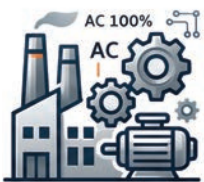




RVE35 Series

VFD & Solar Pump Drive

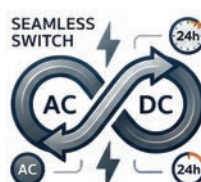
ขีดสุดแห่งการควบคุมและประหยัดพลังงาน
อินเวอร์เตอร์อัจฉริยะ 2-in-1



VFD มาตรฐานอุตสาหกรรม



อินเวอร์เตอร์ระบบโซลาร์เซลล์ทันที



ระบบไฮบริดอัจฉริยะ



Vector Control ประสิทธิภาพสูง

RVE35

Solar Pump Drive

■ Application background

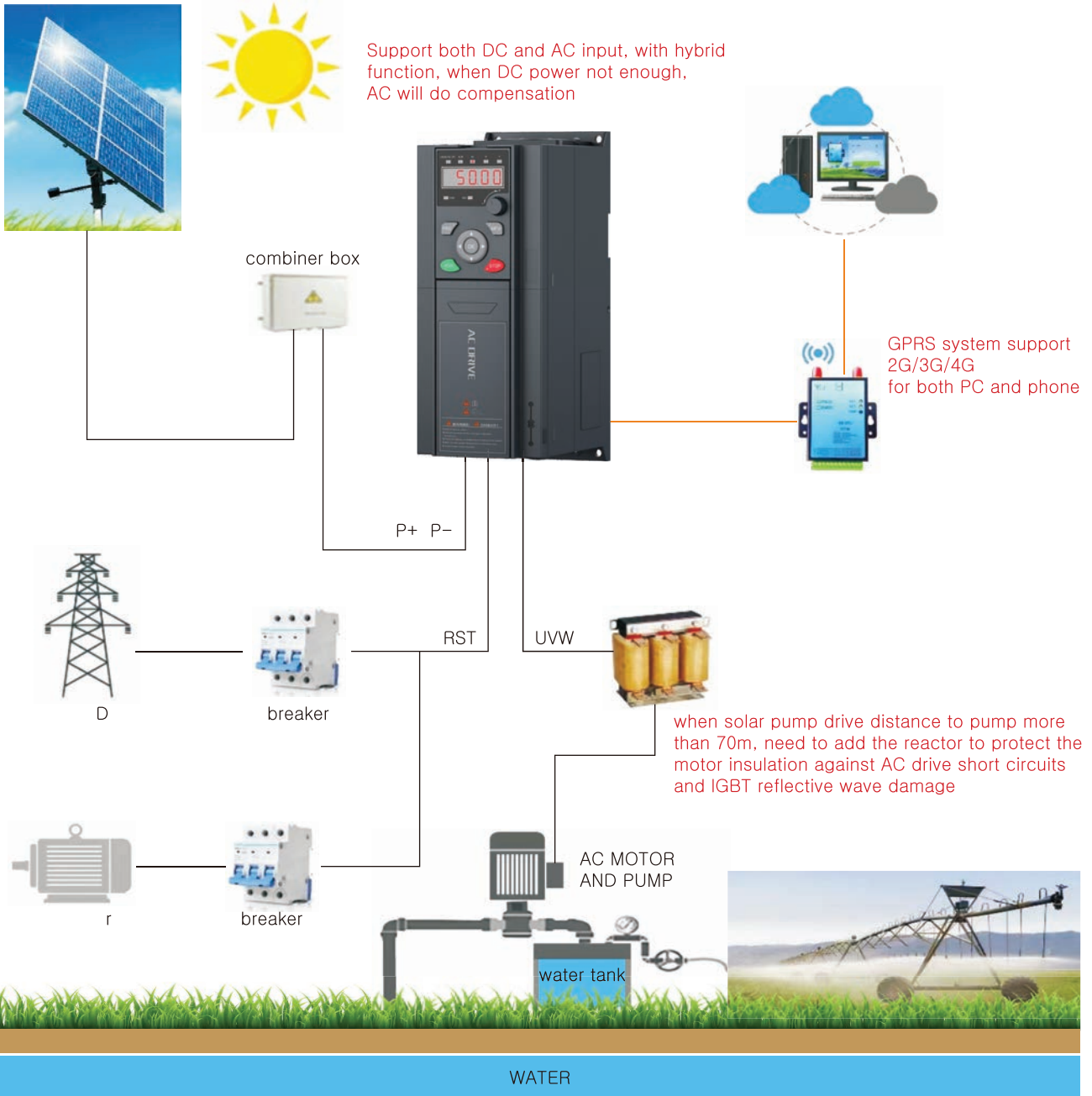


In recent years, with the increasing severity of the global "food problem" and "energy problem", solar water pumps have gradually been hailed as the most effective industrial integration products to solve the problem of increasing output of effective cultivated land and replacing fossil energy with clean 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 sufficient, and meet the set minimum operation frequency when the sunshine is insufficient, 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 RVE35 solar pump drive 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.
- RVE35 series solar pump drive 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.





19 years

Raynen Technology was established



28 years
of Power Quality Solutions
ที่สุดแห่งความเชี่ยวชาญด้านคุณภาพไฟฟ้า

— CBC International —

■ Product overview

The RVE35 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.

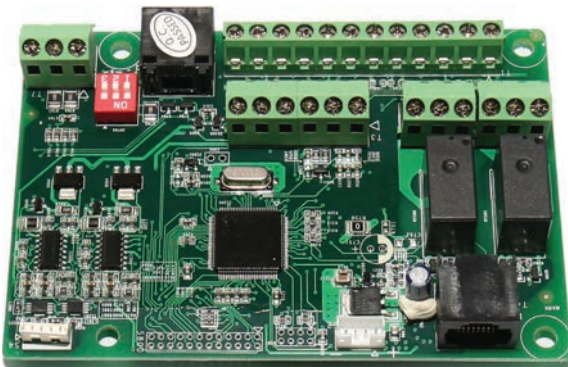


■ Product features

- 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.

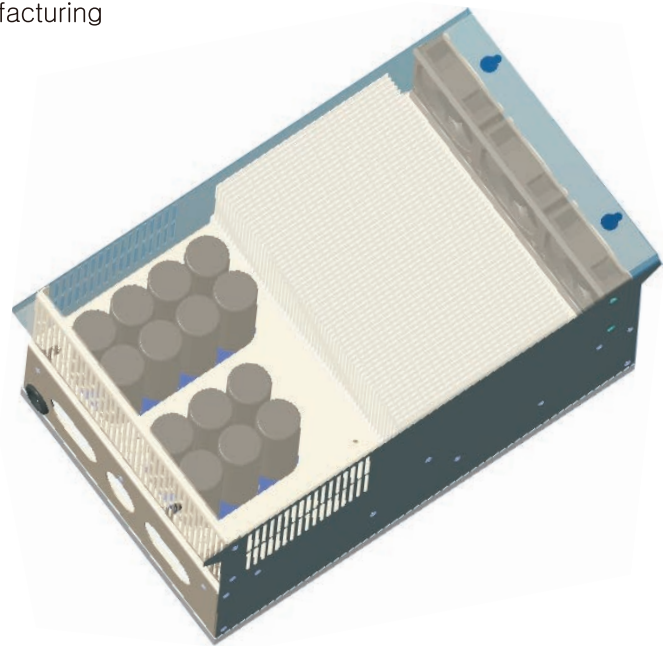
■ Stability and reliability

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.

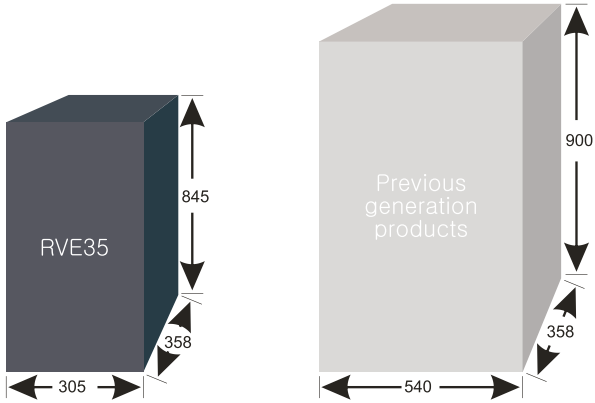


Independent air duct design to resist various harsh pollution environments

- 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%

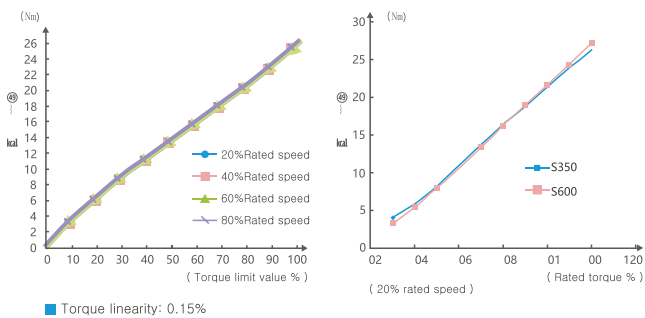
Refined design, volume reduced by 30%



Built-in DC reactor (optional)

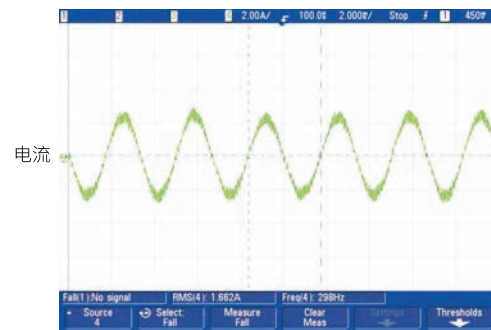
■ Excellent performance

Helping China upgrade its manufacturing process and performance



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

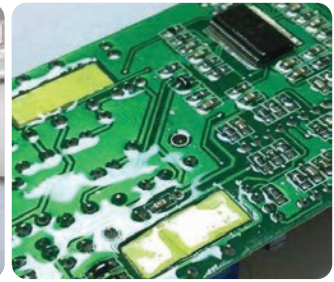


Figure1 Fully automatic coating machine Figure 2 Coated circuit board

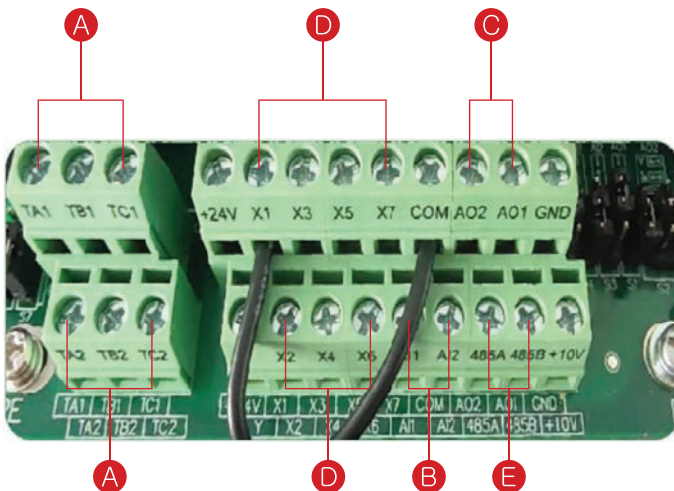
- Adopt full-automatic detection equipment to test various electrical indicators and protection functions of products under rated load;



- 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.

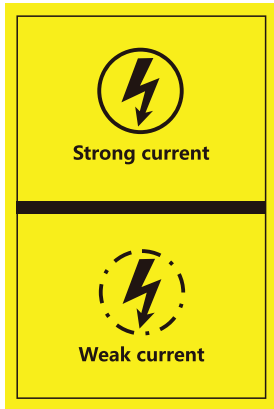


Application advantages



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.

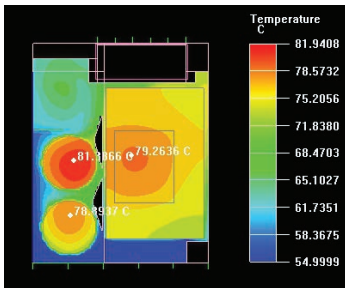


Figure 1 Temperature simulation

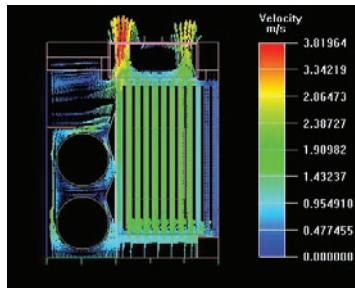


Figure 1 Air duct design

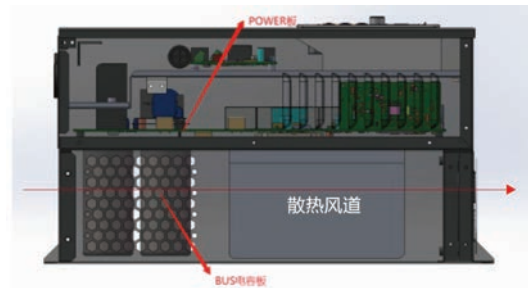


Figure 3 Schematic diagram of air duct

The independent double air duct design technology can realize the use of the solar pump drive with 50°C ring temperature without capacity reduction.

Independent air duct: including IGBT, rectifier bridge and electrolytic capacitor;

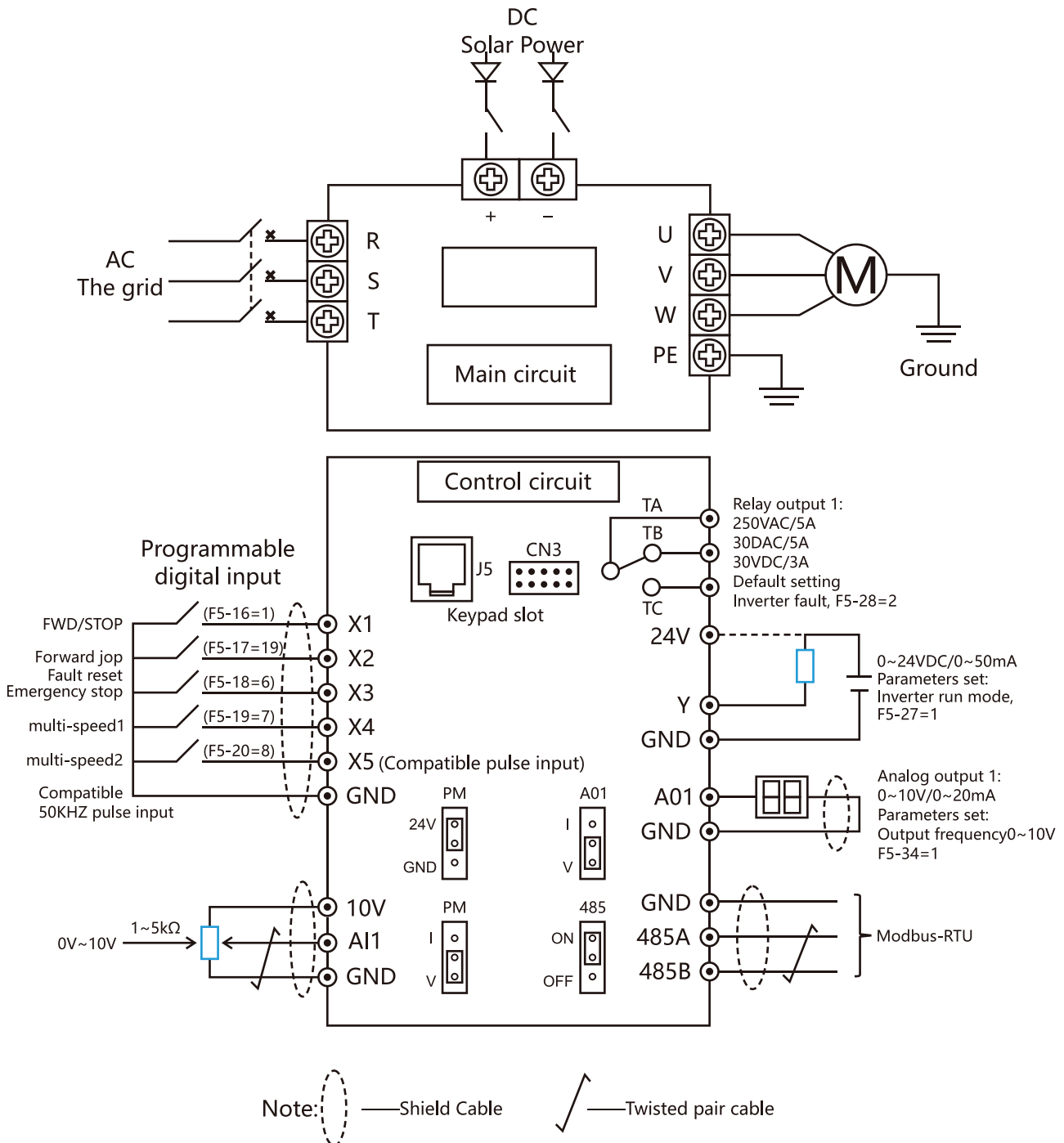
Low loss design is adopted above 25Hz, and 1/6 cycle of peak and trough is not chopped;

- Electronic components strictly adopt international standards;
- Temperature rise test: ambient temperature 40°C;
- Aging test: high temperature 60°C;



- 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

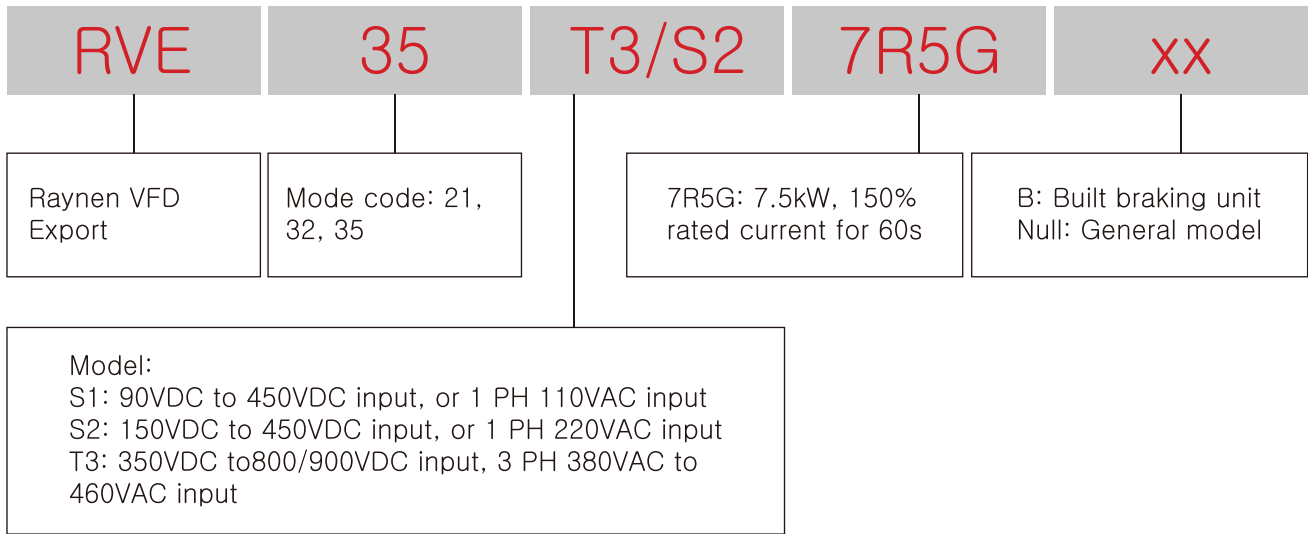
■ Wiring diagram



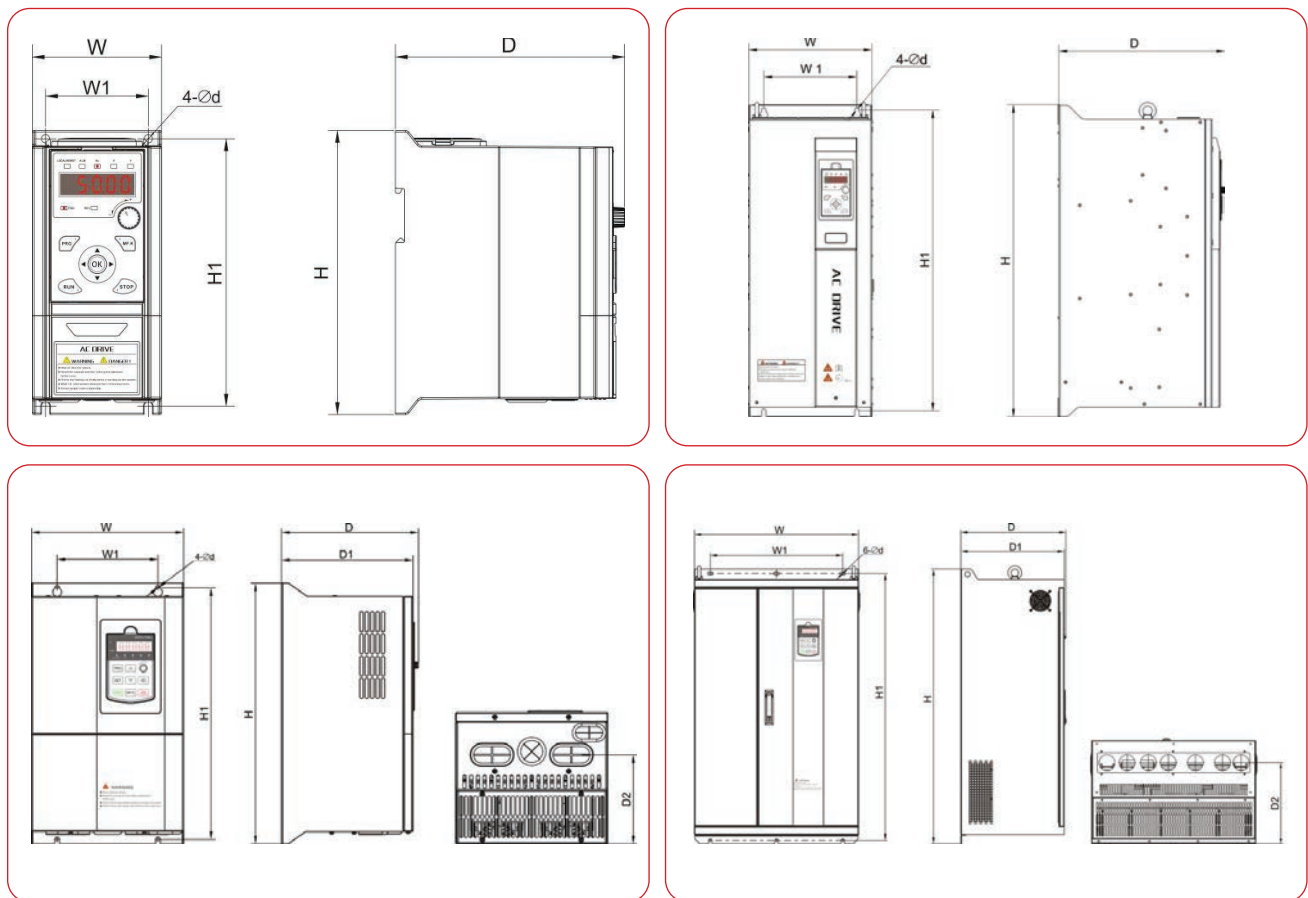
For RVE35 0.4kw-7.5kw products, please note the following:

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



■ 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 phase 0-220VAC output					
RVE35-S2-0R7G	4A	0-220VAC	0.75KW	187*86*152	310/372
RVE35-S2-1R5G	7A	0-220VAC	1.5KW		310/372
RVE35-S2-2R2G	10A	0-220VAC	2.2KW		310/372
RVE35-S2-3G	13A	0-220VAC	3.0KW	265*105*164	310/372
RVE35-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					
RVE35-T3-0R7GB	2.5A/3.7A	0-380/460VAC	0.75KW	187*86*152	540/660
RVE35-T3-1R5GB	3.7A/5A	0-380/460VAC	1.5KW		540/660
RVE35-T3-2R2GB	5/10A	0-380/460VAC	2.2KW		540/660
RVE35-T3-4GB	10/13A	0-380/460VAC	4.0KW	265*105*164	540/660
RVE35-T3-5R5GB	13/16A	0-380/460VAC	5.5KW		540/660
RVE35-T3-7R5GB(Plastic Case)	16/25A	0-380/460VAC	7.5KW	333*150*216	540/660
RVE35-T3-7R5GB(Iron case)	16/25A	0-380/460VAC	7.5KW		540/660
RVE35-T3-11GB	25/32A	0-380/460VAC	11KW	383*180*228	540/660
RVE35-T3-15GB	32/38A	0-380/460VAC	15KW		540/660
RVE35-T3-18GB	38/45A	0-380/460VAC	18KW	435*175*265	540/660
RVE35-T3-22GB	45/60A	0-380/460VAC	22KW		540/660
RVE35-T3-30GB	60/75A	0-380/460VAC	30KW	670*265*358	540/660
RVE35-T3-37GB	75/90A	0-380/460VAC	37KW		540/660
RVE35-T3-45G	90/110A	0-380/460VAC	45KW	845*305*358	540/660
RVE35-T3-55G	110/150A	0-380/460VAC	55KW		540/660
RVE35-T3-75G	150/170A	0-380/460VAC	75KW	900*540*358	540/660
RVE35-T3-90G	170/210A	0-380/460VAC	90KW		540/660
RVE35-T3-110G	210A/250A	0-380/460VAC	110KW	1035*620*400	540/660
RVE35-T3-132G	250A/300A	0-380/460VAC	132KW		540/660
RVE35-T3-160G	300A/340A	0-380/460VAC	160KW	1290*780*410	540/660
RVE35-T3-185G	340/380A	0-380/460VAC	185KW		540/660
RVE35-T3-200G	380/415A	0-380/460VAC	200KW	900*540*358	540/660
RVE35-T3-220G	415/470A	0-380/460VAC	220KW		540/660
RVE35-T3-250G	470/520A	0-380/460VAC	250KW	1035*620*400	540/660
RVE35-T3-280G	520/600A	0-380/460VAC	280KW		540/660
RVE35-T3-315G	600/680A	0-380/460VAC	315KW	1290*780*410	540/660
RVE35-T3-355G	680/750A	0-380/460VAC	355KW		540/660
RVE35-T3-400G	750/810A	0-380/460VAC	400KW		540/660



การนำไปใช้งานกับเครื่องจักรหรืออุปกรณ์ไฟฟ้า

1 ระบบปั๊มน้ำ และการจัดการน้ำ

- ปั๊มบาดาล
- ปั๊มหอยโข่ง
- ปั๊ม AC/DC ท่วมไป
- ปั๊มไหลตามแนวแกน
- ปั๊มแบบสูบน้ำผสม
- ปั๊มเสริมแรงดัน
- ปั๊มเสริมแรงดัน



2 ระบบระบายอากาศ

- พัดลมระบายอากาศขนาดใหญ่ในโรงงาน
- พัดลมและ Blower ในโรงเรือน หรือฟาร์มปศุสัตว์



3 ระบบทำความเย็น และปรับอากาศ

- ปั๊มน้ำเย็น
- หอหล่อเย็น
- เครื่องส่งลมเย็น (AHU)



4 ระบบสายพานลำเลียง (Conveyor)

- สายพานลำเลียงสินค้าในโรงงาน
- อุปกรณ์โรตารีสติกส์ เพื่อปรับความเร็ว



5 เครื่องจักรกลโรงงาน (Industrial Machinery)

- เครื่องผสม
- เครื่องแสง
- เครื่องบด
- เครื่องจักรสิ่งทอ
- เครื่องมือกล
- เครื่องจักรงานไม้
- เครื่องจักรในอุตสาหกรรมปิโตรเลียมและเคมี



6 งานเกษตรกรรม และชลประทาน

- ระบบรดน้ำอัตโนมัติ
- ระบบน้ำหยด
- ระบบสปริงเกลอร์
- ปั๊มน้ำสูบน้ำเข้าฟาร์ม



RVE35 Series Application Guide