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

The company owns powerful R&D team, relatively perfect production system, independent intellectual property and manufacturing bases in Shenzhen and Suzhou. To improve our R&D strength, we keep on introducing advanced overseas technology and broadening our partnerships with first-class universities and research institutions.

The main products of Veichi Electric include a variety of Variable Frequency Drive (VFD), Servo Drive System, Photovoltaic Inverter, PLC, HMI, automation equipment, etc, which are widely used in industries such as oil & gas, chemical industry, ceramic, crane & hoist, metallurgy, electrical-cable and wire, plastic, print and package, textile, metal work and cable, coal mining and municipal engineering. Suitable solutions and products are always ready to meet the demands and improve comprehensive competitiveness of users.

With the spirit of "Innovation is the lifeblood of Veichi", 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 branch offices in China and dozens of partners in Asia, Europe and Africa. Veichi has been named Chinese Electric Industry’s Top Ten National Brands, Chinese Electric Industry Top Ten Satisfying Brands and Top Ten National Brands of Inverter Industry. Veichi products have become the first choice of many enterprises.

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.
The global cumulative online volume of more than 100,000 units
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.

**Four features of solar pump inverter**

- Modularization
- **IP65**
- AC110V/220V/400V
- Smart IOT Module

**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 explore the world of deep well pumps
- Variety module-AC/DC integrated (Boost) module
- IP65: protection-cool appearance, a perfect union of fashion sense and technology

**Solar pump IoT system**

**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—moisten metal to achieve rapid casting in high pressure and speed, special casting method without cutting

- High-end protection—"three proofs": waterproof panel, waterproof joint, waterproof enclosure.
- Surface treatment—high speed sand blasting, electrochemical anodic oxidation

- Human computer interface—support and user "one key start and stop"
## Solar Pump Drive Model Analysis

### Modal Analysis of Three Phase AC PMSM Pump Drive

<table>
<thead>
<tr>
<th>Product model</th>
<th>Voltage level</th>
<th>Input power</th>
<th>Power range</th>
</tr>
</thead>
<tbody>
<tr>
<td>S35-D1-xG</td>
<td>110V</td>
<td>DC 90-400VDC, Single-phase 110VAC</td>
<td>0.75-1.5kW</td>
</tr>
<tr>
<td>S35-D3-xG</td>
<td>220V</td>
<td>150-450VDC, Single-phase 220VAC</td>
<td>0.75-2.2kW</td>
</tr>
<tr>
<td>S35-D5-xG</td>
<td>380V</td>
<td>300-800VDC, Three-phase 380VAC</td>
<td>0.75-10kW</td>
</tr>
</tbody>
</table>

## Technical Specification

### Power Supply Input
- **Voltage, frequency:**
  - D1 Type: 90-450VDC/110VAC: 50/60Hz
  - D3 Type: 150-450VDC/120VAC: 50/60Hz
  - D6 Type: 300-800VDC/380VAC: 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
  - D6 Type: 620-750VDC

### Output
- **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 out of current protection
- **AC/DC switching function:**
  - Self-identification light intensity, automatic switching AC and DC power supply
- **IDC function:** Support VEICHI cloud service, scan code to connect APP keyboard
- **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, single-phase water pump
- **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, E2/RCM fault, motor grounding short circuit fault, input phase loss, output phase loss, inverter overheated, communication fault, motor parameter set-fusing fault
- **Motor grounding short-circuit detection:** Automatically detect whether the motor is short-circuit to ground. Auto detection while electricity
- **Communication network:** Support 485 / Modbus protocol / Support 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
- **Installation site:** Indoor, 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
- **Cooling Method:** Natural cooling / forced air cooling
- **International Certificate:** CE (in progress)
### Solar Panel Recommended Configuration

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>Pm3W Isc Configuration</td>
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</tr>
<tr>
<td>S00-D1-875G</td>
<td>30W</td>
<td>2.75A 11°3</td>
<td></td>
</tr>
<tr>
<td>S00-D1-115G</td>
<td>60W</td>
<td>3.44A 17°2</td>
<td></td>
</tr>
<tr>
<td>S00-D1-145G</td>
<td>90W</td>
<td>5.3A 17°2</td>
<td></td>
</tr>
<tr>
<td>S00-D1-180G</td>
<td>150W</td>
<td>6.12A 15°2</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
1. The recommended solar panel total Voc is at least 1.15 times of inverter bus voltage.
2. The maximum Voc of the inverter is 540V, 540V (602V).
3. The recommended total power of solar panel for the inverter is 1551.15=178W (175V).
4. The recommended total power of solar panel for the inverter is 1551.15=178W (175V).
5. The maximum withstand voltage of D1 model products is 400VDC; of D3 model products is 450VDC; and of D5 model products is 800VDC.

### Dimension of Solar Pump Inverter

- **Inverter Model:**
  - SB20-095G
  - SB20-126G
  - SB20-168G
  - SB20-208G
  - SB20-258G
  - SB20-308G
  - SB20-358G

- **Inverter Size:**
  - W: 105, H: 100, D: 100

- **Installation Hole:**
  - W1: 20, H1: 20

- **Aperture Size:**
  - φ4

- **Diagonals:**
  - 444.5 mm
  - 444.5 mm
  - 444.5 mm
  - 360.5 mm
  - 360.5 mm
Solar pump inverter Standard Wiring Diagram

Application cases of solar pump system