

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 braking 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 lightning 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

Powerful Control. In the Cloud & Off the Grid.

Technical Data

Wind	
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	0 - 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 lightning 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