VEICHI

SI23 Series
Solar Pumping Inverter

VEICHI

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*Version:2018 V1.0

Company Profile

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.

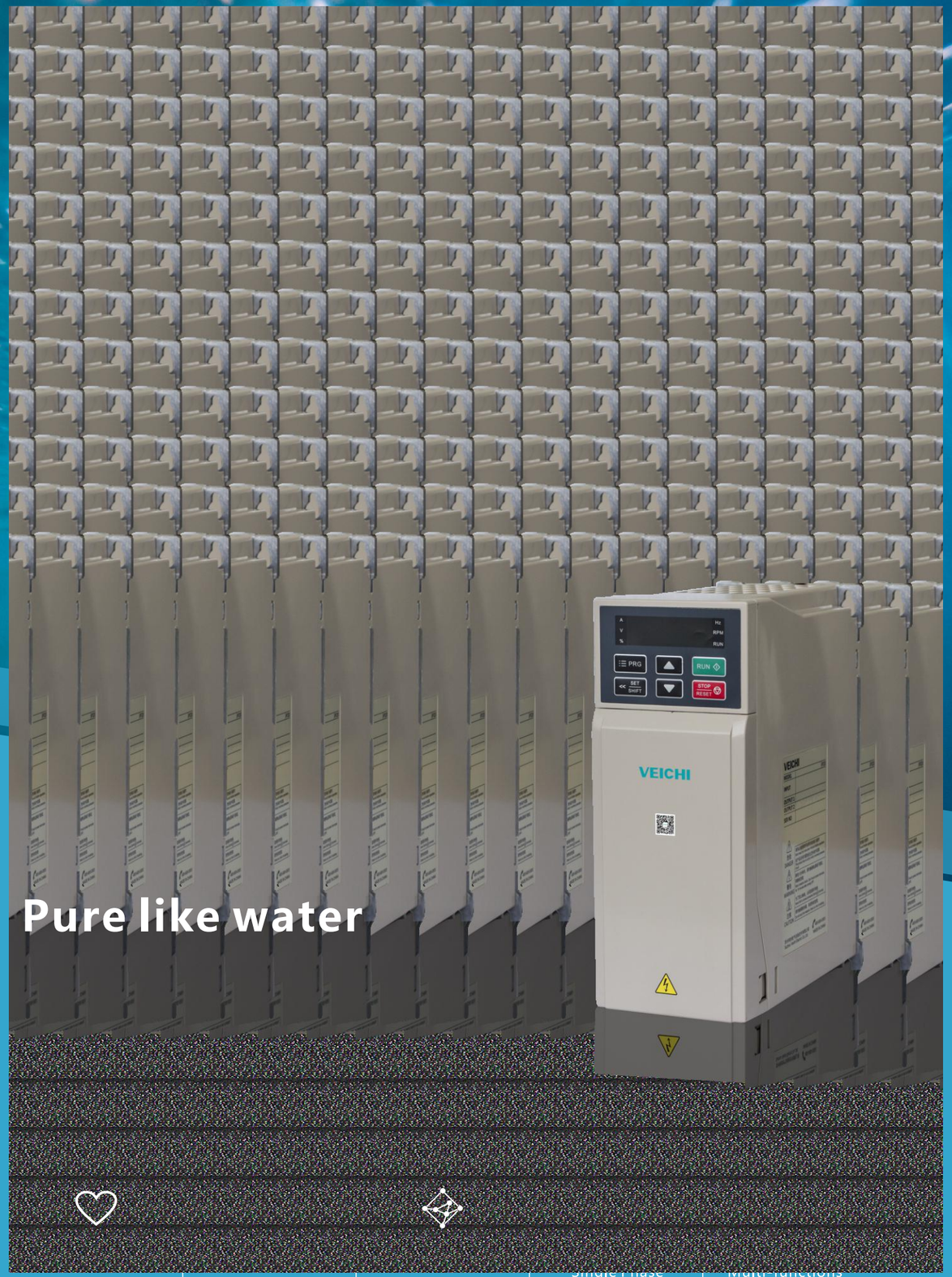
VEICHI is a competitive company and adopts the dual-base operating mode, which contains the Shenzhen VEICHI and Suzhou VEICHI. Suzhou VEICHI Electric Co., LTD is located in Suzhou Wuzhong Economic and Technological Development Zone, which covers 50 acres. The total construction area is approximately 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.

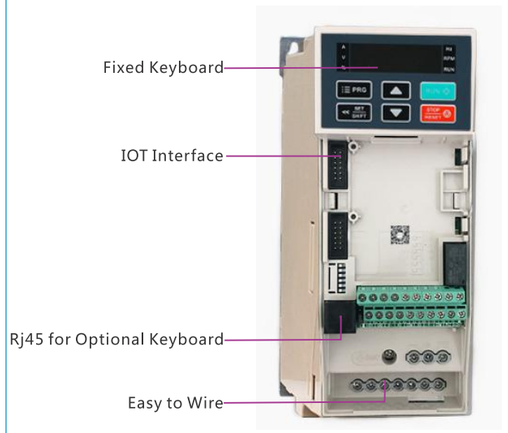
VEICHI has been named Chinese Electrical Industry's Top Ten National Brands, Chinese Electrical Industry Top Ten Satisfying Brands and Top Ten National Brands of Inverter Industry. VEICHI products have become the first choice of many enterprises.



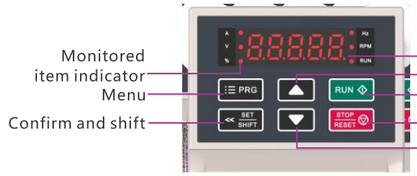
SI23 Series
Solar Pumping Inverter

Fashion Appearance

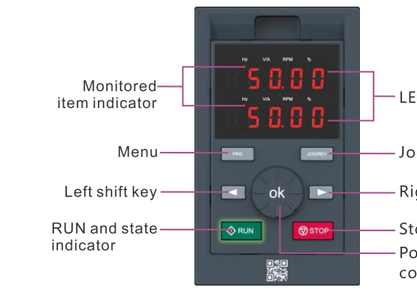
Simple Layout



Concise Keyboard



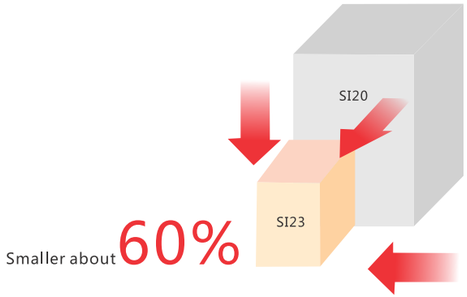
Integrated keyboard



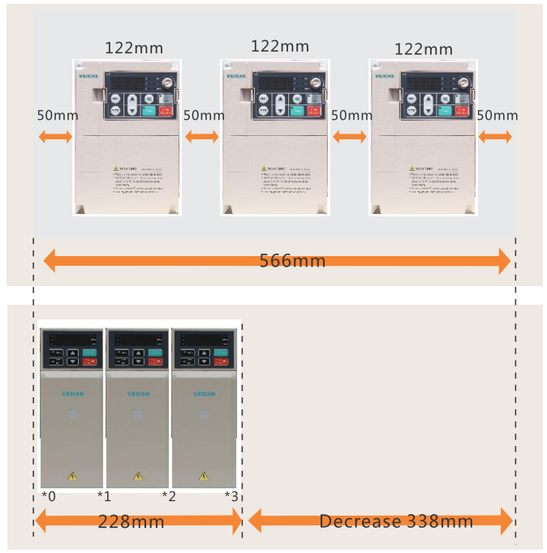
Double line keyboard(External citation)

Narrow body

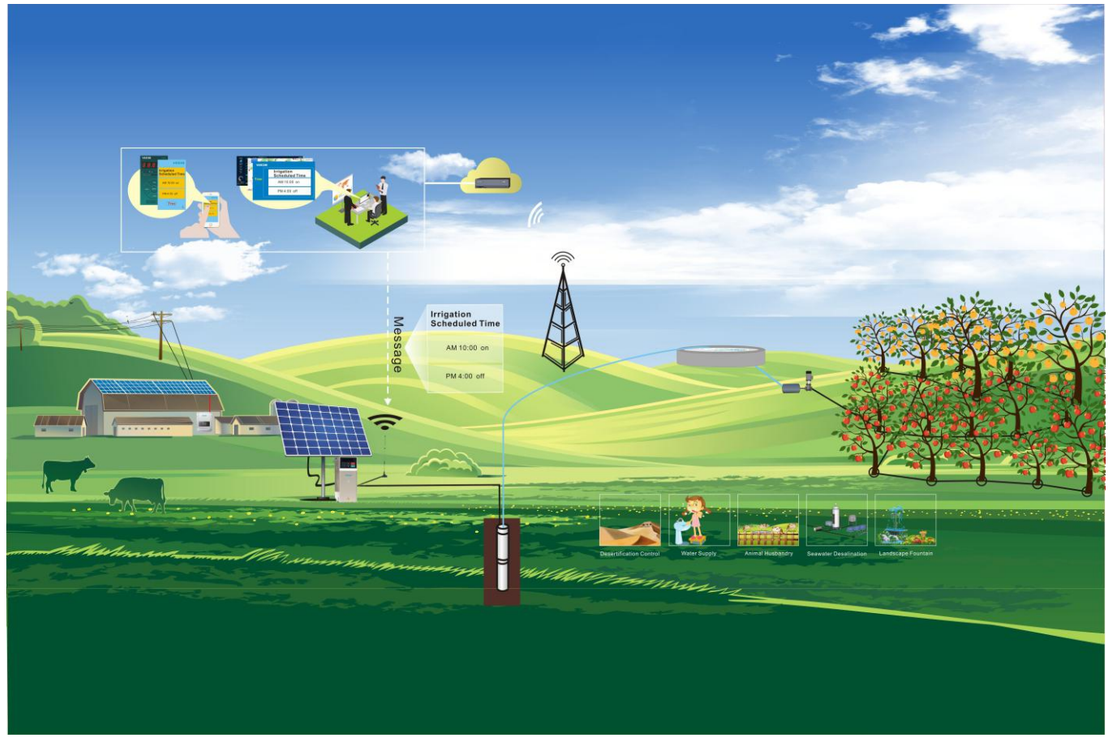
SI23 series all adopt book narrow-body design, and the volume is 60% smaller than the original, which is the real "book-body machine" of inverter.



380V 2.2kW demonstration



Access to Intelligent Agricultural IOT System

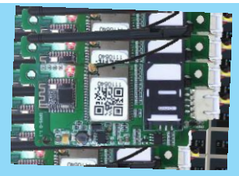


Smart IOT

Remote control of mobile APP
can be controlled home

- Bluetooth, WIFI and GPRS wireless transmission technology.
- Widely-used multi-language switching.
- Drop-down menu for convenient parameter settings.
- Digital display of current data are clear and accurate.
- Ring operation button brings you a special experience.

Various Types

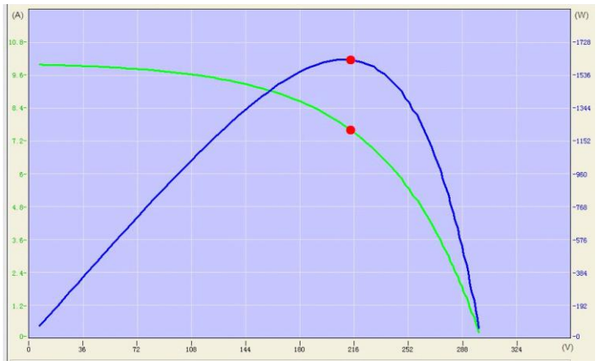


Online Basic Module

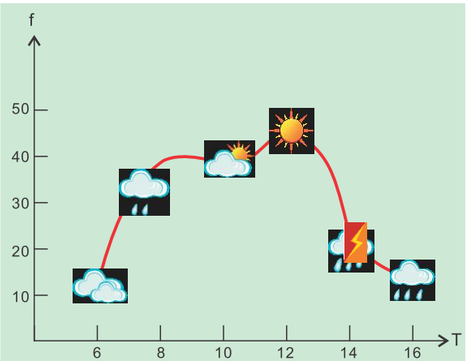
Online Module with Bluetooth

Online & offline Module with WIFI

Advanced MPPT Technology



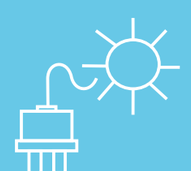
High MPPT Efficiency Max. is 99.9%



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

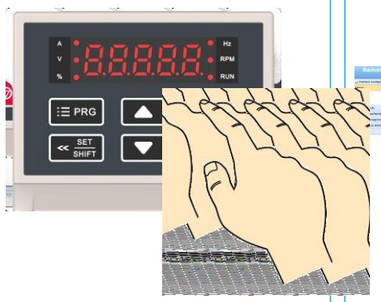
Excellent Control Performance

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

High Frequency

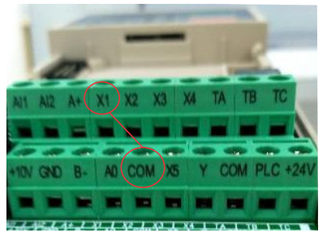
Max. output frequency is 600Hz under VC control

Default Auto-Running



Auto-Running by Keyboard

Scheduled Auto-Running by IOT



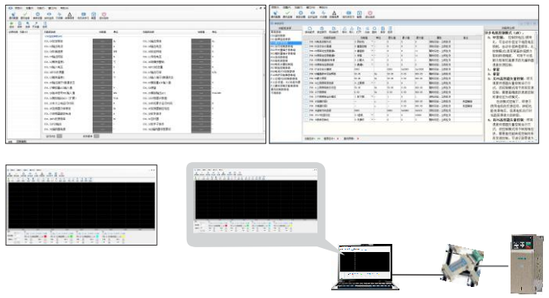
Auto-Running by X1 and COM

One- Key Operation

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

VCASoft Client

Parameter setting module | State monitoring module | Virtual oscilloscope module | Fault analyzing module | Motor control module



Special Functions

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

Driving Multiple Types of Pumps

High Efficiency PMSM
Pumping 30-40% more water with smaller size

Normal AM Pumps
Widely used with normal efficiency

Single Phase Pumps
Popular in rural village with low efficiency

SI23 Product Model

SI 23 - D5 - 004G

- SI : Renewable Energy Product
- 23 : The third generation product
- D5 : DC540V , Suitable for driving pumps within 380VAC
  D3 : DC311V , Suitable for driving pumps with 220VAC
  D1 : DC155V , Suitable for driving pumps with 110VAC
- Suitable water pump power
  1R5 : 1.5kW
  2R2 : 2.2kW
  004 : 4.0kW
  5R5 : 5.5kW
  .....

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

Industry Applications

Farmland Irrigation

Landscape Fountain

Desert Management

Drinking Water

Pool Water Supply

Technical Specification

Solar Pump Inverter Power(KW)	Pump		Maximum Input Power of Solar panel(KW)	Maximum input DC current	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)						
SI23-D1 Series: Input 60-400VDC, 3 Phase 110-230VAC Output, Suitable for AC110V Pumps								
0.75	0.75	110	1.5	9.6	400	175-380	7A	0-600
1.5	1.5	110	3.0	19	400	175-380	10A	0-600
SI23-D3 Series: Input 150-450VDC, 3 Phase150-230VAC Output, Suitable for AC220V Pumps								
0.75	0.75	220	1.5	4.8	450	360-430	4A	0-600
1.5	1.5	220	3.0	9.6	450	360-430	7A	0-600
2.2	2.2	220	4.4	14	450	360-430	10A	0-600
4.0	4.0	220	8.0	26	450	360-430	16A	0-600
SI23-D5 Series: Input 250-780VDC, 3 Phase230-460VAC Output, Suitable for AC380V Pumps								
0.75	0.75	380	1.5	2.8	800	620-750	2.5A	0-600
1.5	1.5	380	3.0	5.6	800	620-750	4.0A	0-600
2.2	2.2	380	4.4	8.2	800	620-750	6.0A	0-600
4.0	4.0	380	8.0	14.8	800	620-750	10A	0-600
5.5	5.5	380	11	20.5	800	620-750	13A	0-600
7.5	7.5	380	15	27.9	800	620-750	17A	0-600
11	11	380	22	41.0	800	620-750	25A	0-600
15	15	380	30	55.8	800	620-750	32A	0-600
18.5	18.5	380	37	68.9	800	620-750	38A	0-600
22	22	380	44	82	800	620-750	45A	0-600
30	30	380	60	111.7	800	620-750	60A	0-600
SI23-T3 Series: Input 350-780VDC, 3Phase230-460VAC Output, Suitable for AC380V Pumps								
37	37	380	74	137.8	800	620-750	75A	0-600
45	45	380	90	167.6	800	620-750	90A	0-600
55	55	380	110	204.8	800	620-750	110A	0-600
75	75	380	150	279.3	800	620-750	150A	0-600
93	93	380	186	346.3	800	620-750	180A	0-600
110	110	380	220	409.6	800	620-750	210A	0-600
132	132	380	264	491.6	800	620-750	250A	0-600
160	160	380	320	595.9	800	620-750	310A	0-600
185	185	380	370	689	800	620-750	340A	0-600
200	200	380	400	744.8	800	620-750	380A	0-600

Technical Specification

Items		Specification
Input Power Supply	voltage, frequency	D1 Type:60-400VDC/1*110VAC 50/60Hz D3 Type:150-450VDC/1*220VAC 50/60Hz D5:Type:250-750VDC/3*380VAC 50/60Hz T3: Type:350-780VDC/3*380VAC 50/60Hz
	Allowable Fluctuations	Voltage Imbalance Rate: < 3% Frequency Fluctuating: ±5% Distortion Rate: confirm to IEC 61800-2
	VFD Efficiency	≥96%
	Total Voc range (V) of recommended panels	D1Type: 175-360VDC D3Type: 360-430VDC D5Type: 620-750VDC T3Type: 620 -750 VDC
Output	MPPT efficiency	Up to 99.9%
	Output frequency range	0-600Hz
	Overload capacity	150% of rated current for 1 minute; 180% of rated current for 10 seconds; 200% of rated current for 0.5 seconds
Protection function	Solar pump protection function	Dry run, low frequency, low power, dormancy, water full, pump over current protection
	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
	Servo control	Support synchronous and asynchronous servo control, perform pulse tracking, zero servo, indexing positioning and other basic servo functions, and support the orthogonal pulse given
	Communication network	Support 485 / Modbus protocol, CANopen protocol, and profibus-DP protocol; Support Modbus free protocol and CAN customize 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	Indoor, altitude less than 1000m, free corrosive gases and direct sunlight
	Temperature, humidity	-10~50℃ 20%~95%RH (No condensation)
	Vibration	Less than 0.5g when frequency less than 20Hz
	Storage Temperature	-20~60℃
	Installation mode	Hanging machine, cabinet machine
	Ingress Protection	IP20
	Cooling Method	Forced air-cooling
International Certificate	CE	

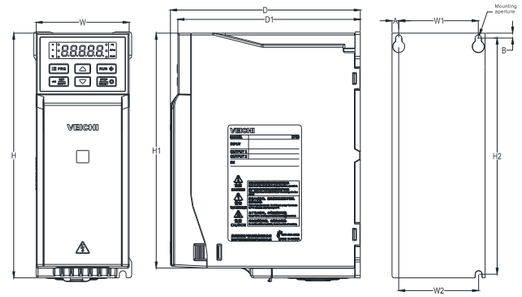
Solar panels recommended configuration

Solar pump inverter model	Solar panel model 1	Solar panel model 2
	P=260W Vmp=30V	P=300W Vmp=37V
	configuration	configuration
SI23-D1-R75G	5*1	4*1
SI23-D1-1R5G	8*1	6*1
SI23-D3-R75G	10*1	9*1
SI23-D3-1R5G	10*1	9*1
SI23-D3-2R2G	11*1	9*1
SI23-D5-004G	18*1	16*1
SI23-D5-5R5G	18*2	16*2
SI23-D5-7R5G	18*2	16*2
SI23-D5-011G	18*3	16*3
SI23-D5-015G	18*4	16*4
SI23-D5-018G	18*5	16*5
SI23-D5-022G	20*5	16*6
SI23-D5-030G	18*8	16*8
SI23-T3-037G	18*10	16*10
SI23-T3-045G	19*11	17*11

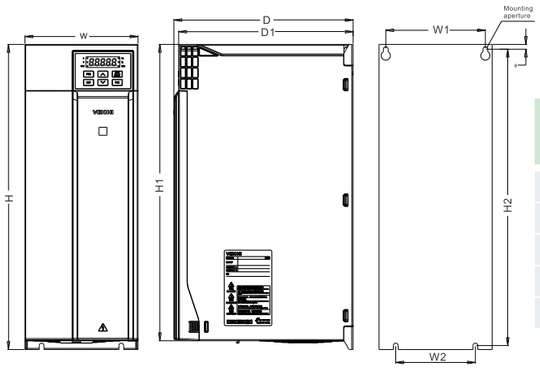
Note:
The recommended total Vmp of solar panel shall be 1.15 times of inverter bus voltage. For example, in D5 series, the recommended Vmp voltage is 540V*1.15=621V; and in D3 series, the recommended Vmp voltage is 311*1.15=357V;
For example, the D1 series recommended Vmp is 155*1.15=178V.
the recommend 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;

Installation dimension

Plastic model

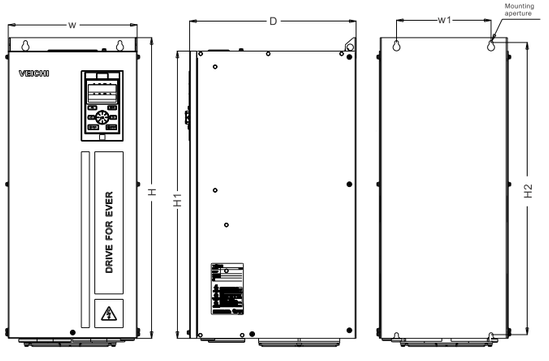


Model	Overall dimension(mm)					Installation dimension (mm)					Installation aperture
	W	H	H1	D	D1	W1	W2	H2	A	B	
SI23-D3-R75G SI23-D3-1R5G	76	200	192	155	149	65	65	193	5.5	4	3-M4
SI23-D3-2R2G SI23-D3-004G	100	242	231	155	149	84	86.5	231.5	8	5.5	3-M4
SI23-D5-R75G SI23-D5-1R5G SI23-D5-2R2G	76	200	192	155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



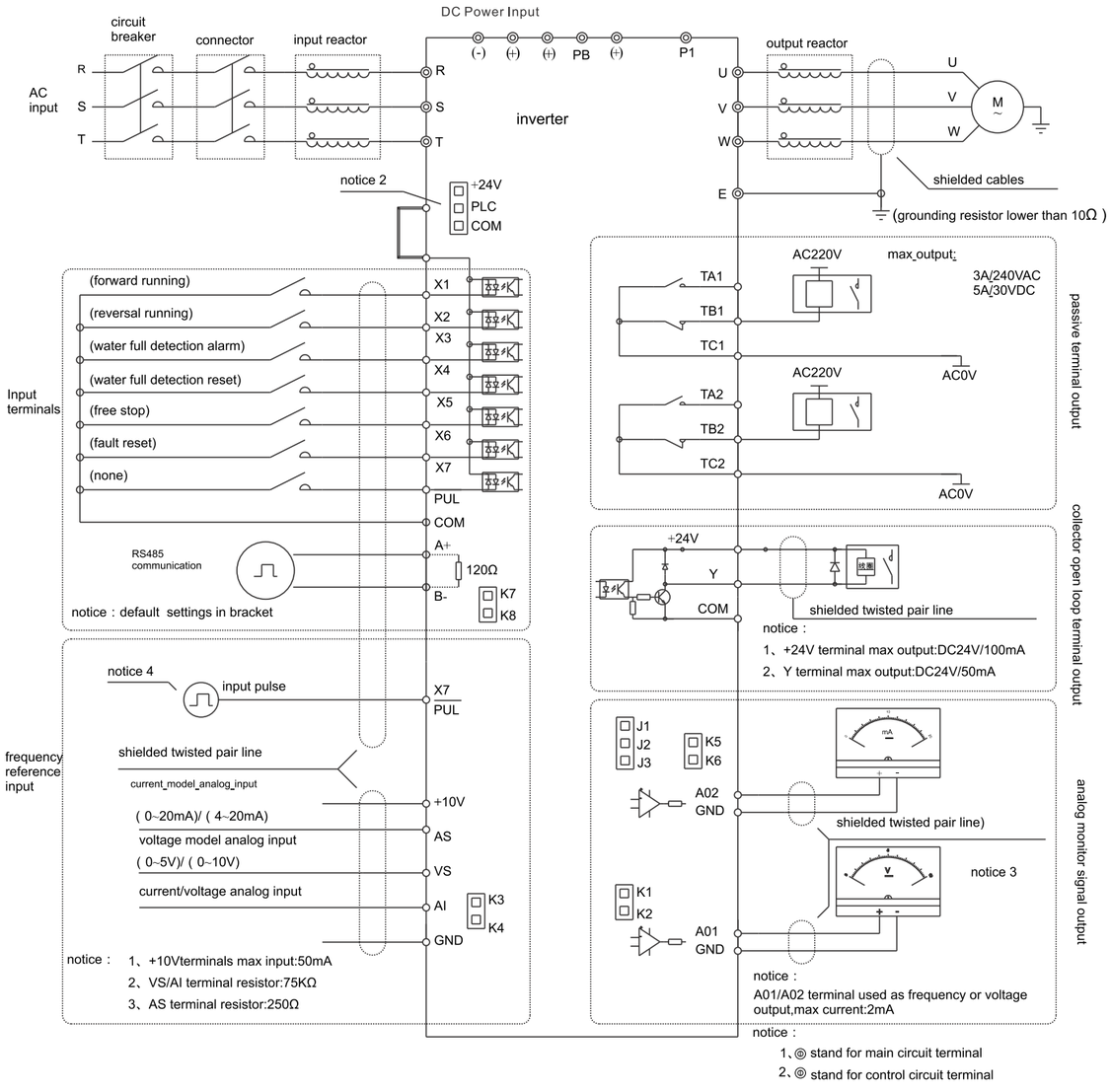
Model	Overall dimension(mm)					Installation dimension (mm)				Installation aperture
	W	H	H1	D	D1	W1	W2	H2	B	
SI23-D5-015G SI23-D5-018G SI23-D5-022G	142	383	372	225	219	125	100	372	6	4-M5
SI23-D5-030G SI23-T3-037G	172	430	/	225	219	150	150	416.5	7.5	4-M5

Steel model



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

Standard Wiring Diagram



Note: When connect solar panel, both AC input (R, T) and DC input (+, -) is okay, AC input is prefer.

Domestic marketing services network

Veichi Electric was established in 2005 and headquartered in Shenzhen, China. In October 2013, Suzhou Veichi Electric Co., Ltd. was founded in Suzhou, Jiangsu province which formed two major production bases. Our sales and service network spread all over the country including more than 40 offices and service centers to ensure timely response of customer needs.

International marketing services network