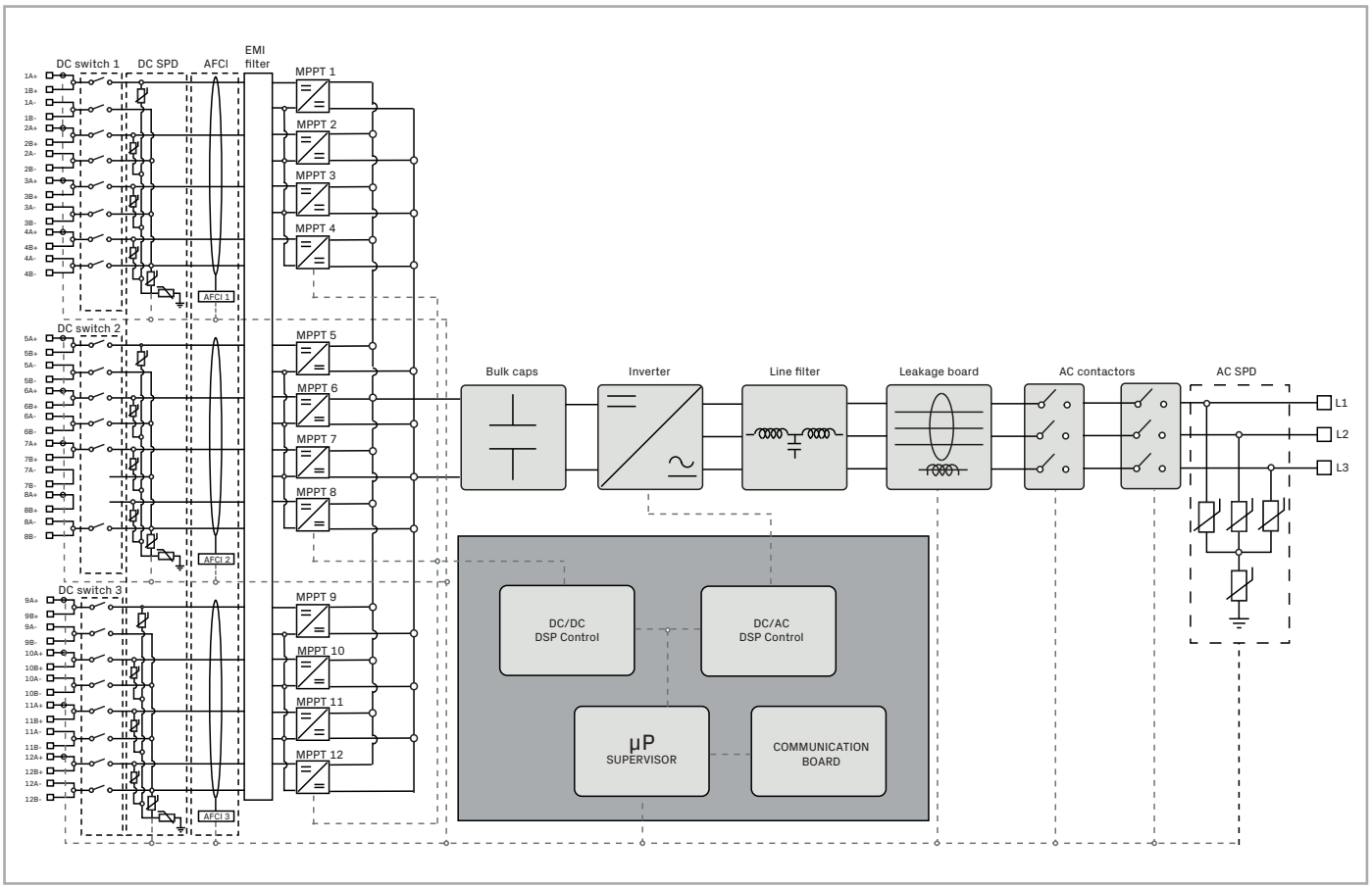
Protect and maximize the efficiency of your assets
Supported by the Aurora Vision cloud platform, the healthy status of the whole PV array can be controlled online through the single string-level I-V curve analysis performed on each inverter. This advanced diagnostic services can be combined with the integrated Arc Fault Detection and PID recovery options, ensuring assets' durability and the profitability of the PV system.

FIMER Digital Platform combining Cloud and Edge Technologies
The cloud and edge computing capabilities, big data analytics and FIMER's digital platform can help the customer to solve the challenge of the new digital era.
The FIMER Digital Platform consists of ICT technologies and a full set of functionalities and services properly combined at both cloud and edge level, able to provide the customer with a fully integrated future proof solution characterized by higher performance, higher reliability, maximized cyber security and always aligned with needs and expectations in terms of minimizing Total Cost of Ownership and facilitating maintenance activities in large scale distributed solar generators.

The new FIMER PVS-350 inverter integrates the last standard IP-based technology; in addition, through the integration of an advanced smart cluster-level aggregator gateway many more functionalities and services can be enabled at plant level such as a fully scalable hierarchical plant controlling solution, effective integration with any 3rd party PPC or SCADA system and always according to any modern regulatory norms and grid operators standard (like IEC 61850, IEC 104, etc...).
Additional premium services are also available to exploit the smart functionalities integrated in each unit (including DC string diagnosis, prognostic and predictive maintenance, scheduled FW upgrade and remote parameter setting and many others), allowing the system to easily meet the most demanding grid support requirements for systems of any size, as well as enabling both owner and aggregator to play the new solar game in the digital era.

Highlights
- The most powerful string inverter in Utility (350 kVA); Power to weight ratio > 3kW/kg
- 12 MPPT/45A – Optimized for the latest generation Ultra-High power PV modules (182mm & 210mm)
- Maximum Energy Yield, η_{MAX} > 99%
- String diagnosis through online IV curve analysis
- Fuse-free design
- Remote firmware upgrade and Multi inverter commissioning
- Segregated AC wiring compartment, support both Al and Cu Cable up to 400mm2
- DC Series Arc Fault Circuit Interrupter
- PID recovery function (optional)
- Support Q@night function

Block diagram PVS-350-TL



Technical data and types

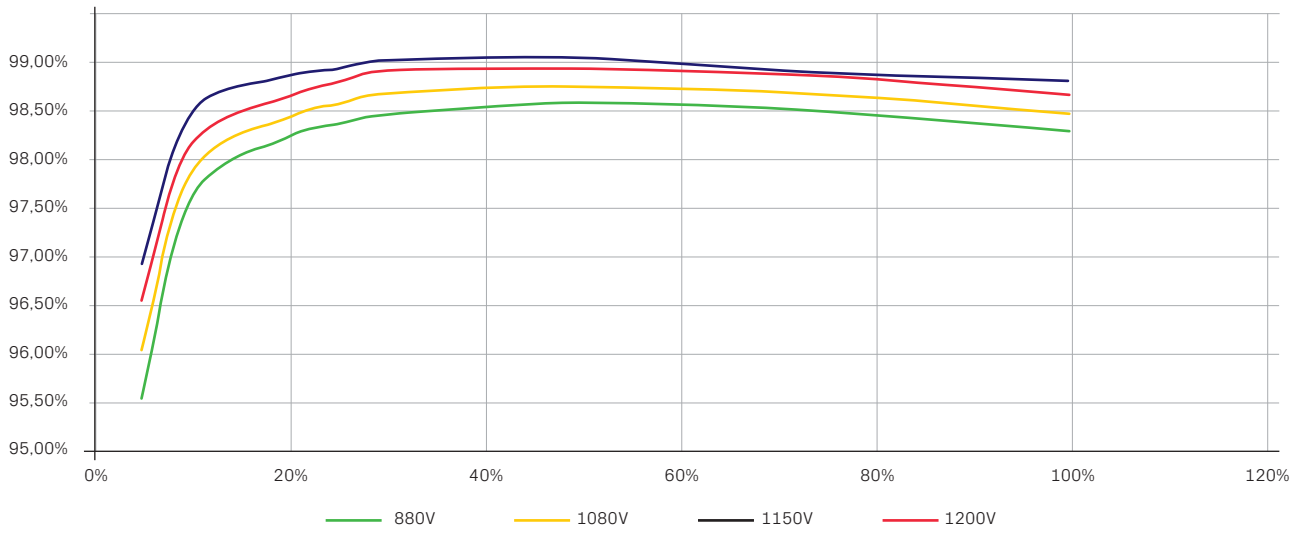
Type code	PVS-350-TL
Input side	
Absolute maximum DC input voltage ($V_{max,abs}$)	1500 V
Start-up DC input voltage (V_{start})	600...1000 V
Operating DC input voltage range (V_{dcmin}...V_{dcmax})	0.7 x Vstart...1500 V (min 500 V)
Rated DC input voltage (V_{dcr})	1080 V
Number of independent MPPT	12
Maximum DC input current for each MPPT ($IMPPT_{max}$)	45 A
Maximum input short circuit current for each MPPT	60 A
Number of DC inputs pairs for each MPPT	2
DC connection type	MC4-Evo2
Input protection	
DC Series Arc Fault Circuit Interrupter	Standard
Reverse polarity protection	Yes, from limited current source
Input over voltage protection for each MPPT - Type 2 surge arrester	Yes, with monitoring
Input over voltage protection for each MPPT - Type 1+2 surge arrester	Optional, with monitoring
Photovoltaic array isolation control (Insulation Resistance)	Yes, acc. to IEC 62109-2
Residual Current Monitoring Unit (leakage current protection)	Yes, acc. to IEC 62109-2
DC switch	Yes
String current monitoring	Yes
Output side	
AC grid connection type	Three phase 3W+PE
Rated AC power (P_{acr})	333000 W
Maximum AC output power (P_{acmax} @cosφ=1)	350000 W
Maximum apparent power (S_{max})	350000 VA
Rated AC grid voltage ($V_{ac,r}$)	800 V
Rated AC output current ($I_{ac,max}$)	240.3 A
Maximum AC output current ($I_{ac,max}$)	253 A
Rated output frequency (f_r)	50 Hz / 60 Hz
Nominal power factor and adjustable range	> 0.995, 0.8 inductive/capacitive with maximum S_{max}
Total current harmonic distortion	< 3%
Max DC Current Injection (% of In)	< 0.5%*In
Maximum AC Cable / single core (multi core)	4x1x400mm2 (4x300mm^2)
AC connection type	Type Terminal block M12 cable lug
Output protection	
Anti-islanding protection	According to local standard
Output overvoltage protection - Type 2 surge protection device	Yes, with monitoring
Operating performance	
Maximum efficiency (η_{max})	≥99,02 %
Weighted efficiency (EURO)	≥98,85 %
Communication	
Communication interface	Ethernet, RS-485
Local user interface	4 LEDs, Web User Interface, Mobile APP
Communication protocol	Modbus RTU/TCP (Sunspec compliant)
Commissioning tool	Web User Interface / Mobile APP
Monitoring	Plant Portfolio Platform
FW update	locally/remotely
Parameter upgrade	interface locally/remotely
Environmental	
Operating ambient temperature range	-25...+60°C
Relative humidity	4%...100% condensing
Maximum operating altitude	4000 m

Technical data and types

Type code	PVS-350-TL
Physical	
Environmental protection rating	IP 66
Cooling	Forced air cooling
Dimension (H x W x D)	740 x 1100 x 490 mm
Weight	≤110kg
Safety	
Isolation level	Transformerless
Marking	CE
Safety and EMC standard (planned)	IEC/EN 62109-1, IEC/EN 62109-2, EN 61000-6-2, EN 61000-6-4, EN55011:2017
Optional available	
Online IV curve analysis	Optional
Q@night	Optional
PID Recovery	Optional

Notes:
1) External AC protection is mandatory

Efficiency Curves



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