

The ESIM1™ Single Phase Modular Inverter Series

E2L™

P302E



Modular Energy Storage Inverter for Single Phase Applications from 6 to 60KW

The ESIM1™ Energy Storage Inverter is a modular 1 phase Output, 1 or 3 phase input unit available in 6KW and 10KW modules.

Up to 6 Modules can be connected in parallel for N+X redundancy to supply up to 60KW (6 units of 10KW) of power in single phase output.

The ESIM1™ is designed to operated on generator and can accept a wide input voltage range.

The ESIM1™ Series is completely decentralised, making it fault tolerant and allowing it to be gradually upgradable by simply adding units in parallel.

The ESIM1™ Series operates in +/- 120Vdc battery banks and includes a powerful charger 12A (6KW unit) and 14A (10KW unit) charging per module allowing the user to also configure the charging power based on the size of the energy storage battery used.

The ESIM1™ Series

The ESIM1™ Modular Decentralised Inverter Series is built in modules of 6KW and 10KW each allowing to reach a total capacity of 60 KW in single phase output. The ESIM1™ is highly compact and efficient allowing substantial savings in space and energy.

The ESIM1™ Modular Decentralised Inverter Series exceptional design meets all modern requirements of building and operating energy efficient and environmentally friendly homes, buildings, business and industrial applications. The ESIM1™ Modular Decentralised Inverter Series employs transform less double conversion Inverter topology.

The E24 ESIM1™ Series is designed with the flexibility to accommodate an increase in power, reliability level, runtime or renewable energy capacity by simply adding a module.

Easy installation and maintenance was at the base of the de-sign for this Modular Decentralised Inverter system with easy access to electrical connections and fully serviceable components.



Features

- Flexible Input 3Phase or 1Phase
- Output Power Factor 1.0
- N+X Parallel Redundancy
- True Online Double Conversion with DSP Control
- Segmental LCD +LED with Three Function Keys
- Touch-screen 2.4" Color Monitor LCD(Optional)
- Green Concept Design for Environment
- Unity Input Power Factor
- High Conversion Efficiency up to 93.5%
- Built-in Powerful charger Can Be set up to 12A/14A for 6k/10k respectively
- System Battery Voltage 16/18/20 blocks Configurable
- Automatic Battery Test Settable from LCD
- Common Battery When UPS in Parallel
- 3-level Intelligent Charging Modes
- EPO
- Communication Interface, RS232/USB/RS485(ModBus)/ Communication Slot
- Optional Maintenance Bypass Module Is Available
- BMS Port(Optional)

The ESIM1™ Unmatched Performance

The ESIM1™ Modular Decentralised Inverter Series is engineered to adapt to almost any existing energy source in a manner to optimise energy costs and minimize generator operation while offering outstanding power quality.

Multi-input power selection:

When used as part of a turnkey E24 Energy Storage Solution, the ESIM1™ Modular Decentralised inverter may connect to a three phase or a single phase input, DC coupled renewable energy inputs (PV or Wind) and/or AC coupled renewable energy input (PV or Wind).

With or without renewable energy sources:

The ESIM1™ system may be used without renewable energy inputs. Under such a case the ESIM1™ will only store the energy of the grid / or the generator into the batteries and keep the load operational without any interruption.

Generator Friendly

The ESIM1™ accepts a wide range of input variations with voltage per phase ranging from 120V to 276V per phase and frequency variations from 40Hz to 70 Hz.

100% isolated from the grid:

The ESIM1 continuously feeds the load from the batteries while refilling them with the exact same energy discharged (100% on-line double conversion topology). This means that the load is constantly being powered by a freshly synthesized sine wave of the purest quality in order to be 100% isolated from any grid disturbance, surge, brownout or harmonics.

On-Line or Off-Line operation

The ESIM1 includes the option to deactivate the double conversion topology and may be operated in green function mode to save about 3% on the double conversion efficiency.

Three Phase load balancing technology

It is common to trip the main utility or the generator breaker due to one of the phases being overloaded. If the ESIM1 is used with three phase input, it includes the technology to equally distribute the load on the three input phases equally in a manner to delay tripping the utility of generator breaker until the three phases reach simultaneously their maximum allowed threshold. This function is extremely valuable for customers with limited available utility breakers or slightly under-sized generators.

Power Factor Correction

Diesel generators consume fuel in proportion to the KVA loads rather than KW. Correcting the load to unity power factor may decrease fuel consumption by up to 50%.

The ESIM1™ includes DSP technology allowing to correct for the input power factor in a manner to substantially save on both the utility and generator bill.

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.

Touch Screen LCD:

The ESIM1™ Modular Decentralised inverter series include a touch screen LCD display with an intuitive menu displaying detailed data about the system.

Besides its unmatched performance and flexibility, the ESIM1™ offers a number of further features:

N+X parallel redundancy

Up to 6 modules can be connected in parallel redundancy mode to reach up to 60KW of power in single phase.

This means that if any power module fail, the system will continue to operate normally (after sounding an alarm) with the only consequence of a decrease in maximum power equal to the number of modules which failed. The likeliness of 2 modules failing at the same time being less than 1 in a million, the reliability of the overall system is the highest in the industry.

DSP Technology

The ESIM1™ Modular Decentralised 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).

Intelligent Battery Management

The ESIM1™ Modular Decentralised 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.

Battery Discharge Time Prediction

The ESIM1™ Modular Decentralised Inverter is capable of predicting the remaining time on battery under a current load level allowing you to make accurate decision making.

Flexible Battery Configuration

The ESIM1™ Modular Decentralised Inverter is programmable to operate on a variable number of batteries. This means that in case one or more batteries are damaged, the ESIM1™ can be programmed to operate on less batteries until the damaged battery is replaced avoiding any downtime.

Easy Swappable Power Modules

In the event of a power module being damaged, it is possible to replace the damaged module with a new one with limited down-time.

Strong Overload Capability

The ESIM1™ Modular Decentralised 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.

Comprehensive Communication Options

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

Low input current total harmonic distortion (THDi)

The ESIM1™ Modular Decentralised 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 Modular Decentralised 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 components.

Truly Modular and Evolutive

The ESIM1™ Modular Decentralised Inverter Series is built into a 19" cabinet allowing to increase power capacity or reliability.

More power modules can be added in order to configure the ESIM1™ to the required capacity or level of reliability:

If for example a Rack is configured with 3 power modules of 10KW each, the maximum power of the Inverter will be $3 \times 10\text{KW} = 30\text{KW}$. If the load is constantly under 20KW, and one module fails, the Inverter will sound an alarm and the load will be automatically transferred to the 2 remaining power modules without any load interruption.



Upgrade as you Grow

The ESIM1™ can be upgraded by adding modules. You may start with a ESIM1™ Modular Decentralised inverter equipped with only one power module and decide later that you wish to upgrade.

Simply add one 10KW power Module to increase output and charging power (check with your dealer validate compatibility with your existing battery bank).

Easy to Service

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.

Technical Specifications

Model				
Capacity (VA/W)			6KVA/6KW	10KVA/10KW
Input	Phase		1Phase 2 Wires + Ground or 3 Phase 4 Wires+ Ground	
	Rated Voltage		380/400/415Vac or 220/230/240VAC	
	Voltage Range		208~478Vac or 120VAC~276VAC	
	Frequency Range		40Hz-70Hz	
	Power Factor		≥0.99	
	Current THDi		≤3%(100% linear load)	
	Bypass Voltage Range		Max. voltage:220V: +25%(optional +10%,+15%,+20%) ; 230V: +20%(optional +10%,+15%) ; 240V: +15%(optional +10%) Min. voltage: -45% (optional -20%,-30%)	
	Frequency protection range		±10%	
Generator Input		Support		
Output	Phase		1Phase 2 Wires + Ground	
	Rated Voltage		220/230/240VAC	
	Power Factor		1.0	
	Voltage Regulation		±1%	
	Frequency	Utility Mode	±1%、±2%、±4%、±5%、±10% of the rated frequency(optional)	
		Battery Mode	(50/60±0.2%) Hz	
	Crest Factor		3:1	
	THD		≤2% with linear load ≤5% with non linear load	
Efficiency		UP to 93.5%		
Battery	Battery Voltage		±96/108/120Vdc (16~20 pcs, 16 pcs define, Standard unit and 20 pcs no power derating; 18 pcs output power factor 0.9; 16 pcs output power factor 0.8)	
	Charge Current(A)		Max. current 12A	Max. current 14A
Transfer Time			Utility to Battery : 0ms; Utility to bypass: 0ms	
Protection	Overload	AC Mode	Load≤110%: last 60min, ≤125%: last 10min, ≤150%: last 1min, ≥150% turn to bypass mode immediately	
		Bat. Mode	Load≤110%: last 10min, ≤125%: last 1min, ≤150%: last 5S, ≥150% shut down UPS immediately	
		Bypass Mode	Breaker(Load < 125%, long-term operation)	
	Short Circuit		Hold Whole System	
Communication Interface			RS232, RS485, Parallel, Intelligent Slot(SNMP card/ Relay card(optional)), BMS (optional),EPO port, Output port, MAINTAIN-AUXSWS port	
Environment	Operating Temperature		0℃~40℃	
	Storage Temperature		-25℃~+55℃	
	Humidity		0~95% non condensing	
	Altitude		< 1500m.When>1500m,lower the rated power for use	
Other	Dimensions		443x131(3U)x580 mm	
	Weight (Kg)		27	28
Safety Conformance			IEC/EN62040-1,IEC/EN60950-1	
EMC			IEC/EN62040-2,IEC61000-4-2,IEC61000-4-3,IEC61000-4-4,IEC61000-4-5,IEC61000-4-6,IEC61000-4-8	



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
ESIM1-6KI	Modular Energy Storage Inverter, N+X, 1 Phase, 240Vdc, 6KW, 220Vac, 50/60Hz
ESIM1-10KI	Modular Energy Storage Inverter, N+X, 1 Phase, 240Vdc, 10KW, 220Vac, 50/60Hz



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