

The ESIB3 Bidirectional Inverters Series

E24™

P316E



The ESIB3 Bidirectional Inverter Series is modular and flexible allowing it to fulfill the most demanding and complex Energy Storage applications.

E24 ESIB3 Bidirectional Inverter series is designed as a module that can be field-configured to realize various energy storage projects.

Ranging from 30KW to 630KW per module with various possible voltage outputs and operating modes, the ESIB3 can be configured to power isolated loads or to inject power into the grid.

The ESIB3 is available with or without galvanic isolation allowing it to integrate

seamlessly into your particular application.

Whether for energy shifting, peak shaving, or Off-Grid Inverter Plus as an upgrade to the previously released Series with numerous new features.

Being battery technology agnostic, the ESIB3 Series is ideally suited for large scale Energy Storage application including peak shaving, energy shifting, off-grid energy storage etc.

Product Description

The ESIB3 Bidirectional Inverter Series consists of a range of bidirectional inverter modules ranging from 30KW to 630KW per module.

In the presence of a grid or generator power, the ESIB3 will charge the batteries while the load is powered by the grid/generator source. If solar panels are connected to the grid via an ongrid inverter, the load will be partially powered by the solar energy and the rest of the load, from the grid (Fig.1).

When the grid is not available, the load will be partially powered by the solar panels and the rest of the needed energy will be supplied from the batteries (Fig. 1).

It is of course possible to operate a load totally without the grid with the same above logic (In such case it is recommended to include a back-up diesel generator to start in case the batteries are depleted).

When batteries are full, the ongrid inverters will keep generating energy to power the load while injecting the unused energy into the grid.

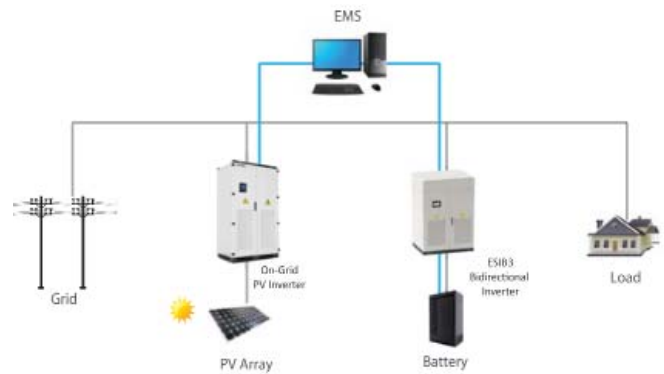


Fig. 1

Design Considerations

Multiple ESIB3 modules can be connected to the same AC bus in order to reach the desired power.

It is also possible to connect multiple batteries series to the same ESIB3 in order to reach the desired energy storage size.

The ESIB3 will act as a grid simulator allowing on-grid inverters (connected to the AC side of the inverter) to inject energy into the simulated grid bus. The solar Energy injected will feed the load.

If the grid is connected, the ESIB3 module will charge the batteries from the grid. Fig. 2 shows an application where the ESIB3 is used to power emergency car charge during a grid interruption in conjunction with a PV power plant and will recharge the batteries when the grid is restored.

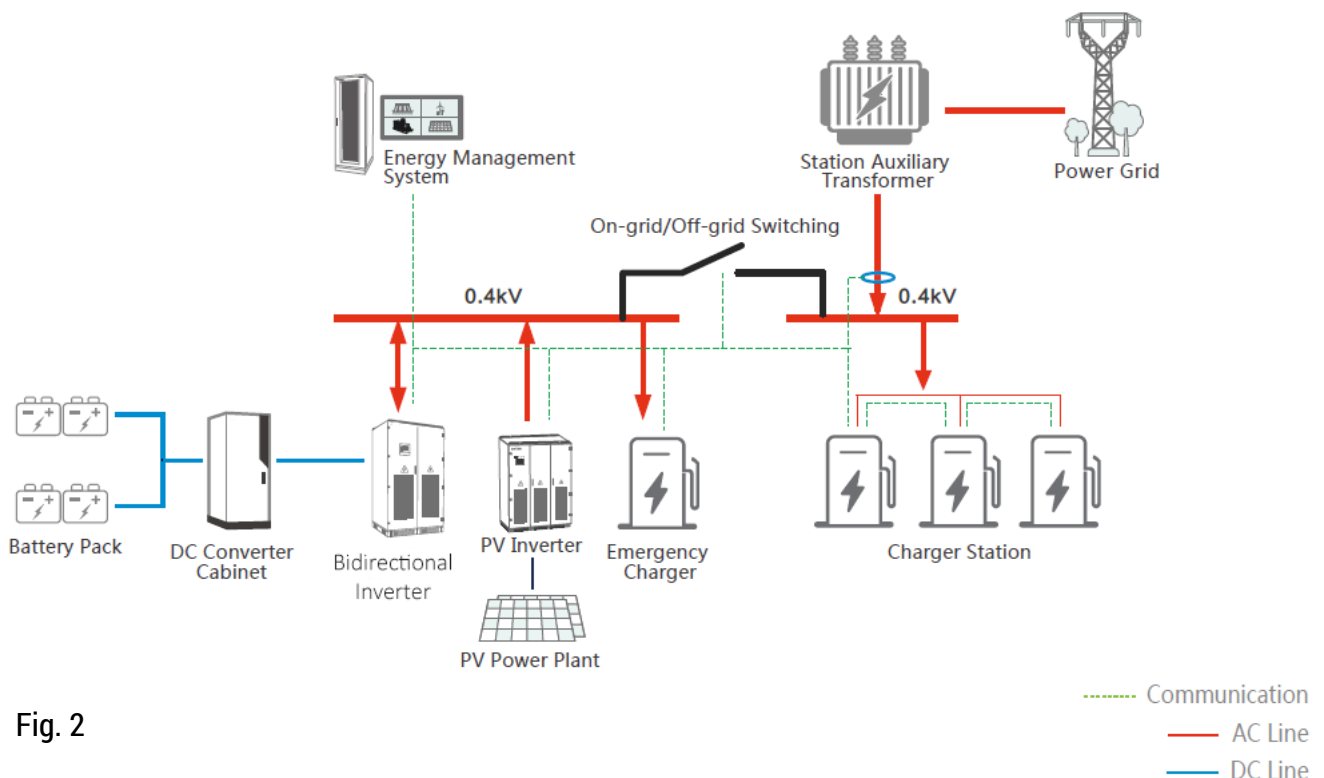


Fig. 2

Product Features

The ESIB3 Bidirectional Inverter Series offer the following features:

Flexible Battery Technology:

The ESIB3 Modules can be configured by software to operate any kind of battery technology. From the front panel of the module, it is possible to setup the charging parameters that are compatible with the battery used.

Energy Storage Forecast

The ESIB3 Modules include a microprocessors that calculates in real time the discharge time expected based on the current load, the state of charge of the batteries as well as proving all the system parameters including inverter temperature, DC bus voltage, AC voltage, current, Power Factor etc.. All data is also accessible via the RS 485 Modbus port.

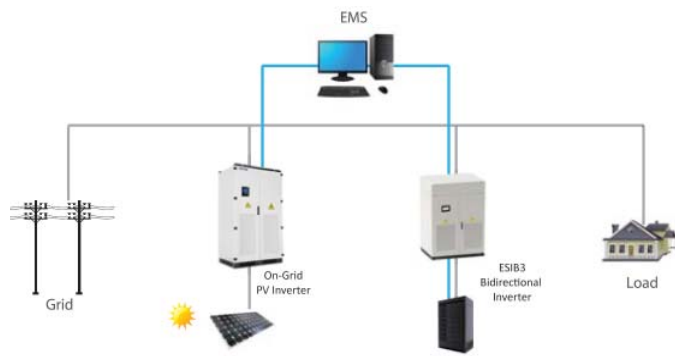
Multiple Operation Mode (Island Load or Grid Connected):

The ESIB3 can be configured to operate in island mode or on-grid mode. In On-Grid Mode, the Inverter constantly synchronize with the AC in order to either inject energy in the grid or charge the batteries. in island mode, the inverter produces a virtual grid signal to allow on-grid inverters to synchronize to it and feed the load while also charging the batteries.

Supports DC or AC Coupling Topology:

The ESIB3 can be configured to operate with DC coupling or AC coupling as per Fig. 3:

- **Flexible Battery Technology (Li-Ion, Lead Acid, Lead Carbon, etc.)**
- **Energy Storage Forecast (Discharge Time, State of Charge, etc.)**
- **CAN or RS485 Communication Interface**
- **Multiple Operation Mode (Island Load or Grid Connected)**
- **Supports DC or AC Coupling Topology**



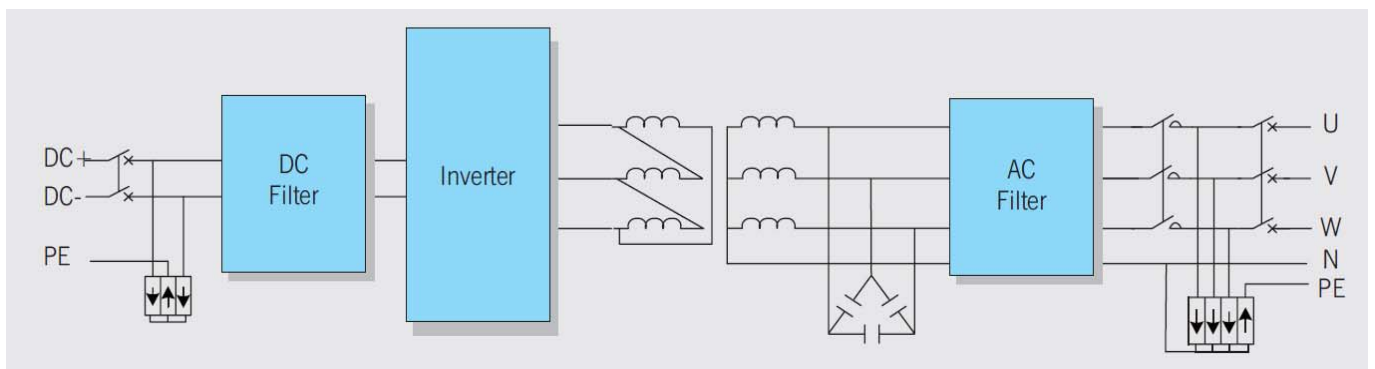
AC Coupling



DC Coupling

Fig. 3

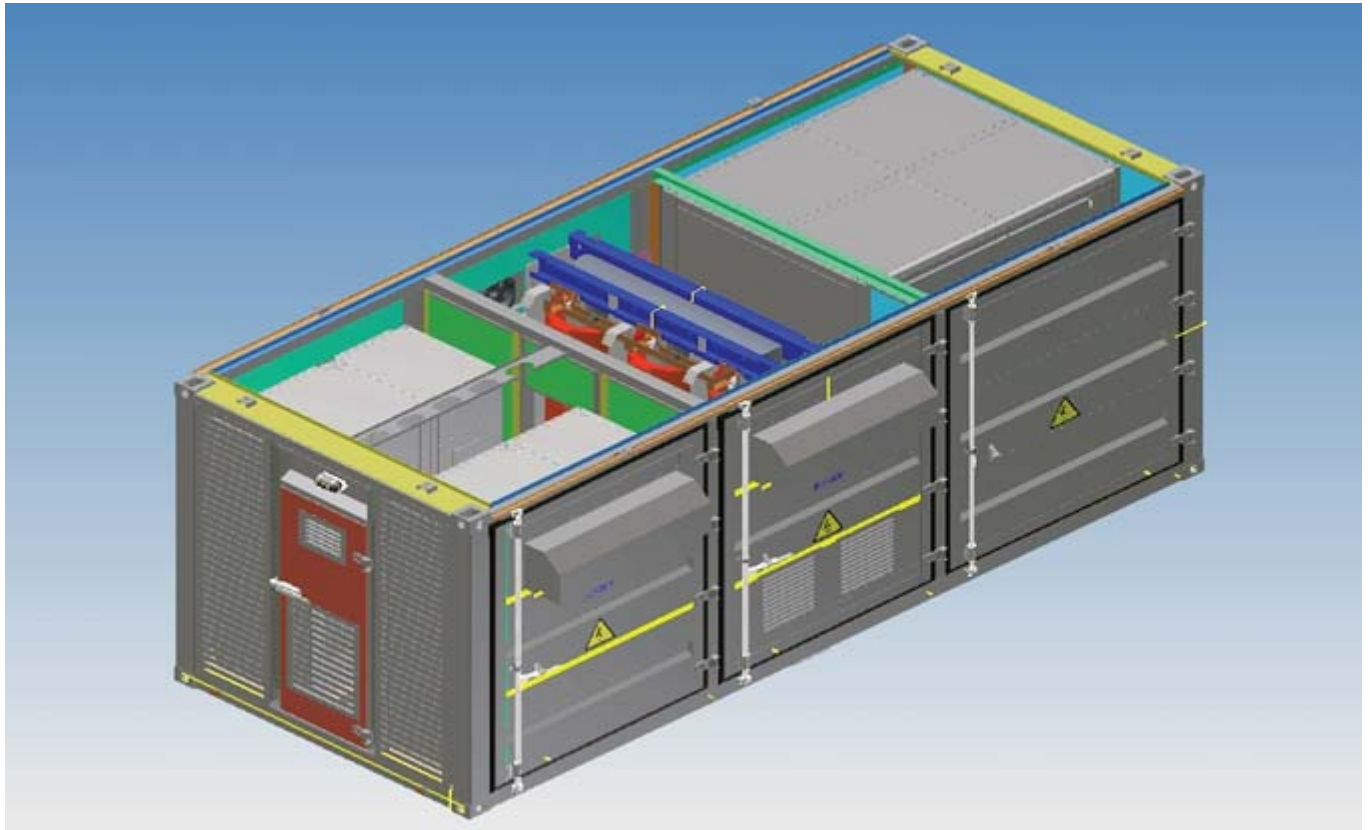
Circuit Diagram



Containerized Systems

E24 offers the ESIB3 Series either as stand alone units or installed in isolated and temperature controlled ship-worthy containers.

E24 also offers custom-designed services to tailor the design of energy storage system to best fit particular applications.



Technical Specifications

MODEL	ESIB3-30KI	ESIB3-50KI	ESIB3-100KI	ESIB3-150KI	ESIB3-250KI	ESIB3-500K	ESIB3-500KT	ESIB3-630KT
Input								
Battery voltage range	400~850Vdc						500~850Vdc	
Max. input current	66A	110A	220A	330A	550A	1100A	1100A	1200A
Output								
Rated output power	30KW	50KW	100KW	150KW	250KW	500KW	500KW	630KW
Max. output power	33KVA	55KVA	110KVA	165KVA	275KVA	550KVA	550KVA	690KVA
AC output topology	3W+N+PE					3W+PE		
Rated output voltage	400Vac					800Vac	315Vac (Transformerless)	
Rated AC output current	43A	72A	144A	216A	361A	722A	916A	1155A
Max. AC output current	48A	80A	160A	240A	400A	800A	1007A	1212A
Grid-tied model								
Grid voltage range	400Vac(-20%~+15%)					800 Vac (-20%~+15%)	315Vac(-20%~+15%)	
Grid frequency range	50 / 60Hz (±2Hz) (adjustable)							
THDi	<3%							
Power factor (cosΦ)	- 1 ~ +1							
ZVRT	Yes							
Off-grid model								
Output voltage accuracy	1%							
Output voltage distortion	<2% (linear load)							
System features								
Max. efficiency	>96.2%	>96.5%	>97%	>97.2%	>97.3%	>97.5%	>98.3%	>98.5%
Charge-discharge switching time	<40ms							
IP rating	IP21							
Relative humidity	<95% (non-condensing)							
Operating temperature	- 30°C ~ 50°C							
Altitude	Above 3000m derating							
User interface	Touch Screen							
Communication interface	RS485, external Ethernet (optional)							
BMS	Yes							
Dimension W×D×H (mm)	700×700×1850		800×935×2000		1200×935×2000	1600×935×2000	1200×800×2000	
Weight (Kg)	390	420	860	930	1350	2770	1100	1300

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.

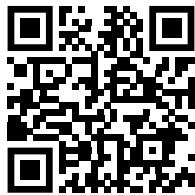
E24 products are conceived in modules allowing for an easy upgrade to adjust with the needs of the customers. Being modular and easy to connect E24 products allow installers to easily configure the required modules for an optimal solution while offering easy upgrade options.

Ordering Information

Ref Number	Description
ESIB3-30KI	Bidirectional Energy Storage Inverter, 30 KW, 400-850Vdc, 400/230Vac, 3P+N+G, 50/60Hz
ESIB3-50KI	Bidirectional Energy Storage Inverter, 50 KW, 400-850Vdc, 400/230Vac, 3P+N+G, 50/60Hz
ESIB3-100KI	Bidirectional Energy Storage Inverter, 100 KW, 400-850Vdc, 400/230Vac, 3P+N+G, 50/60Hz
ESIB3-150KI	Bidirectional Energy Storage Inverter, 150 KW, 400-850Vdc, 400/230Vac, 3P+N+G, 50/60Hz
ESIB3-250KI	Bidirectional Energy Storage Inverter, 250 KW, 400-850Vdc, 400/230Vac, 3P+N+G, 50/60Hz
ESIB3-500K	Bidirectional Energy Storage Inverter, 500 KW, 500-850Vdc, 800Vac, 3P+G, 50/60Hz
ESIB3-500KT	Bidirectional Energy Storage Inverter, 500 KW, 500-850Vdc, 315Vac Transformerless, 3P+G, 50/60Hz
ESIB3-630KT	Bidirectional Energy Storage Inverter, 630 KW, 500-850Vdc, 315Vac Transformerless, 3P+G, 50/60Hz
ESIB3C-250KI	Containerized Bidirectional Energy Storage Inverter, 250 KW, 400-850Vdc, 400/230Vac, 3P+N+G, 50/60Hz
ESIB3C-500K	Containerized Bidirectional Energy Storage Inverter, 500 KW, 500-850Vdc, 800Vac, 3P+G, 50/60Hz
ESIB3C-500KT	Containerized Bidirectional Energy Storage Inverter, 500 KW, 500-850Vdc, 315Vac Transformerless, 3P+G, 50/60Hz
ESIB3C-630KT	Containerized Bidirectional Energy Storage Inverter, 630 KW, 500-850Vdc, 315Vac Transformerless, 3P+G, 50/60Hz
ESIB3C-1M	Containerized Bidirectional Energy Storage Inverter, 1000 KW, 500-850Vdc, 800Vac, 3P+G, 50/60Hz
ESIB3C-1MT	Containerized Bidirectional Energy Storage Inverter, 1000 KW, 500-850Vdc, 315Vac Transformerless, 3P+G, 50/60Hz
ESIB3C-1M2T	Containerized Bidirectional Energy Storage Inverter, 1260 KW, 500-850Vdc, 315Vac Transformerless, 3P+G, 50/60Hz
ESIB3C-1M5T	Containerized Bidirectional Energy Storage Inverter, 1500 KW, 500-850Vdc, 315Vac Transformerless, 3P+G, 50/60Hz
ESIB3C-2MT	Containerized Bidirectional Energy Storage Inverter, 2000 KW, 500-850Vdc, 315Vac Transformerless, 3P+G, 50/60Hz

E24®

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ISO 9001:2015



QUALITY STANDARD

