

# Galaxy VL 1600-2000 kW UPS System

## Technical Specifications

Latest updates are available on the Schneider Electric website

10/2025



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# 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**

**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**

**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**

**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:** The individual equipment in this UPS system have 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.

## Safety Precautions

### **⚠ DANGER**

#### **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.**

### **⚠ DANGER**

#### **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.**

### **⚠ DANGER**

#### **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.**

### **⚠ DANGER**

#### **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 disconnect devices, battery disconnect devices, 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.**

## DANGER

### 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:

- IEC 60364 (including 60364-4-41 - protection against electric shock, 60364-4-42 - protection against thermal effect, and 60364-4-43 - protection against overcurrent), **or**
- 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.**

## DANGER

### 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.**

## DANGER

### 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.**

## DANGER

### 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.**

## DANGER

### 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.**

## **⚠ CAUTION**

### **RISK OF HOT SURFACE**

The outer plates of the cabinet can exceed temperatures of 65 °C (149 °F) at 50 °C (122 °F) ambient room temperature, if the air filter(s) in the front door is clogged. Replace the air filter regularly as described in the UPS operation manual.

**Failure to follow these instructions can result in 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.**



## Model List

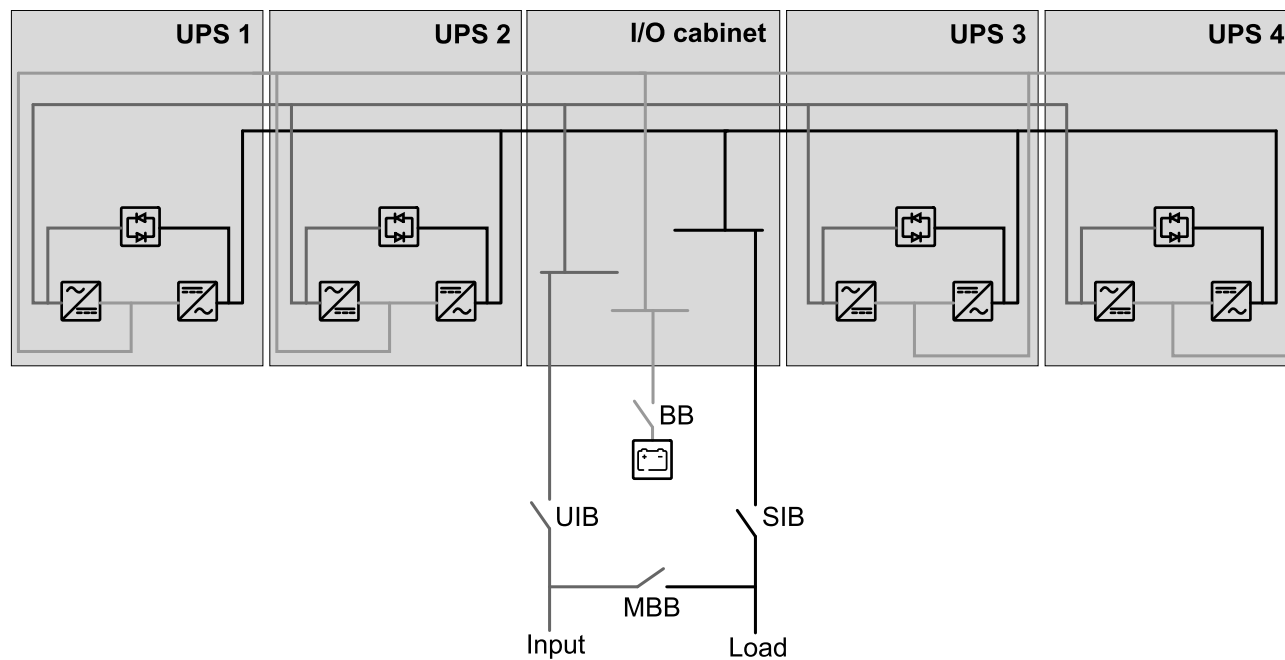


- Galaxy VL UPS System 1600 kW scalable to 2000 kW, 480V, Start-up 5x8 (GVL1600K2000KGS)
- Galaxy VL UPS System 1800 kW scalable to 2000 kW, 480V, Start-up 5x8 (GVL1800K2000KGS)
- Galaxy VL UPS System 2000 kW, 480V, Start-up 5x8 (GVL2000KGS)

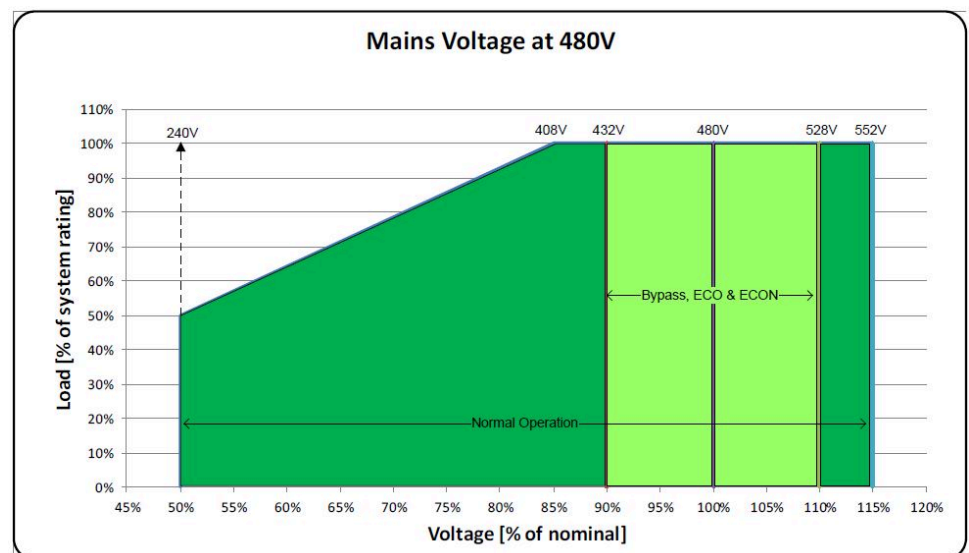
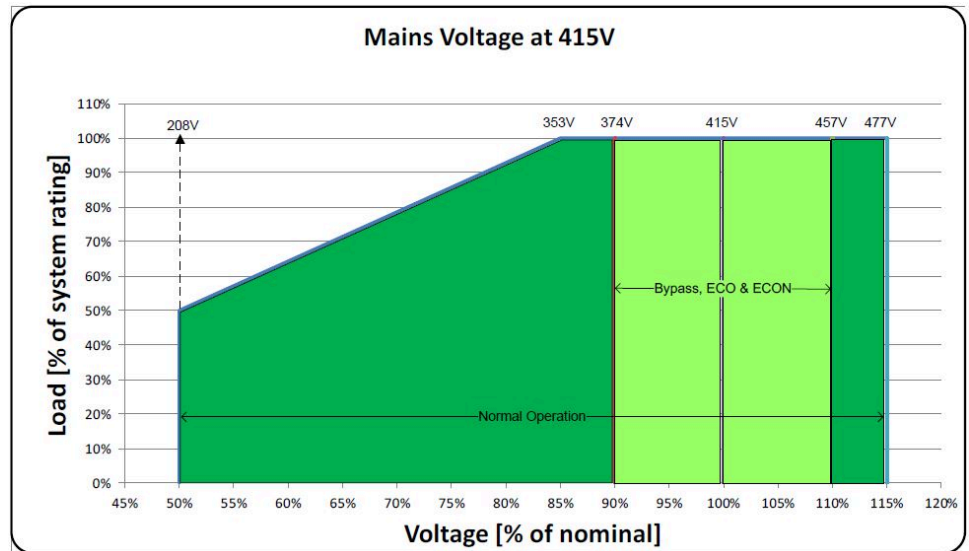
# System Overview

UIB	Unit input disconnect device
SIB	System isolation disconnect device
MBB	Maintenance bypass disconnect device
BB	Battery disconnect device

**NOTE:** In Schneider Electric literature, 'disconnect device' is used as a generic term covering circuit breakers or switches as their position may vary depending on configuration. Details about the individual configuration are found in the electrical diagram and/or by reading the symbol on the front of each disconnect device.



# Input Voltage Window



# Efficiency

**NOTE:** The efficiency values are measured at the output terminals/busbars of the UPS system.

<b>1600 kW</b>	<b>Normal operation</b>		<b>ECO mode</b>		<b>eConversion</b>		<b>Battery operation</b>	
<b>Voltage (V)</b>	<b>415</b>	<b>480</b>	<b>415</b>	<b>480</b>	<b>415</b>	<b>480</b>	<b>415</b>	<b>480</b>
25% load	95.9%	96.3%	99.0%	99.1%	98.4%	98.2%	96.3%	95.9%
50% load	97.1%	96.9%	99.3%	99.4%	99.0%	98.9%	96.7%	96.5%
75% load	97.2%	97.0%	99.4%	99.5%	99.2%	99.2%	96.6%	96.5%
100% load	97.0%	96.9%	99.4%	99.5%	99.3%	99.3%	96.4%	96.4%

<b>1800 kW</b>	<b>Normal operation</b>		<b>ECO mode</b>		<b>eConversion</b>		<b>Battery operation</b>	
<b>Voltage (V)</b>	<b>415</b>	<b>480</b>	<b>415</b>	<b>480</b>	<b>415</b>	<b>480</b>	<b>415</b>	<b>480</b>
25% load	96.1%	96.4%	99.0%	99.1%	98.4%	98.2%	96.3%	96.0%
50% load	97.2%	97.1%	99.3%	99.4%	99.0%	99.0%	96.7%	96.5%
75% load	97.3%	96.9%	99.4%	99.4%	99.2%	99.2%	96.6%	96.5%
100% load	97.1%	96.9%	99.4%	99.5%	99.3%	99.3%	96.4%	96.4%

<b>2000 kW</b>	<b>Normal operation</b>		<b>ECO mode</b>		<b>eConversion</b>		<b>Battery operation</b>	
<b>Voltage (V)</b>	<b>415</b>	<b>480</b>	<b>415</b>	<b>480</b>	<b>415</b>	<b>480</b>	<b>415</b>	<b>480</b>
25% load	96.6%	96.4%	99.0%	99.1%	98.4%	98.2%	96.3%	96.0%
50% load	97.3%	97.1%	99.3%	99.4%	99.0%	99.0%	96.7%	96.5%
75% load	97.3%	97.2%	99.4%	99.4%	99.2%	99.2%	96.6%	96.5%
100% load	97.0%	97.0%	99.4%	99.5%	99.3%	99.3%	96.4%	96.4%

# Derating Due to Load Power Factor

0.5 leading to 0.5 lagging without derating.

UPS rating	UPS output									
	Lagging					Leading				
PF=1	PF=0.5	PF=0.6	PF=0.7	PF=0.8	PF=0.9	PF=0.9	PF=0.8	PF=0.7	PF=0.6	PF=0.5
1600 kW/ kVA	1600 kVA / 800 kW	1600 kVA / 960 kW	1600 kVA / 1120 kW	1600 kVA / 1280 kW	1600 kVA / 1440 kW	1600 kVA / 1440 kW	1600 kVA / 1280 kW	1600 kVA / 1120 kW	1600 kVA / 960 kW	1600 kVA / 800 kW
1800 kW/ kVA	1800 kVA / 900 kW	1800 kVA / 1080 kW	1800 kVA / 1260 kW	1800 kVA / 1440 kW	1800 kVA / 1620 kW	1800 kVA / 1620 kW	1800 kVA / 1440 kW	1800 kVA / 1260 kW	1800 kVA / 1080 kW	1800 kVA / 900 kW
2000 kW/ kVA	2000 kVA / 1000 kW	2000 kVA / 1200 kW	2000 kVA / 1400 kW	2000 kVA / 1600 kW	2000 kVA / 1800 kW	2000 kVA / 1800 kW	2000 kVA / 1600 kW	2000 kVA / 1400 kW	2000 kVA / 1200 kW	2000 kVA / 1000 kW

# Batteries

## Common Lithium-ion Battery

Common Lithium-ion battery configuration (LIBSESMG17UL) is supported.

The battery solution for the 1600 kW UPS system consists of minimum 8 and maximum 10 Galaxy Lithium-ion battery cabinets (LIBSESMG17UL).

The battery solution for the 1800 kW UPS system consists of minimum 9 and maximum 10 Galaxy Lithium-ion battery cabinets (LIBSESMG17UL).

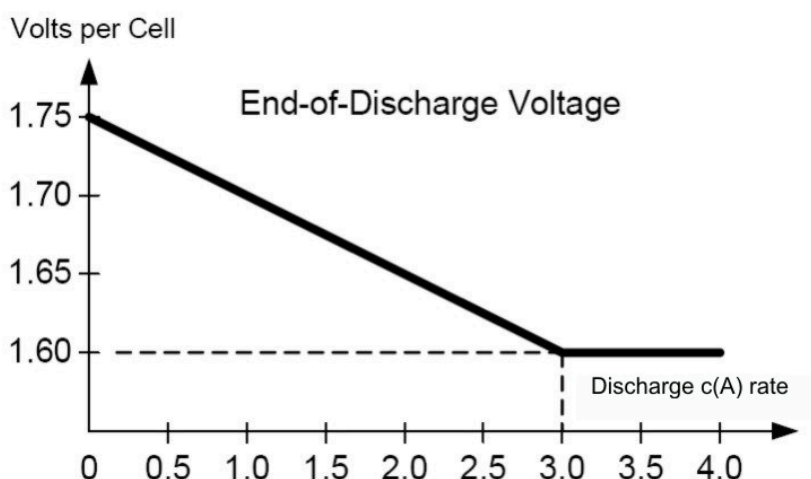
The battery solution for the 2000 kW UPS system consists of 10 Galaxy Lithium-ion battery cabinets (LIBSESMG17UL).

## Common VRLA Battery

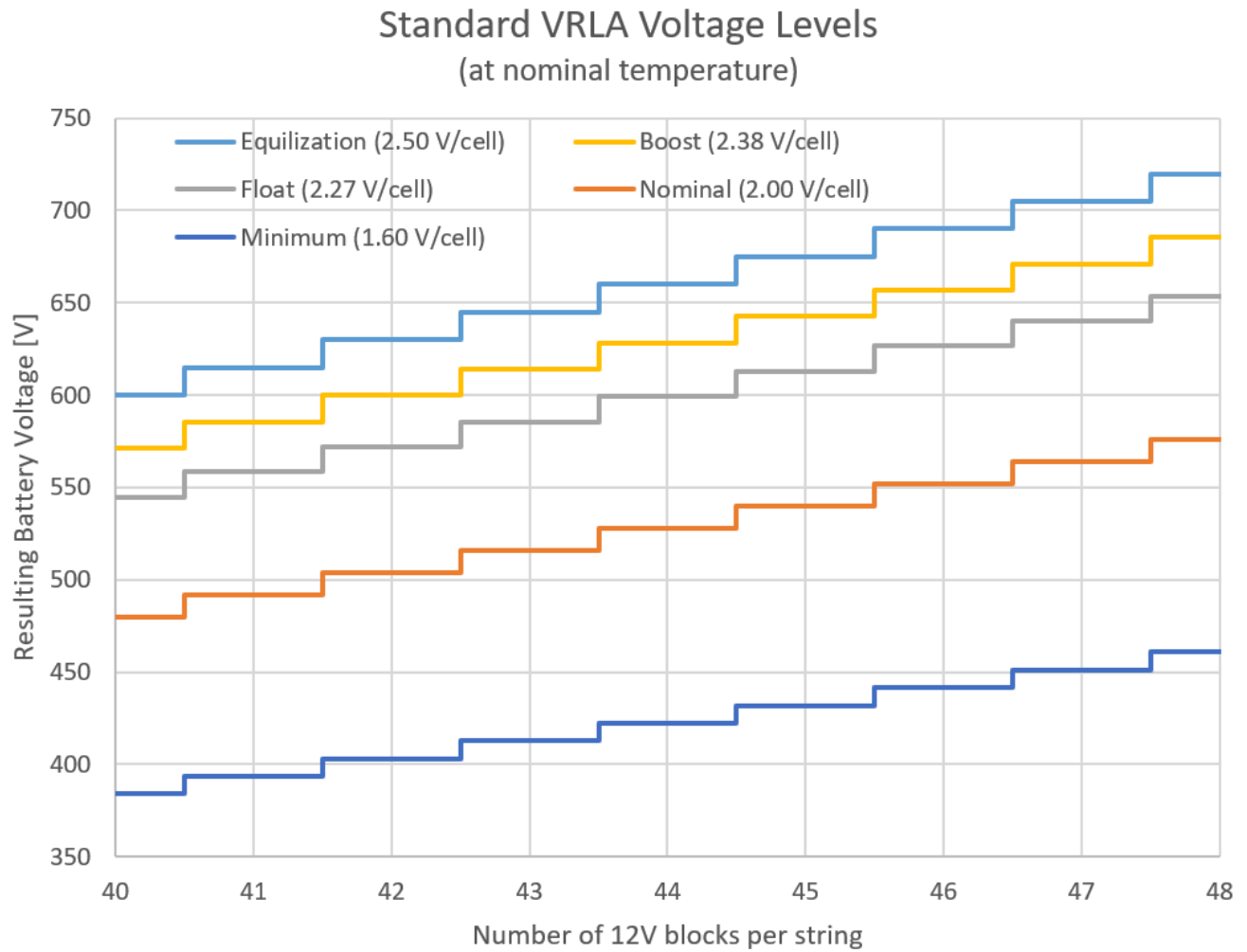
Common VRLA battery configuration is supported.

## End of Discharge Voltage for VRLA Battery

The voltage is 1.6 to 1.75 per cell depending on discharge ratio.



## Standard VRLA Voltage Levels



**NOTE:** Specific configurations may differ from the general constraint shown above.

# Compliance

Safety	UL 1778 5th edition CSA C22.2 NO. 107.3-14, 3rd Edition
EMC/EMI/RFI	Individual UPS cabinets tested for FCC Part 15 Subpart B, Class A
Performance	Individual UPS cabinets: Performance in accordance with: IEC 62040-3: 2021-04, 3rd edition Uninterruptible Power Systems (UPS) - Part 3: Method of specifying the performance and test requirements.  Output performance classification (according to IEC 62040-3, Clause 5.3.4): VFI-SS-11
Transportation	Individual UPS cabinet: IEC 60721-4-2 Level 2M2
Seismic	ICC-ES AC 156 (2018); OSHPD Pre-approved; Sds=1.28 g for z/h=1 and Sds=1.9 g for z/h=0; Ip=1.5
Earthing system <sup>(1)</sup>	TN-S, TNC-S
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) must be installed upstream of the UPS to reduce the overvoltage category to OVCII.
Protective class	I
Pollution degree	2

<sup>(1)</sup> Corner grounding not permitted.

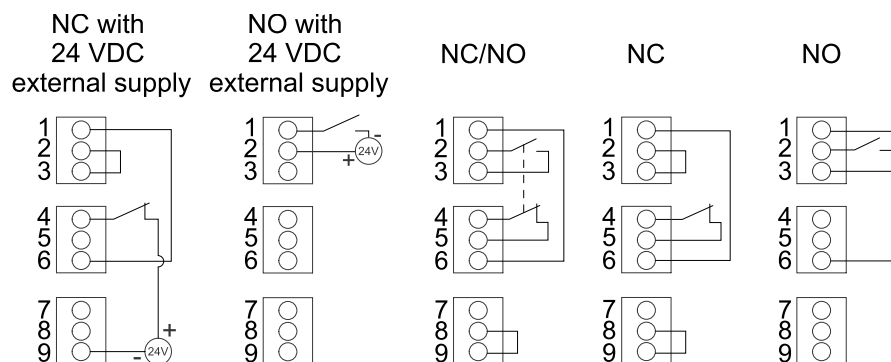


# Communication and Management

Local area network	1 Gbps – 1 port as default
Modbus	Modbus (SCADA)
Output relays	4 x SELV configurable on each UPS cabinet
Input contacts	4 x SELV configurable on each UPS cabinet
Standard control panel	7 inch touchscreen display on each UPS cabinet for individual UPS operation 10 inch touchscreen display on the I/O cabinet for UPS system operation
Audible alarm	Yes
Emergency Power Off (EPO)	Options: <ul style="list-style-type: none"> <li>• Normally Open (NO)</li> <li>• Normally Closed (NC)</li> <li>• External 24 VDC SELV</li> </ul>
External switchgear	UIB MBB SIB
External synchronization	No
Battery monitoring	Available for external battery solutions

## EPO

### EPO Configurations (Terminal J6600, 1-9)



The EPO input supports 24 VDC.

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

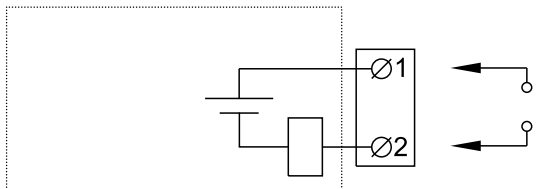
If you want the EPO activation to transfer the UPS into forced static bypass operation instead, please contact Schneider Electric.

# Configurable Input Contacts and Output Relays

## Input Contacts

Four input contacts are available and can be configured to indicate a given event via the display.

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

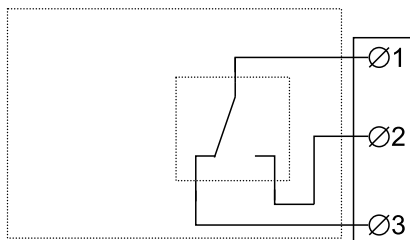


Name	Description	Location
IN _1 (input contact 1)	Configurable input contact	Terminal J6616, 1-2
IN _2 (input contact 2)		Terminal J6616, 3-4
IN _3 (input contact 3)		Terminal J6616, 5-6
IN _4 (input contact 4)		Terminal J6616, 7-8

## Output Relays

Four output relays are available and can be configured to activate on one or more events via the display.

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	Terminal J6617, 1-3
OUT _2 (output relay 2)		Terminal J6617, 4-6
OUT _3 (output relay 3)		Terminal J6617, 7-9
OUT _4 (output relay 4)		Terminal J6617, 10-12

When **Energized check mode** is enabled, the output relay is activated, and will deactivate when the events assigned to the output relay occurs (normally activated).

**Energized check mode** must be individually enabled for each output relay and makes it possible to detect if the output relay is inoperable:

- If the power supply to the output relays is lost, the events assigned to all the output relays will be indicated as present.
- If a single output relay has become inoperable, the events assigned to the single output relay will be indicated as present.

# Specifications

## 1600 kW Specifications

	Voltage (V)	415	480
Input	Connections	Single mains: 4-wire <sup>(2)</sup> (L1, L2, L3, N, G) or 3-wire <sup>(2)</sup> (L1, L2, L3, G)	
	Input voltage range (V)	353-477	408-552
	Frequency (Hz)	40-70	
	Nominal input current (A)	2308	1988
	Maximum short circuit rating (three cycles)	65 kAIC	
	Maximum input current (A)	2816	2428
	Input current limitation (A)	2928	2504
	Total harmonic distortion (THDI)	<5% at 100% load	
	Input power factor	0.99 at 100% load	
	Protection	Built-in backfeed protection and fuses for each UPS	
	Ramp-in	Adaptive 1-300 seconds	
Bypass	Bypass voltage range (V)	374-457	432-528
	Frequency (Hz)	50 or 60	
	Frequency range (Hz)	Programmable: $\pm 1$ , $\pm 3$ , $\pm 10$ . Default is $\pm 3$ .	
	Nominal bypass current (A)	2288	1976
	Maximum short circuit rating (three cycles)	65 kAIC	
	I <sup>2</sup> t thyristor value (A <sup>2</sup> s)	3.1 MA <sup>2</sup> s	
	Bypass backfeed protection options	Built-in backfeed circuit breaker BF2 in each UPS	
Output	Connections <sup>(3)</sup>	4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC <sup>(4)</sup> )	
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$	
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous <sup>(5)</sup> ) Battery operation: 125% for 1 minute Bypass operation: 125% continuous	
	Output power factor	1	
	Nominal output current (A)	2224	1924
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (free-running)	
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6	
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load <sup>(6)</sup>	
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-111	
	Load crest factor	3	
	Load power factor	0.5 leading to 0.5 lagging without derating	

<sup>(2)</sup> WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

<sup>(3)</sup> The number of output connections must match the number of input connections.

<sup>(4)</sup> Per NEC 250.30.

<sup>(5)</sup> 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.

<sup>(6)</sup> THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	415	480
VRLA battery	Maximum charging power (kW)	0-40% load: 80% 100% load: 20%	
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks	
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks	
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks	
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C	
	End of discharge voltage (full load) (VDC)	384	
	End of discharge voltage (no load) (VDC)	420	
	Battery current at full load and nominal battery voltage (A)	3472	
	Battery current at full load and minimum battery voltage (A)	4340	
	Ripple current	< 5% C20 (5 minute runtime)	
	Maximum short circuit rating	30 kA	
Lithium-ion battery	Charging power in % of output power	0-40% load: 80% 100% load: 20%	
	Maximum charging power (kW)	0-40% load: 1280 100% load: 320	
	Nominal battery voltage (VCD) at 3.8 V per cell	517 V (LIBSESMG17UL)	
	Float charge voltage (VCD) at 4.2 V per cell	571 V (LIBSESMG17UL)	
	End of discharge voltage (VCD) at 3.0 V per cell	408 V (LIBSESMG17UL)	
	Battery current at full load and nominal battery voltage (A)	3224	
	Battery current at full load and minimum battery voltage (A)	4085	
	Maximum short circuit rating	30 kA	

**NOTE:** Lithium-ion battery specifications are based on the Galaxy Lithium-ion battery cabinet (LIBSESMG17UL). The battery solution for the 1600 kW UPS system consists of minimum 8 and maximum 10 Galaxy Lithium-ion battery cabinets (LIBSESMG17UL).

# 1800 kW Specifications

	Voltage (V)	415	480
Input	Connections	Single mains: 4-wire <sup>(7)</sup> (L1, L2, L3, N, G) or 3-wire <sup>(7)</sup> (L1, L2, L3, G)	
	Input voltage range (V)	353-477	408-552
	Frequency (Hz)	40-70	
	Nominal input current (A)	2596	2236
	Maximum short circuit rating (three cycles)	65 kAIC	
	Maximum input current (A)	3168	2728
	Input current limitation (A)	3296	2820
	Total harmonic distortion (THDI)	<5% at 100% load	
	Input power factor	0.99 at 100% load	
	Protection	Built-in backfeed protection and fuses for each UPS	
	Ramp-in	Adaptive 1-300 seconds	
Bypass	Bypass voltage range (V)	374-457	432-528
	Frequency (Hz)	50 or 60	
	Frequency range (Hz)	Programmable: $\pm 1$ , $\pm 3$ , $\pm 10$ . Default is $\pm 3$ .	
	Nominal bypass current (A)	2572	2224
	Maximum short circuit rating (three cycles)	65 kAIC	
	I <sup>2</sup> t thyristor value (A <sup>2</sup> s)	3.1 MA <sup>2</sup> s	
	Bypass backfeed protection options	Built-in backfeed circuit breaker BF2 in each UPS	
Output	Connections <sup>(8)</sup>	4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC <sup>(9)</sup> )	
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$	
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous <sup>(10)</sup> ) Battery operation: 125% for 1 minute Bypass operation: 125% continuous	
	Output power factor	1	
	Nominal output current (A)	2504	2164
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (free-running)	
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6	
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load <sup>(11)</sup>	
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-111	
	Load crest factor	3	
	Load power factor	0.5 leading to 0.5 lagging without derating	

(7) WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

(8) The number of output connections must match the number of input connections.

(9) Per NEC 250.30.

(10) 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.

(11) THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	415	480
VRLA battery	Maximum charging power (kW)	0-40% load: 80% 100% load: 20%	
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks	
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks	
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks	
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C	
	End of discharge voltage (full load) (VDC)	384	
	End of discharge voltage (no load) (VDC)	420	
	Battery current at full load and nominal battery voltage (A)	3908	
	Battery current at full load and minimum battery voltage (A)	4884	
	Ripple current	< 5% C20 (5 minute runtime)	
	Maximum short circuit rating	30 kA	
Lithium-ion battery	Charging power in % of output power	0-40% load: 80% 100% load: 20%	
	Maximum charging power (kW)	0-40% load: 1440 100% load: 360	
	Nominal battery voltage (VCD) at 3.8 V per cell	517 V (LIBSESMG17UL)	
	Float charge voltage (VCD) at 4.2 V per cell	571 V (LIBSESMG17UL)	
	End of discharge voltage (VCD) at 3.0 V per cell	408 V (LIBSESMG17UL)	
	Battery current at full load and nominal battery voltage (A)	3627	
	Battery current at full load and minimum battery voltage (A)	4596	
	Maximum short circuit rating	30 kA	

**NOTE:** Lithium-ion battery specifications are based on the Galaxy Lithium-ion battery cabinet (LIBSESMG17UL). The battery solution for the 1800 kW UPS system consists of minimum 9 and maximum 10 Galaxy Lithium-ion battery cabinets (LIBSESMG17UL).

## 2000 kW Specifications

	Voltage (V)	415	480
Input	Connections	Single mains: 4-wire <sup>(12)</sup> (L1, L2, L3, N, G) or 3-wire <sup>(12)</sup> (L1, L2, L3, G)	
	Input voltage range (V)	353-477	408-552
	Frequency (Hz)	40-70	
	Nominal input current (A)	2884	2484
	Maximum short circuit rating (three cycles)	65 kAIC	
	Maximum input current (A)	3520	3032
	Input current limitation (A)	3660	3132
	Total harmonic distortion (THDI)	<5% at 100% load	
	Input power factor	0.99 at 100% load	
	Protection	Built-in backfeed protection and fuses for each UPS	
	Ramp-in	Adaptive 1-300 seconds	
Bypass	Bypass voltage range (V)	374-457	432-528
	Frequency (Hz)	50 or 60	
	Frequency range (Hz)	Programmable: $\pm 1$ , $\pm 3$ , $\pm 10$ . Default is $\pm 3$ .	
	Nominal bypass current (A)	2860	2472
	Maximum short circuit rating (three cycles)	65 kAIC	
	I <sup>2</sup> t thyristor value (A <sup>2</sup> s)	3.1 MA <sup>2</sup> s	
	Bypass backfeed protection options	Built-in backfeed circuit breaker BF2 in each UPS	
Output	Connections <sup>(13)</sup>	4-wire (L1, L2, L3, N, G) or 3-wire (L1, L2, L3, G, GEC <sup>(14)</sup> )	
	Output voltage regulation	Symmetrical load $\pm 1\%$ Asymmetrical load $\pm 3\%$	
	Overload capacity	Normal operation: 150% for 1 minute, 125% for 10 minutes, (110% continuous <sup>(15)</sup> ) Battery operation: 125% for 1 minute Bypass operation: 125% continuous	
	Output power factor	1	
	Nominal output current (A)	2784	2404
	Output frequency (Hz)	50/60 (synchronized to bypass), 50/60 Hz $\pm 0.1\%$ (free-running)	
	Synchronized slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6	
	Total harmonic distortion (THDU)	<1% for linear load, <5% for non-linear load <sup>(16)</sup>	
	Output performance classification (according to IEC/ EN62040-3)	VFI-SS-111	
	Load crest factor	3	
	Load power factor	0.5 leading to 0.5 lagging without derating	

<sup>(12)</sup> WYE source – solid grounded and high resistance grounded sources are supported. Corner (line) grounding is not permitted.

<sup>(13)</sup> The number of output connections must match the number of input connections.

<sup>(14)</sup> Per NEC 250.30.

<sup>(15)</sup> 110% continuous overload in normal operation at nominal mains voltage and at maximum 40 °C (104 °F) ambient temperature. Contact Schneider Electric to enable this function.

<sup>(16)</sup> THDU values are measured at the output busbars/terminals of the single UPS.

	Voltage (V)	415	480
VRLA battery	Maximum charging power (kW)	0-40% load: 80% 100% load: 20%	
	Nominal battery voltage (VDC)	480 for 40 blocks 576 for 48 blocks	
	Nominal float voltage (VDC)	545 for 40 blocks 654 for 48 blocks	
	Maximum boost voltage (VDC)	571 for 40 blocks 685 for 48 blocks	
	Temperature compensation (per cell)	-3.3mV/°C for T ≥ 25 °C, 0mV/°C for T < 25 °C	
	End of discharge voltage (full load) (VDC)	384	
	End of discharge voltage (no load) (VDC)	420	
	Battery current at full load and nominal battery voltage (A)	4340	
	Battery current at full load and minimum battery voltage (A)	5424	
	Ripple current	< 5% C20 (5 minute runtime)	
	Maximum short circuit rating	30 kA	
Lithium-ion battery	Charging power in % of output power	0-40% load: 80% 100% load: 20%	
	Maximum charging power (kW)	0-40% load: 1600 100% load: 400	
	Nominal battery voltage (VCD) at 3.8 V per cell	517 V (LIBSESMG17UL)	
	Float charge voltage (VCD) at 4.2 V per cell	571 V (LIBSESMG17UL)	
	End of discharge voltage (VCD) at 3.0 V per cell	408 V (LIBSESMG17UL)	
	Battery current at full load and nominal battery voltage (A)	4030	
	Battery current at full load and minimum battery voltage (A)	5106	
	Maximum short circuit rating	30 kA	

**NOTE:** Lithium-ion battery specifications are based on the Galaxy Lithium-ion battery cabinet (LIBSESMG17UL). The battery solution for the 2000 kW UPS system consists of 10 Galaxy Lithium-ion battery cabinets (LIBSESMG17UL).



# Upstream and Downstream Protection for UL

## Preconditions for Live Swap of Power Modules

Live Swap of power modules is only allowed under the following preconditions for the UPS system installation:

- Circuit breaker must be installed for input (unit input disconnect device UIB).
- Circuit breaker (UIB) must be equipped with NEC 240.87, NFPA70E, IEEE1584, or EN51110-1 compliant ERMS mode.
- GVLOPT011 (Galaxy VL door switch kit) must be installed in all four UPSs in the UPS system and connected so ERMS mode is set to ON on UIB when the front door of any of the UPSs is opened.
- In ERMS mode, the instantaneous trip current shall be set to 5000 A or less. All time-delay settings shall be set to zero.

Schneider Electric reserves the right to remove the Live Swap label from the product front if the preconditions are not met.

### **DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Only perform Live Swap of the power modules in UPS system installations that follow the preconditions listed above.

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

## Recommended Upstream and Downstream Protection for UL

The output breakers are sized based on the nominal current +10%. This is to accommodate either low grid voltage or deviation in cable length between parallel UPSs. The battery breakers are sized based on the end-of-discharge voltage which has been defined as 380 VDC.

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

### 415 V UPS System

UPS rating	1600 kW		1800 kW		2000 kW	
	Input	Bypass/output	Input	Bypass/output	Input	Bypass/output
Circuit breaker type	NW30H / MTZ2 30H / MTZ3-40	NW30H / MTZ2 30H / MTZ3-40	NW40H / MTZ2 40H / MTZ3-40	NW30H / MTZ2 30H / MTZ3-40	NW40H / MTZ2 40H / MTZ3-40	NW32H/MTZ2 32H / MTZ3-40
I <sub>r</sub>	3000	2700	3600	2800	3600	3200
t <sub>r</sub>	≥4	≥4	≥4	≥4	≥4	≥4
I <sub>i</sub> (x I <sub>n</sub> )	≤5	≤5	≤5	≤5	≤5	≤5

## 480 V UPS System

UPS rating	1600 kW		1800 kW		2000 kW	
	Input	Bypass/output	Input	Bypass/output	Input	Bypass/output
Circuit breaker type	NW30H / MTZ2 30H / MTZ3-40	NW30H / MTZ2 30H / MTZ3-40	NW30H / MTZ2 30H / MTZ3-40	NW30H / MTZ2 30H / MTZ3-40	NW32H / MTZ2 32H / MTZ2 30H / MTZ3-40	NW30H / MTZ2 30H / MTZ3-40
I <sub>r</sub>	2700	2400	3000	2700	3200 (at 480 V UV, 15% charging) OR 3000 (at 480 V UV, 10% charging)	3000
tr	≥4	≥4	≥4	≥4	≥4	≥4
li (x ln)	≤5	≤5	≤5	≤5	≤5	≤5

## Recommended Cable Sizes for UL

**⚡⚠ 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 600 kcmil.
- Shrink sleeve must be fitted over cable lug crimped zone and must overlap with the cable insulation on all power cables.

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

The maximum number of cable connections per busbar in the I/O cabinet:

- 9 x 600 kcmil on input busbars
- 7 x 600 kcmil on output busbars
- 20 x 600 kcmil on DC+/DC- busbars
- 16 on N busbar
- 24 on grounding busbar

**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<sup>(17)</sup>:

- 90 °C (194 °F) conductors (75 °C (167 °F) termination)
- An ambient temperature of 30 °C (86 °F)
- Use of copper conductors

If the ambient temperature is greater than 30 °C (86 °F), select larger conductors in accordance with the correction factors of the NEC.

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

**NOTE:** 100% rated circuit breakers for UIB, SIB, MBB disconnect devices.  
100% rated circuit breakers for battery disconnect devices.

The output cables are sized based on the nominal current +10%. This is to accommodate either low grid voltage or deviation in length between parallel UPSs. The battery cables are sized based on end-of-discharge voltage which has been defined as 380 VDC.

<sup>(17)</sup> Using non-recommended cable sizes will affect the eConversion limits for parallel UPS systems.

**Copper**

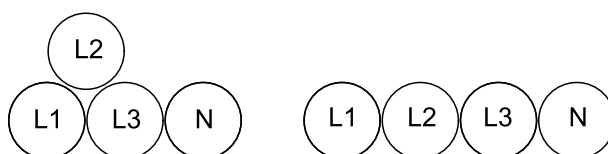
UPS rating	1600 kW		1800 kW	
Voltage (V)	415	480	415	480
Input phases (AWG/kcmil)	9 x 400	8 x 400	9 x 500	8 x 500
Input EGC (AWG/kcmil)	1 x 400	1 x 400	1 x 500	1 x 500
Output phases (AWG/kcmil)	7 x 400	6 x 400	7 x 500	6 x 500
Output EGC (AWG/kcmil)	1 x 400	1 x 400	1 x 500	1 x 500
DC+/DC- (AWG/kcmil)	8 x LIBSESMG17UL: 16 x 300	8 x LIBSESMG17UL: 16 x 300	9 x LIBSESMG17UL: 18 x 300	9 x LIBSESMG17UL: 18 x 300
	9 x LIBSESMG17UL: 18 x 300	9 x LIBSESMG17UL: 18 x 300	10 x LIBSESMG17UL: 20 x 300	10 x LIBSESMG17UL: 20 x 300
	10 x LIBSESMG17UL: 20 x 300	10 x LIBSESMG17UL: 20 x 300		
DC EGC (AWG/kcmil)	2 x 300	2 x 300	2 x 300	2 x 300

**Copper**

UPS rating	2000 kW	
Voltage (V)	415	480
Input phases (AWG/kcmil)	9 x 600	8 x 600
Input EGC (AWG/kcmil)	1 x 600	1 x 600
Output phases (AWG/kcmil)	7 x 600	6 x 600
Output EGC (AWG/kcmil)	1 x 600	1 x 600
DC+/DC- (AWG/kcmil)	10 x LIBSESMG17UL: 20 x 300	10 x LIBSESMG17UL: 20 x 300
DC EGC (AWG/kcmil)	2 x 300	2 x 300

**Guidance for Organizing Input and Output Cables**

The input and output cables must be grouped in circuits. On raceways, use one of the two shown cable formations.

**eConversion Limits for Parallel UPS Systems**

eConversion requires a minimum load percentage on the Galaxy VL 1600-2000 kW UPS system. The minimum required load percentages depend on the power cable sizes.

### Standard eConversion Limits Based on Recommended Cable Sizes

UPS rating	Minimum load %
1600 kW	10%
1800 kW	10%
2000 kW	10%

## Load Sharing in Balance and Unbalance Scenarios in Bypass Operation or eConversion Mode

In double conversion (normal operation), the load sharing between the UPSs in the UPS system is equal as the inverter controls the output current and voltage. However, when the UPS system is commanded to transfer to eConversion (requested bypass), the load sharing is determined by the UPS system impedances (busbars, SCRs). This means that the entire power path from the common input point to the common output point influences the load distribution. This scenario is not unique to this specific UPS system and is applicable to any UPS system.

During eConversion mode or requested bypass operation, if any UPS in the UPS system experiences a load exceeding 100%, it will automatically transfer back to inverter mode as per the design. This ensures the protection and stability of the system.

**NOTE:** Unbalanced current may occur in bypass operation or in eConversion mode due to the varying impedances in the power path. It is essential to monitor and manage these conditions to maintain UPS system reliability and performance.

## Recommended Bolt and Lug Sizes for UL

### **NOTICE**

#### **RISK OF EQUIPMENT DAMAGE**

Use only UL approved compression cable lugs.

**Failure to follow these instructions can result in equipment damage.**

### Copper

Cable size	Bolt size (input/output/neutral/ground)	Bolt size (DC +/DC-)	Cable lug type (one hole)	Cable lug type (two hole NEMA)	Crimping tool	Die
250 kcmil	M12 x 45mm	M12 x 55mm	LCB250-12-X	LCC250-12-X	CT-930	CD-920-250 Yellow P62
300 kcmil	M12 x 45mm	M12 x 55mm	LCB300-12-X	LCC300-12-X	CT-930	CD-920-300 Red P66
350 kcmil	M12 x 45mm	M12 x 55mm	LCB350-12-X	LCC350-12-X	CT-930	CD-920-350 Red P71
400 kcmil	M12 x 45mm	M12 x 55mm	LCB400-12-X	LCC400-12-6	CT-930	CD-920-400 Blue P76
450 kcmil	M12 x 45mm	M12 x 55mm	/	LCC450-12-6	CT-930	/
500 kcmil	M12 x 45mm	M12 x 55mm	LCB500-12-X	LCC500-12-6	CT-930	CD-920-500 Blue P87
600 kcmil	M12 x 45mm	M12 x 55mm	LCB600-12-X	LCC600-12-6	CT-930	CD-920-600 Blue P94

## Torque Specifications

Bolt size	Torque
M6	5 Nm (3.69 lb-ft / 44.3 lb-in)
M8	17.5 Nm (12.91 lb-ft / 154.9 lb-in)
M10	30 Nm (22 lb-ft / 194.7 lb-in)
M12	50 Nm (36.87 lb-ft / 442.5 lb-in)

## Physical

### UPS System Shipping Weights and Dimensions

Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)	Number of preinstalled power modules in the UPS	Number of power modules shipped separately	Number of extra power modules that can be ordered
GVL300K500KG	4 x 880 (1940)	2445 (96.25)	950 (37.40)	1100 (43.30)	1100 (43.30)	0	4
GVLIOCA2MW	1342 (2958)	2445 (96.25)	1918 (75.50)	1050 (41.33)	—	—	—

### Power Module Shipping Weights and Dimensions

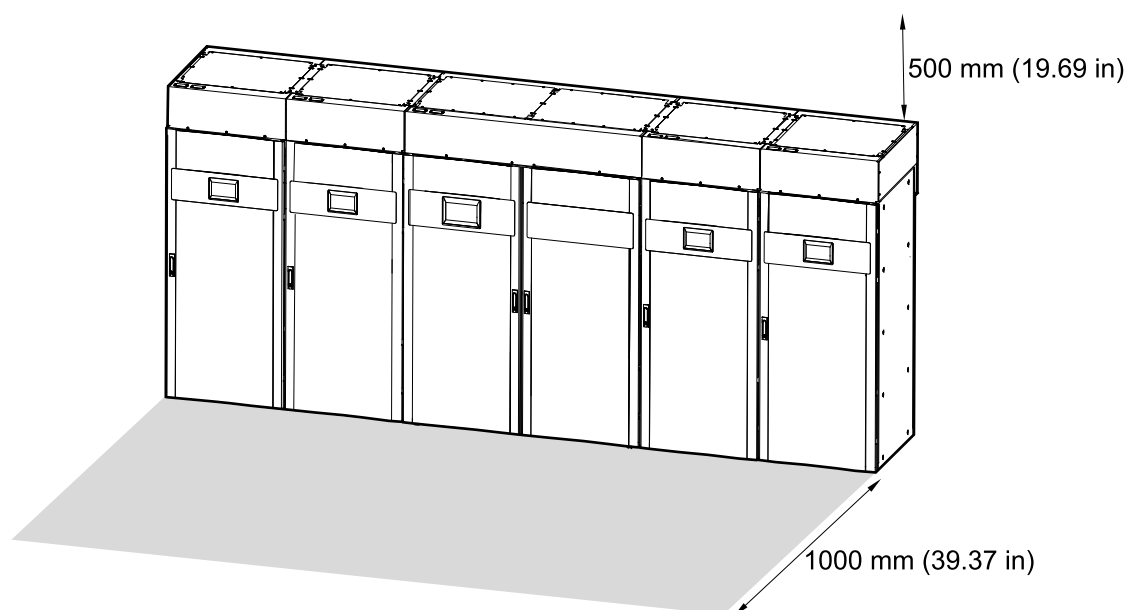
Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
GVPM50KD	62 (137)	330 (13)	580 (22.8)	780 (30.7)

### UPS System Weights and Dimensions

UPS system rating	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
1600 kW	4865 (10725)	2270 (89.4)	5096 (200.6)	1050 (41.3)
1800 kW	5017 (11060)			
2000 kW	5169 (11395)			

## 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.



## Environment

	Operating	Storage
Temperature	0 °C to 40 °C (32 °F to 104 °F) without load derating. 40 °C to 50 °C (104 °F to 122 °F) when derated to 70% power.	-25 °C to 55 °C (-13 °F to 131 °F)
Relative humidity	5-95% non-condensing	10-80% non-condensing
Elevation	Designed for operation in 0-3000 m (0-10000 feet) elevation.  Derating required from 1000-3000 m (3300-10000 feet) with forced air cooling: 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  Derating required from 1000-3000 m (3300-10000 feet) with convection cooling: Up to 1000 m (3300 feet): 1.000 Up to 1500 m (5000 feet) : 0.985 Up to 2000 m (6600 feet): 0.970 Up to 2500 m (8300 feet): 0.955 Up to 3000 m (10000 feet): 0.940	
Audible noise one meter (three feet) from unit for a 500 kW UPS cabinet	69.5 dB at 100% load for 415 V systems 68 dB at 100% load for 480 V systems	
Protection class	IP20	
Color	RAL 9003, gloss level 85%	

## Heat Dissipation in BTU/hr

1600 kW	Normal operation		ECO mode		eConversion		Battery operation	
Voltage (V)	415	480	415	480	415	480	415	480
25% load	57 041	49 105	13 784	12 396	22 192	25 016	52 436	58 348
50% load	81 977	86 344	19 240	16 476	27 572	30 360	93 152	99 000
75% load	119 572	123 444	24 716	20 576	33 020	33 020	144 108	148 500
100% load	170 846	161 718	32 952	27 432	38 484	38 484	203 872	203 872

1800 kW	Normal operation		ECO mode		eConversion		Battery operation	
Voltage (V)	415	480	415	480	415	480	415	480
25% load	61 204	55 985	15 508	13 944	24 964	28 144	58 992	63 976
50% load	89 193	99 812	21 648	18 536	31 020	31 020	104 796	111 376
75% load	131 869	135 575	27 804	27 804	37 148	37 148	162 124	167 064
100% load	185 344	177 001	37 072	30 864	43 296	43 296	229 356	229 356

2000 kW	Normal operation		ECO mode		eConversion		Battery operation	
Voltage (V)	415	480	415	480	415	480	415	480
25% load	61 500	70 822	17 232	15 492	27 740	31 272	65 548	71 084
50% load	96 625	107 981	24 052	20 596	34 464	34 464	116 440	123 752
75% load	145 582	150 557	30 892	30 892	41 276	41 276	180 136	185 628
100% load	210 734	207 042	41 192	34 292	48 104	48 104	254 840	254 840

## Airflow Values

### Indicative Airflow Values in m<sup>3</sup>/Hour Based on a 30 °C (86 °F) Environment

UPS system rating	1600 kW	1800 kW	2000 kW
50% load	11 316	12 528	13 740
75% load	15 196	16 892	18 996
90% load	17 460	19 644	21 744
100% load	18 188	20 348	22 836

### Indicative Airflow Values in m<sup>3</sup>/Hour Based on a 40 °C (104 °F) Environment

UPS system rating	1600 kW	1800 kW	2000 kW
50% load	13 740	15 256	16 772
75% load	16 652	19 096	21 136
90% load	18 672	20 896	23 440
100% load	20 288	23 016	25 664

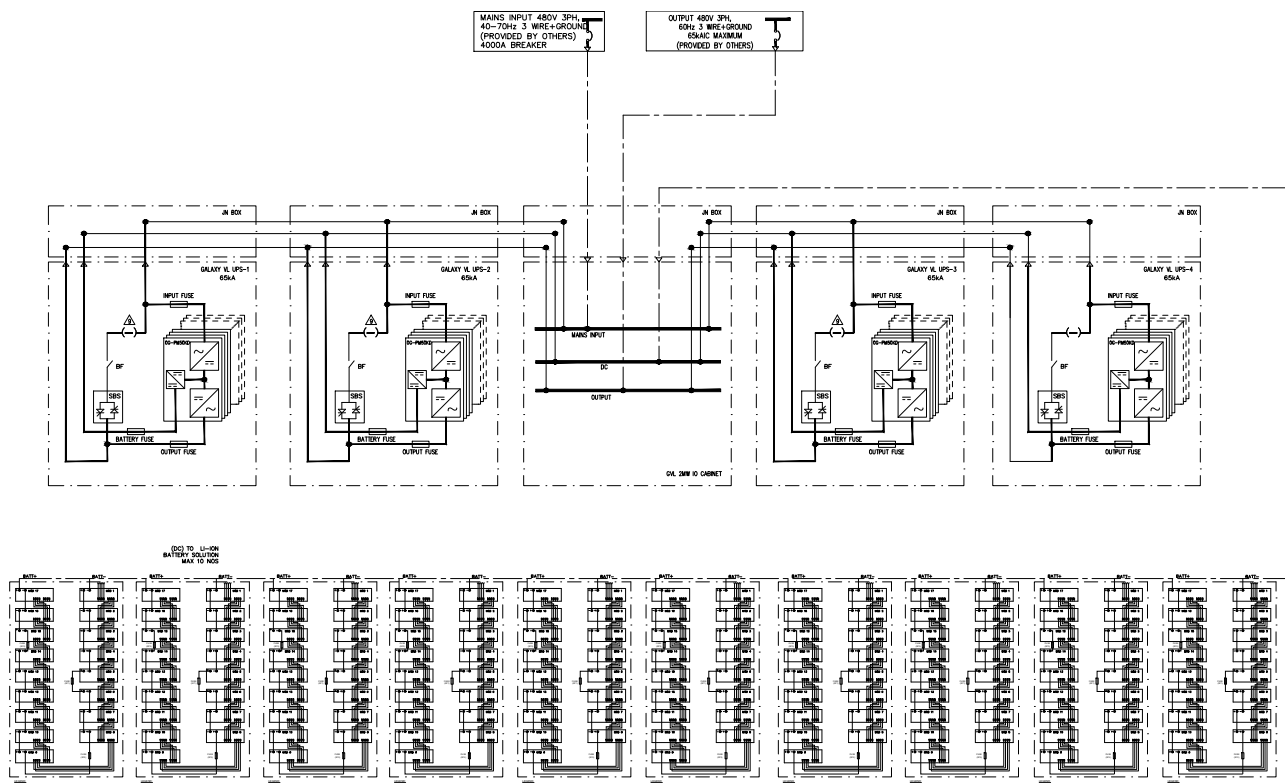


# Drawings

**NOTE:** A comprehensive set of drawings is available on [www.se.com](http://www.se.com).

**NOTE:** These drawings are for reference ONLY – subject to change without notice.

## Galaxy VL 1600-2000 kW 415/480 V UPS System



# Options

## Configuration Options

- eConversion mode
- ECO mode
- Compact design, high density technology, and modular architecture
- Single mains
- Built-in backfeed protection
- Default top cable entry
- EcoStruxure IT compatible
- Generator compatible
- Touchscreen LCD
- Replacement of power module in any operation mode (Live Swap)<sup>(18)</sup>
- Common Lithium-ion battery (LIBSESMG17UL) supported

## Hardware Options

**NOTE:** All hardware options listed here may not be available in all regions.

### Power Module

- Power module 50 kW (GVPM50KD)

### Lithium-ion Battery Cabinet

Battery cabinet including Lithium-ion batteries and battery breaker.

- Galaxy Lithium-ion battery cabinet with 17 battery modules (LIBSESMG17UL)
- Galaxy Lithium-ion battery communication cable, 25 m (82 ft) (LIBSEOPT001)

### Optional Network Management Card

- Network Management Card LCES2 with Modbus, Ethernet and AUX sensors (AP9644)

### Air Filter

- Performance air filter kit for UPS (GVLOPT001)

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<sup>(18)</sup> In all systems that live up to the prerequisites for Live Swap.

## Weights and Dimensions for Options

**NOTE:** Not all options listed here are available for all UPS models. Refer to the hardware options list for the relevant UPS model.

### Galaxy Lithium-ion Battery Cabinet Shipping Weights and Dimensions

Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
LIBSESMG10UL	211 (465)	2150 (84.65)	1200 (47.24)	800 (31.50)
LIBSESMG13UL	211 (465)	2150 (84.65)	1200 (47.24)	800 (31.50)
LIBSESMG16UL	211 (465)	2150 (84.65)	1200 (47.24)	800 (31.50)
LIBSESMG17UL	211 (465)	2150 (84.65)	1200 (47.24)	800 (31.50)
LIBSMG95MODA LIBSMG95MODB	17 (37.4)	215 (8.47)	485 (19.1)	297 (11.7)

**NOTE:** The battery cabinets are shipped without batteries. The battery modules are shipped separately per the chosen configuration with 10, 13, 16, or 17 battery modules.

### Galaxy Lithium-ion Battery Cabinet Weights and Dimensions

Commercial reference	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
LIBSESMG10UL	355 (782)	1970 (77.56)	650 (25.59)	587 (23.11)
LIBSESMG13UL	415 (915)	1970 (77.56)	650 (25.59)	587 (23.11)
LIBSESMG16UL	470 (1036)	1970 (77.56)	650 (25.59)	587 (23.11)
LIBSESMG17UL	490 (1080)	1970 (77.56)	650 (25.59)	587 (23.11)

# Limited Factory Warranty

## One-Year Factory Warranty

The limited warranty provided by Schneider Electric in this Statement of Limited Factory Warranty applies only to products you purchase for your commercial or industrial use in the ordinary course of your business.

## Terms of Warranty

Schneider Electric warrants that the product shall be free from defects in materials and workmanship for a period of one year from the date of product start-up, when start-up is performed by Schneider Electric-authorized service personnel, or within 18 months from the shipment date from Schneider Electric, whichever occurs first. This warranty covers repairing or replacing any defective parts including on-site labor and travel. In the event that the product fails to meet the foregoing warranty criteria, the warranty covers repairing or replacing defective parts at the sole discretion of Schneider Electric for a period of one year from the shipment date.

## Non-transferable Warranty

This warranty is extended to the first person, firm, association or corporation (herein referred to by "You" or "Your") for whom the Schneider Electric product specified herein has been purchased. This warranty is not transferable or assignable without the prior written permission of Schneider Electric.

## Assignment of Warranties

Schneider Electric will assign you any warranties which are made by manufacturers and suppliers of components of the Schneider Electric product and which are assignable. Any such warranties are assigned "AS IS" and Schneider Electric makes no representation as to the effectiveness or extent of such warranties, assumes no responsibility for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this Warranty to such components.

## Drawings, Descriptions

Schneider Electric warrants for the warranty period and on the terms of the warranty set forth herein that the Schneider Electric product will substantially conform to the descriptions contained in the Schneider Electric Official Published Specifications or any of the drawings certified and agreed to by contract with Schneider Electric if applicable thereto ("Specifications"). It is understood that the Specifications are not warranties of performance and not warranties of fitness for a particular purpose.

## Exclusions

Schneider Electric shall not be liable under the warranty if its testing and examination disclose that the alleged defect in the product does not exist or was

caused by end user or any third person misuse, negligence, improper installation or testing. Further, Schneider Electric shall not be liable under the warranty for unauthorized attempts to repair or modify wrong or inadequate electrical voltage or connection, inappropriate on-site operation conditions, corrosive atmosphere, repair, installation, start-up by non-Schneider Electric designated personnel, a change in location or operating use, exposure to the elements, Acts of God, fire, theft, or installation contrary to Schneider Electric recommendations or specifications or in any event if the Schneider Electric serial number has been altered, defaced, or removed, or any other cause beyond the range of the intended use.

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