ESS Energy Storage System for UL9540

Galaxy VS UPS for External Batteries and Galaxy Lithium-ion Battery Cabinets

Installation

NOTE: This is a Solution Manual and replaces individual installation manuals for these products.

Latest updates are available on the Schneider Electric website 9/2024







Legal Information

The information provided in this document contains general descriptions, technical characteristics and/or recommendations related to products/solutions.

This document is not intended as a substitute for a detailed study or operational and site-specific development or schematic plan. It is not to be used for determining suitability or reliability of the products/solutions for specific user applications. It is the duty of any such user to perform or have any professional expert of its choice (integrator, specifier or the like) perform the appropriate and comprehensive risk analysis, evaluation and testing of the products/solutions with respect to the relevant specific application or use thereof.

The Schneider Electric brand and any trademarks of Schneider Electric SE and its subsidiaries referred to in this document are the property of Schneider Electric SE or its subsidiaries. All other brands may be trademarks of their respective owner.

This document and its content are protected under applicable copyright laws and provided for informative use only. No part of this document may be reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), for any purpose, without the prior written permission of Schneider Electric.

Schneider Electric does not grant any right or license for commercial use of the document or its content, except for a non-exclusive and personal license to consult it on an "as is" basis.

Schneider Electric reserves the right to make changes or updates with respect to or in the content of this document or the format thereof, at any time without notice.

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this document, as well as any non-intended use or misuse of the content thereof.

Access to Your Product Manuals Online

Find the UPS Manuals, Submittal Drawings, and Other Documentation for Your Specific UPS Here:

In your web browser, type in https://www.go2se.com/ref= and the commercial reference for your product.

Example: https://www.go2se.com/ref=GVSUPS20KGS

Find the UPS Manuals, Relevant Auxiliary Product Manuals, and Option Manuals Here:

Scan the code to go to the Galaxy VS online manual portal:

UL (200/208/220/480 V)



https://www.productinfo.schneider-electric.com/galaxyvs_ul/

Here you can find your UPS installation manual, UPS operation manual, and UPS technical specifications, and you can also find installation manuals for your auxiliary products and options.

This online manual portal is available on all devices and offers digital pages, search functionality across the different documents in the portal, and PDF download for offline use.

Learn More About the Galaxy VS Here:

Go to *https://www.se.com/ww/en/product-range/65772* to learn more about this product.

Table of Contents

Important Safety Instructions — SAVE THESE	
INSTRUCTIONS	7
FCC Statement	8
Electromagnetic Compatibility	8
Safety Precautions	8
Electrical Safety	
Battery Safety	12
Specifications	14
Overview of ESS Energy Storage Systems	14
Specifications for 480 V Systems	21
Input Specifications 480 V	21
Bypass Specifications 480 V	22
Output Specifications 480 V	22
Specifications for 480 V Energy Storage Solution	23
Recommended Upstream Protection 480 V	25
Specifications for 208 V Systems	
Input Specifications 208 V	
Bypass Specifications 208 V	
Specifications for 200/208/220 V Energy Storage S	
Recommended Unstream Protection 208 V	31
Specifications for Lithium-ion Battery Cabinets	
Recommended Bolt and Lug Sizes	
Torque Specifications	
Compliance	
Guidance for Organizing Battery Cables	
Weights and Dimensions	
Environment	
Clearance	40
Single System Overview	42
Overview of Installation Kits	43
Optional Seismic Kit GVSOPT002	44
Optional NEMA 2 Hole Kit GVSOPT005	44
Overview of Accessory Kits	45
Installation Procedure	47
Prepare for Installation	
Prepare for Installation	51
Install the Power Medule(s)	
listali the Power Module(s)	
Install the Seismic Anchoring (Option)	
Install the Rear Seismic Anchoring	57
Position and Interconnect the Battery Cabinets	59
Install the Front Seismic Anchoring	61
Prepare the UPS for TN-C/480 V Solid-Grounded	System62
Connect the Power Cables	
Connect the Power Cables with NEMA 2 Hole Pla	ates 67

Connect the Signal Cables71	1
Connect the Signal Cables from Switchgear and Third-Party	
Auxiliary Products	3
Connect the External Communication Cables77	7
Connect the Modbus Cables77	7
Add Translated Safety Labels to Your Product79	9
Final Installation80	0
Install the Battery Modules in the Battery Cabinet84	4
Connect the Power Cables	6
Overview of Communication Interface	9
Route the Signal Cables to the Switchgear, Rack BMS, and	
System BMS Ports	0
Overview of Signal Cables between the Battery Cabinets and the	
Auxiliary Contacts in the UPS94	4
Overview of Signal Cables for Alarms and Battery Breaker Trip96	6
Overview of CAN Bus Cables between the Battery Cabinets97	7
Overview of EPO Signal Cables97	7
Decommission or Move the UPS to a New Location	8
Decommission or Move the Battery Cabinet to a New	
Location	6

Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a "Danger" or "Warning" safety message indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Failure to follow these instructions will result in death or serious injury.

WARNING indicates a hazardous situation which, if not avoided, **could result** in death or serious injury.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

Failure to follow these instructions can result in injury or equipment damage.

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

Failure to follow these instructions can result in equipment damage.

Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

FCC Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Electromagnetic Compatibility

NOTICE

RISK OF ELECTROMAGNETIC DISTURBANCE

This is a product category C2 UPS product. In a residential environment, this product may cause radio inference, in which case the user may be required to take additional measures.

Failure to follow these instructions can result in equipment damage.

Safety Precautions

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All safety instructions in this document must be read, understood and followed.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Read all instructions in the Installation Manual before installing or working on this UPS system.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not install the UPS system until all construction work has been completed and the installation room has been cleaned.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- The product must be installed according to the specifications and requirements as defined by Schneider Electric. It concerns in particular the external and internal protections (upstream breakers, battery breakers, cabling, etc.) and environmental requirements. No responsibility is assumed by Schneider Electric if these requirements are not respected.
- After the UPS system has been electrically wired, do not start up the system. Start-up must only be performed by Schneider Electric.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The UPS system must be installed according to local and national regulations. Install the UPS according to:

- NEC NFPA 70, or
- Canadian Electrical Code (C22.1, Part 1)

depending on which one of the standards apply in your local area.

Failure to follow these instructions will result in death or serious injury.

ADANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Install the UPS system in a temperature controlled indoor environment free of conductive contaminants and humidity.
- Install the UPS system on a non-flammable, level and solid surface (e.g. concrete) that can support the weight of the system.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The UPS is not designed for and must therefore not be installed in the following unusual operating environments:

- Damaging fumes
- Explosive mixtures of dust or gases, corrosive gases, or conductive or radiant heat from other sources
- · Moisture, abrasive dust, steam or in an excessively damp environment
- · Fungus, insects, vermin
- · Salt-laden air or contaminated cooling refrigerant
- Pollution degree higher than 2 according to IEC 60664-1
- Exposure to abnormal vibrations, shocks, and tilting
- Exposure to direct sunlight, heat sources, or strong electromagnetic fields

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill or cut holes for cables or conduits with the gland plates installed and do not drill or cut holes in close proximity to the UPS.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not make mechanical changes to the product (including removal of cabinet parts or drilling/cutting of holes) that are not described in the Installation Manual.

Failure to follow these instructions will result in death or serious injury.

CHEMICAL HAZARD

This product can expose you to chemicals including Tetrabromobisphenol A, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

RISK OF OVERHEATING

Respect the space requirements around the UPS system and do not cover the product's ventilation openings when the UPS system is in operation.

Failure to follow these instructions can result in equipment damage.

NOTICE

RISK OF EQUIPMENT DAMAGE

Do not connect the UPS output to regenerative load systems including photovoltaic systems and speed drives.

Failure to follow these instructions can result in equipment damage.

Electrical Safety

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Turn off all power supplying the UPS system before working on or inside the equipment.
- Before working on the UPS system, check for hazardous voltage between all terminals including the protective earth.
- The UPS contains an internal energy source. Hazardous voltage can be present even when disconnected from the utility/mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that utility/mains and batteries are disconnected. Wait five minutes before opening the UPS to allow the capacitors to discharge.
- A disconnection device (e.g. disconnection circuit breaker or switch) must be installed to enable isolation of the system from upstream power sources in accordance with local regulations. This disconnection device must be easily accessible and visible.
- The UPS must be properly earthed/grounded and due to a high touch current/leakage current, the earthing/grounding conductor must be connected first.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

In systems where backfeed protection is not part of the standard design, an automatic isolation device (backfeed protection option or other device meeting the requirements of IEC/EN 62040–1 **or** UL1778 5th Edition – depending on which of the two standards apply to your local area) must be installed to prevent hazardous voltage or energy at the input terminals of the isolation device. The device must open within 15 seconds after the upstream power supply fails and must be rated according to the specifications.

Failure to follow these instructions will result in death or serious injury.

When the UPS input is connected through external isolators that, when opened, isolate the neutral or when the automatic backfeed isolation is provided external to the equipment or is connected to an IT power distribution system, a label must be fitted at the UPS input terminals, and on all primary power isolators installed remote from the UPS area and on external access points between such isolators and the UPS, by the user, displaying the following text (or equivalent in a language which is acceptable in the country in which the UPS system is installed):

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Risk of Voltage Backfeed. Before working on this circuit: Isolate the UPS and check for hazardous voltage between all terminals including the protective earth.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Always perform correct Lockout/Tagout before working on the UPS.
- A UPS with autostart enabled will automatically restart when the mains supply returns.
- If autostart is enabled on the UPS, a label must be added on the UPS to warn about this functionality.

Failure to follow these instructions will result in death or serious injury.

Add the label below on the UPS if autostart has been enabled:

ADANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Autostart is enabled. The UPS will automatically restart when the mains supply returns.

Failure to follow these instructions will result in death or serious injury.

Battery Safety

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Battery circuit breakers must be installed according to the specifications and requirements as defined by Schneider Electric.
- Servicing of batteries must only be performed or supervised by qualified personnel knowledgeable of batteries and the required precautions. Keep unqualified personnel away from batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
- Do not dispose of batteries in a fire as they can explode.
- Do not open, alter, or mutilate batteries.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Batteries can present a risk of electric shock and high short-circuit current. The following precautions must be observed when working on batteries

- · Remove watches, rings, or other metal objects.
- Use tools with insulated handles.
- · Wear protective glasses, gloves and boots.
- Do not lay tools or metal parts on top of batteries.
- Disconnect the charging source prior to connecting or disconnecting battery terminals.
- Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electric shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

Failure to follow these instructions will result in death or serious injury.

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

When replacing batteries, always replace with the same battery module type.

Failure to follow these instructions will result in death or serious injury.

NOTICE

RISK OF EQUIPMENT DAMAGE

- Lithium-ion batteries should not be stored beyond 15 months from the date of production. If they are stored for longer the calendar degradation will cause the batteries to be irreversible degraded beyond what is expected a reduced runtime will be the consequence. Performance guarantee will be measured from the time of deployment or from production date +15 months, whichever comes first. For storage beyond 15 months, contact Schneider Electric.
- If the UPS system remains de-energized for a long period, Schneider Electric recommends to shut down the battery cabinet completely.

Failure to follow these instructions can result in equipment damage.

Specifications

Overview of ESS Energy Storage Systems

Arc flash related calculation of the battery system is estimated with the Direct-Current Incident Energy Calculations referenced in Informative Annex D of NFPA 70E Standard for Electrical Safety in the Workplace. The ESS system is assumed to estimate the worst-case scenario of 3 x LIBSESMG16UL battery cabinets in parallel. Estimated arc flash: <0.97 cal/cm².

ESS model	Input/output voltage, VAC, 3- phase, 60Hz (V)	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input/output (kW)	Ambient temperature range (°C)	Max. short- circuit current (kA)
GVSUPS20KFS- 1LIBSESMG13UL	200/208/220	74/72/68	54.3	26.5	20	23±5	65
GVSUPS20KFS- 2LIBSESMG13UL	200/208/220	74/72/68	54.3	53	20	23±5	65
GVSUPS20KFS- 3LIBSESMG13UL	200/208/220	74/72/68	54.3	79.5	20	23±5	65
GVSUPS20KFS- 1LIBSESMG16UL	200/208/220	74/72/68	44.1	32.6	20	23±5	65
GVSUPS20KFS- 2LIBSESMG16UL	200/208/220	74/72/68	44.1	65.2	20	23±5	65
GVSUPS20KFS- 3LIBSESMG16UL	200/208/220	74/72/68	44.1	97.8	20	23±5	65
GVSUPS40KFS- 1LIBSESMG13UL	200/208/220	149/143/135	107.2	26.5	40	23±5	65
GVSUPS40KFS- 2LIBSESMG13UL	200/208/220	149/143/135	107.2	53	40	23±5	65
GVSUPS40KFS- 3LIBSESMG13UL	200/208/220	149/143/135	107.2	79.5	40	23±5	65
GVSUPS40KFS- 1LIBSESMG16UL	200/208/220	149/143/135	87.1	32.6	40	23±5	65
GVSUPS40KFS- 2LIBSESMG16UL	200/208/220	149/143/135	87.1	65.2	40	23±5	65
GVSUPS40KFS- 3LIBSESMG16UL	200/208/220	149/143/135	87.1	97.8	40	23±5	65
GVSUPS60KGS- 1LIBSESMG16UL	480	89	130	32.6	60	23±5	65
GVSUPS60KGS- 2LIBSESMG16UL	480	89	130	65.2	60	23±5	65
GVSUPS60KGS- 3LIBSESMG16UL	480	89	130	97.8	60	23±5	65
GVSUPS75KFS- 1LIBSESMG13UL	200/208/220	273/269/254	200	26.5	75	23±5	65
GVSUPS75KFS- 2LIBSESMG13UL	200/208/220	273/269/254	200	53	75	23±5	65
GVSUPS75KFS- 3LIBSESMG13UL	200/208/220	273/269/254	200	79.5	75	23±5	65
GVSUPS75KFS- 1LIBSESMG16UL	200/208/220	273/269/254	162.5	32.6	75	23±5	65
GVSUPS75KFS- 2LIBSESMG16UL	200/208/220	273/269/254	162.5	65.2	75	23±5	65
GVSUPS75KFS- 3LIBSESMG16UL	200/208/220	273/269/254	162.5	97.8	75	23±5	65
GVSUPS100KGS- 1LIBSESMG16UL	480	149	214	32.6	100	23±5	65

ESS model	Input/output voltage, VAC, 3- phase, 60Hz (V)	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input/output (kW)	Ambient temperature range (°C)	Max. short- circuit current (kA)
GVSUPS100KGS- 2LIBSESMG16UL	480	149	214	65.2	100	23±5	65
GVSUPS100KGS- 3LIBSESMG16UL	480	149	214	97.8	100	23±5	65
GVSUPS150KGS- 1LIBSESMG16UL	480	223	321	32.6	150	23±5	65
GVSUPS150KGS- 2LIBSESMG16UL	480	223	321	65.2	150	23±5	65
GVSUPS150KGS- 3LIBSESMG16UL	480	223	321	97.8	150	23±5	65
GVSUPS80KRGS- 1LIBSESMG13UL	480	121	96	26.5	80	23±5	65
GVSUPS80KRGS- 2LIBSESMG13UL	480	121	96	53	80	23±5	65
GVSUPS80KRGS- 3LIBSESMG13UL	480	121	96	79.5	80	23±5	65
GVSUPS80KGS- 1LIBSESMG13UL	480	121	96	26.5	80	23±5	65
GVSUPS80KGS- 2LIBSESMG13UL	480	121	96	53	80	23±5	65
GVSUPS80KGS- 3LIBSESMG13UL	480	121	96	79.5	80	23±5	65
GVSUPS60KRGS- 1LIBSESMG16UL	480	91	72	32.6	60	23±5	65
GVSUPS60KRGS- 2LIBSESMG16UL	480	91	72	65.2	60	23±5	65
GVSUPS60KRGS- 3LIBSESMG16UL	480	91	72	97.8	60	23±5	65
GVSUPS60KFS- 1LIBSESMG13UL	200/208/220	227/219/206	173	26.5	60	23±5	65
GVSUPS60KFS- 2LIBSESMG13UL	200/208/220	227/219/206	173	53	60	23±5	65
GVSUPS60KFS- 3LIBSESMG13UL	200/208/220	227/219/206	173	97.5	60	23±5	65
GVSUPS50KRGS- 1LIBSESMG16UL	480	76	60	32.6	50	23±5	65
GVSUPS50KRGS- 2LIBSESMG16UL	480	76	60	65.2	50	23±5	65
GVSUPS50KRGS- 3LIBSESMG16UL	480	76	60	97.8	50	23±5	65
GVSUPS50KRFS- 1LIBSESMG13UL	200/208/220	185/182/172	144	26.5	50	23±5	65
GVSUPS50KRFS- 2LIBSESMG13UL	200/208/220	185/182/172	144	53	50	23±5	65
GVSUPS50KRFS- 3LIBSESMG13UL	200/208/220	185/182/172	144	79.5	50	23±5	65
GVSUPS50KGS- 1LIBSESMG16UL	480	76	60	32.6	50	23±5	65
GVSUPS50KGS- 2LIBSESMG16UL	480	76	60	65.2	50	23±5	65
GVSUPS50KGS- 3LIBSESMG16UL	480	76	60	97.8	50	23±5	65
GVSUPS50KFS- 1LIBSESMG13UL	200/208/220	185/182/172	144	26.5	50	23±5	65
GVSUPS50KFS- 2LIBSESMG13UL	200/208/220	185/182/172	144	53	50	23±5	65

ESS model	Input/output voltage, VAC, 3- phase, 60Hz (V)	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input/output (kW)	Ambient temperature range (°C)	Max. short- circuit current (kA)
GVSUPS50KFS- 3LIBSESMG13UL	200/208/220	185/182/172	144	79.5	50	23±5	65
GVSUPS50K150GS- 1LIBSESMG16UL	480	227	180	32.6	150	23±5	65
GVSUPS50K150GS- 2LIBSESMG16UL	480	227	180	65.2	150	23±5	65
GVSUPS50K150GS- 3LIBSESMG16UL	480	227	180	97.8	150	23±5	65
GVSUPS40KRGS- 1LIBSESMG13UL	480	61	48	26.5	40	23±5	65
GVSUPS40KRGS- 2LIBSESMG13UL	480	61	48	53	40	23±5	65
GVSUPS40KRGS- 3LIBSESMG13UL	480	61	48	79.5	40	23±5	65
GVSUPS40KRFS- 1LIBSESMG13UL	200/208/220	152/145/137	115	26.5	40	23±5	65
GVSUPS40KRFS- 2LIBSESMG13UL	200/208/220	152/145/137	115	53	40	23±5	65
GVSUPS40KRFS- 3LIBSESMG13UL	200/208/220	152/145/137	115	79.5	40	23±5	65
GVSUPS40KGS- 1LIBSESMG13UL	480	61	48	26.5	40	23±5	65
GVSUPS40KGS- 2LIBSESMG13UL	480	61	48	53	40	23±5	65
GVSUPS40KGS- 3LIBSESMG13UL	480	61	48	79.5	40	23±5	65
GVSUPS30KRGS- 1LIBSESMG13UL	480	46	36	26.5	30	23±5	65
GVSUPS30KRGS- 2LIBSESMG13UL	480	46	36	53	30	23±5	65
GVSUPS30KRGS- 3LIBSESMG13UL	480	46	36	79.5	30	23±5	65
GVSUPS30KRFS- 1LIBSESMG13UL	200/208/220	114/109/104	87	26.5	30	23±5	65
GVSUPS30KRFS- 2LIBSESMG13UL	200/208/220	114/109/104	87	53	30	23±5	65
GVSUPS30KRFS- 3LIBSESMG13UL	200/208/220	114/109/104	87	79.5	30	23±5	65
GVSUPS30KGS- 1LIBSESMG13UL	480	46	48	26.5	30	23±5	65
GVSUPS30KGS- 2LIBSESMG13UL	480	46	48	53	30	23±5	65
GVSUPS30KGS- 3LIBSESMG13UL	480	46	48	79.5	30	23±5	65
GVSUPS30KFS- 1LIBSESMG13UL	200/208/220	114/109/104	87	26.5	30	23±5	65
GVSUPS30KFS- 2LIBSESMG13UL	200/208/220	114/109/104	87	53	30	23±5	65
GVSUPS30KFS- 3LIBSESMG13UL	200/208/220	114/109/104	87	79.5	30	23±5	65
GVSUPS25KRFS- 1LIBSESMG13UL	200/208/220	93/92/86	73	26.5	25	23±5	65
GVSUPS25KRFS- 2LIBSESMG13UL	200/208/220	93/92/86	73	53	25	23±5	65
GVSUPS25KRFS- 3LIBSESMG13UL	200/208/220	93/92/86	73	79.5	25	23±5	65

ESS model	Input/output voltage, VAC, 3- phase, 60Hz (V)	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input/output (kW)	Ambient temperature range (°C)	Max. short- circuit current (kA)
GVSUPS25KFS- 1LIBSESMG13UL	200/208/220	93/92/86	73	26.5	25	23±5	65
GVSUPS25KFS- 2LIBSESMG13UL	200/208/220	93/92/86	73	53	25	23±5	65
GVSUPS25KFS- 3LIBSESMG13UL	200/208/220	93/92/86	73	79.5	25	23±5	65
GVSUPS25K75FS- 1LIBSESMG13UL	200/208/220	284/283/271	217	26.5	75	23±5	65
GVSUPS25K75FS- 2LIBSESMG13UL	200/208/220	284/283/271	217	53	75	23±5	65
GVSUPS25K75FS- 3LIBSESMG13UL	200/208/220	284/283/271	217	79.5	75	23±5	65
GVSUPS20KRGS- 1LIBSESMG13UL	480	31	24	26.5	20	23±5	65
GVSUPS20KRGS- 2LIBSESMG13UL	480	31	24	53	20	23±5	65
GVSUPS20KRGS- 3LIBSESMG13UL	480	31	24	79.5	20	23±5	65
GVSUPS20KRFS- 1LIBSESMG13UL	200/208/220	75/73/69	58	26.5	20	23±5	65
GVSUPS20KRFS- 2LIBSESMG13UL	200/208/220	75/73/69	58	53	20	23±5	65
GVSUPS20KRFS- 3LIBSESMG13UL	200/208/220	75/73/69	58	79.5	20	23±5	65
GVSUPS20KGS- 1LIBSESMG13UL	480	31	24	26.5	20	23±5	65
GVSUPS20KGS- 2LIBSESMG13UL	480	31	24	53	20	23±5	65
GVSUPS20KGS- 3LIBSESMG13UL	480	31	24	79.5	20	23±5	65
GVSUPS15KRFS- 1LIBSESMG13UL	200/208/220	57/55/52	43	26.5	15	23±5	65
GVSUPS15KRFS- 2LIBSESMG13UL	200/208/220	57/55/52	43	53	15	23±5	65
GVSUPS15KRFS- 3LIBSESMG13UL	200/208/220	57/55/52	43	79.5	15	23±5	65
GVSUPS15KFS- 1LIBSESMG13UL	200/208/220	57/55/52	43	26.5	15	23±5	65
GVSUPS15KFS- 2LIBSESMG13UL	200/208/220	57/55/52	43	53	15	23±5	65
GVSUPS15KFS- 3LIBSESMG13UL	200/208/220	57/55/52	43	79.5	15	23±5	65
GVSUPS120KGS- 1LIBSESMG16UL	480	182	144	32.6	120	23±5	65
GVSUPS120KGS- 2LIBSESMG16UL	480	182	144	65.2	120	23±5	65
GVSUPS120KGS- 3LIBSESMG16UL	480	182	144	97.8	120	23±5	65
GVSUPS10KRFS- 1LIBSESMG13UL	200/208/220	38/37/35	29	26.5	10	23±5	65
GVSUPS10KRFS- 2LIBSESMG13UL	200/208/220	38/37/35	29	53	10	23±5	65
GVSUPS10KRFS- 3LIBSESMG13UL	200/208/220	38/37/35	29	79.5	10	23±5	65
GVSUPS10KFS- 1LIBSESMG13UL	200/208/220	38/37/35	29	26.5	10	23±5	65

ESS model	Input/output voltage, VAC, 3- phase, 60Hz (V)	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input/output (kW)	Ambient temperature range (°C)	Max. short- circuit current (kA)
GVSUPS10KFS- 2LIBSESMG13UL	200/208/220	38/37/35	29	53	10	23±5	65
GVSUPS10KFS- 3LIBSESMG13UL	200/208/220	38/37/35	29	79.5	10	23±5	65
GVSUPS100KRGS- 1LIBSESMG16UL	480	152	120	32.6	100	23±5	65
GVSUPS100KRGS- 2LIBSESMG16UL	480	152	120	65.2	100	23±5	65
GVSUPS100KRGS- 3LIBSESMG16UL	480	152	120	97.8	100	23±5	65
GVSUPS10KFS - 1LIBSESMG16UL	200/208/220	38/37/35	29	32.6	10	23±5	65
GVSUPS10KFS - 2LIBSESMG16UL	200/208/220	38/37/35	29	65.2	10	23±5	65
GVSUPS10KFS - 3LIBSESMG16UL	200/208/220	38/37/35	29	97.8	10	23±5	65
GVSUPS10KRFS - 1LIBSESMG16UL	200/208/220	38/37/35	29	32.6	10	23±5	65
GVSUPS10KRFS - 2LIBSESMG16UL	200/208/220	38/37/35	29	65.2	10	23±5	65
GVSUPS10KRFS - 3LIBSESMG16UL	200/208/220	38/37/35	29	97.8	10	23±5	65
GVSUPS15KFS - 1LIBSESMG16UL	200/208/220	38/37/35	29	32.6	10	23±5	65
GVSUPS15KFS - 2LIBSESMG16UL	200/208/220	57/55/52	43	65.2	15	23±5	65
GVSUPS15KFS - 3LIBSESMG16UL	200/208/220	57/55/52	43	97.8	15	23±5	65
GVSUPS15KRFS - 1LIBSESMG16UL	200/208/220	57/55/52	43	32.6	15	23±5	65
GVSUPS15KRFS - 2LIBSESMG16UL	200/208/220	57/55/52	43	65.2	15	23±5	65
GVSUPS15KRFS - 3LIBSESMG16UL	200/208/220	57/55/52	43	97.8	15	23±5	65
GVSUPS20KRFS - 1LIBSESMG16UL	200/208/220	75/73/69	58	32.6	20	23±5	65
GVSUPS20KRFS - 2LIBSESMG16UL	200/208/220	75/73/69	58	65.2	20	23±5	65
GVSUPS20KRFS - 3LIBSESMG16UL	200/208/220	75/73/69	58	97.8	20	23±5	65
GVSUPS20KRGS - 1LIBSESMG16UL	480	31	24	32.6	20	23±5	65
GVSUPS20KRGS - 2LIBSESMG16UL	480	31	24	65.2	20	23±5	65
GVSUPS20KRGS - 3LIBSESMG16UL	480	31	24	97.8	20	23±5	65
GVSUPS25K75FS - 1LIBSESMG16UL	200/208/220	284/283/271	217	32.6	75	23±5	65
GVSUPS25K75FS - 2LIBSESMG16UL	200/208/220	284/283/271	217	65.2	75	23±5	65
GVSUPS25K75FS - 3LIBSESMG16UL	200/208/220	284/283/271	217	97.8	75	23±5	65
GVSUPS25KFS - 1LIBSESMG16UL	200/208/220	93/92/86	73	32.6	25	23±5	65
GVSUPS25KFS - 2LIBSESMG16UL	200/208/220	93/92/86	73	65.2	25	23±5	65

ESS model	Input/output voltage, VAC, 3- phase, 60Hz (V)	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input/output (kW)	Ambient temperature range (°C)	Max. short- circuit current (kA)
GVSUPS25KFS - 3LIBSESMG16UL	200/208/220	93/92/86	73	97.8	25	23±5	65
GVSUPS25KRFS - 1LIBSESMG16UL	200/208/220	93/92/86	73	32.6	25	23±5	65
GVSUPS25KRFS - 2LIBSESMG16UL	200/208/220	93/92/86	73	65.2	25	23±5	65
GVSUPS25KRFS - 3LIBSESMG16UL	200/208/220	93/92/86	73	97.8	25	23±5	65
GVSUPS30KFS - 1LIBSESMG16UL	200/208/220	114/109/104	87	32.6	30	23±5	65
GVSUPS30KFS - 2LIBSESMG16UL	200/208/220	114/109/104	87	65.2	30	23±5	65
GVSUPS30KFS - 3LIBSESMG16UL	200/208/220	114/109/104	87	97.8	30	23±5	65
GVSUPS30KGS - 1LIBSESMG16UL	480	46	48	32.6	30	23±5	65
GVSUPS30KGS - 2LIBSESMG16UL	480	46	48	65.2	30	23±5	65
GVSUPS30KGS - 3LIBSESMG16UL	480	46	48	97.8	30	23±5	65
GVSUPS30KRFS - 1LIBSESMG16UL	200/208/220	114/109/104	87	32.6	30	23±5	65
GVSUPS30KRFS - 2LIBSESMG16UL	200/208/220	114/109/104	87	65.2	30	23±5	65
GVSUPS30KRFS - 3LIBSESMG16UL	200/208/220	114/109/104	87	97.8	30	23±5	65
GVSUPS30KRGS - 1LIBSESMG16UL	480	46	36	32.6	30	23±5	65
GVSUPS30KRGS - 2LIBSESMG16UL	480	46	36	65.2	30	23±5	65
GVSUPS30KRGS - 3LIBSESMG16UL	480	46	36	97.8	30	23±5	65
GVSUPS40KGS - 1LIBSESMG16UL	480	61	48	32.6	40	23±5	65
GVSUPS40KGS - 2LIBSESMG16UL	480	61	48	65.2	40	23±5	65
GVSUPS40KGS - 3LIBSESMG16UL	480	61	48	97.8	40	23±5	65
GVSUPS40KRFS - 1LIBSESMG16UL	200/208/220	152/145/137	115	32.6	40	23±5	65
GVSUPS40KRFS - 2LIBSESMG16UL	200/208/220	152/145/137	115	65.2	40	23±5	65
GVSUPS40KRFS - 3LIBSESMG16UL	200/208/220	152/145/137	115	97.8	40	23±5	65
GVSUPS40KRGS - 1LIBSESMG16UL	480	61	48	32.6	40	23±5	65
GVSUPS40KRGS - 2LIBSESMG16UL	480	61	48	65.2	40	23±5	65
GVSUPS40KRGS - 3LIBSESMG16UL	480	61	48	97.8	40	23±5	65
GVSUPS50KFS - 1LIBSESMG16UL	200/208/220	185/182/172	144	32.6	50	23±5	65
GVSUPS50KFS - 2LIBSESMG16UL	200/208/220	185/182/172	144	65.2	50	23±5	65
GVSUPS50KFS - 3LIBSESMG16UL	200/208/220	185/182/172	144	97.8	50	23±5	65

ESS model	Input/output voltage, VAC, 3- phase, 60Hz (V)	Max. input current (A)	Max. output current (A)	Max. energy output (kWh)	Max. power input/output (kW)	Ambient temperature range (°C)	Max. short- circuit current (kA)
GVSUPS50KRFS - 1LIBSESMG16UL	200/208/220	185/182/172	144	32.6	50	23±5	65
GVSUPS50KRFS - 2LIBSESMG16UL	200/208/220	185/182/172	144	65.2	50	23±5	65
GVSUPS50KRFS - 3LIBSESMG16UL	200/208/220	185/182/172	144	97.8	50	23±5	65
GVSUPS60KFS - 1LIBSESMG16UL	200/208/220	227/219/206	173	32.6	60	23±5	65
GVSUPS60KFS - 2LIBSESMG16UL	200/208/220	227/219/206	173	65.2	60	23±5	65
GVSUPS60KFS - 3LIBSESMG16UL	200/208/220	227/219/206	173	97.8	60	23±5	65
GVSUPS80KGS - 1LIBSESMG16UL	480	121	96	32.6	80	23±5	65
GVSUPS80KGS - 2LIBSESMG16UL	480	121	96	65.2	80	23±5	65
GVSUPS80KGS - 3LIBSESMG16UL	480	121	96	97.8	80	23±5	65
GVSUPS80KRGS - 1LIBSESMG16UL	480	121	96	32.6	80	23±5	65
GVSUPS80KRGS - 2LIBSESMG16UL	480	121	96	65.2	80	23±5	65
GVSUPS80KRGS - 3LIBSESMG16UL	480	121	96	97.8	80	23±5	65

Specifications for 480 V Systems

The supply for input and bypass must be solid-grounded WYE transformers. Delta input supply for either input or bypass is not permitted.

The UPS system must be installed as a separately derived system. Leakage currents will occur in the bonding jumper and the technical/system earth.

Input Specifications 480 V

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW			
Connections	Input conne Input conne	Input connections in single mains system: 3-wire (L1, L2, L3, G) WYE or 4-wire (L1, L2, L3, N, G) WYE Input connections in dual mains system: 3-wire (L1, L2, L3, G) WYE										
Input voltage range (V)	408-552	408-552										
Frequency range (Hz)	40-70	40-70										
Nominal input current (A)	25	37	50	62	74	99	124	149	186			
Maximum input current (A)	31	46	61	76	91	121	152	182	227			
Input current limitation (A)	31	48	63	77	95	126	154	188	231			
Input power factor	0.99 for load 0.95 for load	d greater thai d greater thai	n 50% n 25%									
Total harmonic distortion (THDI)	<5% at 100	% load		<3% at 100% load	<5% at 100% load		<3% at 100% load	<5% at 100% load	<3% at 100% load			
Maximum short circuit rating	65 kA RMS											
Protection	Built-in bac	kfeed protect	ion and fuses	;								
Ramp-in	Programma	able and adap	otive 1-40 sec	onds								

NOTE: For a UPS with N+1 power module, the input power factor is 0.99 at 100% load and the total harmonic distortion (THDI) is <6% at full linear load (symmetrical).

Bypass Specifications 480 V

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW			
Connections	3-wire (L1,	3-wire (L1, L2, L3, G) WYE or 4-wire (L1, L2, L3, N, G) WYE										
Bypass voltage range (V)	432-528	432-528										
Frequency range (Hz)	50/60 ± 1, 5	50/60 ± 1, 50/60 ± 3, 50/60 ± 10 (user selectable)										
Nominal bypass current (A)	25	37	50	62	74	99	123	148	185			
Nominal neutral current (A) ¹	42	62	83	104	125	166	208	208	208			
Maximum short circuit rating	65 kA RMS											
Protection	Built-in bac Internal fus	Built-in backfeed protection and fuses Internal fuse specifications: Rated 400 A, prearcing 33 kA ² s										

Output Specifications 480 V

NOTE: The number of output connections must match the number of input wires in a single mains system or bypass wires in a dual mains system.

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Connections	3-wire (L1,	L2, L3, G, GE	EC ²) or 4-wire	e (L1, L2, L3,	N, G)				
Output voltage regulation	Symmetrica Asymmetric	al load ± 1% cal load ± 3%							
Overload capacity	150% for 1 125% for 10 125% for 1 125% conti 1000% for	150% for 1 minute (in normal operation) 125% for 10 minutes (in normal operation) 125% for 1 minute (in battery operation) 125% continuous (bypass operation) 1000% for 100 milliseconds (bypass operation)							
Dynamic load response	± 5% after 2 ± 1% after 5	± 5% after 2 milliseconds ± 1% after 50 milliseconds							
Output power factor	1	1							
Nominal output current (A)	24	36	48	60	72	96	120	144	180
Frequency regulation (Hz)	50/60 Hz by	ypass synchr	onized — 50/6	60 Hz ± 0.1%	free-running				
Synchronized slew rate (Hz/sec)	Programma	able to 0.25, 0).5, 1, 2, 4, 6						
Total harmonic distortion (THDU)	<1% for line <5% for not	ear load n-linear load							
Load crest factor	2.5								
Load power factor	From 0.7 le	ading to 0.7 I	agging witho	ut any deratir	ng				

^{1.} Harmonic currents in neutral are only considered to be 1.73 x nominal up till 100 kW. Above 100 kW only resistive load is considered.

^{2.} Per NEC 250.30.

Specifications for 480 V Energy Storage Solution

Battery Specifications 480 V

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Protection of the energy storage device: An overcurrent protective device must be located in close proximity to the energy storage device.
- Trip delay must be set to zero on all battery breakers.

Failure to follow these instructions will result in death or serious injury.

See Specifications for Lithium-ion Battery Cabinets, page 33 for details.

Recommended Cable Sizes 480 V

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All wiring must comply with all applicable national and/or electrical codes. The maximum allowable cable size is 300 kcmil.

Failure to follow these instructions will result in death or serious injury.

The maximum number of cable connections per busbar: Two on input/output/ bypass busbars; Four on DC+/DC- busbars; Six on N/G busbars.

NOTE: Overcurrent protection is to be provided by others.

Cable sizes in this manual are based on Table 310.15 (B)(16) of the National Electrical Code (NEC) with the following assertions:

- 90 °C (194 °F) conductors (75 °C (167 °F) termination)
- An ambient temperature of 30 °C (86 °F)
- Use of copper or aluminum conductors for the UPS.
- Use of copper conductors for the Lithium-ion battery cabinet.

Equipment grounding conductors (EGC) are sized in accordance with NEC Article 250.122 and Table 250.122.

If the ambient temperature is greater than 30 $^{\circ}$ C (86 $^{\circ}$ F), larger conductors are to be selected in accordance with the correction factors of the NEC.

NOTE: For the scalable UPS (GVSUPS50K150GS), always size the cables for a UPS rating of 150 kW.

NOTE: Recommended cable sizes and maximum allowable cable size may vary for the auxiliary products. Not all auxiliary products support aluminum cables. Refer to the installation manual provided with the auxiliary product.

NOTE: The DC cable sizes given here are recommendations – Always follow the specific instructions in the battery solution documentation for DC cable sizes and DC EGC cable sizes and ensure that the DC cable sizes match the battery breaker rating.

NOTE: Neutral conductor is sized to handle 1.73 times phase current in case of high harmonic content from non-linear loads. If non or less harmonic currents are expected, neutral conductor can be sized accordingly but not less than the phase conductor.

NOTE: DC cables are sized according to 16 battery blocks in LIBSMG16UL.

Copper

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Input phases (AWG/ kcmil)	8	6	4	3	1	2/0	3/0	4/0	300
Input EGC (AWG/ kcmil)	10	8	8	6	6	6	4	4	4
Bypass/output phases (AWG/kcmil)	10	8	6	4	3	1	2/0	3/0	4/0
Bypass EGC/output EGC (AWG/kcmil)	10	10	8	8	8	6	6	6	4
Neutral (AWG/kcmil)	6	4	2	1/0	2/0	4/0	2 x 1/0	2 x 1/0	2 x 1/0
DC+/DC- (AWG/ kcmil)	300	300	300	300	300	300	300	300	300
DC EGC (AWG/ kcmil)	300	300	300	300	300	300	300	300	300

Aluminum

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Input phases (AWG/ kcmil)	6	4	2	1	1/0	3/0	250	300	2 x 3/0
Input EGC (AWG/ kcmil)	6	6	6	4	4	4	2	2	2 x 2
Bypass/output phases (AWG/kcmil)	6	6	4	2	1	2/0	3/0	250	300
Bypass EGC/output EGC (AWG/kcmil)	6	6	6	6	6	4	4	4	2
Neutral (AWG/kcmil)	4	2	1/0	2/0	4/0	2 x 1/0	2 x 2/0	2 x 250	2 x 2/0

NOTE: Aluminum conductors are not supported for the Lithium-ion battery cabinets.

NOTE: 80% rated circuit breakers for UIB, UOB, MBB, SSIB.

Recommended Upstream Protection 480 V

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- For parallel systems, instantaneous override (Ii) values must not be set higher than 1250 A. Place the label 885-92556 adjacent to the upstream circuit breaker to inform about the hazard.
- For UPS rating 20-120 kW: In parallel systems with three or more UPSs, a circuit breaker must be installed on the output of each UPS. The unit output breaker (UOB) instantaneous override (Ii) values must not be set higher than 1250 A.
- For UPS rating 150 kW: In parallel systems with two or more UPSs, a circuit breaker must be installed on the output of each UPS. The unit output breaker (UOB) instantaneous override (Ii) values must not be set higher than 1250 A.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF FIRE

- Connect only to a circuit with the below specifications.
- Connect to a circuit provided with a 250 A branch circuit overcurrent protection maximum in accordance with the National Electrical Code, ANSI/ NFPA70, and the Canadian Electrical Code, Part I, C22.1.

Failure to follow these instructions can result in injury or equipment damage.

NOTE: For the scalable UPS (GVSUPS50K150GS), always size the upstream protection for a UPS rating of 150 kW.

NOTE: Overcurrent protection is to be provided by others and marked with its function.

UPS rating	20 kW		30 kW		40 kW		50 kW	
	Input	Bypass	Input	Bypass	Input	Bypass	Input	Bypass
Breaker type	HJF36100U3	1X						
lr	40	35	60	50	80	70	100	80
tr @ 6 Ir	0.5-16							
li (x ln)	≤8							

NOTE: Circuit breakers listed below are 80% rated.

UPS rating	60 kW		80 kW		100 kW		
	Input	Bypass	Input	Bypass	Input	Bypass	
Breaker type	HJF36150U31X	HJF36100U31X	JJF36250U31X	HJF36150U31X	JJF36250U31X		
lr	125	100	175	125	200	175	
tr @ 6 Ir	0.5-16						
li (x ln)	≤10	≤12	≤5	≤8	≤5		

UPS rating	120 kW		150 kW			
	Input	Bypass	Input	Bypass		
Breaker type	JJF36250U31X	JJF36250U31X	LJF36400U31X	JJF36250U31X		
lr	250	200	300	250		

UPS rating	120 kW		150 kW		
	Input	Bypass	Input	Bypass	
tr @ 6 Ir	0.5-16				
li (x ln)	≤5		≤3	≤5	

Specifications for 208 V Systems

Input Specifications 208 V

UPS rating	10 kW	15 kW	20 kW	25 kW	30 kW	40 kW	50 kW	60 kW	75 kW
Voltage (V)	200/208/22	0							
Connections	Input conne Input conne	nput connections in single mains system: 4-wire (L1, L2, L3, N, G) WYE nput connections in dual mains system: 3-wire (L1, L2, L3, G) WYE							
Input voltage range (V)	200 V: 170- 208 V: 177- 220 V: 187-	00 V: 170-230 08 V: 177-239 20 V: 187-253							
Frequency range (Hz)	40-70								
Nominal input current (A)	31/30/28	47/45/42	62/60/56	78/75/71	93/90/85	124/119/ 113	155/149/ 141	186/179/ 169	233/224/ 212
Maximum input current (A)	38/37/35	57/55/52	75/73/69	93/92/86	114/109/ 104	152/145/ 137	185/182/ 172	227/219/ 206	284/283/ 271
Input current limitation (A)	40/38/36	59/56/53	78/75/71	93/92/86	117/111/ 106	156/149/ 141	185/182/ 172	233/224/ 211	284/283/ 271
Input power factor	0.99 for loa 0.95 for loa	d greater that d greater that	n 50% n 25%						
Total harmonic distortion (THDI)	<5% at 100% load	<3% at 100	% load					<5% at 100% load	<3% at 100% load
Maximum short circuit rating	65 kA RMS	65 kA RMS							
Protection	Built-in bac	Built-in backfeed protection and fuses							
Ramp-in	Programma	ble and adap	otive 1-40 sec	conds					

NOTE: For a UPS with N+1 power module, the input power factor is 0.99 at 100% load and the total harmonic distortion (THDI) is <6% at full linear load (symmetrical).

Bypass Specifications 208 V

UPS rating	10 kW	15 kW	20 kW	25 kW	30 kW	40 kW	50 kW	60 kW	75 kW
Voltage (V)	200/208/22	0							
Connections	4-wire (L1,	-wire (L1, L2, L3, N, G) WYE							
Bypass voltage range (V)	200 V: 180- 208 V: 187- 220 V: 198-	00 V: 180-220 08 V: 187-229 20 V: 198-242							
Frequency range (Hz)	50/60 ± 1, 5	//60 ± 1, 50/60 ± 3, 50/60 ± 10 (user selectable)							
Nominal bypass current (A)	30/30/28	45/43/41	59/57/54	74/71/68	89/87/82	119/114/ 108	148/142/ 135	178/171/ 162	223/214/ 202
Nominal neutral current (A) ³	50/48/45	75/72/68	100/96/91	125/120/ 114	150/144/ 136	200/192/ 182	250/240/ 227	250/240/ 227	250/240/ 227
Maximum short circuit rating	65 kA RMS								
Protection	Built-in bac Internal fus	kfeed protect e specificatio	ion and fuses ns: Rated 40	; 0 A, prearcinç	g 33 kA²s			Built-in bac protection a Internal fus specificatio 550 A, prea kA ² s	kfeed and fuses e ns: Rated ircing 52

Output Specifications 208 V

UPS rating	10 kW	15 kW	20 kW	25 kW	30 kW	40 kW	50 kW	60 kW	75 kW
Voltage (V)	200/208/22	0							
Connections	4-wire (L1,	L2, L3, N, G)							
Output voltage regulation	Symmetrica Asymmetric	al load ± 1% cal load ± 3%							
Overload capacity	150% for 1 125% for 10 125% for 1 125% conti 1000% for 1	0% for 1 minute (in normal operation) 5% for 10 minutes (in normal operation) 5% for 1 minute (in battery operation) 5% continuous (bypass operation) 00% for 100 milliseconds (bypass operation)							
Dynamic load response	± 5% after 2 ± 1% after 5	: 5% after 2 milliseconds : 1% after 50 milliseconds							
Output power factor	1	1							
Nominal output current (A)	29/28/26	43/42/39	58/56/52	73/70/66	87/83/79	115/111/ 105	144/139/ 131	173/167/ 157	217/208/ 197
Frequency regulation (Hz)	50/60 Hz by	/pass synchr	onized – 50/6	60 Hz ± 0.1%	free-running				
Synchronized slew rate (Hz/sec)	Programma	able to 0.25, ().5, 1, 2, 4, 6						
Total harmonic distortion (THDU)	<2%	<2%							
Load crest factor	2.5	2.5							
Load power factor	From 0.7 le	ading to 0.7 I	agging withou	ut any deratir	g				

^{3.} Harmonic currents in neutral are only considered to be 1.73 x nominal up till 50 kW. Above 50 kW only resistive load is considered.

Specifications for 200/208/220 V Energy Storage Solution

Battery Specifications 208 V

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Protection of the energy storage device: An overcurrent protective device must be located in close proximity to the energy storage device.
- Trip delay must be set to zero on all battery breakers.

Failure to follow these instructions will result in death or serious injury.

See Specifications for Lithium-ion Battery Cabinets, page 33 for details.

Recommended Cable Sizes 208 V

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All wiring must comply with all applicable national and/or electrical codes. The maximum allowable cable size is 300 kcmil.

Failure to follow these instructions will result in death or serious injury.

The maximum number of cable connections per busbar: Two on input/output/ bypass busbars; Four on DC+/DC- busbars; Six on N/G busbars.

NOTE: Overcurrent protection is to be provided by others.

Cable sizes in this manual are based on Table 310.15 (B)(16) of the National Electrical Code (NEC) with the following assertions:

- 90 °C (194 °F) conductors (75 °C (167 °F) termination)
- An ambient temperature of 30 °C (86 °F)
- Use of copper or aluminum conductors for the UPS.
- Use of copper conductors for the Lithium-ion battery cabinet.

If the ambient temperature is greater than 30 $^{\circ}$ C (86 $^{\circ}$ F), larger conductors are to be selected in accordance with the correction factors of the NEC.

Equipment grounding conductors (EGC) are sized in accordance with NEC Article 250.122 and Table 250.122.

NOTE: For the scalable UPS (GVSUPS25K75FS), always size the cables for a UPS rating of 75 kW.

NOTE: Recommended cable sizes and maximum allowable cable size may vary for the auxiliary products. Not all auxiliary products support aluminum cables. Refer to the installation manual provided with the auxiliary product.

NOTE: Neutral conductor is sized to handle 1.73 times phase current in case of high harmonic content from non-linear loads. If non or less harmonic currents are expected, neutral conductor can be sized accordingly but not less than the phase conductor.

Copper

UPS rating	10 kW	15 kW	20 kW	25 kW	30 kW	40 kW	50 kW	60 kW	75 kW
Input phases (AWG/ kcmil)	8	4	3	2	1/0	3/0	4/0	300	2 x 2/0
Input EGC (AWG/ kcmil)	10	8	8	6	6	6	4	4	3

Copper (Continued)

UPS rating	10 kW	15 kW	20 kW	25 kW	30 kW	40 kW	50 kW	60 kW	75 kW
Bypass/output phases (AWG/kcmil)	8	6	4	3	2	1/0	3/0	4/0	300
Bypass EGC/output EGC (AWG/kcmil)	10	10	8	8	6	6	6	4	4
Neutral (AWG/kcmil)	6	3	1	2/0	3/0	2 x 1/0	2 x 2/0	2 x 2/0	2 x 2/0
DC+/DC-(AWG/ kcmil)	300	300	300	300	300	300	300	300	300
DC EGC (AWG/ kcmil)	300	300	300	300	300	300	300	300	300

Aluminum

UPS rating	10 kW	15 kW	20 kW	25 kW	30 kW	40 kW	50 kW	60 kW	75 kW
Input phases (AWG/ kcmil)	6	3	1	1/0	3/0	250	300	2 x 3/0	4/0
Input EGC (AWG/ kcmil)	6	6	6	4	4	4	2	2 x 2	1
Bypass/output phases (AWG/kcmil)	6	4	3	1	1/0	3/0	250	300	2 x 3/0
Bypass EGC/output EGC (AWG/kcmil)	6	6	6	6	4	4	4	2	2
Neutral (AWG/kcmil)	4	1	2/0	4/0	2 x 1/0	2 x 2/0	2 x 4/0	2 x 4/0	2 x 4/0

NOTE: Aluminum conductors are not supported for Lithium-ion battery cabinets.

NOTE: 80% rated circuit breakers for UIB, UOB, MBB, SSIB.

Recommended Upstream Protection 208 V

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- For parallel systems, instantaneous override (Ii) values must not be set higher than 1250 A. Place the label 885-92556 adjacent to the upstream circuit breaker to inform about the hazard.
- For UPS rating 10-60 kW: In parallel systems with three or more UPSs, a circuit breaker must be installed on the output of each UPS. The unit output breaker (UOB) instantaneous override (Ii) values must not be set higher than 1250 A.
- For UPS rating 75 kW: In parallel systems with two or more UPSs, a circuit breaker must be installed on the output of each UPS. The unit output breaker (UOB) instantaneous override (Ii) values must not be set higher than 1250 A.

Failure to follow these instructions will result in death or serious injury.

HAZARD OF FIRE

- Connect only to a circuit with the below specifications.
- Connect to a circuit provided with a 250 A branch circuit overcurrent protection maximum in accordance with the National Electrical Code, ANSI/ NFPA70, and the Canadian Electrical Code, Part I, C22.1.

Failure to follow these instructions can result in injury or equipment damage.

NOTE: For the scalable UPS (GVSUPS25K75FS), always size the upstream protection for a UPS rating of 75 kW.

NOTE: Overcurrent protection is to be provided by others and marked with its function.

UPS rating	10 kW 15 kW		20 kW		25 kW			
	Input	Bypass	Input	Bypass	Input	Bypass	Input	Bypass
Breaker type	HJF36100U31X			HJF36150- U31X	HJF36100- U31X			
lr	50	40	80	60	100	80	125	100
tr @ 6 Ir	0.5-16							
li (x ln)	≤8						≤5	≤8

UPS rating	30 kW		40 kW		50 kW	
	Input	Bypass	Input	Bypass	Input	Bypass
Breaker type	HJF36150U31X		JJF36250U31X	HJF36150U31X	JJF36250U31X	
lr	150	110	200	150	250	200
tr @ 6 Ir	0.5-16					
li (x ln)	≤10	≤12	≤5	≤8	≤5	

UPS rating	60 kW		75 kW	
	Input	Bypass	Input	Bypass
Breaker type	LJF36400U31X	JJF36250U31X	LJF36400U31X	LJF36400U31X
lr	300	225	350	300

UPS rating	60 kW		75 kW	
	Input	Bypass	Input	Bypass
tr @ 6 Ir	0.5-16			
li (x ln)	≤5		≤3	≤5

Specifications for Lithium-ion Battery Cabinets

	LIBSESEMG13UL	LIBSESMG16UL
Charging power in % of output power	40% at ≤ 80% load, 15% at 100% load	40% at ≤ 80% load, 15% at 100% load
Nominal battery voltage (VDC) at 3.8 V per cell	395.2	486.4
Charge current default rate (CA rate)	0.7	0.7
Maximum continuous charge current rate (CA rate)	1	1
Float charge voltage (VDC) at 4.2 V per cell	436.8	537.6
End of discharge voltage (VDC) at 3.0 V per cell	312	384
Maximum continuous 100% depth of discharge power (kW)	140	173
Maximum partial depth of discharge power (kW)	176	218
Short circuit rating value (kA) - Isc, RMS (Isc, MAX)	2.9(9.0)	2.9(9.0)

NOTE: If the battery temperature is higher than the threshold after a full discharge at maximum continuous discharge power, the UPS may have to reduce the charge current to zero to protect the battery.

NOTE: The battery temperature must return to room temperature $\pm 3 \degree C (5 \degree F)$ before a new discharge at maximum continuous discharge power. If not, the battery breaker may be tripped due to overtemperature protection.

NOTE: The working temperature for the busbars should be no more than 100 $^{\circ}$ C (212 $^{\circ}$ F).

Recommended Bolt and Lug Sizes

NOTICE

RISK OF EQUIPMENT DAMAGE

Use only UL approved compression cable lugs.

Failure to follow these instructions can result in equipment damage.

Recommended Bolt and Lug Sizes for the UPS – Copper — One Hole Cable Lugs

Cable size	Bolt size	Cable lug type	Crimping tool	Die
10 AWG	M8 x 25 mm	LCA10-56-L	NA	NA
8 AWG	M8 x 25 mm	LCA8-56-L	CT-720	CD-720-1 Red P21
6 AWG	M8 x 25 mm	LCA6-56-L	CT-720	CD-720-1 Blue P24
4 AWG	M8 x 25 mm	LCA4-56-L	CT-720	CD-720-1 Gray P29
3 AWG	M8 x 25 mm	LCA4-56-L	CT-720	CD-720-1 Gray P29
2 AWG	M8 x 25 mm	LCA2-56-Q	CT-720	CD-720-1 Brown P33
1 AWG	M8 x 25 mm	LCA1-56-E	CT-720	CD-720-2 Green P37
1/0 AWG	M8 x 25 mm	LCA1/0-56-X	CT-720	CD-720-2 Pink P42
2/0 AWG	M8 x 25 mm	LCA2/0-56-X	CT-720	CD-720-2 Black P45
3/0 AWG	M8 x 25 mm	LCA3/0-56-X	CT-720	CD-720-2 Orange P50
4/0 AWG	M8 x 25 mm	LCA4/0-56-X	CT-720	CD-720-3 Purple P54
250 kcmil	M8 x 25 mm	LCA250-56-X	CT-720	CD-720-3 Yellow P62
300 kcmil	M8 x 25 mm	LCA300-56-X	CT-720	CD-720-4 White P66

Recommended Bolt and Lug Sizes for the Lithium-ion Battery Cabinet- Copper - One Hole Cable Lugs

Cable size	Bolt size	Cable lug type	Crimping tool	Die
300 kcmil	M10x30	LCA300-12-X	CT-720	CD-720-4 White P66

Recommended Bolt and Lug Sizes for the UPS – Copper — Two Hole Cable Lugs

Cable size	Bolt size	Cable lug type	Crimping tool	Die
6 AWG	M8 x 25 mm	LCC6-12-L	CT-930	CD-920-6 Blue P24
4 AWG	M8 x 25 mm		CT 020	CD-920-4 Gray P29
3 AWG	M8 x 25 mm	LCC4-12-L	01-950	CD-320-4 Olay 1 23
2 AWG	M8 x 25 mm	LCC2-12-Q	CT-930	CD-920-2 Brown P33
1 AWG	M8 x 25 mm	LCC1-12-E	CT-930	CD-920-1 Green P37
1/0 AWG	M8 x 25 mm	LCC1/0-12-X	CT-930	CD-920-1/0 Pink P42
2/0 AWG	M8 x 25 mm	LCC2/0-12-X	CT-930	CD-920-2/0 Black P45
3/0 AWG	M8 x 25 mm	LCC3/0-12-X	CT-930	CD-920-3/0 Orange P50
4/0 AWG	M8 x 25 mm	LCC4/0-12-X	CT-930	CD-920-4/0 Purple P54
250 kcmil	M8 x 25 mm	LCC250-12-X	CT-930	CD-920-250 Yellow P62
300 kcmil	M8 x 25 mm	LCC300-12-X	CT-930	CD-920-300 White P66

Recommended Bolt and Lug Sizes for the Lithium-ion Battery Cabinet– Copper — Two Hole Cable Lugs

Cable size	Bolt size	Cable lug type	Crimping tool	Die
300 kcmil	M10x30	LCC300-12-X	СТ-930	CD-920-300 White P66

Recommended Bolt and Lug Sizes for the UPS – Aluminum — One Hole Cable Lugs

Cable size	Bolt size	Cable lug type	Crimping tool	Die
6 AWG	M8 x 25 mm	LAA6-56-X	CT-720	CD-720-1 Gray P29
4 AWG	M8 x 25 mm	LAA4-56-X	CT-720	CD-720-2 Green P37
3 AWG	M8 x 25 mm	LAA3-56-X	CT-720	CD-720-2 Green P37
2 AWG	M8 x 25 mm	LAA2-56-X	CT-720	CD-720-2 Pink P42
1 AWG	M8 x 25 mm	LAA1-56-X	CT-720	CD-720-2 Gold P45
1/0 AWG	M8 x 25 mm	LAA1/0-56-X	CT-720	CD-720-2 Tan P50
2/0 AWG	M8 x 25 mm	LAA2/0-56-5	CT-720	CD-720-3 Olive P54
3/0 AWG	M8 x 25 mm	LAA3/0-56-5	CT-720	CD-720-3 Ruby P60
4/0 AWG	M8 x 25 mm	LAA4/0-56-5	CT-720	CD-720-4 White P66
250 kcmil	M8 x 25 mm	LAA250-56-5	CT-720	CD-720-5 Red P71
300 kcmil	M8 x 25 mm	LAA300-56-5	CT-720	CD-720-6 Blue P76

NOTE: Aluminum cables are not supported for the Lithium-ion battery cabinets.

Recommended Bolt and Lug Sizes for the UPS – Aluminum — Two Hole Cable Lugs

Cable size	Bolt size	Cable lug type	Crimping tool	Die
2/0 AWG	M8 x 25 mm	LAB2/0-12-5	CT-720	CD-720-3 Olive P54
3/0 AWG	M8 x 25 mm	LAB3/0-12-5	CT-720	CD-720-3 Ruby P60
4/0 AWG	M8 x 25 mm	LAB4/0-12-5	CT-720	CD-720-4 White P66
250 kcmil	M8 x 25 mm	LAB250-12-2	CT-720	CD-720-5 Red P71
300 kcmil	M8 x 25 mm	LAB300-12-2	CT-720	CD-720-6 Blue P76

NOTE: Aluminum cables are not supported for the Lithium-ion battery cabinets.

Torque Specifications

Bolt size	Torque for UPS	Torque for Lithium-ion battery cabinet
M4	1.7 Nm (1.25 lb-ft / 15 lb-in)	1.7 Nm (1.25 lb-ft / 15 lb-in)
M5	2.2 Nm (1.62 lb-ft / 19.5 lb-in)	NA
M6	5 Nm (3.69 lb-ft / 44.3 lb-in)	5 Nm (3.69 lb-ft / 44.3 lb-in)
M8	17.5 Nm (12.91 lb-ft / 154.9 lb-in)	14 Nm (10.33 lb-ft)
M10	30 Nm (22 lb-ft / 194.7 lb-in)	30 Nm (22.13 lb-ft)
M12	50 Nm (36.87 lb-ft / 442.5 lb-in)	46 Nm (33.93 lb-ft)

Compliance

	UPS	Lithium-ion battery cabinet
Safety	IEC 62040-1: 2017, Edition 2.0, Uninterruptible Power Systems (UPS) - Part 1: Safety requirements UL 1778 5th edition	IEC 62619:2017 Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications
		IEC 62477-1:2012+A11:2014 Safety requirements for power electronic converter systems and equipment Part 1: General
		UL 1973:2022 Batteries for Use in Stationary, Vehicle Auxiliary and Light Electric Rail Applications
		UL 9540A:2019 Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
EMC/EMI/RFI	IEC 62040-2: 2016, 3rd edition Uninterruptible Power Systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements C2	IEC 62040-2:2016 Uninterruptible Power Systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements C2
	IEEE C62.41-1991 Location Category B1, IEEE Recommended Practice on Surge Voltages in Low- Voltage AC Power Circuits	FCC Part 15, Radio Frequency Devices, class A
Performance	Performance in accordance with: IEC 62040-3: 2021, 3rd edition Uninterruptible Power Systems (UPS) - Part 3: Method of specifying the performance and test requirements.	-
Environmental		IEC 60068-2-1:2007 Environmental testing – Part 2-1: Tests – Test A: Cold
		IEC 60068-2-2:2007 Environmental testing – Part 2-2: Tests – Test B: Dry heat
		IEC 60068-2-78:2012 Environmental testing – Part 2- 78: Tests – Test Cab: Damp heat, steady state
Transportation	IEC 60721-4-2 Level 2M2	IEC60068-2-27:2008 Environmental testing – Part 2- 27: Tests – Test Ea and guidance: Shock
		IEC60068-2-31:2008 Environmental testing – Part 2- 31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens
		IEC60068-2-64:2008 Environmental testing – Part 2- 64: Tests – Test Fh: Vibration, broadband random and guidance
Seismic	ICC-ES AC 156 (2015); OSHPD Pre-approved; Sds= 1.45 g for z/h=1 and Sds=2.00 g for z/h=0; lp=1.5	OSHPD, CBC 2019, S _{DS} =2.0g (z/h = 1); 2.5g (z/h = 0)
Earthing system	TN-C, TN-S, TT, IT	
Overvoltage category	This UPS is OVCII compliant. If the UPS is installed in an environment with an OVC rating higher than II, an SPD (surge protection device)	11
	UPS	Lithium-ion battery cabinet
------------------	---	-----------------------------
	must be installed upstream of the UPS to reduce the overvoltage category to OVCII.	
Protective class	1	1
Pollution degree	2	2

Guidance for Organizing Battery Cables

NOTE: For 3rd party batteries, use only high rate batteries for UPS applications.

NOTE: When the battery bank is placed remotely, the organizing of the cables is important to reduce voltage drop and inductance. The distance between the battery bank and the UPS must not exceed 200 m (656 ft). Contact Schneider Electric for installations with a longer distance.

NOTE: To minimize the risk of electromagnetic radiation, it is highly recommended to follow the below guidance and to use grounded metallic tray supports.

Cable Length				
<30 m	Not recommended	Acceptable	Recommended	Recommended
31–75 m	Not recommended	Not recommended	Acceptable	Recommended
76–150 m	Not recommended	Not recommended	Acceptable	Recommended
151–200 m	Not recommended	Not recommended	Not recommended	Recommended

Weights and Dimensions

UPS Weights and Dimensions

	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
GVSUPS100KRGS GVSUPS25K75FS GVSUPS30KRFS GVSUPS40KRFS GVSUPS50K150GS GVSUPS50KRFS GVSUPS60KRGS GVSUPS80KRGS GVSUPS150KGS	290 (639)	1485 (58.46)	521 (20.51)	847 (33.35)
GVSUPS100KGS GVSUPS80KGS GVSUPS50KRGS GVSUPS50KFS GVSUPS40KRGS GVSUPS30KRGS GVSUPS25KRFS GVSUPS20KRGS GVSUPS20KRFS GVSUPS15KRFS GVSUPS10KRFS	250 (551)	1485 (58.46)	521 (20.51)	847 (33.35)
GVSUPS50KGS GVSUPS40KGS GVSUPS30KGS GVSUPS25KFS GVSUPS20KGS GVSUPS15KFS GVSUPS10KFS	206 (454)	1485 (58.46)	521 (20.51)	847 (33.35)
GVSUPS120KGS GVSUPS60KFS	278 (613)	1485 (58.46)	521 (20.51)	847 (33.35)
GVSUPS30KFS	238 (525)	1485 (58.46)	521 (20.51)	847 (33.35)

Lithium-ion Battery Cabinet Weights and Dimensions

	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
LIBSESMG13UL	415 (915)	1970 (77.56)	650 (25.59)	587 (23.11)
LIBSESMG16UL	470 (1036)	1970 (77.56)	650 (25.59)	587 (23.11)

Environment

	Operating		Storage	
	UPS	Lithium-ion battery cabinet	UPS	Lithium-ion battery cabinet
Temperature	0 °C to 50 °C (32 °F to 122 ° F) with load derating above 40 °C (104 °F). ⁴	Recommended operating temperature is 18 °C to 28 ° C (64 °F to 82 °F)	-25 °C to 55 °C (-13 °F to 131 °F)	Lithium-ion battery cabinet: 0 °C to 40 °C (32 °F to 104 ° F)
				Battery modules: Recommended storage for battery modules is 20 °C (68 °F) or cooler (non-freezing)
Relative humidity	5-95% non-condensing	0-95% non-condensing	10-80% non-condensing	Lithium-ion battery cabinet: 0-90% non-condensing
				Lithium-ion battery modules: Recommended storage for battery modules is 40-80% non-condensing
Elevation	Designed for operation in 0- 3000 m (0-10000 feet) elevation. Derating required from 1000-3000 m (3300-10000 feet): Up to 1000 m (3300 feet): 1.000 Up to 1500 m (5000 feet) : 0.975 Up to 2000 m (6600 feet): 0.950 Up to 2500 m (8300 feet): 0.925 Up to 3000 m (10000 feet): 0.900	0-3000 m (0-10000 feet)		
Audible noise one meter (three feet) from unit	480 V: 57 dB at 70% load, 64 dB at 100% load 208 V: 60 dB at 70% load, 68 dB at 100% load			
Protection class	IP21	IP20		
Color	RAL 9003, gloss level 85%			

^{4.} For temperatures between 40 $^{\circ}$ C (104 $^{\circ}$ F) and 50 $^{\circ}$ C (122 $^{\circ}$ F), derate the load power rating with 2.5% per $^{\circ}$ C.

Clearance

NOTE: Clearance dimensions are published for airflow and service access only. Consult with the local safety codes and standards for additional requirements in your local area.

NOTE: The required minimum rear clearance for the UPS is 150 mm (5.91 in).

NOTE: Clearance dimensions of Lithium-ion Battery Cabinet have been verified by UL 9540A 4th edition (project No. 4789548397, issued by UL on 2021-05-21).

Front View of the UPS



Lithium-ion Battery Cabinet



* Rear clearance is only required for Lithium-ion battery cabinet with seismic anchoring.

Single System Overview

UIB	Unit input breaker
SSIB	Static switch input breaker
ІМВ	Internal maintenance breaker
UOB	Unit output breaker
ВВ	Battery breaker

Single System – Single Mains

Single System – Dual Mains



Overview of Installation Kits

Installation Kit 0M-100883

Part	Used in	Number of units
Spring washer	Connect the Power Cables, page 63.	40

Installation Kit 0M-100917

Part	Used in	Number of units
M8 nut with washer	Prepare the UPS for TN-C/480 V Solid-Grounded System, page 62.	2
Bonding busbar		1

Installation Kit 0M-88357

Part	Used in	Number of units
USB cable	Connect the Modbus Cables, page 77.	1
150 Ohm resistor		10
Terminal connector		2

Installation Kit 0J-0M-1160

Part	Used in	Number of units
Temperature sensor	For third-party battery solution, see Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products, page 73. Refer to the installation manual for your specific battery solution for information on how to install and connect the temperature sensor.	1 O

Optional Seismic Kit GVSOPT002

Part	Used in	Number of units
M8 x 20 mm bolt with washer	Install the Seismic Anchoring (Option), page 56 and Final Installation, page 80.	12
Rear anchor		1
Rear anchoring bracket		
Front anchoring bracket		
Rear connection plate	Used for installation with an adjacent product. Follow instructions in the installation manual for the adjacent product.	1

Optional NEMA 2 Hole Kit GVSOPT005

Part	Used in	Number of units
NEMA 2 hole plate (output, DC+, N)	Connect the Power Cables with NEMA 2 Hole Plates, page 67.	7
NEMA 2 hole plate (input, bypass, DC-)		8
M8 nut with washer		30
Spring washer		30
M8x24 mm flat washer		60

Overview of Accessory Kits

Accessory Kit 0M-95318: Busbar Kit

NOTE: Save this accessory kit for the field service representative. The busbars will be installed by Schneider Electric during the start-up service.

Accessory Kit 0M-95319: Cover Kit

NOTE: Save this accessory kit for the field service representative. The covers will be installed by Schneider Electric during the start-up service.

Accessory Kit 0M-95320: Cable Kit

Part Number	Description	Quantity	Used in
0W76926	Signal cable from battery module to battery module – standard	15	Note: Save these signal cables for the field service representative. These signal cables will be installed by Schneider Electric during the start-up service.
0W76936	Signal cable from battery module to battery module – long	1	
0W76933	Signal cable from battery module to RBMS	1	
0W76928	Signal cable from RBMS CAN 2 to RBMS CAN 1 in next battery cabinet	1	Route the Signal Cables to the Switchgear, Rack BMS, and System BMS Ports, page 90
0W76929	Signal cable from MCCB AUX 1 to UPS	1	
0W76934	Signal cable from MCCB AUX 2 to MCCB AUX 1 in next battery cabinet	1	
0W13444	Signal cable from SGB I/O 1 to the UPS	1	
0W13442	Signal cable from SGB I/O 2 to the UPS	1	
0W76972	Signal cable from SGB I/O 1 to SGB I/ O 1 between the battery cabinets	1	

Accessory Kit 0M-95331: Seismic Anchoring and Fuse Kit

Part Number	Description	Quantity	Used in
870-50102	Anchor parts	4	Install the Rear Seismic Anchoring, page 57
870-51172	Interconnection plate between seismic brackets	1	
803-0684	M6 x 12 torx screw with washer	4	
803-0686	M6 x 16 torx with washer	18	Install the Rear Seismic Anchoring, page 57 and Position and Interconnect the Battery Cabinets, page 59.
TME00409	500 A fast acting fuse	3	Note: Save for the field service representative. The fuses will be installed by Schneider Electric during the start-up service.
HUA29593	Washer	6	
HUA13751	M12 x 16 hexagonal screw	6	
HUA41574	3 A rated fuse	2	

Optional Kit

Part Number	Description	Quantity	Used in
LIBSEOPT002	Galaxy LIB cabinet SMPS AC/DC converter	1 ⁵	Note: Scan the QR code on the SMPS AC/DC converter to find the installation manual.
LIBSEFUSEKIT	Galaxy 10-module LIB cabinet fuse kit	1	Note: Save for the field service representative. The busbars will be installed by Schneider Electric during the start-up service.

^{5.} One AC/DC converter box can supply up to 10 battery cabinets. For 11+ battery cabinets, at least two AC/DC converter boxes are required.

Installation Procedure



- 1. Lithium-ion battery cabinet(s): Prepare for Installation, page 49.
- 2. UPS: Prepare for Installation, page 51.
- 3. Only for UPS without preinstalled power modules: Install the Power Module(s), page 55.
- 4. UPS: Install the Seismic Anchoring (Option), page 56.
- 5. Lithium-ion battery cabinet(s): Install the Rear Seismic Anchoring, page 57.
- 6. Lithium-ion battery cabinet(s): Position and Interconnect the Battery Cabinets, page 59.
- 7. Lithium-ion battery cabinet(s): Install the Front Seismic Anchoring, page 61.
- Only for UPS for TN-C/480 V solid-grounded earthing system (no neutral connection): Prepare the UPS for TN-C/480 V Solid-Grounded System, page 62.
- 9. UPS: Perform one of the following:
 - Connect the Power Cables, page 63, OR
 - Connect the Power Cables with NEMA 2 Hole Plates, page 67.
- 10. UPS: Connect the Signal Cables, page 71.
- 11. **UPS**: Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products, page 73.
- 12. UPS: Connect the External Communication Cables, page 77.
- 13. UPS: Connect the Modbus Cables, page 77.

- 14. UPS: Add Translated Safety Labels to Your Product, page 79.
- 15. UPS: Final Installation, page 80.
- 16. Lithium-ion battery cabinet(s): Install the Battery Modules in the Battery Cabinet, page 84.
- 17. Lithium-ion battery cabinet(s): Connect the Power Cables, page 86.
- 18. Lithium-ion battery cabinet(s): Route the Signal Cables to the Switchgear, Rack BMS, and System BMS Ports, page 90.

AADANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Startup must only be performed by Schneider Electric.

Failure to follow these instructions will result in death or serious injury.

For moving or decommissioning the UPS or the Lithium-ion battery cabinets after installation has been completed, see Decommission or Move the UPS to a New Location, page 98 or Decommission or Move the Battery Cabinet to a New Location, page 106.

Prepare for Installation

1. Remove the indicated cover.



2. Remove the two transparent covers.



3. Remove the plate in front of the battery shelves.



4. Remove the four boxes with accessory kits from the bottom of the cabinet. Refer to Overview of Accessory Kits, page 45 for more information on the accessory kits.



Prepare for Installation

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill or punch holes for cables or conduits with the gland plate installed and do not drill or punch holes in close proximity to the UPS.

Failure to follow these instructions will result in death or serious injury.

NOTE: Route the signal cables separately from the power cables and route the Class 2/SELV cables separately from the non-Class 2/non-SELV cables.

1. Remove the front panel.



- 2. Remove the lower front plate.
- 3. Remove the transparent cover.
- 4. Remove the top cover:
 - a. Remove the screws and tilt the front of the top cover upwards.
 - b. Slide the top cover towards the rear to remove it. Tabs in the rear of the top cover must disconnect from the slots in the rear of the UPS.

- 5. For installation with adjacent auxiliary cabinet on the left side of the UPS: Remove the left side panel. The side panel is reinstalled on some adjacent auxiliary cabinets. Follow the adjacent auxiliary product manual.
- 6. For installation with adjacent auxiliary cabinet on the left side of the UPS: Remove the lower left side plate for internal power cabling between the UPS and the adjacent auxiliary cabinet.

Front View of the UPS



- 7. For installation with adjacent auxiliary cabinet on the right side of the UPS: Remove the right side panel. The side panel is reinstalled on some adjacent auxiliary cabinets. Follow the adjacent auxiliary product manual.
- 8. For installation with adjacent auxiliary cabinet on the right side of the UPS: Remove the lower right side plate for internal power cabling between the UPS and the adjacent auxiliary cabinet.

Front View of the UPS



- 9. Perform one of the following:
 - For bottom cable entry: Remove the gland plate in the bottom of the UPS.

Front View of the UPS



- For rear cable entry: Remove the gland plate in the rear of the UPS.

Front View of the UPS



- 10. Drill/punch holes for power cables/conduits in the gland plate. Install conduits (not provided), if applicable.
- 11. Install the gland plate in the bottom or rear of the UPS.

12. Remove the rear gland plates and the rear brush plates from the UPS.

Rear View of the UPS



- 13. Perform one of the following:
 - For installation without conduits: Reinstall the brush plates.
 - **For installation with conduits**: Drill a hole in the gland plates for conduits, install conduits, and reinstall the gland plates.

Rear View of the UPS without Conduits

Rear View of the UPS with Conduits



- 14. Route the non-Class 2/non-SELV signal cables through the left rear brush/ gland plate and into the left side of the UPS.
- 15. Route the external cables that connect to the controller box through the right rear brush/gland plate and through the cable channel to the front of the UPS.
- 16. Route the Class 2/SELV signal cables through the right rear brush/gland plate and into the right side of the UPS.

Install the Power Module(s)

HEAVY LOAD

Power modules are heavy and require two persons to lift.

- 20 kW power module weighs 25 kg (55 lbs).
- 50 kW power module weighs 38 kg (84 lbs).

Failure to follow these instructions can result in injury or equipment damage.

NOTE: Always install power modules starting with the bottom position and upwards.

- 1. Remove the screw in each side of the empty power module slot. Remove filler plate, if present.
- 2. Push the power module into the slot.
- 3. Reinstall the screw in each side of the slot.



Install the Seismic Anchoring (Option)

1. Mount the rear anchor(s) to the floor. Use appropriate hardware for the floor type – the hole diameter in the rear anchor is ø14 mm.



2. Install the rear anchoring bracket on the UPS with the provided M8 bolts.

Rear View of the UPS



3. Push the UPS into position so the rear anchoring bracket connects to the rear anchor. The front anchoring bracket is installed in the final installation steps.

Rear View of the UPS



Install the Rear Seismic Anchoring

1. Mount the rear seismic assembly (4 x 870-50102 and M6 x 16 torx screws from accessory kit 0M-95331 and the rear shipping bracket) to the floor. Use appropriate hardware for the floor type – the hole diameter in the rear seismic bracket is ø14 mm. The minimum requirement is M12 strength grade 8.8 hardware.

Rear View



2. In systems with more battery cabinets, interconnect the seismic assemblies with the interconnection plate 870-51172 from the accessory kit 0M-95331.



3. Remove the indicated screws.

Rear View



4. Remove the rear seismic bracket.

Rear View



5. Install the rear seismic bracket on the battery cabinet(s).

Rear View



Position and Interconnect the Battery Cabinets

NOTE: This procedure describes how to position and interconnect several battery cabinets. If your system only has one battery cabinet, you only need to follow step 2 and step 3.

1. Remove the side panels that are adjacent to the other battery cabinets.



2. Push the right-most battery cabinet into position. For seismic anchoring, ensure that the rear seismic bracket connects to the rear anchors.

Rear View



3. Lower the levelling feet until they connect with the floor - use a bubble-leveler to ensure that the cabinet is level.



- 4. Push the second right-most battery cabinet into position, align with the seismic anchoring (if any), and level the battery cabinet as described in step 2 and step 3.
- 5. Install the ten interconnection screws (five in the front and five in the rear) between the two battery cabinets.

NOTE: To reach the five interconnection screws in the rear of the leftmost battery cabinet, the left side panel can be removed. Reinstall the left side panel on the left-most battery cabinet after interconnection.





6. Push the third battery cabinet into position, align with the seismic anchoring (if any), level the battery cabinet, and interconnect with the other battery cabinets as described in step 2, step 3, and step 5. Continue until all the battery cabinets are in place, levelled, and interconnected.

Install the Front Seismic Anchoring

1. Install the front seismic bracket (front shipping bracket) on the battery cabinet.



2. Anchor the front seismic bracket to the floor using appropriate hardware for the floor type – the hole diameter in the front seismic bracket is ø14 mm. The minimum requirement is M12 strength grade 8.8 hardware.

NOTE: Floor anchoring bolts are not supplied.

Prepare the UPS for TN-C/480 V Solid-Grounded System

NOTE: The UPS is preconfigured for TNS earthing system.

NOTE: 480 V solid-grounded system (no neutral connection) using a bonding busbar will result in a higher leakage current.

1. Only for TN-C/480 V solid-grounded system (no neutral connection): Install the supplied bonding busbar.

Front View of the UPS – TN-C/480 V Solid-Grounded System (No Neutral Connection)



Connect the Power Cables

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

In single mains systems where power cables are split due to the cable size restriction, use the bypass busbars for the second input cable set. There is not enough space to land two input cable sets on the input busbars due to the single mains jumper busbars.

Failure to follow these instructions will result in death or serious injury.

NOTICE

RISK OF EQUIPMENT DAMAGE

To ensure correct load sharing in bypass operation in a parallel system:

- All bypass cables must be the same length for all UPSs.
- All output cables must be the same length for all UPSs.
- All input cables must be the same length for all UPSs (only required in single mains system).

Failure to follow these instructions can result in equipment damage.

- 1. Only for 480 V solid-grounded systems (no neutral cable connection):
 - a. Remove the RFI bracket. Save the two screws.
 - b. Remove the screw in the left side and save it.
 - c. Install the RFI bracket in the left side with the three screws.

Front View of the UPS



2. **Only for dual mains system**: Remove the three single mains jumper busbars.

Front View of the UPS



3. Connect the power cables as shown in the described order:



*Provided in kit.

- a. Connect the equipment grounding conductor/PE cables.
- b. Connect the N cables. Connect battery midpoint (if present in battery solution).
- c. Connect the DC+ cables.
- d. Connect the output cables.
- e. Connect the DC- cables.
- f. Only for dual mains system: Connect the bypass cables.
- g. Connect the input cables.

NOTE: Ensure to connect the input cables to the correct input busbars in the top left side of the UPS.

Front View of the UPS – Single Mains System

Front View of the UPS – Dual Mains System



RISK OF EQUIPMENT DAMAGE

Check the fastening of the cable lugs. If the cable lugs move due to pulling on cables, the bolt can become loose.

Failure to follow these instructions can result in injury or equipment damage.

Connect the Power Cables with NEMA 2 Hole Plates

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

In single mains systems where power cables are split due to the cable size restriction, use the bypass busbars for the second input cable set. There is not enough space to land two input cable sets on the input busbars due to the single mains jumper busbars.

Failure to follow these instructions will result in death or serious injury.

NOTICE

RISK OF EQUIPMENT DAMAGE

To ensure correct load sharing in bypass operation in a parallel system:

- All bypass cables must be the same length for all UPSs.
- All output cables must be the same length for all UPSs.
- All input cables must be the same length for all UPSs (only required in single mains system).

Failure to follow these instructions can result in equipment damage.

- 1. Only for 480 V solid-grounded systems (no neutral cable connection):
 - a. Remove the RFI bracket. Save the two screws.
 - b. Remove the screw in the left side and save it.
 - c. Install the RFI bracket in the left side with the three screws.

Front View of the UPS



- 2. Perform one of the following:
 - Only for single mains system: Remove the indicated L3 jumper busbar in the left side of the UPS. Save the L3 jumper busbar for reinstallation later.
 - Only for dual mains system: Remove the three single mains jumper busbars in the left side of the UPS.

Front View of the UPS



3. Install the NEMA 2 hole plates and connect the power cables as shown in the described order:



*Provided in kit.

Front View of the UPS — Single Mains System

Front View of the UPS — Dual Mains System



- a. Connect the equipment grounding conductor/PE cables.
- b. Connect the N cables. Connect battery midpoint (if present in battery solution).
- c. Connect the DC+ cables.

- d. Connect the output cables.
- e. Connect the DC- cables.
- f. Only for dual mains system: Connect the bypass cables.
- g. Connect the input cables.

NOTE: Ensure to connect the input cables to the correct input busbars in the top left side of the UPS.

4. **Only for single mains system**: Reinstall the L3 jumper busbar in its original position with two M8 nuts.

Front Right View of the UPS



Connect the Signal Cables

RISK OF EQUIPMENT DAMAGE

All Class 2/SELV signal cables shall be double insulated/jacket cable and minimum rated for 30 VDC. All non-Class 2/non-SELV signal cables shall be double insulated/jacket cable and minimum rated for 600 VAC.

Failure to follow these instructions can result in injury or equipment damage.

NOTE: Route the signal cables separately from the power cables and route the Class 2/SELV cables separately from the non-Class 2/non-SELV cables.

1. Connect the Class 2/SELV signal cables from the building EPO to board 640-4864 terminal J6600 in the UPS according to one of the options below.

The EPO circuit is considered Class 2/SELV. Class 2/SELV circuits must be isolated from the primary circuitry. Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is Class 2/SELV.

EPO Configurations (640-4864 terminal J6600, 1-9)



The EPO input supports 24 VDC.

NOTE: The default setting for the EPO activation is to turn off the inverter.

If you want the EPO activation to transfer the UPS into forced static bypass operation instead, please contact Schneider Electric.

2. Connect the Class 2/SELV signal cables from the auxiliary products to board 640-4864 in the UPS. Follow the instructions in the auxiliary product manuals.

3. Connect the Class 2/SELV signal cables to the input contacts and output relays on board 640-4864 in the UPS.

Do not connect any circuit to the input contacts unless it can be confirmed that the circuit is Class 2/SELV.

The input contacts support 24 VDC 10 mA. All circuits connected must have the same 0 V reference.



Name	Description	Location
IN _1 (input contact 1)	Configurable input contact	640-4864 terminal J6616, 1-2
IN _2 (input contact 2)	Configurable input contact	640-4864 terminal J6616, 3-4
IN _3 (input contact 3)	Configurable input contact	640-4864 terminal J6616, 5-6
IN _4 (input contact 4)	Configurable input contact	640-4864 terminal J6616, 7-8

The output relays support 24 VAC/VDC 1 A. All external circuitry must be fused with maximum 1 A fast acting fuses.



Name	Description	Location
OUT _1 (output relay 1)	Configurable output relay	640-4864 terminal J6617, 1-3
OUT _2 (output relay 2)	Configurable output relay	640-4864 terminal J6617, 4-6
OUT _3 (output relay 3)	Configurable output relay	640-4864 terminal J6617, 7-9
OUT _4 (output relay 4)	Configurable output relay	640-4864 terminal J6617, 10-12

4. Connect the non-Class 2/non-SELV signal cables from the auxiliary products to board 640-4843 in the UPS. Follow the instructions in the auxiliary product manuals.
Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products

NOTE: Route the signal cables separately from the power cables and route the Class 2/SELV cables separately from the non-Class 2/non-SELV cables.

Example of Single System with Third-Party Switchgear



NOTE: The internal maintenance breaker IMB* cannot be used in a system with an external maintenance bypass breaker MBB and the internal maintenance breaker IMB* must be padlocked in the open position.

1. Install the temperature sensor provided with the UPS in the battery solution. In battery cabinets, install the temperature sensor in the top corner of the battery cabinet.

HAZARD OF FIRE

Position the temperature sensor as described to ensure correct temperature measurements.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

2. Route the battery temperature sensor cables from the battery solution to the UPS and connect on board 640-4864 in the top of the UPS as shown.

NOTE: One temperature sensor is provided with the UPS. Contact Schneider Electric if you want to buy an additional temperature sensor.

NOTE: The battery temperature sensor cables are considered Class 2/ SELV. Class 2/SELV circuits must be isolated from the primary circuitry.



3. Connect signal cables from the breaker indicator lights in your switchgear to board 640-4864 terminal J6618 in the top of the UPS. If an external supply is used, remove jumper from J6618 pin 8 and 9.

NOTE: The breaker indicator light circuit is considered Class 2/SELV. Class 2/SELV circuits must be isolated from the primary circuitry. Do not connect any circuit to the breaker indicator light terminals unless it can be confirmed that the circuit is Class 2/SELV.



Connect the Signal Cables from Switchgear and Third-Party Auxiliary Products

 Connect the signal cables from battery breaker 1 in your battery solution for shunt trip or undervoltage (UV) trip connection to board 640-4843 terminal J6603. Follow the illustration for connection with internal or external 24 VDC supply.

Battery Breaker Trip Connection with Internal 24 VDC Supply

Battery Breaker Trip Connection with External 24 VDC Supply











Supported Shunt

Voltage (V)	Current (A)	Time (ms)	Tempera- ture	Recommended cable size ⁶	
				IEC	UL
24	1.6	Continuous	20 °C (68 °F)	0.5 mm ² copper	20 AWG copper
24	10	1300	20 °C (68 °F)	1.5 mm ² copper	16 AWG copper
24	20	200	20 °C (68 °F)	2.5 mm ² copper	13 AWG copper
24	30	60	20 °C (68 °F)	4 mm ² copper	11 AWG copper

The cable supplying the shunt trip shall be a jacket cable and rated for 600 VAC. The specifications and recommendations of the shunt trip manufacturer must always be considered when selecting the cable.

5. Connect the signal cables from battery breaker 2 (if present) in your battery solution for shunt trip or undervoltage (UV) trip connection to board 640-4843 terminal J6604. The connection principle is the same as for battery breaker 1.

^{6.} The recommended cable size is based on a voltage drop of maximum 0.8x24 VDC for 30 meter cables.

6. Connect signal cables from AUX switches in your switchgear to board 640-4843 in the top of the UPS.



Terminal number	Function	Connection
J6601	UOB_RED (redundant AUX switch in unit output breaker)	Connect to redundant AUX switch in unit output breaker UOB.
J6602	SIB (system isolation breaker)	Connect to normally open (NO) AUX switch in system isolation breaker SIB for parallel system. SIB must contain an AUX switch for each connected UPS.
	BB2 (battery breaker 2)	Connect to normally open (NO) AUX switch in battery breaker number 2 ⁷
	BB1 (battery breaker 1)	Connect to normally open (NO) AUX switch in battery breaker number 1 ⁷
J6603	BB1_TRIP (battery breaker 1)	Connect to shunt trip or UV trip in battery breaker number 17
J6604	BB2_TRIP (battery breaker 2)	Connect to shunt trip or UV trip in battery breaker number 27
J6609	UOB (unit output breaker)	Connect to normally open (NO) AUX switch in unit output breaker UOB.
	SSIB (static switch input breaker)	Connect to normally open (NO) AUX switch in static switch input breaker SSIB. SSIB must contain an AUX switch for each connected UPS.
J6614	UIB (unit input breaker)	Connect to normally open (NO) AUX switch in unit input breaker UIB. UIB must contain an AUX switch for each connected UPS.
	MBB (maintenance bypass breaker)	Connect to normally closed (NC) AUX switch in maintenance bypass breaker MBB. MBB must contain an AUX switch for each connected UPS.

^{7.} The UPS can connect to and monitor up to two battery breakers.

Connect the External Communication Cables

1. Connect the external communication cables to the ports in the UPS controller box.

Front View of the Controller Box



- A. Universal I/O port for built-in network management card.
- B. Modbus port for built-in network management card.
- C. Network port for built-in network management card. Use a shielded network cable.

NOTE: Check that you are connecting to the correct port to avoid network communication conflicts.

Connect the Modbus Cables

- 1. Connect the Modbus cables to the UPS(s). Use either 2-wire or 4-wire connection.
 - All Modbus signal cables shall be double insulated/jacket cable and minimum rated for 30 VDC.
 - Shielded twisted pair cables must be used for Modbus connections. The shield connection to the ground must be as short as possible (ideally below 1 cm). The cable shield must be connected to the Ch Gnd pin on each device.
 - Wiring should be done in accordance with local wiring codes.
 - Route signal cables separately from power cables to ensure sufficient isolation.
 - The Modbus port is galvanically isolated with the Com pin as ground reference.

Example: 2-Wire Connection with Two UPSs





2. Install 150 Ohm termination resistors at each end of each bus if the buses are very long and operate at high data rates. Busses under 610 meters (2000 feet) at 9600 baud or under 305 meters (1000 feet) at 19200 baud should not require termination resistors.

Add Translated Safety Labels to Your Product

The safety labels on your product are in English and French. Sheets with translated safety labels are provided with your product.

- 1. Find the sheets with translated safety labels provided with your product.
- 2. Check which 885-xxx/TMExxxx numbers are on the sheet with translated safety labels.
- 3. Locate the safety labels on your product that match the translated safety labels on the sheet look for the 885-xxx/TMExxxx numbers.
- 4. Add the replacement safety label in your preferred language to your product on top of the existing French safety label.

Final Installation

- 1. Reinstall the top cover:
 - a. Tilt the top cover and slide it onto the UPS from the rear. Tabs in the rear of the top cover must connect to the slots in the rear of the UPS.
 - b. Push the top cover down in the front.

Rear View of the UPS



c. Reinstall the screws.

Front View of the UPS



2. Check the fastening of the cable lugs.

RISK OF EQUIPMENT DAMAGE

Check the fastening of the cable lugs. If the cable lugs move due to pulling on cables, the bolt can become loose.

Failure to follow these instructions can result in injury or equipment damage.

3. Reinstall the transparent cover.

Front View of the UPS



4. Reinstall the lower front plate.

Front View of the UPS



5. Only for seismic anchoring:

- a. Install the seismic front anchoring bracket on the UPS with the provided M8 bolts.
- b. Mount the seismic front anchoring bracket on the UPS to the floor. Use appropriate hardware for the floor type the hole diameter in the front anchoring bracket is ø18 mm.

Front View of the UPS



6. Lower the front and rear leveling feet on the UPS with a wrench until they connect with the floor. Use a bubble-leveler to check that the UPS is level. This step is not necessary for a UPS with seismic anchoring.

Front View of the UPS



TIP HAZARD

Do not move the cabinet after the leveling feet have been lowered.

Failure to follow these instructions can result in injury or equipment damage.

7. Only for UL 924 and CSA C22.2 NO. 141-15 solutions: Fill out the label on the lower front plate with the UPS output rating in kW.

ACAUTION

HAZARD OF EQUIPMENT DAMAGE

The total load must not exceed the output rating. Total load ______kW maximum.

Failure to follow these instructions can result in injury or equipment damage.

- 8. Reinstall the front panel on the UPS:
 - a. Insert the two tabs in the bottom of the front panel in the UPS at a tilted angle.
 - b. Reconnect the front panel strap to the UPS.
 - c. Close the front panel and lock with the two locking knobs.



Install the Battery Modules in the Battery Cabinet

Type A Battery Module



Type B Battery Module



AAWARNING

HAZARD OF INJURY AND ELECTRIC SHOCK

• Be careful when installing and removing the battery modules (>17 kg).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

1. Install the battery modules on the shelves from top to bottom.

NOTE: Pay special attention to the location of type A and type B battery modules.

Battery Configurations for Battery Cabinets with 17, 16, 13, and 10 Battery Modules



2. Reinstall the plate in front of the battery shelves.



Connect the Power Cables

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill or punch holes with the gland plates installed and do not drill or punch holes in close proximity to the battery cabinet.

Failure to follow these instructions will result in death or serious injury.

1. Remove the gland plates.



2. Drill or punch holes for cables/conduits in the rear gland plate according to the label on the gland plate.

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Ensure that there are no sharp edges that can damage the cables.

Failure to follow these instructions will result in death or serious injury.

3. Install conduits (if applicable) and reinstall the gland plates.

- 4. Route the power cables through the gland plate and connect to the terminals:
 - a. Connect the PE cable to the PE terminal/Connect the EGC cable to the grounding terminal.
 - b. For installations with two hole cable lugs only, temporarily remove the protection cover.

NOTE: The protection cover must be reinstalled when the DC- cable has been connected.

c. Connect the DC+ and DC- cables to the DC+ and DC- terminals.



Connect the power cables in the UPS. If more battery cabinets are part of the solution, connect all battery cabinets to the UPS according to the diagram below.

NOTE: If the combined short circuit current of the battery cabinets exceeds the short circuit rating of the UPS, a pull box with fuses or an external box with a battery breaker must be installed. Please contact Schneider Electric for more information and refer to the submittal drawings for your specific UPS.

2-Wire Connection



6. Reinstall the two transparent covers.



Overview of Communication Interface



- A. TCP/IP
- B. DRY CONTACT ports
- C. SMPS I/O
- D. CAN I/O
- E. RS485
- F. System BMS CAN I/O
- G. DC OUT 1 and DC OUT 2
- H. Reset switch
- I. Start-up button
- J. DC IN 1 and DC IN 2
- K. Status LEDs
- L. CAN bus loop termination resistor switch
- M. CAN 1 port, CAN 2 port
- N. Module
- O. EPO
- P. PSU 1 LED
- Q. PSU 2 LED
- R. SG IO 1
- S. SG IO 2
- T. MCCB AUX 1
- U. MCCB AUX 2

Route the Signal Cables to the Switchgear, Rack BMS, and System BMS Ports

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill or punch holes with the gland plates installed and do not drill or punch holes in close proximity to the battery cabinet.

Failure to follow these instructions will result in death or serious injury.

NOTE: Please refer to the UPS submittal drawings to get a complete overview of the connections before preparing for and routing the signal cables.

1. Remove the gland plates for signal cables.



2. Drill or punch holes for cables/conduits and install conduits (if applicable).

AADANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Ensure that there are no sharp edges that can damage the cables.

Failure to follow these instructions will result in death or serious injury.

3. The provided SELV signal cable 0W13444 and the ELV signal cables 0W76929 and 0W13442 are 5 m (16.4 ft) long. You can extend the length of the three signal cables if the distance to the UPS is more than the expected 5 m (16.4 ft). Follow one of the instructions below:

Signal cable specifications

0W13444	4 conductors, 22 AWG, 600 V ETFE UL10086, strand, 90 °C		
0W76929	2 conductors, 24 AWG, 600 V ETFE UL10086, double insulation, strand, 90 °C		
0W13442	2 conductors, 22 AWG, 600 V ETFE UL10086, double insulation, strand, 90°C		

 The provided signal cable is long enough to reach between the battery cabinet and the UPS: Remove the male adapter connector from the end of the signal cables and continue to the next step. OR



The provided signal cable is NOT long enough to reach between the battery cabinet and the UPS: Remove the female connector and the male adapter connector from the end of the signal cable, shorten the signal cable to 120 mm (4.7 in) length, and reattach the labels and the female connector and male adapter connector to the signal cable. Attach a signal cable⁸ (not provided) to the male adapter connector in the correct length to reach from the battery cabinet to the UPS. As an alternative, you can also crimp the signal cable extensions. Ensure that the crimp point is inside the battery cabinet, not in conduits or cable trays outside the battery cabinet.



^{8.} Select the extension signal cables according to the Signal cable specifications.

4. Route the SELV signal cable 0W13444 and the ELV signal cables 0W76929 and 0W13442 into the battery cabinet and to the switchgear ports. Do not connect the signal cables, Schneider Electric service will complete the connections during start-up.

With Provided Signal Cables

With Extended Signal Cables



5. Route the signal cable 0W76928, 0W76934, and 0W76972 through the openings in the sides of the battery cabinets and to the ports in the rack BMS and the switchgear ports. Do not connect the signal cables, Schneider Electric service will complete the connections during start-up.

NOTE: All cables between rack BMS and rack BMS as well as between system BMS and rack BMS are considered Class 2/SELV.



6. Reinstall the plate in front of the battery breaker.



- 7. Reinstall the front door of the battery cabinet.
- Install the temperature sensor provided with the UPS above the battery cabinet, approximately 300 mm (12 in) from the top. Route the signal cable to the UPS and connect according to the instructions in the UPS installation manual.



NOTE: The temperature sensor measures the ambient temperature. Do not place the temperature sensor close to external heating or cooling equipment which may give an incorrect measurement of the ambient temperature.

Overview of Signal Cables between the Battery Cabinets and the Auxiliary Contacts in the UPS

The connection of auxiliary contacts is dependent on the number of battery breakers supported by the UPS. In the examples below two banks of battery breakers are supported.

NOTE: If the combined short circuit current of the battery cabinets exceeds the short circuit rating of the UPS, a pull box with fuses or an external box with a battery breaker must be installed. Please contact Schneider Electric for more information.

System with Two Battery Cabinets

System with One Battery Cabinet







System with Four Battery Cabinets in Two Battery Banks



Overview of Signal Cables for Alarms and Battery Breaker Trip

In systems with more battery cabinets, only the system BMS of battery cabinet 1 (the battery cabinet closest to the UPS) is connected to the UPS. Remove signal cable 0W13441 between the SMPS I/O port and the DRY CONTACT ports on battery cabinet 2 and battery cabinet 3.

- SG IO 1: Used for sending signals for minor and major alarms to the UPS.
- SG IO 2: Used for receiving trip signal from the UPS.

System with One Battery Cabinet

GND 3



System with Three Battery Cabinets in Two Battery Banks



Overview of CAN Bus Cables between the Battery Cabinets

NOTE: In systems with more battery cabinets, remove the cables 0W76935 from CAN 1 in the rack BMS to the System BMS CAN I/O in battery cabinet 2 and battery cabinet 3.

1. Route signal cable 0W76928 from CAN 2 port of battery cabinet 1 to the CAN 1 port of battery cabinet 2. Repeat for the remaining battery cabinets. Do not connect the CAN cables, Schneider Electric service will complete the connections during start-up.



Overview of EPO Signal Cables

Connect the Class 2/SELV signal cables from the building EPO to the rack BMS. Class 2/SELV circuits must be isolated from the primary circuitry. Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is Class 2/SELV.



Decommission or Move the UPS to a New Location

- 1. Shut down the UPS completely follow the instructions in the UPS operation manual.
- 2. Lockout/Tagout all breakers in the maintenance bypass cabinet/maintenance bypass panel/switchgear in the OFF (open) position.
- 3. Lockout/Tagout all battery breakers in the switchgear/battery solution in the OFF (open) position.
- 4. Remove the front panel from the UPS.
- 5. Lockout/Tagout the internal maintenance breaker IMB in the OFF (open) position.

6. Remove all power modules from the UPS:

HEAVY LOAD

Power modules are heavy and require two persons to lift.

- 20 kW power module weighs 25 kg (55 lbs).
- 50 kW power module weighs 38 kg (84 lbs).

Failure to follow these instructions can result in injury or equipment damage.

a. Remove the screws and push the unlock switch.



- b. Pull the power module halfway out. A locking mechanism prevents the power module from being pulled all the way out.
- c. Release the lock by pressing the release button on both sides of the power module and remove the power module.



d. Install a filler plate (if available) in front of the empty power module slot.



e. Store the power modules safely until reinstallation.

RISK OF EQUIPMENT DAMAGE

- Store the power modules at an ambient temperature of -15 to 40 °C (5 to 104 °F), 10-80% non-condensing humidity.
- Store the power modules in their original protective packaging.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

7. Remove the lower front plate.



8. Measure for and verify ABSENCE of voltage with a multimeter probe through the holes in the transparent cover for input, bypass, output, neutral, and DC.



9. Remove the transparent cover.

10. Measure for and verify ABSENCE of voltage on each input/bypass/output/DC busbar before continuing.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Measure for and verify ABSENCE of voltage on each input/bypass/output/ DC busbar before continuing.

Failure to follow these instructions will result in death or serious injury.

Front View of the UPS



- 11. Disconnect and remove all power cables from the UPS. See Connect the Power Cables, page 63 or Connect the Power Cables with NEMA 2 Hole Plates, page 67 for details.
- 12. Remove the top cover.

13. Disconnect and remove any signal cables from the top and the front of the UPS.

Rear View of the UPS with Conduits



- 14. For UPS system with maintenance bypass cabinet: Remove the interconnection hardware between the UPS and the maintenance bypass cabinet. See the installation manual provided with the maintenance bypass cabinet for details. Save all parts for reinstallation.
- 15. Reinstall all removed plates and covers. See Final Installation, page 80 for details.
- 16. If present, remove the seismic front anchoring bracket from the UPS. Save for reinstallation.



Front View of the UPS

17. If the UPS is installed on the mounting skid kit GVSOPT027, dismount the UPS from the mounting skid. See the installation manual provided with the kit for details.

- 18. Reinstall the front panel on the UPS:
 - a. Insert the two tabs in the bottom of the front panel in the UPS at a tilted angle.
 - b. Reconnect the front panel strap to the UPS.
 - c. Close the front panel and lock with the two locking knobs.



- 19. Raise the feet of the UPS until the casters have full contact with the floor.
- 20. You can now move the UPS by rolling it over the floor on the casters.

TIPPING HAZARD

- The casters of the UPS are exclusively for transport on flat, even, hard, and horizontal surfaces.
- The casters of the UPS are intended for transport over short distances (i.e. inside the same building).
- Move at a slow pace and pay close attention on the floor conditions and the balance of the UPS.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

21. If present, remove the rear seismic anchoring bracket from the UPS and remove the seismic anchors from the floor. Save for reinstallation. See Install the Seismic Anchoring (Option), page 56 for details.

22. For transport over longer distances or in conditions that are not suitable for the casters of the UPS:

TIPPING HAZARD

For transport over longer distances or in conditions that are not suitable for the casters of the UPS, ensure:

- that personnel performing the transport have necessary skills and have received adequate training;
- to use appropriate tools to safely lift and transport the UPS;
- to protect the product against damage by using appropriate protection (like wrapping or packaging).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Transportation requirements:

- Mount the UPS in a vertical position in the center of a suitable pallet with minimum pallet dimensions: 680 mm x 1040 mm (27 in x 41 in)). The pallet must be suitable for the weight of the UPS (180 kg (397 lbs) with no power modules installed).
- · Use appropriate means of fixation to mount the UPS to the pallet.
- The original shipping pallet in combination with the original transportation brackets can be reused, if in undamaged condition.

ADANGER

TIPPING HAZARD

- The UPS must be appropriately fixed to the pallet immediately after being placed on the pallet.
- The fixation hardware must be strong enough to withstand vibrations and shocks during loading, transport, and unloading.

Failure to follow these instructions will result in death or serious injury.

UNEXPECTED EQUIPMENT BEHAVIOR

Do not lift the UPS with a forklift/pallet truck directly on the frame as it may bend or damage the frame.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

- 23. Perform one of the following:
 - Decommission the UPS, OR
 - Move the UPS to a new location to install it.

24. **Only for installing the UPS in a new location**: Follow the installation manual to install UPS in the new location. See Installation Procedure, page 47 for installation overview. Start-up must only be performed by Schneider Electric.

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Start-up must only be performed by Schneider Electric.

Failure to follow these instructions will result in death or serious injury.

Decommission or Move the Battery Cabinet to a New Location

1. Lockout/Tagout the battery breaker in the OFF (open) position and open the two fuse holders in the battery cabinet.



- 2. Lockout/Tagout the power to the SMPS AC/DC converter upstream (if applicable).
- 3. Disconnect and remove all power cables from the battery cabinet. See Connect the Power Cables, page 86 for details.



- 4. Disconnect and remove all signal cables from the battery cabinet. See Route the Signal Cables to the Switchgear, Rack BMS, and System BMS Ports, page 90 for details.
- Disconnect and remove power cables to the SMPS AC/DC converter (if applicable). Refer to the SMPS AC/DC converter installation manual for details.
- 6. Contact Schneider Electric for removal of the battery busbars and fuse kits. The battery busbars and fuse kits must only be removed by a Schneider Electric-certified field service representative or service partner.

7. Remove the batteries from the shelves. Recycle or reuse the batteries as appropriate.

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Servicing of batteries must only be performed or supervised by qualified personnel knowledgeable of batteries and the required precautions. Keep unqualified personnel away from batteries.

- Recycle lead-acid batteries correctly. Batteries contain lead and dilute sulfuric acid.
- Dispose of the batteries in accordance with country and local regulations.

Failure to follow these instructions will result in death or serious injury.

- 8. Contact Schneider Electric for removal of the interconnection busbars between the cabinets. The interconnections busbars must only be removed by a Schneider Electric-certified field service representative or service partner.
- 9. Remove the seismic front and rear anchoring brackets from the cabinets. Save for reinstallation. See Install the Front Seismic Anchoring, page 61 and Install the Rear Seismic Anchoring, page 57 for details.
- 10. Close and lock the front door of the cabinets.
- 11. Raise the feet of the cabinets until the casters have full contact with the floor.
- 12. You can now move each cabinet individually by rolling it over the floor on the casters.

AWARNING

TIPPING HAZARD

- The casters of the cabinet are exclusively for transport on flat, even, hard, and horizontal surfaces.
- The casters of the cabinet are intended for transport over short distances (i.e. inside the same building).
- Move at a slow pace and pay close attention on the floor conditions and the balance of the cabinet.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

13. For transport over longer distances or in conditions that are not suitable for the casters of the cabinet:

TIPPING HAZARD

For transport over longer distances or in conditions that are not suitable for the casters of the battery cabinet, ensure:

- that personnel performing the transport have necessary skills and have received adequate training;
- to use appropriate tools to safely lift and transport the cabinet;
- to protect the product against damage by using appropriate protection (like wrapping or packaging).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

AWARNING

TOP-HEAVY CABINET

The battery cabinet is top-heavy. Take appropriate precautions during handling and preparation for transport/shipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Transportation requirements:

- Mount the cabinet in a vertical position in the center of a suitable pallet. The pallet must be suitable for the weight of the cabinet.
- Use appropriate means of fixation to mount the cabinet to the pallet.

TIPPING HAZARD

- The cabinet must be appropriately fixed to the pallet immediately after being placed on the pallet.
- The fixation hardware must be strong enough to withstand vibrations and shocks during loading, transport, and unloading.

Failure to follow these instructions will result in death or serious injury.

UNEXPECTED EQUIPMENT BEHAVIOR

Do not lift the cabinet with a forklift/pallet truck directly on the frame as it may bend or damage the frame.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

- 14. Perform one of the following:
 - Decommission the battery cabinet, OR
 - Move the battery cabinet to a new location to install it.
15. **Only for installing the battery cabinet in a new location**: Follow the installation manual to install the battery cabinet in the new location. See the chapter titled **Installation Procedure** for installation overview. Start-up must only be performed by Schneider Electric.

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Start-up must only be performed by Schneider Electric.

Failure to follow these instructions will result in death or serious injury.

Schneider Electric 35 rue Joseph Monier 92500 Rueil Malmaison France

+ 33 (0) 1 41 29 70 00

www.se.com

As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

© 2024 – 2024 Schneider Electric. All rights reserved. 990-55223-001