

The Off-Grid Inverter Plus Series

E24™

P301E



The Off-Grid Inverter Plus has all the possible features you can think off.

E24's Off-Grid Inverter Plus series was designed as an upgrade to the previously released Series with numerous new features.

The Plus series offers among other features, more power, a wider solar voltage input for further installation flexibility, and an enhanced communication interface.

The ESIM01 Series is ideally suited for high-end clients looking for the ultimate off-grid inverter.

Being totally silent, battery agnostic, and configurable to provide up to 45KW in either single or three phase configuration, the Plus series is the ideal solution for any off-grid application.

With its new features, the Plus series communicates all information to the user via Bluetooth and can connect to any other building management system via RS 485.

Simple, yet extremely reliable, the Plus series has it all.

Product Description

The Off-Grid Inverter Plus Series (OGIP™ Series) is a modular decentralized system built in modules of 3KW or 5KW each that can be connected in parallel in single or three phase configuration to reach a maximum power of 45KW (1 x 45 KW in single phase or 3 x 15KW in three phase).

The OGIP™ Series is battery agnostic allowing it to be used with any type of battery (Lead Acid, ELA, Lithium, ...) with or without a battery management system.

The The OGIP™ Series operates modular battery units that can also be increased based on client needs.

The OGIP™ Series allows the user to gradually upgrade in either power or Battery size at will in order to gradually adapt the system with his growing energy needed.

The OGIP™ Series is fitted with a bluetooth wireless connection that connects the client to an application allowing him to remotely monitor his energy system.



Product Features

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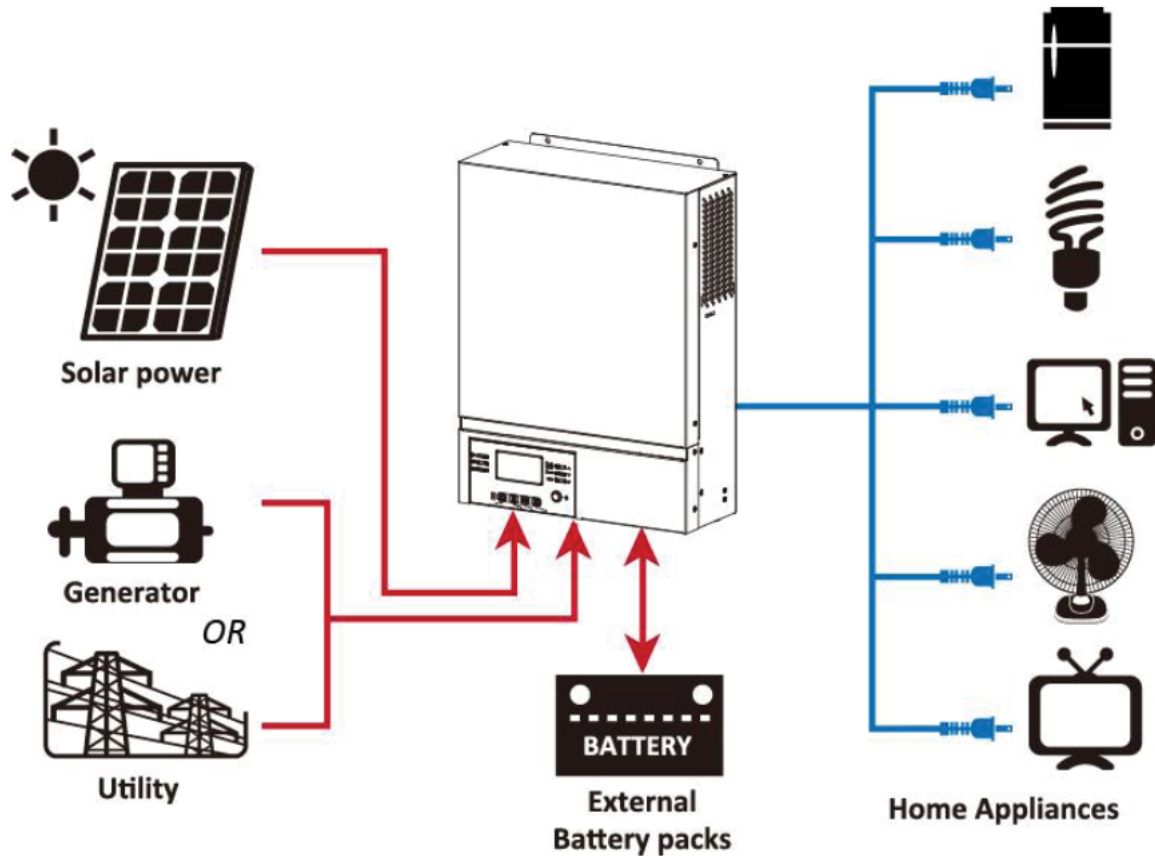
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- **Super compact - fits anywhere**
- **Works with or without solar panels**
- **Wide Utility/Generator input voltage**
- **Intuitive large LCD display**
- **Seamless unattended operation**
- **Bluetooth Communication**
- **Detachable LCD Control Screen (20 meters)**
- **Wide Solar Input Voltage Range**
- **Seamless unattended operation**
- **Pure Sine Wave Output**
- **200% start-up power capacity**
- **Up to 93 % efficiency**
- **Unity power factor**
- **Up to 9 Units in Parallel**
- **Multiple Communication Ports (RS485, CAN-BUS, RS232, Dry Contact) for BMS**
- **Battery Equalization to extend battery life**
- **USB-ON-THE-GO function**
- **Easy Replaceable Fans**
- **OPTIONAL Automatic control of Generator**
- **OPTIONAL Feed back of unused solar energy to grid**



Super compact - Fits Anywhere

The OGIP™ Series is wall mounted taking only 40cm height by 30cm width on your wall. The battery can be installed at a few meters away in an attic or an unused space in your home or business.

Works with or without solar panels

The OGIP™ Series charges the batteries from either the solar energy or the utility supply/back-up generator. If you do not install solar panels, the unit will still operate by only charging from your utility/generator. Off-course we recommend that you install solar panels in order to save on the cost of fuel and utilities.

Wide Utility/Generator input voltage

The OGIP™ Series accepts a wide range of input voltage to remain fully compatible with your utility and generator voltage outputs

Intuitive large LCD display

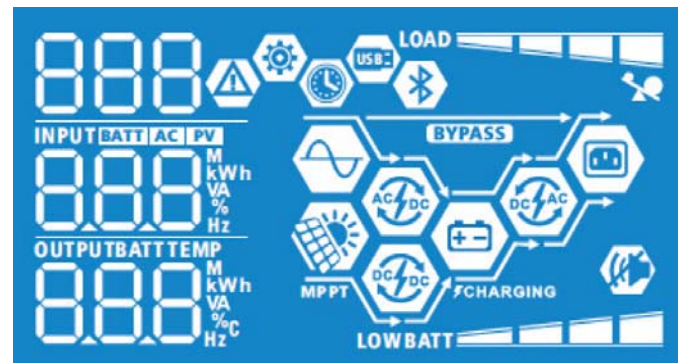
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Seamless unattended operation

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Bluetooth Communication

For our more curious customers, when and why, the ESIM01™ hybrid inverter series include a touch screen LCD display with an intuitive menu displaying detailed data about the system.



Intuitive large LCD display



Bluetooth Communication

Detachable LCD Control Screen (20 meters)

The LCD screen which includes all system information as well as the control interface can be detached and installed at a distance that should not exceed 20 meters.

Wide Solar Input Voltage Range

Most inverters of small power capacity have an input voltage from solar PVs limited to 100-150Vdc maximum. This limits the numbers of Solar panels that be installed in series rather than in parallel which decreases the energy generation performance. The OGIP™ Series can accept Solar input voltage from 120 to 450Vdc (MPP tracking). Max Solar DC voltage is 500Vdc.

Seamless unattended operation

The OGIP™ Series is fully automated with large number of protection features built-in. The unit includes surges arrestors and input fuses to protect against input surges. The unit also includes overload protection circuitry that is easily user resettable in case of inadvertently connecting a load above the unit capacity. When adding the Optional E24 Energy storage Controller, a second layer of overload protection is added that reconnects automatically the load once the overload is cleared. Similarly the unit includes automatic circuitry to protect the batteries from being over depleted or overcharged. The OGIP™ Series is fully automated with built-in protection that operates with no human attendance needed.

Pure Sine Wave Output

The unit provides an impeccable Sine wave output with no noise or any possible interference with your appliances or equipment.

200% start-up power capacity

When turning on electrical equipment, some have high in-rush current at start-up. Airconditioning units, pumps, motors, laser printers, photocopiers, are typical examples of high in-rush current equipment. The OGIP™ Series is capable of providing twice the rated capacity of the inverter during the starting up of your equipment allowing you to save on the size of the inverter required.

Up to 93 % efficiency

The OGIP™ Series uses the latest high frequency SPWM technology to provide the highest operation efficiency bring the highest possible return on investment.

Unity power factor

An inverter of 3KVA with a power factor of 0.8 is in reality a 2.4KW inverter. E24 inverters are rated a unity power factor delivering 3KW for 3KVA inverters and 5KW for 5KVA inverter.

Up to 9 Units in Parallel

Up to 9 inverters can be connected in parallel to increase power and runtime. For example, if 9 inverters of 5KW are connected in parallel, the maximum power reached is 45KW.

It is also possible to connect the inverters in such a way to build a three phase input and output system. To do that three inverters are needed (one on each phase) as a minimum configuration. Under such configuration the power capacity becomes $3 \times 5\text{KW} = 15\text{KW}$. It is possible to have a maximum of 3 inverters on each phase to reach a maximum capacity in three phase of 45KW (15KW on each phase).



Detachable LCD Control Screen (20 meters)

Multiple Communication Ports (RS485, CAN-BUS, RS232, Dry Contact) for BMS

Communication ports are used to exchange information between different systems in order to build a fully integrated solution. When using lithium batteries, it is necessary for the batteries to exchange information with the inverter. Similarly, when using an E24 optional Energy Storage controller, it is necessary for the controller to read information from the inverter and battery for him to take the proper decisions (for example start the generator etc...)

The OGIP™ Series includes a number of communication ports that offer multiple communication protocols: RS232, RS485, CAN-BUS, Dry contacts. All the above communication ports are available in order to be compatible with any of the possible ports available on the devices that need to exchange information with the inverter.

Battery Equalization to extend battery life

When operating multiple batteries in series for a given time, some batteries may be slightly more charged than others. As a result the entire system may lose some of its performance due to the fact that batteries are not 100% equal to each other. The OGIP™ Series includes an internal algorithm that forces batteries to equalize which substantially increases system performance and battery life.

USB-ON-THE-GO function

The OGIP™ Series includes a USB port to plug a USB drive in order to download historical data of the system that can be used for analysis.

Easy Replaceable Fans

One of the components that must be replaced with time on inverters are the fans that run continuously. These fans must be easy to replace in order to avoid downtime. The OGIP™ Series is engineered in a way to allow easy replacement of the fans with minimal complexity and downtime.

Options

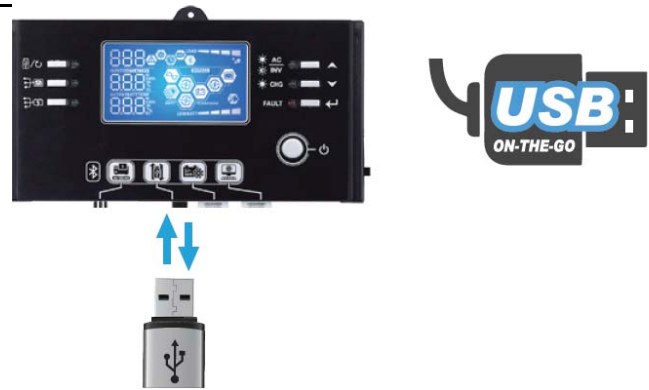
OPTIONAL Feed back of unused solar energy to grid

When used with E24 optional PV controllers and E24 PV inverters (ask your E24 authorized dealer), it is possible for the resulting combination of equipment to automatically return unused solar energy to the grid once the batteries are full.

OPTIONAL Automatic control of Generator

When used with the E24 optional Energy Controller it is possible to automatically start and stop an auxiliary generator in the event where the power drawn by the load either exceeds a preset level or when batteries start to be depleted.

The controller will automatically shut down the generator when the load is decreased below the preset maximum load or when the battery capacity is restored.



USB-ON-THE-GO Function

Technical Specifications

Line Mode Specifications	Inverter Model	ESIM01P-3KI	ESIM01P-5KI
	Input Voltage Waveform	Sinusoidal (utility or generator)	
	Nominal Input Voltage	230Vac	
	Low Loss Voltage	170Vac±7V (UPS); 90Vac±7V (Appliances)	
	Low Loss Return Voltage	180Vac±7V (UPS); 100Vac±7V (Appliances)	
	High Loss Voltage	280Vac±7V	
	High Loss Return Voltage	270Vac±7V	
	Max AC Input Voltage	300Vac	
	Nominal Input Frequency	50Hz / 60Hz (Auto detection)	
	Low Loss Frequency	40±1Hz	
	Low Loss Return Frequency	42±1Hz	
	High Loss Frequency	65±1Hz	
	High Loss Return Frequency	63±1Hz	
	Output Short Circuit Protection	Circuit Breaker	
Efficiency (Line Mode)	>95% (Rated R load, battery full charged)		
Transfer Time	10ms typical (UPS); 20ms typical (Appliances)		
Power Limitation	<p>The graph illustrates the power limitation of the inverter. The x-axis represents Input Voltage in Volts (V), with marked values at 90V, 170V, and 280V. The y-axis represents Output Power. The power starts at 50% of the rated power at 90V and increases linearly to reach the full Rated Power at 170V. From 170V to 280V, the output power remains constant at the Rated Power level.</p>		
Charge Mode Specifications	Charging Algorithm	3-Steps	
	Utility Charging Mode		
	Charging Current (UPS)	Up to 60A (programmable)	
	Charging Floating Voltage	54Vdc	
	Solar Charging Mode		
	Charging Current (MPPT)	Up to 80A from solar (Total Charging Current = 140A Max.)	
	Paximum PV Array Power	4000W	5000W
	System DC Voltage	48Vdc	
	Max. PV Array Open Circuit Voltage	145Vdc	
	Standby Power Consumption	2W	
DC Voltage Accuracy	+/-0.3%		
General Specifications	Safety Certification	CE	
	Operating Temperature Range	0°C to 50°C	
	Storage temperature	-15°C~ 60°C	
	Dimension (D*W*H), mm	115 x 300x 400	
	Net Weight, kg	9	10

Invert Mode Specifications	Inverter Model	ESIM01P-3KI	ESIM01P-5KI
	Rated Output Power	3KVA / 3KW	5KVA / 5KW
	Output Voltage Waveform	Pure Sine Wave	
	Output Voltage Regulation	230Vac±5%	
	Output Frequency	50Hz	
	Peak Efficiency	90%	
	Surge Power	5s@≥150% load; 10s@110%~150% load	
	Surge Capacity	2x rated power for 5 seconds	
	Nominal DC Input Voltage	48Vdc	
	Cold Start Voltage	46.0Vdc	
	Low DC Warning Voltage @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	44.0Vdc 42.8Vdc 40.4Vdc	
	Low DC Warning Return Voltage @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	46.0Vdc 44.8Vdc 42.4Vdc	
	Low DC Cut-off Voltage @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	41.0Vdc 40.8Vdc 38.4Vdc	
	High DC Recovery Voltage	58Vdc	
	High DC Cut-off Voltage	60Vdc	
	No Load Power Consumption	<50W	
Saving Mode Power Consumption	<15W		

Charging Controls	Voltage Setting	Battery Type	Float
			48
		Flooded/AGM/Gel	54
	Charging Curve	<p>The graph plots Battery Voltage per cell (left y-axis, 2.25Vdc marked) and Charging Current% (right y-axis, 50% and 100% marked) against Time (x-axis). The curve starts at a low voltage and 100% current, rises linearly through the Bulk (Constant Current) phase to a plateau at 2.25Vdc. It then enters the Maintenance (Floating) phase, where the voltage gradually decreases and the current drops from 100% to 0%. Time intervals T0 and T1 are indicated for the Bulk and Maintenance phases respectively.</p>	

Hybrid



Storage Inverter



Battery



E24 Modular Range Of Products For Building Easy, Flexible & Evolutive Solutions

E24 products dynamically evolve with the lifestyle and work style of its customers while easing the installation process.

E24 products are conceived in modules allowing for an easy upgrade to adjust with the needs of the customers. Being modular and easy to connect E24 products allow installers to easily configure the required modules for an optimal solution while offering easy upgrade options.



Ordering Information

Ref Number	Description
ESIM01P-3KI	Modular Solar off-Grid Inverter Plus, 24Vdc, 3KW, 1 Phase, 230V, 50/60Hz, 4KWp, 500Vdc, Blue Tooth, RS485, RS232
ESIM01P-5KI	Modular Solar off-Grid InverterPlus, 48Vdc, 5KW, 1 Phase, 230V, 50/60Hz, 5KWp, 500Vdc, Blue Tooth, RS485, RS232

E24®

www.e24solutions.com



ISO 9001:2015



QUALITY STANDARD

