

# Galaxy VM

**160-225 kVA 480 V 65 kAIC**

## Technical Specifications

**GVMSB160KG65S, GVMSB180KG65S, GVMSB225KG65S, GVMPB160KG65S, GVMPB180KG65S, GVMPB225KG65S, GVMRB160KG65S, GVMRB180KG65S, GVMRB225KG65S**

**07/2020**



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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.

## Safety Precautions

### ⚠ 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 circuit breakers, battery circuit 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.**

### ⚠ 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

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 area 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.**

## ***NOTICE***

### **RISK OF OVERHEATING**

Respect the clearance 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.

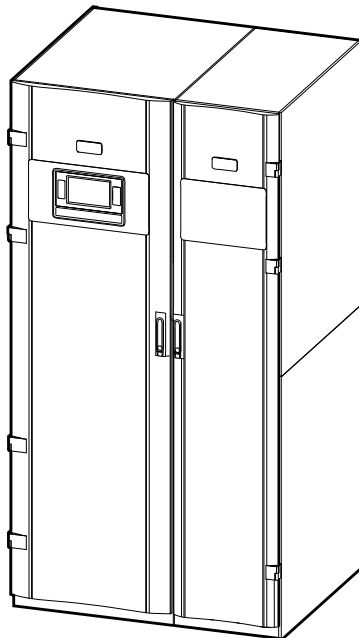
**Failure to follow these instructions can result in equipment damage.**

# Technical Data

## Galaxy VM System Overview

### UPS

Front View of UPS



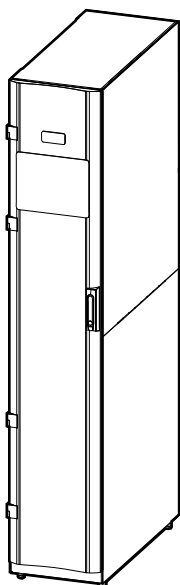
The UPS is the core in each Galaxy VM System and consists of two cabinets:

- To the right an I/O cabinet for field wiring and with disconnection devices.
- To the left a power cabinet with power electronics and user interface.

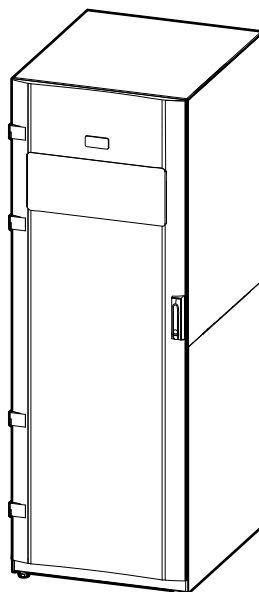
### Modular Battery Cabinets

The modular battery cabinet is available in two sizes:

Narrow Modular Battery Cabinet



Wide Modular Battery Cabinet

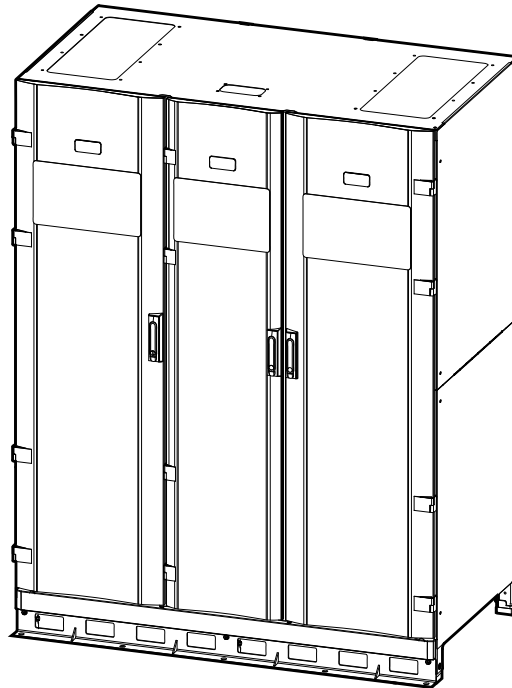




## System Bypass Cabinet

The system bypass cabinet is used in parallel systems and contains the maintenance bypass breaker MBB and the system isolation breaker SIB. The 675 kVA system bypass cabinet is also available in a version with a load bank breaker.

### Front View of the System Bypass Cabinet



## Model List

### UPS Model List

- 160 kVA UPS (GVMSB160KG65S)
- 180 kVA UPS (GVMSB180KG65S)
- 225 kVA UPS (GVMSB225KG65S)
- 160 kVA Parallel UPS (GVMPB160KG65S)
- 180 kVA Parallel UPS (GVMPB180KG65S)
- 225 kVA Parallel UPS (GVMPB225KG65S)
- 160 kVA Additional UPS for 1+1 configuration (GVMRB160KG65S)
- 180 kVA Additional UPS for 1+1 configuration (GVMRB180KG65S)
- 225 kVA Additional UPS for 1+1 configuration (GVMRB225KG65S)

### Output Transformer

- 480–208 V output transformer (GVMTF225KGF)

### Modular Battery Cabinets Model List

- UPS Modular Battery Cabinet wide up to 12 battery modules (GVMMODBCW)
- UPS Modular Battery Cabinet narrow up to 6 battery modules (GVMMODBCN)

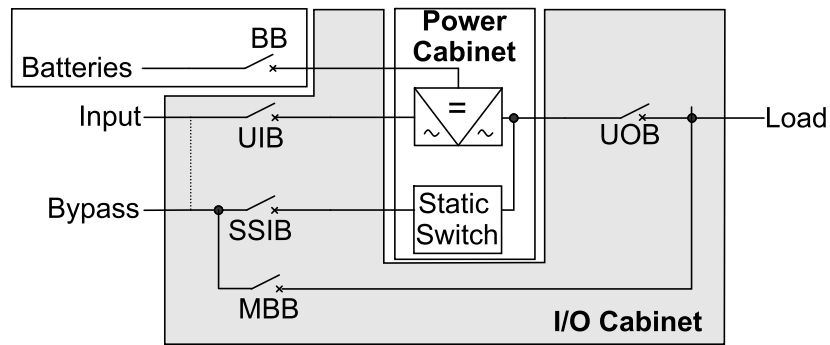
## System Bypass Cabinet Model List

- 450 kVA System Bypass Cabinet (GVMSBC450KG)
- 675 kVA System Bypass Cabinet (GVMSBC675KG)
- 675 kVA System Bypass Cabinet with Load Bank Breaker (GVMSBCLB675KG)

## Overview of Configurations

### Single System

UIB	Unit input breaker
SSIB	Static switch input breaker
BB	Battery breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker



### 1+1 Redundant System

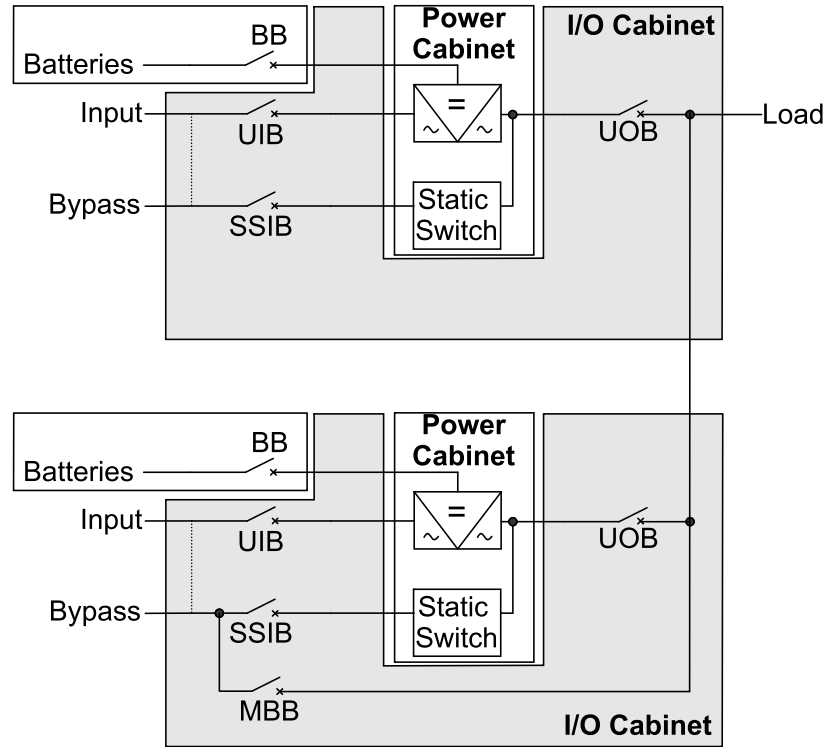
## **NOTICE**

### **HAZARD OF EQUIPMENT DAMAGE**

The cable length for bypass and output must be the same for all parallel UPS units to ensure correct load sharing in bypass operation. In single utility/mains systems all input cables must be same length.

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

UIB	Unit input breaker
SSIB	Static switch input breaker
BB	Battery breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker



Parallel System

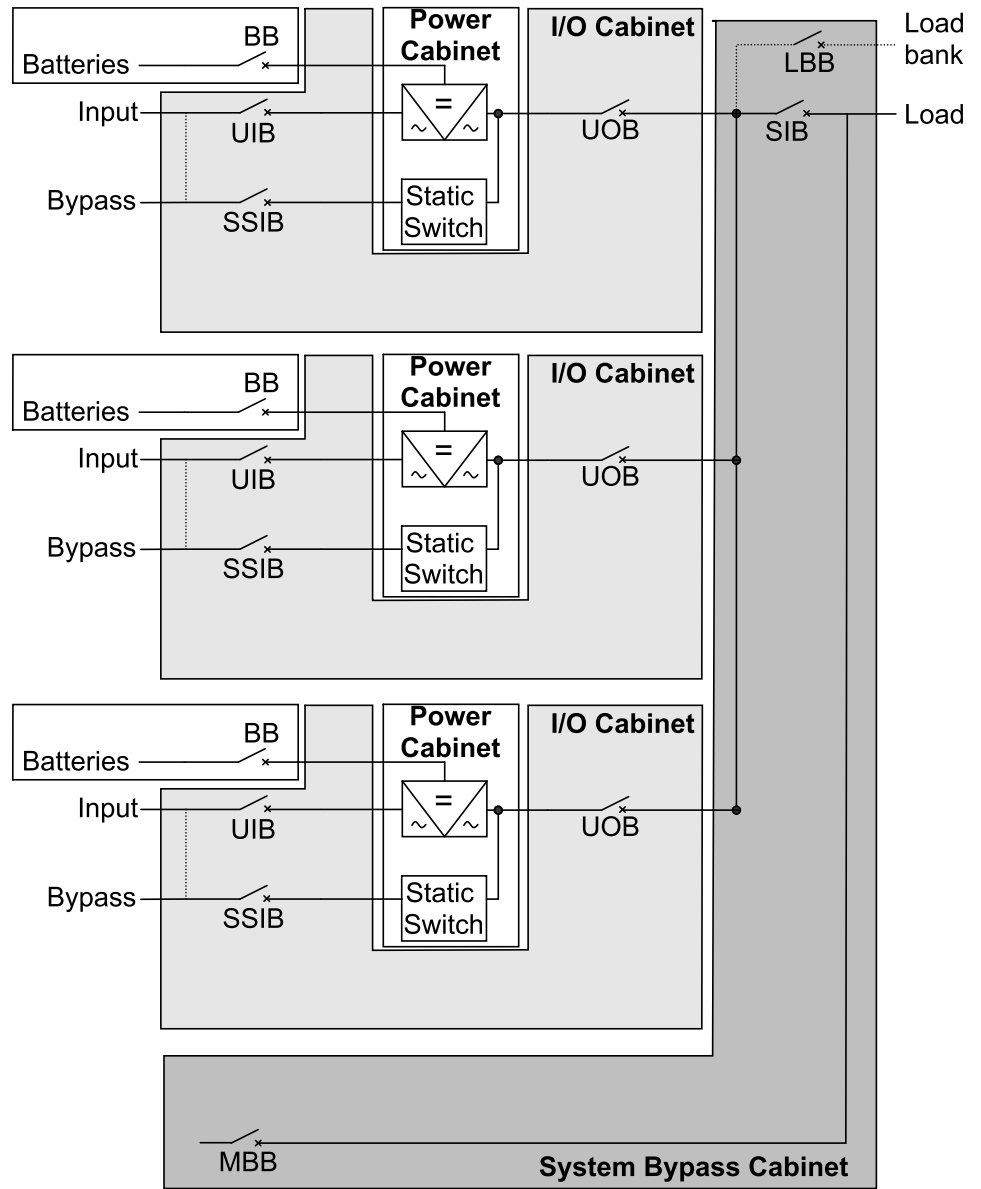
**NOTICE**

**HAZARD OF EQUIPMENT DAMAGE**

The cable length for bypass and output must be the same for all parallel UPS units to ensure correct load sharing in bypass operation. In single utility/mains systems all input cables must be same length.

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

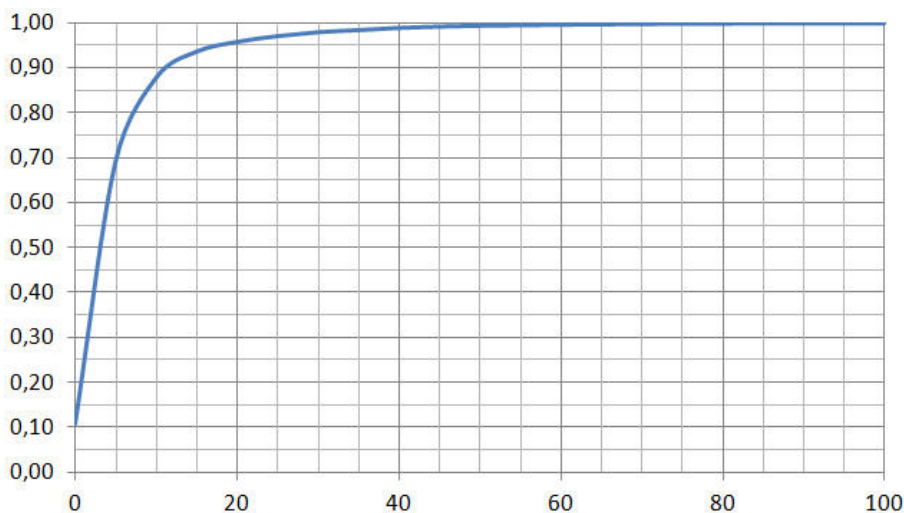
UIB	Unit input breaker
SSIB	Static switch input breaker
BB	Battery breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker
SIB	System isolation breaker
LBB	Load bank breaker (optional)



## Input Power Factor

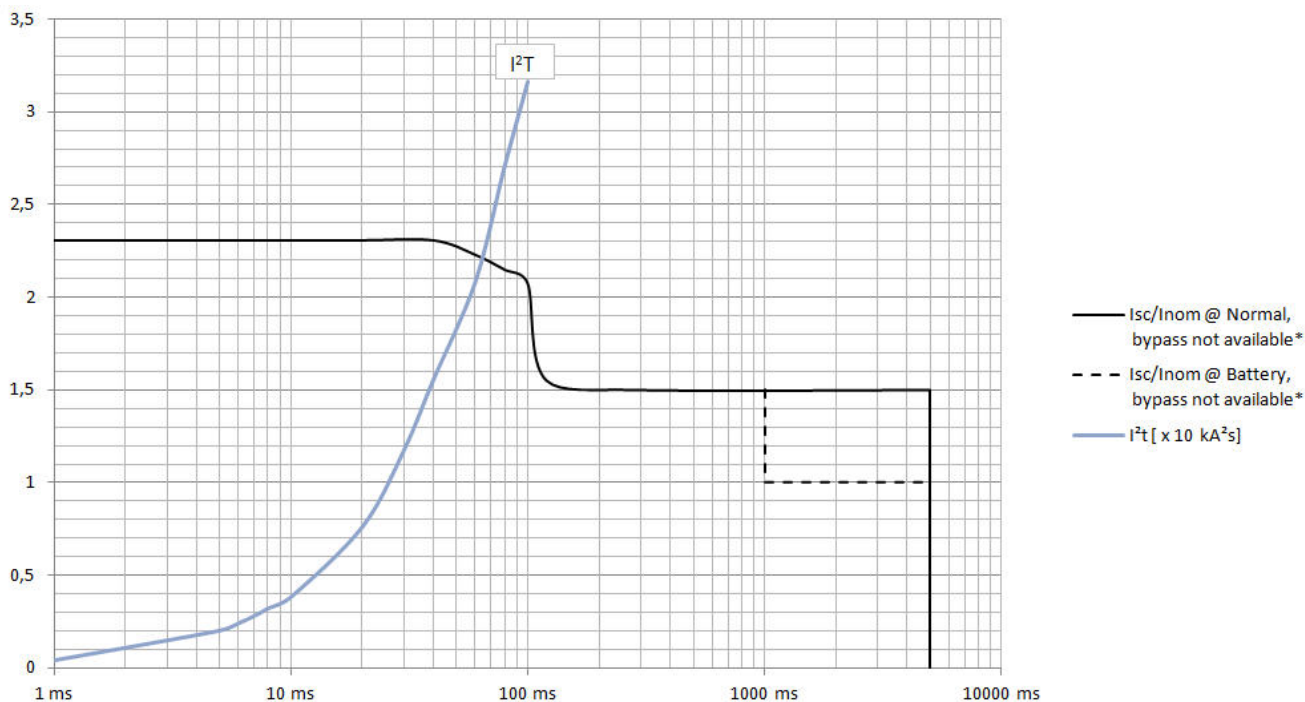
Power factor (PF) is given for a 480 V normal AC source for linear/non-linear loads.

	160 kVA	180 kVA	225 kVA
25% load	0.97	0.97	0.97
50% load	0.99	0.99	0.99
75% load	0.99	0.99	0.99
100% load	0.99	0.99	0.99



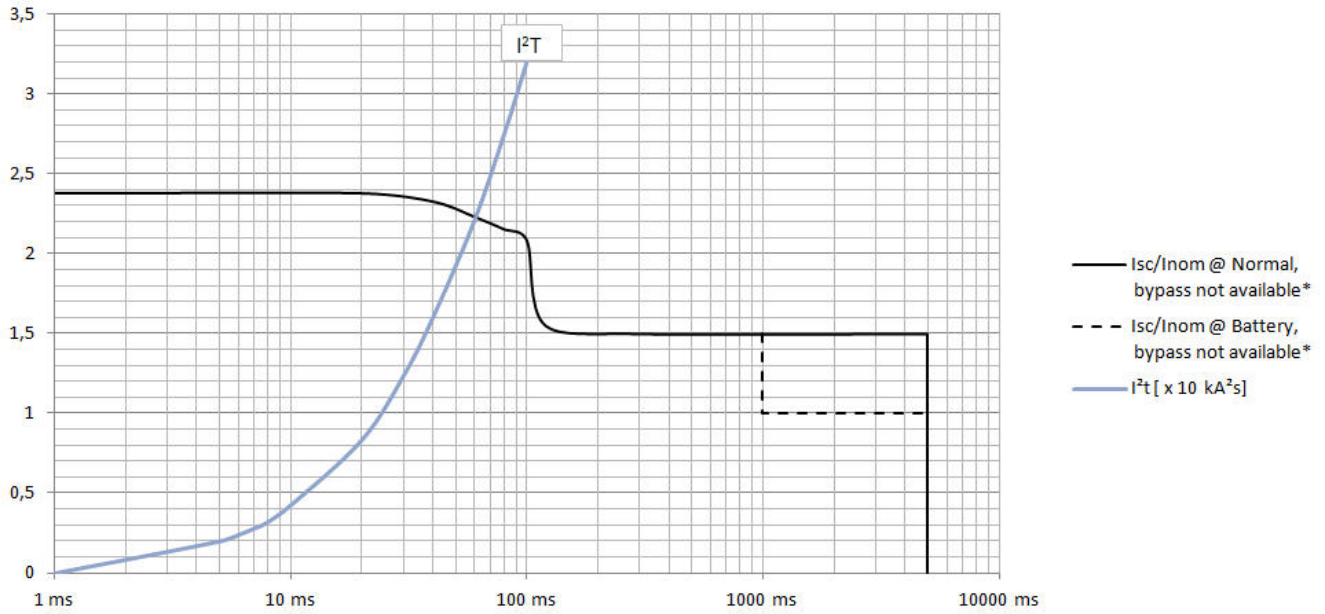
## Inverter Short-Circuit Capabilities (Bypass not Available)

### IK1 – Short-Circuit between a Phase and Neutral



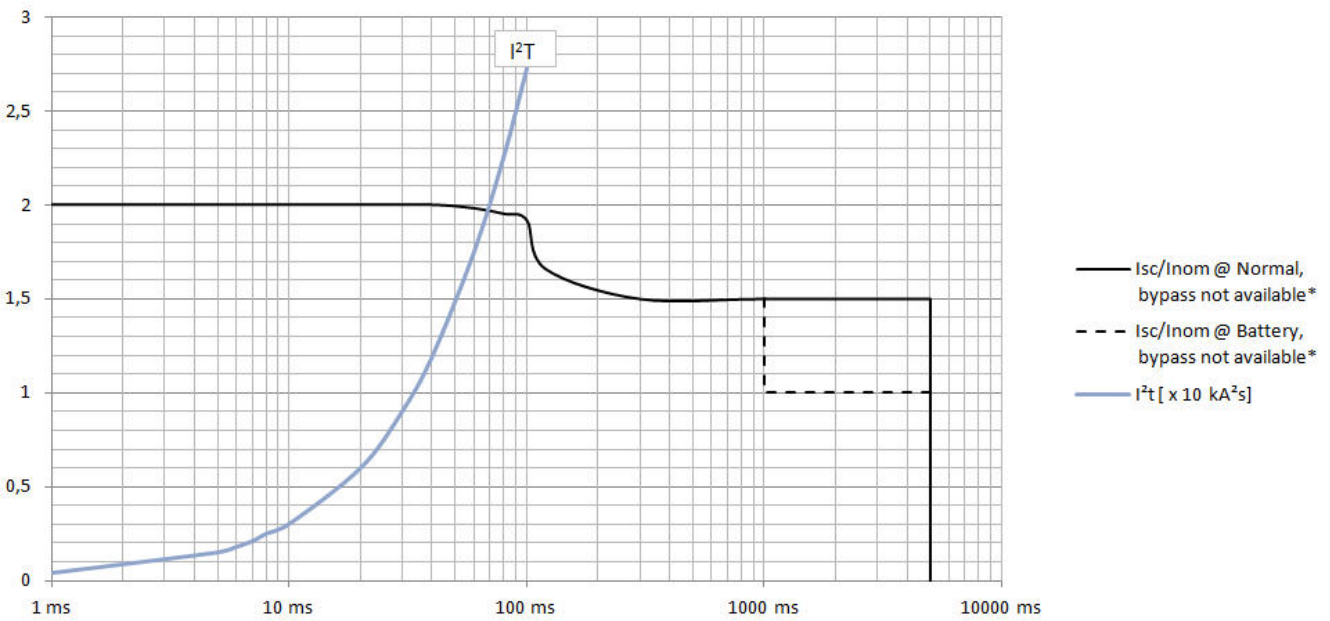
\* I<sub>sc</sub> = Inverter short-circuit current RMS, I<sub>nom</sub> = Inverter nominal current RMS

### IK2 – Short-Circuit between Two Phases



\* I<sub>sc</sub> = Inverter short-circuit current RMS, I<sub>nom</sub> = Inverter nominal current RMS

### IK3 – Short-Circuit between All Three Phases



\* I<sub>sc</sub> = Inverter short-circuit current RMS, I<sub>nom</sub> = Inverter nominal current RMS

## Efficiency

### Efficiency in Normal Operation

The table below provides average system efficiencies with a balanced linear load, and a power factor of 0.9.

	160 kVA	180 kVA	225 kVA
25% load	95.1	95.6	95.8
50% load	96.3	96.4	96.4
75% load	96.5	96.5	96.5
100% load	96.4	96.4	96.4

### Efficiency In EConversion Mode

	160 kVA	180 kVA	225 kVA
25% load	96.8	97.1	97.4
50% load	98.3	98.4	98.6
75% load	98.7	98.8	98.9
100% load	98.9	99.0	99.0

### Efficiency in ECO Mode

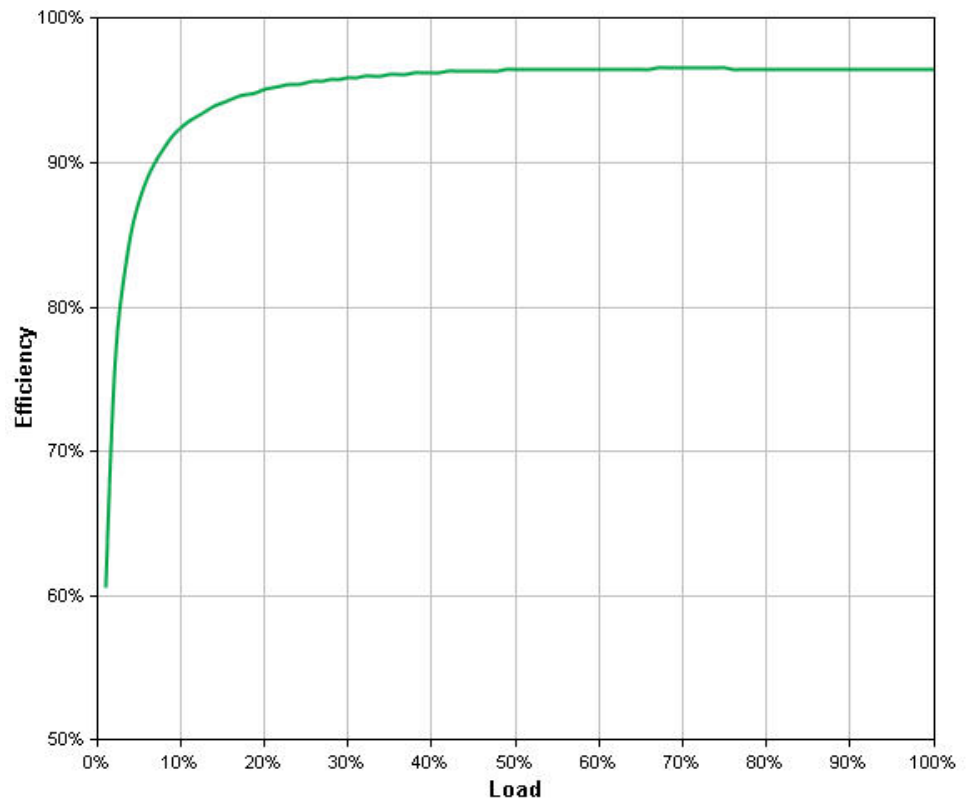
	160 kVA	180 kVA	225 kVA
25% load	98.1	98.2	98.5
50% load	99.0	99.0	99.1
75% load	99.2	99.2	99.4
100% load	99.3	99.5	99.5

### Efficiency in Battery Operation

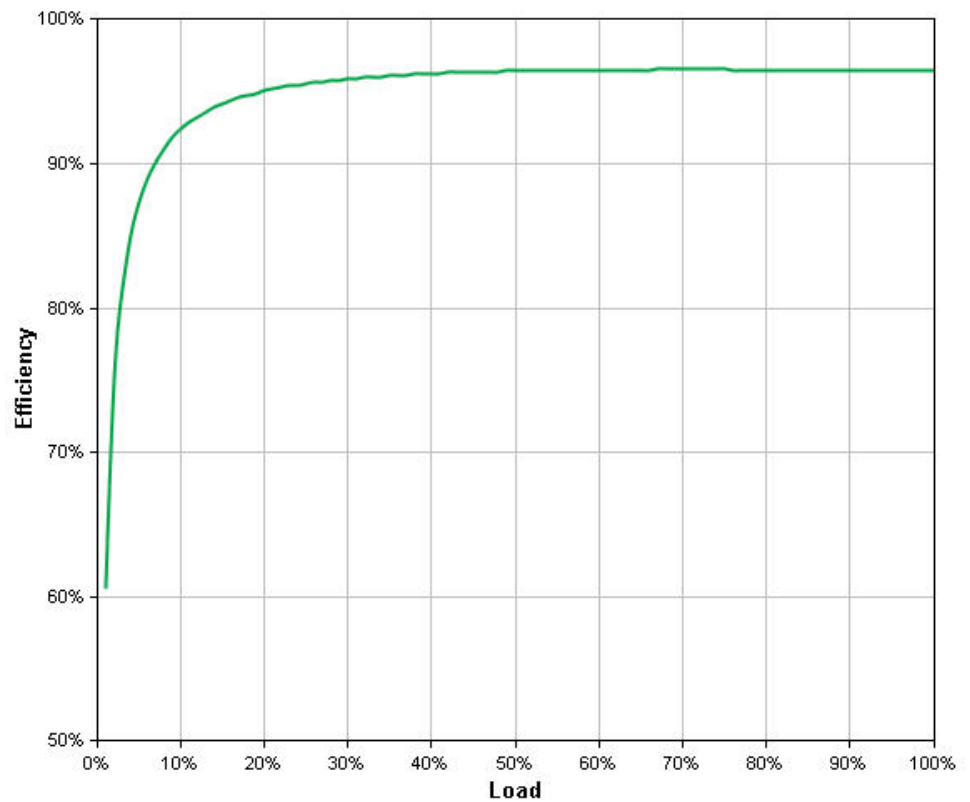
	160 kVA	180 kVA	225 kVA
25% load	96.1	96.4	96.3
50% load	96.2	96.5	96.2
75% load	95.9	96.2	96.0
100% load	95.5	95.8	95.7

### Efficiency Curves for Normal Operation

**160 kVA**

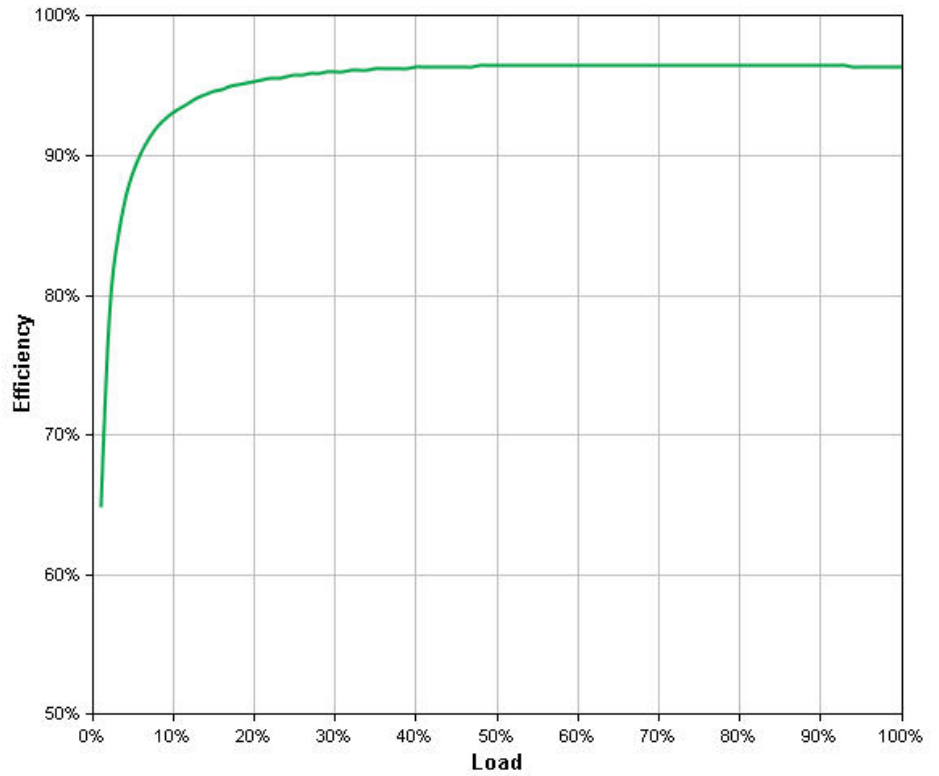


**180 kVA**

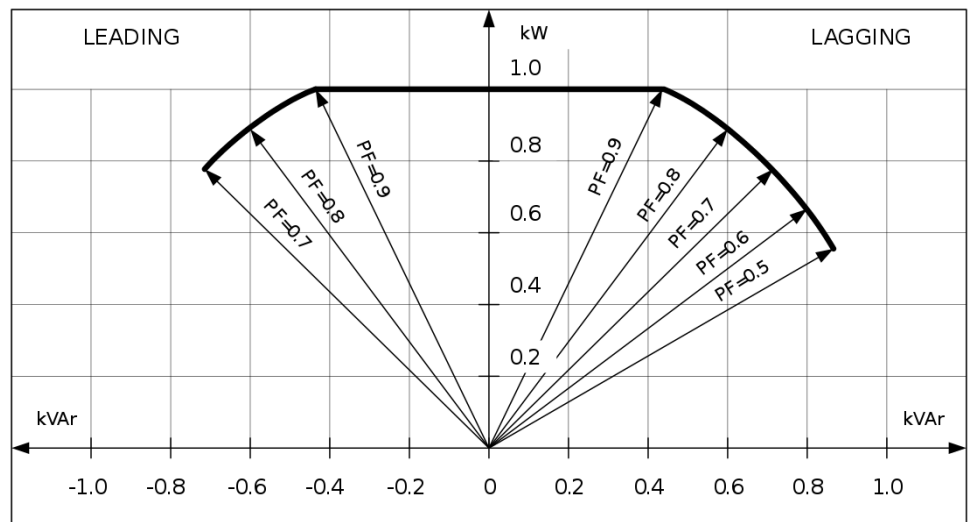




### 225 kVA



### Derating Due to Load Power Factor



## Batteries

### Modular Battery Specifications

Battery	Capacity	Type	Recommended Operating Temperature	Life	Block Quantity
PXL12090	C20: 9 Ah	VRLA	25 °C +/- 3 °C	5 years	40 blocks/string <sup>1</sup>
HRL 1234W F2FR	C20: 9 Ah <sup>2</sup>	VRLA	25 °C +/- 3 °C	8 years	40 blocks/string <sup>1</sup>

### Typical Battery Runtimes

**NOTE:** The battery runtimes are intended as a guide only.

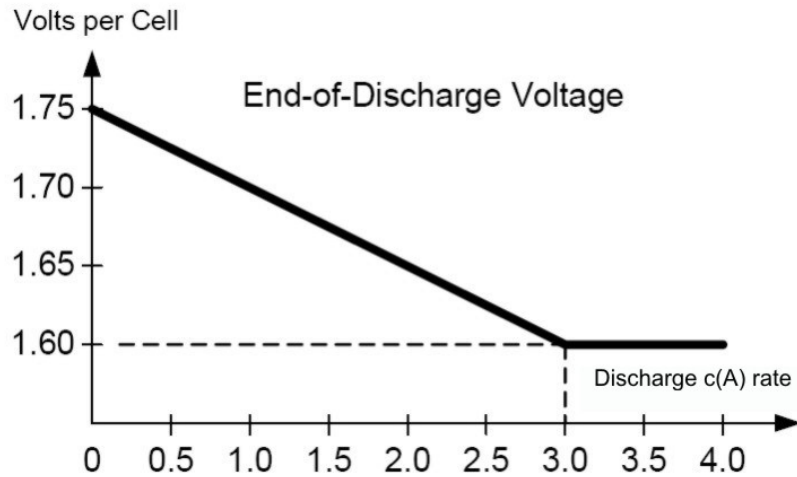
#### Typical Battery Runtimes in Minutes for Systems with Modular Battery Cabinets

Modular Battery Cabinets	Number of Battery Modules	160 kVA	180 kVA	225 kVA
(1) GVMMODBCW	9	5.6	NA	NA
	10	6.6	5.5	NA
	11	7.7	6.4	NA
	12	8.7	7.4	5.1
(1) GVMMODBCW (1) GVMMODBCN	13	9.8	8.3	5.8
	14	11	9.3	6.6
	15	12	10	7.3
	16	13	11	8.1
	17	14	12	8.9
	18	15.5	13	9.6
(2) GVMMODBCW	24	22.5	19.5	14.5
(2) GVMMODBCW (1) GVMMODBCN	30	30	26	19.5
(3) GVMMODBCW	36	37.5	32.5	24.5
(3) GVMMODBCW (1) GVMMODBCN	42	45.5	39.5	30
(4) GVMMODBCW	48	53.5	46.5	35.5
(4) GVMMODBCW (1) GVMMODBCN	54	62	54	41
(5) GVMMODBCW	60	70.5	61.5	46.5
(5) GVMMODBCW (1) GVMMODBCN	66	79	69	52.5
(6) GVMMODBCW	72	87.5	76.5	58.0
(6) GVMMODBCW (1) GVMMODBCN	78	96.5	84.5	64
(7) GVMMODBCW	84	105	92.0	70
(7) GVMMODBCW (1) GVMMODBCN	90	115	100	76.5
(8) GVMMODBCW	96	125	106	82.5

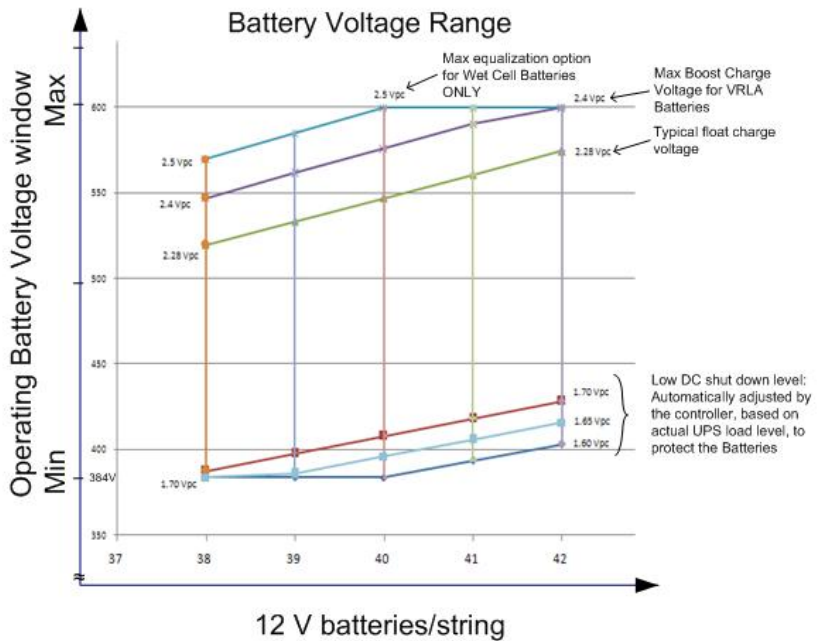
1. Narrow modular battery cabinets can contain 6 parallel strings and wide modular battery cabinets can contain 12 parallel strings
2. 34 W - approximately 9 Ah

### End of Discharge Voltage

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



### Battery Voltage Range



### Battery Gassing Rates for Modular Battery Cabinets

Gassing Rate	Single Cartridge	Single Shelf Narrow Modular Battery Cabinet (2 Cartridges)	Single Shelf Wide Modular Battery Cabinet (4 Cartridges)
Typical cc/hr (ml/hr)	18 (18)	36 (36)	73 (73)
Maximum cc/hr (ml/hr)	59 (59)	119 (119)	238 (238)

## Electrolyte Values for Modular Battery Cabinets

	Single Cartridge	Single Shelf Narrow Modular Battery Cabinet (2 Cartridges)	Single Shelf Wide Modular Battery Cabinet (4 Cartridges)
Electrolyte Volume L (gal)	3.66 (0.967)	7.32 (1.93)	14.6 (3.86)
Electrolyte Weight kg (lbs)	4.89 (10.08)	9.78 (21.5)	19.6 (43.1)
Sulfuric Acid Weight kg (lbs)	2.13 (4.69)	4.26 (9.38)	8.52 (18.8)

## Battery Material Safety Data Sheet

**NOTE:** For Material Safety Data Sheet (MSDS), go to the Knowledge Base [http://schneider-electric.com/sites/corporate/en/support/faq/faq\\_main.page](http://schneider-electric.com/sites/corporate/en/support/faq/faq_main.page) and type "MSDS" to get the latest MSDS information.

## Compliance

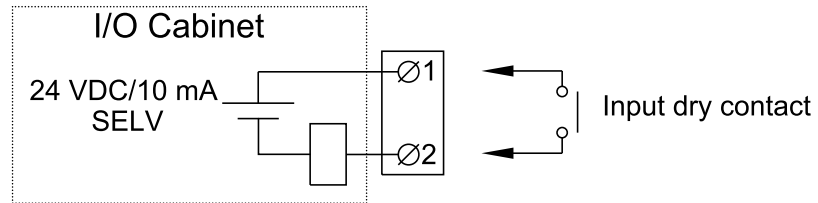
Safety	UL1778 5th edition
EMC/EMI/RFI	FCC47 Part 15
Performance	IEC62040-3
Markings	UL1778
Transportation	ISTA 2B
Seismic	OSHPD, IBC2012 and CBC2013 to Sds=2.02g

## Communication and Management

Local Area Network	100 Mbps
Extensions	2 x Rhodes 2 NMC Cards (optional)
MODBUS	MODBUS (SCADA & ION-E)
Relay Outputs	12 of which 6 are configurable
Dry Contact Inputs	12 of which 6 are configurable
Standard Control Panel	7" Touch Screen Display
Audible alarm	Yes
Emergency Power Off (EPO)	Options: <ul style="list-style-type: none"> <li>• Normally Open</li> <li>• Normally Closed</li> <li>• External 24 VDC SELV</li> </ul>
External switchgear	Yes
External Synchronization	Yes all 3 phases
Transformer compensation	Yes
Battery Monitoring	Available for modular battery cabinets

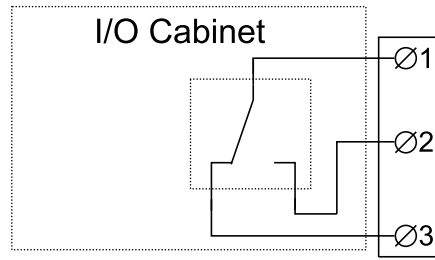
## Overview of Input Contacts and Output Relays

### Input Contacts



Name	Description	Location
IN 1 (Contact 1)	Configurable input contact	640-3640 terminal J5502
IN 2 (Contact 2)	Configurable input contact	640-3640 terminal J5503
IN 3 (Contact 3)	Configurable input contact	640-3640 terminal J5504
IN 4 (Contact 4)	Configurable input contact	640-3640 terminal J5505
IN 5 (Contact 5)	Configurable input contact	640-3640 terminal J5510
IN 6 (Contact 6)	Configurable input contact	640-3640 terminal J5509
IN 7	Transformer temperature switch	640-3640 terminal J5508
IN 9	Forced external synchronization input	640-3640 terminal J5506
IN 10	External synchronization requested input	640-3640 terminal J5511
IN 11	Use static bypass standby	640-3640 terminal J5512

### Output Relays



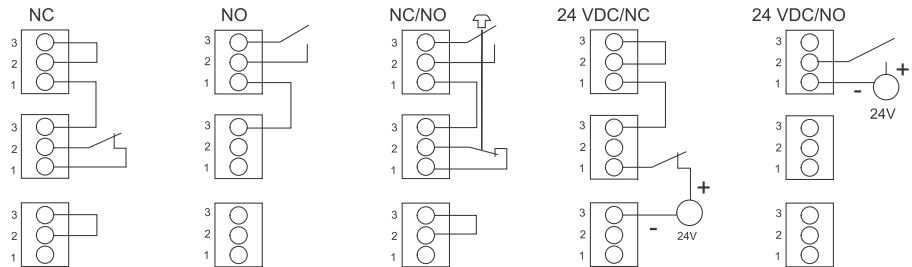
Output relay connection

Max 5 A/250 VAC

Max 5 A/24 VDC

Name	Description	Location
OUT 1 (Relay 1)	Configurable output relay	640–3635 terminal J4939
OUT 2 (Relay 2)	Configurable output relay	640–3635 terminal J4940
OUT 3 (Relay 3)	Configurable output relay	640–3635 terminal J4941
OUT 4	Forced external synchronization output	640–3640 terminal J5520
OUT 5	Reserved for future use	640–3640 terminal J5521
OUT 6	External synchronization requested output	640–3640 terminal J5522
OUT 7	UPS in inverter ON	640–3640 terminal J5523
OUT 8 (Relay 4)	Configurable output relay	640–3640 terminal J5524
OUT 9 (Relay 5)	Configurable output relay	640–3640 terminal J5525
OUT 10 (Relay 6)	Configurable output relay	640–3640 terminal J5528

### EPO Connections



# Facility Planning

## Input Specifications

	160 kVA	180 kVA	225 kVA
Connections	L1, L2, L3 + G WYE source – solid grounded and high resistance grounded sources are supported		
Voltage (V)	480		
Input voltage range (V)	360–576		
Frequency range (Hz)	40–70		
Nominal input current (A)	181	204	255
Maximum input current (A)	218	245	306
Input current limitation (A)	247	278	347
Total harmonic distortion (THDI)	<3% at 100% load <4% at 50% load <6% at 25% load		
Maximum short circuit rating	I <sub>cs</sub> = 65 kA		
Protection	Built-in backfeed contactor		
Ramp-in	Adaptive 1 - 40 sec		

## Bypass Specifications

**NOTE:** Bypass is inoperable when the system is configured as a frequency converter.

	160 kVA	180 kVA	225 kVA
Connections	L1, L2, L3 + G or L1, L2, L3 + N + G		
Voltage (V)	480		
Bypass voltage range (V)	432–528		
Frequency (Hz)	50 or 60		
Frequency range (Hz)	Programmable: +/-0.1, +/-3, +/-10. Default is +/-3.		
Nominal bypass current (A)	192	217	271
Maximum short circuit rating	I <sub>cs</sub> = 65 kA		
Protection	Built-in Backfeed Contactor		

## Output Specifications

	160 kVA	180 kVA	225 kVA
Voltage (V)	480		
Connections	L1, L2, L3 + G or L1, L2, L3 + N + G		
Overload capacity <sup>3</sup>	150% for 1 minute, 125% for 10 minutes (normal operation) at 40°C 150% for 1 second, 125% for 1 minute (battery operation) at 40°C 1000% for 100 ms (bypass operation)		
Dynamic load response	Symmetric load (0–100%): +/- 1% static +/- 5% after 2 ms +/- 1% after 50 ms		
Output power factor	0.9		
Nominal output current (A)	192	217	271
Total harmonic distortion (THDU)	<2% at 100% linear load <3% at 100% non-linear load		
Output frequency (Hz)	50/60 (sync to bypass) 50/60 Hz +/-0.1% (free-running)		
Slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6		
Output performance classification (according to IEC/ EN62040-3)	VFI-SS-111		
Load crest factor	Up to 3 (THDU < 5%)		
Load power factor	0.7 leading to 0.5 lagging without derating		

## Battery Specifications

	160 kVA	180 kVA	225 kVA
Charging power in % of output power	40% charge ≤ 80% load 20% charge ≤ 100% load		
Nominal battery voltage (VDC)	480		
Nominal float voltage (VDC)	545		
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)	313	353	441
Battery current at full load and minimum battery voltage (A)	392	441	551
Temperature compensation	-3.3 mV per °C for T ≥ 25 °C 0 mV per °C for T < 25 °C		
Ripple current	< 5% C20 (5 minutes backup time)		
Battery test	Programmable: Manual/automatic		
Deep discharge protection	Yes		
Recharge according to battery temperature	Yes		
Cold start	Yes		

3. Overload capabilities are not available when the system is configured as a frequency converter



## Requirements for a Third Party Battery Solution

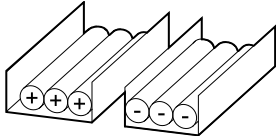
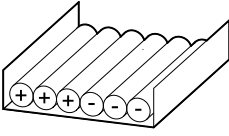
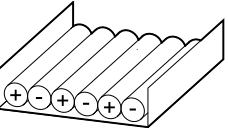
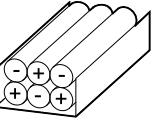
Battery breaker boxes from Schneider Electric are recommended for the battery interface. Please contact Schneider Electric for more information.

## 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

## Recommended Upstream Protection

This equipment is rated for use in a circuit capable of delivering no more than 65 kA RMS symmetrical amperes at 480 V maximum.

The UPS system can be supplied from a 3-wire or 4-wire service. If the load requires a 4-wire service, a 3-wire bypass is not permitted. In systems with a 4-wire service, connect the bypass input neutral, the output neutral, and the inverter midpoint in the I/O cabinet by the busbar jumper 880–3102.

**NOTE:** All wiring must comply with all applicable local and/or national electrical codes. The maximum allowable conductor size is 300 kcmil for AC cables and 500 kcmil for DC cables.

Cable ampacity is based on NFPA 70–2014 Art. 310.15 Table 310.15 (B) with the following assertions:

- 75 °C termination
- 3 current carrying conductors
- An ambient temperature of 30 °C
- Use of copper conductors

If the ambient room temperature is greater than 30 °C, 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:** Refer to the installation manual for your specific battery solution for information on recommended battery cable sizes.

## 160 kVA System

	80% Rated Breakers	Cable Size	100% Rated Breakers	Cable Size
Input	In = 400 Ir = 250	2 x 2/0 AWG	In = 400 Ir = 250	1 x 250 kcmil
Bypass	In = 400 Ir = 200	1 x 250 kcmil	In = 400 Ir = 200	1 x 3/0 AWG
Output	In = 400 Ir = 200	1 x 250 kcmil	In = 400 Ir = 200	1 x 3/0 AWG

## 180 kVA System

	80% Rated Breakers	Cable Size	100% Rated Breakers	Cable Size
Input	In = 400 Ir = 300	2 x 2/0 AWG	In = 400 Ir = 300	1 x 300 kcmil
Bypass	In = 400 Ir = 225	1 x 300 kcmil	In = 400 Ir = 225	1 x 4/0 AWG
Output	In = 400 Ir = 225	1 x 300 kcmil	In = 400 Ir = 225	1 x 4/0 AWG

## 225 kVA System

	80% Rated Breakers	Cable Size	100% Rated Breakers	Cable Size
Input	In = 600 Ir = 350	2 x 4/0 AWG	In = 400 Ir = 350	2 x 2/0 AWG
Bypass	In = 400 Ir = 300	2 x 2/0 AWG	In = 400 Ir = 300	1 x 300 kcmil
Output	In = 400 Ir = 300	2 x 2/0 AWG	In = 400 Ir = 300	1 x 300 kcmil

## Recommended Bolt and Lug Sizes

### **NOTICE**

#### **HAZARD OF EQUIPMENT DAMAGE**

Use only UL approved cable lugs.

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

Cable Size	Terminal Bolt Diameter	Cable Lug Type	Crimping Tool/Die
2/0 AWG	M10	LCA2/0-12-X	CT-720/CD-720-2
3/0 AWG	M10	LCA3/0-12-X	CT-720/CD-720-2
4/0 AWG	M10	LCA4/0-12-X	CT-720/CD-720-3
250 kcmil	M10	LCA250-12-X	CT-720/CD-720-3
300 kcmil	M10	LCA300-12-X	CT-720/CD-720-4
400 kcmil	M10	LCA400-12-X	CT-720/CD-720-5
500 kcmil	M10	LCA500-12-X	CT-720/CD-720-6

### Trip Settings for Unit Input Breaker (UIB)

	160 kVA	180 kVA	225 kVA
Ir	300	300	400
tr	0.5	0.5	0.5
li	1.5	1.5	1.5

### Trip Settings for Static Switch Input Breaker (SSIB)

**NOTE:** tr and li must be set by the installer based on the installation coordination.

	160 kVA	180 kVA	225 kVA
Ir	250	300	350
tr	0.5– <b>16<sup>4</sup></b>	0.5– <b>16<sup>4</sup></b>	0.5– <b>16<sup>4</sup></b>
li	1.5– <b>12<sup>4</sup></b>	1.5– <b>12<sup>4</sup></b>	1.5– <b>12<sup>4</sup></b>

### Trip Settings for Maintenance Bypass Breaker (MBB)

**NOTE:** tr and li must be set by the installer based on the installation coordination.

	160 kVA	180 kVA	225 kVA
Ir	250	300	350
tr	0.5– <b>16<sup>4</sup></b>	0.5– <b>16<sup>4</sup></b>	0.5– <b>16<sup>4</sup></b>
li	1.5– <b>12<sup>4</sup></b>	1.5– <b>12<sup>4</sup></b>	1.5– <b>12<sup>4</sup></b>

### Trip Settings for Unit Output Breaker (UOB)

	160 kVA	180 kVA	225 kVA
Ir	250	300	350
tr	4	4	4
li	6	8	8

## Torque Specifications

Bolt size	Torque
M4	1.7 Nm (1.25 lb-ft)
M5	2.5 Nm (1.84 lb-ft)
M6	5 Nm (3.69 lb-ft)
M8	17.5 Nm (12.91 lb-ft)
M10	30 Nm (22 lb-ft)
M12	50 Nm (36.87 lb-ft)
M14	75 Nm (55.31 lb-ft)

4. The default setting is marked with bold.

## Physical

### Weights and Dimensions

#### UPS Weights and Dimensions

Part	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
160 kVA UPS (GVMSB160KG65S) Power cabinet I/O cabinet	469 (1031.8) 210 (463)	1970 (77.56)	1002 (39.45)	854 (33.62)
180 kVA UPS (GVMSB180KG65S) Power cabinet I/O cabinet	469 (1031.8) 210 (463)	1970 (77.56)	1002 (39.45)	854 (33.62)
225 kVA UPS (GVMSB225KG65S) Power cabinet I/O cabinet	494 (1086.8) 210 (463)	1970 (77.56)	1002 (39.45)	854 (33.62)
160 kVA parallel UPS (GVMPB160KG65S) Power cabinet I/O cabinet	469 (1031.8) 210 (463)	1970 (77.56)	1002 (39.45)	854 (33.62)
180 kVA parallel UPS (GVMPB180KG65S) Power cabinet I/O cabinet	469 (1031.8) 210 (463)	1970 (77.56)	1002 (39.45)	854 (33.62)
225 kVA parallel UPS (GVMPB225KG65S) Power cabinet I/O cabinet	494 (1086.8) 210 (463)	1970 (77.56)	1002 (39.45)	854 (33.62)
160 kVA additional UPS for 1+1 configuration (GVMRB160KG65S) Power cabinet I/O cabinet	469 (1031.8) 210 (463)	1970 (77.56)	1002 (39.45)	854 (33.62)
180 kVA additional UPS for 1+1 configuration (GVMRB180KG65S) Power cabinet I/O cabinet	469 (1031.8) 210 (463)	1970 (77.56)	1002 (39.45)	854 (33.62)
225 kVA additional UPS for 1+1 configuration (GVMRB225KG65S) Power cabinet I/O cabinet	494 (1086.8) 210 (463)	1970 (77.56)	1002 (39.45)	854 (33.62)

#### Output Transformer Cabinet Weights and Dimensions

Part	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
480–208 V output transformer cabinet (GVMTF225KGF)	1200 (2640)	1970 (77.56)	800 (31.50)	854 (33.62)

#### Modular Battery Cabinets Weights and Dimensions

Part	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
Modular battery cabinet wide up to 12 strings (GVMMODBCW) <sup>5</sup>	210 (462) <sup>1</sup>	1970 (77.56)	700 (27.56)	854 (33.62)
Modular battery cabinet narrow up to 6 strings (GVMMODBCN) <sup>5</sup>	139 (305,8) <sup>1</sup>	1970 (77.56)	370 (14.57)	854 (33.62)

5. The weight is without batteries. Each battery module string (GVMMBTU) weights 4 x 30 kg (4 x 66 lbs)

### System Bypass Cabinet Weights and Dimensions

Part	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
System bypass cabinet 450K 480V (GVMSBC450KG)	485 (1067)	1970 (77.56)	1505 (59.25)	837 (32.95)
System bypass cabinet 675K 480V (GVMSBC675KG)	505 (1111)	1970 (77.56)	1505 (59.25)	837 (32.95)
System bypass cabinet 675K 480V with load bank breaker (GVMSBCLB675KG)	585 (1287)	1970 (77.56)	1785 (70.28)	837 (32.95)

### Kits Weights and Dimensions

Description	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
Battery breaker kit 250 A UL (GVMBBK250UL)	7.4 (16.28)	262 (10.31)	377 (14.84)	241 (9.49)
Battery breaker kit 400 A UL (GVMBBK400UL)	11.4 (25.08)	262 (10.31)	377 (14.84)	766 (30.16)
Fuse kit 160 to 225 kVA WW (GVMFU800WW)	3.2 (7.04)	127 (5)	396 (15.59)	241 (9.49)

## Shipping Weights and Dimensions

### UPS Shipping Weights and Dimensions

Part	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
160 kVA UPS (GVMSB160KG65S) Power cabinet I/O cabinet	484.5 (1068)	2156 (84.88)	740 (29.13)	1052 (41.42)
	235 (518)	2150 (84.64)	750 (29.53)	1060 (41.73)
180 kVA UPS (GVMSB180KG65S) Power cabinet I/O cabinet	484.5 (1068)	2156 (84.88)	740 (29.13)	1052 (41.42)
	235 (518)	2150 (84.64)	750 (29.53)	1060 (41.73)
225 kVA UPS (GVMSB225KG65S) Power cabinet I/O cabinet	510 (1124)	2156 (84.88)	740 (29.13)	1052 (41.42)
	235 (518)	2150 (84.64)	750 (29.53)	1060 (41.73)
160 kVA parallel UPS (GVMPB160KG65S) Power cabinet I/O cabinet	484.5 (1068)	2156 (84.88)	740 (29.13)	1052 (41.42)
	227 (500)	2150 (84.64)	750 (29.53)	1060 (41.73)
180 kVA parallel UPS (GVMPB180KG65S) Power cabinet I/O cabinet	484.5 (1068)	2156 (84.88)	740 (29.13)	1052 (41.42)
	227 (500)	2150 (84.64)	750 (29.53)	1060 (41.73)
225 kVA parallel UPS (GVMPB225KG65S) Power cabinet I/O cabinet	510 (1124)	2156 (84.88)	740 (29.13)	1052 (41.42)
	227 (500)	2150 (84.64)	750 (29.53)	1060 (41.73)
160 kVA additional UPS for 1+1 configuration (GVMRB160KG65S) Power cabinet I/O cabinet	484.5 (1068)	2156 (84.88)	740 (29.13)	1052 (41.42)
	227 (500)	2150 (84.64)	750 (29.53)	1060 (41.73)
180 kVA additional UPS for 1+1 configuration (GVMRB180KG65S) Power cabinet I/O cabinet	484.5 (1068)	2156 (84.88)	740 (29.13)	1052 (41.42)
	227 (500)	2150 (84.64)	750 (29.53)	1060 (41.73)
225 kVA additional UPS for 1+1 configuration (GVMRB225KG65S) Power cabinet I/O cabinet	510 (1124)	2156 (84.88)	740 (29.13)	1052 (41.42)
	227 (500)	2150 (84.64)	750 (29.53)	1060 (41.73)

### Output Transformer Cabinet Shipping Weights and Dimensions

Part	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
480–208 V output transformer cabinet (GVMTF225KGF)	1250 (2750)	2150 (84.65)	990 (38.98)	1060 (41.73)

### Modular Battery Cabinet Shipping Weights and Dimensions

Part	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
Modular battery cabinet wide (GVMMODBCW) <sup>6</sup>	252 (556)	2150 (84.64)	990 (38.98)	1060 (41.73)
Modular battery cabinet narrow (GVMMODBCN) <sup>6</sup>	164 (362)	2150 (84.64)	750 (29.83)	1060 (41.73)

### System Bypass Cabinet Shipping Weights and Dimensions

Part	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
System bypass cabinet 450 K 480 V (GVMSBC450KG)	560 (1235)	2045 (80.57)	1805 (71.06)	1156 (45.51)
System bypass cabinet 675 K 480 V (GVMSBC675KG)	580 (1279)	2045 (80.57)	1805 (71.06)	1156 (45.51)
System bypass cabinet 675K 480 V with load bank breaker (GVMSBCLB675KG)	675 (1488)	2045 (80.57)	2085 (82.09)	1156 (45.51)

### Kits Shipping Weights and Dimensions

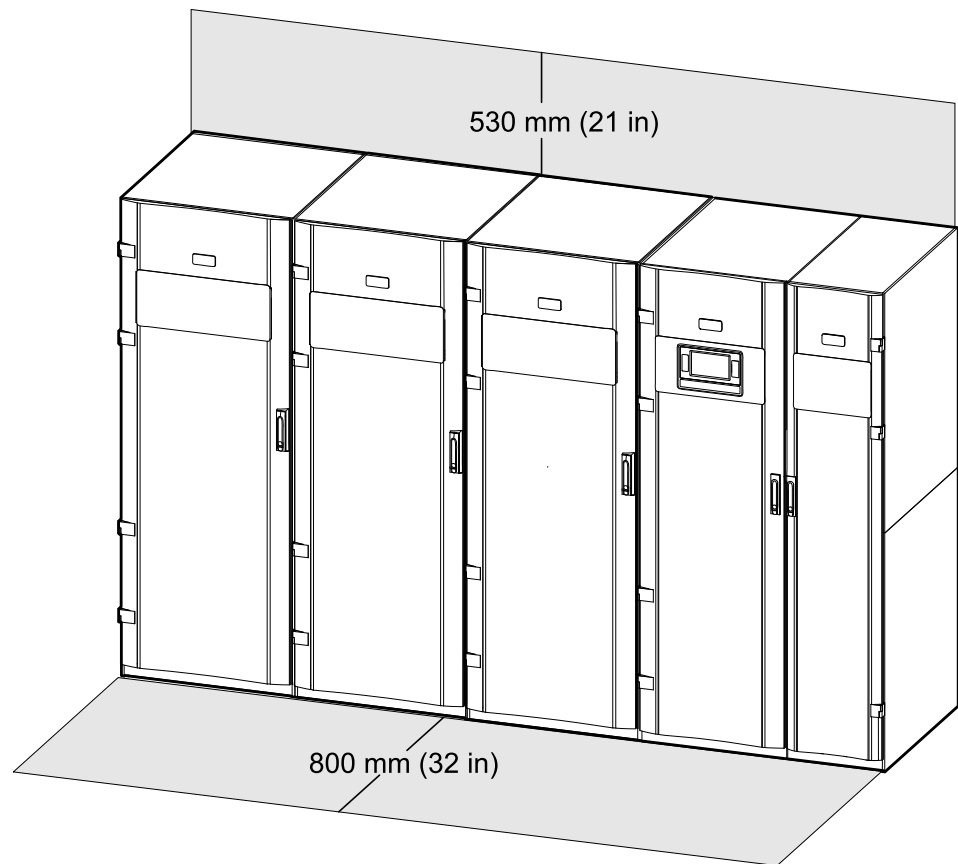
Description	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
Battery breaker kit 250 A (GVMBBK250UL)	7.9 (17.42)	262 (10.31)	377 (14.84)	766 (30.16)
Battery breaker kit 400 A (GVMBBK400UL)	11.9 (26.24)	262 (10.31)	377 (14.84)	766 (30.16)
Fuse kit 160 to 225 kVA (GVMFU800WW)	3.5 (7.72)	127 (5)	396 (15.59)	241 (9.49)

6. The weight is without batteries. Each battery module string weights 4 x 31.5 kg (4 x 69.45 lbs)

## 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 UPS system can be placed up against the wall and there is no requirement for rear or side access.





## Environment

**⚠ DANGER**

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

- Install the UPS system in a temperature controlled 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.
- No responsibility is assumed by Schneider Electric if these requirements are not respected.

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

	Operation	Storage
Temperature	0 °C to 40 °C ( 32 °F to 104 °F )	-15 °C to 40 °C (5 °F to 104 °F) for systems with batteries  -25 °C to 55 °C (-13 °F to 131 °F) for systems without batteries
Relative humidity	0-95% non-condensing	0-95% non-condensing
Altitude derating according to IEC 62040-3	1000 m (3300 ft): 1.000 1500 m (5000 ft): 0.975 2000 m (6600 ft): 0.950	≤ 5000 m above sea-level (or in an environment with equivalent air pressure)
Audible noise (1 meter from surface)	55 dBA at 70% load and 40 °C 65 dBA at 100% load and 40 °C	
Protection class	IP20	
Color	RAL 9003 White	

## Heat Dissipation

**NOTE:** The maximum air flow through the UPS at highest fan speed is 3600 m<sup>3</sup>/h.

### Heat Dissipation for 160 kVA Systems

Operation Mode	Normal	ECO Mode	ECOversion	Battery Operation
Heat dissipation at 100% load (BTU/hr)	18348	2469	5465	22076
Heat dissipation at 75% load (BTU/hr)	12970	2224	4854	15354
Heat dissipation at 50% load (BTU/hr)	9174	2231	4249	9704
Heat dissipation at 25% load (BTU/hr)	5385	1871	4061	4719

### Heat Dissipation for 180 kVA Systems

Operation Mode	Normal	ECO Mode	ECOversion	Battery Operation
Heat dissipation at 100% load (BTU/hr)	20642	2778	5583	24836
Heat dissipation at 75% load (BTU/hr)	14591	2502	5035	17273
Heat dissipation at 50% load (BTU/hr)	10321	2510	4494	10917
Heat dissipation at 25% load (BTU/hr)	6058	2104	4127	5309

### Heat Dissipation for 225 kVA Systems

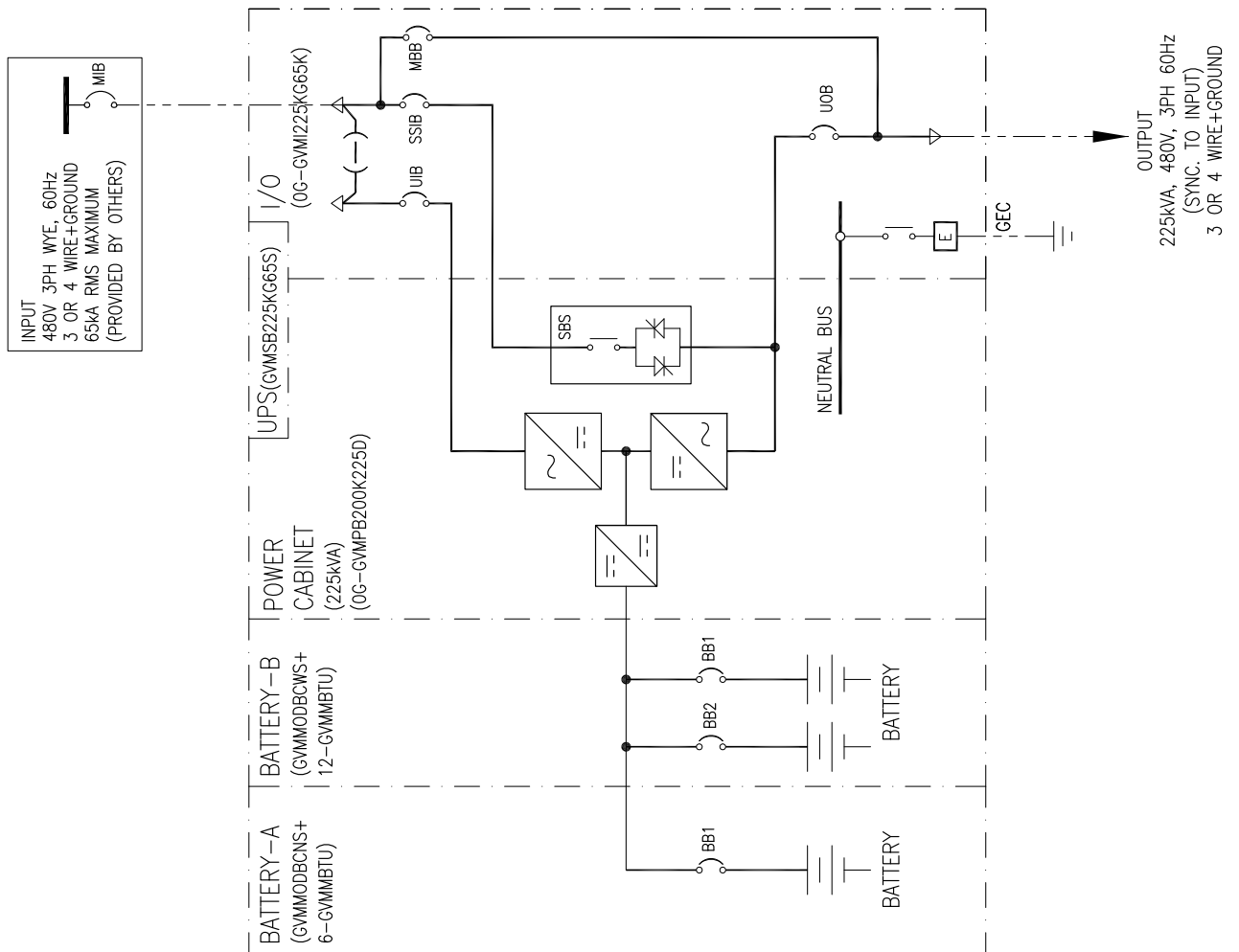
Operation Mode	Normal	ECO Mode	ECOversion	Battery Operation
Heat dissipation at 100% load (BTU/hr)	25802	3472	6979	31045
Heat dissipation at 75% load (BTU/hr)	18239	3128	5764	21592
Heat dissipation at 50% load (BTU/hr)	12901	3137	4905	13646
Heat dissipation at 25% load (BTU/hr)	7573	2630	4611	6637

# Drawings

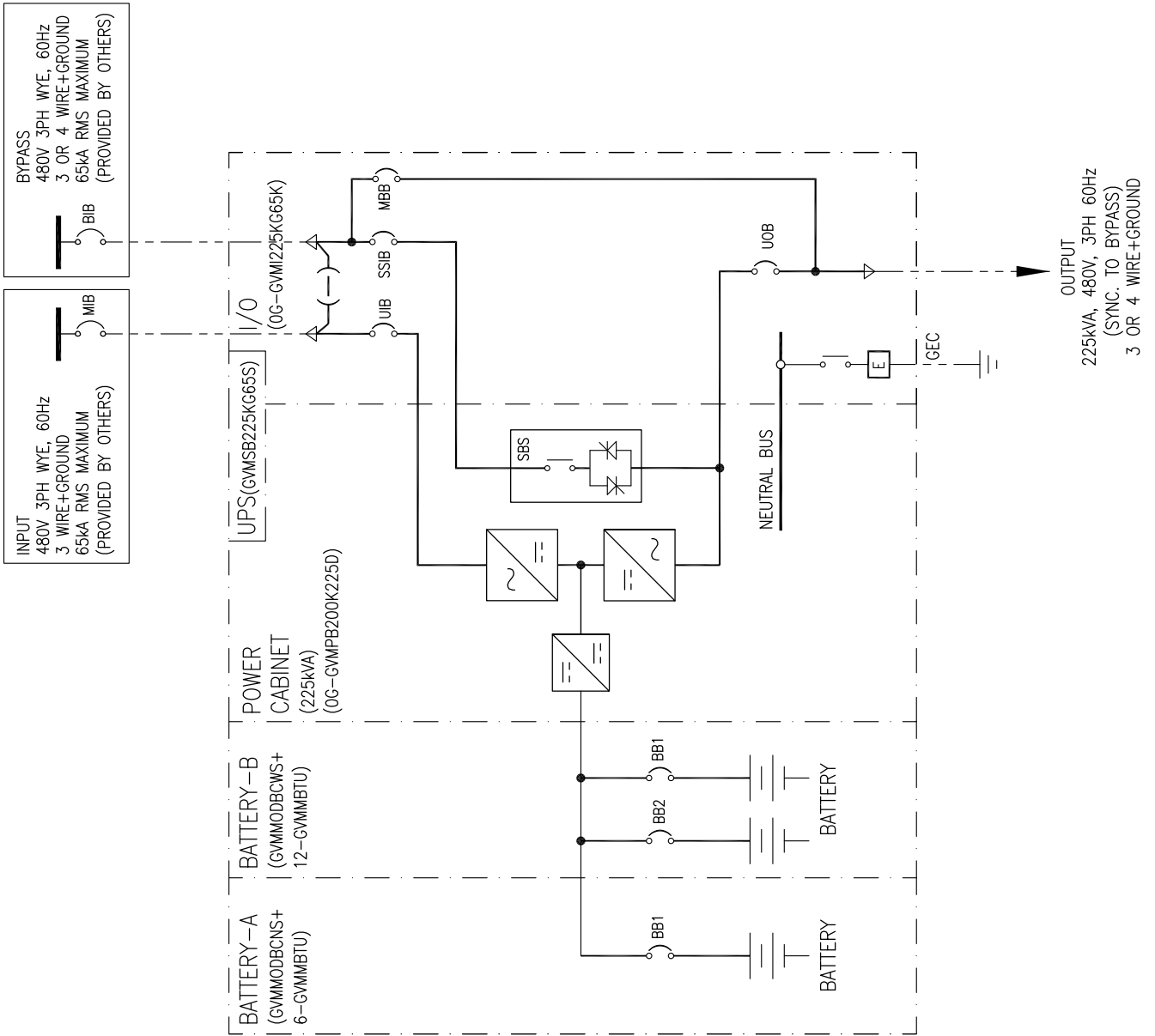
**NOTE:** A comprehensive set of drawings is available on [www.schneider-electric.com](http://www.schneider-electric.com).

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

## Single System Single Mains with Wide and Narrow Modular Battery Cabinet



# Single System Dual Mains with Wide and Narrow Modular Battery Cabinet



# Options

## Hardware Options

- Dust filters

## Battery Options

- Modular battery cabinets

## Configuration Options

- Single or dual feed
- Top or bottom feed
- Bypass Connection: Built-in Static Bypass
- Frequency Converter

# 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 and occurs within six months of the Schneider Electric shipment date. 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. For Schneider Electric cooling solutions, this warranty does not cover circuit breaker resetting, loss of refrigerant, consumables, or preventive maintenance items. Repair or replacement of a defective product or part thereof does not extend the original warranty period. Any parts furnished under this warranty may be new or factory-remanufactured.

## 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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Customers with warranty claims issues may access the SCHNEIDER ELECTRIC worldwide customer support network through the SCHNEIDER ELECTRIC web site: <http://www.schneider-electric.com>. Select your country from the country selection pull-down menu. Open the Support tab at the top of the web page to obtain contact information for customer support in your region.

Schneider Electric  
35 rue Joseph Monier  
92500 Rueil Malmaison  
France

+ 33 (0) 1 41 29 70 00



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

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