

# VEICHI

## Renewable Energy Products



# VEICHI

Shenzhen Veichi Electric Co., Ltd

Third floor, Building Chunsheng, Lulingya Industrial Park, No. 1  
Tangtou community, Shiyan street, Baoan District, Shenzhen  
Tel: +86-0755-3666 1688  
Fax: +86-755-2968 5680 E-mail: overseas@veichi.com

Facebook: <https://www.facebook.com/veichiglobal/>

Suzhou Veichi Electric Co., Ltd

No.1000 Songjia road, Wuzhong Economic and Technological  
Development Zone, Suzhou  
Tel: +86-512-6617 1988  
Fax: +86-512-6617 3610

Whatsapp: +86- 138 2881 8903 [Http://www.veichi.org](http://www.veichi.org)



Wechat Official Account  
\*Version 2018 V1.1  
Veichi Electric Co., Ltd all rights reserved,  
subject to change without notice.



VEICHI

# Make It Simple

VEICHI Solar Products  
Better Life & Brighter Future

VEICHI Electric Co., Ltd. is a high-tech enterprise that is professionally engaged in the development, manufacturing and marketing of industrial automatic control products, and we are committed to becoming a global leading provider of industrial automatic control products and system solutions.

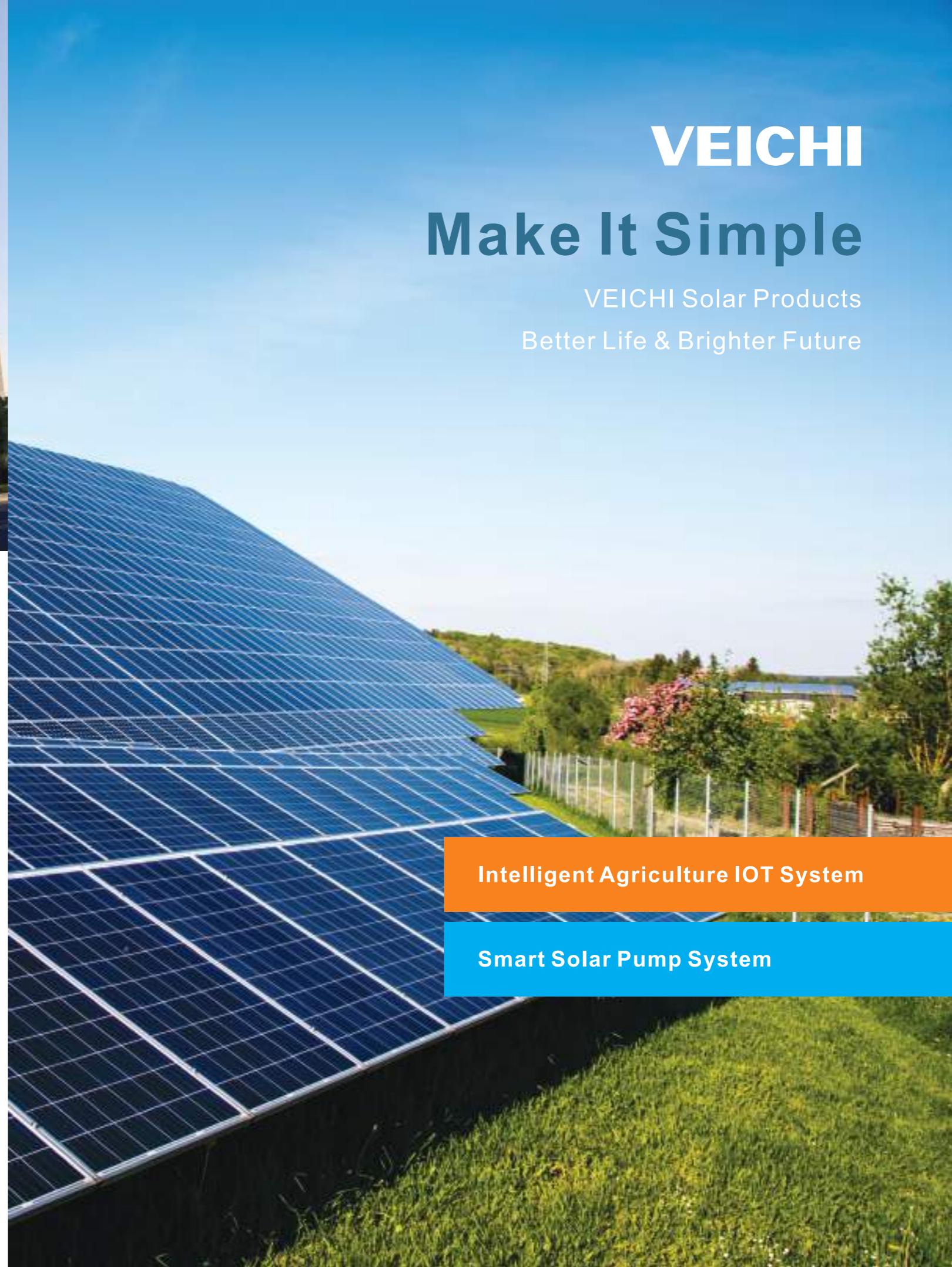
VEICHI is a competitive company and adopts the dual-base operating mode, which contains the Shenzhen VEICHI and Suzhou VEICHI. Suzhou VEICHI Electric Co., LTD is located in Suzhou Wuzhong Economic and Technological Development Zone, which covers 50 acres. The total construction area is approximately 80 thousand square meters and all properties are privately run. Additionally, VEICHI is always at the forefront of the domestic industrial automation field.

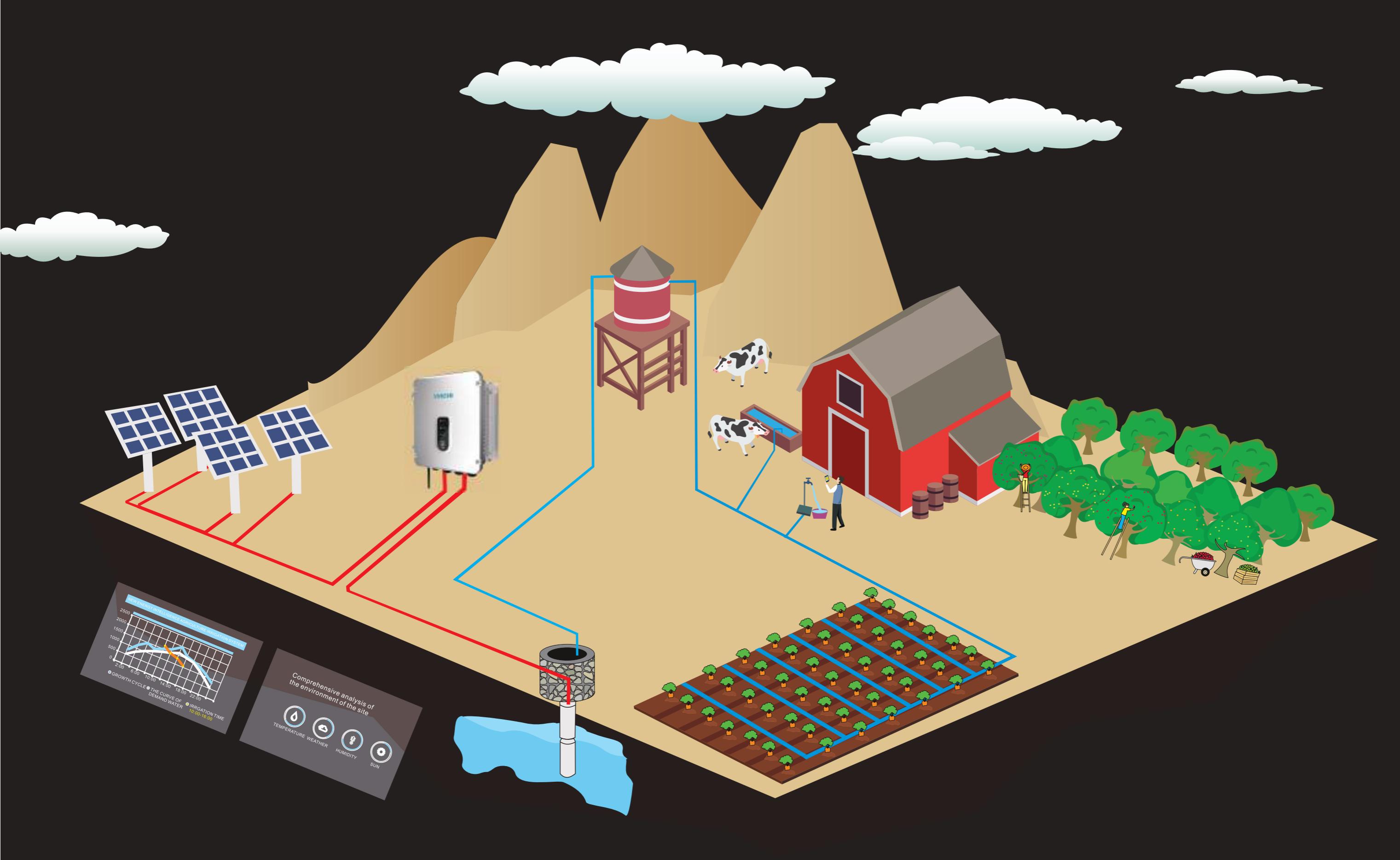
VEICHI has become the flagship company of industrial automation, which owns an innovative R&D team and establishes a good corporation relationship with famous universities and research institutions. Currently, VEICHI owns more than 110 patents of invention, and many of them are in the leading position both at home and abroad, which completely has independent intellectual property rights.

VEICHI produces a variety of core products, including Variable Frequency Drive (VFD), Servo Drive System, Photovoltaic Inverter, PLC, HMI, and Automation Equipment, which are widely used in industries such as oil & gas, chemical, ceramic, crane & construction hoist, lathe, Auto making, metallurgy, electrical cable and wire, plastic, print and package, textile, chemical fiber, metal work and coalmining and municipal engineering. Suitable solutions and products are always ready to meet the demands and improve comprehensive competitiveness of customers.

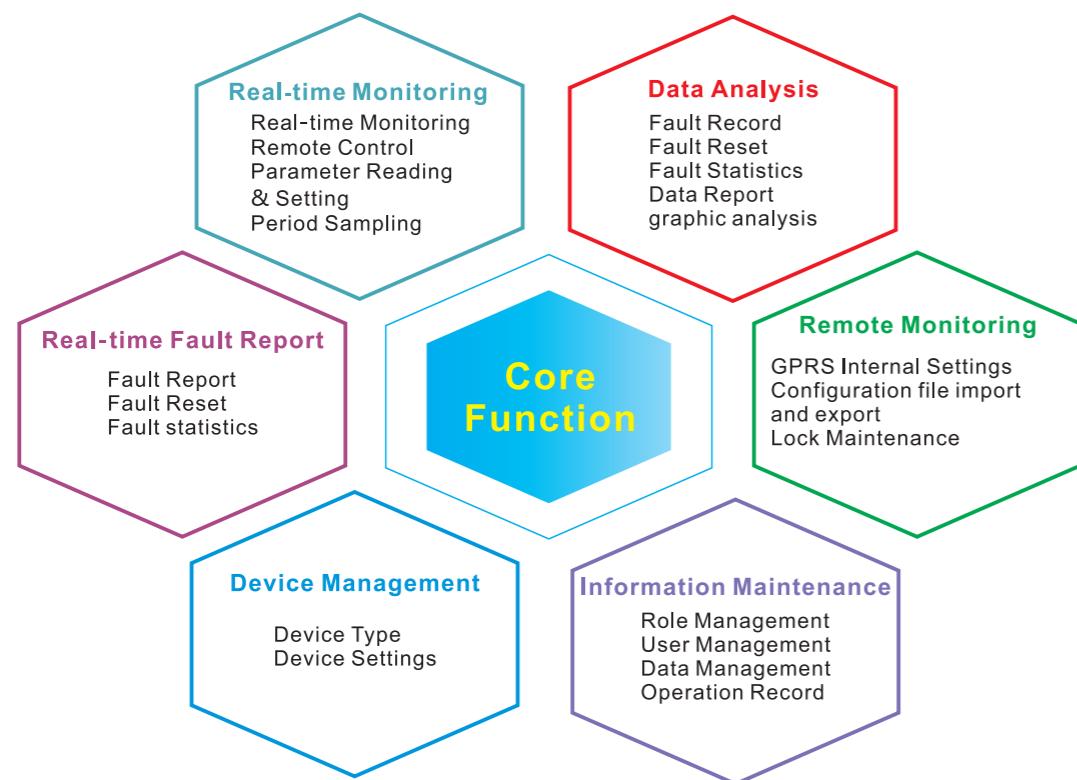
"Innovation is the lifeblood of VEICHI", therefore we're committed to becoming one of the leading providers of electric drives, industrial control and green energy products. VEICHI has set up more than 40 brand offices in China and dozens of partners in Asia, Europe and Africa.

VEICHI has been named Chinese Electrical Industry's Top Ten National Brands, Chinese Electrical Industry Top Ten Satisfying Brands and Top Ten National Brands of Inverter Industry. VEICHI products have become the first choice of many enterprises.





## Core Functions of IOT Products and System

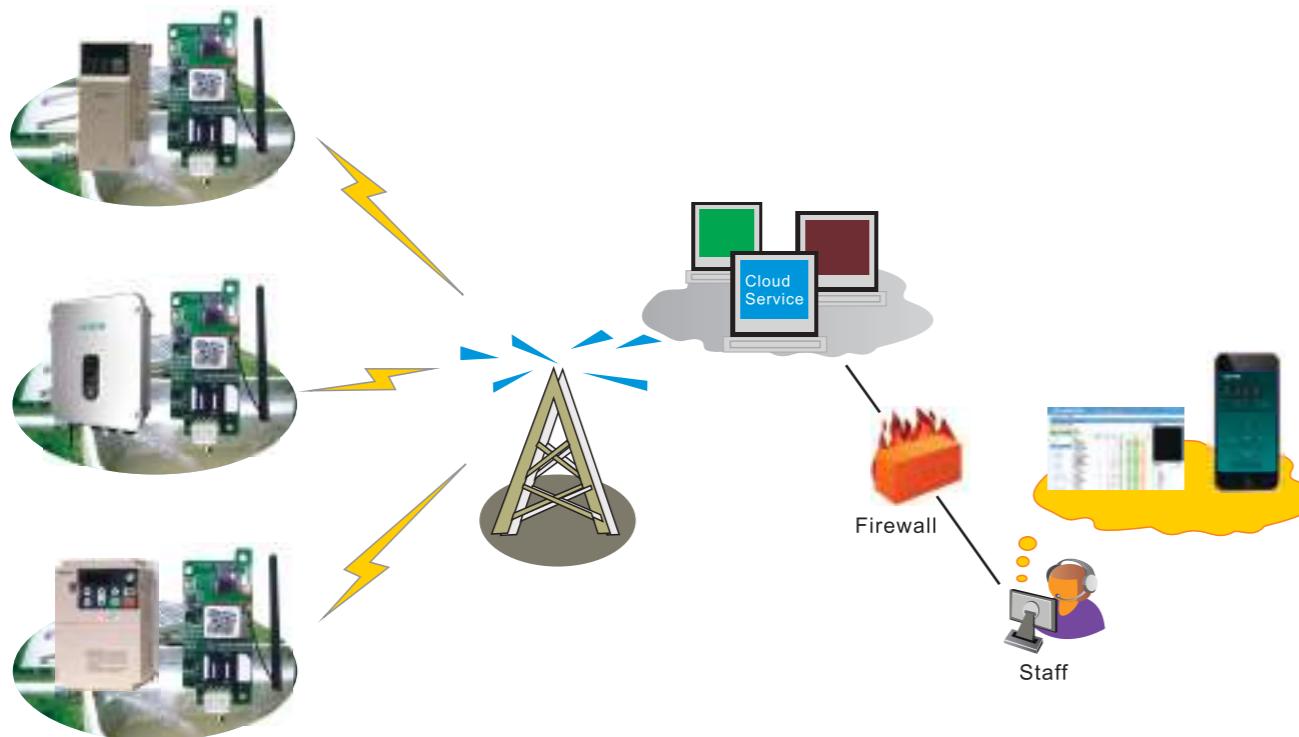


## Application of GT89-V in Solar Pump

The global cumulative online volume of more than 110000 units



## Topological Graph of GPRS and Cloud Platform



Real-time monitoring, remote expert consultation, large data automatic calculation of the power generation and pumping capacity and other energy-saving status, PC support, mobile APP query.



## Smart Solar Pump System

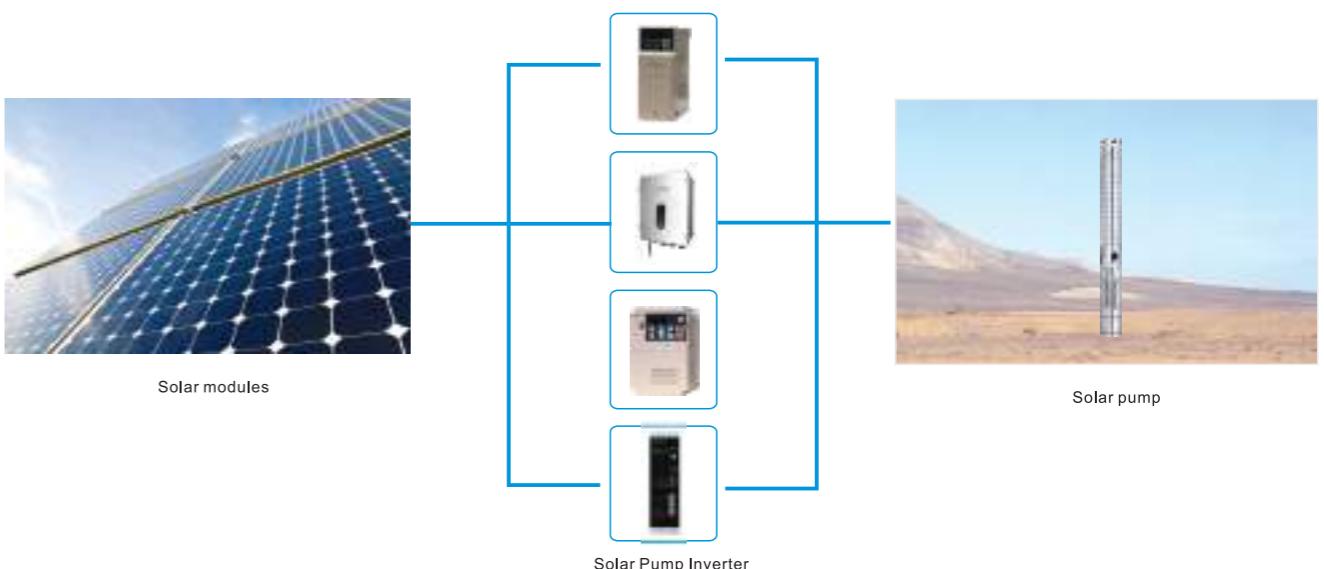
SI30 Series Solar Pump System  
SI23 Series Solar Pump System  
SI22 Series Solar Pump System

Zero carbon new energy system with the max investment value



It rises with the new century concept of sustainable development, which is highly respected by governments, to benefit the global areas lack of electricity and water. Solar pumps are the most attractive water supply method in the sunny areas today, especially in remote areas without electricity. Using the inexhaustible solar energy, the system automatically works at sunrise and stops at sunset and has no need of personal care, which is a perfect green energy system with economy, reliability and environmental benefits.

### Solar pump system components



### Solar modules



**10 years** product warranty

**25 years** warranty of linear performance



High conversion efficiency



5 Watt positive tolerance



Strong endurance capacity of wind and snow



3800Pa 5400Pa



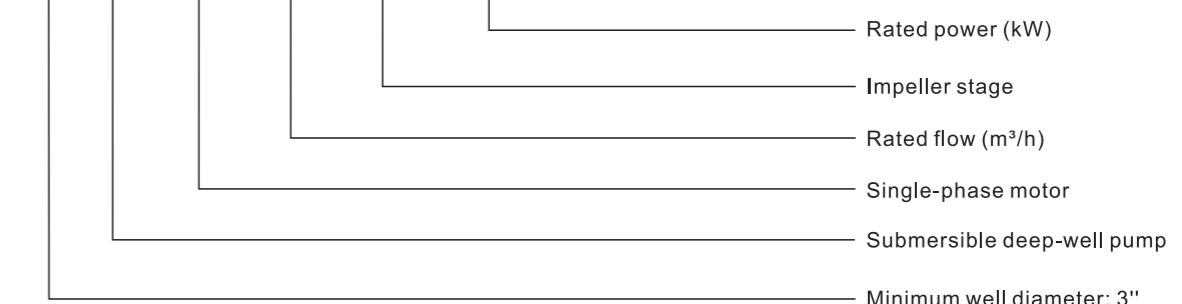
Excellent performance with poor light

## Polycrystalline solar modules:100W-300W

Model	Peak power (Pmax)[Wp]	Peak power voltage (Vmp)[V]	Peak power current (Imp)[A]	Open circuit voltage (Voc) [V]	Short circuit current (Isc) [A]	Modules efficiency	Power error	Size (mm)	Weight (kg)	Maximum system voltage (V)	Fuse rating [A]
SZYL-P100-18	100	18.8	5.32	22.4	5.69	15%	0/+5	1010*660*35	7.88	DC1000	10
SZYL-P120-18	120	18.8	6.38	22.4	6.79	15.3%	0/+5	1190*660*35	8.8	DC1000	10
SZYL-P150-18	150	19	7.89	22.7	8.4	15.1%	0/+5	1480*670*35	12	DC1000	15
SZYL-P200-30	200	30.1	6.64	36.4	7.22	13.5%	0/+5	1500*990*35	17	DC1000	10
SZYL-P200-36	200	36.1	5.54	43.7	6.02	13.5%	0/+5	1500*990*35	17	DC1000	10
SZYL-P250-30	250	31.7	7.89	37.7	8.43	15.4%	0/+5	1640*990*40	17.7	DC1000	15
SZYL-P260-30	260	32	8.13	38.2	8.74	16%	0/+5	1640*990*35	17.7	DC1000	15
SZYL-P300-36	300	38.1	7.87	45.2	8.42	15.5%	0/+5	1960*990*40	23.3	DC1000	15

## Solar pump model analysis

3 XR (m) 1.8/ 10- 0.25



## Solar pump



Submersible pump (deep well pump) with its exceptional natural advantages, is widely used in water resources extraction situations ,such as groundwater, deep well or rivers, which is the best choice of solar pump system.

### Application environment

- ◎ Suitable for water pumping from deep well or water tank.
- ◎ Household, civil and industrial applications.
- ◎ Suitable for garden irrigation.

### Application conditions

- ◎ The maximum water temperature :35°C.
- ◎ The maximum sediment concentration : 0.25%
- ◎ The maximum immersed depth : 80m.
- ◎ The minimum well diameter: 3".

### Motor and pump

- ◎ Winding motor or full enclosed motor.
- ◎ Three phase: 380V-415V/50Hz.
- ◎ Single phase: 220V-240V/50Hz.
- ◎ The tube column design.
- ◎ The tolerance curve conforms to ISO9906.

Constitution	Material
Pump shell	AIS1304SS
Guide housing	Castings-Cu ASTM280
Suction device	Castings-Cu ASTM280
Diffuser	PC
Impeller	POM
Pump shaft	①AIS1316SS ②AIS1304SS
coupling	①AIS1316SS ②AIS1304SS
Wear ring	AIS1304SS
Motor housing	AIS1304SS
Cover	Cast-Cu ASTM280
base	AIS1304SS
Mechanical seal	Special seal for deep well (carbon -SIC/TC)
Pump shaft	AIS1304SS-C1045
Bearing	NSK
Sealing lubricant	Food grade machinery and medicinal oils

Model		Power		Flow and corresponding head														
1~220V/240V	3~380V/415V	kW	HP	Q	m³/h	0	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6
					1/min	0	5	10	15	20	25	30	35	40	45	50	55	60
3XRm1.8/27-0.75	3XR1.8/27-0.75	0.75	1			113	111	109	106	101	92	82	67	51	32			
3XRm1.8/37-1.1	3XR1.8/27-1.1	1.1	1.5			155	153	150	145	133	127	112	92	69	43			
3XRm1.8/47-1.5	3XR1.8/27-1.5	1.5	2			197	194	190	184	175	161	142	117	88	55			
3XRm2.5/28-1.1	3XR2.5/28-1.1	1.1	1.5			117	116	114	112	109	104	100	93	86	76	65	51	37
3XRm2.5/36-1.5	3XR2.5/36-1.5	1.5	2			151	149	114	144	140	134	128	120	110	98	83	66	48
3.5XRm3/20-1.1	3.5XR3/20-1.1	1.1	1.5	H ( m )		148	146	142	140	135	129	121	111	99	86	71	54	36
3.5XRm3/26-1.5	3.5XR3/26-1.5	1.5	2			194	191	186	183	177	169	158	146	130	112	92	70	47
4XRm2/16-0.75	4XR2/16-0.75	0.75	1			116	116	114	112	109	105	99	92	83	73	61	50	
4XRm2/22-1.1	4XR2/22-1.1	1.1	1.5			160	159	157	154	150	144	136	126	114	100	84	68	
4XRm2/28-1.5	4XR2/28-1.5	1.5	2			204	202	200	196	191	183	173	161	145	127	107	87	
4XRm2/38-2.2	4XR2/38-2.2	3.3	3			276	275	271	266	259	249	235	218	197	173	145	118	

Model		Power		Flow and corresponding head														
1~220V/240V	3~380V/415V	kW	HP	Q	m³/h	0	0.6	1.2	1.8	2.4	3	3.6	4.2	4.8	5.4	6		
					1/min	0	10	20	30	40	50	60	70	80	90	100		
3.5XRm4/20-1.5	3.5XR4/20-1.5	1.5	2			118	115	112	108	104	99	92	81	70	55	35		
4XRm3/17-1.1	4XR3/17-1.1	1.1	1.5			138	126	122	116	108	96	80	60	38				
4XRm3/21-1.5	4XR3/21-1.5	1.5	2			145	140	136	129	120	107	89	67	42				
4XRm3/30-2.2	4XR3/30-2.2	2.2	3			217	210	203	193	180	160	133	100	63				
--	4XR3/40-3	3	4	H ( m )		289	280	271	258	240	213	178	133	85				
4XRm4/17-1.5	4XR4/17-1.5	1.5	2			131	126	123	120	116	109	100	90	77	62	46		
4XRm4/24-2.2	4XR4/24-2.2	2.2	3			186	178	174	169	163	153	141	127	109	88	66		
--	4XR4/32-3	3	4			247	238	231	225	218	204	188	170	145	117	87		
--	4XR4/40-4	4	5.5			309	297	289	281	272	255	235	212	181	117	109		

Model		Power		Flow and corresponding head													
1~220V/240V	3~380V/415V	kW	HP	Q	m³/h	0	1.2	2.4	3.6	4.8	6	7.2	8.4	9.6	10.8		
					1/min	0	20	40	60	80	100	120	140	160	180		
4XRm6/21-2.2	4XR6/21-2.2	2.2	3			135	132	123	114	105	89	69	44				
--	4XR6/28-3	3	4			180	176	164	152	139	119	92	59				
--	4XR6/36-4	4	5.5			232	226	210	195	179	153	118	76				
--	4XR6/44-5.5	5.5	7.5			283	277	257	239	219	187	145	93				
--	4XR6/52-7.5	7.5	10	H ( m )		335	327	304	282	259	221	171	110				
4XRm8/18-2.2	4XR8/18-2.2	2.2	3			109	103	96	90	84	79	72	61	45	28		
--	4XR8/24-3	3	4			155	145	135	127	119	112	101	85	63	39		
--	4XR8/30-4	4	5.5			188	183	171	158	150	142	128	110	85	55		
--	4XR8/38-5.5	5.5	7.5			258	242	225	212	198	187	168	143	105	65		
--	4XR8/46-7.5	7.5	10			288	281	262	243	230	217	197	168	131	85		

Model	
-------	--

## Application cases of solar pump system



## SI23 Series Hybrid Solar Pump Inverter



### Power Range

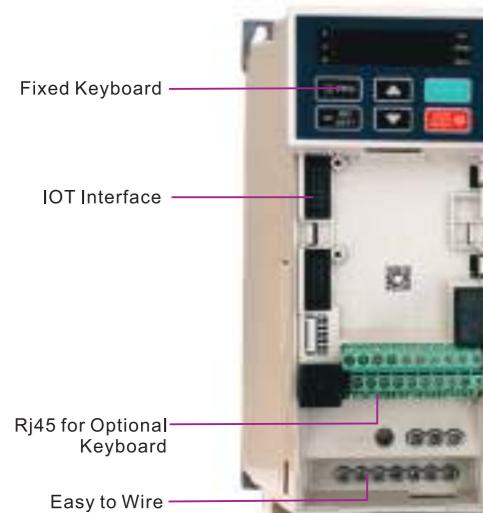
- ◎ SI23-D1-XXXG : For AC110V pumps, 0.75-1.5kw
- ◎ SI23-D3-XXXG : For AC220V pumps, 0.75-4.0kw
- ◎ SI23- D5-XXXG : For AC380V pumps, 0.75-30.0kw
- ◎ SI23-T3-XXXG: For AC380V pumps, 37.0-200.0kw

### Features

- ◎ AM/PMSM
- ◎ Fashion Appearance
- ◎ High Performance
- ◎ MPPT Technology
- ◎ Smart IOT
- ◎ IP20

## Fashion Appearance

### Simple Layout



### Concise Keyboard

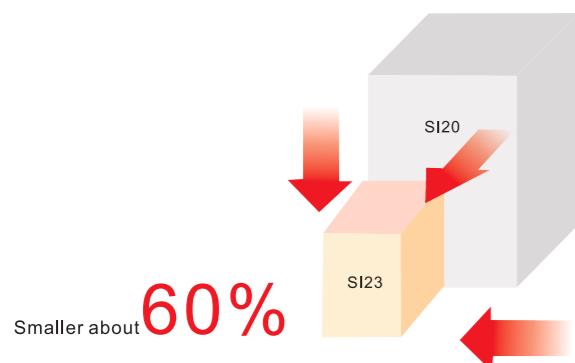


## Various Types

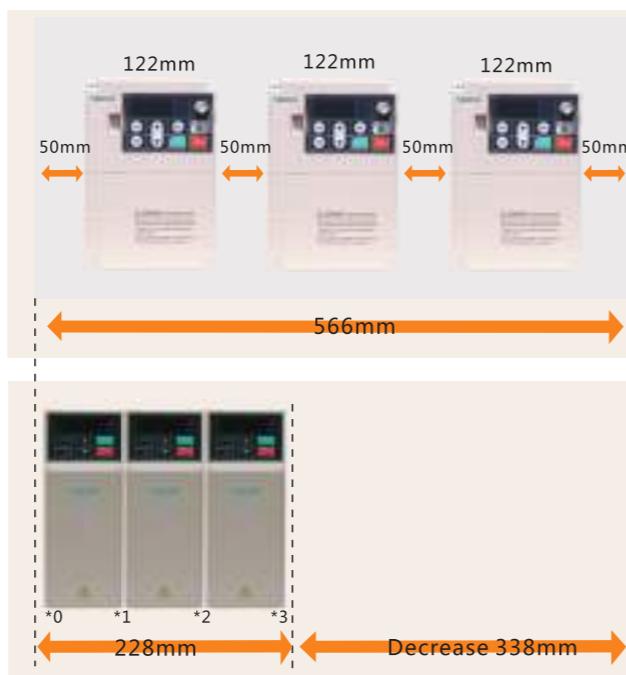


## Narrow body

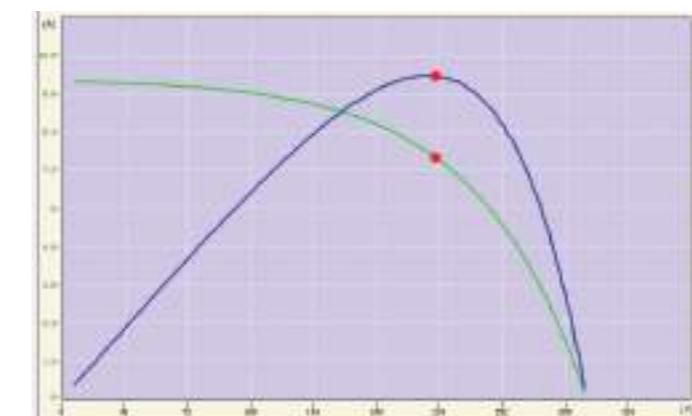
SI23 series all adopt book narrow-body design, and the volume is 60% smaller than the original, which is the real "book-body machine" of inverter.



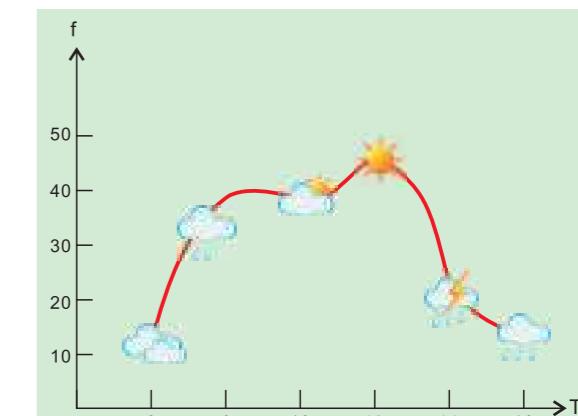
380V 2.2kW demonstration



## Advanced MPPT Technology



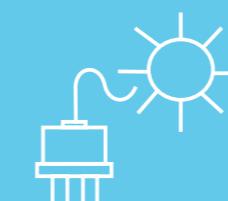
High MPPT Efficiency Max. is 99.9%



Auto-Track at any daytime

## High Performance & Multi-functions

### High Overload Capacity



150% rated current 1min  
180% rated current 10s  
200% rated current 0.5s

### Excellent Control Performance



Open-loop torque response<20ms,  
steady speed accuracy 0.2%(PMSM),  
0.5%(AM)

### High Frequency



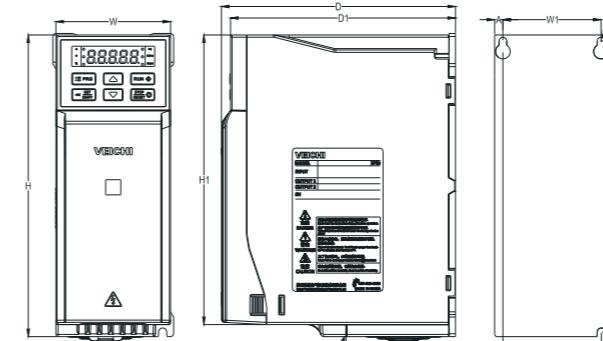
Max. output frequency is 600Hz  
under VC control

## Driving Multiple Types of Pumps



## Installation dimension

Plastic model



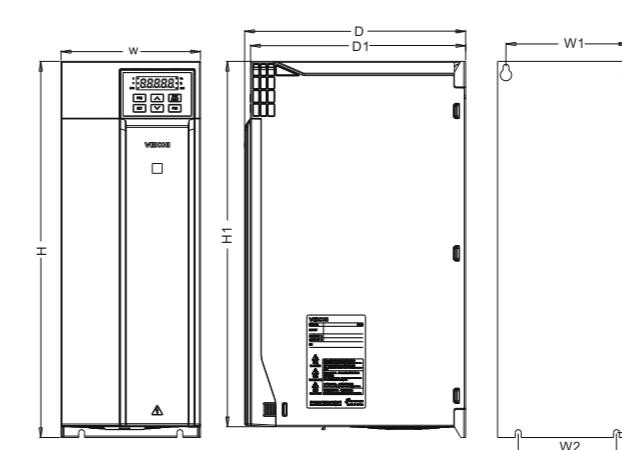
Model	Overall dimension(mm)				Installation dimension mm				Installation aperture		
	W	H	H1	D	D1	W1	W2	H2			
SI23-D3-R75G	76	200	192	155	149	65	65	193	5.5	4	3-M4
SI23-D3-1R5G											
SI23-D3-2R2G	100	242	231	155	149	84	86.5	231.5	8	5.5	3-M4
SI23-D3-004G											
SI23-D5-R75G											
SI23-D5-1R5G	76	200	192	155	149	65	65	193	5.5	4	3-M4
SI23-D5-2R2G											
SI23-D5-004G	100	242	231	155	149	84	86.5	231.5	8	5.5	3-M4
SI23-D5-5R5G											
SI23-D5-7R5G	116	320	307.5	175	169	98	100	307.5	9	6	3-M5
SI23-D5-011G											

## SI23 Product Model

SI 23 - D5 - 004G

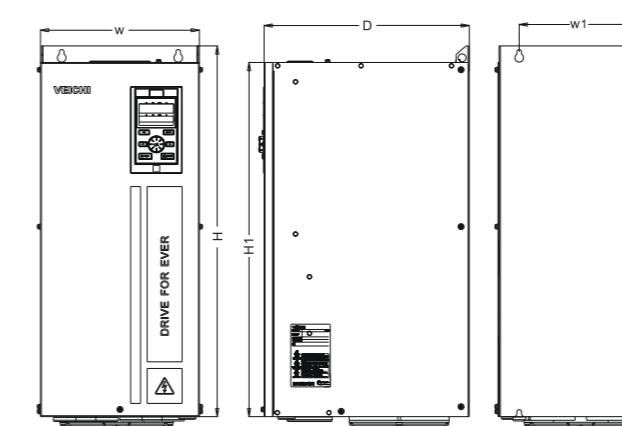
Suitable water pump power  
1R5 : 1.5kW  
2R2 : 2.2kW  
004 : 4.0kW  
5R5 : 5.5kW  
.....  
D5 : DC540V , Suitable for driving pumps within 380VAC  
D3 : DC311V , Suitable for driving pumps with 220VAC  
D1 : DC155V , Suitable for driving pumps with 110VAC

23 : The third generation product  
SI : Renewable Energy Product



Model	Overall dimension(mm)				Installation dimension mm				Installation aperture	
	W	H	H1	D	D1	W1	W2	H2		
SI23-D5-015G										
SI23-D5-018G	142	383	372	225	219	125	100	372	6	4-M5
SI23-D5-022G										
SI23-D5-030G	172	430	/	225	219	150	150	416.5	7.5	4-M5
SI23-T3-037G										

Steel model



Model	Overall dimension(mm)				Installation dimension(mm)		Installation aperture
	W	H	H1	D	W1	H2	
SI23-T3-045G							
SI23-T3-055G	240	560	535	310	176	544	4-M6
SI23-T3-075G							
SI23-T3-090G	270	638	580	350	195	615	4-M8
SI23-T3-110G							
SI23-T3-132G	350	738	680	405	220	715	4-M8
SI23-T3-160GL							
SI23-T3-185GL							
SI23-T3-200GL	360	940	850	480	200	914	4-M16
SI23-T3-220GL							
SI23-T3-250GL	370	1140	1050	545	200	1110	4-M16
SI23-T3-280GL							

## Solar Pump Drive Model Analysis

Model analysis of three phase AC PMSM Pump Drive				
Product model	Voltage level	Input power		Power range
		DC	AC	
SI23-D1-xxG	110V	60-400VDC	single-phase 110VAC	0.75-1.5kW
SI23-D3-xxG	220V	150-450VDC	single-phase 220VAC	0.75-4kW
SI23-D5-xxG	380V	250-780VDC	three-phase 380VAC	0.75-30kW
SI23-T3-xxG	380V	350-780VDC	three-phase 380VAC	37.0-200kW



## SI30 Series Hybrid Solar Pump Inverter

**IP65——360 degrees, no dead angle, waterproof and dustproof**

- ◎ Shell material —— using shell specialized die-casting aluminum Al-Si-Cu alloy, code ADC12
- ◎ Die casting —— molten metal to achieve rapid casting in high pressure and speed, special casting method without cutting



Human computer interface — support end user "one key start and stop"

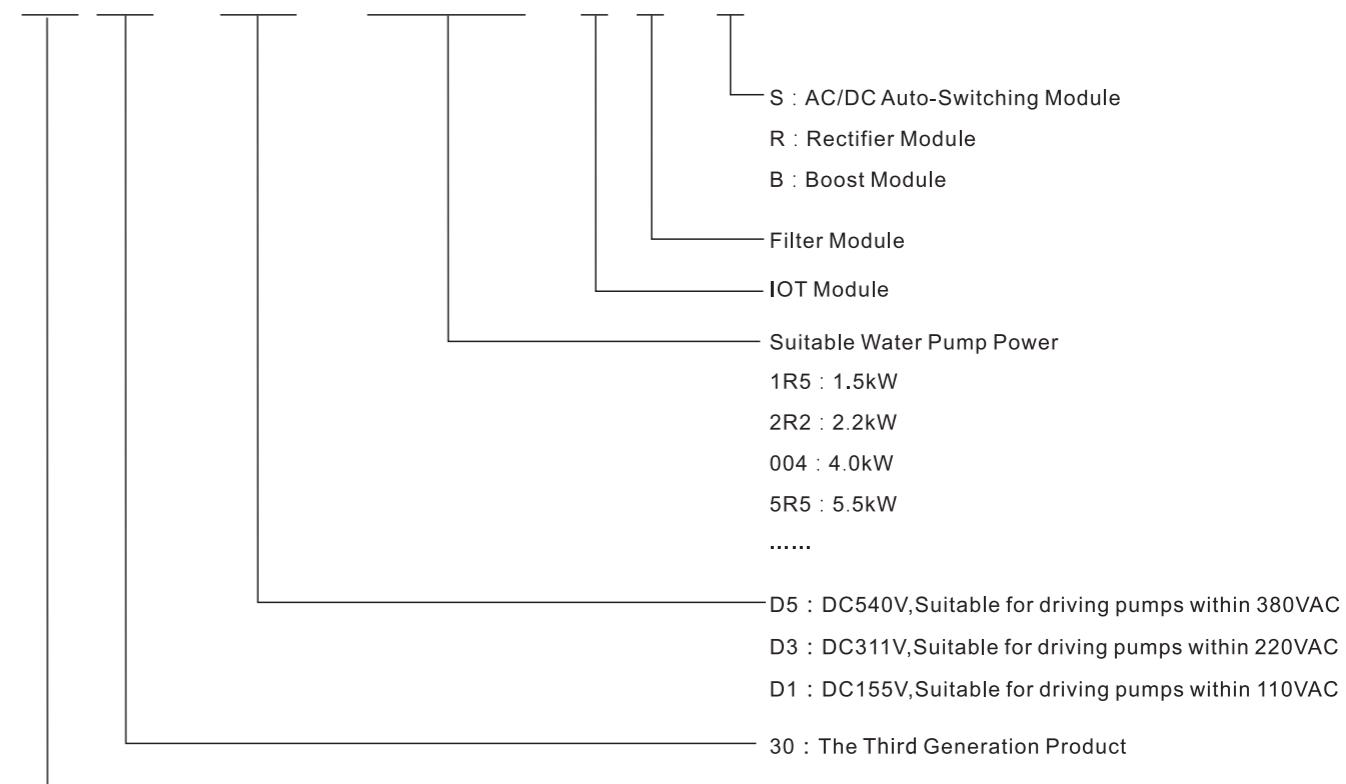
◎ High-end protection——"three proofings": waterproof panel, waterproof joint, waterproof enclosure.

◎ Surface treatment —— high speed sand blasting, electrochemical anodic oxidation



### SI30 Product Model

**SI30 - D5 - 004G - I F S**

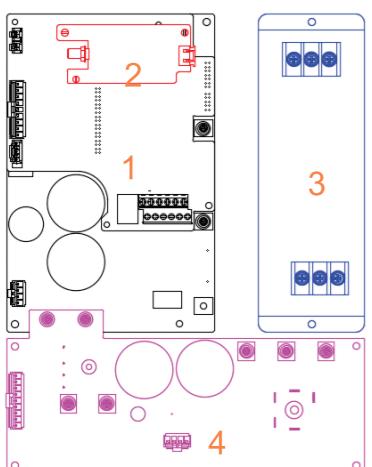


### Four features of solar pump inverter



### Solar pump inverter-Product introduction

#### Modular Design



Ingenious design: Small and exquisite inverter modules

Industry 4.0 : GPRS , Bluetooth, cloud platform to build the IOT module

Well pump assistant: Special filter takes you to interpret the world of deep well pumps

Variety modules----AC/DC integrated (Boost) module

IP65 protection---cool appearance, a perfect union of fashion sense and technology

## Technical Specification

Solar Pump Inverter Power (KW)	Pump		Maximum Input Power of Solar panel (KW)	Maximum Input DC Voltage(V)	Total Voc Range of Recommended Panels(V)	Rated Output Current(A)	Output Frequency Range(Hz)
SI30-D1 Series: Input 90-400VDC, 3 Phase 110-230VAC Output, MPPT Voltage Range 90-400VDC, Suitable for AC110V Pumps							
0.75	0.75	110	1.0	400	175-380	7A	0-320
1.5	1.5	110	1.95	400	175-380	10A	0-320
SI30-D3 Series: Input 150-450VDC, 3 Phase 150-230VAC Output, MPPT Voltage Range 150-450VDC, Suitable for AC220V Pumps							
0.75	0.75	220	1.0	450	360-430	4A	0-320
1.5	1.5	220	1.95	450	360-430	7A	0-320
2.2	2.2	220	2.86	450	360-430	10A	0-320
SI30-D5 Series: Input 300-800VDC, 3 Phase 230-460VAC Output, MPPT Voltage Range 300-780VDC, Suitable for AC380V Pumps							
0.75	0.75	380	1.0	800	620-750	2.3A	0-320
1.5	1.5	380	2.2	800	620-750	3.7A	0-320
2.2	2.2	380	3.3	800	620-750	5.0A	0-320
4.0	4.0	380	5	800	620-750	10A	0-320
5.5	5.5	380	8	800	620-750	13A	0-320
7.5	7.5	380	10	800	620-750	17A	0-320
11	11	380	14.3	800	620-750	25A	0-320
15	15	380	19.5	800	620-750	32A	0-320

## Solar panel recommended configuration

Solar pump inverter model	Solar panel model 1			Solar panel model 2			Solar panel model 3			
	Voc: 21V±2V			Voc: 33V±2V			Voc: 43V±2V			
	P±3W	Isc	configuration	P±3W	Isc	configuration	P±3W	Isc	configuration	Inverter rated current
SI30-D1-R75G	30W	2.75A	11*3							7A
SI30-D1-1R5G	60W	3.48A	10*3							10A
SI30-D3-R75G	30W	2.75A	17*2							4A
SI30-D3-1R5G	60W	3.48A	17*2							7A
SI30-D3-2R2G	90W	5.5A	17*2							10A
SI30-D5-R75G	30W	2.75A	30*1							2.3A
SI30-D5-1R5G	60W	3.48A	30*1							3.7A
SI30-D5-2R2G	90W	5.5A	30*1				150W	4.45A	16*1	5A
SI30-D5-004G	85W	4.7A	28*2				300W	8.00A	16*1	10A
SI30-D5-5R5G				180W	6.82A	19*2	200W	6.12A	16*2	13A
SI30-D5-7R5G				240W	8.81A	20*2	200W	7.32A	15*3	17A
SI30-D5-011G				180W	7.33A	20*4	240W	7.32A	15*4	25A
SI30-D5-015G				240W	8.81A	20*4	240W	7.32A	15*5	32A

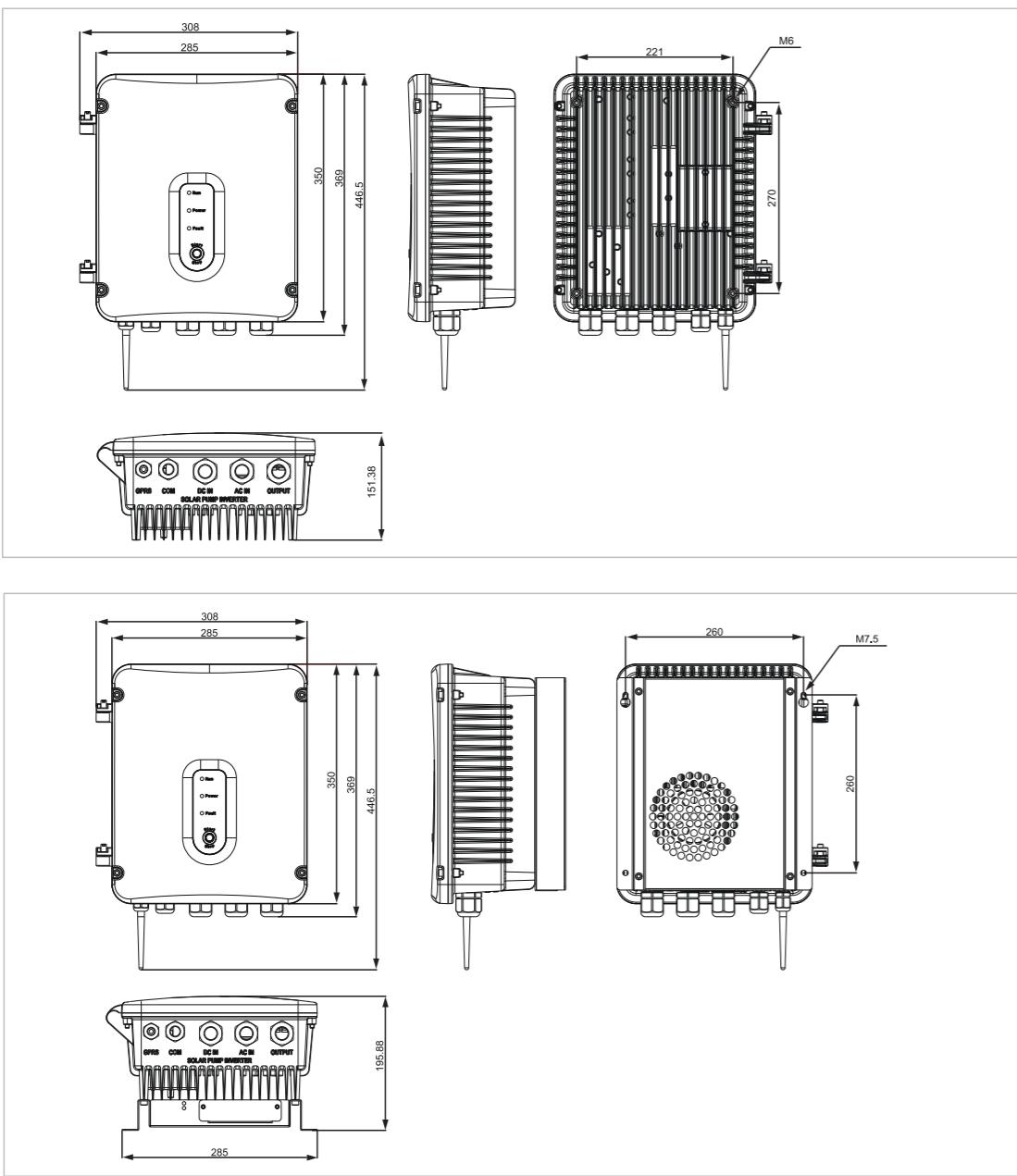
Note:

- The recommended solar panel total Voc is at least 1.15 times of inverter bus voltage  
As in the D5 series, the minimum Voc voltage is  $540V \times 1.15 = 621V$  (620V);  
As in the D3 series, the minimum Voc voltage is  $311 \times 1.15 = 357V$  (360V);  
As in the D1 series, the minimum Voc voltage is  $155 \times 1.15 = 178V$  (175V);
- The recommend total power of solar panel should be at least 1.2 times of the inverter power(drive the same power pump); such as the recommend total power of solar panel for 7.5kW water pump system:  $7500 \times 1.2 = 9000W$ ;
- The maximum withstand voltage of D1 model products is 400VDC; of D3 model products is 450VDC;and of D5 model products is 850VDC;

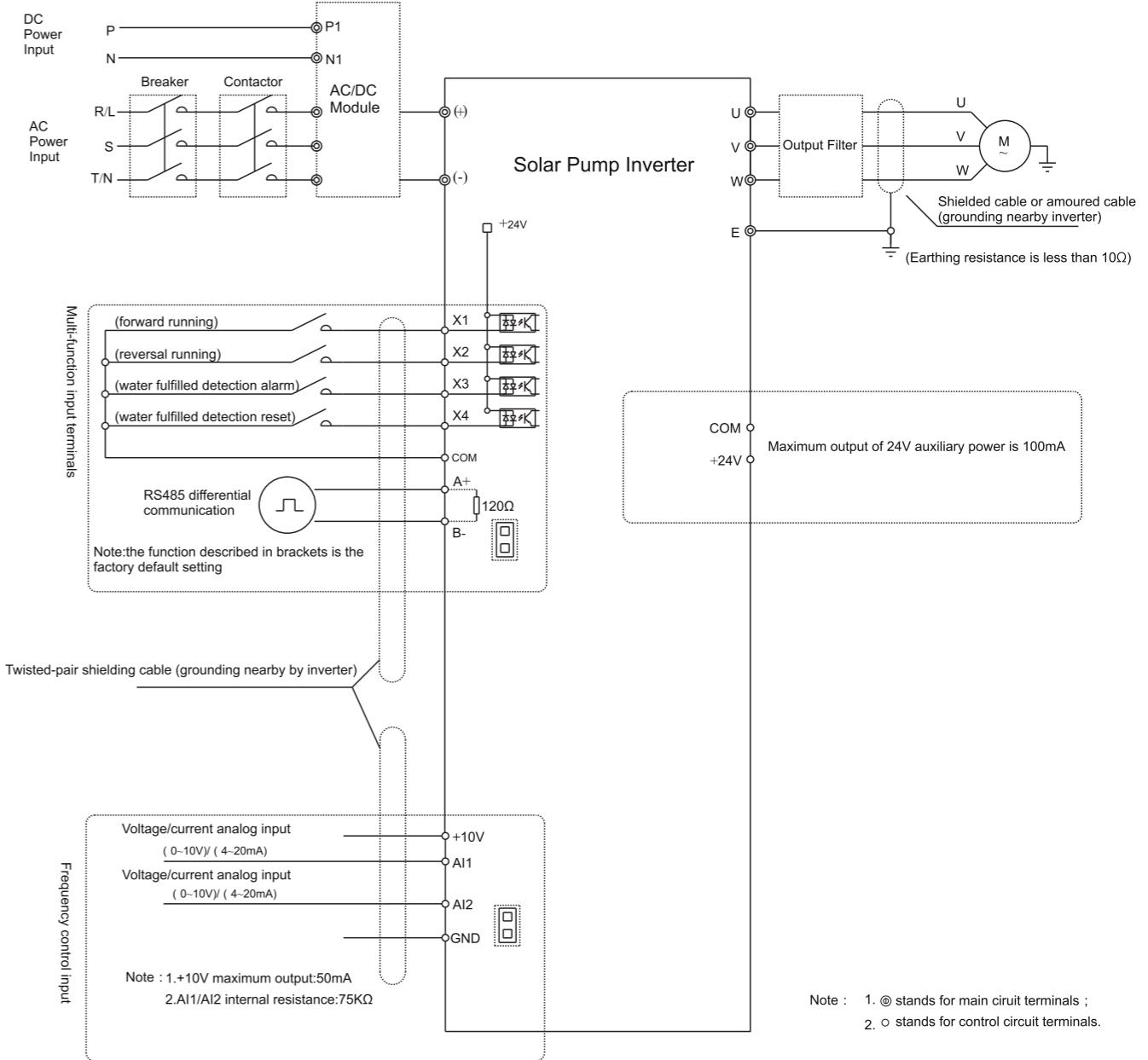
## Technical Specification

Items		Specification	
Power Supply Input	voltage, frequency	D1 Type:90-400VDC/1*110VAC D3 Type:150-450VDC/1*220VAC D5:Type:300-850VDC/3*380VAC	50/60Hz 50/60Hz 50/60Hz
	Allowable Fluctuations	Voltage Imbalance Rate:<3% Frequency Fluctuation :±5% Distortion Rate: confirm to IEC 61800-2	
	VFD Efficiency	≥97%	
	Total Voc range (V) of recommended panels	D1 Type:175-380VDC D3 Type:360-430VDC D5 Type:620-750VDC	
	MPPT efficiency	up to 99.9%	
	Output frequency range	0 ~ 320Hz (320Hz or more can be customized)	
	Overload capacity	150% of rated current for 1 minute; 180% of rated current for 10 seconds; 200% of rated current for 0.5 seconds	
	Solar pump protection function	Dry run, low frequency, low power, dormancy, water full, pump over current protection	
	AC/DC switching function	Self identification light intensity, automatic switching AC and DC power supply	
	IOT function	Support VEICHI cloud service, scan code to connect APP keyboard	
Protection function	Boost function	Only for D1, D3 models, support built-in Boost function	
	Water pump type	Three-phase AC AM pump, three-phase AC PMSM pump, BLDC(5.5kW or below), single-phase water pump(2.2kW or below)	
	Multi function input	Supports 4 way X input	
	Analog input	Support 2 analog AI input, Can choose 0-10V/0-20mA	
	Basic protection function	Bus overvoltage, under voltage, inverter over current, module fault, inverter overload, motor overload, current detection zero drift fault,hall fault, E2RCM fault, motor grounding short circuit fault, input phase loss, output phase loss, inverter overheat, communication fault, motor parameter self-tuning fault	
	Motor grounding short-circuit detection	Automatically detect whether the motor is short-circuit to ground. Auto detection while electrify	
	Communication network	Support 485 / Modbus protocolSupport Modbus free protocol; can realize the network, linkage control among VEICHI inverters	
	Remote and monitoring functions	Support remote program upgrade, remote monitoring, and remote lock function, can be connected to VEICHI GPRS module;support VEICHI virtual oscilloscope monitoring and debugging	
Environment	Installation site	Outdoor, altitude less than 1000m, free corrosive gases and direct sunlight	
	Temperature, humidity	-10 ~ +60°C , 20% to 95% RH (No condensation)	
	Vibration	Less than 0.5g when frequency less than 20Hz	
	Storage Temperature	-20~60°C	
	Installation mode	Hanging machine	
	Ingress Protection	IP65	
International Certificate	Cooling Method	Natural cooling / forced air cooling	
	CE		

## Dimension of solar pump inverter



## Solar pump inverter Standard Wiring Diagram



Inverter Model	Dimension			Installation Aperture		Aperture Size
	W	H	D	W1	H1	
SI30-D1-R75G						
SI30-D1-1R5G						
SI30-D3-R75G						
SI30-D3-1R5G						
SI30-D3-2R2G						
SI30-D5-R75G						
SI30-D5-1R5G						
SI30-D5-2R2G						
SI30-D5-004G						
SI30-D5-5R5G						
SI30-D5-7R5G						
SI30-D5-011G						
SI30-D5-015G	308	446.5	195.88	260	260	φ 7.5



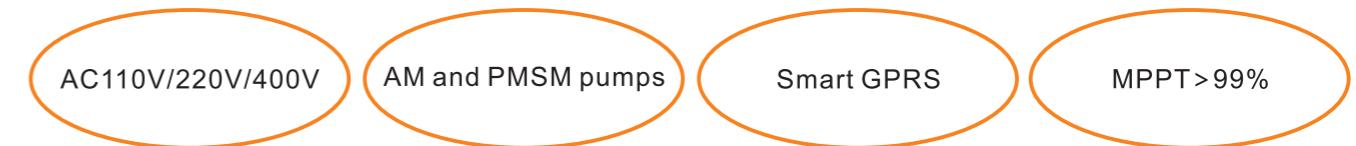
## SI20 Series Solar Pump Inverter

### SI20-D0-1R5G special type of solar pump inverter

- ◎ **Ultra low voltage:** With the incredible ultra low input voltage of 30VDC, 300W three-phase AC pumps could be driven perfectly, "a panel, a pump, will no longer be a dream."
- ◎ **Super compatibility:** Can drive three-phase AC AM and PMSM pumps.
- ◎ **Ingenious design:** powerful Boost function and specialized sine wave output filter.
- ◎ **Electrical parameters:** input power of 30-300V DC or 1 \* 90-240V AC; maximum output power of 1.5kW, maximum output current of 10A, output voltage of 3 \* 90-230V AC



### Four features of solar pump inverter



### Solar pump inverter introduction

#### SI20 series solar pump inverter

- ◎ **Clean energy:** inexhaustible energy supply, non-pollution, zero carbon dioxide emissions, actively contribute to curbing global warming.
- ◎ **Economic and affordable:** One-time investment to get long-term returns, and enjoy government subsidies.
- ◎ **Safe and reliable:** unattended, work at sunrise and stop at sunset.
- ◎ **Simple operation:** One key operation
- ◎ **Smart Internet of Things:** powerful GPRS Internet of Things, and users could master the system state at anytime and anywhere.
- ◎ **Personal customized:** special model supports ultra low input voltage of 30-300VDC with a specialized sine wave filter.
- ◎ **International standards:** in line with national standards, and access to CE certification.



### Model Analysis

Model Analysis of three - phase AC pump drive				
Product Model	Voltage Level	Input Power		Power Range
		DC	AC	
SI20-D0-xxG	110V	30-300VDC	Single Phase 110VAC	Maximum Power 1.5kW
SI20-D1-xxG	110V	90-400VDC	Single Phase 110VAC	0.75-1.5kW
SI20-D3-xxG	220V	150-450VDC	Single Phase 220VAC	0.75-4.0kW
SI20-D5-xxG	380V	250-780VDC	Three Phase 380VAC	0.75-30.0kW
SI20-T3-xxG	380V	350-780VDC	Three Phase 380VAC	37.0-200.0kW

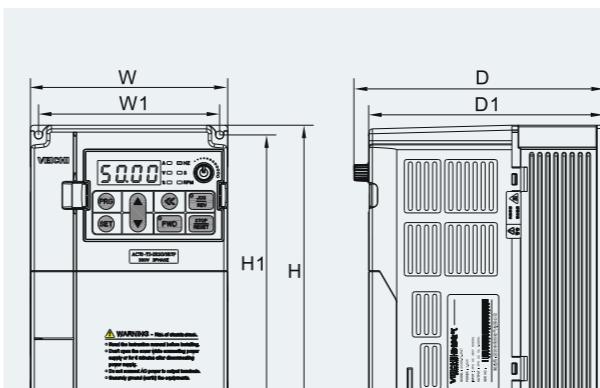
## Solar panels recommended configuration

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	Isc	configuration	P±3W	Isc	configuration	P±3W	Isc	configuration
SI20-D1-R75G									7A
SI20-D1-1R5G									10A
SI20-D3-R75G	30W	2.75A	17*2						4A
SI20-D3-1R5G	60W	3.48A	17*2						7A
SI20-D3-2R2G	90W	5.5A	17*2						10A
SI20-D3-004G	90W	5.5A	17*3						16A
SI20-D5-R75G	30W	2.75A	30*1						2.3A
SI20-D5-1R5G	60W	3.48A	30*1						3.7A
SI20-D5-2R2G	90W	5.5A	30*1						5A
SI20-D5-004G	85W	4.7A	28*2						10A
SI20-D5-5R5G				180W	7.33A	19*2			13A
SI20-D5-7R5G				240W	8.81A	20*2	200W	7.32A	15*3
SI20-D5-011G				180W	7.33A	20*4	240W	7.32A	15*4
SI20-D5-015G				240W	8.81A	20*4	240W	7.32A	15*5
SI20-D5-018G				240W	8.81A	20*5	240W	7.32A	15*6
SI20-D5-022G				240W	8.81A	20*6	270W	7.32A	15*7
SI20-D5-030G				240W	8.81A	20*8	270W	7.32A	15*10
SI20-T3-037G				270W	8.81A	20*9	270W	7.32A	15*11
SI20-T3-045G				270W	8.81A	20*10	270W	7.32A	15*14
									90A

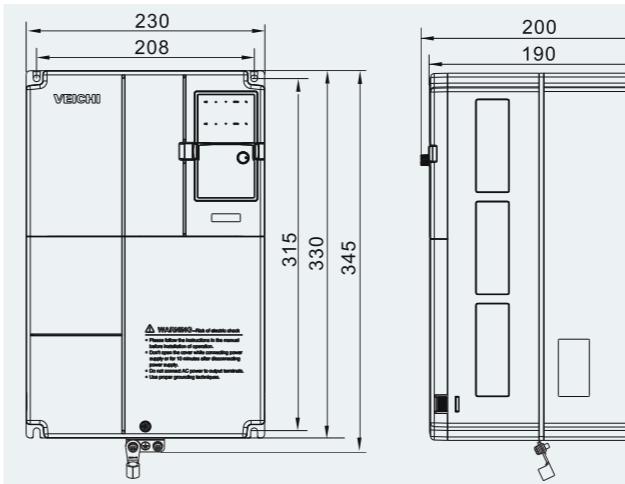
Note:

The recommended total Vmp of solar panel shall be 1.15 times of inverter bus voltage. For example, in D5 series, the recommended Vmp voltage is 540V\*1.15=621V; and in D3 series, the recommended Vmp voltage is 311\*1.15=357V;  
 For example, the D1 series recommended Vmp is 155\*1.15=178V.  
 the recommend total power of solar panel should be at least 1.2 times of the inverter power(drive the same power pump); such as the recommend total power of solar panel for 7.5kW water pump system: 7500\*1.2=9000W;  
 The maximum withstand voltage of D1 model products is 400VDC; of D3 model products is 450VDC;and of D5 and T3 model products is 780VDC;

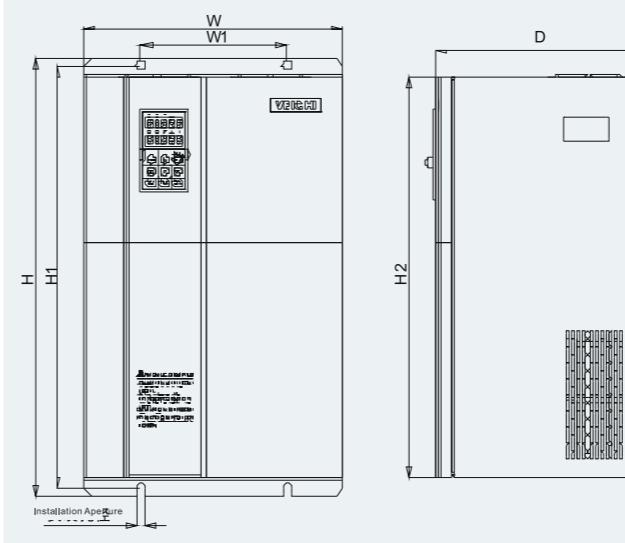
## Dimension of solar pump inverter



Inverter Model	Dimension				Installation aperture		Aperture Size
	W	H	D	D1	W1	H1	
SI20-D1-R75G	122	182	154.5	145	112	171	ø5
SI20-D1-1R5G	159	246	157.5	148	147.2	236	ø5.5
SI20-D3-R75G	122	182	154.5	145	112	171	ø5
SI20-D3-2R2G	159	246	157.5	148	147.2	236	ø5.5
SI20-D3-004G	195	291	167.5	158	179	275	ø7
SI20-D5-R75G	122	182	154.5	145	112	171	ø5
SI20-D5-1R5G	159	246	157.5	148	147.2	236	ø5.5
SI20-D5-2R2G	195	291	167.5	158	179	275	ø7
SI20-D5-004G	159	246	157.5	148	147.2	236	ø5.5
SI20-D5-5R5G	195	291	167.5	158	179	275	ø7
SI20-D5-7R5G	195	291	167.5	158	179	275	ø7
SI20-D5-011G	195	291	167.5	158	179	275	ø7



Inverter Model	Dimension				Installation aperture		Aperture Size
	W	H	D	D1	W1	H1	
SI20-D5-015G	230	330	200	190	208	315	ø7
SI20-D5-018G	230	330	200	190	208	315	ø7
SI20-D5-022G	230	330	200	190	208	315	ø7



Inverter Model	Dimension				Installation aperture		Aperture Size
	W	H	D	H2	W1	H1	
SI20-D5-030G	255	410	225	370	180	395	ø7
SI20-T3-037G	305	570	260	522	180	550	ø9
SI20-T3-045G	380	620	290	564	240	595	ø11
SI20-T3-055G	500	780	340	708	350	755	ø11
SI20-T3-075G	650	1060	400	950	400	1023	ø16
SI20-T3-093G							
SI20-T3-110G							
SI20-T3-132G							
SI20-T3-075G							
SI20-T3-093G							
SI20-T3-110G							

# Mighty. Small.



## SI22 Mini Solar Pump Inverter

SI22 puts uncompromising performance and potential in your application. It's thinner and lighter than ever before, yet powerful enough to help you take your ideas even further.

### Product Features



Ultrahigh Cost Performance



Small Body



Modern Stylish



Advanced MPPT Technology



Driving Multi-types of Pumps

### Ultrahigh Cost Performance

Working as smart assistant for farmers, economical and practical.

### SI22-D1-1R5G

SZYL-P280-35×4;Total power:1.1kW



+



+



→

75%

### SI22-D3-2R2G

SZYL-P280-35×8;Total power:2.2kW



+



+



→

80%



Save 4 pcs panels(save 50% \$)

Similar water flow per day



## Small Body

Palm-sized, reducing installation space & delivery cost.



## Smart IOT

Wireless data transmission card



Supports wide frequency bands for global application



Small size,integrated design,easy to install and use



Support wifi transmission LAN could be built through wifi in someplace without network coverage



Built in GPS+Beidou positioning chips,dual positioning system



Powerful internet manage platform,free to manage field equipment



## Driving Multi-types of Pumps

**1**

Three-phase AC pump:One –key operation at default setting

**2**

Single-phase AC pump:Soft start and smooth running

**3**

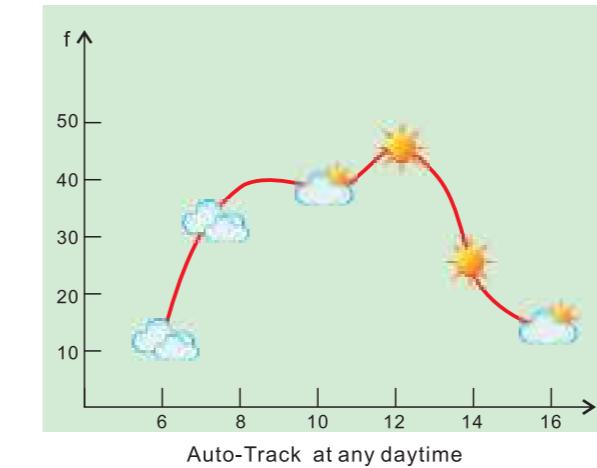
Three-phase AC PMSM pump:Perfectly driving high-efficiency PMSM pump by open-loop and sensor-less vector control

**4**

Brushless DC pump:Compliantly driving 10A or below BLDC pump

## MPPT Technology:Auto-track the whole voltage range

- Wide input voltage range 60-400VDC
- MPPT efficiency more than 99%
- Auto-track at daytime



## Modern Stylish

One technology & one art,Easy to understand



## SI22 Product Model

**SI 22 - D1 - 1R5G**

Suitable water pump power

R75G:0.75KW

1R5G:1.5KW

2R2G:2.2KW

Note:Maximum power of D1:1.5KW

Maximum power of D3:2.2KW

D3 : DC311V,suitable for driving AC220V pump

D1 : DC156V,suitable for driving AC110V pump

22 : Series No.

SI : Renewable Energy Product

## Technical Specification

Solar Pump Inverter Power(KW)	Pump		Max solar power input (KW)	Max DC input voltage V	Recommend Voc voltage (V)	Rated Output Current(A)	Output frequency(Hz)
	Rated Power (KW)	Rated Voltage(V)					
SI22-D1 series, DC60-400VDC input, 3 phase 110-230VAC output, suitable for 110VAC pump							
0.75	0.75	110	1.0	400	175-380	7A	0-320
1.5	1.5	110	1.95	400	175-380	10A	0-320
SI22-D3 series, DC60V-400V input, 3 phase 220-240VAC output, suitable for 220VAC pump							
0.75	0.75	220	1.0	400	360-400	4A	0-320
1.5	1.5	220	1.95	400	360-400	7A	0-320
2.2	2.2	220	2.86	400	360-400	10A	0-320

## Technical Specification

Items		Specification
Power Input	Voltage	60-400VDC
	Inverter Efficiency	> 96%
Output	MPPT Efficiency	More than 99%
	Output Frequency Range	0-320Hz ( 320Hz or more can be customized )
	Overload Capacity	150% of rated current for 1 minute , 180% for 10 seconds , 200% for 0. second
Basic Function	Solar Pump Protection	Dry run、low frequency、low power、dormancy、water fulfilled and over-current of pump protections
	IOT Module	Support plug and play IOT module
	DI/DO	1 loop digital input,1 loop collector circuit output
	Auxiliary Power	24VDC , maximum output 100mA
	Water Pump Types	Three-phase AC AM pump ( 110VAC/220VAC ) , three-phase AC PMSM pump , BLDC pump ( 10A or below ) , single-phase pump ( 10A or below )
	Basic Protection	Over voltage、under voltage、over current、overload、over heat、Hall fault、short circuit between phases、grounding short circuit、output phase loss , etc.
Environment	Installation Site	Indoor, altitude less than 1000m, free corrosive gases and direct sunlight
	Temperature、Humidity	-10—60°C
	Installation Mode	Hanging
	Ingress Protection	IP20
	Cooling	Forced air cooling
International Certificate	CE	

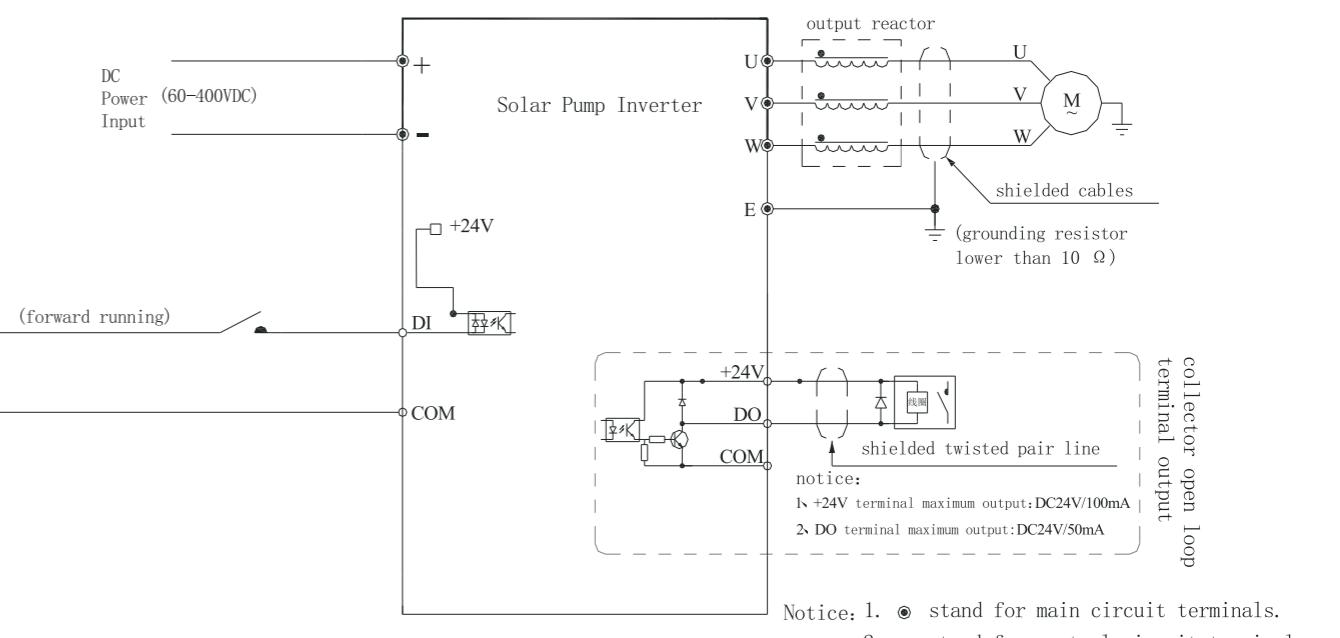
## Recommended Configuration

Solar pump inverter model	Solar panel model 1			Solar panel model 2		
	Voc: 21V±2V			Voc: 36V±2V		
	P±3W	Isc	configuration	P±3W	Isc	configuration
SI22-D1-R75G	30W	2.75A	11*3	180W	7.33A	6*1
SI22-D1-1R5G	60W	3.48A	10*3	285W	9.41A	6*1
SI22-D3-R75G	30W	2.75A	17*2	—	—	—
SI22-D3-1R5G	60W	3.48A	17*2	180W	7.33A	11*1
SI22-D3-2R2G	90W	5.5A	17*2	250W	8.92A	11*1

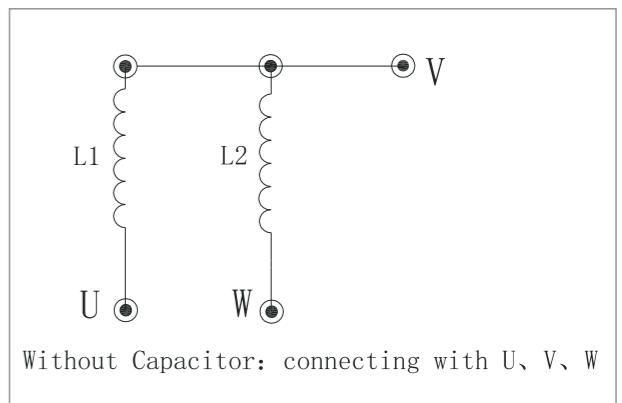
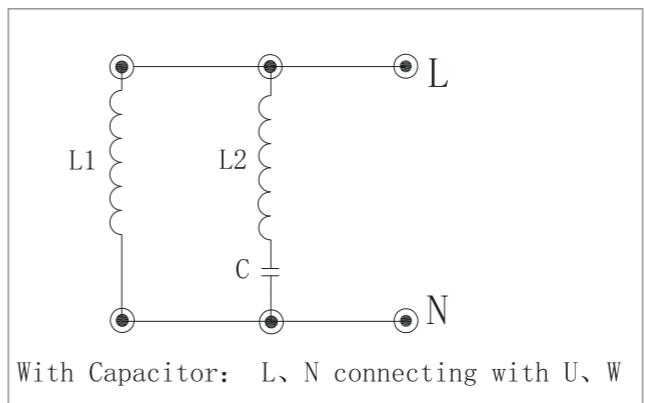
Note:

- 1.Total Voc of the recommended configuration should be at least 1.15 times of bus voltage of inverter.
- As D1 type, the minimum Voc should be  $110 \times 1.414 \times 1.15 = 178.8V$  ( 180V ) .
- As D3 type, the minimum Voc should be  $220 \times 1.414 \times 1.15 = 357.6V$  ( 360V ) .
- 2. Total power of recommended configuration should be at least 1.2 times of pump power.

## Standard Wiring for three phase motor



## Wiring for single phase motor



## Industry Applications

