VERITAS Engineering

Catalog
Of

Solar & Wind Hybrid Power Generation Trainer

Brand: VERITAS

Model: VSWT-001

Picture: Solar & Wind Hybrid Power Generation Trainer

Technical Specification

1.**Photovoltaic tracking system**

-Four solar cells fixed by aluminum profile with pluggable safety lead for system connection

-Solar automatic tracking system

1) Automatic, manual and remote control modes
2) Transparent detection head with four-quadrant epoxy silicon wafer
3) Controller box with build-in microcontroller and LCD display.
4) Remote controller with 8m distance for system control
5) Dual-axis tracking platform with horizontal 0...350° and vertical- 10°...70°

-Simulated light source: 3x1000W halogen tungsten lamps with circular connector

-Extruded aluminum profiles with 8 grooves for the frame construction

2. **Wind power generation system**

-Wind source simulation: 2200W axial flow fan with 1450r/min and blast capacity 18700m3/h, the mounting frame is made of aluminum profile with 4 grooves and the connection is achieved by full sealing safety plugs.

-Horizontal axis wind turbine: 300W 12V with five blades, starting at 2.0m/s and rated 13m/s. Flange coupling used for column connection and the base frame is made of aluminum profile with four cushion rubbers.

-Anemometer:

provided aluminum profile frame and circular connection for data acquisition.

1) Wind speed sensor:
2) Wind direction sensor: Measure range: 0...360° Max. turning radius: 200mm Starting speed: 0.3m/s

3. **Power supply unit**

-Single phase AC220V ±5% input with RCCB
-Power indication lamp, fuse protector, emergency button
-DC output: two way 0...30VDC variable, with DVM and ampere indication.

4. **Instrument unit**

-Voltage meters: digital voltmeters for system parameter detection, including 2xAC250V, AC30V, DC30V.
-Ampere meters: digital ammeters for system parameter detection, including AC2A, AC5A, DC2A, DC5A.
-Watt hour meter: 2 units for AC output electricity consumption measurement

5. **Monitor and control unit**

-Touch screen: 7" TFT with 800*480 resolution and 300MHz main frequency. Available for RS232/485, USB and LAN interface communication.

1) Wind source start, stop and speed control
2) Light source automatic and manual control
3) Dual-axis tracking platform automatic and manual control
4) Real-time data monitoring including battery voltage, wind turbine output voltage, current and power, solar panel output voltage, current and power, load 1 output current and load 2 output current.

-Control button

1) Wind source start, stop, speed up and speed down control buttons
2) Light source manual/auto transfer, light 1#/2#/3# on-off buttons
3) Dual-axis tracking manual/auto transfer, E/S/W/N direction contro! buttons

-VFD frequency control:

Vector frequency inverter for wind source frequency control,
input 1PH 220V,
output 3PH 220V with power 2.2KW and LED display.

6. **Load unit**

-LED garden lamp: AC220V input, 6W x 4 white with 24 beads and rectifier unit
-DC12V/AC220V inductive load: fan 4500rpm/4700rpm, with protective cover
-DC12V/AC220V resistive load: 3W LED lamp, angle adjustable
- Resistive load box: 100...99.99k adjustable
- External AC/DC load connection board: four-way each external load connection via 4mm safety sockets

7. **Sine wave inverter:**

Output power 300W,
peak power 600W,
reverse battery + - protection,
DC12V, output AC220V

8. **Wind speed & direction meter:**

Digital Anemometer

- Model: GM8901
- Brand: Benetech

LCD display with 6 set buttons

9. **Wind & solar hybrid controller**
   - Intelligent max power point tracking with Modbus communication
   - Battery: 12V, reverse connect, overvoltage and under voltage protection
   -Wind turbine: 300W/12V, over speed, rated 25ADC, over current, indirect lightning strike protection, PWM unloading
   - Solar: 250W/12V, rated input 15A, reverse connect protection, open circuit unloading
   - 2 Output channels: 12A, over current (15A/30s, 18A/0.4s), short circuit (>150A) protection, light/time control, available for maintained output, inverted output and PWM output (250Hz only for second channel)
   - LCD display
      1) Wind input speed/unloading current voltage/current/power/generating capacity/
      2) Solar input voltage/current/power/generating capacity
      3) Battery voltage / charging current/power/total charging capacity/battery state information
      4) Two way outputs current/power/error information

10. **Storage battery:** 12V12AH maintenance free sealed lead acid battery x 2
11. **Lattice screen:** Two 16x64 LED lattice modules, with on/off switch and indicator, control chip with USB port for edit
12. **Mobile aluminum experiment stand**
   -High compressed chipboard tabletop
   -Solid impact-resistant protective edging
   -4 swiveling casters, 2 of which have brakes
   - Extruded aluminum profiles with 4 grooves
   -Lockable storage drawer x3 with cabinet

13. **Accessory**
   -Safety whole sealing cable:
   Conductor cross section: 16AWG tinned copper wire, 3kV,20A, with axial socket
   4 x connection leads 4mm, 80cm, red/black
   5 x connection leads 4mm, 60cm, red
   1 x connection leads 4mm, 60cm, green/yellow
   4 x connection leads 4mm, 60cm, black
   7 x connection leads 4mm, 40cm, red/black
   -Tools: cross screwdriver, socket head wrench, monkey wrench, etc.