NEW WEST TECHNOLOGIES LTD.

More Intelligent

The sample version is constantly updated with product upgrades, please pay attention to the version number
For products and solutions marked with *, please contact us for detailed information

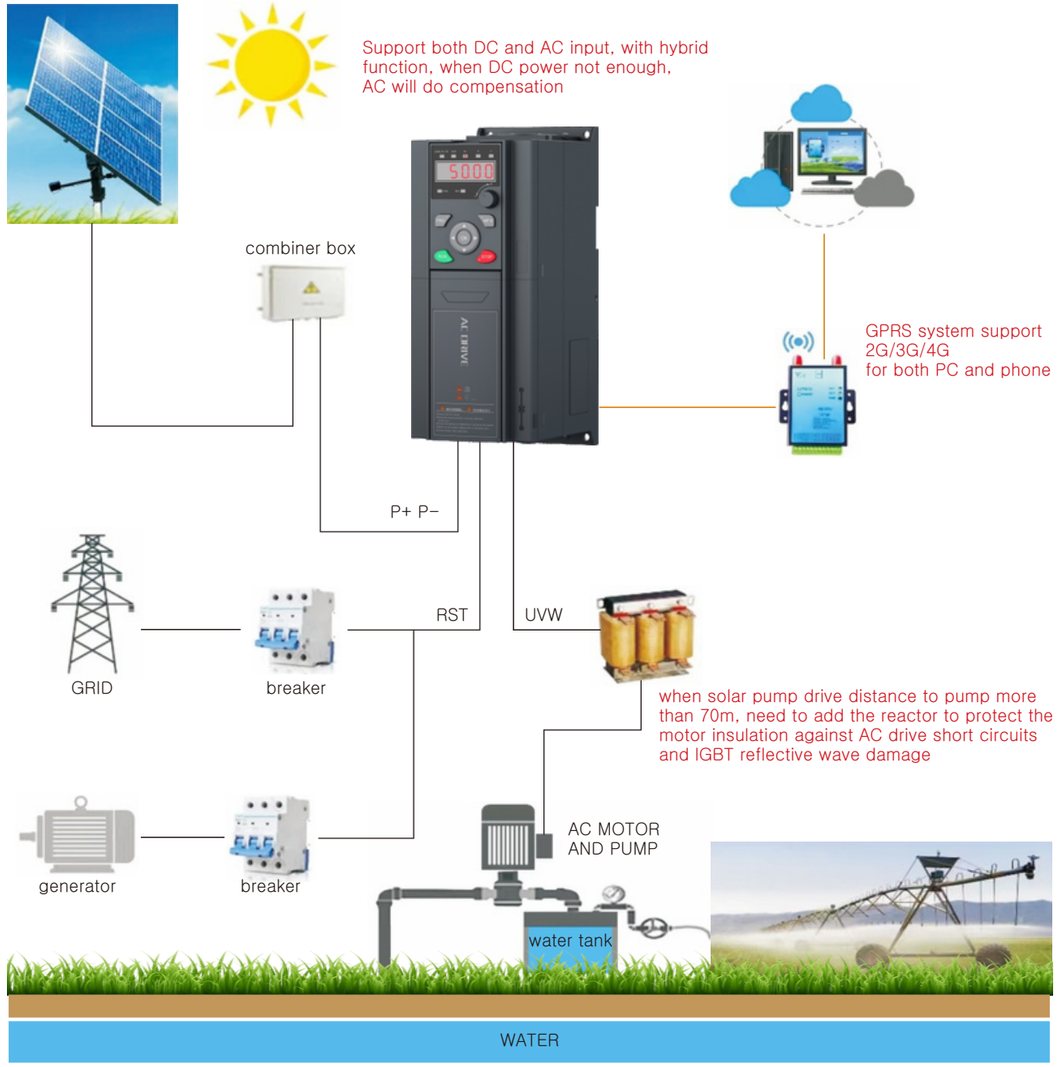
CT2000SP Solar Pump Drive

Application background

In recent years, with the increasing severity of the global "food problem" and "energy problem", solar water pumps have gradually been hailed as the most efective industrial integration products to solve the problem of increasing output of efective cultivated land and replacing fossil energy with clean energy. As a result, an emerging economic model was born in which the solar industry developed in combination with traditional industries such as agricultural water conservancy, desert control, domestic water use, and urban waterscape.

Application advantages

- The solar water pump system operates automatically without manual attendance. The system is mainly composed of solar water lifting drive, solar array and water pump. The system saves energy storage devices such as batteries, replaces power storage with water storage, and directly drives the water pump to lift water.
- The solar pump drive controls and regulates the operation of the system to achieve maximum power point tracking. Ensure the rated operation of the system when the sunshine is sufcient, and meet the set minimum operation frequency when the sunshine is insufcient, so as to ensure the full application of solar cell power.
- The solar cell array is composed of several solar cell modules in series and in parallel. It absorbs sunlight radiation energy and converts it into electric energy to provide power for the whole system.
- The water pump lifts water from water sources such as deep wells, rivers and lakes, injects it into water tanks / pools, or directly connects it to irrigation or fountain systems. DC pump, AC pump, centrifugal pump, axial flow pump, mixed flow pump, deep well pump, etc. can be used.
- The development of CT2000SP solar pump is based on the high-performance VFD. The software and hardware have been changed to make it suitable for application. MPPT function and special control parameters for solar water pump control are added to the software.
- CT2000SP series solar pump is developed by our company has excellent performance and simple use. It is exported to India, Pakistan, Afghanistan, the United States, the Middle East, Africa and other places, and is highly praised.



Product overview

The CT2000SP series solar pump drive is the company's new solar pump drive for photovoltaic water pump applications. Based on the original photovoltaic water pump product, it optimizes the product's ease of use and performance, and at the same time expands the product's applicable voltage level and power range. It can be applied to single-phase/three-phase 220V and three-phase 380V water pumps.

Product characteristics

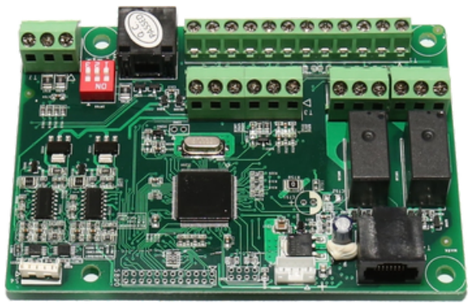
The solar water pump uses the durable energy from the sun. It works at sunrise and rests at sunset. It does not need personnel to take care of it, does not need diesel oil, and does not need the power grid. It can be used together with drip irrigation, sprinkler irrigation, infiltration irrigation and other irrigation facilities. It saves water and energy, and can significantly reduce the investment cost of using fossil energy power. It is a new energy and new technology product applied to the global "food problem" and "energy problem" integrated system solutions.

Product features

- Maximum power point tracking (MPPT) with fast response speed and stable operation
- Dry run (under load) protection
- Motor maximum current protection
- Input power protection
- Low stop frequency protection
- The PQ (power/flow) performance curve enables calculating the flow output from the pump
- Digital control for fully automatic operation, data storage and protective functions
- Intelligent power module (IPM) for the main circuit
- LED display operating panel and support remote control
- Dual mode AC and DC power supply input is available
- Low water probe sensor, and water level control function
- Ambient temperature for using: -10 to +50°C.

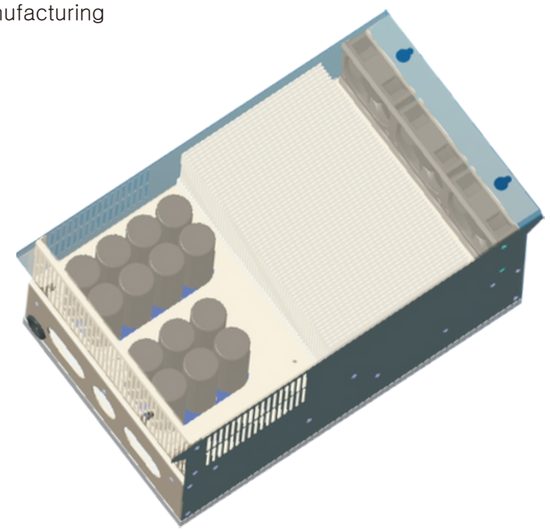
Stability and reliability

Improving the competitiveness of Chinese manufacturing



High-speed control performance

Long-life device options and refined design ensure the health and stability of the product throughout its life cycle. The three-conformal coating process increases the environmental resistance of the single board and comprehensively improves the protection capability of the single board.

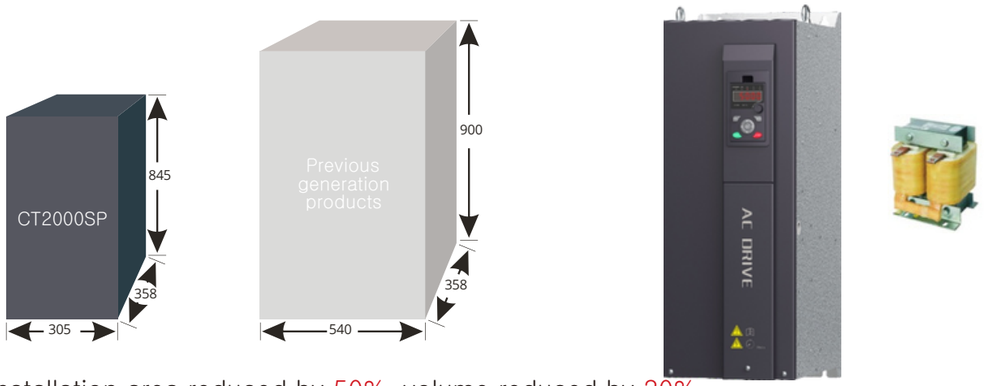


Independent air duct design to resist various harsh pollution environments

- The independent air duct design can effectively prevent dust from entering the solar pump drive and causing faults such as short circuits, thereby improving reliability;
- The use of a cooling fan with a long life and large air volume can effectively reduce the temperature rise of the solar pump drive and ensure reliable and stable operation of the solar pump drive.

Compact structure

Make Chinese manufacturing more flexible



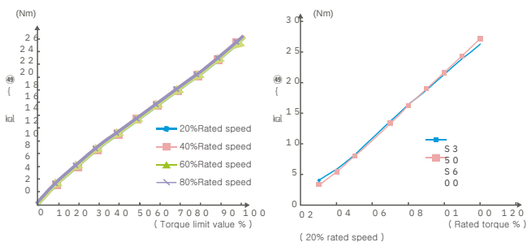
Installation area reduced by 50%, volume reduced by 30%

Refined design, volume reduced by

Built-in DC reactor (optional)

Excellent performance

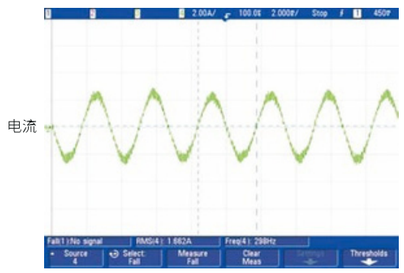
Helping China upgrade its manufacturing process and performance



■ Torque linearity: 0.15%

High-performance vector control to improve equipment accuracy

The maximum output frequency under vector control reaches 1500Hz, which can achieve high-precision speed output within the 10-fold weak magnetic speed regulation range.



Long life design

Current waveform of synchronous motor in open-loop vector control mode at 500Hz with 100% rated load.

Production and testing

- The full-automatic three proof paint coating machine is used to thicken the protective layer of the circuit board, effectively preventing the damage of the circuit board caused by wind dust, corrosive gas and humid air. At the same time, fixing protruding electronic components with glue can reduce or eliminate the adverse impact of complex environment on the performance of electronic devices and prolong the service life of products

Figure1 Fully automatic coating machine

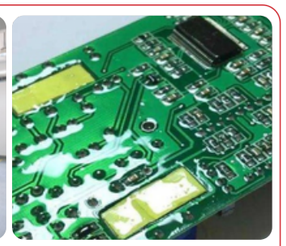
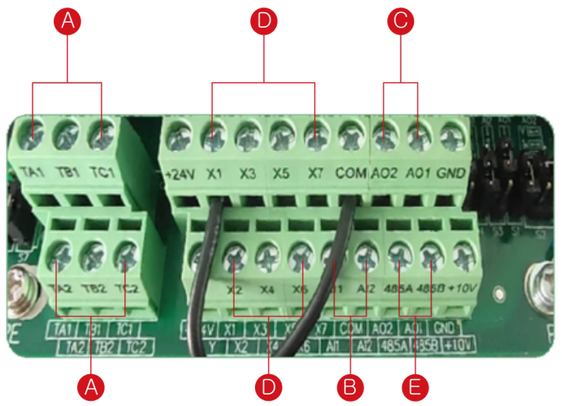


Figure 2 Coated circuit board

- Adopt full-automatic detection equipment to test various electrical indicators and protection functions of products under rated load;

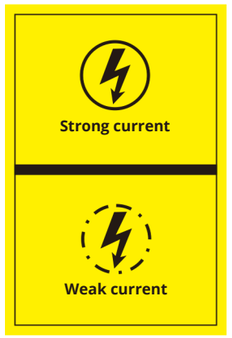
- All finished products are aged under load for 48 hours at a high temperature of 60 degrees, and then all electrical indicators are tested under load, so as to reduce the product failure rate.

Application advantages



Rich terminal interfaces

- A relay output *2
- B Analog input *2 (0~5V, 0~10V, 4~20mA),
- C Analog output *2 (0~5V, 0~10V 4~20mA),
- D Logic input *8,
- E MODBUS



Strong and weak current isolation

- Effectively avoid magnetic field interference and increase product service life

Laminated structure design

- The capacitor board and power board are designed in layers, and the capacitor board is arranged in an independent heat dissipation duct, which can effectively dissipate heat

  The new laminated design can reduce stray inductance, reduce peak voltage and protect igbt At the same time, the structure is compact and saves installation space

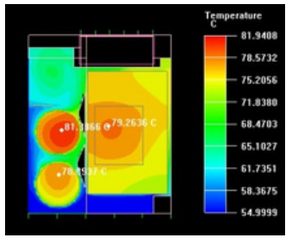


Figure1 Temperature simulation

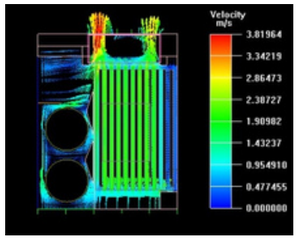


Figure1 Air duct design

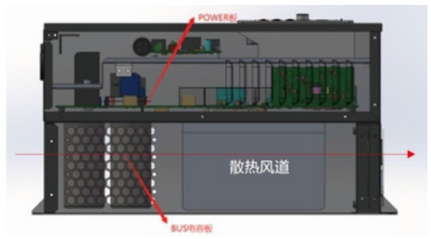
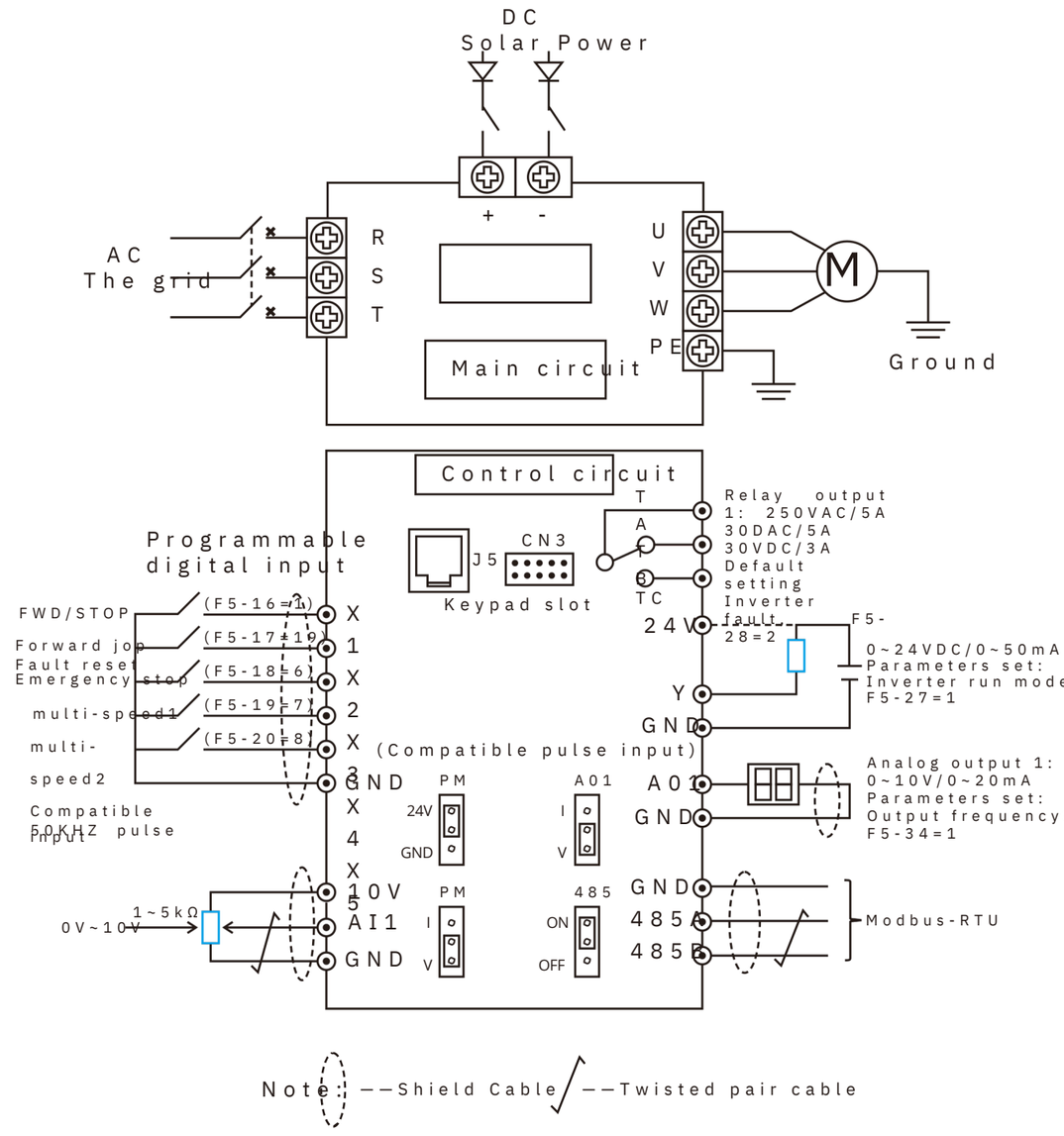


Figure3 Schematic diagram of air duct

- The independent double air duct design technology can realize the use of the solar pump drive with 50℃ ring temperature without capacity reduction.
- Independent air duct: including IGBT, rectifier bridge and electrolytic capacitor;
- Low loss design is adopted above 25Hz, and 1/6 cycle of peak and trough is not chopped;
- Electronic components strictly adopt international standards;
- Temperature rise test: ambient temperature 40℃;
- Aging test: high temperature 60℃;

- The solar pump drive is equipped with EMC filter as standard
- The solar pump drive has comprehensively passed the EMC experiments of pulse group, surge, electrostatic discharge and so on:
- Electrostatic discharge 8kv/15kv;
- Surge I2I-2kv/I2g-4kv;
- Burst input part -4kv/io-2kv
- The test standard is higher than Schneider standard

Wiring diagram



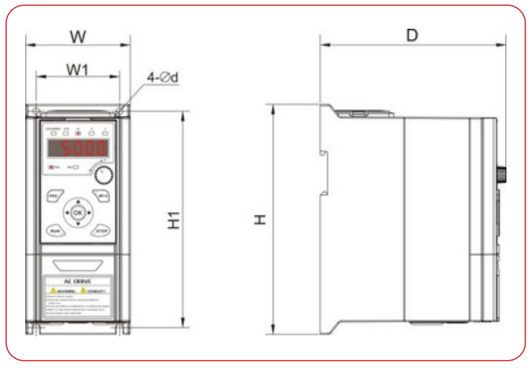
For CT2000SP 0.4kw-7.5kw products, please note the following:

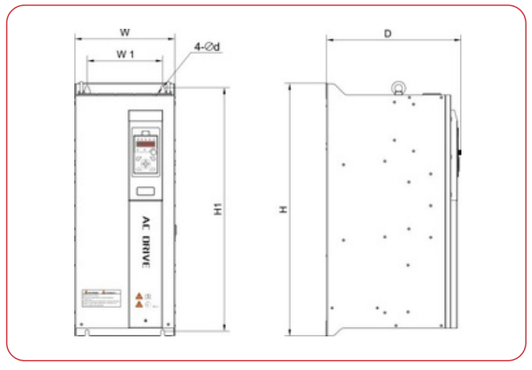
1. The product does not contain X6 and X7 logic input terminals;
2. The product only includes 1 analog input, 1 analog output, and 1 relay output

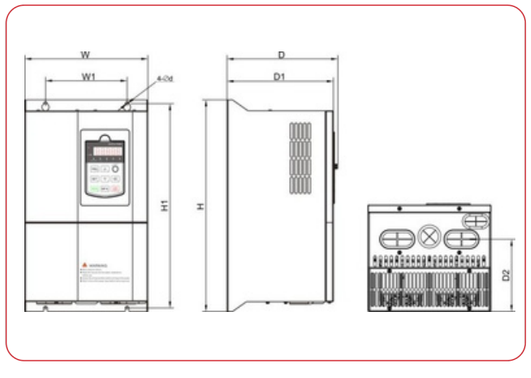
Model selection

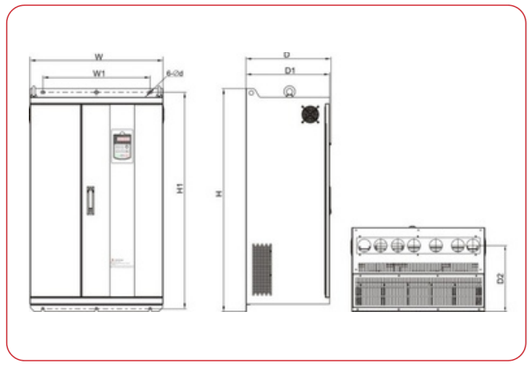
CT	2000SP	T3/S2	7R5G	xx
Model Type	Solar pump series	Model: S1: 90VDC to 450VDC input, or 1 PH 110VAC input S2: 150VDC to 450VDC input, or 1 PH 220VAC input T3: 350VDC to800/900VDC input, 3 PH 380VAC to 440VAC input	7R5G: 7.5kW, 150% rated current for 60s	B: Built braking unit Null: General model

Product dimensions









Type selection

Models	Rate current (A)	Output voltage (VAC)	Applicable for power (kW) pump	External of drive size H*W*D (mm)	MPPT Vmp/Voc
General type S2 series: Vmp 310VDC or 220VAC input, 1/3 phase 0-220VAC output					
CT2000SP-S2-0R7G	4A	0-220VAC	0.75KW	187*86*152	310/372
CT2000SP-S2-1R5G	7A	0-220VAC	1.5KW		310/372
CT2000SP-S2-2R2G	10A	0-220VAC	2.2KW		310/372
CT2000SP-S2-3G	13A	0-220VAC	3.0KW	265*105*164	310/372
CT2000SP-S2-4G	16A	0-220VAC	4.0KW		310/372
General type T3 series: Vmp540 to 650VDC or 380 to 460VAC input, 3 phase 0-380/460VAC output					
CT2000SP-T3-0R7GB	2.5A/3.7A	0-380/440VAC	0.75KW	187*86*152	540/660
CT2000SP-T3-1R5GB	3.7A/5A	0-380/440VAC	1.5KW		540/660
CT2000SP-T3-2R2GB	5/10A	0-380/440VAC	2.2KW		540/660
CT2000SP-T3-4R0GB	10/13A	0-380/440VAC	4.0KW		540/660
CT2000SP-T3-5R5GB	13/16A	0-380/440VAC	5.5KW	265*105*164	540/660
CT2000SP-T3-7R5GB	16/25A	0-380/440VAC	7.5KW		540/660
CT2000SP-T3-7R5GB	16/25A	0-380/440VAC	7.5KW	333*150*216	540/660
CT2000SP-T3-11GB	25/32A	0-380/440VAC	11KW		540/660
CT2000SP-T3-15GB	32/38A	0-380/440VAC	15KW		540/660
CT2000SP-T3-18GB	38/45A	0-380/440VAC	18KW	383*180*228	540/660
CT2000SP-T3-22GB	45/60A	0-380/440VAC	22KW		540/660
CT2000SP-T3-30G	60/75A	0-380/440VAC	30KW	435*175*265	540/660
CT2000SP-T3-37G	75/90A	0-380/440VAC	37KW		540/660
CT2000SP-T3-45G	90/110A	0-380/440VAC	45KW	670*265*358	540/660
CT2000SP-T3-55G	110/150A	0-380/440VAC	55KW		540/660
CT2000SP-T3-75G	150/170A	0-380/440VAC	75KW		540/660
CT2000SP-T3-90G	170/210A	0-380/440VAC	90KW	845*305*358	540/660
CT2000SP-T3-110G	210A/250A	0-380/440VAC	110KW		540/660
CT2000SP-T3-132G	250A/300A	0-380/440VAC	132KW		540/660
CT2000SP-T3-160G	300A/340A	0-380/440VAC	160KW	788*500*360	540/660
CT2000SP-T3-185G	340/380A	0-380/440VAC	185KW		540/660
CT2000SP-T3-200G	380/415A	0-380/440VAC	200KW	900*540*358	540/660
CT2000SP-T3-220G	415/470A	0-380/440VAC	220KW		540/660
CT2000SP-T3-250G	470/520A	0-380/440VAC	250KW		540/660
CT2000SP-T3-280G	520/600A	0-380/440VAC	280KW	1035*620*400	540/660
CT2000SP-T3-315G	600/680A	0-380/440VAC	315KW		540/660
CT2000SP-T3-355G	680/750A	0-380/440VAC	355KW	1290*780*410	540/660
CT2000SP-T3-400G	750/810A	0-380/440VAC	400KW		540/660