

The ESIM01™ Hybrid Inverter Series

E24™

P300E



Modular, Off-Line, Energy Storage Inverter, Single Phase Series

E24's Hybrid Inverter series provides a compact and efficient solution to our customers around the globe.

The ESIM01™ Inverter is a hybrid and modular 5 KVA inverter designed to receive inputs from multiple energy sources and store this energy in E24's ELA batteries.

Through its smart energy management system, the ESIM01™ can prioritize which energy source (Solar, Generator, or Utility Mains) is used to charge the batteries and thus reduce the energy costs on the consumer.

E24's compact, compatible, and silent design of the ESIM01™ makes it an ideal solution for homes and small businesses where power cuts are frequent or for applications where full utilization of the solar system is required.

The ESIM01™ Hybrid Inverter Series

The ESIM01™ Hybrid Inverter Series is a modular decentralized system built in modules of 5KVA each; reaching a total capacity of up to 30 KVA when combined in parallel units.

The ESIM01™ is highly compact and efficient allowing substantial savings in space and energy.

The ESIM01™ Hybrid Inverter Series exceptional design meets basic modern requirements in terms of energy efficiency and environmental friendly applications for homes and small businesses.

E24's hybrid inverter employs transformer less high frequency IGBT technology to offer the highest efficiency while remaining silent during its operation.

In addition, ESIM01™ Hybrid Inverter Series modular design offers consumers the flexibility to accommodate an increase in power, reliability level, runtime or renewable energy capacity by simply adding additional inverter modules or battery modules.

This makes the ESIM01™ Hybrid Inverter Series a user-friendly, easy-to-install, and compact product that can provide plenty of benefits for our customers.



- **Super compact - fits anywhere**
- **Up to 97 % efficiency**
- **Unity input power factor**
- **Up to 6 Units in Parallel**



The ESIM1™ Unmatched Performance

The ESIM1™ 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.

Multi-input power selection:

When used as part of a turnkey E24 Energy Storage Solution, the ESIM1™ hybrid inverter may connect to 2 primarily AC single phase inputs, 1 DC coupled renewable energy input (PV or Wind) and 1 AC coupled renewable energy input (PV). An optional extra input source can be added with a preset level of priority and a preset level of maximum energy intake (E24 Energy Storage Controller is required).

With or without renewable energy sources:

The ESIM1™ hybrid system may be used without renewable energy inputs. Under such a case the ESIM1™ will only store the energy of the utility mains into the batteries and seamlessly restore the energy.

Any quality of input power is acceptable:

The ESIM1™ accepts almost any quality of input with voltage per phase ranging from 120V to 280V per phase and frequency variations from 40Hz to 70 Hz.

Programmable priority of energy sources:

When used as part of a turnkey E24 Energy Storage Solution, the ESIM1™ may be programmed by default to prioritize the energy source available to either supply the load directly or charge the batteries. Any unused renewable energy generated is feedback to the grid for Net-metering benefits. Other priority configurations can be programmed at will.

Generator control:

When used with the E24 Energy Controller as part of our innovative turnkey Energy Storage Solutions; the ESIM1™ includes the controls to automatically start and stop an auxiliary generator

in the event where the power drawn by the load either exceeds a preset level of current discharge of the batteries or a preset level of battery capacity.

The preset level of discharge can be set to trigger the starting of the generator when the load reaches a level that will deplete the batteries in less than 3 to 8 hours.

The preset level of battery discharge that will trigger the starting of the generator can be set to a depth of discharge ranging between 30% and 80%. The lower the depth of discharge set, the higher the runtime on batteries before the generator starts but the shorter the number of cycles that the battery can deliver (shorter battery lifetime). Refer to our battery brochure for details.

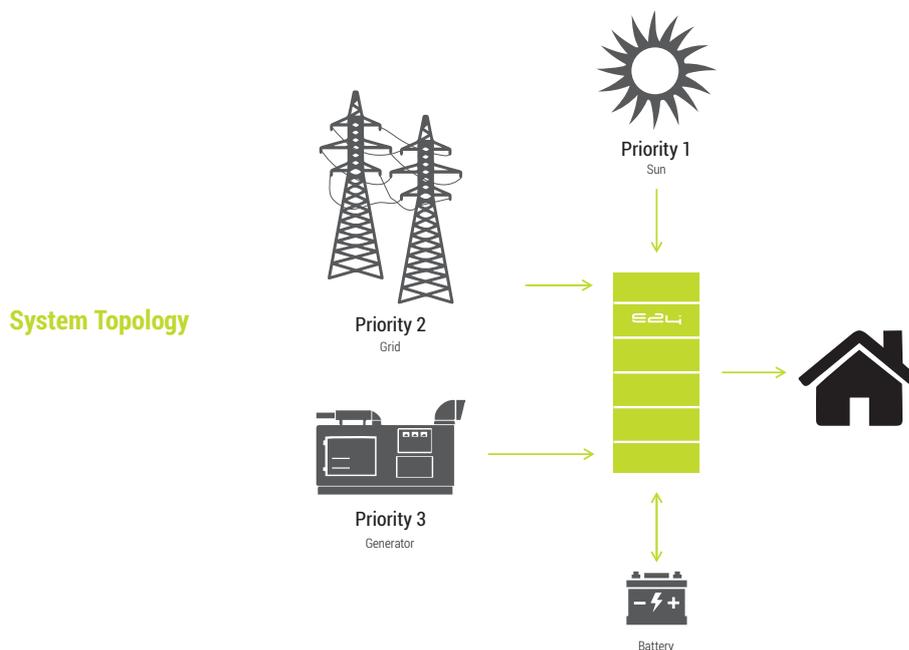
The ESIM1™ automatically shuts down the generator when the load is decreased below the preset maximum load or when the battery capacity is restored.

Seamless, easy operation:

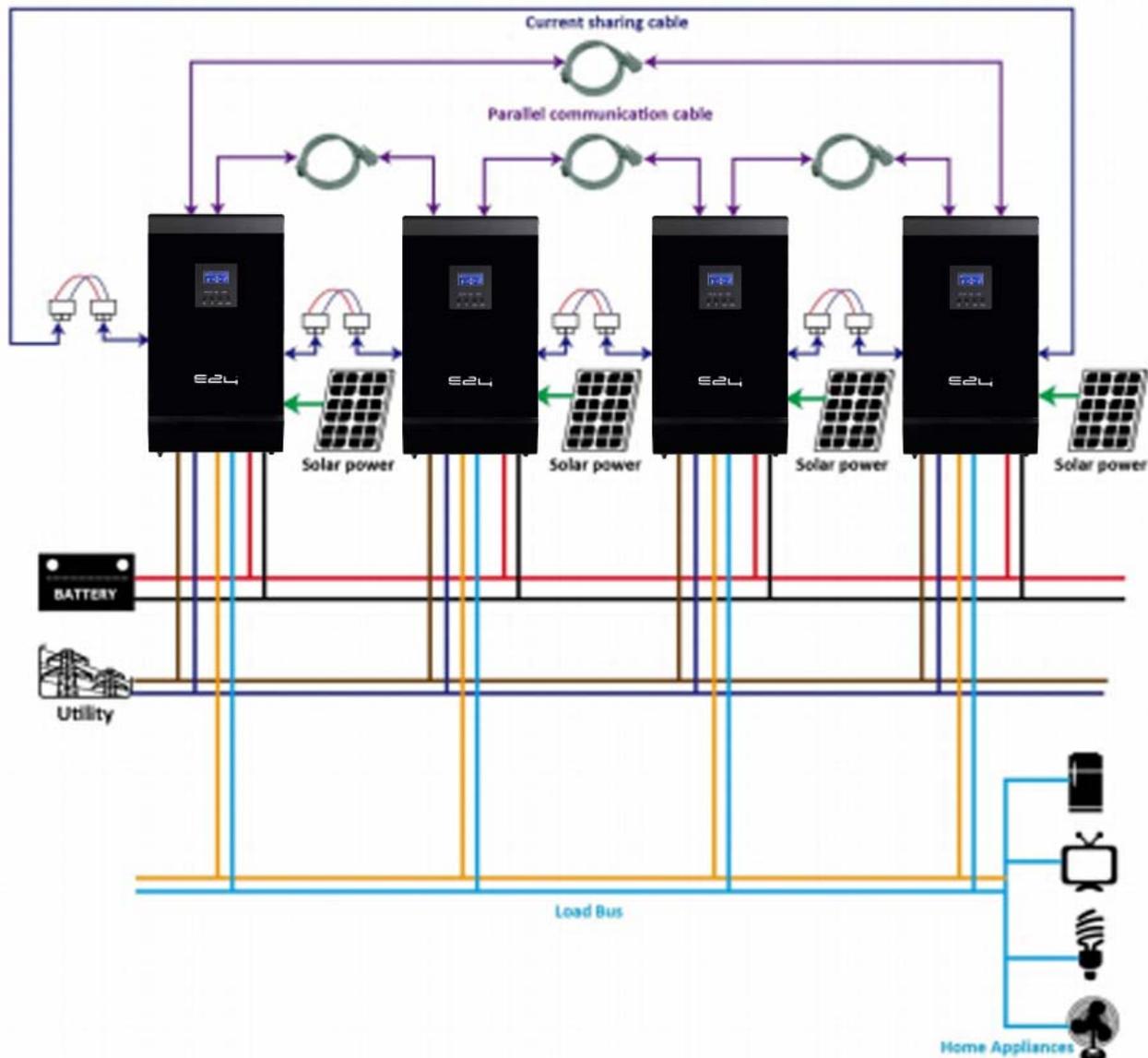
The ESIM1™ is engineered to operate without any user intervention. There is no need to push any buttons or understand how it works. It simply does.

Large Screen LCD:

For our more curious customers, when and why, the ESIM1™ hybrid inverter series include a touch screen LCD display with an intuitive menu displaying detailed data about the system.



Truly Modular and Evolvable



start with a ESIM1™ hybrid inverter equipped with only one unit and decide later that you wish to add more units when your load increases.

Our ESIM1™ Hybrid inverter series can be utilized in different configuration to support single-phase and three-phase applications.

Simply add units in parallel (up to 6 units) for a maximum output power of 20KVA for single phase applications; or utilize the combination of 6 units in parallel to support three-phase application and provide up to 30KVA on phase and 20KVA on the others.

The advantage of a modular system is that it allows to replace one module in case of a damaged part.

The ESIM1™ allows to detect easily which module is faulty. It is then easy to swap the faulty module with a new one. Simply remove and slide out the faulty module and replace and snap in the new module and the system is operational again.

Customers who own multiple ESIM1™ units may keep one module as a common spare part for all racks allowing to minimize downtime.

Outstanding Features

Hot-Swappable Power Modules

In the event where a power module requires to be replaced, it is possible to replace the module with a new one without shutting down the inverter and without any load interruption.

Strong Overload Capability

The ESIM01™ Hybrid Inverter is capable of handling overloads of 110% / 125% / 150% for 60min / 10min / 1 min respectively.

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.

Generator Mode (Optional)

The ESIM01™ Series can be ordered with dry contacts to prevent the Hybrid Inverter of charging when the generator is operational.

Emergency Power Off (EPO)

The ESIM01™ Series is equipped with a concave red EPO button with transparent cover built into the control panel for emergency power off.

Comprehensive Communication Options

Communications options include: RS232, RS485, Modbus (option), SNMP adaptor (Option), Dry Contacts.

Low input current total harmonic distortion (THDi)

The ESIM01™ 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.

Besides its unmatched performance and flexibility, the ESIM01™ offers a number of features:

N+X parallel redundancy

Up to 6 units can be positioned in parallel to provide an maximum power out of 20KVA for single-phase applications or 30KVA for three-phase applications.

DSP Technology

The ESIM01™ 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 ESIM01™ Hybrid Inverter complies to EN 60950-1 standards.

Intelligent Battery Management

The ESIM01™ Hybrid Inverter includes an intelligent battery charger that includes a float/boost charger and a dynamic cut-off level that reduces battery maintenance and improves battery life.

Flexible Battery Configuration

The ESIM01™ Hybrid Inverter is programmable to operate on a variable number of batteries. This means that in case one or more batteries are damaged, the ESIM01™ can be programmed to operate on less batteries until the damaged battery is replaced avoiding any downtime.



Technical Specifications

Line Mode Specifications	Inverter Model	ESIM01-2KI	ESIM01-3KI	ESIM01-5KI
	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 curve starts at 90V with 50% of the rated power. It then rises linearly to reach the full Rated Power at 170V. From 170V to 280V, the output power remains constant at the Rated Power level. Beyond 280V, the power drops to zero.</p>			

Charge Mode Specifications	Charging Algorithm	3-Steps		
	Utility Charging Mode			
	Utility Charging Current (Programmable)	Up to 30A	Up to 60A	Up to 60A
	Charging Floating Voltage	27Vdc	27Vdc	54Vdc
	Solar Charging Mode			
	Charging Current (MPPT)	Up to 40A from solar (Total Charging Current = 70A Max.)	Up to 60A from solar (Total Charging Current = 120A Max.)	Up to 80A from solar (Total Charging Current = 140A Max.)
	System DC Voltage	24Vdc	24Vdc	48Vdc
	Max. PV Array Open Circuit Voltage, Power	102Vdc, 1000W	145Vdc, 1500W	145Vdc, 4000W
	Standby Power Consumption	2W		
DC Voltage Accuracy	+/-0.3%			

General Specifications	Safety Certification	CE		
	Operating Temperature Range	0°C to 55°C		
	Storage temperature	-15°C~ 60°C		
	Dimension (D*W*H), mm	100 x 227 x 305	100 x 300 x 440	120 x 295 x 468
	Net Weight, kg	5.2	9.5	11

Invert Mode Specifications	Inverter Model	ESIM01-2KI	ESIM01-3KI	ESIM01-5KI
	Rated Output Power	3KVA/2.4KW	3KVA/3KW	5KVA/4KW
	Output Voltage Waveform	Pure Sine Wave		
	Output Voltage Regulation	230Vac±5%		
	Output Frequency	50Hz		
	Peak Efficiency	93%	93%	90%
	Overload Protection	5s@≥150% load; 10s@110%~150% load		
	Surge Capacity	2* rated power for 5 seconds		
	Nominal DC Input Voltage	24Vdc	24Vdc	48Vdc
	Cold Start Voltage	23.0Vdc	23.0Vdc	46.0Vdc
	Low DC Warning Voltage @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	22.0Vdc 21.4Vdc 20.2Vdc	22.0Vdc 21.4Vdc 20.2Vdc	44.0Vdc 42.8Vdc 40.4Vdc
	Low DC Warning Return Voltage @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	23.0Vdc 22.4Vdc 21.2Vdc	23.0Vdc 22.4Vdc 21.2Vdc	46.0Vdc 44.8Vdc 42.4Vdc
	Low DC Cut-off Voltage @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	20.5Vdc 20.4Vdc 19.2Vdc	20.5Vdc 20.4Vdc 19.2Vdc	41.0Vdc 40.8Vdc 38.4Vdc
	High DC Recovery Voltage	29Vdc	29Vdc	58Vdc
	High DC Cut-off Voltage	30Vdc	30Vdc	60Vdc
	No Load Power Consumption	<50W	<50W	<50W
Saving Mode Power Consumption	<15W	<15W	<15W	

Charging Controls	Voltage Setting	Battery Type	Float	
			24	48
		Flooded/AGM/Gel	27	54
	Charging Curve	<p>The graph plots Battery Voltage per cell (left y-axis, 2.25Vdc marked) and Charging Current% (right y-axis, 100% and 50% marked) against Time (x-axis). The curve starts at a low voltage and rises linearly during the Bulk (Constant Current) phase, labeled T0. At the end of T0, the voltage reaches a constant level of 2.25Vdc, and the charging current is at 100%. This is followed by the Maintenance (Floating) phase, labeled T1, where the voltage remains constant at 2.25Vdc and the charging current gradually decreases from 100% towards 0%.</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
ESIM01-2KI	Solar off-Grid Inverter, 24Vdc, 2.4KW, 1 Phase, 230V, 50/60Hz, 1KWp, 100Vdc, RS 232
ESIM01-3KI	Modular Solar off-Grid Inverter, 24Vdc, 3KW, 1 Phase, 230V, 50/60Hz, 1.5KWp, 145Vdc, RS 232
ESIM01-5KI	Modular Solar off-Grid Inverter, 48Vdc, 5KW, 1 Phase, 230V, 50/60Hz, 4KWp, 145Vdc, RS 232
ESIM01-MOD	RS485 Interface for ESIM01-5K

E24[®]

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ISO 9001:2015



QUALITY STANDARD

