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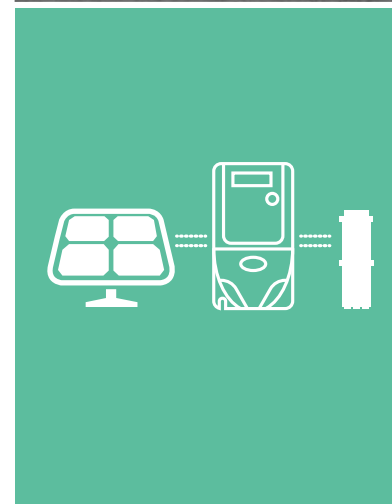
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NK300A-1

Solar Pump System





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About NOKER

Xi'an Noker Electric Co., Ltd. is a national high-tech enterprise, which specializes in R&D, manufacture, sale and service of electrical drive, industrial automation products. Noker headquarters is located in Xi'an city, established in 2002.

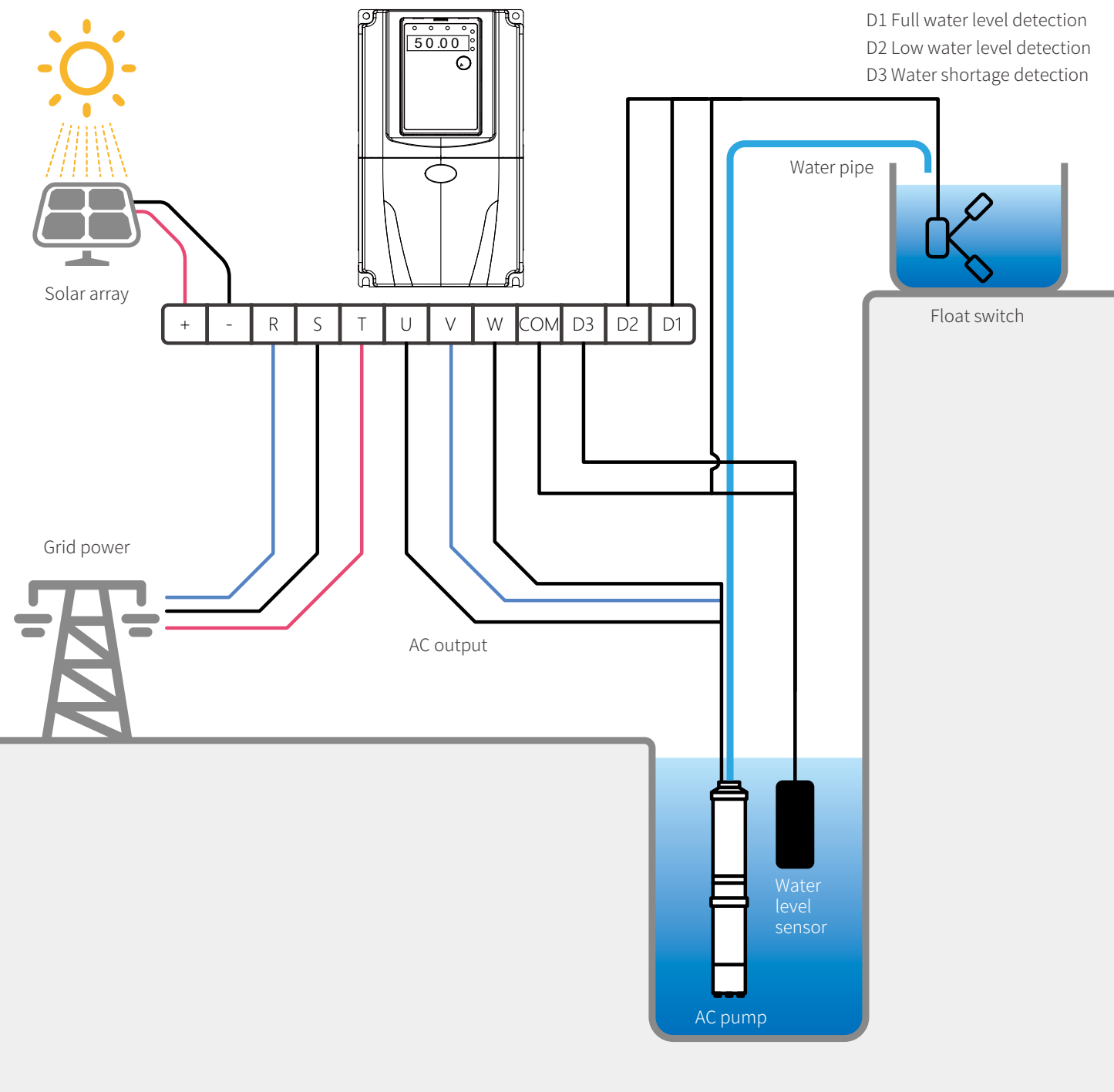
NOKER masters the leading synchronization, asynchronization current vector control technology, torque control technology and solar pump driving technology, including the main products such as general purpose inverter, various kinds of inverters of special industries and solar pump inverter. The products cover 220V, 380V, 460V, 525V, 660V voltage level with 0.4kW --1.6MW power range, which are widely used in electric power, metallurgy, petroleum and chemical, mining, textile and chemical fiber, printing and packaging,

paper-making, machine tool, plastic, hoisting, solar agricultural irrigation and other industries.

With "Market-oriented, Customer-centric" business philosophy, NOKER provides high cost performance products and service to customers, make the customers more competitive. The sales and service network is nationwide in domestic market. And our products have also been exported to more than 60 countries all over the world.

NOKER adheres to the enterprise core value of "Quality, Innovation, Integrity, Win-Win", dedicated to be the world famous supplier of products and services in the electric drive, industrial automation control fields, and would like to achieve customer, staff and enterprise values growing together.

Solar pump system



Solar pump system, consisting of solar array, solar pump inverter, AC water pump and water tank, uses solar cell as power supply to directly take water from deep wells, rivers, lakes and other water sources through the water pump. Solar pump system, consisting of solar array, solar pump inverter, AC water pump and water tank, uses solar cell as power supply to directly take water from deep wells, rivers, lakes and other water sources through the water pump.

The solar array absorbs solar radiation and converts it into electric energy to provide power supply for the whole system. The solar pump inverter converts the DC output by the solar array into AC and drives the water pump; in addition, it adjusts the output voltage and frequency according to the sunshine intensity in real time to realize maximum power point tracking and to maximize the use of solar energy. When the sunshine intensity is low, the solar pump system can switch to grid power for complementary power supply.

System feature

- The system automatically starts in the morning and stops in the evening. It can run perfectly whenever there is sunshine, with no need of back-up battery.
- Applicable to and suits all applications requiring water pumps.
- Compatible with all types of solar panels and AC pumps (such as self-priming pump, submersible pump, deep-well pump and surface pump).
- Maximum operating ambient temperature 60°C.
- Remote monitoring for real time operation status and switching on/off by GPRS.
- Good performance even in cloudy weather.
- In the long run, the return on investment is much higher than diesel generators.
- Equipped with perfect protection, requires no man to be on duty, runs fully automatically.
- 18 months warranty for the whole system, 10 years warranty for solar panel.

The solar pump system is a presentation of low-carbon, energy-saving and environmental protection. It can obviously improve the living standard of people in areas lacking water and electricity. Therefore, it has broad market prospect and huge social value.

Application

Solar water pump system is mainly used for daily water supply, agricultural and forestry irrigation, desert control, livestock drinking water, sewage treatment, scenic fountain and swimming pool, etc.



Swimming pool



Daily water supply



Agricultural irrigation



Livestock drinking water



NK300A-01

solar pump inverter

NK300A-01 series solar pump inverter adopts MPPT (Maximum Power Point Tracking) and excellent motor drive technology to maximize the power output from solar panels. 300A-01 inverters are compatible with both AC and DC input, and the AC output can be used for various kinds of normal AC pumps. When the solar power is not available, or the sunshine is not strong enough to drive the pump, the inverter could be automatically switched to single phase or three phase AC input power, such as generator, grid power.

NK300A-01 inverters are equipped with overall protection function (self-checking functions for dry running, weak sunshine, full water level, etc.), motor soft start and speed control functions, with perfect function, easy operation and installation.

NK300A-01 inverters can also support remote monitoring and control function, which can monitor all operation data and fault information of the inverters.



1AC 220V pump : 0.4~5.5kW

3AC 220V pump : 0.4~11kW

3AC 380V pump : 0.75~110kW

Product feature

- 01 Flexibility**
 - Suitable for all kinds of pumps, including single phase 220V pump
 - Compatible with all popular solar panels
 - Support AC input, could switch to grid power supply to make system work 24 hours
- 02 Smartness**
 - Built-in MPPT technology with up to 99% efficiency
 - With water level detection function, automatically regulate the pump flow to prevent dryrunning, full water level, etc
 - Self-adaptation to the motor's power rating
- 03 High Cost-effectiveness**
 - Plug-and-play system design, no need to set any parameter
 - Wide range of input voltage
 - No need battery, suitable for all kinds of applications
 - Easy installation and effortless maintenance
- 04 Reliability**
 - 10-year market proven experience of leading motor and pump drive technology
 - Soft start feature to prevent water hammer and increase system life
 - Built-in overvoltage, overload, undervoltage and weak sunshine protection
- 05 Remote Monitoring**
 - Standard RS485 interface, support to remote monitor the system with NOKER software on PC
 - Optional GPRS module for remote monitoring
 - Spots value of solar pump parameters monitoring available from anywhere
 - Support the lookup of the history parameters of solar pump system

Technical specifications

Technical Index	Specification	
	220V inverter	380V inverter
Input DC voltage	200~450V	300~900V
Max input DC voltage	450V	900V
MPPT Voltage (Vmp)	160~380V	260~750V
Recommended MPPT Voltage (Vmp)	320	550
MPPT efficiency	99.9%	
Input AC voltage	1AC/3AC 220/230/240V	3AC 380/400/415/440V
Output AC voltage	1AC/3AC 0~220/230/240V	3AC 0~380/400/415/440V
Output frequency	0~300Hz	
IP level	IP20	
Fault protection function	Up to 30 general fault protections including overcurrent, overvoltage, undervoltage, overheating, default phase, overload, shortcut, etc., and also include water level sensor failure protection, full water, dry running, weak sunshine warning special protection functions for solar pump system. Could record the detailed running status during failure & has fault automatic reset function.	

Selection guide

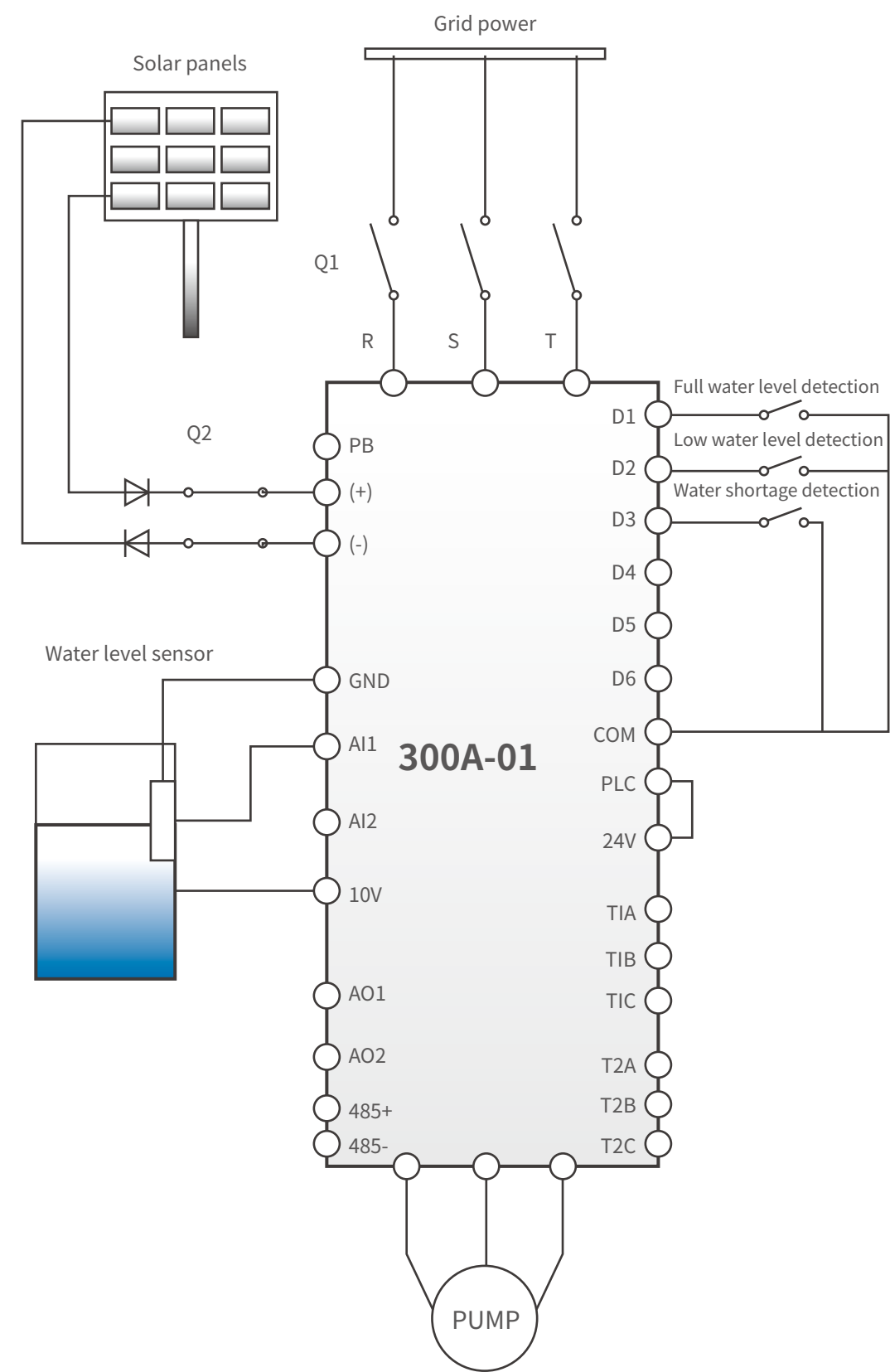
Model	Motor		Rated output current (A)	Suggested open circuit voltage (V)
	kW	HP		
Single phase ouput 220V				
NK300A-01-04-0R4G-S2	0.4	0.5	4	350~400
NK300A-01-04-0R7G-S2	0.75	1	7	350~400
NK300A-01-04-1R5G-S2	1.5	2	9.6	350~400
NK300A-01-04-2R2G-S2	2.2	3	15	350~400
NK300A-01-04-004G-S2	4.0	5	23	350~400
NK300A-01-04-5R5G-S2	5.5	7.5	32	350~400

Model	Motor		Rated output current (A)	Suggested open circuit voltage (V)
	kW	HP		
Three phase ouput 220V				
NK300A-01-0R4G-S2	0.4	0.5	2.3	350~400
NK300A-01-0R7G-S2	0.75	1	4	350~400
NK300A-01-1R5G-S2	1.5	2	7	350~400
NK300A-01-2R2G-S2	2.2	3	9	350~400
NK300A-01-004G-S2	4.0	5	17	350~400
NK300A-01-5R5G-S2	5.5	7.5	25	350~400
NK300A-01-7R5G-S2	7.5	10	32	350~400
NK300A-01-011G-S2	11	15	45	350~400
Three phase ouput 380V				
NK300A-01-0R7G-T4	0.75	1	2.1	625~750
NK300A-01-1R5G-T4	1.5	2	3.8	625~750
NK300A-01-2R2G-T4	2.2	3	6.0	625~750
NK300A-01-004G-T4	4.0	5	9	625~750
NK300A-01-5R5G-T4	5.5	7.5	13	625~750
NK300A-01-7R5G-T4	7.5	10	17	625~750
NK300A-01-011G-T4	11	15	25	625~750
NK300A-01-015G-T4	15	20	32	625~750
NK300A-01-018G-T4	18.5	25	37	625~750
NK300A-01-022G-T4	22	30	45	625~750
NK300A-01-030G-T4	30	40	60	625~750
NK300A-01-037G-T4	37	50	75	625~750
NK300A-01-045G-T4	45	60	90	625~750
NK300A-01-055G-T4	55	75	110	625~750
NK300A-01-075G-T4	75	100	150	625~750
NK300A-01-090G-T4	90	125	176	625~750
NK300A-01-110G-T4	110	150	210	625~750

Notice:

1. According to the light condition of different areas, the required power of solar array is at least 1.3 times of the pump power.
2. When used for deep well pump, or the output power line of inverter is longer, the inverter should be derated to use, and need to install output reactor.

Wiring diagram



GPRS module & Remote monitoring

NOKER GPRS data collection module is applicable to the solar pump monitoring system, mainly to facilitate the user to monitor the operation state of remote water supply equipment. Thus, the system requires no man to be on duty on site, saves operation cost and realizes intelligent control over equipment operation with functions of remote start-stop, parameter monitoring and fault warning.



- Product based on the stable and reliable communication operators, applicable to the existing operators.
- External extended installation, easy for direct replacement in case of failure, simple for maintenance.
- Support the functions such as remote control over start-stop, running data monitoring, and fault alarm.
- 24V input, low power, no need additional power supply, and easy to use.

Remote monitoring system



Accessories of solar pump system

Solar panel



NOKER solar pump system gives full consideration of the sunshine conditions in different regions and adopts the solar panels of different materials to create the highest cost-effective solar pump system.

- 10 years manufacturer warranty
- 12 years warranty 90% power output
- 25 years warranty 80% power output

Combiner box



In the solar pump system, in order to reduce the connection lines between the solar panel and the inverter, improve the system stability and facilitate the system maintenance, a DC convergence device between the solar panel and the inverter is usually a necessary which combines the solar panel and thereafter connects the inverter. The combiner box also provides protection against lightning and short circuit.

- Max. input voltage: DC 1000V (according to user's requirements)
- Max. input current: 20A (according to user's system configuration)
- Solar panels input route: 6, 8, 10, 12, 14,16, 18, 20 lines (according to user's requirements)
- Protection class: IP65

Booster unit



For the small solar pump system, the pump power is very small (below 4kW), in order to meet the working voltage of solar pump inverter, it requires the solar panels with much higher power than the pump, leading to a waste of the solar panel and increasing the user's cost. The booster unit can raise the DC voltage of the solar panel by 5-9 times according to the system requirements, decreasing the quantity requirement for solar panels as well as the system cost.

It is easy to use; correct wiring at the input and output terminals of the unit is all.

Output reactor

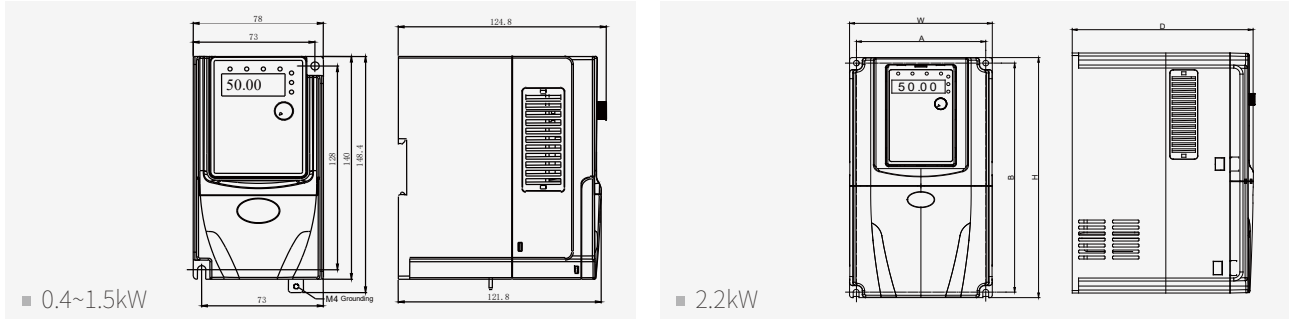


It is installed next to the inverter between the inverter and water pump. It can smooth filter, reduce motor noise and help prolong the life of water pump; reduce the leakage current caused by the output higher harmonic, and protect the power switch devices in the inverter, ensuring steadier operation and higher efficiency of the water pump.

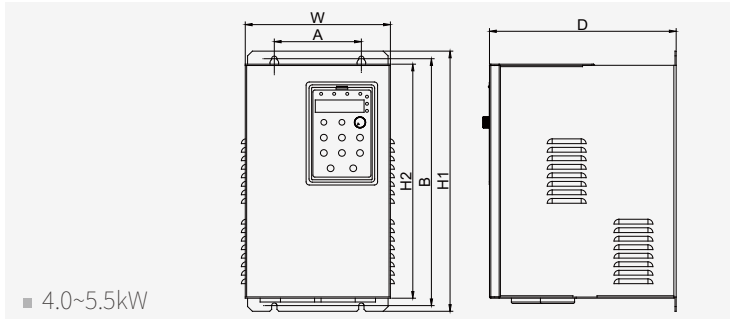
If the distance between the inverter and water pump exceeds 50 meters, an output reactor is suggested. If the distance exceeds 100 meters, the output reactor shall be a must, and the inverter shall be derated.

300A-01 dimensions

Single phase output 220V inverter

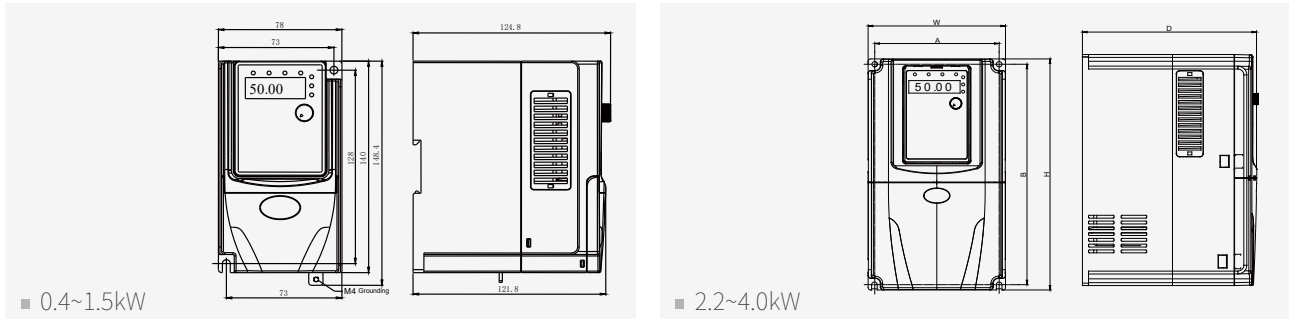


Power Range	External Dimension(mm)			Installation Dimension (mm)		Mounting Bolt Model
	W	H/H1	D/D1	A	B	
0.4~1.5kW	78	140/148.4	124.8/121.8	73	128	M4
2.2kW	135	240	173	122.6	229	M4



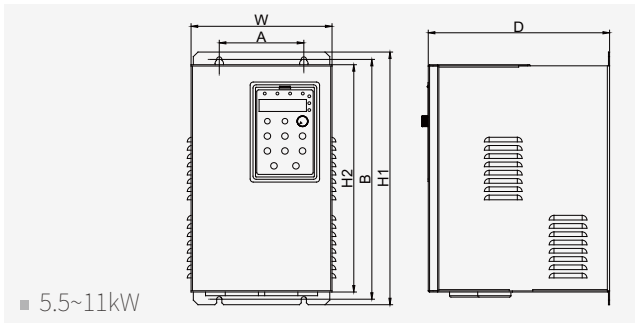
Power Range	External Dimension(mm)				Installation Dimension (mm)		Mounting Bolt Model
	W	H1	H2	D	A	B	
4.0kW	170	314	285	167	90	301.6	M4
5.5kW	200	329.1	300	177.2	90	316.6	M4

Three phase output 220V inverter



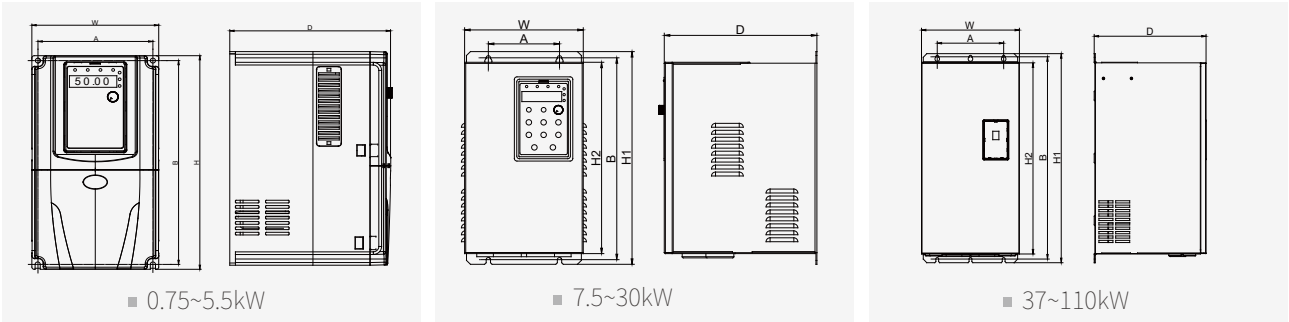
Power Range	External Dimension(mm)			Installation Dimension (mm)		Mounting Bolt Model
	W	H/H1	D/D1	A	B	
0.4~1.5kW	78	140/148.4	124.8/121.8	73	128	M4
2.2kW	110	185	153	98	174	M4
4.0kW	135	240	173	122.6	229	M4

Application



Power Range	External Dimension (mm)				Installation Dimension (mm)		Mounting Bolt Model
	W	H1	H2	D	A	B	
5.5kW	170	314	285	167	90	301.6	M4
7.5kW	200	329.1	300	177.2	90	316.6	M4
11kW	225	397.6	365	185.2	120	384.1	M5

Three phase output 380V inverter



Power Range	External Dimension (mm)				Installation Dimension (mm)		Mounting Bolt Model
	W	H1	H2	D	A	B	
0.75~2.2kW	110	185		153	98	174	M4
4.0~5.5kW	135	240		173	122.6	229	M4
7.5kW	170	314	285	167	90	301.6	M4
11~15kW	200	329.1	300	177.2	90	316.6	M4
18.5~22kW	225	397.6	365	185.2	120	384.1	M5
30kW	255	439.6	402.4	209.6	140	423.6	M5
37~45kW	280	570	521.2	258	190	552	M6
55~75kW	320	600	552	330	230	582	M8
90~110kW	320	715	662	330	230	695.5	M8



China 3AC 380V 30kW



Afghanistan 3AC 380V 7.5kW



Dubai 1AC 220V 0.75kW



Congo 3AC 380V 5.5kW



Bangladesh 1AC 220V 2.2kW



Morocco 1AC 220V 4.0kW



Thailand 3AC 380V 15kW



India 3AC 380V 4.0kW