Pico-Grid

An All-in-One solar power system for WiFi and IoT devices

This highly reliable power system includes:

> **Thin film solar panel**

> **Smart Off-Grid PoE injector**

> **Integrated lithium ion battery**

> **Complete cloud-based management and control**

> **Built-in communications**

Clear Blue's Pico-Grid power solution is the industry's first all-in-one power system specifically designed to support mission-critical, ultra low-power loads such as WiFi hotspots and IoT devices. Pico-Grid includes built-in connectivity to Illumience, the cloud-based management platform and service, that optimizes energy generation, storage and load control.

Maximum Uptime

Predictive analytics, weather forecasting, and individual load control ensure maximum uptime.

Long Life

Our dynamic charging algorithm is designed to deliver the longest battery life.

Easy Maintenance & Installation

Designed for easy installation without special training. Installers and

customers get peace of mind through our commissioning and provisioning services, to ensure you get it right the first time, every time.

Delivering on the Promise of WirelessPower
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Pico-Grid

System Components Overview

Solar Panel	Thin-Film CIG 75W solar panels in quantities of 1-2 depending upon need. Designed for applications with high dust and/or shading.
Smart Off-Grid PoE Injector	12/24/48*V PoE and DC Output, 200W MPPT Charging with a 30Ah @ 6.4V integrated lithium ion battery

Ports & Ratings

Port I/O Ratings	Voltage & Power	Current	Details
PoE / Load Port 1	Regulated 48W @ 48V DC 96W @ 24V DC	1A Max (Passive PoE + DC Port Combined)	Built in support for 2 physical connections, 1 passive PoE pins 4+, 5+ │ 7-, 8-, and 1 push-in wire connection. 10/100 ethernet data passthrough ports. *Note: Product ships at 24V DC as a default configuration to avoid damage to loads.*
PoE / Load Port 2	Regulated 48W @ 48V DC 96W @ 24V DC	4A Max (Passive PoE + DC Port Combined)	Built in support for 2 physical connections, 1 passive PoE pins 4+, 5+ │ 7-, 8-, and 1 push-in wire connection. 10/100 ethernet data passthrough ports. *Note: Product ships at 12V DC as a default configuration to avoid damage to loads.*
Power I/O Port	7V	15A	Additional I/O Power Port that can be used for modular scalability, including: • Paralleling of multiple Pico-Grids • Addition of Clear Blue expansion battery pack • Ability to supplement with a Clear Blue Grid power option
Solar Port	10V-40V up to 200W	12A	Up to 200W usable through MPPT with reverse polarity protection.

Installation & Maintentance Tools

Local Wi-Fi Interface	Full Wi-Fi application, featuring a comprehensive commissioning guide for seamless setup and real-time monitoring of key performance metrics, enhancing your control.

Smart Off-Grid Cloud Management & Service

Illumience Management (Cloud Based)	All settings are remotely managed by the Illumience cloud service including remote monitoring, troubleshooting, and remote software upgrades. Comprehensive and customizable detailed reporting to enable optimal performance.
Management Benefits	Remote control, fully customizable parameters, customizable alarms, weather and energy forecasting, remote troubleshooting and remediation tools, group management, battery state of charge and health.
Service Support	Clear Blue Illumience software and service team monitors and manages sites on behalf of customer.
Security	All data between devices and the cloud are encrypted for security purposes.

Communications

Built In Communications	WiFi 2.4GHz 802.11 b/g/n or cellular.

Smart Off-Grid Controller
Technical Data

Features

Internal Battery Protection	Boosting longevity with our intelligent features: Temperature Protection for safe operations in all conditions, LVD/LVR for optimized battery health by smart load disconnection, and Cell Balancing, ensuring efficient performance with safety checks.
Smart Battery Charge Profile	MPPT patented multi-stage charging, remote software configurable charge profile designed specifically for solar charging. Using 200W when available, it adapts to sun changes, absorbing optimal power. Inbuilt safety systems prevent overcharging, managing battery levels smartly.
Load Protection	I/O overload protection, short circuit and low voltage disconnect, and transient voltage protection across all load I/O's. Protection mechanism ensures safety, automatically cutting off and resuming power when necessary. Real-time alerts and notifications keep you informed of any power issues. All protections have two level capability – both hardware failsafe and normal software control. High availability features - variable overload and short circuit multi-try, and variable surge current management.
Load Management Scheduling	Event engine enables proactive load management to enable off-hours scheduling as normal operation and also in certain degraded service/outage scenarios. Coupled with Illumience's weather and energy forecasting, any service impacts can be scheduled for off-hours to ensure maximum SLA to users. Adjust voltage levels individually for each output.
Potential Energy	Ongoing full sweep MPPT measurements for accurate measurement of site solar potential energy, provides a profile of actual available energy at the site for shading management, the impact of soiling and obstructions, and critical information for upgrade and increased capacity usage for other loads (optional cell phone charging).
Remote Software Update	New features delivered to all devices via remote software download on an ongoing basis as part of Clear Blue's management service, three years of which is included in upfront price.
Battery Type	High-performance, long life lithium iron phosphate battery cells with Clear Blue BMS.

Physical

Connectors	RJ45 Mode B* and push-in Cage Clamp wire connector. Toolless colour coded wire push-in connectors for easy & foolproof installation.
Dimensions (L x W x H)	118mm x 270mm x 195mm (4.65in x 10.63in x 7.68in)
Weight	2.6Kg. / 5.8lbs.
Mounting	Including mounting hardware for both solar panels and wall wount or pole mount PoE injector

Environmental

Ambient Temperature	-20°C to 60°C
Controller Power Consumption	2W Max
Enclosure Rating	IP55, UV Resistant Enclosure Suitable for Outdoor use, IPx5 humidity

* Mode B is physically compatible with industry active POE standards as well as passive POE.

Certifcations

Health & Safety	EN/UL/CSA 62368-1, TUV certified.
EMC	EN 55032: 2015/A11: 2020, EN 55035: 2017/A11: 2020, ETSI EN 301 489-1 V2.2.3 ETSI EN 301 489-17 V3.1.1, FCC Part 15 Subpart B, IECS 003, Issue 07: 2020

Warranty

Warranty	5 year warranty