



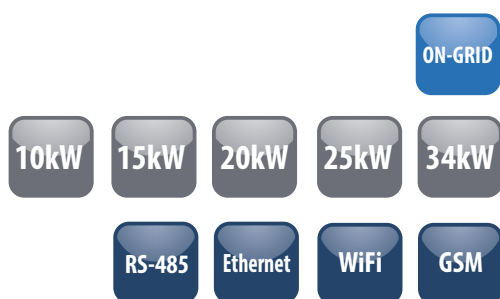
## PVSA PHOTOVOLTAIC STRING INVERTERS

Conforming to the most advanced international standards, the PVSA satisfies the application demands of a market in constant technological evolution.

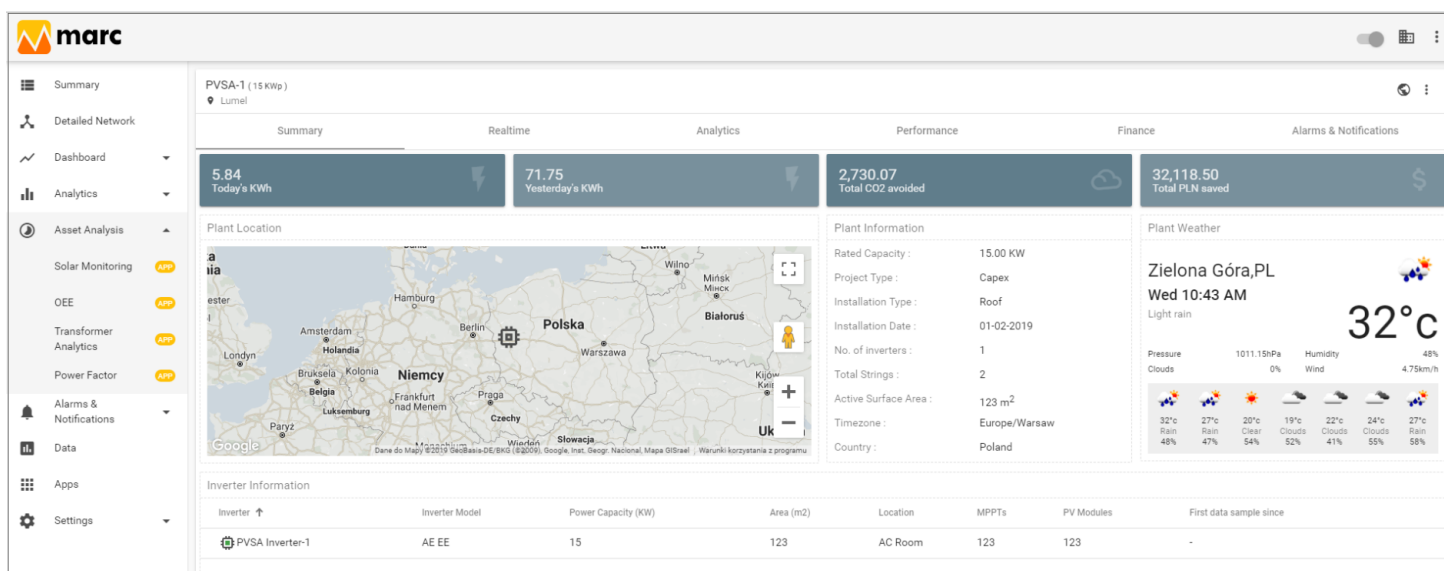
Our product represents the most advanced technology in the sector for controlling state-of-the-art industrial and civil PV plants. Maximum energy efficiency, long term reliability, plant monitoring and high-level professional service are the cornerstones of the PVSA range.

These inverters feature cutting-edge power components and advanced system controls that deliver superior performance with rapid returns on investments.

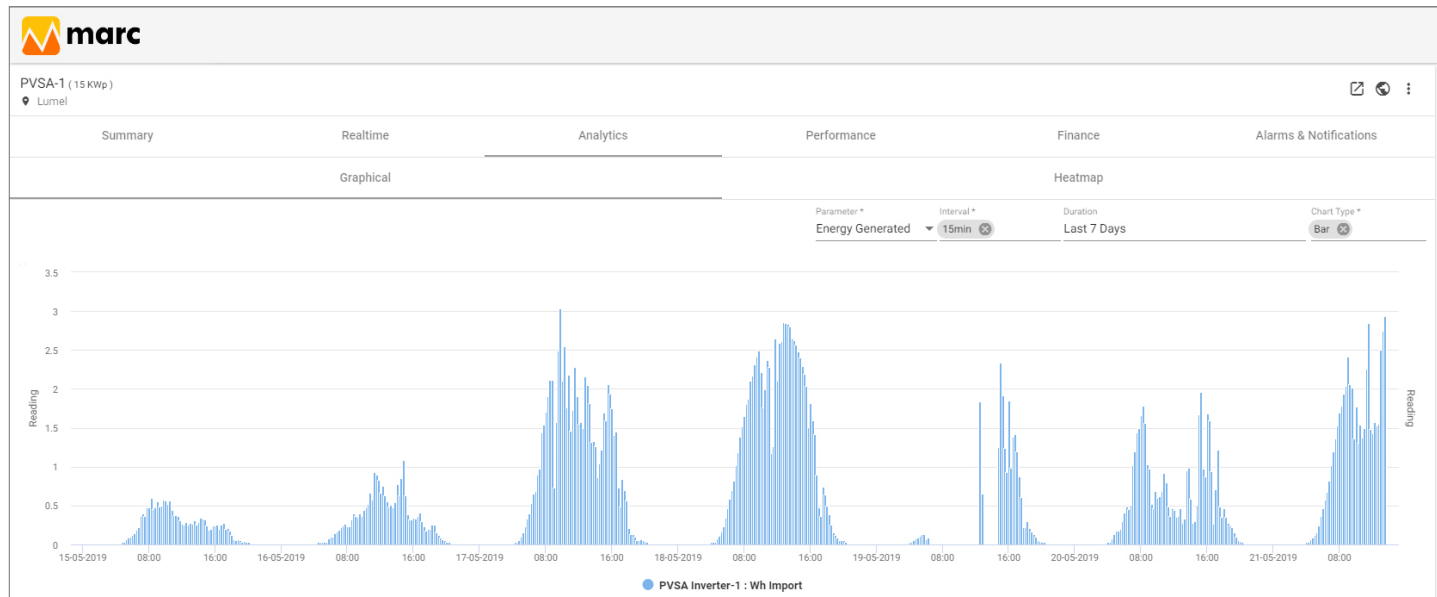
- Maximum efficiency up to 98.5%
- IP -65 structure suitable for both indoor & outdoor installation
- Full power without derating up to 50°C ambient temperature.
- Natural ventilation minimizes breakdown & maintenance.
- Robust design and latest-generation power components with SiC technology.
- Maximum power point tracking, up to 3 MPPT trackers.
- Wide MPPT voltage range 350 to 800V.
- Large graphical display provides a easy, user-friendly operator interface.
- "Transformerless" versions for enhanced efficiency.
- String fault detection & DC fuses on both poles of string.
- Integrated DC circuit breaker under load.
- Tool free & maintenance free terminals on both DC & AC side.
- Integrated datalogger for operation and fault data logging.
- USB port for quick & handy saving of production and operation data.
- Integrated protections against overcurrent, overtemperature, reverse dc polarity, AC & DC overvoltage.
- Wire Box to allow separate access for easy and quick installation.
- 2 RS-485 ports for communication interface
- Integrated inputs/outputs: 3 analog inputs, 2 digital inputs, 2 digital outputs.
- Auxiliary 24 V out (500mA max) for connection of environmental sensors.



Monitoring of PVSA operation through ►



# PVSA - PHOTOVOLTAIC STRING INVERTERS



## VERY HIGH CONVERSION EFFICIENCY LEVEL

Maximum efficiency up to 98.5% makes the PVSA string inverter one of the highest performing products on the market.

The use of SiC technology achieves high efficiency even with low input voltages. Choice of cutting-edge power components and its intelligent design of the conversion system demonstrate its attention to performance and ensure users the fastest and highest return on their investments.



## PERFECT IN EVERY INSTALLATION CONDITION

### Full power up to 50°C

The ability to work at high ambient temperatures without derating makes the PVSA ideal even in the harshest environments.

### IP 65

PVSA is suitable for both indoor and outdoor installations thanks to its IP65 structure.

### Natural ventilation

The absence of cooling fans not only increases conversion efficiency, it also minimizes breakdowns and maintenance related to their operation in harsh environments.



## RIGHT ANSWER TO ALL ENGINEERING NEEDS

With a very wide range of modular configurations, the PVSA line of inverters ensures users not only the best technical solution but also the best price/performance ratio for every plant engineering need:

- AC power with variable  $j$  : 10-34kW, (25 & 34kW  $\cos j = 1$ )
- up to 3 MPPT trackers.



# PVSA - PHOTOVOLTAIC STRING INVERTERS

**LUMEL**  
EVERYTHING COUNTS

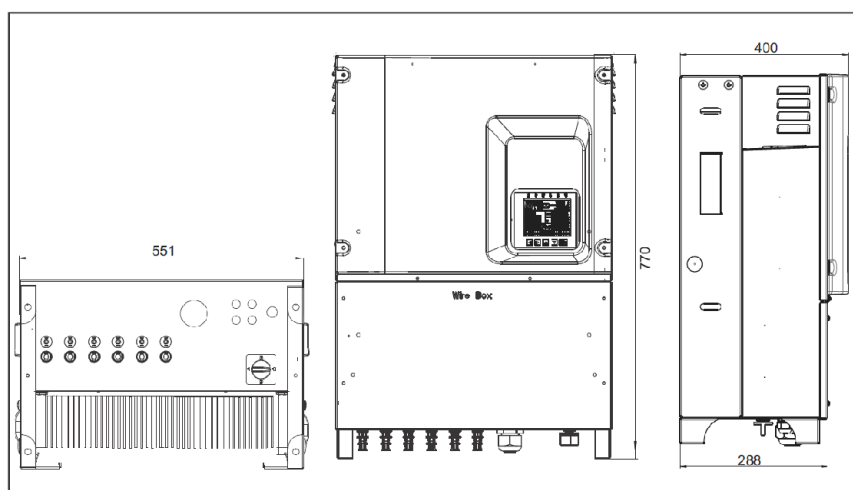
## APPLICATION EXAMPLES

Advanced energy series PVSA (10/15/20/25 kW).  
Maximum flexibility and performance even in systems with complex structure.

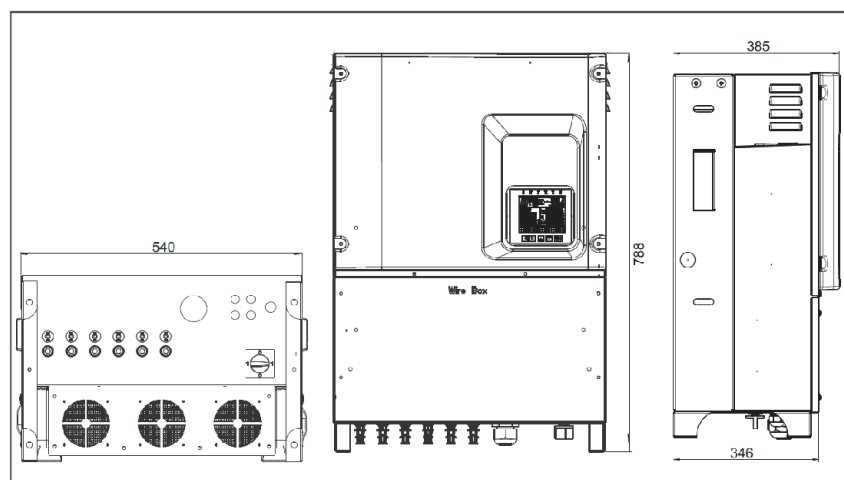
PLANTS WITH NON-UNIFORM STRINGS



## EXTERNAL DIMENSIONS



Inverters up to 25kW



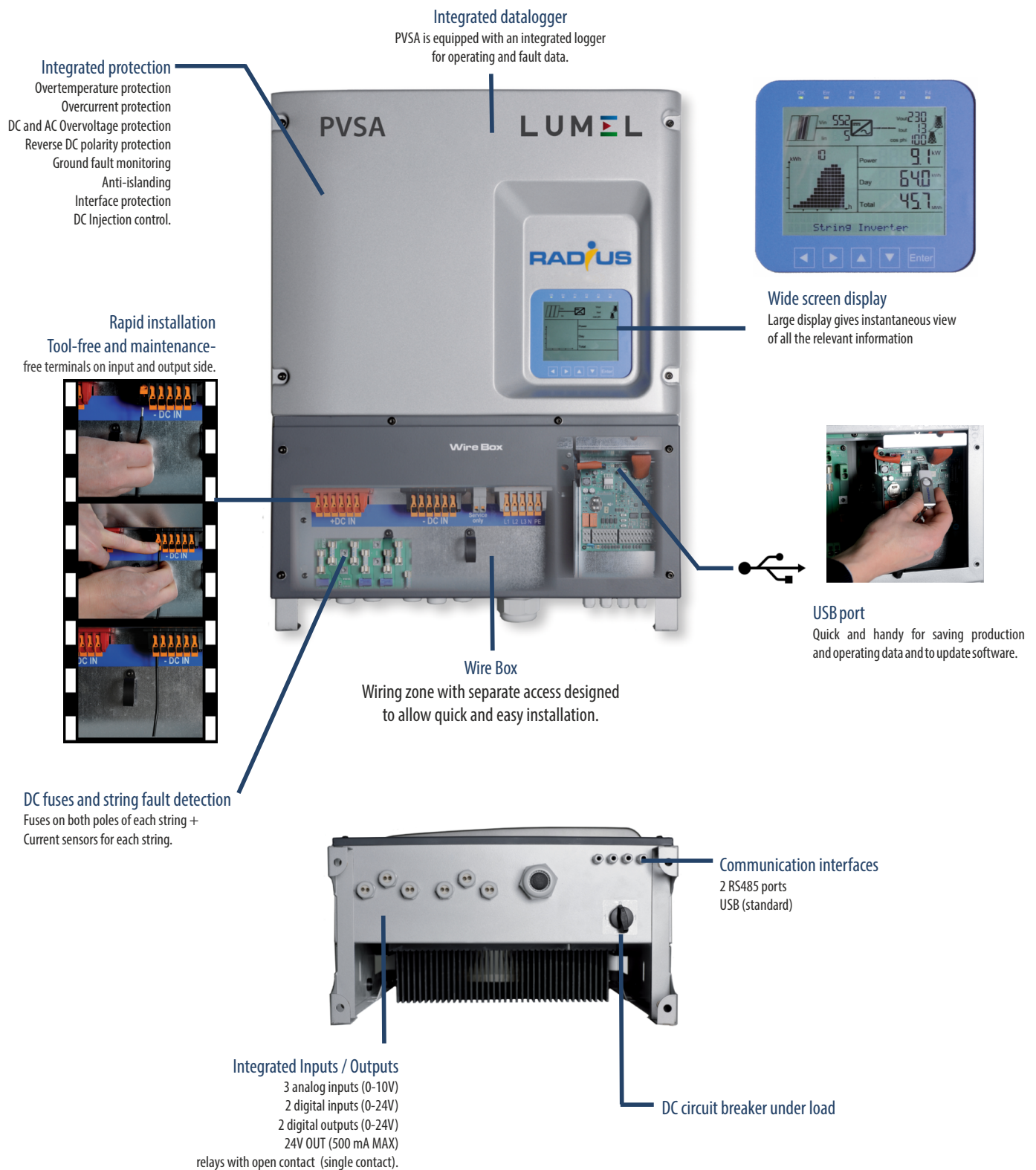
Inverters 34kW



# PVSA - PHOTOVOLTAIC STRING INVERTERS

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## GENERAL CHARACTERISTIC





## TECHNICAL DATA

PVSA												
Inverter type			10k-AE-TL-1	10k-AE-TL-2	15k-AE-TL-2	20k-AE-TL-2	20k-AE-TL-3	25k-AE-TL-2	34k-AE-TL-2			
Input data	Maximum DC voltage	V <sub>oc</sub> max	[V]		1000							
	MPPT Range(@ maximum power	[V]		350...800		390...800		350...800		450...800	520...800	
	Start- up voltage	[V]		>200								
	Max. recommended PV power (balanced input)	[kWp]		12		18		24		30	40.8	
	MPPT number			1		2		2		3	2	2
	Number of strings per each MPPT			3		2		2		3	3	
	Maximum DC current per MPPT	I <sub>dc</sub> max	[A]	33.7		22.5		22.5		33.7	33.7	
Output data	Rated AC power	P <sub>NOM</sub> AC	[kW]		10		15		20		25	34
	AC rated current/ max current	I <sub>ac</sub> max	[A]		14.4/16		21.6/24		28.9/32		36.2/37	49.1/50
	AC voltage	V <sub>AC</sub>	[V]		415V (3 phases + neutral) (output voltage range 320...480) <sup>1)</sup>							
	Rated AC frequency	f <sub>ac</sub>	[Hz]		50/60Hz (output frequency range 47...53/57...63) <sup>1)</sup>							
	Gird connection			TN-C/TN-S/TN-C-S/TT								
	THDi	THD grid	[%]		≤3							
	Power factor (settable)	cos φ			± 0.8							
Efficiency	Maximum efficiency	[%]		98.1		98.2		98.3		98.3	98.1	
	European efficiency (Euro ETA)	[%]		97.7		97.8		98		97.6	97.6	
Protections	Interface proteccions (grid monitor)		Intergrated									
	Anti-islanding		Intergrated (where required by local regulations)									
	Insulation control		Intergrated									
	Residual current monitoring		Intergrated									
	Reverse DC polarity protection		Intergrated									
	AC/DC overvoltage		Type 3 SPD standard with thermal proteccions & DC side indication CAT III (AC), II (DC)									
	DC injection control		Intergrated									
	DC circuit breaker		Circuit breaker under load									
	DC fuses & string failure detection		12 A fuses on both poles of each string + current sensors for each string									
	Night consumption (standby loss)		Inverter is mechanically disconnected from the grid.									

<sup>(1)</sup> The output voltage and frequency interval may vary according to the network connection standard.

# PVSA - PHOTOVOLTAIC STRING INVERTERS



## TECHNICAL DATA

PVSA								
Inverter type		10k-AE-TL-1	10k-AE-TL-2	15k-AE-TL-2	20k-AE-TL-2	20k-AE-TL-3	25k-AE-TL-2	34k-AE-TL-2
Interface	Display	KA == 100 x 100mm. graphic display with keyboard						
	Communication	2 x RS485 (with isolated input/ output); 1 x USB (USB for software updates and archival data download)						
	Inputs/ outputs	3 x analog input (0...10V) 2 x digital input (0...24V) 2 x digital output (0...24V) output 24V (500mA max) 2 relays (30V d.c.; 25V a.c./2A)						
Cooling		Natural convection						forced convection
Environmental conditions	Temperature range	-20...+60°C						
		derating over 50°C					derating over 40°C	derating over 50°C
	Vibes	1G						
	Protection grade	IP 65						
	Environmental conditions	climatic class acc. to IEC 60721-3-4						
	Maximum allowable relative humidity, without condensatio	100%						
	Polution level	acc. to EN 60721-3-4. The inverter should not be exposed to direct sunlight. This will prevent a rise in temperature inside the inverter and a decrease in performance.						
	Maximum mounting height above sea level	up to 2000m; 1,2% derating over 1000m						
Weight	Weight (kg)	66	72	72	76	76	94	
Standards	Standards	NC RfG; EN 50438; PN-EN 50549-1:2019; EN 61000-6-4:2007; EN 61000-6-2:2005 EN 61010-1:2010; EN IEC 63000:2018; IEC 60068-2-1/2/14/30; IEC 61727; IEC 62109-1/2; IEC 62116; IEC 61683; IEC 60529; IEC 61000-6-3/2; CE, VDE V 0126+1+1; VDE+AR+N 4105; CEI 0+21; CEI 0+16 ed. III; RD 661+Rd1699 South African Grid code, NRS 097-2-1.(1)						

## ORDERING CODE

	PVSA	XXk	XX	TL	X	SFXX	X	X
<b>Inverter power:</b>								
34 kW		34k						
25 kW		25k						
20 kW		20k						
15 kW		15k						
10 kW		10k						
<b>Model:</b>								
Advanced Energy		AE						
<b>Transformer:</b>								
not included			TL					
<b>MPPT numbers:</b>								
1 MPPT*					1			
2 MPPT					2			
3 MPPT**					3			
<b>Version:</b>								
standard						SFXX		
<b>Language:</b>								
polish/ english							M	
<b>Acceptance tests:</b>								
without additional quality requirements								0
with an extra quality inspection certificate								1
acc. to customers request								X

\* concerns 10 kW version  
\*\* concerns 20 kW version



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