



Data Sheet

RADIUS APV-S



PHOTOVOLTAIC STRING INVERTERS

Technology from
GEFRAN, Italy



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DESCRIPTION

Rishabh, a leader in industrial sector with vast experience and know-how, presents the new Radius APV-S string inverter. Conforming to the most advanced international standards, the APV-S satisfies the application demands of a market in constant technological evolution.

The RADIUS range of PV inverters 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 RADIUS range.

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



RADIUS -APV-S

FEATURES

- ▶ Maximum efficiency up to 98.3%
- ▶ 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 Rs485 ports for communication interface
- ▶ Integrated inputs/outputs: 3 analog inputs, 2 digital inputs, 2 digital outputs
- ▶ Auxiliary 24 VDC out (500mA max) for connection of environmental sensors



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VERY HIGH CONVERSION EFFICIENCY LEVEL



Maximum efficiency up to 98.3% makes the APV-S 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.



Full power up to 50°C

The ability to work at high ambient temperatures without derating makes the APV-S ideal even in the harshest environments. See specifications for details.

IP 65

APV-S is suitable for both indoor and outdoor installations thanks to its IP65 structure.

Natural ventilation up to 25kW

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

PERFECT IN EVERY INSTALLATION CONDITION



RIGHT ANSWER TO ALL ENGINEERING NEEDS



With a very wide range of modular configurations, the APV-S 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 cos phi: 10-34kW(25 & 34kW cos phi=1)

The offer is completed with a wide range of options, accessories, and services that make RADIUS the ideal partner for the entire life of the PV system.



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APPLICATIONS

ADVANCED ENERGY Series APV-S-...k-AE (10-34kW)

Maximum flexibility and performance even in systems with complex structure.

PLANTS WITH NON-UNIFORM STRINGS



CODE DESCRIPTION

APV-S-XXk-XX-TL-X X X X X -XX

Display	KA = advanced display
Grounding kit	X = not included
Interface protection system to CEI-021 standard and AC3 contactor	X = not included
DC fuses and Broken string recognition	F = included
DC circuit breaker under load	S = included
MPPT numbers	1 = 1 MPPT 2 = 2 MPPT 3 = 3 MPPT
Transformer:	TL = not included
Model	AE = Advanced Energy
Inverter power in kW:	20k = 20 kW 18k = 18 kW 25k = 25 kW 15k = 15 kW 34k = 34 kW 12k = 12 kW 10k = 10 kW
Photovoltaic string inverter, APV-S series	



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GENERAL CHARACTERISTICS

Integrated protection

- Overtemperature protection
- Overcurrent protection
- DC and AC Overvoltage protection
- Reverse DC polarity protection
- Ground fault monitoring
- Anti-islanding
- Interface protection
- DC Injection control.

Integrated datalogger

APV-S is equipped with an integrated logger for operating and fault data.



Wide screen display

Large display gives instantaneous view of all the relevant information

DC fuses and string fault detection

Fuses on both poles of each string + Current sensors for each string.



Rapid installation

Tool-free and maintenance-free terminals on output side and MC-4 Terminals on DC side

Wire Box

Wiring zone with separate access designed to allow quick and easy installation.

USB port

Quick and handy for saving production and operating data to update software.

Communication interfaces

2 RS485 ports
 USB (standard)

DC circuit breaker under load

Integrated Inputs / Outputs

- 3 analog inputs (environmental sensors)
- 2 digital inputs (0-24V)
- 2 digital outputs (0-24V)
- 24VDC OUT (500 mA MAX)
- relays with open contact (single contact).



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CHOOSING THE INVERTER - TECHNICAL DATA

APV-S...-AE			RADIUS Range of Inverters Technology from Gefran- Italy								Designed on the Technology Platform of Radius	
			10k-AE-TL-1	10k-AE-TL-2	12k-AE-TL-1	12k-AE-TL-2	15k-AE-TL-2	18k-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 _{dc max} [V]	1000									
	MPPT Range(@ maximum power)	[V]	350..800	420..800	350..800	390..800	470..800	350..800	450..800	520..800		
	Start- up voltage	[V]	>200									
	Max. Recommended PV Power (balanced input)	[kWp]	12	14.4	18	21.6	24	30	40.8			
	MPPT number	No. MPPT	1	2	1	2	2	2	2	3	2	2
	Number of strings per each MPPT	No.	3	2	3	2	2	2	3	2	3	3
	Maximum DC current per MPPT	I _{dc max} [A]	33.7	22.5	33.7	22.5	22.5	22.5	33.7	22.5	33.7	33.7
Output data	Rated AC Power	P _{NOM AC} [kW]	10	10	12	12	15	18	20	20	25	34
	AC rated current/Max current	I _{AC max} [A]	14.4/16	14.4/16	17.3/19.2	17.3/19.2	21.6/24	26/28.9	28.9/32	28.9/32	36.2/37	49.1/50
	AC voltage	V _{AC} [V]	415V (3-phases + Neutral) (output voltage range 320..480) ¹⁾									
	Rated AC frequency	f _{AC} [Hz]	50/60Hz (Output frequency range 47..53/57..63) ¹⁾									
	Grid connection		TN-C/TN-S/TN-C-S/TT									
	THDi	THD grid [%]	≤3									
Efficiency	Power factor (settable)	cosphi	+/- 0.8									
	Maximum efficiency	[%]	98.1	98.1	98.1	98.1	98.2	98.3	98.3	98.3	98.3	98.1
	European efficiency (Euro ETA)	[%]	97.7	97.7	97.7	97.7	97.8	98	98	97.6	97.6	97.6
Protections	Interface protections(grid monitor)		Integrated									
	Anti-islanding		Integrated (Where required by local regulations)									
	Insulation control		Integrated									
	Residual current monitoring		Integrated									
	Reverse DC polarity protection		Integrated									
	AC/DC overvoltage		Type 3 SPD standard with thermal protections & DC side indication Optional: Type 2 pluggable DC SPD & AC SPD ⁽²⁾									
	DC injection control		Integrated									
	DC circuit breaker		Circuit breaker under load									
	DC fuses & string failure detection		12A fuses on both poles of each string + current sensors for each string									
Night Consumption(Standby loss)		Inverter is mechanically disconnected from the grid .										

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

(2) Optional AC SPDs are available only for 34kW.



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Version No.: G 09/2020

CHOOSING THE INVERTER - TECHNICAL DATA

APV-S-...-AE											
		RADIUS Range of Inverters Technology from Gefran- Italy								Designed on the Technology Platform of Radius	
		10k-AE-TL-1	10k-AE-TL-2	12k-AE-TL-1	12k-AE-TL-2	15k-AE-TL-2	18k-AE-TL-2	20k-AE-TL-2	20k-AE-TL-3	25k-AE-TL-2	34k-AE-TL-2
Interface	Display	KA KA = 100 x 100mm graphic display with keypad									
	Communications	2 Rs485 ports (both with separate in/out) 1 standard USB port (only for firmware updates and downloading of historical data) In built GSM based remote monitoring system(optional)									
	Inputs/Outputs	3 analog inputs (environment sensors 0..10V) 2 Digital inputs (0-24V) 2 Digital outputs (0-24V) 24V OUT (500mA MAX) 2 relays single contact (30Vdc, 250Vac/2A)									
	Cooling	Natural Convection									Forced Convection
Environmental Data	Temperature Range	-20...+60°C									
		over 50°C derating								over 40°C derating	over 50°C derating
	Vibration	1G									
	IP protection degree	IP 65									
	Environmental conditions	4K4H									
	Maximum permissible value for relative humidity, non condensing	100%									
	Pollution degree	EN 60721-3-4, free from direct solar radiation To avoid increasing the internal temperature of the inverter and cause a reduction of the output power (derating)									
	Altitude	Up to 2000m with derating (1.2% each 1000m above 1000m)									
Dimension & Weight	Dimensions	Width x Height x Depth: 551 x 770 x 328mm									WxHxD: 551 x 770 x 382mm
	Weight(Kg)	66	72	66	72	72	72	76	76	76	94
Standards	Approvals	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)									Designed to meet all the relevant applicable IEC standards

(3) All the above models up to 20kW are available in PVSyst software under manufacturer name Gefran. The complete series of Radius including new models (25-34kW) is available under manufacturer name Rishabh.



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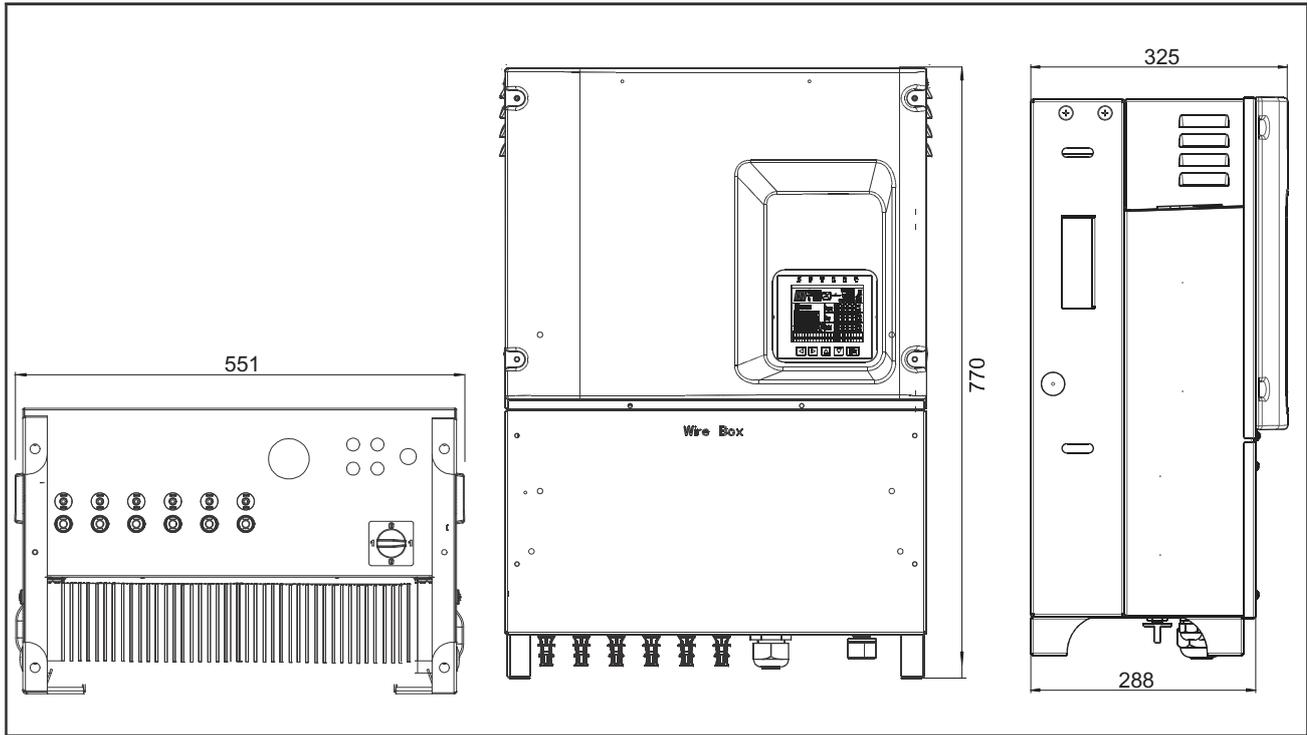
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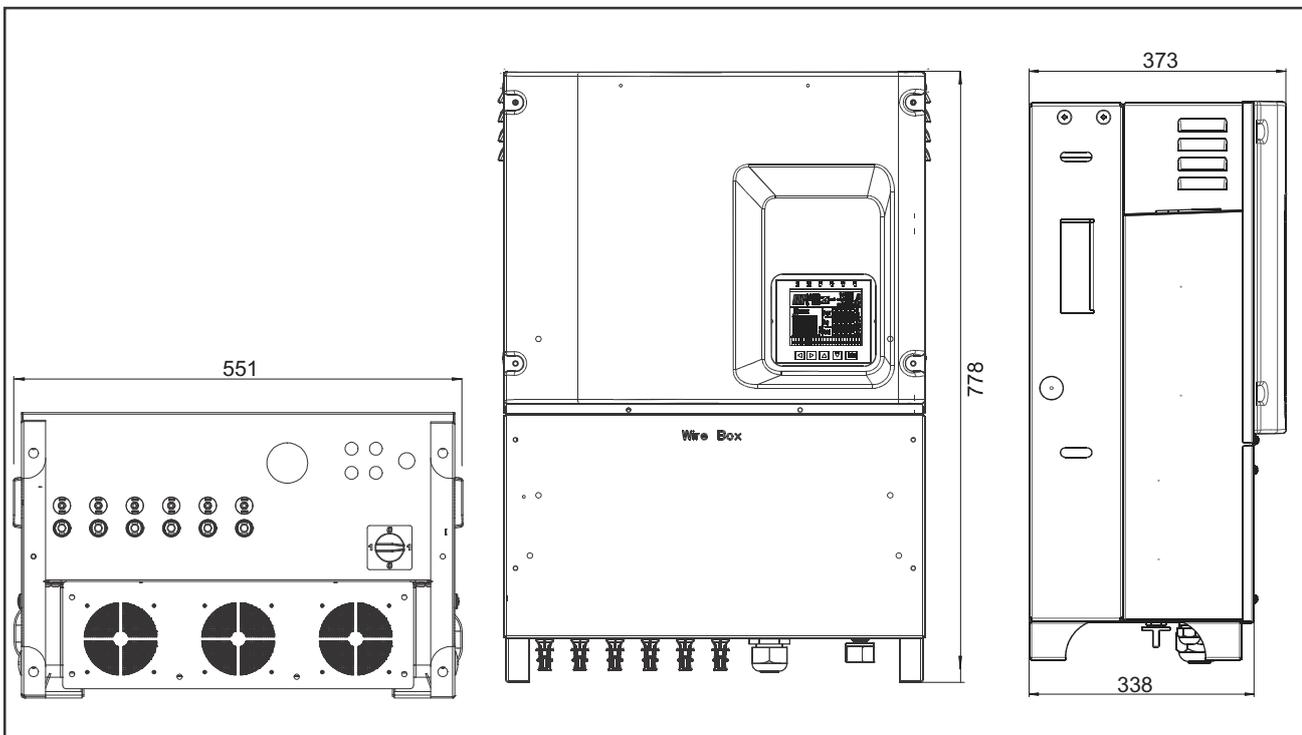
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APV-S- AE (10-25kW) DIMENSION



APV-S- 34kW-AE DIMENSION



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SOLAR ON-GRID INVERTERS
from



RISHABH



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