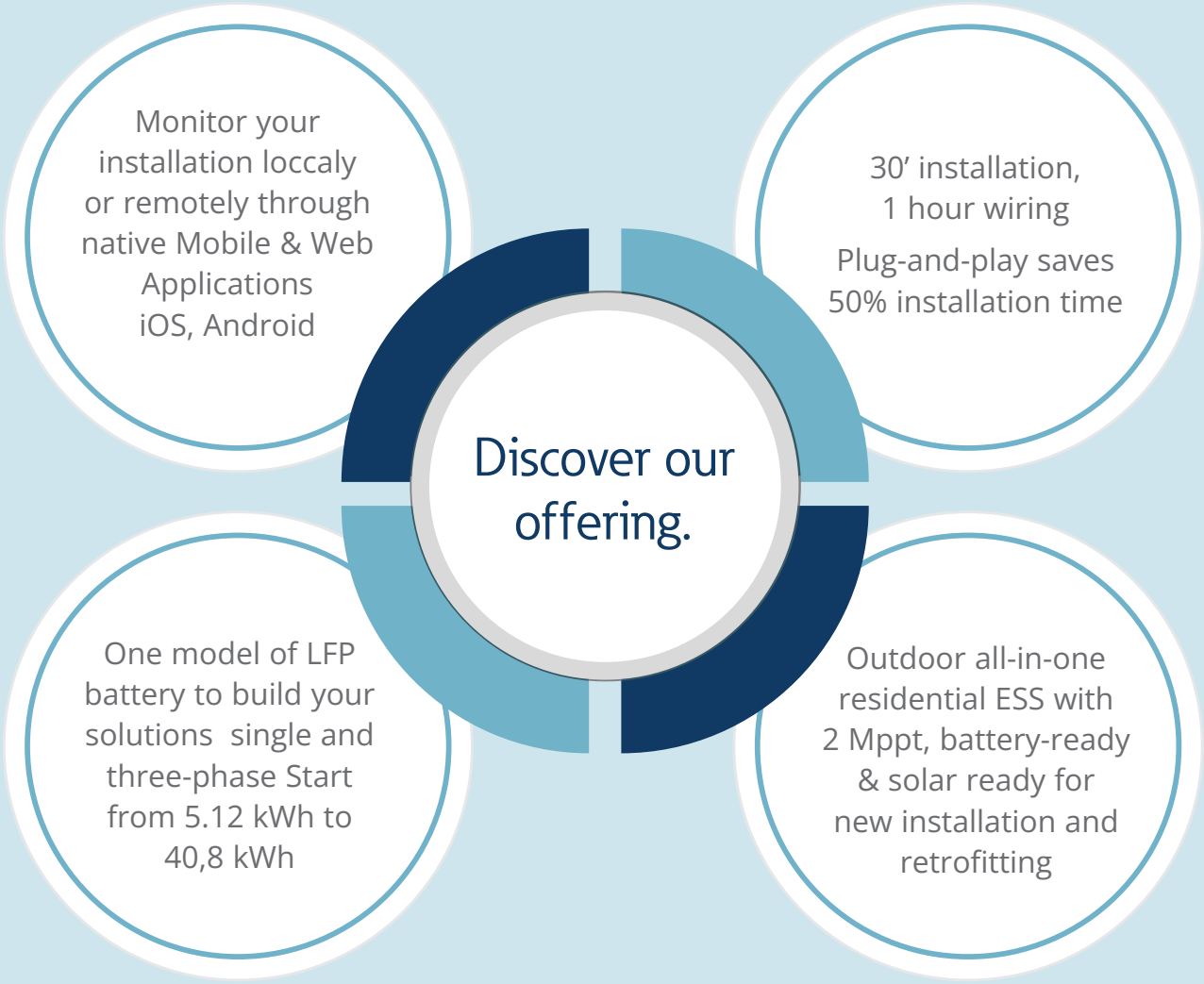
Product brochure
xStorage Hybrid energy storage system

xStorage Hybrid LFP battery solutions

Single-Phase
5 kW/10 kWh

Three-Phase
10 kW/20 kWh

Powering Business Worldwide



Safety

1000 cycles

24/7 monitoring

Backup in 20 ms

Easy installation

Single-phase & Three-phase

200% DC/AC ratio

DO/DI support

Unbalanced output

Three-phase

Use-cases examples

Has no solar

Wants solar with storage

New installation with DC coupling, PV (Solar) + xStorage Hybrid

Offers the following:

- Optimizer compatibility
- Solar charging
- Charging from grid
- Backup
- Reduced peak consumption

Key benefit:

Connect your new solar array directly to your battery with no additional inverter needed

Wants solar with storage to reduce ECV energy costs

New installation with DC coupling, EVC Home + xStorage Hybrid

Offers the following:

- Micro inverter compatibility
- Optimizer compatibility
- Solar charging
- Charging from grid
- Backup
- Reduced peak consumption

Key benefit:

Improved time of use tariffs and reduced ECV energy costs.

Wants only storage

New installation with AC coupling and xStorage Hybrid only

Offers the following:

- Optimizer compatibility
- Charging from grid
- Backup
- Reduced peak consumption

Key benefit:

Optimize your time of use tariffs to store energy in more expensive periods.

Has solar

Wants more storage

Retrofit AC & DC coupled, existing PV (Solar) + xStorage Hybrid

Offers the following:

- Micro inverter compatibility
- Optimizer compatibility
- Solar charging
- Charging from grid
- Backup
- Reduced peak consumption

Key benefit:

Add a battery to your existing solar array; your existing inverter can be replaced.

Wants more solar with storage storage

Retrofit AC & DC coupled, install alongside your existing system

Offers the following:

- Micro inverter compatibility
- Optimizer compatibility
- Solar charging
- Charging from grid
- Backup
- Reduced peak consumption

Key benefit:

Expansion of a solar without the need for an additional PV inverter.

Key Features

Fast Setup

completes a plant setup after a few steps and adds smart devices as you need.

Accurate Analysis

calculates and reports energy usage patter and give reasonable advice.

Graphic Display

understand power production & consumption status from a glimpse of the energy flowchart.

Device Management

adds, deletes, changes, controls any device at any time, any location.

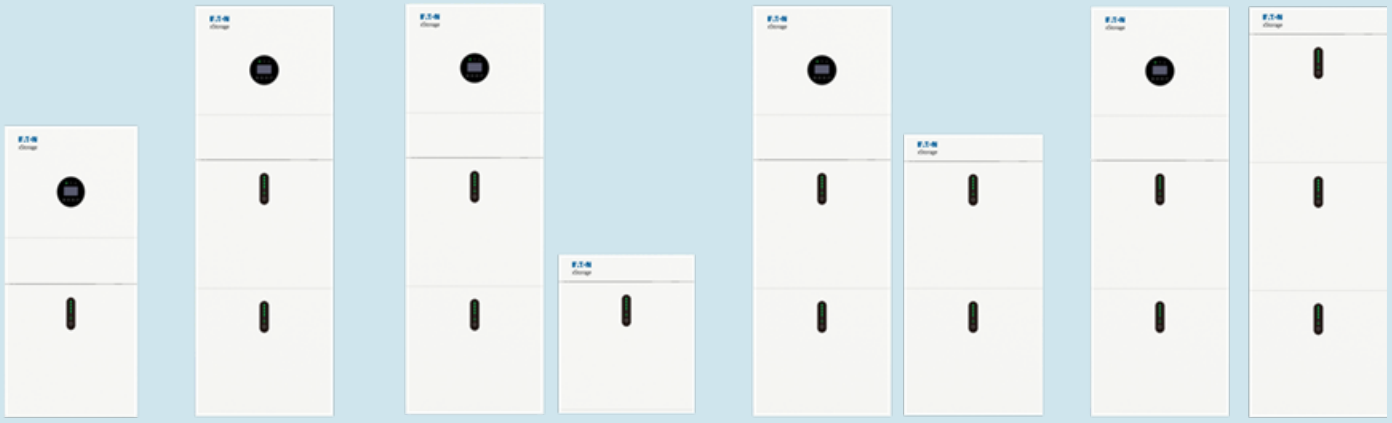
Plant Management

shares a plant to a service provider or any friends within management software range, creating a greater convenience.

How to increase your battery capacity?

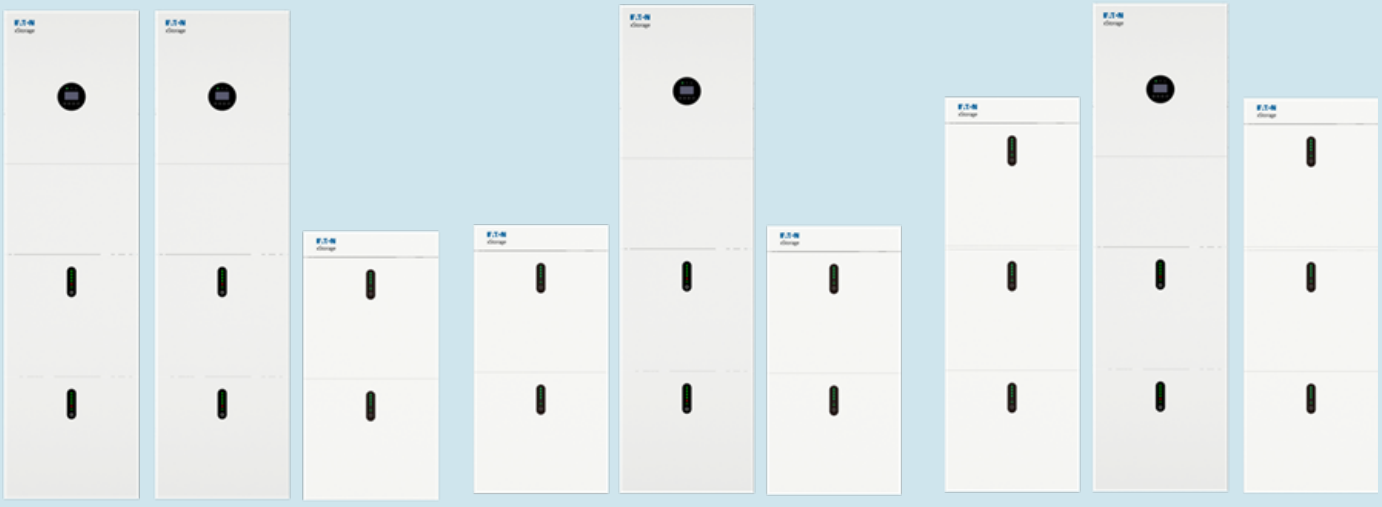
All installation can evolve if your needs or your usages change, you can add a battery when you want.

Single-phase configuration



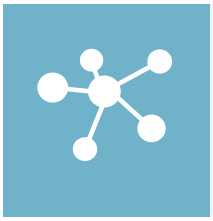
5 kWh | 10 kWh | 15 kWh | 20 kWh | 25 kWh

Three-phase configuration



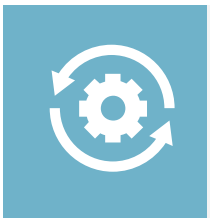
10 kWh | 20 kWh | 30 kWh | 40 kWh

Different work modes are available



Ecosystem – work mode: self-consumption

The energy generated by the solar panels will be used in the following order: feed the home loads; charge the battery and then, feed into the grid. When the sun is off, the load will be supported by battery to enhance self-consumption. If the power supply from the batteries is not sufficient, the grid will support the load demand.



Ultimate control

Choose whether you want to charge your batteries from solar, grid or a mixture of both. When charging from grid xStorage Hybrid optimizes around your time of use or dynamic tariff.

Work mode: battery priority

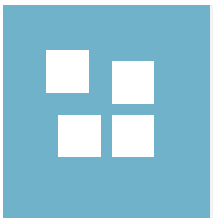
The battery is only used as a backup power supply when the grid fails and if the grid works, the batteries won't be used to power the loads. The battery will get charged with the power generated by the PV system or from the grid.

Installation secured: peak shift

This mode is designed for time of use mode customer. The customer can set up the charging/discharging time & power via inverter screen. Manage peak-shaving by setting the power that must not be exceeded and by guaranteeing connection to the network during periods of high consumption.

Remote access

You can access and control your xStorage Hybrid remotely using a smartphone app.
Live displays allow you to monitor your imported and exported electricity all in one place.



Modular storage by design

Each battery module stores 5 kWh of electricity. Combining five together provides up to 25 kWh of storage for single-phase and combine eight together provides up to 40 kWh of storage for three-phase.

Flexible installation

xStorage Hybrid, works as both an AC and DC coupled battery system with solar PV. Connect PV without the need for a separate inverter or retrofit to any existing PV system.

Blackout backup

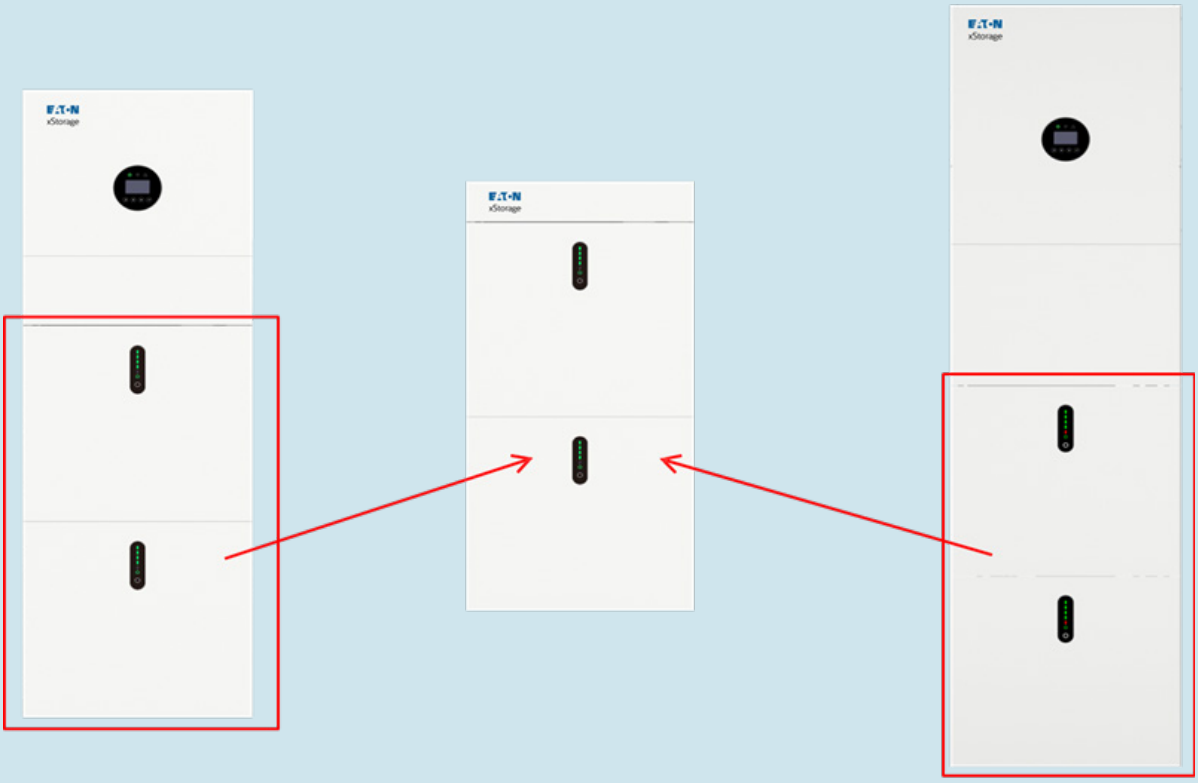
Instant energy availability to a dedicated socket or lighting circuit in the event of a power cut* (< 20 ms)

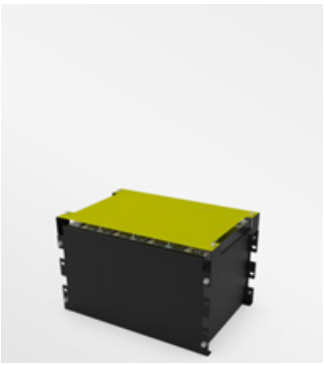
*Additional installation costs will apply

Battery technical data

Our lithium iron phosphate battery (LiFePO 4 battery) or LFP battery (lithium ferrophosphate) combines with the hybrid inverter single & three-phase versions covers all field applications. Increasing storage capacity becomes easy when power or storage extensions are needed.

With his 10 000 life/cycles and a large range of temperature (-10 °C to +50 °C) our LFP Battery is one of the best on the market, for internal and external (IP65) installations.





Module Level

- Comply with GB/T18384 electric shock protection requirements
- Comply with UL94-V0 flame retardant requirements and latest national standards
- Comply with the requirements of GB/T31467.3-2015 combustion of 130 sec.

PACK Level

- Thermal management, control battery temperature rise (≤ 10°C)
- High performance BMS, comprehensive protection including over/undervoltage, over current, short circuit, high and low temperature
- Positive and negative double fuse design meets the Australian AS4777 safety standard

System Level

- Battery connection abnormal protection
- Triple protection with thermomagnetic switch, MOSFET high speed switch, fuse
- System leakage protection, insulation monitoring, overload and short circuit protection

Single-phase technical data

Combination

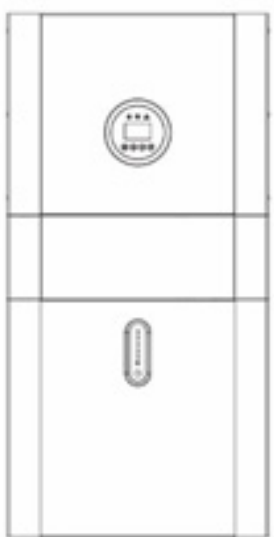
Product Item	Description	Dimensions (mm) Width x Height x Depth	Weight (kg)
XSTHS1P036BP05V1	XSTS 1P 3.6kW 5kWh V1	540 x 1130 x 270	94
XSTHS1P036BP10V1	XSTS 1P 3.6kW 10kWh V1	540 x 1720 x 270	155
XSTHS1P036BP15V1	XSTS 1P 3.6kW 15kWh V1	1380 x 1720 x 270	216
XSTHS1P036BP20V1	XSTS 1P 3.6kW 20kWh V1	1380 x 1720 x 270	278
XSTHS1P036BP25V1	XSTS 1P 3.6kW 25kWh V1	1380 x 1720 x 270	336
XSTHS1P050BP05V1	XSTS 1P 5kW 5kWh V1	540 x 1130 x 270	94
XSTHS1P050BP10V1	XSTS 1P 5kW 10kWh V1	540 x 1720 x 270	155
XSTHS1P050BP15V1	XSTS 1P 5kW 15kWh V1	1380 x 1720 x 270	216
XSTHS1P050BP20V1	XSTS 1P 5kW 20kWh V1	1380 x 1720 x 270	278
XSTHS1P050BP25V1	XSTS 1P 5kW 25kWh V1	1380 x 1720 x 270	336
XSTHS1P060BP05V1	XSTS 1P 6kW 5kWh V1	540 x 1130 x 270	94
XSTHS1P060BP10V1	XSTS 1P 6kW 10kWh V1	540 x 1720 x 270	155
XSTHS1P060BP15V1	XSTS 1P 6kW 15kWh V1	1380 x 1720 x 270	216
XSTHS1P060BP20V1	XSTS 1P 6kW 20kWh V1	1380 x 1720 x 270	278
XSTHS1P060BP25V1	XSTS 1P 6kW 25kWh V1	1380 x 1720 x 270	336

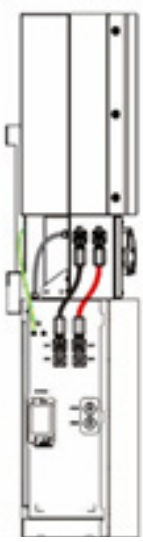
Three-phase technical data

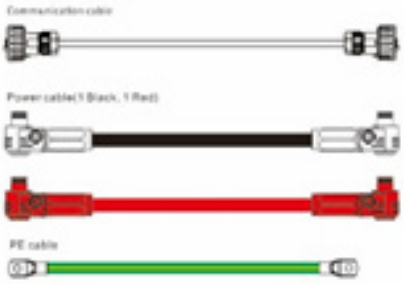
Combination

Product Item	Description	Dimensions (mm) Width x Height x Depth	Weight (kg)
XSTHS3P080BP10V1	XSTS 3P 8kW 10kWh V1	540 x 2210 x 270	107
XSTHS3P080BP20V1	XSTS 3P 8kW 20kWh V1	1380 x 2210 x 270	229
XSTHS3P080BP30V1	XSTS 3P 8kW 30kWh V1	2220 x 2210 x 270	350
XSTHS3P080BP40V1	XSTS 3P 8kW 40kWh V1	2220 x 2210 x 270	645
XSTHS3P100BP10V1	XSTS 3P 10kW 10kWh V1	540 x 2210 x 270	107
XSTHS3P100BP20V1	XSTS 3P 10kW 20kWh V1	1380 x 2210 x 270	229
XSTHS3P100BP30V1	XSTS 3P 10kW 30kWh V1	2220 x 2210 x 270	350
XSTHS3P100BP40V1	XSTS 3P 10kW 40kWh V1	2220 x 2210 x 270	645
XSTHS3P120BP10V1	XSTS 3P 12kW 10kWh V1	540 x 2210 x 270	107
XSTHS3P120BP20V1	XSTS 3P 12kW 20kWh V1	1380 x 2210 x 270	229
XSTHS3P120BP30V1	XSTS 3P 12kW 30kWh V1	2220 x 2210 x 270	350
XSTHS3P120BP40V1	XSTS 3P 12kW 40kWh V1	2220 x 2210 x 270	645

Example - Hybrid Inverter + Pack 5.1





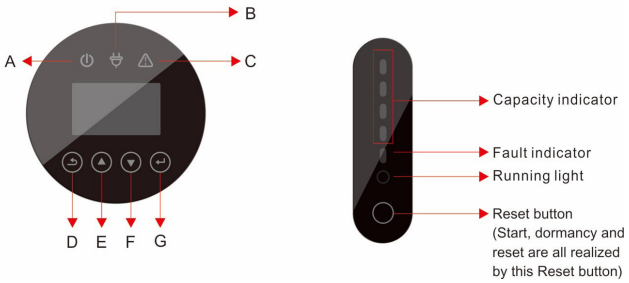


You can purchase various capacity battery packs from Eaton. Each battery pack contains the necessary communication, power, and PE cables for operation.

Easy to commission and monitor your production and energy capacity.

A large screen helps to set the installation on the phase of commissioning before the onboarding on the cloud.

A smartphone is enough for onboarding on the cloud, no extra accessories are needed.



Object	Description	Description
A	Indicator LED	Grid connection
B		Off-grid
C		Red: The inverter is in fault.
D	Button Function	Return Button: Escape from current interface or function. Enter the setting interface.
E		Up button: Move cursor to upside or increase value.
F		Down Button: Move cursor to downside or decrease value.
G		ENT Button: Confirm the selection.

Hybrid Single-phase Inverter Technical Specifications

Hybrid Inverter Model	XSTHS1P-3.68K	XSTHS1P-5K	XSTHS1P-6K
PV string input			
Max. DC voltage	580V	580V	580V
Nominal voltage	400V	400V	400V
MPPT voltage range	80V-560V	80V-560V	80V-560V
Start voltage	150V	150V	150V
Number of MPPT tracker	2	2	2
Strings per MPPT tracker	1	1	1
Max. input current per MPPT	15A	15A	15A
Max. short-circuit current per MPPT	18A	18A	18A
AC output (grid)			
Nominal AC output power	3680W	5000W	6000W
Max. AC apparent power	7360VA (from grid)	7360VA (from grid)	7360VA (from grid)
Max. AC output power	3680W	5000W	6000W
Nominal AC voltage	230Vac	230Vac	230Vac
AC grid frequency range	50 / 60Hz±5Hz	50 / 60Hz±5Hz	50 / 60Hz±5Hz
Max. output current	16A	22A 2	25A
Max. input current	32A	32A	32A
Power factor (cosφ)	0.8leading-0.8lagging	0.8leading-0.8lagging	0.8leading-0.8lagging
THDi	<3%	<3%	<3%
Battery input			
Battery type	LFP (LiFePO4)	LFP (LiFePO4)	LFP (LiFePO4)
Nominal battery voltage	51.2V		
Charging voltage range	44.8-56.5V		
Max. charging current	50A	100A	100A
Max. discharging current	80A	100A	100A
Battery capacity	100-400Ah	100-400Ah	100-400Ah
Charging strategy for Li-ion battery	discharge rate is 0.8C, charge rate is 0,5C		
AC output (backup)			
Max. output apparent power	4000VA	5000VA	5000VA
Peak output apparent power	6900VA 10sec	6900VA 10sec	6900VA 10sec
Max. output current	16A	20A	20A
Nominal output voltage	230V	230V	230V
Nominal output frequency	50/60Hz	50/60Hz	50/60Hz
Output THDv (@linear load)	<3% (Linear Load)	<3% (Linear Load)	<3% (Linear Load)
Efficiency			
Max. PV efficiency	97.6%	97.6%	97.6%
Euro. PV efficiency	97.0%	97.0%	97.0%

Hybrid Inverter Model	XSTHS1P-3.68K	XSTHS1P-5K	XSTHS1P-6K
Protection			
DC switch	Bipolar DC switch (125A/Pole)	Bipolar DC switch (125A/Pole)	Bipolar DC switch (125A/Pole)
Anti-islanding protection	Yes	Yes	Yes
Output over current	Yes	Yes	Yes
DC reverse polarity protection	Yes	Yes	Yes
String fault detection	Yes	Yes	Yes
AC/DC surge protection	DC Type II; AC Type III	DC Type II; AC Type III	DC Type II; AC Type III
Insulation detection	Yes	Yes	Yes
AC short circuit protection	Yes	Yes	Yes
General specifications			
Dimensions W x H x D	540*590*240mm		
Weight	32kg		
Operating temperature range	-25℃~+60℃		
Noise (dB)	<35dB		
Cooling type	Natural convection		
Max. operation altitude	2000m		
Operation humidity	0~95% (No condensation)		
IP class	IP65		
Topology	Battery isolation		
Communication	RS485/CAN2.0/WIFI/4G		
Display	LCD/APP		
Certifications & standards	IEC/EN 62109-1&2; IEC/EN61000-6-1; IEC/EN61000-6-2; EN61000-6-3; IEC/EN61000-6-4; IEC/EN61000-3-11; EN61000-3-12; IEC61683; IEC62116; IEC61727; EN50549-1; PTPiREE 2021-04; DIN VDE 0126-1-1 VFR 2019; NRS 097; VDE-AR-N-4105; CEI0-21; G98/G99; C10/C11		

*1. Nominal AC output power is 4600W for Germany and South Africa.

Battery Pack LFP Technical Specifications

Battery Model	XSTHSBP-5.1-16S-100A-F, XSTHSBP-5.1-16S-100A-N
Physical	
Battery type	LFP (LiFePO4)
Weight	54KG
Dimension (W x H x D)	540*490*240mm
IP Protection	IP65
Warranty	5 Year Product Warranty, 10 Year Performance Warranty
Electrical	
Energy Capacity	5.12kwh
Usable Capacity	4.6kwh
Depth of Discharge (DoD)	90%
Nominal Voltage	51.2V
DC Circuit Breaker	125A
Operating Voltage Range	44.8-56.5V
Internal Resistance	<20mΩ
Cycle Life	10000 cycles
Operation	
Max. Charge/Discharge Current	50A/80A
Rated DC power	4096W
Max. Charge/Discharge Power	2825W/4096W
Operating Temperature Range	-10 to 50°C charging, -10 to 50°C discharging
Humidity	0~95% (No condensation)
BMS	
Modules Connection	Max.5 for single-phase Max 8 for three-phase
Capacity	100-500Ah with single phase 200/400/600/800Ah with three-phase
Power Consumption	<2W
Communication	CAN & RS485
Monitoring Parameters	System voltage, current, cell voltage, cell temperature, PCBA temperature measurement
Certificate	
Safety (Cell)	Pack: IEC/EN 62619; UN38.3; IEC 63056; IEC 62040-1; VDE-AR-E 2510-50 Cell: IEC/EN 62619; UN38.3; UL1973

*Maximum 5 battery packs in parallel with single-phase.
*Maximum 8 battery packs in parallel with three-phase.

Hybrid Inverter Three-phase Technical Specifications

Hybrid Inverter Model	XSTHS3P-8K	XSTHS3P-10K / XSTHS3P-10KBE	XSTHS3P-12K
PV String Input			
Max. continuous PV input power	16kW	20kW	20kW
Max. DC voltage	1100V		
Nominal voltage	720V		
MPPT voltage range	140V-1000V		
MPPT voltage range (full load)	380V-850V	420V-850V	480V-850V
Start voltage 1	200V		
Number of MPPT	2		
Strings per MPPT	1		
Max. input current per MPPT	15A		
Max. short-circuit current per MPPT	20A		
AC Output (Grid)			
Nominal AC output power	8kW	10kW	12kW
Max. AC apparent power	8.8kVA	11kVA / 10KVA	13.2kVA
Nominal AC voltage	400Vac		
AC grid frequency range	50 / 60Hz±5Hz		
Nominal output current	11.6A	14.5A	17.4A
Max. output current	12.8A	16A	19.2A
Power factor (cosφ)	0.8leading-0.8lagging		
THDi	3%		
Battery input			
Battery type	LFP (LiFePO4)		
Nominal battery voltage	51.2V		
Charging voltage range	44.8-56.5V		
Max. charging current	160A	160A	160A
Max. discharging current	160A	200A	200A
Battery capacity	200/400/600/800Ah		
Charging rate for Li-ion battery	discharge rate is 0.8C, charge rate is 0,5C		
AC output (backup)			
Nominal AC output power	7.36kW	9.2kW	9.2kW
Max. AC output power	8kVA	10kVA	10kVA
Nominal output current	10.7A	13.3A	13.3A
Max.output current	11.6A	14.5A	14.5A
Nominal output voltage	400V		
Nominal output frequency	50/60Hz		
Output THDv (@linear load)	<2% Linear Load		

Notes

For more information, please visit:
eaton.com/xstoragehybrid

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