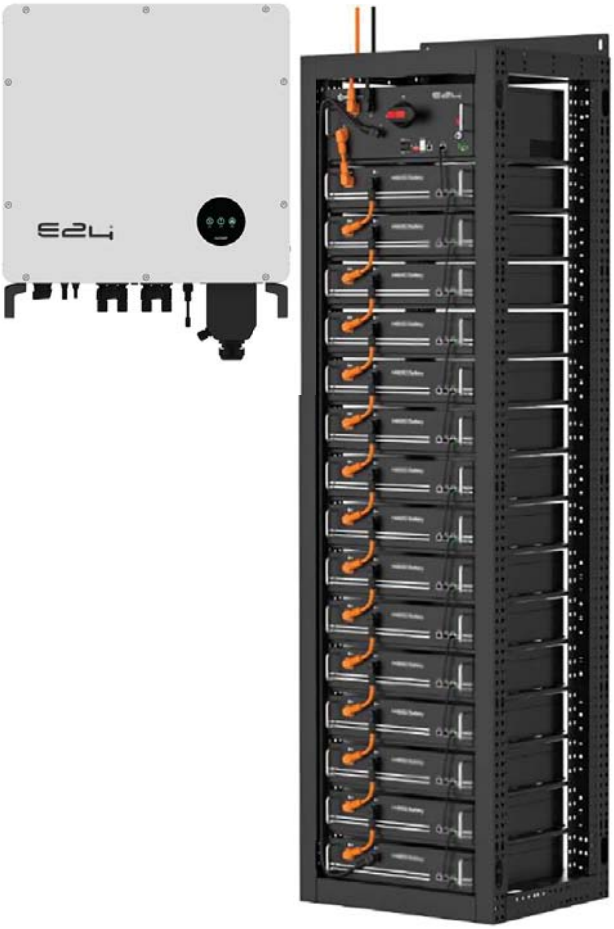
The ESSM3™ Series

Indoor and Outdoor 3 Phase Modular Energy Storage Systems

P316E



Indoor and Outdoor Modular, Three Phase, PCS systems in 50KW modules to build highly sophisticated Energy Storage Systems from 50KW to 1000KW (European Compliance)

The ESSM3 Series, offers a range of modular PCS units in 50 or 100KW modules allowing to reach 1MW in off-grid or On-grid or Hybrid configuration.

The units are to be installed outdoors and include the temperature isolated cabinets and temperature control AC units as well as the Energy Management software to program and manage the system operation seamlessly.

The units are designed to operate in conjunction with utility or Generator input and may be programmed with different priorities depending on the lowest cost of energy sources.

The units have also solar PV inputs and the option to install static switches in order to operate the units in Off-Grid mode or on-grid mode automatically as programmed on the Energy Management System.

The ESSM3 Series allow for full cloud visualization of power conditions through a sophisticated cloud application.

The ESSM3™ Inverter

- Outdoor installation (IP 65 Waterproof)
- 350 to 1000 Vdc Solar input
- 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
- Unbalanced load support
- Up to 97.5 % efficiency
- Unity power factor
- Up to 20 Units in Parallel
- Reverse connection protection
- DC Switch
- Over Temperature Protection
- Grid Monitoring and Earth Fault protection
- DC and AC Surge Protection
- Multiple Communication Ports (RS485, CAN-BUS, Dry Contact for BMS)

The ESSM3 inverters are built in modules of 50KW, each that can be connected in parallel in to reach a maximum power of 1000KW (20 x 50KW) in three phase configuration.

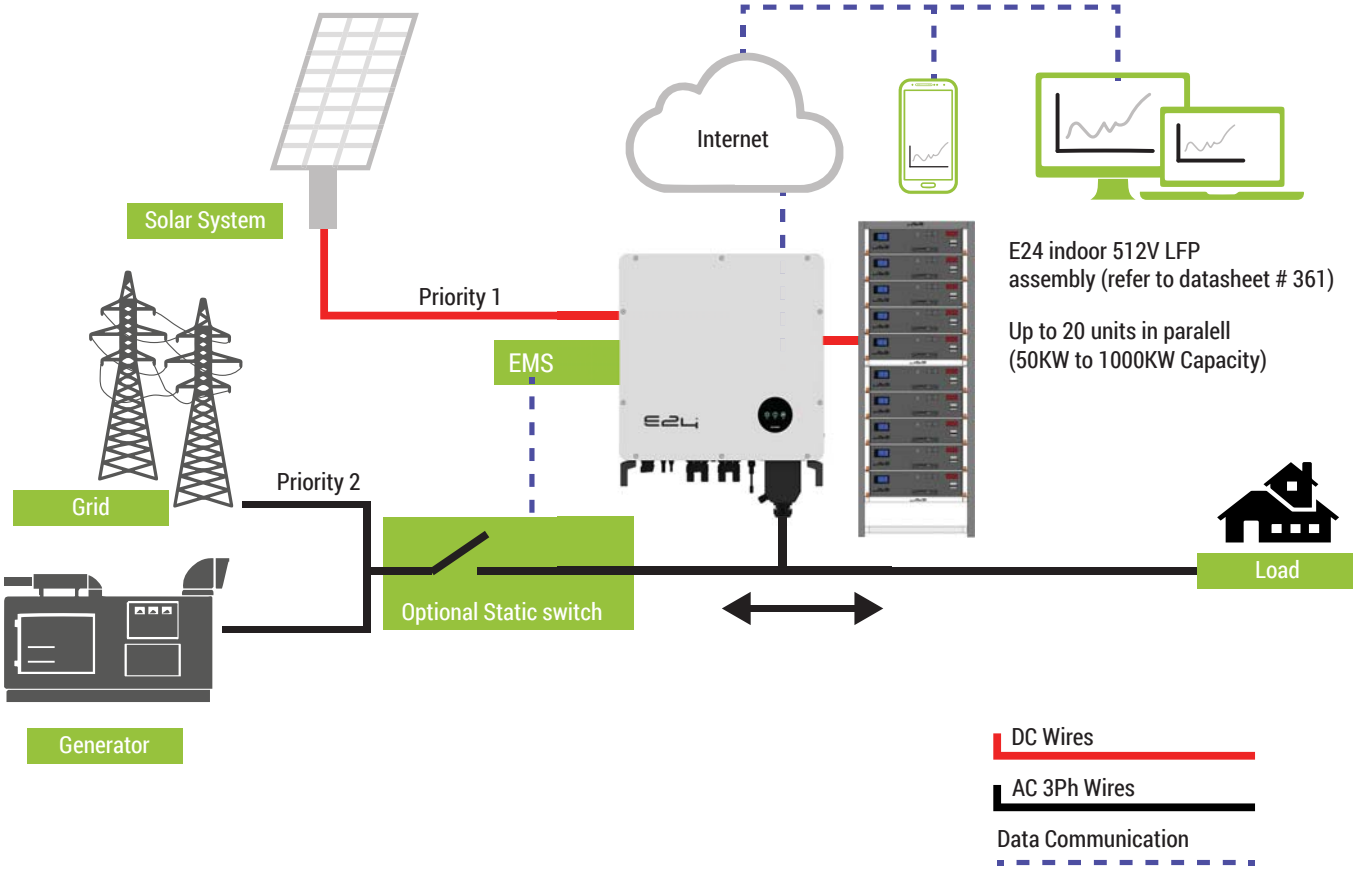
The ESSM3 inverters are battery agnostic allowing them to be used with any type of battery (Lead Acid, ELA, Lithium, ...). The ESSM3 inverters operate modular battery units that can also be increased based on client needs. They allow the user to gradually upgrade in either power or Battery size at will in order to gradually adapt the system with his growing energy needs.

The ESSM3™ 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 operation.

The ESSM3™ Series for indoor applications

The ESSM3™ Hybrid Inverter use high DC voltage requiring LFP batteries having a voltage ranging between 500 Vdc and 750 Vdc. We therefore recoment the useage of E24 pre-configured LFP battery assemblies as detailed in our datasheet ref: 361.



The ESSM3 inverters may be configured to operate in off-grid, on-grid or both modes as set on the Energy Management System (EMS).

In the event where the system is designed to operate only in ON-GRID mode, there is no need to install the optional static switch: Under this configuration, the inverter will supply power to the load and grid as programmed under the EMS but will not be able to power the load if both utility and generator are not available.

In Off-Grid mode, it is necessary to connect the optional static switch in order to allow the disconnection of the circuit between utility/Gen and the load in order for the inverter to power the load on batteries during power interruption.

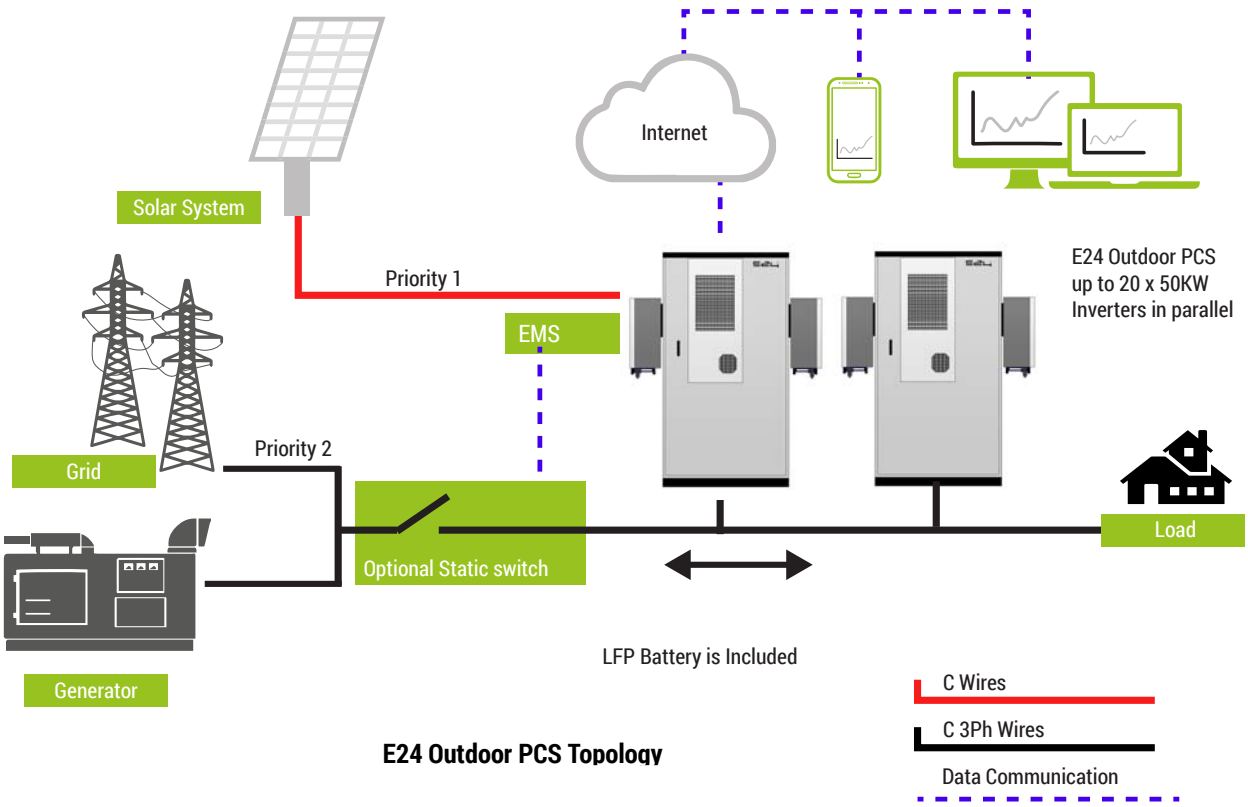
The ESSM3 unit (s) can be programmed to operate in either Off-Grid or On-Grid mode according to certain parameters as programmed in the Energy Management System (EMS).

ESSM3™ Inverter Specifications

Product Specifications	ESSM3-50KI
PV Side	
Max. Input Voltage	1000 V
MPPT Voltage Range	350 V ~800 V
Max. Current per MPPT	36 A
Number of MPPT	3
Number of Inputs Per MPPT	2
Battery Side	
Max. Input Voltage	750 V
Min. Input Voltage	350 V
DC Voltage at Nominal Operation	500 V ~ 750 V
Max. DC Current	55 A*2
Max. DC Input Power	55 kW
Number of DC Inputs	2
AC Side (On Grid)	
Nominal AC Output Power	50 kW
Max. AC Output Power	55 kVA
Max. AC Current	80 A
Nominal AC Voltage	400 V
AC Voltage Range	340 V ~ 440 V
Nominal Grid Frequency/Frequency Range	50 / 60 Hz ±5Hz
THDv	< 3% (100% Load)
Adjustable PF Range	-1 (Lagging) ~ 1 (Leading)
AC Side (Off Grid)[1)]	
Nominal AC Voltage	230 / 400 V ±3%; 3L+N+PE
THDv	< 3% (Linear Load)
Nominal Grid Frequency/Frequency Range	50 / 60 Hz
Nominal AC Output Power	50 kW
Max. AC Output Power	55 kVA
Efficiency	
Max. Efficiency	97.5%
Protection	
Reverse Connection Protection	Yes
DC Switch	Yes
Over-Temperature Protection	Yes
Grid Monitoring/Earthing Fault Detection	Yes
Insulation Monitoring	Yes
DC/AC Surge Protection	DC Type II; AC Type III
General Parameters	
Dimensions (WxHxD)	650 x 715 x 325 mm
Weight	75 kg
Topology	Transformerless
IP Protection	IP65
Operation Temperature Range	-25 ~ 60°C (> 45°C Derating)
Operation Humidity Range	0 ~ 100% (No Condensing)
Cooling Method	Intelligent Air Cooling
Max. Operation Altitude	3000 m
Communication Port	RS-485 / CAN
Certificates	IEC 62477; IEC 61000; CE;GB/T; IEC 62109; IEC 61683; IEC 60068; IEC 61727; IEC 62116; EN 50549; VDE 4105; G 99

The ESSM3™ Series for Outdoor applications

The ESSM3™ 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 Outdoor PCS Topology

The ESSM3 inverters may be configured to operate in off-grid, on-grid or both modes as set on the Energy Management System (EMS).

In the event where the system is designed to operate only in ON-GRID mode, there is no need to install the optional static switch: Under this configuration, the inverter will supply power to the load and grid as programmed under the EMS but will not be able to power the load if both utility and generator are not available.

In Off-Grid mode, it is necessary to connect the optional static switch in order to allow the disconnection of the circuit between utility/Gen and the load in order for the inverter to power the load on batteries during power interruption.

The ESSM3 unit (s) can be programmed to operate in either Off-Grid or On-Grid mode according to certain parameters as programmed in the Energy Management System (EMS).

The ESSM3™ Outdoor Units Specifications

ESSM3-BAT102

Technical information:

Battery Type:	LFP
Battery Module Capacity (kWh):	5.12
Number of Modules:	10 x 2
Total Battery capacity (kWh):	102.4
Voltage Range (Vdc):	448 - 576
Charge / Discharge rate:	1C
Depth of Discharge (DoD):	90%
Maximum Number of 50 KW Inverters:	2
Number of Cycles @ 80% DOD (0.5C):	8000

General Information:

Dimensions (WxDxH in mm)	1100x1100x 2380
Weight (Kg):	1500
Installation Site:	Outdoors
IP Protection	IP54
Anti-Corrosion Level:	C4
Operation Humidity:	5 to 95%
Operating Temperature (deg C):	-30 to 50
Max Operation Altitude (m):	3000
Communication:	Ethernet, Can
Communication protocol:	Can, Modbus TCP/IP
Cooling Method:	Air Conditioning
Standards:	IEC62619-2017, UN38.3, IEC61000-6-2/4

ESSM3-BAT145

Technical information:

Battery Type:	LFP
Battery Module Capacity (kWh):	16.1
Number of Modules:	9
Total Battery capacity (Kwh):	144.9
Nominal voltage (Vdc):	403 -518
Charge / Discharge rate:	1C
DoD:	90%
Maximum Number of 50 KW Inverters:	3
Number of Cycles @ 80% DOD (0.5C):	8,000

General Information:

Dimensions (WxDxH in mm)	1300x1200x 2380
Weight (Kg):	2200
Installation Site:	Outdoors
IP Protection	IP54
Anti-Corrosion Level:	C4
Operation Humidity:	5 to 95%
Operating Temperature (deg C):	-30 to 50
Max Operation Altitude (m):	3000
Communication:	Ethernet, Can
Communication protocol:	Can, Modbus TCP/IP
Cooling Method:	Air Conditioning
Standards:	IEC62619-2017, UN38.3, IEC61000-6-2/4

ESSM3-BAT197

Technical information:

Battery Type:	LFP
Battery Module Capacity (kWh):	17.92k
Number of Modules:	11
Total Battery capacity (kWh):	197
Nominal voltage (Vdc):	616-792
Charge / Discharge rate:	1C
DoD:	90%
Maximum Number of 50 KW Inverters:	4
Number of Cycles @ 80% DOD (0.5C):	8,000

General Information:

Dimensions (WxDxH in mm)	1300x1200x 2380
Weight (Kg):	2500
Installation Site:	Outdoors
IP Protection	IP54
Anti-Corrosion Level:	C4
Operation Humidity:	5 to 95%
Operating Temperature (deg C):	-30 to 50
Max Operation Altitude (m):	3000
Communication:	Ethernet, Can
Communication protocol:	Can, Modbus TCP/IP
Cooling Method:	Air Conditioning
Standards:	IEC62619-2017, UN38.3, IEC61000-6-2/4

Advanced Energy Management Systems, Software, IOT & Web Monitoring Technology

"That which is measured improves. That which is measured and reported improves exponentially."
- Karl Pearson

E24 Technology is all about optimization and automation allowing customers to save energy, save on the environment and improve quality of life.

At E24, advanced software is at the heart of each solution provided allowing to simplify operations while optimizing return on investment.

All solutions are software customized to best fit their working environment and the energy conditions and tariffs under which they are operated. Each customer, each application, and each region is different. This is why E24 software is designed to be easily configured upon commissioning to adapt perfectly to the application, customer requirements and load profile.

E24 offers IOT and Web monitoring services allowing customers to monitor all data related to their energy infrastructure. This includes equipment that may or may not be part of E24 provided solutions. E24 Software can, of course, be configured to notify customers of any anomaly or threshold reached for his needed actions.

Depending on the solutions purchased E24 offers adapted standard and custom designed IOT and Web Monitoring services that allow customers to monitor all data related to their energy infrastructure and see historical information dating up to 10 years.

E24 IOT & Web Monitoring Solutions

Cloud Monitoring add-ons allow customers to visualise all data related to their energy infrastructure from their PC, laptop or smartphone. Customers are also able to download their data dating back up to 10 years for their analysis.

IOT Solutions allow customers to view their data through a user-friendly interface, and accordingly take actions such as starting or stopping certain equipment, modifying settings or other actions, all done remotely from any internet device.

Customising Services allow E24 to modify its software to best suit customers' existing energy infrastructure. This may include setting-up communication links with SCADA systems or any bidirectional exchange of information.

"E24's technology thrives on optimization, automation, and advanced data monitoring"

Hybrid | Storage Inverter | Battery

and much more ...

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
ESSM3-50KI	IP65 Bidirectional Inverter with PV input, 50KW, 3Phase, 400/230V, 50/60Hz
ESSM3-BAT102	IP 54 Outdoor LFP Battery, 102.4KWh without EMS, Cooling, or Static Switch
ESSM3-BAT145	IP 54 Outdoor LFP Battery, 144.9KWh without EMS, Cooling, or Static Switch
ESSM3-BAT197	IP 54 Outdoor LFP Battery, 197KWh without EMS, Cooling, or Static Switch
ESSM3-EMS1	1st Level EMS for off-Grid parallel application for ESSM3 systems
ESSM3-EMS2	2nd Level EMS for on-Grid parallel application for ESSM3 systems
ESSM3-AC15	AC Unit 1500W
ESSM3-AC30	AC Unit 3000W
ESSM3-STS-100KI	STS unit for 2 x 50KW Inverters in off-grid mode
ESSM3-STS-250KI	STS unit for 5 x 50KW Inverters in off-grid mode

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ISO 9001:2015

QUALITY STANDARD

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