

FOPOWERS

PV300

Solar Pumping Inverter



FOPOWERS



MPPT
Technology



Driving Multiple
Types of Pumps



Compact structure,
stable and reliable



High Performance
& Multi-functions

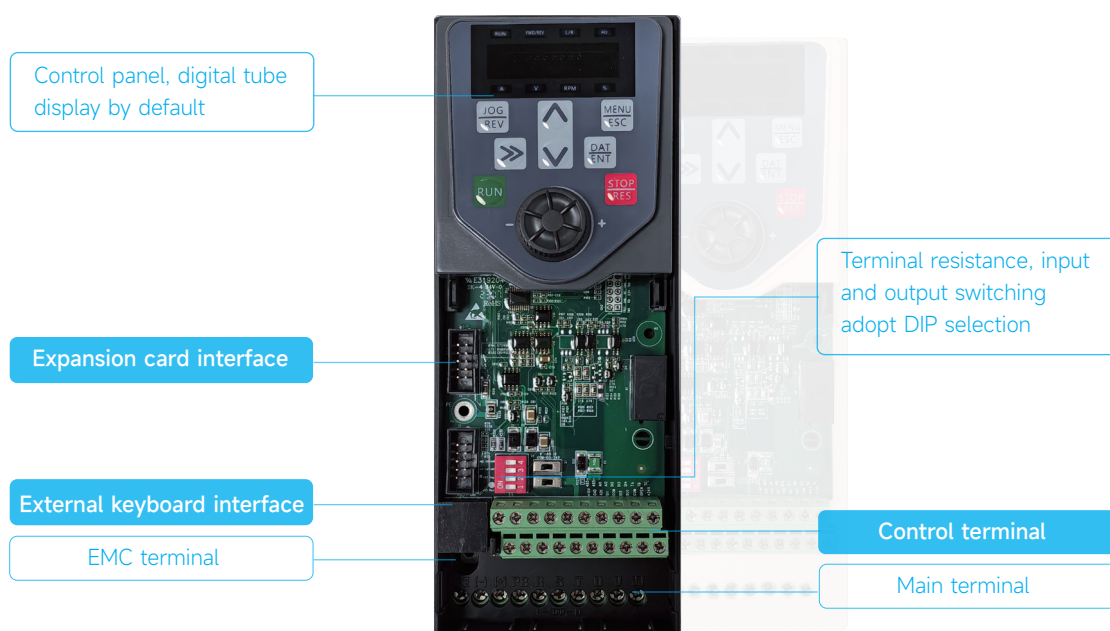


PV300

Solar Pump Inverter Enjoy the green low-carbon life

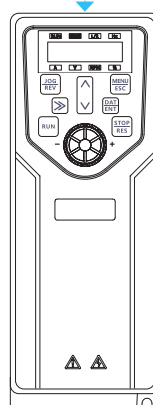
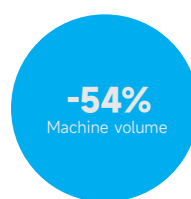
PRODUCT FEATURES

Compact structure, stable and reliable



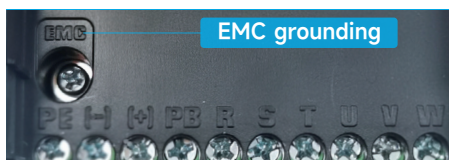
New book structure

The whole series adopts the book-style design, the volume is about 54% smaller than the similar book-style products, and the space utilization rate is high, which effectively saves the customer's electrical cabinet space and electrical cabinet cost.



Domestic top brand

EMC grounding design



Adopt innovative EMC grounding design, grounding can be quickly selected through the terminal or intermittently, effectively solve EMC interference.

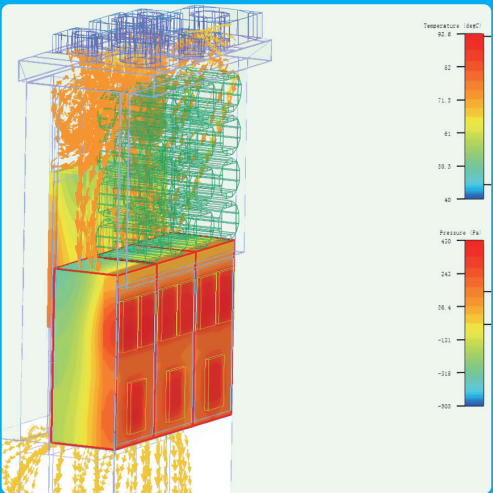
Keyboard operation

A newly designed panel keyboard with superior operability. Built-in keyboard and external keyboard support dual line display(control right can be selected through the drive parameters built-in or external keyboard).



Advanced heat dissipation design

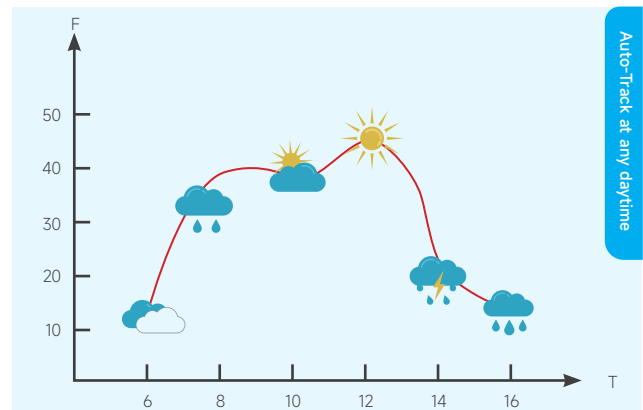
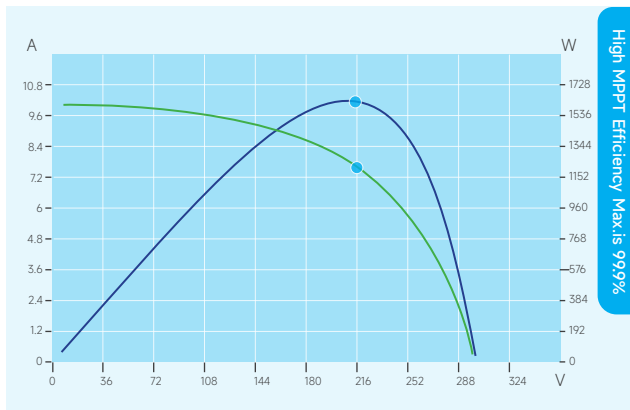
Wide tooth surface heat dissipation and high wind speed design. Ensure the full power range drives can be used without derating of at high temperature.



HEAT DESIGN

Advanced MPPT Technology

By continuously adjusting the output voltage and current of the inverter to match the maximum power point at the current light intensity, the maximum MPPT efficiency can reach 99.9%.



Driving Multiple Types of Pumps

Compatible with synchronous machine and asynchronous machine, energy-saving transformation is effortless.



Asynchronous pumps



synchronous pumps



High Performance & Multi-functions

One-Key Operation

Just RUN it for AM pump system; Just RUN it after self-tuning for PMSM pump system.



Auto-Running by Keyboard

Special Functions

- Low frequency
- Dry run
- Over current of pump
- Minimum power
- PQ curve
- Dormancy



Auto-Running by DI1 and COM

Maintenance Tools

Complete monitoring, configuration, optimization and diagnostic services are provided by FGAppStudio running on PC tool.



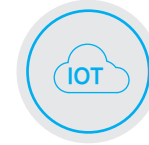
Intelligent monitoring brings smart irrigation

Custom PQ curve

automatically calculate the parameters most concerned by users based on the curve, such as flow speed, daily flow, cumulative flow, daily power generation, and cumulative power generation.

Intelligent IOT system

IOT data platform, wireless transmission technology(GPRS, Bluetooth or WIFI), intelligent judgment of needs for water and fertilizer for achieving smart irrigation.

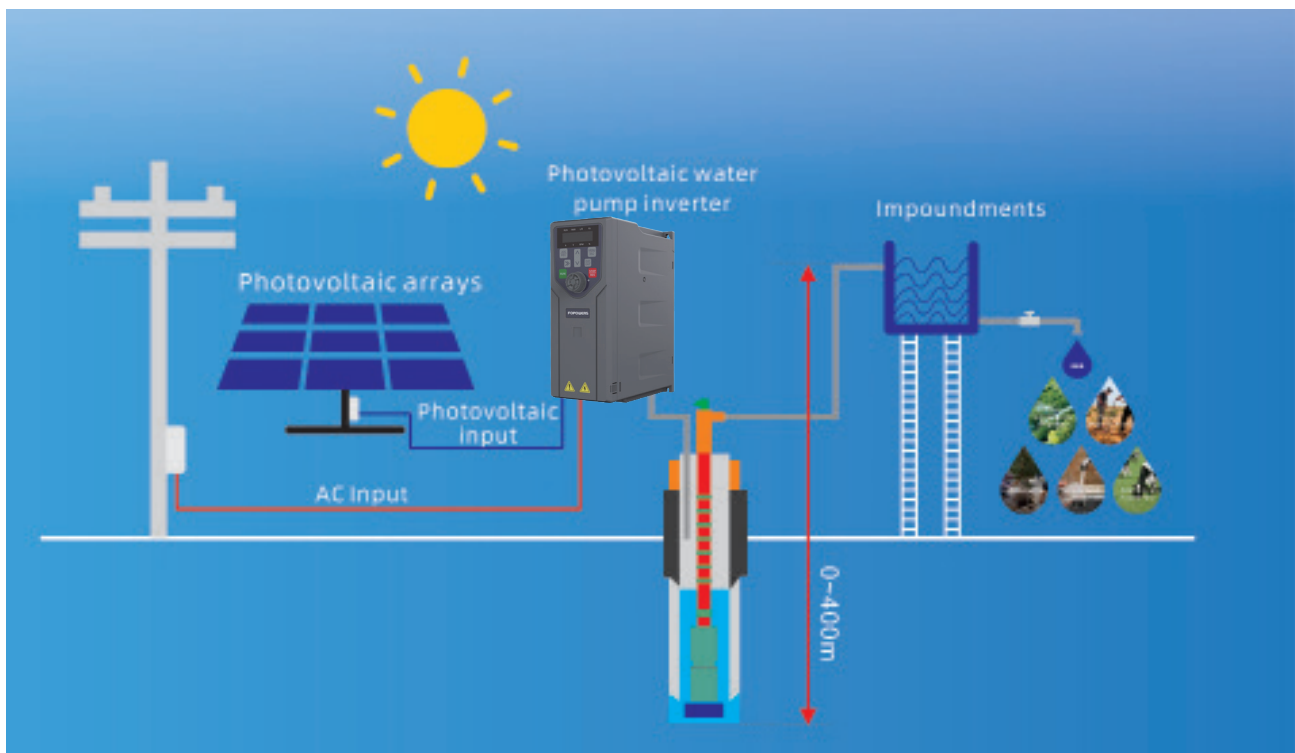


Remote control of mobile APP can be controlled home

- ▶ Bluetooth, WIFI and GPRS wireless transmission
- ▶ Technology. Widely-used multi-language switching.
- ▶ Digital display Of current data are clear and accurate.



Solar Pumping Inverter application system



NAMING RULES

PV300 - 4T - 7.5G	
①	②
① Inverter series PV300 series Solar photovoltaic water pump inverter	③ Adaptive motor power 0.75: 0.75KW 7.5: 7.5KW
② Voltage Class 1T: Suitable for driving pumps with 110VAC 2S/2T: Suitable for driving pumps with 220VAC 4T: Suitable for driving pumps with 380VAC / 480VAC	

SOLAR PUMP DRIVE MODEL ANALYSIS

Product model	Voltage level	Input power		Power range
		DC	AC	
PV300-1T-xxG	110V	90-400VDC	Single-phase 110VAC	0.75-1.5kW
PV300-2S/2T-xxG	220V	150-450VDC	Single-phase 220VAC	0.75-4.0kW
PV300-4T-xxG	380V	250-800VDC	Three-phase 380VAC	0.75-37kW
		350-800VDC	Three-phase 380VAC	45.0-200kW
	480V	250-900VDC	Three-phase 480VAC	0.75-37kW
		350-900VDC	Three-phase 480VAC	45.0-200kW

TECHNICAL SPECIFICATIONS

For other customized parameters, please contact our engineers to get!

Solar Pump Inverter Power (KW)	Pump		Maximum Input Power of Solar panel (KW)	Maximum Input DC Voltage (V)	Total Voc range (V)of Recommended Panels	Rated Output Current (A)	Output Frequency Range (Hz)
	Rated Power (KW)	Rated Voltage (V)					
PV300-1T Series: Input 90-400VDC, 3 Phase 110-230VAC Output, Suitable for AC 110V Pumps							
0.75	0.75	110	1.0	400	175-380	7	0-600
1.5	1.5	110	1.95	400	175-380	10.6	0-600
PV300-2S Series:Input 150-450VDC,1 Phase150-230VAC Output, Suitable for AC 220V Pumps PV300-2T Series: Input 150-450VDC,3 Phase 150-230VAC Output, Suitable for AC 220V Pumps							
0.75	0.75	220	1.0	450	360-430	4	0-600
1.5	1.5	220	1.95	450	360-430	7	0-600
2.2	2.2	220	2.86	450	360-430	10.6	0-600
4.0	4.0	220	4.81	450	360-430	17	0-600
PV300-4T Series: Input 250-800VDC (900VDC operational) 3 Phase 230-460VAC Output, Suitable for AC 380V Pumps							
0.75	0.75	380	1.0	800	620-750	2.5	0-600
1.5	1.5	380	2.2	800	620-750	3.8	0-600
2.2	2.2	380	3.3	800	620-750	5.1	0-600
4.0	4.0	380	5	800	620-750	10	0-600
5.5	5.5	380	8	800	620-750	14	0-600
7.5	7.5	380	10	800	620-750	18	0-600
11	11	380	14.3	800	620-750	26	0-600
15	15	380	19.5	800	620-750	33	0-600
18.5	18.5	380	23.4	800	620-750	38	0-600
22	22	380	28.6	800	620-750	46	0-600
30	30	380	39	800	620-750	61	0-600
37	37	380	48.1	800	620-750	76	0-600
PV300-4T Series: Input 350-800VDC (900VDC operational) 3 Phase 230-460VAC Output, Suitable for AC 380V Pumps							
45	45	380	58.5	800	620-750	92	0-600
55	55	380	71.5	800	620-750	113	0-600
75	75	380	97.5	800	620-750	151	0-600
90	90	380	120	800	620-750	177	0-600
110	10	380	143	800	620-750	211	0-600
132	32	380	171.6	800	620-750	254	0-600
160	60	380	208	800	620-750	305	0-600
185	185	380	240.5	800	620-750	327	0-600
200	200	380	260	800	620-750	378	0-600

Solar Pump Inverter Power (kW)	Pump		Maximum Input Power of Solar panel (kW)	Maximum Input DC Voltage (V)	Total Voc range (V) of Recommended Panels	Rated Output Current (A)	Output Frequency Range (Hz)
	Rated Power (kW)	Rated Voltage (V)					
220	220	380	305	800	620-750	427	0-599.00
250	250	380	335	800	620-750	466	0-599.00
280	280	380	386	800	620-750	521	0-599.00
315	315	380	415	800	620-750	586	0-599.00
355	355	380	466	800	620-750	651	0-599.00
400	400	380	522.5	800	620-750	726	0-599.00
450	450	380	616	800	620-750	821	0-599.00
500	500	380	676	800	620-750	861	0-599.00
560	560	380	726	800	620-750	951	0-599.00
630	630	380	851	800	620-750	1101	0-599.00
710	710	380	959	800	620-750	1261	0-599.00

SOLAR PANELS RECOMMENDED CONFIGURATION

Solar pump inverter model	Solar panel model 1			Solar panel model 2			Solar panel model 3			
	Voc:21V±2V			Voc:31V±2V			Voc:43V±2V			
	P±3W (W)	Isc (A)	configuration	P±3W (W)	Isc (A)	configuration	P±3W (W)	Isc (A)	configuration	Inverter rated current (A)
PV300-1T-0.75G										7.0
PV300-1T-1.5G										9.6
PV300-2T-0.75G	30	2.75	17*2							4.0
PV300-2T-1.5G	60	3.48	17*2							7.0
PV300-2T-2.2G	90	5.5	17*2							9.6
PV300-2T-3.7G	90	5.5	17*3							16
PV300-4T-0.75G	30	2.75	30*1							2.5
PV300-4T-1.5G	60	3.48	30*1							3.8
PV300-4T-2.2G	90	5.5	30*1							5.1
PV300-4T-3.7G	85	4.7	28*2							9.0
PV300-4T-5.5G				180	7.33	19*2				13
PV300-4T-7.5G				240	8.81	20*2	200	7.32	15*3	17
PV300-4T-11G				180	7.33	20*4	240	7.32	15*4	25
PV300-4T-15G				240	8.81	20*4	240	7.32	15*5	32
PV300-4T-18.5G				240	8.81	20*5	240	7.32	15*6	37
PV300-4T-22G				240	8.81	20*6	270	7.32	15*7	45
PV300-4T-30G				240	8.81	20*8	270	7.32	15*10	60
PV300-4T-37G				270	8.81	20*9	270	7.32	15*11	75
PV300-4T-45G				270	8.81	20*10	270	7.32	5*14	91

Note: The recommended total Vmp of solar panel shall be 1.15 times of inverter bus voltage. For example, in 4T series, the recommended Vmp voltage is 540V*1.15=621V; and in 2T series, the recommended Vmp voltage is 311*1.15=357V; For example, the 1T series recommended Vmp is 155*1.15=178V.

The recommended total power of solar panel should be at least 1.2 times of the inverter power (drive the same power pump); such as the recommended total power of solar panel for 7.5kW water pump system: 7500*1.2=9000W

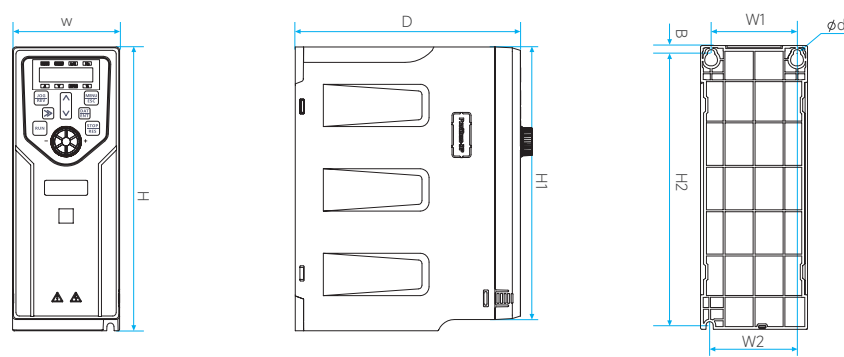
The maximum withstand voltage of 1T model products is 400VDC; of 2T model products is 450VDC; and of 4T model products is 900VDC.

TECHNICAL SPECIFICATIONS

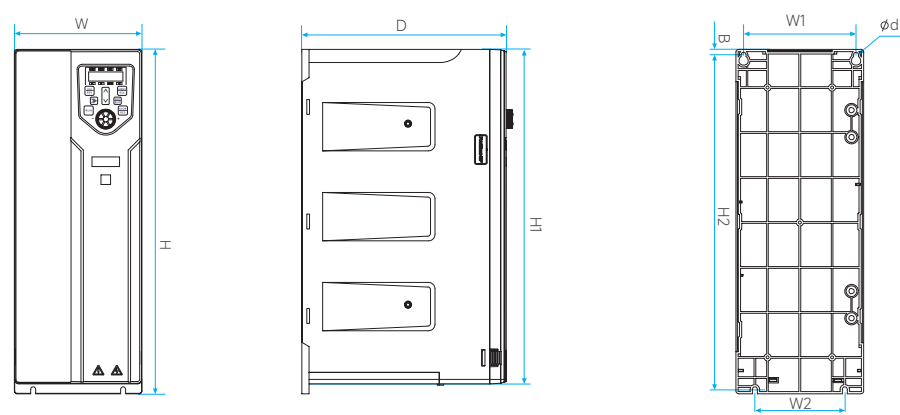
Items		Specifications
Power input	Voltage	1T: 90VDC-400VDC 2S/2T: 150VDC-450VDC 4T: 250VDC-800VDC / 350VDC-800VDC / 350VDC-900VDC
	Frequency	50Hz/60Hz, Tolerance $\pm 5\%$
	Voltage range	Continuous voltage fluctuation $\pm 15\%$, short fluctuation $-15\% \sim +15\%$
		Voltage out-of-balance rate $< 3\%$
	Total Voc range (V) of recommended panels	1T Type: 175-380VDC 2S/2T Type: 360-430VDC 4T Type: 620-750VDC
Power output	Adaptive motor type	three-phase asynchronous motor, Permanent magnet synchronous motor
	Output voltage (V)	three-phase: $0\% \sim$ rated input voltage, error $< \pm 3\%$
	Output frequency (Hz)	$0.00\% \sim 599.00\text{Hz}$; Unit: 0.01Hz
	Overload capacity	150% rated current/1 min, 180% rated current/10s, 200% rated current/0.5s
Basic functions	ACC/DEC time	$0.0 \sim 30000\text{s}$
	Switching frequency	$0.5\text{kHz} \sim 16\text{kHz}$
	Frequency setting	Digital setting + control panel, Communication, Analog setting, Terminal pulse setting
	Motor start-up methods	Started from starting frequency, Speed tracking start
	Motor stop methods	Ramp to stop, Free stop
Protection function	Solar pump protection function	Dry run, Low frequency, Low power, Dormancy, Water full, Pump over current protection
	Basic protection function	Inverter unit protection, Overcurrent during acceleration, Overcurrent during deceleration, Over current at constant speed, Overvoltage during acceleration, Overvoltage during deceleration, Overvoltage at constant speed, Undervoltage, Power input phase loss, Power output phase loss, Inverter overload, Motor overload, Current detection fault, Inverter temperature exceeds the limit, Load becoming 0, Too large speed deviation, Short circuit to ground, External equipment fault, Fast current limit fault, Communication fault, Master slave control communication disconnection, EEPROM read-write fault, PID feedback lost during running, Data storage fault, Control power supply fault, Motor switchover fault during running, Accumulative running time reached
Communication network		Supports 485/Modbus protocol, Profibus-DP protocol, CANopen protocol, Profinet protocol, EtherCAT protocol, Modbus TCP protocol and CAN customized protocol
Featured functions	Parameter copy, parameter backup, common DC bus, free switchover between two motors' parameters, flexible parameter displayed & hidden, various master & auxiliary setting and switchover, flying start, a variety of Accel/Decel curves optional, brake control, 16-step speed control programmable (2-step speed supports flexible frequency command), wobble frequency control, fixed length control, count function three history faults, over excitation brake, over voltage stall protection, under voltage stall protection, restart on power loss, skip frequency, frequency binding, four kinds of Accel/Decel time, motor thermal protection, flexible fan control, process PID control, simple PLC, multi-functional key programmable, droop control, autotuning, field-weakening control, high-precision torque restraint, V/f separated control	

Items		Specifications
Environment	Place of operation	Indoors, no direct sunlight, free from dust, corrosive gases, flammable gases, oil mist, water vapor, water drop or salt, etc.
	Altitude	0~2000m. De-rate 1% for every 100m when the altitude is above 1000 meters
	Ambient temperature	-10°C ~ 50°C , The rated output current should be derated 1% for every 1°C when the ambient is 40°C ~ 50°C
	Relative humidity	0~95%, no condensation
	Vibration	Less than 5.9m/s ² (0.6g)
	Storage temperature	-20°C ~ +60°C
Others	IP grade	IP20
	Cooling method	Forced air cooling

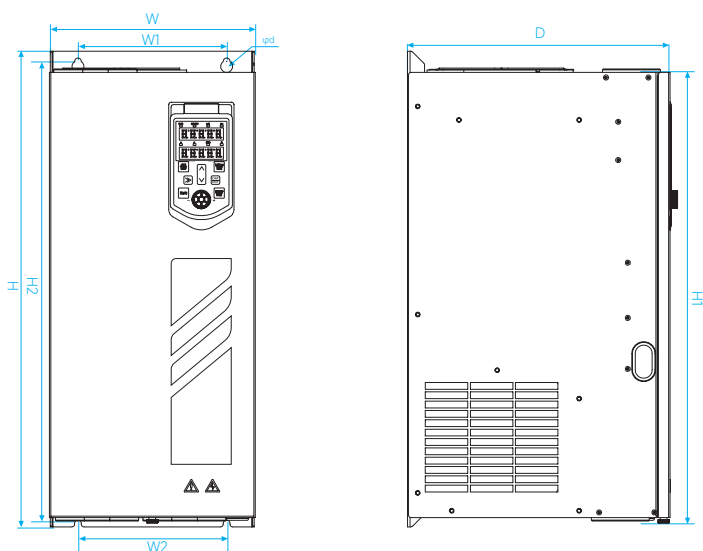
INSTALLATION DIMENSION DRAWING



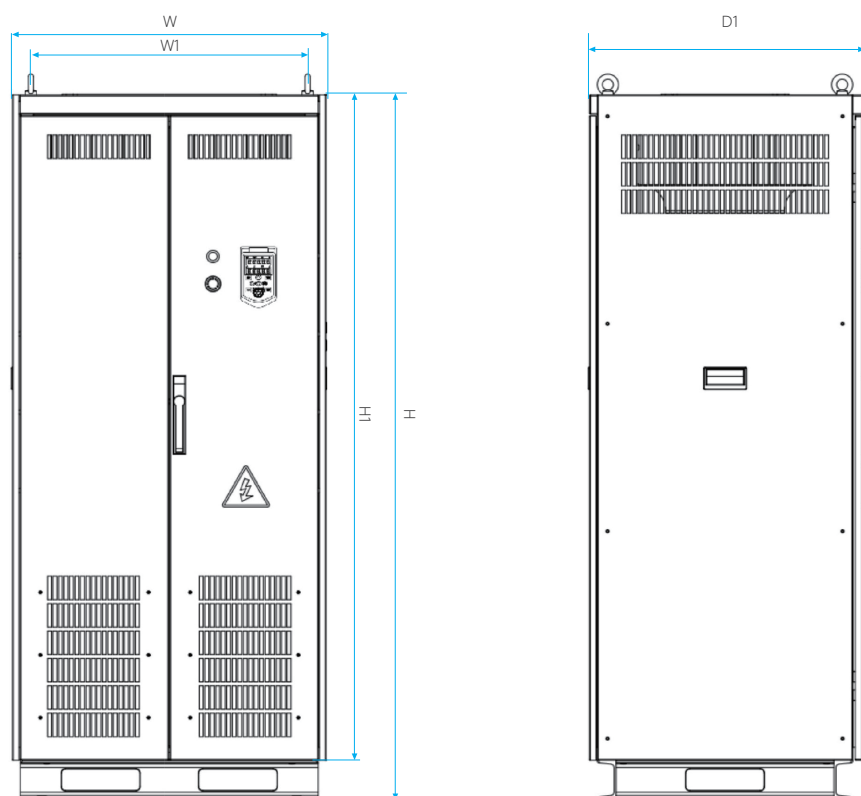
Schematic diagram of P1



Schematic diagram of P2



Schematic diagram of **P3**



Schematic diagram of **P4**

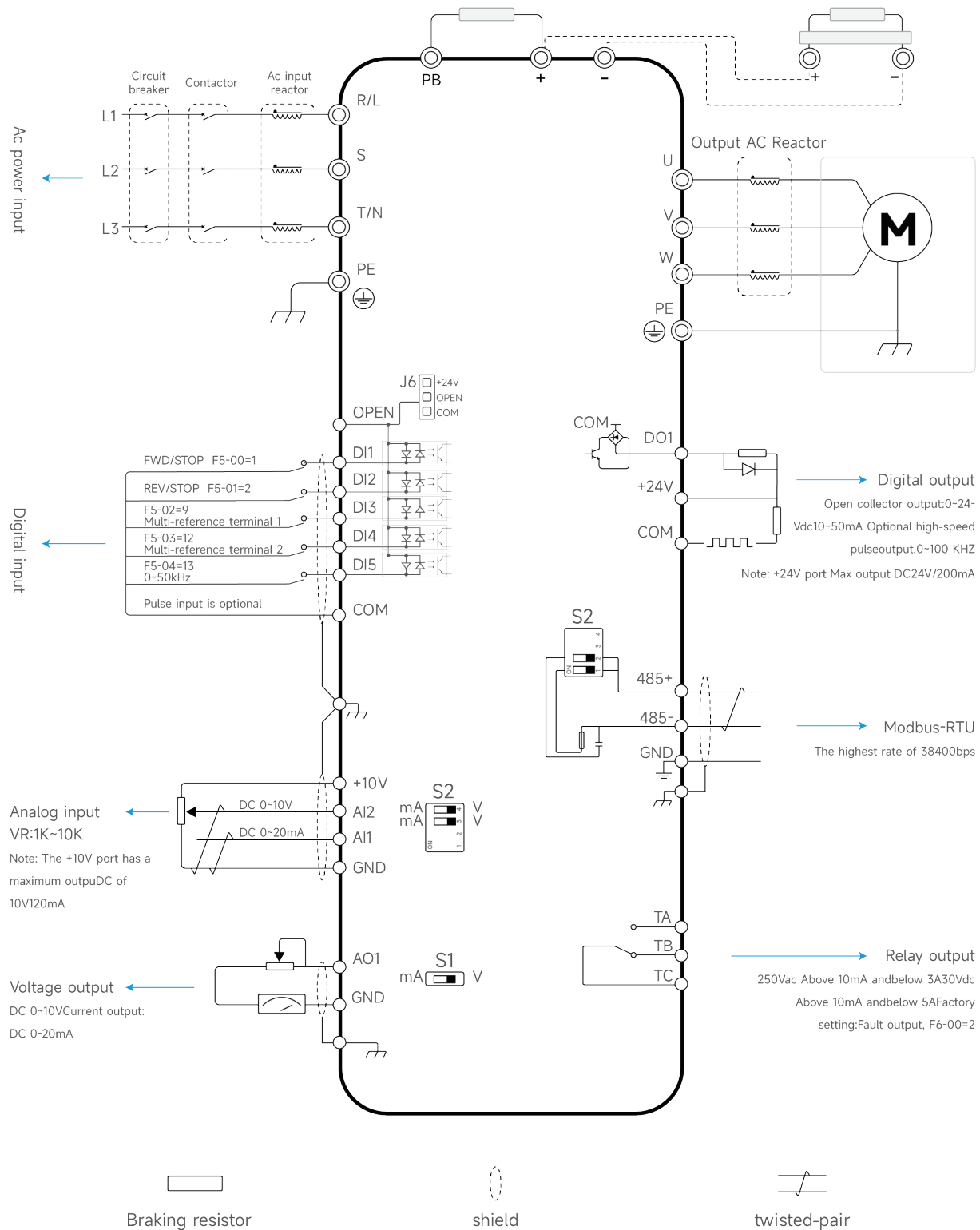
DIMENSIONS

Model	External and installation dimensions(mm)									NW (Kg)	GW (Kg)	Outline Specification DiaGram
	W	H	H1	D	W1	W2	H2	B	d			
PV300-1T												
PV300-1T-0.75G	76	200	193	160	61	62	193	5.5	3-φ5	1.2	1.5	P1
PV300-1T-1.5G												
PV300-2S/2T												
PV300-2S/2T-0.75G	76	200	193	160	61	62	193	5.5	3-φ5	1.2	1.5	P1
PV300-2S/2T-1.5G												
PV300-2S/2T-2.2G												
PV300-2S/2T-4.0G	100	242	232	165	84	85	231	5.5	3-φ5	2.3	2.6	P2
PV300-4T												
PV300-4T-0.75G	76	200	193	160	61	62	193	5.5	3-φ5	1.2	1.5	P1
PV300-4T-1.5G												
PV300-4T-2.2G												
PV300-4T-4.0G												
PV300-4T-5.5G	100	242	232	165	84	85	231	5.5	3-φ5	2.3	2.6	P2
PV300-4T-7.5G												
PV300-4T-11G	116	320	306	185	98	98	307	5	3-φ5	3.5	5	
PV300-4T-15G	142	383	372	227	125	100	372	6	4-φ6	5.5	7.0	
PV300-4T-18.5G												
PV300-4T-22G												
PV300-4T-30G	173	430	408	230	150	150	416	8	4-φ7	13.3	14.3	P3
PV300-4T-37G												
PV300-4T-45G	242	560	524	310	175	175	544	12	4-φ8	26.0	27.0	
PV300-4T-55G												
PV300-4T-75G												
PV300-4T-90G	270	638	595	350	195	195	615	15	4-φ10	36.0	40.0	
PV300-4T-110G												
PV300-4T-132G	349	738	681	403	220	220	715	13	4-φ18	65.0	72.0	
PV300-4T-160G												

Model	External and installation dimensions(mm)									NW (Kg)	GW (Kg)	Outline Specification DiaGram
	W	H	H1	D	W1	W2	H2	B	d			
PV300-4T-185G	360	940	851	480	200	200	910	21	4- Ø18	90	102	P3
PV300-4T-200G												
PV300-4T-220G												
PV300-4T-250G	369	1141	1050	550	200	200	1110	20	4- Ø18	130.0	150.0	
PV300-4T-280G												
PV300-4T-315G	400	1250	1160	550	240	240	1213	24	4- Ø18	209.0	225.0	
PV300-4T-355G												
PV300-4T-400G												
PV300-4T-450G	460	1400	1294	544	300	300	1360	24	4- Ø18	230.0	255.0	
PV300-4T-500G												
PV300-4T-560G												
PV300-4T-630G	850	1800	1700	700	650	/	/	/	4- Ø18	475	500	P4
PV300-4T-710G												



STANDARD WIRING DIAGRAM



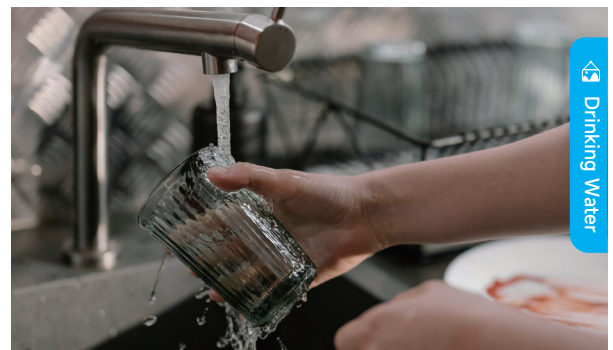
INDUSTRY APPLICATIONS



Farmland Irrigation



Pool Water Supply



Drinking Water



Landscape Fountain



Desert Management

Due to the continuous upgrade of our company's products, changes in content will not be notified separately.

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