

Data Sheet

RADIUS APV-S



PHOTOVOLTAIC STRING INVERTERS

Technology from
GEFRAN, Italy



Generate



Measure



Control



Record



Analyze

DESCRIPTION



Rishabh, a leader in industrial sector with vast experience and knowhow, presents the new Radius APVS string inverter. Conforming to the most advanced international standards, the APVS 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, userfriendly 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 APVS 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.

SiC Silicon Carbide
Technology

Full power up to 50°C

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

IP 65

APVS 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 APVS 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: 10-50kW

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 SeriesAPVS...k AE (10-50)kW

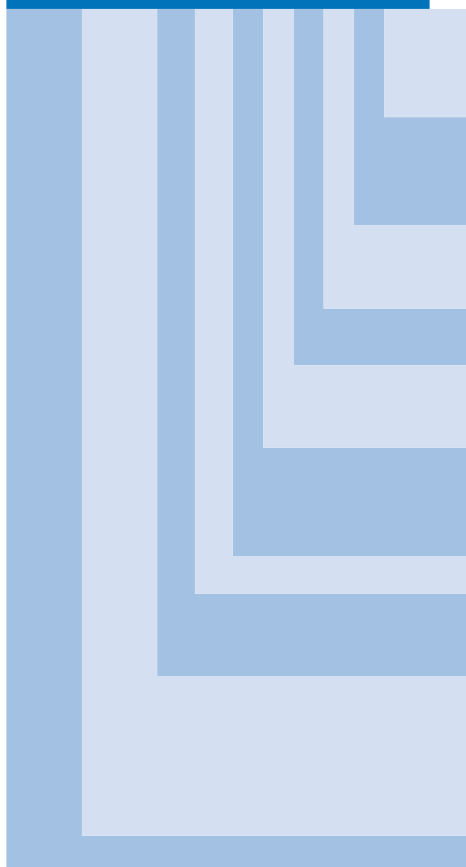
Maximum flexibility and performance even in systems with complex structure.

PLANTS WITH NON-UNIFORM STRINGS



CODE DESCRIPTION

APVS -XXk XX-TL-XX X X X-XX

	Display	KA = advanced display
	Grounding kit	X = not included
	Interface protection system to CEI021 standard and AC3 contactor or AC SPD	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 50k = 50 kW 10k = 10 kW
Photovoltaic string inverter, APVS series		



Generate



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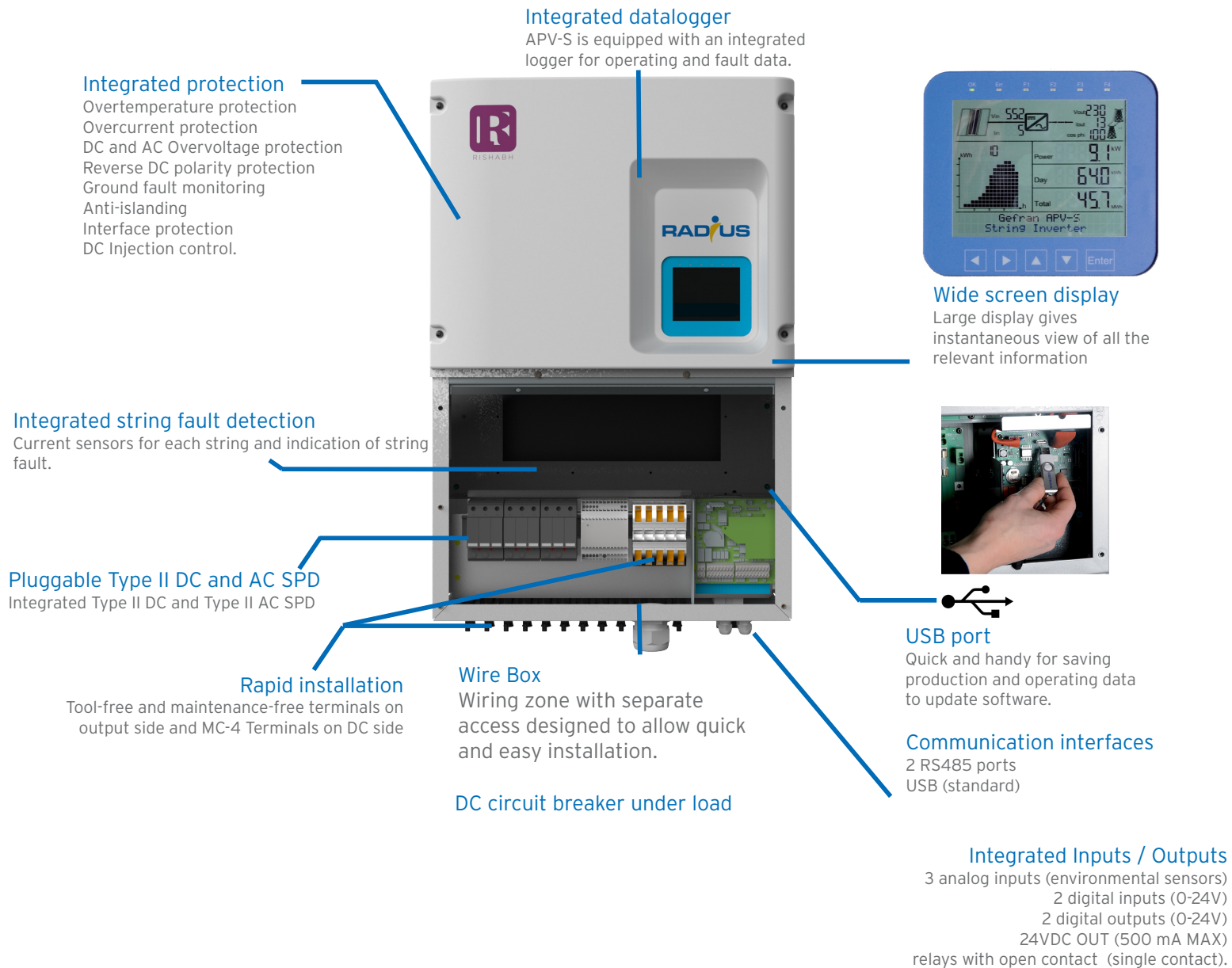


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GENERAL CHARACTERISTICS



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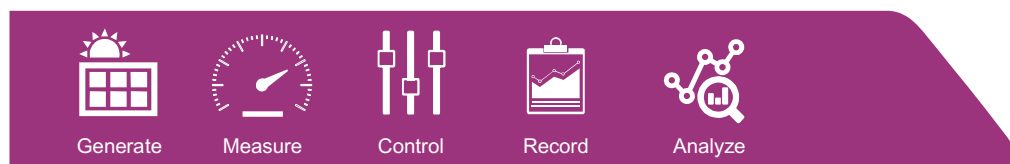
Analyze

CHOOSING THE INVERTER - TECHNICAL DATA

APVS..AE														
			RADIUS Range of Inverters Technology from Gefran Italy							Designed on the Technology Platform of Radius				
			10kAETL1	10kAETL2	12kAETL1	12kAETL2	15kAETL2	18kAETL2	20kAETL2	20kAETL3	25kAETL2	34kAETL2	50kAETL3	
Input data	Maximum DC voltage	V _{dc} max	[V]	1000										
	MPPT Operating Range		[V]	350..800										
	MPPT Range(@ maximum power)		[V]	350..800		390..800	350..800	390..800	470..800	350..800		450..800	520..800	
	Nominal Voltage		[V]	600V										
	Max. Recommended PV Power (balanced input)		[kWp]	12		14.4		18	21.6	24		30	40.8	60
	MPPT number	No. MPPT		1	2	1	2	2	2	2	3	2	2	3
	Number of strings per each MPPT	No.		2	1	2	1	2/1	2	2	2/1/1	3/2	3	4/3/3
	Maxm DC current per MPPT/ Maxm Short Circuit Current	I _{max} /I _{sc}	[A]	33.7/42	22.5/28	33.7/42	22.5/28	22.5/28	22.5/28	33.7/42	22.5/28	33.7/42	33.7/42	33.7/42
Output data	Rated AC Power	P _{NOM} AC	[kW]	10	10	12	12	15	18	20	20	25	34	50
	AC rated current/Max current	I _{AC} max	[A]	13.9/16	13.9/16	16.6/19.2	16.6/19.2	20.8/24	25.0/28.9	27.8/32	27.8/32	34.8/37	47.3/50	69.5/79
	AC voltage	V _{AC}	[V]	{(239V _{LN} /415V _{LL} 3-phases + Neutral)/(230V _{LN} /400V _{LL} 3-phases + Neutral)} (output voltage Range (320 ... 480V _{LL}) / (184...277V _{LN})) ⁽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										
	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	98.1
	European efficiency (Euro ETA)		[%]	97.7	97.7	97.7	97.7	97.8	98	98	97.6	97.6	97.6	97.6
Efficiency	Interface protections(grid monitor)			Integrated										
	Antiislanding			Integrated (Where required by local regulations)										
	Insulation control			Integrated										
	Residual current monitoring			Integrated										
	Reverse DC polarity protection			Integrated										
	AC/DC overvoltage			AC SPD Type 2 Pluggable and Type 3 SPD standard with thermal protections Optional: Type 2 pluggable DC SPD										
	DC injection control			Integrated										
	DC circuit breaker			Circuit breaker under load										
	DC fuses & string failure detection			20A/15A/12A fuses ⁽²⁾ + current sensors for each string										
	Night Consumption(Standby loss)			<1W										

(1) The output voltage and frequency interval may vary according to the network connection standard^{*}

(2) Applicable only for 10-25kW model, for 34-50kW model (MC4 with Inline fuses) are available as an option.



CHOOSING THE INVERTER - TECHNICAL DATA

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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 Data	Temperature Range	-20...+60°C ⁶⁾									
	Noise Emission (Typical)	40db(A)								50db(A)	
	Vibration	1G									
	IP protection degree	IP 65									
	Environmental conditions	4K4H									
	Maximum permissible value for relative humidity, non condensing	100%									
	Pollution degree	EN 6072134, free from direct solar radiation To avoid increase in 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 325mm								WxHxD: 551 x 864 x 377mm	
	Weight(Kg)	66	72	66	72	72	72	76	76	76	94
Standards	Approvals	IEC 6006821/2/14/30, IEC 61727, IEC 621091/2, IEC 62116, IEC 61683, IEC 60529, IEC 6100063/2, CE, VDE V 012611, VDEARN 4105; CEI 021, CEI 016 ed. III; RD 661 - Rd1699; South African Grid code, NRS 09721.(1)							IEC 6006-8-2-1/2/14/30, IEC 61727, IEC 62116, IEC 61683, IEC 60529, IEC 6100063/2, CE, VDE-V-0126-1-1, IEC 62109-1/2,		

(4) All the above models up to 20kW are available in PVSyst software under manufacturer name Gefran. The complete series of Radius including new models (25-50kW) is available under manufacturer name Rishabh.

(5) For 50kW model VDE-V-0126-1 is available on request .

(6) Refer power derating versus temperature curves



Generate



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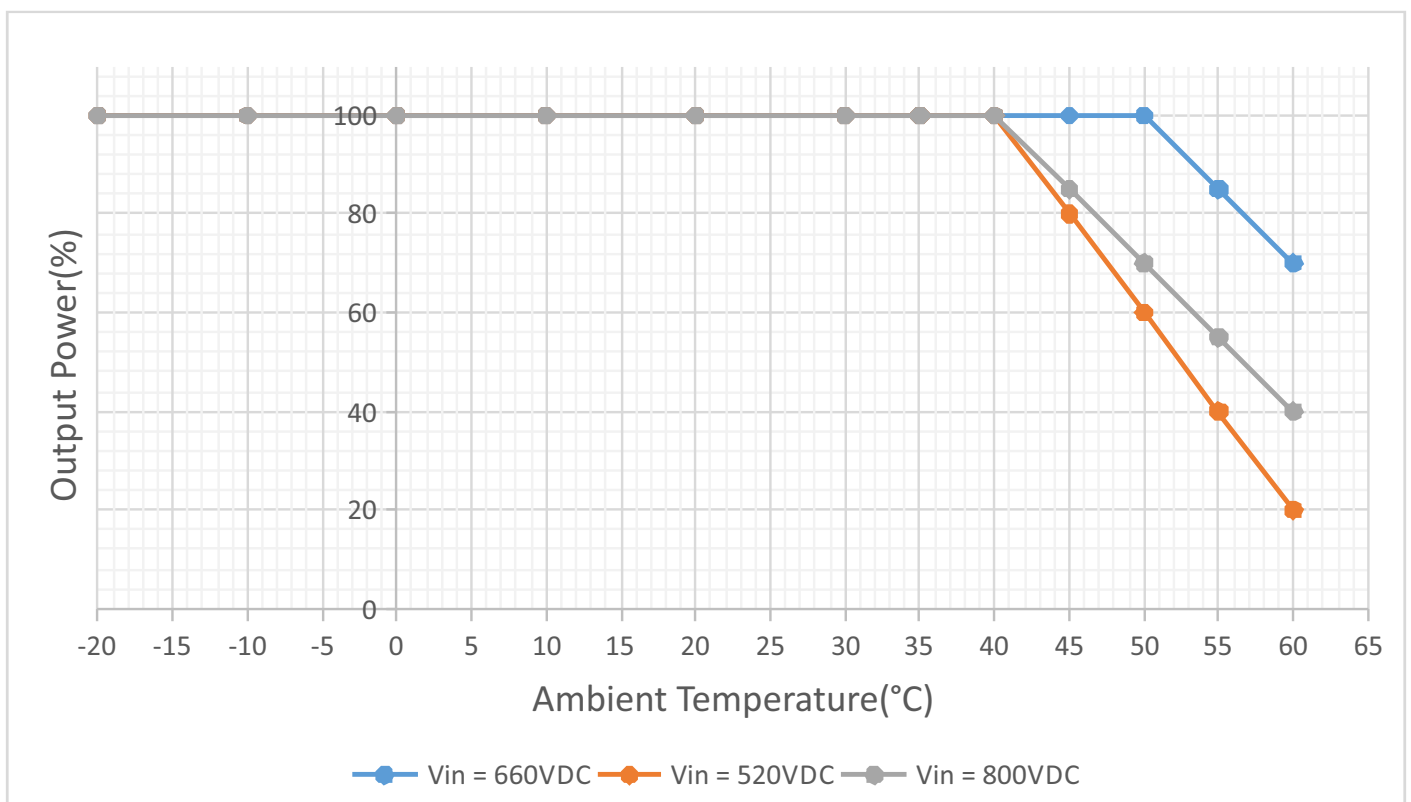


Record



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APV-S TEMPERATURE DERATING CURVE



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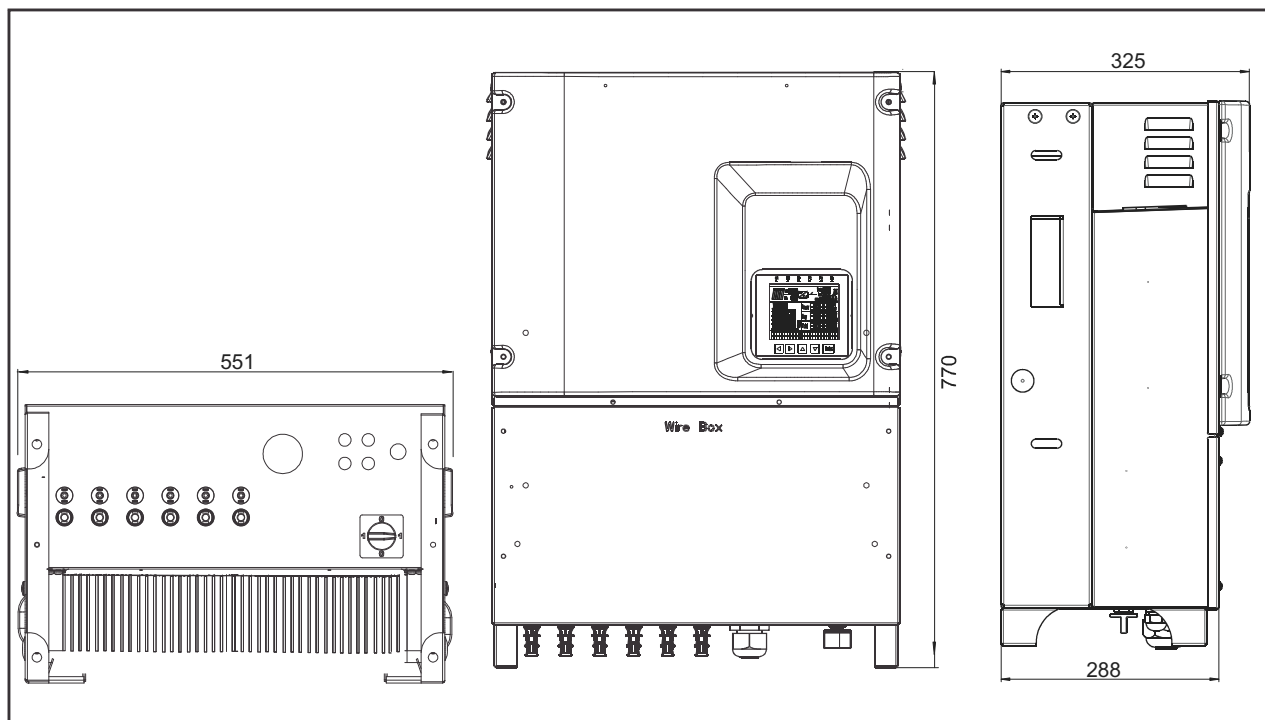


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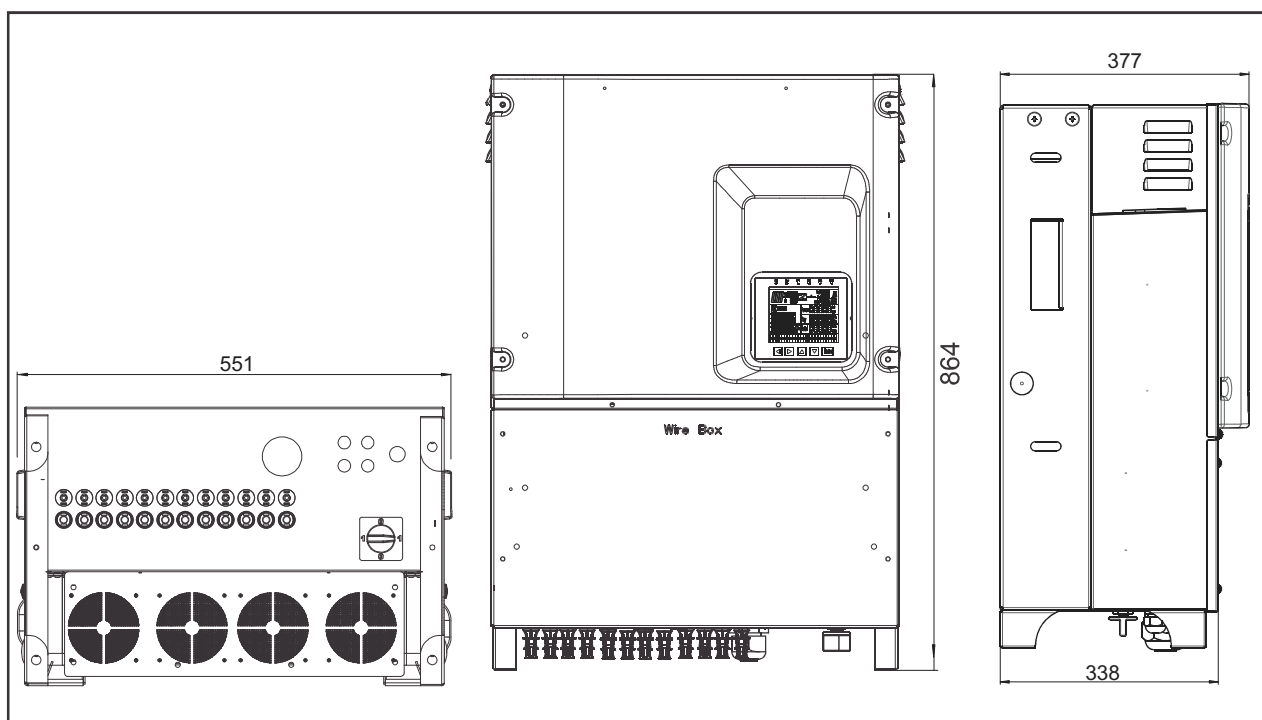


Analyze

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



APV-S-(34-50)kW-AE DIMENSION



Generate



Measure



Control



Record



Analyze



SOLAR ON-GRID INVERTERS from



RISHABH



Generate



Measure



Control



Record



Analyze

These specifications may be changed without notice.

Version No: 3 4/22