xStorage Hybrid ESS LFP Battery Solutions

Safety guidelines

Save these instructions. These safety instructions contain essential information that should be followed when installing the xStorage system according to the procedure described in the xStorage installation manual. Instructions should be carefully read and understood before using the equipment and retained for future reference. The xStorage ESS (Energy Solution System) is a product for indoor and outdoor application and installation must be carried out in a dry indoor environment between -10°C and 50°C depending on the conditions of use of the battery, free of conductive contaminant. **NOTE:The xStorage system can only be installed by qualified personnel i.e., an Eaton certified installer who needs to fully understand and apply provided safety instructions to avoid electrical hazard shock, potential death and sever product damage.**

These safety guidelines apply to the following product:

Green Motion Home			
Type		**Part Number**	
Single-phase Hybrid Inverter	XSTHS1P036P080V1	XSTHS1P050P080V1	XSTHS1P060P080V1
Three-phase Hybrid Inverter	XSTHS3P080P200V1	XSTHS3P100P200V1 XSTHS3P100P200V1BE	XSTHS3P120P200V1
Battery LFP (LiFePo4)		XSTHS1P050CK5BP	

Use Phase	**User**	**Actions**
Type	**Part Number**	
Logistics	Forwarder	Loading, storing, delivery
Installation	Professional certified installer	Mounting, installation, commissioning
Operation phase	End User	Normal operation via user interface, malfunction, notification, misuse
Service and maintenance	Eaton certified service provider	Standard checkup, replacement of invert, battery pack or electrical devices, software update
Deinstallation	Professional certified installer	Dismantling the installed xStorage system and recycling

- **Protection of Warning Sign**
  The warning signs contain essential information for the system to operate safely, and it is strictly prohibited to torn or damage them. Ensure that the warning signs are always well-functioning and correctly placed. The signs must be replaced immediately when damaged.

This sign indicates a hazardous situation which, if not avoided, could result in death or significant injury!

The hybrid inverter must not be touched or put into service until 5 minutes after it has been switched off or disconnected to prevent an electric shock or injury.

This sign indicates a hot surface hazard!

Refer to the operating instructions.

Safety Introduction

- **Manual Keeping**
  The installation manual contains essential information about operating the system. Before operating, please read it very carefully. The system should be operated in strict accordance with the instructions in the manual, otherwise it can cause damage or loss to equipment, personnel, and property. This manual should be kept carefully for maintenance and reparation.

- **Operator Requirements**
  The operators should get a professional qualification or be trained. The operators should be familiar with the whole storage system, including compositions and working principles of the system. The operators should be familiar with the Product Instruction. While maintaining, the maintainer is not allowed to operate any equipment until all the equipment has been turned off and fully discharged.

- **Setting of Warning Sign for Safety**
  During instruction, maintenance, and repair, follow the instructions below to prevent non-specialist personnel from causing misuse or accident: Obvious signs should be placed at front switch and rear-level switch to prevent accidents caused by false switching. Warning signs or tapes should be set near operating areas. The system must be reinstalled after maintenance or operation.

- **Measuring Equipment**
  To ensure the electrical parameters match requirements, related measuring equipment is required when the system is being connected or tested. Ensure that the connection and use matched specification to prevent electric arcs or shocks.

- **Moisture Protection**
  It is highly likely that moisture may cause damage to the system. Repair or maintaining activities in wet weather should be avoided or limited.

- **Operation after Power Failure**
  The battery system is part of the energy storage system which stores life threatening high voltage even when the DC side is switched off. Touching the battery outlets is prohibited. The inverter can keep a life-threatening voltage even after disconnecting it from the DC and / or AC (Alternating Current) calibrated voltage tester before an installer works on the equipment.

- **Information on environmental conservation and recycling**

This Symbol indicates that the marked device must not be disposed of as normal household waste.
It must be disposed of at a collection center for the recycling of electric and electronic equipment.

Battery Safety Datasheet

1. Hazard Information. Classification of the hazardous chemical.

2. Other hazards. This product is a Lithium Iron Phosphate Battery with certified compliance under the UN Recommendations on Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3. For the battery cell, chemical materials are stored in a hermetically sealed metal case, designed to withstand temperatures and pressures encountered during normal use. Consequently, during normal use, there is no physical risk of ignition or explosion nor chemical risk of release of hazardous materials. However, if the product is exposed to fire, additional mechanical shock, decomposition, additional electrical stress due to misuse, the gas vent will be activated. The battery cell case will be damaged to the extreme. Hazardous materials may be released. Additionally, if heated strongly by the surrounding fire, acrid or noxious fumes may be emitted.

3. Safety Datasheet. For detailed information please refer to the battery safety datasheet provided.

WARNING LOGISTICS

- Do not lift any of the packed or unpacked units on your own without help or using an adequate machine lifter. There is a severe risk of self-injury.
- Do not pack pallets with product on top of each other. 1 pallet contains: 5 batteries (54kg each). If the stocked number of packages exceeds the defined number, there is a double risk of damaging the products and risking packages falling directly to the floor and on the handler of the units leading to potential death and product irreversible damage.
- When loading, lifting, storing and delivering products, avoid uncontrolled product movements. These could harm both the product and the handler of the units.
- The battery pack must be transported in its original packaging, in an upright orientation (arrow printed on the packaging). Compliant, non-flammable material must be used to protect the battery pack from impact damage. Never lift the battery pack by the terminals.
- During the delivery, products must be carefully packed to prevent any product damage during the transport in case of excessive vehicle movements which should be avoided, carried following transportation rules for dangerous goods.

CAUTION LOGISTICS

- xStorage battery pack units and power conversion systems are considerably heavy: wear safety shoes and preferentially use a vacuum lifter for handling operations.
- All handling operations such as loading, lifting, moving packed units through the warehouse, delivery and unloading will require AT LEAST two persons working together.
- Always store xStorage equipment in a dry and humidity-controlled environment (where the storage temperature range is from 0°C up to 40°C) and far away from running liquids.
- Never let a foreign body penetrate inside the battery pack packaging. In case of dropping the packaging report this immediately to the responsible personnel who then must carry out a product quality control check and make sure that any fall or impact did not cause any damage to the product.
- Do not leave packed products outside. Excessive weather might cause severe product damage.

DANGER INSTALLATION

- The xStorage Energy Storage System can be installed in indoor or outdoor environment, free of conductive contaminants. Never install the xStorage ESS in an airtight room, in the presence of flammable gases, or in an environment exceeding the specifications. for outdoor installation avoid direct exposure to rain and sun by using protection such as a cap. Excessive amount of dust in the operating environment of the xStorage ESS may cause damage or lead to malfunction.
- Allowed ambient temperature range is [-10°C, 50°C] and must not exceed.
- Do not install and operate the xStorage ESS near water or excessive humidity (95% maximum).
- Prior to starting any installation or service work, all AC and DC power sources MUST BE disconnected. Ensure system grounding / PE continuity as well.
- Do not open or mutilate the battery pack nor the power conversion system.
- If accidentally dropping the battery pack or the power conversion system, immediately move back to the 5m safe distance and prepare foam fire extinguishers in case the battery packs cells ignite from the impact. Immediately inform your Eaton technical support representative.

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xStorage Hybrid Inverters LFP Battery Solutions

Safety guidelines

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WARNING INSTALLATION

- Prior to energizing the installed xStorage ESS, verify if rules of wiring have been respected and compliant with country regulations. The usage of RCD is mandatory to protect people against direct and indirect contact. Contact with any part of a grounded element can result in an electrical shock. The likelihood of a shock can be reduced if all grounds are removed during installation and maintenance (applicable to the equipment and remote battery supplies not having a grounded supply circuit).
- Never block the natural air flow around the system and do not place anything on the top or near the sides of the system after installation. Never expose the xStorage Buildings system to direct sunlight or source of heat.
- If the xStorage ESS must be stored prior to installation, storage must be in a dry place away from the sun and rain exposure.
- When installing the power conversion system note that within this device AC and DC sources are terminated. To prevent risk of electrical shock during the installation please ensure that all AC and DC terminals are disconnected from power source.
- Make sure to secure the Ground line to the Grid's Ground, and to double check that the Line and Neutral are not confused with Ground.
- Do not attempt to alter any wiring or connectors in the battery packs, the DC tie cabinet and the power conversion system. Attempting to alter wiring can cause injury.

CAUTION INSTALLATION

- xStorage battery packs and power conversion systems are considerably heavy products: wear safety shoes and preferentially use a vacuum lifter for handling operations.
- All handling operations will require at least two people for unpacking, lifting and installation.
- Carefully unpack xStorage equipment avoiding any excessive movements which might lead to product damage and severe self-injury.
- Handling precautions must be taken i.e. wear rubber gloves, boots and use adequate installation tools.
- Do not lay tools, metal parts or anything else on top of the unpacked or mounted xStorage equipment.
- Battery packs and connection box must be installed according to the installation manual.
- Suitable eye protection should be worn when working with or around Lithium-ion batteries.

DANGER OPERATION

- The xStorage ESS once installed and energized contains components that carry HIGH HAZARDOUS CURRENTS AND VOLTAGES. As an end user DO NOT REMOVE ITS COVER and DO NOT OPEN IT at any time. All repairs and service should be performed ONLY by AN EATON AUTHORIZED SERVICE PERSON and qualified. There are NO USER SERVICEABLE PARTS inside the xStorage ESS.
- Never block the natural air flow around the installed system, do not place anything on the top or near sides of the system after installation.
- Although designed to meet the requirements of international safety standards, the xStorage ESS may become hot while in operating mode. Do not touch the peripheral surfaces especially of the power conversion system during or shortly after its operation.

WARNING OPERATION

- Any type of the xStorage ESS control should be performed only through the official xStorage user interface application in the way instructed by the Eaton certified installer ensuring that product is in the nominal operation mode. Any failure to do so will lead to the product misuse, its damage, malfunction and potential person injury.
- Before charging the battery packs from the grid check with the Eaton certified installer that this option is available and the system set correctly. Otherwise, you risk damaging the product, putting yourself in danger and using the product illegally.
- Note that a deepcyclecharge and discharge may damage the battery cells inside of the battery pack and can be dangerous if not performed correctly. The battery system must be cycled in accordance with the manufacturer's instructions. If the battery system has been over-discharged, please contact your Eaton technical support representative. The battery system must not be charged and discharged outside of the recommended voltage levels. If the battery system is misused (typically over/under charged), harmful gases may be released.

WARNING SERVICE AND MAINTENANCE

- To prevent risk of electrical shock during service and maintenance please ensure that all AC and DC terminals are disconnected from power sources. The xStorage ESS can be powered by PV solar system, the grid or by its own energy sources (batteries), and AC/DC sources are terminated within the power conversion system while DC sources are terminated within the battery pack. Therefore, the output terminals may still be energized even when the xStorage ESS is disconnected from an AC or a DC source. After disconnecting all sources of supply, wait for 5 minutes before accessing the system.
- Make sure to secure the Ground line to the Grid's Ground and to double check that the Line and Neutral are not confused with Ground.
- When replacing the battery pack be aware that HIGH VOLTAGES, CORROSIVE, TOXIC and EXPLOSIVE substances are present in it. Because of the battery string the output terminal may carry high voltage even when the AC supply is not connected to the xStorage ESS. Thus, do not touch battery pack terminals before making absolutely sure they are deenergized. Apply the shutdown instructions carefully.
- When replacing the power conversion system note that within this device AC and DC sources are terminated. To prevent risk of electrical shock during its service and maintenance please ensure that all AC and DC terminals are disconnected from power source and deenergized. This can only be done by an Eaton certified installer.
- Adding or removing a battery pack may only be carried out by a qualified person.
- When servicing/replacing any other electric units listed in the xStorage Buildings accessory list make sure they are as well disconnected from any AC/DC source and deenergized.

WARNING DEINSTALLATION

- Prior to starting the dismantling process, fully discharge the battery pack to prevent any potential electrical shocks.
- To further prevent risk of electrical shock during the deinstallation phase please ensure that all AC/DC terminals are disconnected from all power sources (PV and grid).
- Note that the xStorage ESS can be powered by PV solar system, the grid or by its own energy sources (batteries), and AC/DC sources are terminated within the power conversion system while DC sources are terminated within the battery pack. Thus, the output terminals may still be energized even when the xStorage ESS is disconnected from all power sources. Allow five minutes to pass before moving forward with deinstallation.
- When demounting the battery pack take every precaution to prevent product fall and avoid any potential electrical and chemical hazard as battery pack might contain residual HIGH VOLTAGES and CORROSIVE, TOXIC, EXPLOSIVE substances.
- Do not touch the power conversion system/ battery pack terminals before making absolutely sure they are deenergized.

CAUTION DEINSTALLATION

- Note that all xStorage units i.e. the power conversion system, the battery pack are considerably heavy. Thus, wear safety shoes and make sure that all handling operations during the deinstallation such as dismounting, repacking units, moving them from the original installation zone to the transportation vehicle, loading, unloading at the recycling center, etc. involve AT LEAST two persons working together.
- Suitable eye protection should be worn when working with or around Lithium-ion batteries.

CAUTION DEINSTALLATION

- At the end of the xStorage ESS product life cycle only installer qualified personnel are allowed to carry out a full system disposal (power conversion system, battery pack and supporting electrical elements) by following local disposal regulations. Contact the local recycling or hazardous waste center for information on proper disposal of the used equipment.
- The product is made up of recyclable materials. Dismantling and destruction must take place in compliance with all local regulations concerning waste. At the end of its service life, the product must be transported by qualified carrier to a processingcenter for electrical and electronic waste.
- Dispose of the battery pack according to local disposal requirements. Do not dispose any of the xStorage ESS elements in a fire. When exposed to flame the battery pack may explode.
- The product contains Lithium-ion battery cells that must be processed according to applicable local regulations concerning this type of batteries. The battery pack may be removed to comply with regulations and in view of correctdisposal.
- Do not open or mutilate any of the xStorage ESS elements prior to its disposal. Released electrolyte from the battery pack is harmful to the skin and eyes. It may be toxic.
- Do not discard the xStorage ESS or any of its elements in the domestic waste. This product contains sealed, Lithium-ion battery cells and must be disposed of properly. For more information, contact your local recycling/ reuse or hazardous wastecenter.
- Do not discard waste electrical or electronic equipment (WEEE) in the domestic waste. For proper disposal, contact your local recycling/reuse or hazardous waste center.

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