Smart Off-Grid Controller, Wind Module

The Wind Module provides excellent energy generation and control of both vertical and horizontal axis wind turbines, converting the energy produced to charge the storage batteries. It is part of Clear Blue’s Smart Off-Grid system, which includes the smart hybrid controller, an integrated communications network and the Illumience Cloud software for full remote control and management over the Internet.

**Clear Blue Wind Module features deliver high reliability and performance:**

- Fully digital controlled converter with a flexible and powerful control method and control strategy.
- Maximum power point tracking: The controller implements high speed MPPT in real time, by tracking the turbine’s power curves. The power curve can consist of up to 24 points defined by the user or chosen from the system defaults.
- Can charge different types of batteries (lead-acid, lithium ion, etc..) implementing constant voltage and constant current charging with temperature compensation.
- PWM electromechanical braking: Automatic breaking is implemented using PWM chopper which achieves a step-less loading profile. The Wind Module will automatically start PWM voltage intelligent dump-load function once the wind turbine rotation speed or wind turbine voltage is more than the setting point.
- TVS lightning protection: The input is protected against lighting using transient voltage suppressors (TVS).
- Other important protection features to ensure high reliability and performance: Battery over-current protection, battery reverse connection protection, open battery protection, wind turbine automatic brake and manual brake, over load protection and short circuit protection.

**Real Time Control and Management over the Internet**

- Configuration done remotely via PC or smartphone.
- Set and change wind charge profiles anytime
- Proactive versus reactive maintenance to ensure long life of turbine
- Remote troubleshooting and control slashes maintenance time and cost

www.clearbluetechnologies.com
## Technical Data

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| Turbine Input to Controller | V (in) 5-20V (L-L) RMS  
I (in) Max: 15A RMS |
| Controller Output | V (out) 24-32 V DC (28V nominal)  
I (out) 20A DC maximum |
| Wind MPPT -  
2 versions available  
and user selectable | Dynamic power curve MPPT  
Advanced perturb & observe MPPT |
| Power | O - 500W in power  
A/C and D/C models available |
| Electromechanical Breaking | No external resistive load required  
Breaking current 100A peak |
| Protection and Reliability | TVS lightening protection at the input  
Battery over-current protection  
Reverse polarity protection  
Short circuit protection  
Temperature Compensation  
External/Auxiliary Contactor for External Load |
| LEDs | On, fault, communication, status (tricolor) |
| Supported Wind Turbines | Vertical and horizontal axis wind turbines |