

# Bidirectional Three Phase Off-line Inverter Plus Series

E2L®

P314E



## **Bidirectional, Modular, Three Phase, Off-Line Plus Inverters in 10 KW to 15 KW per unit for Off-Grid & Weak-Grid Applications (European Models)**

The P314 Series (ESIB03P ), offers a range of modular inverters in 10 KW and 15KW versions ideally suited for applications where energy feed-in to the grid is required.

Units may be connected in parallel (up to 6) to increase power in Three phase configurations.

The P314 series include USB, Dry contact, RS232, and Optional SNMP, MODBUS and Wifi Cards to connect to other control devices while providing an easy web interface to the end-user.

# The ESIB03P™ Inverter Series

The ESIB03P inverters are built in modules of 10KW, and 15KW, 30KW and 50KW each that can be connected in parallel in to reach a maximum power of 90KW (6x15KW) in three phase configuration.

The ESIB03P inverters are battery agnostic allowing them to be used with any type of battery (Lead Acid, ELA, Lithium, ...). The ESIB03P inverters operate modular battery units that can also be increased based on client needs. They allow the user to gradually upgrade in either power or Battery size at will in order to gradually adapt the system with his growing energy needs.

The ESIB03P inverters can be fitted with an optional WiFi dongle for wireless connection that connects the client to a cloud application allowing him to remotely monitor his energy system. They are highly compact and efficient allowing substantial savings in space and energy.

The ESIB03P™ Inverters exceptional design meets basic modern requirements in terms of energy efficiency and environmental friendly applications for residential, business and Industrial applications.

E24's inverters employ transformerless high-frequency technology to offer the highest efficiency while remaining silent during its operation.

- **Wide Solar input range (320 to 900 Vdc)**
- **Feeds back energy to the grid**
- **Super compact**
- **Works with or without solar panels**
- **Wide Utility/Generator input voltage**
- **Intuitive LCD display**
- **Built-in AC coupled function**
- **Seamless Unattended operation**
- **Pure Sine Wave Output**
- **150% Unbalanced load support**
- **Up to 92 % efficiency**
- **Unity power factor**
- **Up to 6 Units in Parallel**
- **Multiple Communication Ports USB, Dry contact, RS232, and Optional SNMP, MODBUS and Wifi Cards**
- **Battery Equalization to extend battery life**
- **USB-ON-THE-GO function**
- **Easy Replaceable Fans**
- **OPTIONAL Automatic control of Generator**
- **Built-in Timer for various mode of on/off operations**

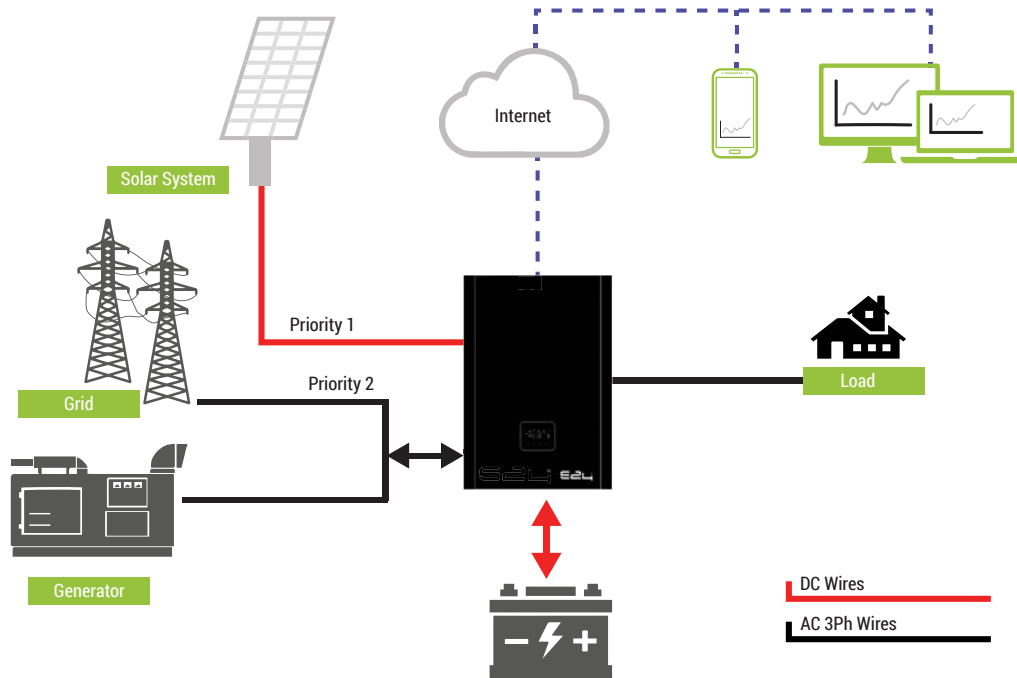


ESIB03P-10KI

ESIB03P-15KI

# The ESIB03P™ Unmatched Features

The ESIB03P™ Hybrid Inverter Series is engineered to adapt to almost multiple existing number of energy sources in a manner to optimise energy costs and minimize generator operation while offering immediate power backup to the user.



**E24 Bidirectional inverter Topology**

## Works with or without solar panels

The ESIB03P inverters charge 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 ESIB03P inverters accept a wide range of input voltage to remain fully compatible with your utility and generator voltage outputs

## Intuitive large LCD display

The ESIB03P inverters have a built in LCD display that provide intuitively all the data about the generated, stored or consumed energy.

## Super compact - Fits Anywhere

The ESIB03P inverters are wall mounted taking limited space 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.

## Programmable priority of energy sources:

The ESIB03P™ may be programmed by default to priorities the energy source available to either supply the load directly or charge the batteries. Any unused renewable energy generated may be fed back to the grid for Net-metering benefits. Other priority configurations can be programmed at will.

## Seamless, easy operation:

The ESIB03P™ is engineered to operate without any user intervention. There is no need to push any buttons or understand how it works. It simply does.

## Strong Overload Capability

The ESIB03P™ inverter is capable of handling overloads of 110% - 125% / 150% for 10s / 5s respectively under unbalanced load.

## Power Walk In

Power Walk In function allows the rectifier of each unit to be turned on progressively and in sequences in order to avoid the sudden load on generators.

## Dry Contacts

The ESIB03P™ Series includes dry contacts that can be used to trigger certain actions like the automatic start-up of a diesel generator when battery is low and its shutdown when battery is charged.

## Comprehensive Communication Options

Communications options include: USB, Dry contact, RS232, and Optional SNMP, MODBUS and Wifi Cards

**Low input current total harmonic distortion (THDi)**

The ESIB03P™ Hybrid Inverter Series actively manages the input current total harmonic distortion (THDi) at a low level (2 percent at 100 percent load). E24's unique technology neutralizes the emission of harmonics at the input of the Hybrid Inverter system, providing greater reliability of operations for circuit breakers and extending the overall service life of the equipment. Low harmonic distortion saves unnecessary over sizing of gensets, cabling and circuit breakers, avoids extra heating of input transformers and extends the overall service life of all Hybrid Inverter stream components.

**DSP Technology**

The ESIB03P™ Hybrid Inverter is built on advance Digital Signal Processing technology in order to provide high performance steady and accurate operation over its lifetime while offering outstanding efficiency (up to 96% in online mode).

**Standards**

The ESIB03P™ Hybrid Inverter complies to EN 60950-1 standards.

**Intelligent Battery Management**

The ESIB03P™ Hybrid Inverter includes an intelligent battery charger that offers a float/boost charger and a dynamic cut-off level that reduces battery maintenance and improves battery life.

**Modularity up to 6 units**

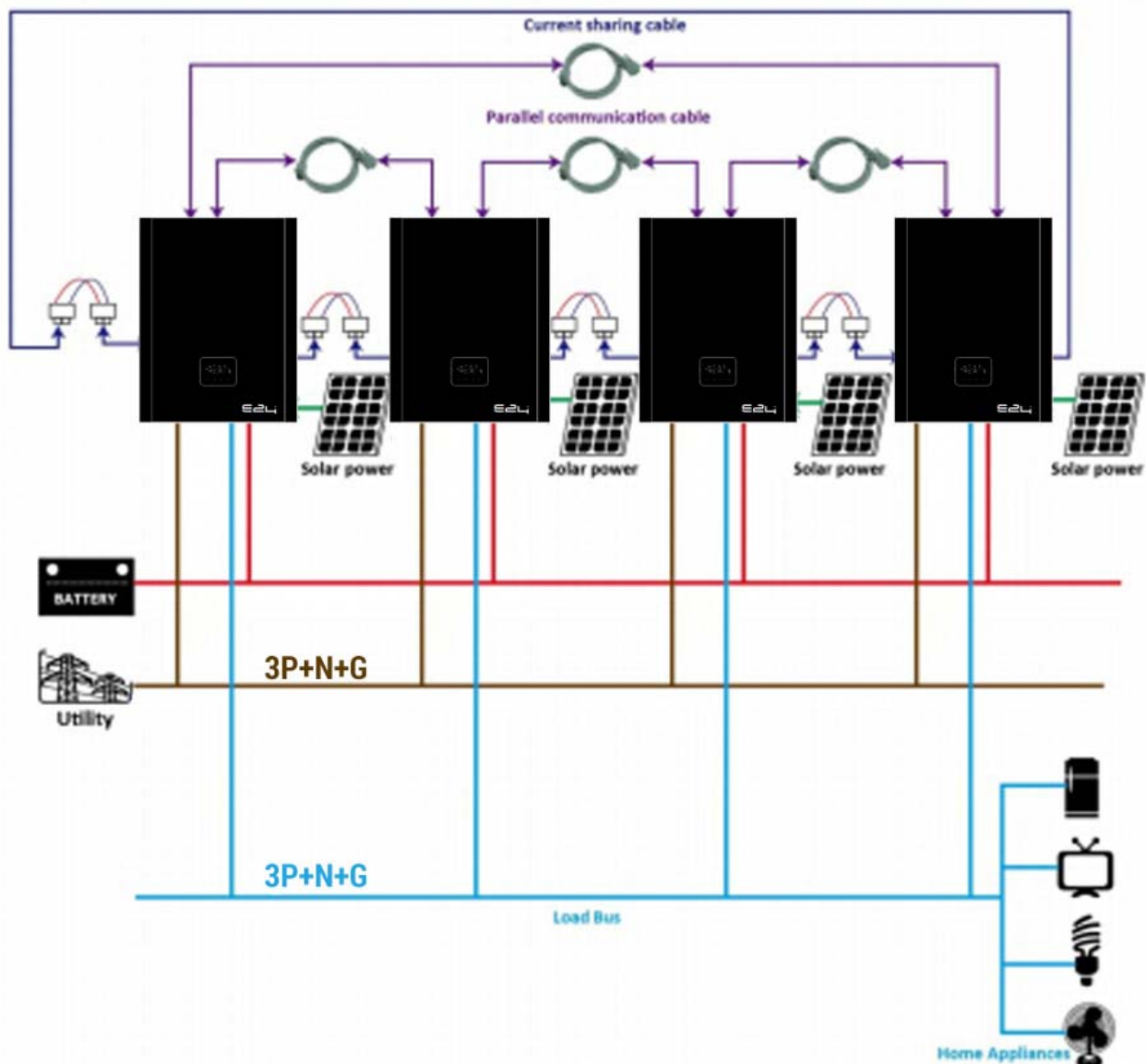
Up to 6 units can be positioned in parallel to provide an maximum power out in three-phase configuration.

**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 ESIB03P inverters can accept Solar input voltage from 400 to 800Vdc (MPP tracking). Max Solar DC voltage is 900Vdc.

**Fully Protection**

The ESIB03P 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.



**Pure Sine Wave Output**

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

**150% start-up power capacity**

When turning on electrical equipment, some have high in-rush current at start-up. Air conditioning units, pumps, motors, lazer printers, photocopiers, are typical examples of high in-rush curent equipment. The ESIB03P are capable of providing 1.5X 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 96 % efficiency**

The ESIB03P use 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 at unity power factor delivering 10KW for 10KVA inverters and 15KW for 15KVA inverter and so on.

**Multiple Communication Ports USB, Dry contact, RS232, and Optional SNMP, MODBUS and Wifi Cards**

Communication ports are used to exchange information between different systems in order 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 it to take the proper decisions (for example start the generator etc...)

**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 loses some of its performance due to the fact that batteries are not 100% equal to each other. The ESIB03P includes an internal algorithm that forces batteries to equalize which substantially increase system performance and battery life.

**USB-ON-THE-GO function**

The ESIB03P include a USB port to plug a USB drive in order to download historical data of the system that can be used for analysis and to rapidly program the inverter from a laptop.



**USB-ON-THE-GO Function**

**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 ESIB03P is engineered in a way to allow easy replacement of the fans with minimal complexity and downtime.

**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 shuts down the generator when the load is decreased below the preset maximum load or when the battery capacity is restored.

# ESIB03P™ Technical Specifications (European Models in 400/230Vac)

AC Input/Output	<b>Inverter Model</b>	ESIB03P-10KI		ESIB03P-15KI		
	<b>Input Voltage Waveform</b>	Sinusoidal (utility or generator)				
	<b>Nominal Input Voltage (Vac)</b>	400/230				
	<b>AC Startup Voltage / Auto Restart Voltage (Vac)</b>	120 - 140 / 180 per Phase				
	<b>Output Voltage Range (Vac)</b>	184 - 265				
	<b>Acceptable Input Voltage Range (Vac)</b>	170 - 280				
	<b>Nominal Output Current per Phase (A)</b>	14.5		21.7		
	<b>Max AC Input Voltage per Phase (Vac)</b>	300				
	<b>Nominal Input Frequency (Hz)</b>	50 / 60 (Auto detection)				
	<b>Low Loss Frequency (Hz)</b>	40±1Hz				
	<b>Low Loss Return Frequency (Hz)</b>	42±1Hz				
	<b>High Loss Frequency (Hz)</b>	65±1Hz				
	<b>High Loss Return Frequency (Hz)</b>	63±1Hz				
	<b>Output Short Circuit Protection</b>	Circuit Breaker				
	<b>Efficiency (Line Mode)</b>	>96% ( Rated R load, battery full charged )				
<b>Transfer Time</b>	10ms typical (UPS); 20ms typical (Appliances)					
<b>Number of Units in Parallel</b>	6					

Charge Mode Specifications	<b>Charging Algorithm</b>	3-Steps				
	<b>Utility Charging Mode</b>					
	<b>Max. AC Input Current per phase (A)</b>	40		40		
	<b>Max. Programmable Utility Charging Current (A)</b>	200		300		
	<b>Max. Battery Charging Current (A)</b>	200		300		
	<b>Solar Charging Mode</b>					
	<b>Maximum PV Input Power (kW)</b>	14.85		22.5		
	<b>Maximum Solar Charging Current (MPPT)</b>	200		300		
	<b># of MPP Trackers</b>	2		2		
	<b># of Strings per MPP</b>	A:2; B:1		A:2; B:2		
	<b>Maximum Current per MPP (A)</b>	A:18.6; :18.6A		A:37.7; B:18.6		
	<b>System DC Voltage, DC Voltage Range (Vdc)</b>	48, 44 to 60				
	<b>Max. PV Array Open Circuit Voltage</b>	500Vdc (MPPT from 90Vdc to 450Vdc)				
	<b>Standby Power Consumption</b>	2W				
	<b>DC Voltage Accuracy</b>	+/-0.3%				
<b>Dual Input</b>	Optional					

		ESIB03P-10KI		ESIB03P-15KI		
Invert Mode Specifications	<b>Inverter Model</b>	ESIB03P-10KI		ESIB03P-15KI		
	<b>Rated Output Power</b>	10KVA / 10KW		15KVA / 15KW		
	<b>Output Voltage Waveform</b>	Pure Sine Wave				
	<b>Output Voltage Regulation</b>	230Vac±5%				
	<b>Output Frequency</b>	50Hz				
	<b>Peak Efficiency</b>	96%				
	<b>Surge Power</b>	5s@≥150% load; 10s@110%~150% load				
	<b>Surge Capacity</b>	2x rated power for 5 seconds				
	<b>Nominal DC Input Voltage (Vdc)</b>	48				
	<b>Cold Start Voltage (Vdc)</b>	46				
	<b>Low DC Warning Voltage (Vdc)</b> @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	Programmable: 44.0 42.8 40.4				
	<b>Low DC Warning Return Voltage</b> @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	Programmable: 46.0 44.8 42.4				
	<b>Low DC Cut-off Voltage</b> @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	Programmable: 41.0 40.8 38.4				
	<b>High DC Recovery Voltage</b>	58Vdc				
	<b>High DC Cut-off Voltage</b>	60Vdc				
	<b>No Load Power Consumption</b>	<50W				
<b>Saving Mode Power Consumption</b>	<15W					
General Specifications	<b>Communication Interface</b>	USB, Dry contact, RS232, and Optional SNMP, MODBUS and Wifi Cards				
	<b>Safety Certification</b>	CE				
	<b>Operating Temperature Range</b>	0°C to 50°C				
	<b>Storage temperature</b>	-15°C~ 60°C				
	<b>Dimension (D*W*H) (mm)</b>	167 x 500 x 622	219 x 650 x 820			
	<b>Net Weight (kg)</b>	40	62			

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.



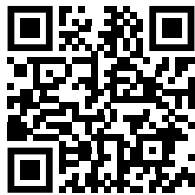


## Ordering Information

Ref Number	Description
ESIB03P-10KI	Mod. Solar Bi-direct. Inverter, 48Vdc, 10KW, 3Ph. , 400/230V, 50/60Hz, 14.85KWp, 900Vdc, Cloud Mon., USB,RS485, RS232,WiFi, Dry
ESIB03P-15KI	Mod. Solar Bi-direct. Inverter, 48Vdc, 15KW, 3Ph. , 400/230V, 50/60Hz, 22.5KWp, 900Vdc, Cloud Mon., USB,RS485, RS232,WiFi, Dry

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