Galaxy VS

UPS for External Batteries

Technical Specifications

20-150 kW 400 V

Latest updates are available on the Schneider Electric website
8/2021

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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.

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

⚠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-inflammable, 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.

Model list

UPS Models for External Batteries

- Galaxy VS UPS 20 kW 400 V, for external batteries, start-up 5x8 (GVSUPS20KHS)
- Galaxy VS UPS 30 kW 400 V, for external batteries, start-up 5x8 (GVSUPS30KHS)
- Galaxy VS UPS 40 kW 400 V, for external batteries, start-up 5x8 (GVSUPS40KHS)
- Galaxy VS UPS 50 kW 400 V, for external batteries, start-up 5x8 (GVSUPS50KHS)
- Galaxy VS UPS 60 kW 400 V, for external batteries, start-up 5x8 (GVSUPS60KHS)
- Galaxy VS UPS 80 kW 400 V, for external batteries, start-up 5x8 (GVSUPS80KHS)
- Galaxy VS UPS 100 kW 400 V, for external batteries, start-up 5x8 (GVSUPS100KHS)
- Galaxy VS UPS 120 kW 400 V, for external batteries, start-up 5x8 (GVSUPS120KHS)
- Galaxy VS UPS 150 kW 400 V, for external batteries, start-up 5x8 (GVSUPS150KHS)

UPS Models for External Batteries with N+1 Power Module

- Galaxy VS UPS 20 kW 400 V, with N+1 power module for external batteries, start-up 5x8 (GVSUPS20KRHS)
- Galaxy VS UPS 30 kW 400 V, with N+1 power module for external batteries, start-up 5x8 (GVSUPS30KRHS)
- Galaxy VS UPS 40 kW 400 V, with N+1 power module for external batteries, start-up 5x8 (GVSUPS40KRHS)
- Galaxy VS UPS 50 kW 400 V, with N+1 power module for external batteries, start-up 5x8 (GVSUPS50KRHS)
- Galaxy VS UPS 60 kW 400 V, with N+1 power module for external batteries, start-up 5x8 (GVSUPS60KRHS)
- Galaxy VS UPS 80 kW 400 V, with N+1 power module for external batteries, start-up 5x8 (GVSUPS80KRHS)
- Galaxy VS UPS 100 kW 400 V, with N+1 power module for external batteries, start-up 5x8 (GVSUPS100KRHS)

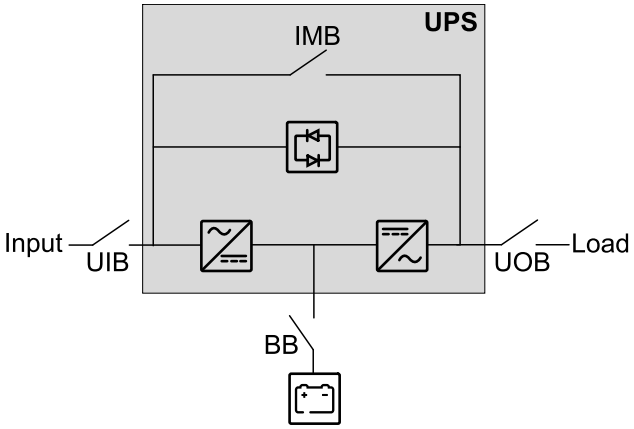
Scalable UPS Models for External Batteries

- Galaxy VS UPS 50 kW 400 V scalable to 150 kW for external batteries, start-up 5x8 (GVSUPS50K150HS)

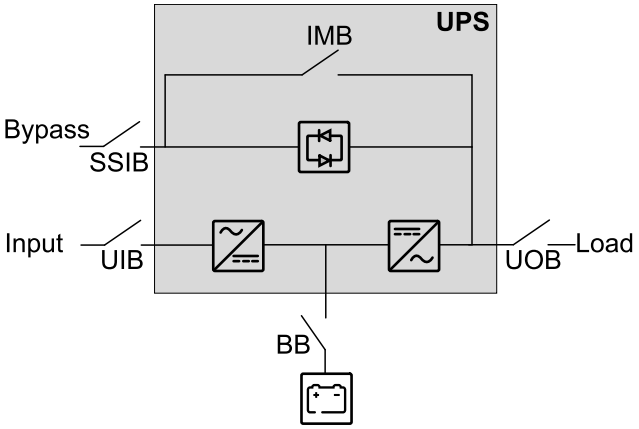
Single System Overview

UIB	Unit input breaker
SSIB	Static switch input breaker
IMB	Internal maintenance breaker
UOB	Unit output breaker
BB	Battery breaker

Single System – Single Mains



Single System – Dual Mains



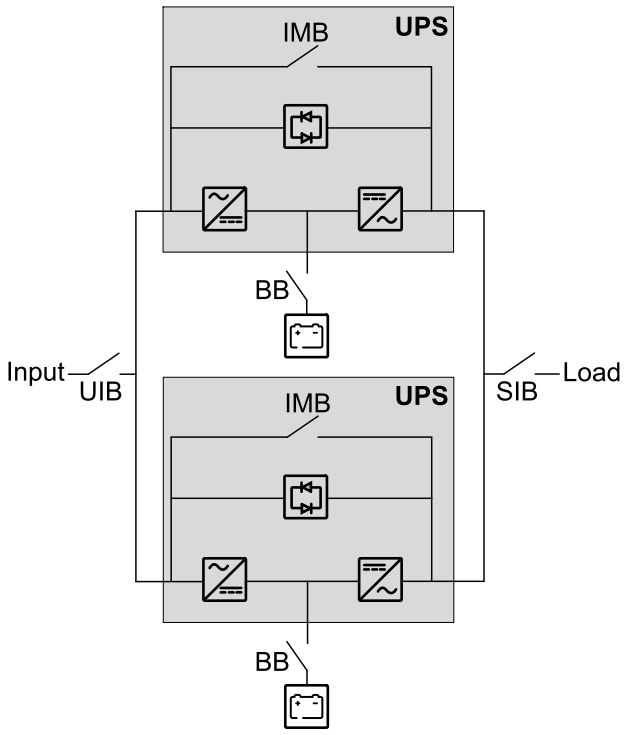
Parallel System Overview

UIB	Unit input breaker
SSIB	Static switch input breaker
IMB	Internal maintenance breaker
UOB	Unit output breaker
SIB	System isolation breaker
BB	Battery breaker
MBB	External maintenance bypass breaker

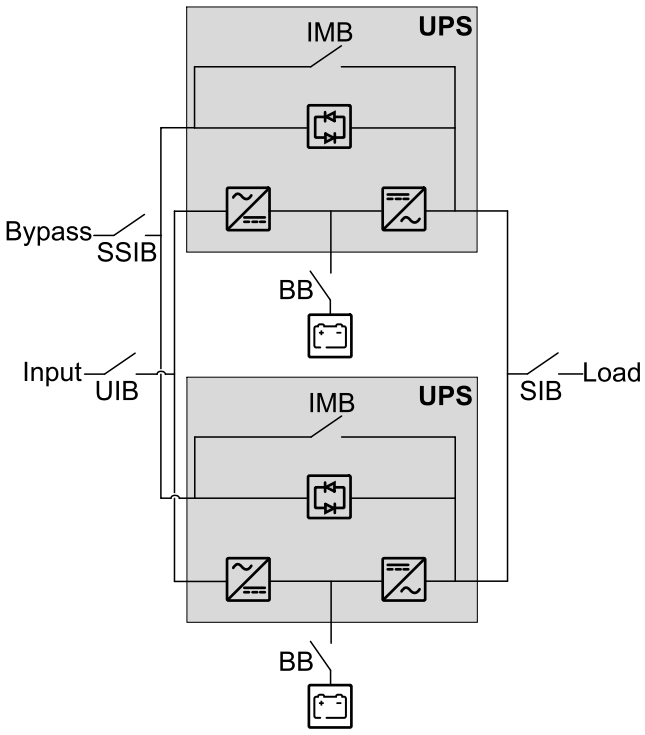
Simplified 1+1 Parallel System

Galaxy VS can support 2 UPSs in a simplified 1+1 parallel system for redundancy with shared unit input breaker UIB and static switch input breaker SSIB.

Simplified 1+1 Parallel System – Single Mains



Simplified 1+1 Parallel System – Dual Mains

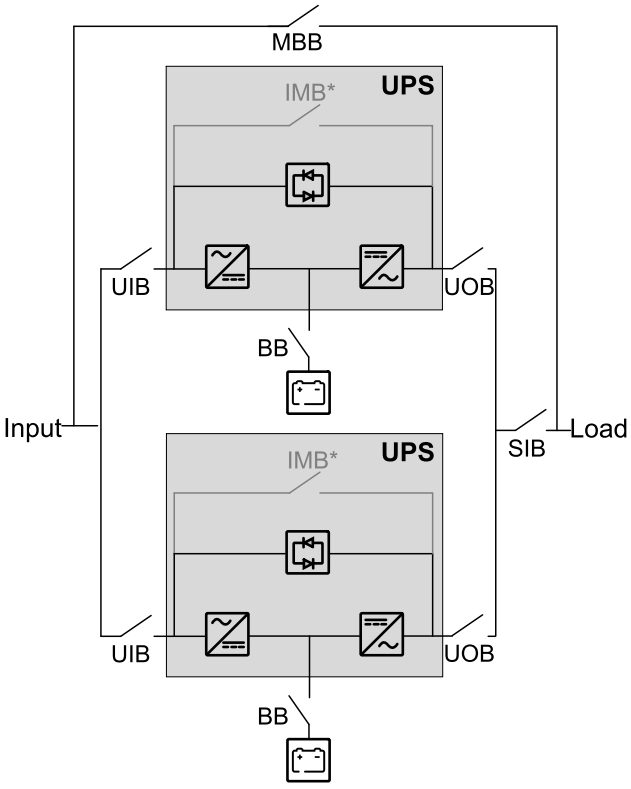


Parallel System with Individual Unit Input Breaker UIB and Static Switch Input Breaker SSIB

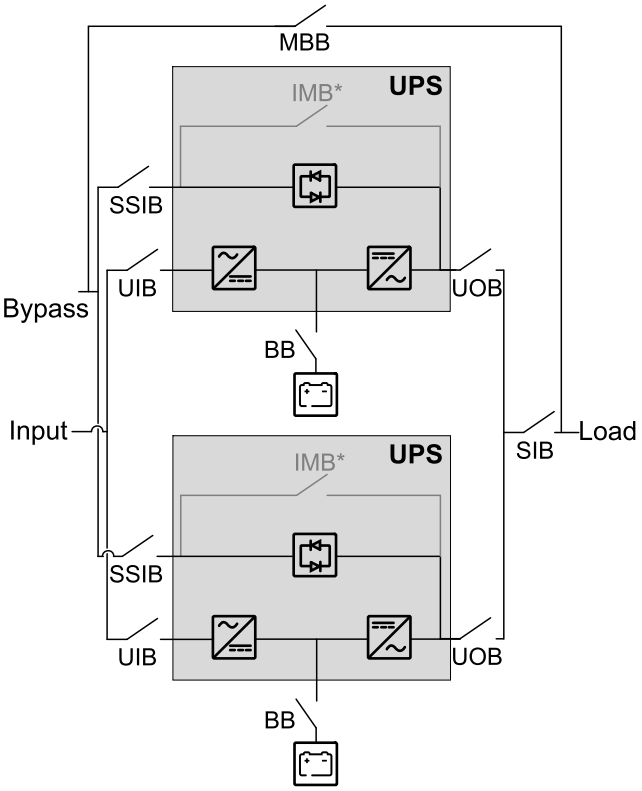
Galaxy VS can support up to 4 UPSs in parallel for capacity and up to 3+1 UPSs in parallel for redundancy with individual unit input breaker UIB and static switch input breaker SSIB.

NOTE: The internal maintenance breaker IMB can only be used in a simplified 1+1 parallel system. In any other parallel system, an external maintenance bypass breaker MBB must be provided and the internal maintenance breaker IMB* must be padlocked in the open position.

Parallel System – Single Mains



Parallel System – Dual Mains

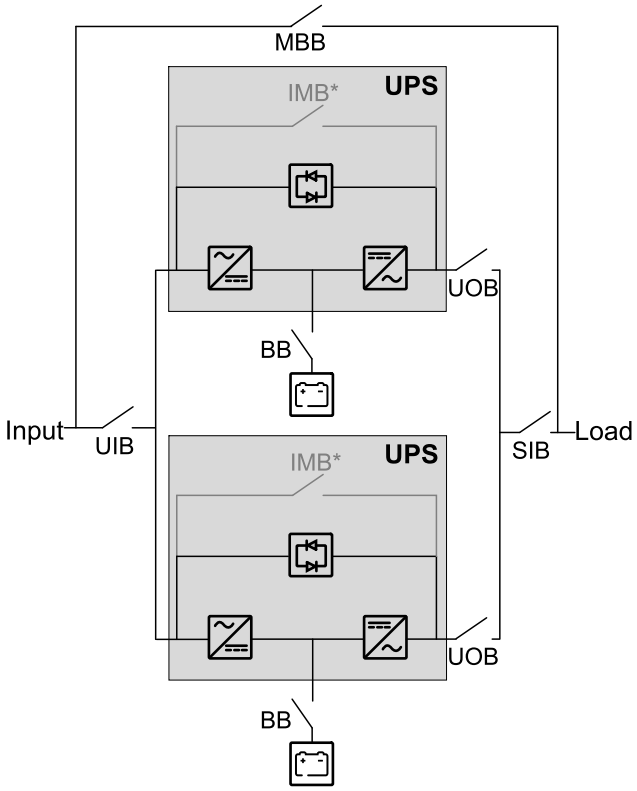


Parallel System with Shared Unit Input Breaker UIB and Static Switch Input Breaker SSIB

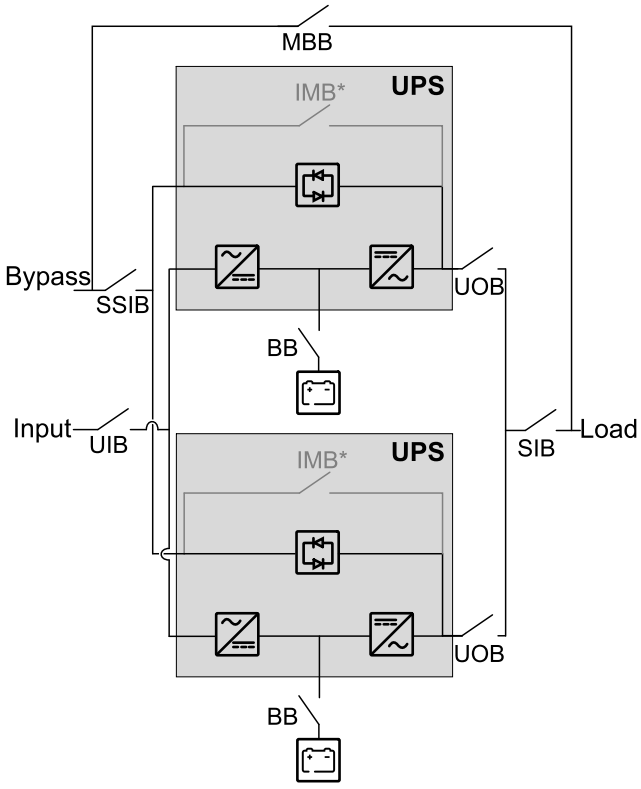
Galaxy VS can support up to 4 UPSs in parallel for capacity and up to 3+1 UPSs in parallel for redundancy with shared unit input breaker UIB and static switch input breaker SSIB.

NOTE: The internal maintenance breaker IMB can only be used in a simplified 1+1 parallel system. In any other parallel system, an external maintenance bypass breaker MBB must be provided and the internal maintenance breaker IMB* must be padlocked in the open position.

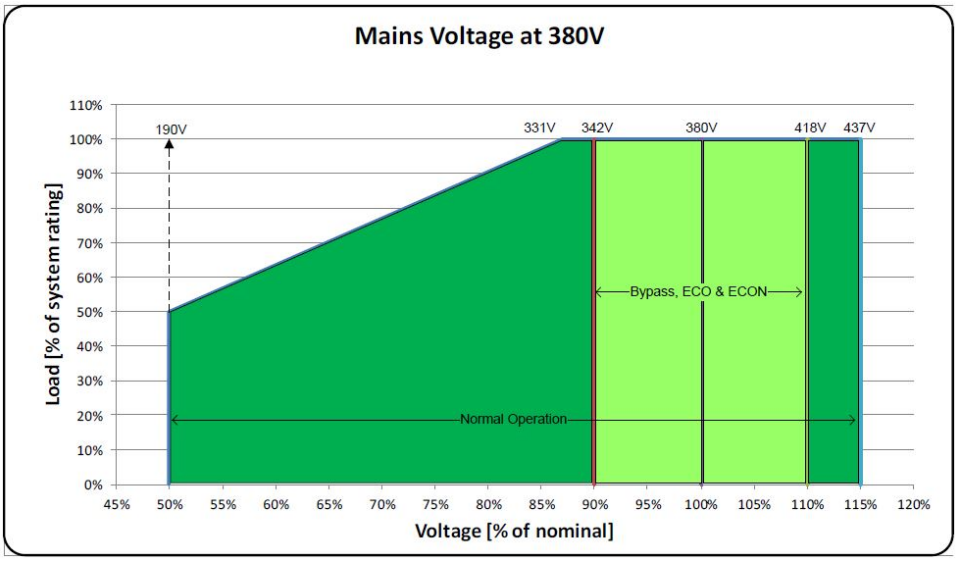
Parallel System – Single Mains

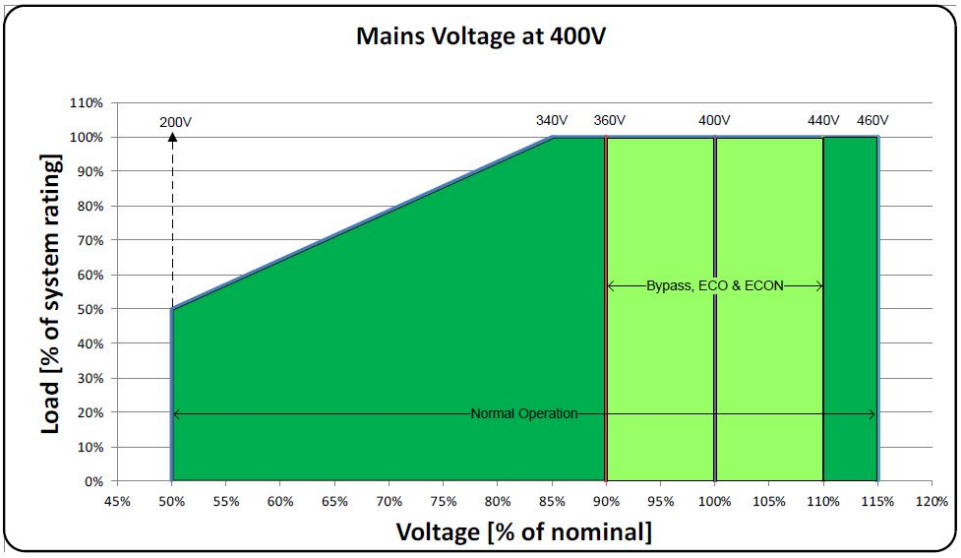


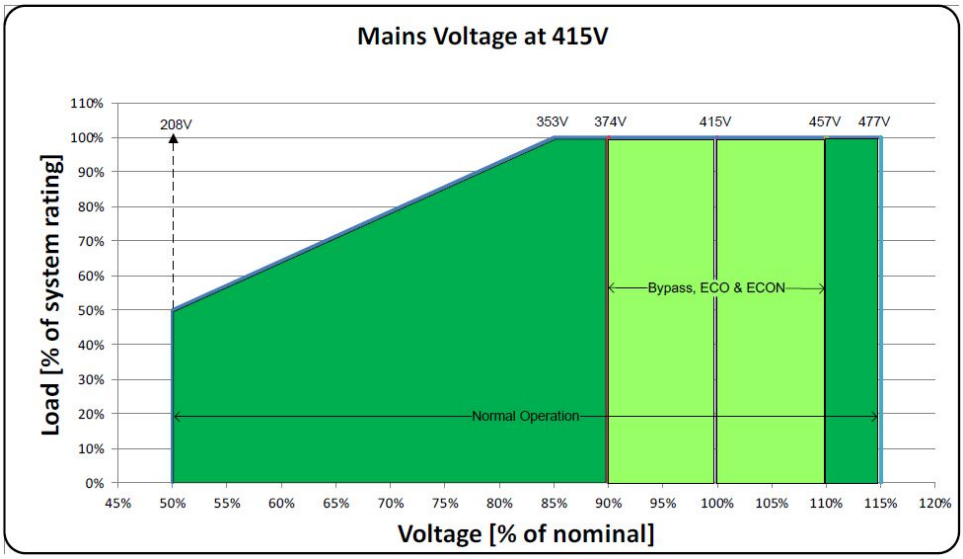
Parallel System – Dual Mains



Input Voltage Window

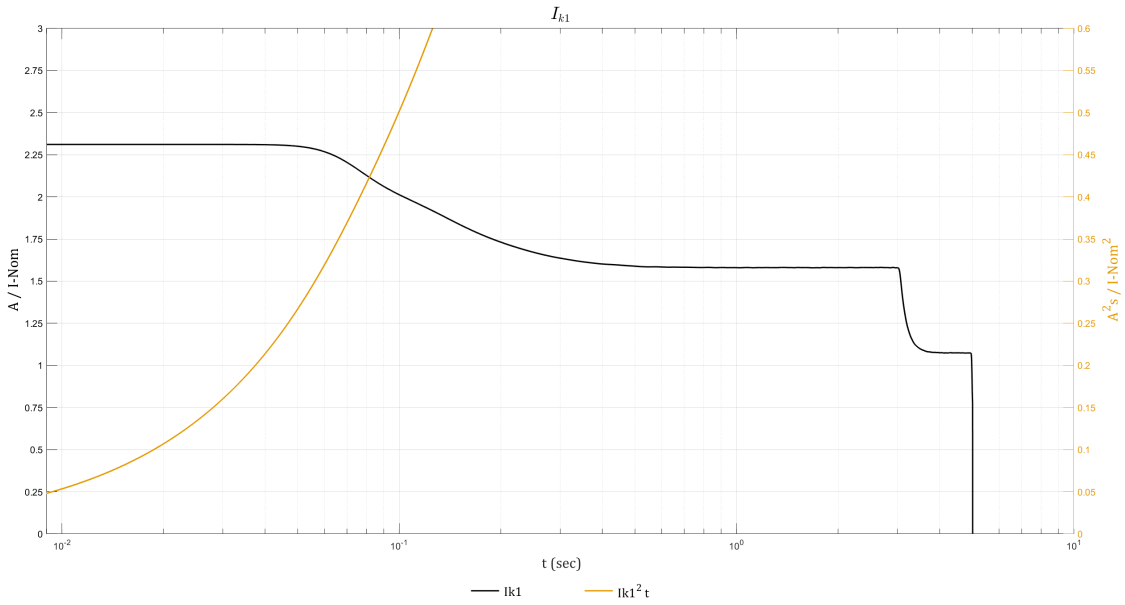






Inverter Short Circuit Capabilities (Bypass not Available)

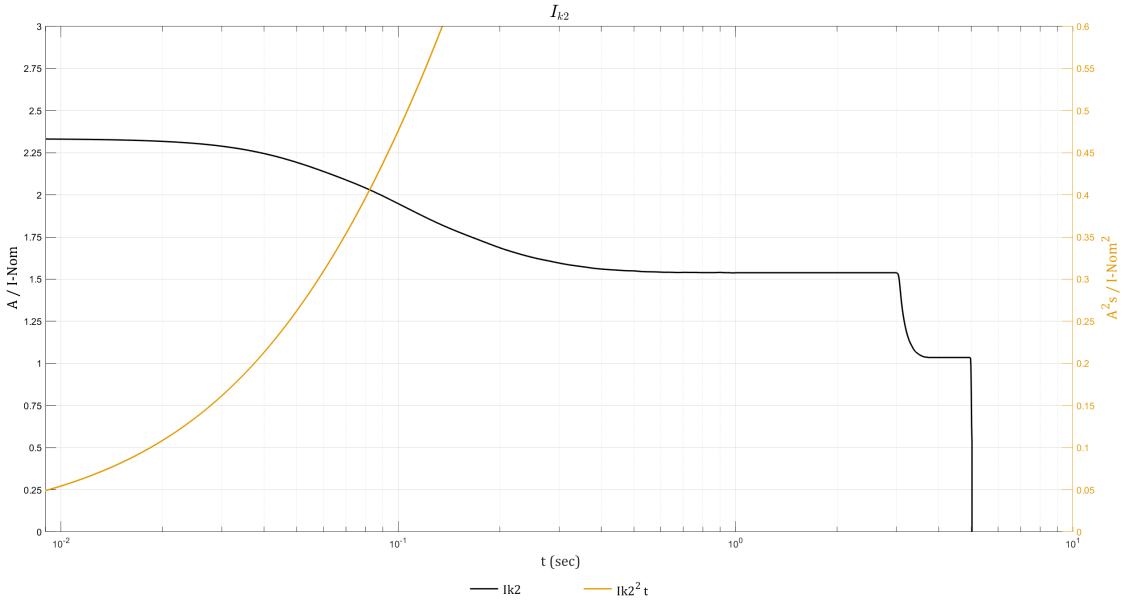
IK1 – Short Circuit between a Phase and Neutral



IK1 400 V

S [kVA]	10ms; I[A]/I²t [A²t]	20ms; I[A]/I²t [A²t]	30ms; I[A]/I²t [A²t]	100ms; I[A]/I²t [A²t]	1s; I[A]/I²t [A²t]
10	33 / 11	33 / 22	33 / 33	29 / 104	23 / 603
15	50 / 25	50 / 50	50 / 75	44 / 235	34 / 1356
20	67 / 45	67 / 89	67 / 134	58 / 418	46 / 2411
30	100 / 100	100 / 200	100 / 300	87 / 940	68 / 5420
40	133 / 180	133 / 360	133 / 530	116 / 1670	91 / 9640
50	167 / 280	167 / 560	167 / 830	145 / 2610	114 / 15070
60	200 / 400	200 / 800	200 / 1200	174 / 3760	137 / 21700
80	267 / 710	267 / 1420	267 / 2140	232 / 6690	182 / 38580
100	334 / 1110	334 / 2230	334 / 3340	291 / 10450	228 / 60270
120	400 / 1600	400 / 3210	400 / 4810	349 / 15050	274 / 86800
150	500 / 2500	500 / 5010	500 / 7510	436 / 23510	342 / 135620

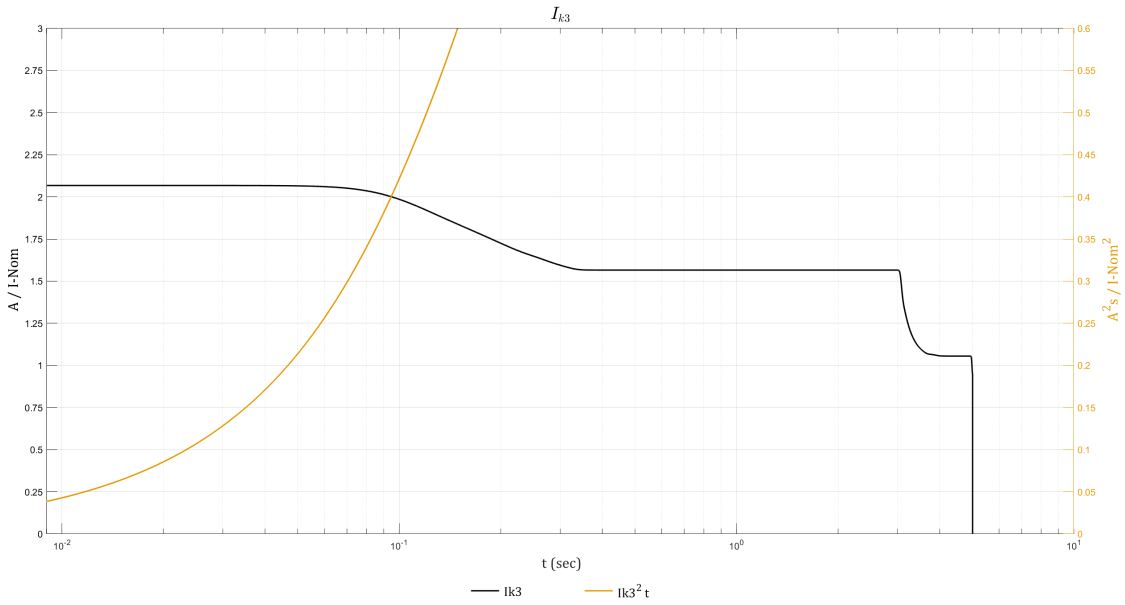
IK2 – Short Circuit between Two Phases



IK2 400 V

S [kVA]	10ms; I[A]/I²t [A²t]	20ms; I[A]/I²t [A²t]	30ms; I[A]/I²t [A²t]	100ms; I[A]/I²t [A²t]	1s; I[A]/I²t [A²t]
10	34 / 11	33 / 23	33 / 34	28 / 99	22 / 571
15	50 / 26	50 / 51	50 / 76	42 / 223	33 / 1285
20	67 / 45	67 / 90	67 / 135	56 / 397	44 / 2284
30	101 / 100	100 / 200	100 / 300	84 / 890	67 / 5140
40	135 / 180	134 / 360	134 / 540	112 / 1590	89 / 9140
50	168 / 280	167 / 570	167 / 840	141 / 2480	111 / 14280
60	202 / 410	201 / 810	201 / 1210	169 / 3570	133 / 20560
80	269 / 730	268 / 1450	268 / 2150	225 / 6350	178 / 36550
100	336 / 1130	335 / 2260	335 / 3370	281 / 9920	222 / 57110
120	404 / 1630	401 / 3250	401 / 4850	337 / 14280	266 / 82230
150	505 / 2550	502 / 5090	502 / 7580	422 / 22320	333 / 128490

IK3 – Short Circuit between Three Phases



IK3 400 V

S [kVA]	10ms; I[A]/I²t [A²t]	20ms; I[A]/I²t [A²t]	30ms; I[A]/I²t [A²t]	100ms; I[A]/I²t [A²t]	1s; I[A]/I²t [A²t]
10	30 / 9	30 / 18	30 / 27	29 / 88	23 / 574
15	45 / 20	45 / 40	45 / 60	43 / 198	34 / 1290
20	60 / 36	60 / 71	60 / 107	57 / 351	45 / 2294
30	90 / 80	90 / 160	90 / 240	86 / 790	68 / 5160
40	119 / 140	119 / 290	119 / 430	115 / 1400	90 / 9180
50	149 / 220	149 / 450	149 / 670	143 / 2200	113 / 14340
60	179 / 320	179 / 640	179 / 960	172 / 3160	136 / 20650
80	239 / 570	239 / 1140	239 / 1710	229 / 5620	181 / 36710
100	298 / 890	298 / 1780	298 / 2670	287 / 8780	226 / 57350
120	358 / 1280	358 / 2570	358 / 3850	344 / 12640	271 / 82590
150	448 / 2000	448 / 4010	448 / 6010	430 / 19760	339 / 129040

Efficiency

NOTE: The values for 60 kW in battery operation are preliminary values.

20 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	94.0%	94.4%	94.1%	96.9%	96.7%	96.7%
50% load	95.7%	96.1%	95.9%	98.1%	98.2%	98.2%
75% load	96.4%	96.6%	96.6%	98.6%	98.7%	98.7%
100% load	96.7%	96.9%	96.9%	98.8%	98.9%	98.9%

20 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	95.6%	95.4%	95.3%	93.6%	93.6%	93.6%
50% load	97.7%	97.6%	97.6%	95.7%	95.7%	95.7%
75% load	98.4%	98.3%	98.3%	96.3%	96.3%	96.3%
100% load	98.7%	98.7%	98.7%	96.6%	96.6%	96.6%

30 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	95.0%	95.5%	95.3%	97.7%	97.7%	97.7%
50% load	96.4%	96.6%	96.6%	98.6%	98.7%	98.7%
75% load	96.7%	97.0%	96.9%	98.9%	98.9%	99.0%
100% load	96.8%	97.0%	97.0%	99.1%	99.1%	99.1%

30 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	97.0%	96.9%	96.8%	95.0%	95.0%	95.0%
50% load	98.4%	98.3%	98.3%	96.3%	96.3%	96.3%
75% load	98.8%	98.8%	98.8%	96.6%	96.6%	96.6%
100% load	99.0%	99.0%	99.0%	96.7%	96.7%	96.7%

40 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	95.7%	96.1%	95.9%	98.1%	98.2%	98.2%
50% load	96.7%	96.9%	96.9%	98.8%	98.9%	98.9%
75% load	96.8%	97.0%	97.0%	99.1%	99.1%	99.1%
100% load	96.7%	96.9%	96.9%	99.2%	99.2%	99.2%

40 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	97.7%	97.6%	97.6%	95.7%	95.7%	95.7%
50% load	98.7%	98.7%	98.7%	96.6%	96.6%	96.6%
75% load	99.0%	99.0%	99.0%	96.7%	96.7%	96.7%
100% load	99.2%	99.2%	99.2%	96.6%	96.6%	96.6%

50 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	96.2%	96.4%	96.3%	98.4%	98.5%	98.4%
50% load	96.8%	97.0%	97.0%	99.0%	99.0%	99.0%
75% load	96.7%	97.0%	97.0%	99.2%	99.2%	99.2%
100% load	96.4%	96.7%	96.8%	99.2%	99.3%	99.3%

50 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	98.1%	98.0%	98.0%	96.1%	96.1%	96.1%
50% load	98.9%	98.9%	98.9%	96.7%	96.7%	96.7%
75% load	99.2%	99.1%	99.1%	96.7%	96.7%	96.7%
100% load	99.3%	99.3%	99.3%	96.5%	96.5%	96.5%

60 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	96.0%	96.0%	96.0%	98.3%	98.3%	98.3%
50% load	96.8%	96.9%	96.9%	98.9%	98.9%	98.9%
75% load	96.9%	97.0%	97.0%	99.1%	99.1%	99.1%
100% load	96.7%	96.9%	97.0%	99.2%	99.2%	99.2%

60 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	98.1%	98.0%	97.9%	95.2%	95.2%	95.2%
50% load	98.8%	98.8%	98.7%	96.4%	96.4%	96.4%
75% load	99.1%	99.0%	99.1%	96.7%	96.7%	96.7%
100% load	99.1%	99.1%	99.2%	96.7%	96.7%	96.7%

80 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	96.2%	96.3%	96.3%	98.6%	98.6%	98.6%
50% load	96.9%	97.1%	97.0%	99.0%	99.1%	99.1%
75% load	96.9%	97.1%	97.1%	99.2%	99.2%	99.2%
100% load	96.8%	97.0%	97.1%	99.3%	99.3%	99.3%

80 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	98.1%	98.0%	98.0%	95.8%	95.8%	95.8%
50% load	98.9%	98.9%	98.9%	96.6%	96.6%	96.6%
75% load	99.1%	99.1%	99.1%	96.7%	96.7%	96.7%
100% load	99.3%	99.3%	99.3%	96.6%	96.6%	96.6%

100 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	96.5%	96.6%	96.6%	98.8%	98.8%	98.8%
50% load	96.9%	97.1%	97.1%	99.1%	99.1%	99.2%

100 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
75% load	96.9%	97.1%	97.2%	99.3%	99.3%	99.3%
100% load	96.6%	96.8%	96.9%	99.3%	99.3%	99.4%

100 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	98.4%	98.4%	98.4%	96.2%	96.2%	96.2%
50% load	99.1%	99.1%	99.0%	96.7%	96.7%	96.7%
75% load	99.2%	99.3%	99.3%	96.7%	96.7%	96.7%
100% load	99.3%	99.3%	99.3%	96.5%	96.5%	96.5%

120 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	96.5%	96.5%	96.5%	98.7%	98.7%	98.7%
50% load	97.0%	97.0%	97.1%	99.1%	99.1%	99.1%
75% load	96.9%	97.0%	97.1%	99.2%	99.2%	99.2%
100% load	96.6%	96.7%	96.9%	99.2%	99.3%	99.3%

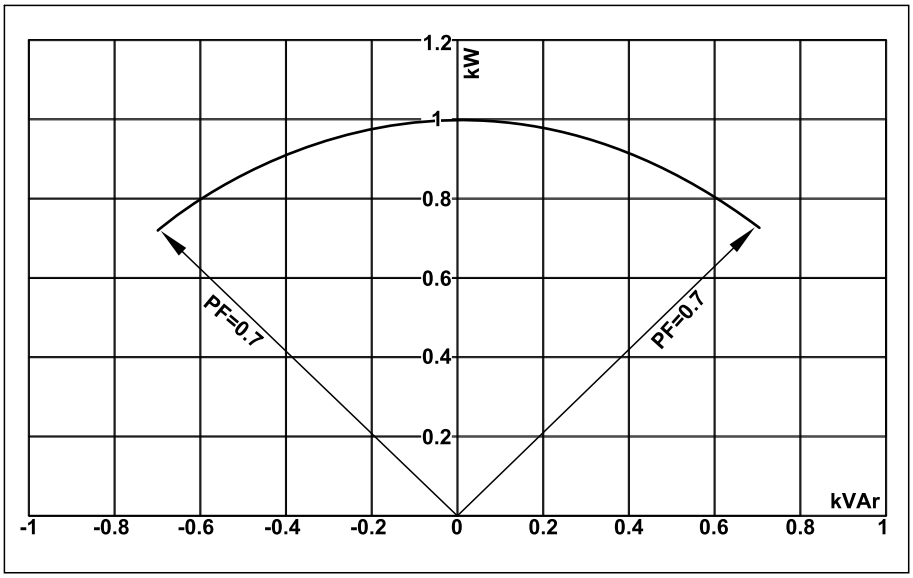
120 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	98.4%	98.4%	98.4%	NA	NA	NA
50% load	99.0%	99.0%	99.0%	NA	NA	NA
75% load	99.2%	99.2%	99.2%	NA	NA	NA
100% load	99.3%	99.3%	99.3%	NA	NA	NA

150 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	96.5%	96.5%	96.5%	98.8%	98.9%	98.9%
50% load	97.0%	97.1%	97.1%	99.1%	99.2%	99.2%
75% load	96.9%	97.0%	97.1%	99.2%	99.2%	99.3%
100% load	96.5%	96.8%	96.9%	99.2%	99.3%	99.3%

150 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	98.6%	98.6%	98.5%	NA	NA	NA
50% load	99.1%	99.1%	99.1%	NA	NA	NA
75% load	99.2%	99.3%	99.3%	NA	NA	NA
100% load	99.2%	99.3%	99.3%	NA	NA	NA

Derating Due to Load Power Factor

0.7 leading to 0.7 lagging without derating.



UPS rating	UPS output					
	Lagging			Leading		
PF=1	PF=0.7	PF=0.8	PF=0.9	PF=0.9	PF=0.8	PF=0.7
20 kVA/kW	20 kVA / 14 kW	20 kVA / 16 kW	20 kVA / 18 kW	20 kVA / 18 kW	20 kVA / 16 kW	20 kVA / 14 kW
30 kVA/kW	30 kVA / 21 kW	30 kVA / 24 kW	30 kVA / 27 kW	30 kVA / 27 kW	30 kVA / 24 kW	30 kVA / 21 kW
40 kVA/kW	40 kVA / 28 kW	40 kVA / 32 kW	40 kVA / 36 kW	40 kVA / 36 kW	40 kVA / 32 kW	40 kVA / 28 kW
50 kVA/kW	50 kVA / 35 kW	50 kVA / 40 kW	50 kVA / 45 kW	50 kVA / 45 kW	50 kVA / 40 kW	50 kVA / 35 kW
60 kVA/kW	60 kVA / 42 kW	60 kVA / 48 kW	60 kVA / 54 kW	60 kVA / 54 kW	60 kVA / 48 kW	60 kVA / 42 kW
80 kVA/kW	80 kVA / 56 kW	80 kVA / 64 kW	80 kVA / 72 kW	80 kVA / 72 kW	80 kVA / 64 kW	80 kVA / 56 kW
100 kVA/kW	100 kVA / 70 kW	100 kVA / 80 kW	100 kVA / 90 kW	100 kVA / 90 kW	100 kVA / 80 kW	100 kVA / 70 kW
120 kVA/kW	120 kVA / 84 kW	120 kVA / 96 kW	120 kVA / 108 kW	120 kVA / 108 kW	120 kVA / 96 kW	120 kVA / 84 kW
150 kVA/kW	150 kVA / 105 kW	150 kVA / 120 kW	150 kVA / 135 kW	150 kVA / 135 kW	150 kVA / 120 kW	150 kVA / 105 kW

Leakage Current

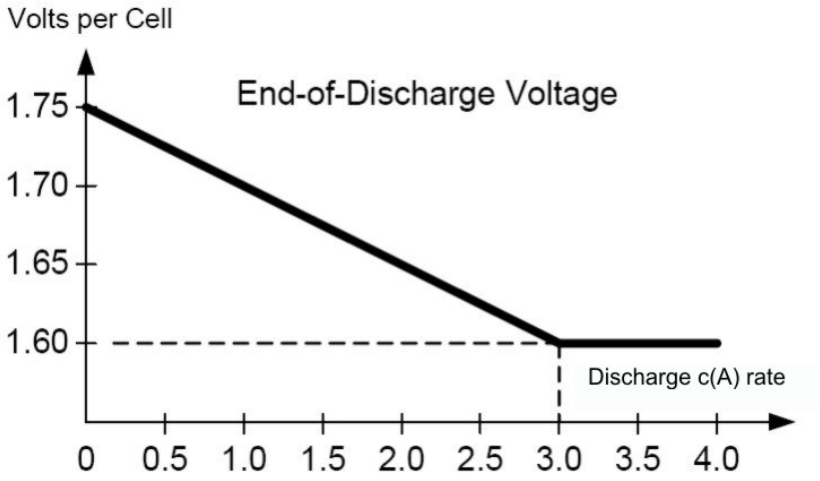
380/400/415 V UPS system 4-wire installation at 100% load

UPS rating	Leakage current
20-50 kW	62 mA
60-100 kW	67 mA
120-150 kW	91 mA

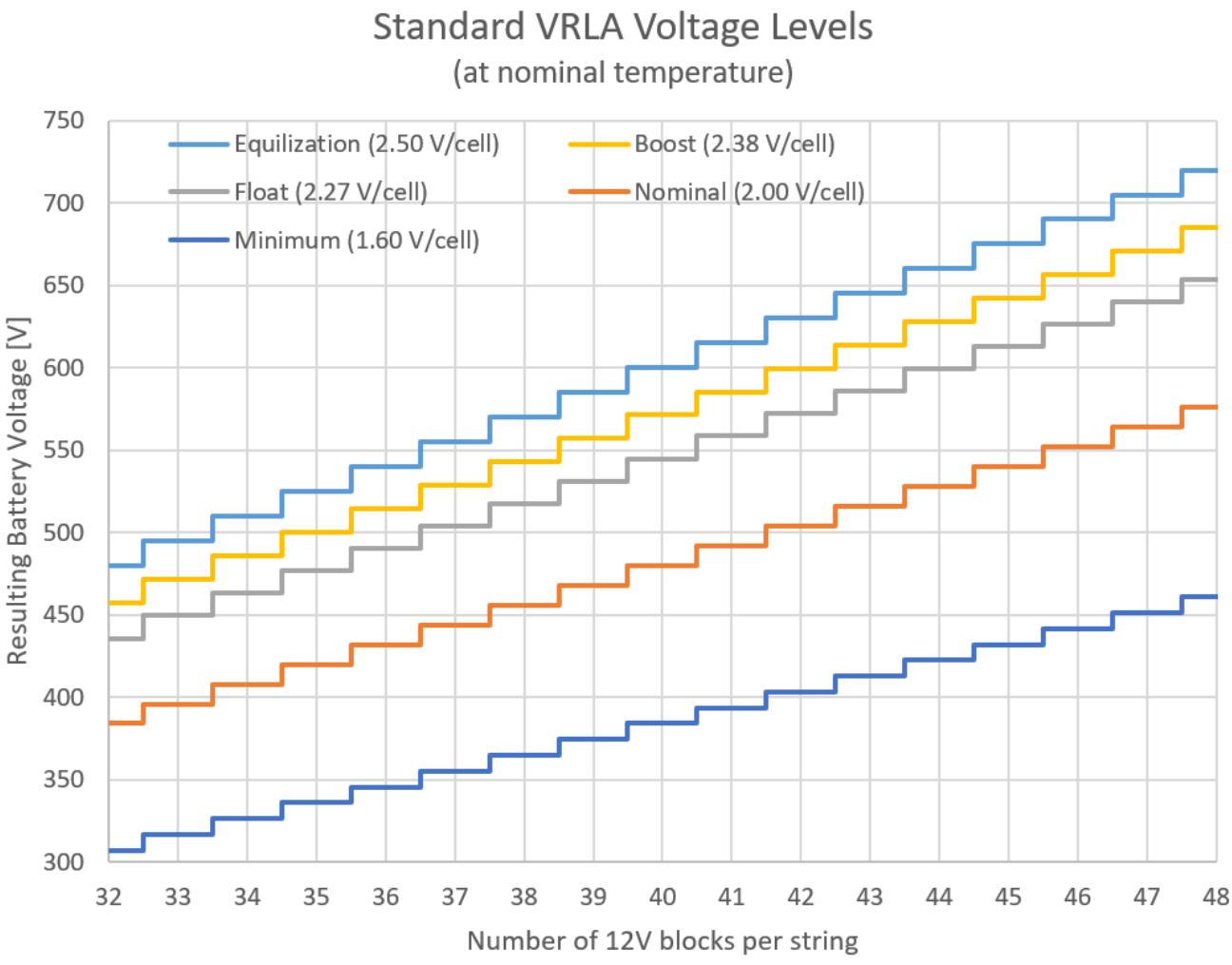
Batteries

End of Discharge Voltage

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.

Classic Battery Cabinet Runtimes for 400 V

Battery runtimes are listed in minutes at 100% load. Battery runtimes are estimated values based on battery manufacturer data for operation at 25 °C.

Please note that not all battery solutions are available for all UPS ratings due to:

- The number of battery blocks in the specific battery solution differs from the specific UPS requirements.
- The specific battery solution would provide less than 5 minutes runtime with the specific UPS.
- The battery breaker rating in the specific battery solution does not match the specific UPS rating.

UPS rating	**20 kW**			**30 kW**			**40 kW**		
Power factor	**0.8**	**0.9**	**1**	**0.8**	**0.9**	**1**	**0.8**	**0.9**	**1**
GVSCBC7D	40.5	35.0	31.0	24.5	21.0	18.5	16.5	14.5	12.5
GVSCBC7E	48.0	41.5	36.5	29.0	25.0	22.0	20.0	17.5	15.0
GVSCBC7C[1]	60.5	52.5	46.5	37.0	32.0	28.5	26.0	22.5	19.5
GVSCBC10A2	88.0	77.0	67.5	54.0	47.0	41.0	38.0	32.5	28.5
GVSCBC10B2	135	115	100	84.0	73.0	64.0	59.5	51.0	45.0
2 x GVSCBC7D	92.0	80.5	71.5	57.5	50.0	44.0	40.5	35.0	31.0
2 x GVSCBC7E	105	95.0	84.0	68.0	59.0	52.0	48.0	41.5	36.5
2 x GVSCBC7C[1]	135	115	105	85.0	74.0	65.5	60.5	52.5	46.5
2 x GVSCBC10A2	200	175	155	125	105	96.0	89.0	77.0	68.0
2 x GVSCBC10B2	300	260	230	190	165	145	135	115	100

UPS rating	**50 kW**			**60 kW**			**80 kW**			**100 kW**		
Power factor	**0.8**	**0.9**	**1**	**0.8**	**0.9**	**1**	**0.8**	**0.9**	**1**	**0.8**	**0.9**	**1**
GVSCBC7D	12.5	10.5	9.0	9.6	8.0	6.8	6.1	NA	NA	NA	NA	NA
GVSCBC7E	15.0	12.5	11.0	11.5	9.9	8.4	7.6	6.3	5.2	5.2	NA	NA
GVSCBC7C[1]	19.5	17.0	14.5	15.5	13.0	11.5	10.5	8.9	7.6	7.6	6.3	5.3
GVSCBC10A2	28.5	24.5	21.0	22.5	19.0	16.5	15.0	13.0	11.0	11.0	9.3	7.9
GVSCBC10B2	45.0	38.5	33.5	35.5	30.5	26.5	24.0	20.5	17.5	17.5	14.5	12.5
2 x GVSCBC7D	31.0	26.5	23.0	24.5	21.0	18.5	16.5	14.0	12.5	12.5	10.5	8.9
2 x GVSCBC7E	36.5	31.5	27.5	29.0	25.0	22.0	20.0	17.0	15.0	15.0	12.5	11.0
2 x GVSCBC7C[1]	46.5	40.0	35.5	37.0	32.0	28.5	26.0	22.5	19.5	19.5	17.0	14.5
2 x GVSCBC10A2	68.0	58.5	51.5	54.0	47.0	41.0	38.0	32.5	28.5	28.5	24.5	21.0
2 x GVSCBC10B2	100	91.0	80.0	84.0	73.0	64.0	59.5	51.0	45.0	45.0	38.5	33.5

UPS rating	**120 kW**			**150 kW**		
Power factor	**0.8**	**0.9**	**1**	**0.8**	**0.9**	**1**
GVSCBC10A2	8.4	7.0	5.8	5.8	NA	NA
GVSCBC10B2	13.0	11.0	9.1	9.1	7.4	5.9
2 x GVSCBC7D	9.6	8.0	6.8	6.8	5.5	NA
2 x GVSCBC7E	11.5	9.9	8.4	8.4	7.0	5.9
2 x GVSCBC7C[1]	15.5	13.0	11.5	11.5	9.7	8.4
2 x GVSCBC10A2	22.5	19.0	16.5	16.5	14.0	12.0
2 x GVSCBC10B2	35.5	30.5	26.0	26.0	22.5	19.0

1. Runtimes are given with battery type XP12-240. Previous versions of this product with battery type XP12V1800 do not match the given runtimes.

Modular Battery Cabinet Runtimes for 400 V

Battery runtimes are listed in minutes at 100% load. Battery runtimes are estimated values based on battery manufacturer data for operation at 25 °C.

The runtimes listed here are for the Galaxy VS 9 Ah smart high capacity battery modules (GVSBTHU) used in the modular battery cabinet (GVSMODBC6 or GVSMODBC9). The GVSMODBC6 can contain up to six modular battery strings and the GVSMODBC9 can contain up to nine modular battery strings. A maximum of four modular battery cabinets can be connected to the UPS.

Due to the battery breaker capabilities in the modular battery cabinet the following applies:

- For a UPS rated 20-50 kW a minimum of one GVSMODBC6 or one GVSMODBC9 must be installed.
- For a UPS rated 60-100 kW a minimum of **two GVSMODBC6** or **one GVSMODBC9** must be installed.
- For a UPS rated 120-150 kW a minimum of **three GVSMODBC6** or **two GVSMODBC9** must be installed.

The modular battery strings must be distributed evenly among the modular battery cabinets in the UPS system.

NOTE: Runtimes for UPS models with N+1 power module are similar to or a little lower than the runtimes for the standard UPS models with the same power rating.

UPS rating	**20 kW**			**30 kW**			**40 kW**		
Power factor	**0.8**	**0.9**	**1**	**0.8**	**0.9**	**1**	**0.8**	**0.9**	**1**
Number of modular battery strings									
1	5.5	NA	NA	NA	NA	NA	NA	NA	NA
2	14.5	12.5	11	8.5	7.2	6.1	5.6	NA	NA
3	24.5	21.5	18.5	14.5	12.5	11	10	8.5	7.3
4	35.5	31	27	21.5	18.5	16	14.5	12.5	11
5	47	41	35.5	28.5	24.5	21.5	19.5	17	14.5
6	58.5	51	45	36	31	27	25	21.5	18.5
7	71	61.5	54	43.5	37.5	32.5	30.5	26	23
8	83	72.5	63.5	51	44	38.5	36	31	27
9	96	83.5	73.5	59	51	45	41.5	35.5	31.5
10	105	95	83.5	67	58	51	47	41	36
11	120	105	94	75.5	65.5	57.5	53	46	40.5
12	135	115	100	84	72.5	63.5	59	51	45
13	145	130	115	92.5	80	70.5	65	56.5	49.5
14	160	140	125	100	87.5	77	71.5	61.5	54.5
15	175	155	135	110	95.5	83.5	77.5	67	59
16	190	165	145	115	100	90.5	84	72.5	64
17	205	180	155	125	110	97.5	90	78	69
18	220	190	165	135	115	100	96.5	83.5	74
19	235	205	180	145	125	110	100	89.5	79
20	250	215	190	155	135	115	110	95	84
21	265	230	200	160	140	125	115	100	89
22	280	245	215	170	150	130	120	105	94
23	295	255	225	180	155	140	130	110	99.5
24	310	270	235	190	165	145	135	115	100

UPS rating	20 kW			30 kW			40 kW		
Power factor	0.8	0.9	1	0.8	0.9	1	0.8	0.9	1
Number of modular battery strings									
25	325	285	250	200	175	150	140	120	110
26	340	295	260	210	180	160	150	130	115
27	355	310	275	220	190	165	155	135	120
28	370	325	285	230	200	175	160	140	125
29	385	340	300	240	210	185	170	145	130
30	405	350	310	250	215	190	175	155	135
31	420	365	325	260	225	200	185	160	140
32	435	380	335	270	235	205	190	165	145
33	450	395	350	280	245	215	200	170	150
34	470	410	360	290	250	220	205	180	155
35	485	425	375	300	260	230	215	185	160
36	500	440	385	310	270	235	220	190	170

UPS rating	50 kW			60 kW			80 kW		
Power factor	0.8	0.9	1	0.8	0.9	1	0.8	0.9	1
Number of modular battery strings									
1	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	7.3	6.2	5.2	5.6	NA	NA	NA	NA	NA
4	11	9.4	8	8.5	7.2	6.1	5.6	NA	NA
5	14.5	12.5	11	11.5	9.9	8.5	7.8	6.5	5.6
6	18.5	16	14	14.5	12.5	11	10	8.5	7.3
7	23	19.5	17	18	15.5	13.5	12	10.5	9.2
8	27	23.5	20	21.5	18.5	16	14.5	12.5	11
9	31.5	27	23.5	25	21.5	18.5	17	14.5	12.5
10	36	31	27	28.5	24.5	21.5	19.5	17	14.5
11	40.5	35	30.5	32	27.5	24	22.5	19	16.5
12	45	39	34	36	31	27	25	21.5	18.5
13	49.5	43	37.5	39.5	34	30	27.5	23.5	20.5
14	54.5	47	41	43.5	37.5	33	30.5	26	23
15	59	51	45	47	41	36	33	28.5	25
16	64	55.5	48.5	51	44	39	36	31	27
17	69	59.5	52	55	47.5	42	38.5	33.5	29
18	74	64	56	59	51	45	41.5	36	31.5
19	79	68	60	63	54.5	48	44.5	38.5	33.5
20	84	72.5	63.5	67	58	51	47	41	36
21	89	77	67.5	71.5	62	54	50	43.5	38
22	94	81.5	71.5	75.5	65.5	57.5	53	46	40.5
23	99.5	86	75.5	79.5	69	60.5	56	48.5	42.5
24	100	90.5	79.5	84	72.5	64	59	51	45
25	110	95	83.5	88	76.5	67	62	54	47
26	115	100	87.5	92.5	80	70.5	65	56.5	49.5
27	120	100	92	96.5	84	74	68	59	52

UPS rating	50 kW			60 kW			80 kW		
Power factor	0.8	0.9	1	0.8	0.9	1	0.8	0.9	1
Number of modular battery strings									
28	125	105	96	100	87.5	77	71.5	62	54.5
29	130	110	100	105	91.5	80.5	74.5	64.5	56.5
30	135	115	100	110	95.5	84	77.5	67	59
31	140	120	105	110	99	87.5	80.5	70	61.5
32	145	125	110	115	100	90.5	84	72.5	64
33	150	130	115	120	105	94	87	75.5	66.5
34	155	135	120	125	110	97.5	90	78	69
35	160	140	125	130	115	100	93.5	81	71.5
36	170	145	130	135	115	100	96.5	84	74

UPS rating	100 kW			120 kW			150 kW		
Power factor	0.8	0.9	1	0.8	0.9	1	0.8	0.9	1
Number of modular battery strings									
1	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	5.6	NA	NA	NA	NA	NA	NA	NA	NA
6	7.3	6.2	5.2	5.6	NA	NA	NA	NA	NA
7	9.2	7.7	6.6	7	5.9	5	5	NA	NA
8	11	9.4	8	8.5	7.2	6.1	6.1	5.1	NA
9	12.5	11	9.5	10	8.5	7.3	7.3	6.2	5.2
10	14.5	12.5	11	11.5	9.9	8.5	8.5	7.2	6.1
11	16.5	14	12.5	13	11	9.7	9.7	8.3	7.1
12	18.5	16	14	14.5	12.5	11	11	9.4	8
13	20.5	18	15.5	16.5	14	12	12	10.5	9
14	23	19.5	17	18	15.5	13.5	13.5	11.5	10
15	25	21.5	18.5	19.5	17	14.5	14.5	12.5	11
16	27	23.5	20	21.5	18.5	16	16	13.5	12
17	29	25	22	23	20	17	17	15	13
18	31.5	27	23.5	25	21.5	18.5	18.5	16	14
19	33.5	29	25.5	26.5	23	20	20	17	15
20	36	31	27	28.5	24.5	21.5	21.5	18.5	16
21	38	33	28.5	30.5	26	22.5	22.5	19.5	17
22	40.5	35	30.5	32	27.5	24	24	21	18
23	42.5	37	32	34	29.5	25.5	25.5	22	19
24	45	39	34	36	31	27	27	23.5	20
25	47	41	35.5	37.5	32.5	28.5	28.5	24.5	21.5
26	49.5	43	37.5	39.5	34	30	30	26	22.5
27	52	45	39.5	41.5	36	31	31	27	23.5
28	54.5	47	41	43.5	37.5	32.5	32.5	28.5	24.5
29	56.5	49	43	45.5	39	34	34	29.5	26
30	59	51	45	47	41	35.5	35.5	31	27

UPS rating	100 kW			120 kW			150 kW		
Power factor	0.8	0.9	1	0.8	0.9	1	0.8	0.9	1
Number of modular battery strings									
31	61.5	53	46.5	49	42.5	37	37	32	28
32	64	55.5	48.5	51	44	38.5	38.5	33.5	29
33	66.5	57.5	50.5	53	46	40	40	35	30.5
34	69	59.5	52	55	47.5	41.5	41.5	36	31.5
35	71.5	61.5	54	57	49.5	43	43	37.5	32.5
36	74	64	56	59	51	44.5	44.5	39	34

Compliance

Safety	IEC 62040-1: 2008-06, 1st edition Uninterruptible Power Systems (UPS) - Part 1: General and safety requirements for UPS IEC 62040-1: 2013-01, 1st edition amendment 1 UL 1778 5th edition
EMC/EMI/RFI	IEC 62040-2: 2016, 3rd edition Uninterruptible Power Systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements C2 FCC Part 15 Subpart B, Class A IEEE C62.41-1991 Location Category B2, IEEE Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits
Transportation	IEC 60721-4-2 Level 2M2
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; Ip=1.5

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.

Output performance classification (according to IEC 62040-3, Clause 5.3.4): VFI-SS-11

Regional Seismic Compliance

Certificate available upon request.

Country/Region	Code ID	Hazard level ground	Hazard level roof
Argentina	INPRES-CIRSOC103	Zone 4	Zone 4
Australia	AS 1170.4-2007	Z = 0.22	Z = 0.22
Canada[2]	2020 NBCC	S_a = 2.0	S_a = 1.46
Chile	NCh 433.Of1996	Zone 3	Zone 2
China	GB 50011-2010 (2016)	α_{Max} = 1.4	α_{Max} = 1.2
Europe	Eurocode 8 EN1998-1	α_{gR} = 0.45	α_{gR} = 0.3
India	IS 1893 (Part 1) : 2016	Z = 0.36	Z = 0.36
Japan	Building Standard Law	Zone A	Zone A
New Zealand	NZS 1170.5:2004+A1	Z = 0.6	Z = 0.42
Peru	N.T.E. - E.030	Zone 4	Zone 4
Russia	SNIP II-7-81 (SP 14.13330.2014)	MSK 10	MSK 9
Taiwan	CPA 2011 Seismic Design Code	S_S^D = 0.8	S_S^D = 0.8
U.S.A.[2]	ASCE 7-16 / IBC 2018	S_{DS} = 2.0	S_{DS} = 1.47

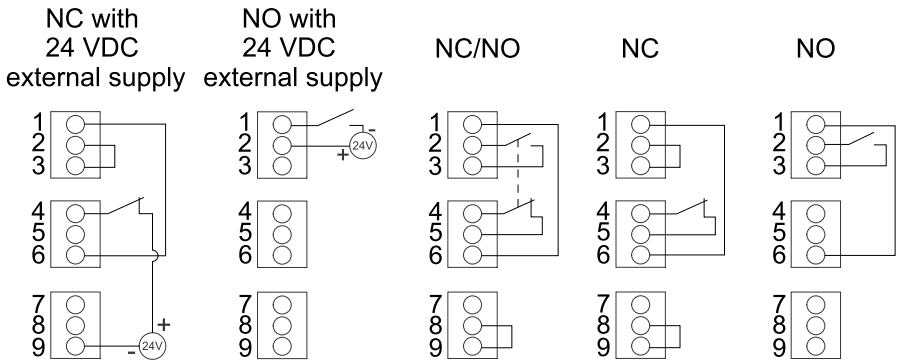
2. OSHPD Pre-approved in accordance with AC156 test protocol.

Communication and Management

Local area network	1 Gbps – 1 port as default
Modbus	Modbus (SCADA)
Output relays	4 x SELV configurable
Input contacts	4 x SELV configurable
Standard control panel	4.3 inch touchscreen display
Audible alarm	Yes
Emergency Power Off (EPO)	Options: • Normally Open (NO) • Normally Closed (NC) • External 24 VDC SELV
External switchgear	UIB UOB SSIB MBB SIB
External synchronization	No
Battery monitoring	Available for external battery solutions

EPO

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



The EPO input supports 24 VDC.

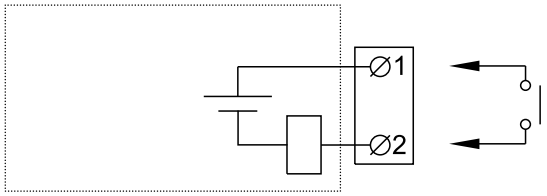
NOTE: The default setting for the EPO activation is to turn off the inverter.

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

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.

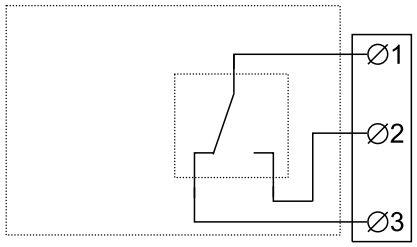


Name	Description	Location
IN _1 (input contact 1)	Configurable input contact	640-4864 terminal J6616, 1–2
IN _2 (input contact 2)	Configurable input contact	640-4864 terminal J6616, 3–4
IN _3 (input contact 3)	Configurable input contact	640-4864 terminal J6616, 5–6
IN _4 (input contact 4)	Configurable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

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	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

Energized check mode: When this mode is enabled, it means that the output relay is activated when the events associated with the output relay are not present (normally activated). **Energized check mode** is individually set for each output relay and makes it possible to detect if the power supply to the output relays is lost, as all output relays will deactivate and the events associated with the output relays will be indicated as present.

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.

Third Party Battery Breaker Requirements

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All selected battery breakers must be equipped with instantaneous trip functionality with an undervoltage release coil or a shunt trip release coil.

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

NOTE: There are more factors to consider when selecting a battery breaker than the requirements listed below. Please contact Schneider Electric for more information.

Design Requirements for Battery Breaker

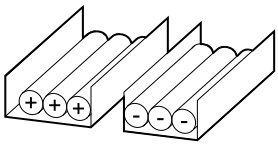
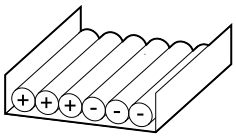
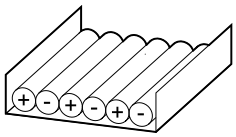
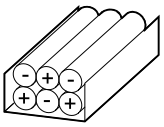
Battery breaker rated DC voltage > Normal battery voltage	The normal voltage of the battery configuration is defined as the highest nominal occurring battery voltage. This can be equivalent to the float voltage which may be defined as **number of battery blocks x number of cells x cell float voltage**.
Battery breaker rated DC current > Rated discharge battery current	This current is controlled by the UPS and must include maximum discharge current. This will typically be the current at the end of discharge (minimum operation DC voltage or in overload condition or a combination).
DC landings	Two DC landings for DC cables are required.
AUX switches for monitoring	One AUX switch must be installed in each battery breaker and connected to the UPS. The UPS can monitor up to two battery breakers.
Short-circuit breaking capability	The short-circuit breaking capability must be higher than the short-circuit DC current of the (largest) battery configuration.
Minimum trip current	The minimum short-circuit current to trip the battery breaker must match the (smallest) battery configuration, to make the breaker trip in case of a short circuit, up to the end of its life time.

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

Specifications

Input Specifications 400 V

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Voltage (V)	**380/400/415**								
Connections	4-wire (L1, L2, L3, N, PE) WYE (single mains) 3-wire (L1, L2, L3, PE) WYE (dual mains)[3] [4]								
Input voltage range (V)	380 V: 331-437 400 V: 340-460 415 V: 353-477								
Frequency range (Hz)	40-70								
Nominal input current (A)	32/30/29	47/45/43	63/60/58	79/75/72	95/90/87	126/120/116	158/150/144	189/180/173	237/225/217
Maximum input current (A)	38/36/35	57/54/52	76/72/69	91/90/87	114/108/104	151/144/139	182/180/173	227/216/208	273/270/260
Input current limitation (A)	39/37/36	59/56/54	78/74/72	91/91/90	117/111/107	156/148/143	182/182/179	234/222/214	273/273/268
Input power factor	0.99 for load greater than 50% 0.95 for load greater than 25%								
Total harmonic distortion (THDI)	<5% at 100% load	<3% at 100% load							
Maximum short circuit rating	65 kA RMS								
Protection	Built-in backfeed protection and fuses								
Ramp-in	Programmable and adaptive 1-40 seconds								

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).

3. TN and TT power distribution systems are supported. Corner (line) grounding is not supported.
4. **Only for dual mains system with upstream 4-pole breakers**: Install an N connection with the input cables (L1, L2, L3, N, PE). Refer to earthing schematics for TN-S dual mains 4-pole circuit breaker.

Bypass Specifications 400 V

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Voltage (V)	**380/400/415**								
Connections	4-wire (L1, L2, L3, N, PE) WYE								
Bypass voltage range (V)	380 V: 342-418 400 V: 360-440 415 V: 374-457								
Frequency range (Hz)	50/60 ± 1, 50/60 ± 3, 50/60 ± 10 (user selectable)								
Nominal bypass current (A)	31/29/28	46/44/42	61/58/56	77/73/70	92/87/84	123/117/112	153/146/141	184/175/169	230/219/211
Nominal neutral current (A)[5]	53/50/48	79/75/72	105/100/96	131/125/120	158/150/144	210/200/193	263/250/241	263/250/241	263/250/241
Maximum short circuit rating	65 kA RMS								
Protection	Built-in backfeed protection and fuses Internal fuse specifications: Rated 400 A, prearcing 33 kA^2s							Built-in backfeed protection and fuses Internal fuse specifications: Rated 550 A, prearcing 52 kA^2s	

Output Specifications 400 V

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Voltage (V)	**380/400/415**								
Connections	4-wire (L1, L2, L3, N, PE)								
Output voltage regulation	Symmetrical load ± 1% Asymmetrical load ± 3%								
Overload capacity	150% for 1 minute (in normal operation) 125% for 10 minutes (in normal operation) 125% for 1 minute (in battery operation) 110% continuous (bypass operation) 1000% for 100 milliseconds (bypass operation)								
Dynamic load response	± 5% after 2 milliseconds ± 1% after 50 milliseconds								
Output power factor	1								
Nominal output current (A)	30/29/28	46/43/42	61/58/56	76/72/70	91/87/83	122/115/111	152/144/139	182/173/167	228/217/209
Frequency regulation (Hz)	50/60 Hz bypass synchronized – 50/60 Hz ± 0.1% free-running								
Synchronized slew rate (Hz/sec)	Programmable to 0.25, 0.5, 1, 2, 4, 6								
Output performance classification (according to IEC 62040-3:2021)	VFI-SS-11								
Total harmonic distortion (THDU)	<1% for linear load <5% for non-linear load								
Load crest factor	2.5								
Load power factor	From 0.7 leading to 0.7 lagging without any derating								

5. 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.

Battery Specifications 400 V

⚠⚠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.

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Charging power in % of output power at 0-40% load[6]	80%								
Charging power in % of output power at 100% load	20%[7]								
Maximum charging power (at 0-40% load) (kW)[6]	16	24	32	40	48	64	80	96	120
Maximum charging power (at 100% load) (kW)	4	6	8	10	12	16	20	24	30
Nominal battery voltage (VDC)	32-48 blocks: 384-576			40-48 blocks: 480-576	35-48 blocks: 420-576	32-48 blocks: 384-576	40-48 blocks: 480-576		
Nominal float voltage (VDC)	32-48 blocks: 436-654			40-48 blocks: 545-654	35-48 blocks: 477-654	32-48 blocks: 436-654	40-48 blocks: 545-654		
Maximum boost voltage (VDC)	720 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)	32 blocks: 307			40 blocks: 384	35 blocks: 336	32 blocks: 307	40 blocks: 384		
Battery current at full load and nominal battery voltage (A)[8]	54	81	109	109	130	174	217	260	326
Battery current at full load and minimum battery voltage (A)[8]	68	102	136	136	163	217	271	326	407
Ripple current	< 5% C20 (5 minute runtime)								
Battery test	Manual/automatic (selectable)								
Maximum short circuit rating	10 kA								

6. Values based on 48 blocks.
7. At 380 V only 15% for 50 kW, 100 kW, and 150 kW.
8. Values based on 20-40 kW: 32 blocks; 50-150 kW: 40 blocks.

Recommended Cable Sizes 400 V

⚠⚠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 150 mm^2.

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/PE busbars.

NOTE: Overcurrent protection is to be provided by others.

Cable sizes in this manual are based on table B.52.3 and table B.52.5 of IEC 60364-5-52 with the following assertions:

- 90 °C conductors
- An ambient temperature of 30 °C
- Use of copper or aluminum conductors
- Installation method C

PE cable size is based on table 54.2 of IEC 60364-4-54.

If the ambient temperature is greater than 30 °C, larger conductors are to be selected in accordance with the correction factors of the IEC.

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 PE 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.

Copper

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Input phases (mm^2)	6	10	16	25	35	50	70	95	120
Input PE (mm^2)	6	10	16	16	16	25	35	50	70
Bypass/output phases (mm^2)	6	6	10	16	25	35	50	70	95
Bypass PE/output PE (mm^2)	6	6	10	16	16	16	25	35	50
Neutral (mm^2)	10	16	25	35	50	70	95	95	95
DC+/DC- (mm^2)[9]	10	25	35	35	50	70	95	95	120
DC PE (mm^2)	10	16	16	16	25	35	50	50	70

Aluminum

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Input phases (mm^2)	6	16	25	35	50	70	95	120	150
Input PE (mm^2)	6	16	16	16	25	35	50	70	95

9. 20-40 kW: DC cables are sized according to 32 blocks. 50-100 kW: DC cables are sized according to 40 blocks.

Aluminum (Continued)

UPS rating	20 kW	30 kW	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW	150 kW
Bypass/output phases (mm^2)	6	10	16	25	35	50	70	95	150
Bypass PE/output PE (mm^2)	6	10	16	16	16	25	35	50	95
Neutral (mm^2)	10	25	35	50	70	95	2 x 70	2 x 70	2 x 70
DC+/DC- (mm^2)[10]	16	35	50	50	70	95	2 x 70	2 x 70	2 x 95
DC PE (mm^2)	16	16	25	25	35	50	70	70	95

Recommended Upstream Protection 400 V

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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.

NOTE: For local directives which require 4-pole circuit breakers: If neutral conductor is expected to carry a high current, due to line-neutral non-linear load, the circuit breaker must be rated according to expected neutral current.

NOTE: For the scalable UPS (GVSUPS50K150HS), always size the upstream protection for a UPS rating of 150 kW.

UPS rating	20 kW		30 kW		40 kW	
	Input	Bypass	Input	Bypass	Input	Bypass
Breaker type	NSX100H TM40D (LV429674)	NSX100H TM32D (LV429675)	NSX100H TM63D (LV429672)	NSX100H TM50D (LV429673)	NSX100H TM80D (LV429671)	NSX100H TM63D (LV429672)
In	40	32	63	50	80	63
Ir	40	32	63	50	80	63
Im	500 (fixed)	400 (fixed)	500 (fixed)	500 (fixed)	640 (fixed)	500 (fixed)

UPS rating	50 kW		60 kW		80 kW		100 kW	
	Input	Bypass	Input	Bypass	Input	Bypass	Input	Bypass
Breaker type	NSX100H TM100D (LV429670)	NSX100H TM80D (LV429671)	NSX160H TM125D (LV430671)	NSX100H TM100D (LV429670)	NSX160H TM160D (LV430670)	NSX160H TM125D (LV430671)	NSX250H TM200D (LV431671)	NSX160H TM160D (LV430670)
In	100	80	125	100	160	125	200	160

10. 20-40 kW: DC cables are sized according to 32 blocks. 50-100 kW: DC cables are sized according to 40 blocks.

UPS rating	50 kW		60 kW		80 kW		100 kW	
	Input	**Bypass**	**Input**	**Bypass**	**Input**	**Bypass**	**Input**	**Bypass**
Ir	100	80	125	100	160	125	200	160
Im	800 (fixed)	640 (fixed)	1250 (fixed)	800 (fixed)	1250 (fixed)	1250 (fixed)	≤6 x In	1250 (fixed)

UPS rating	120 kW		150 kW	
	Input	**Bypass**	**Input**	**Bypass**
Breaker type	NSX250H TM250D (LV431670)	NSX250H TM200 (LV431671)	NSX400H Mic.L5 (LV432701)	NSX250H TM250 (LV431670)
In/Io	250	200	280	250
Ir	250	200	—	250
tr	—	—	0.5	—
Im/Isd	≤5 x In	≤6 x In	10	≤5 x In
tsd	—	—	0	—
Ii	—	—	≤4.5 x In	—

Torque Specifications

Bolt size	Torque
M4	1.7 Nm
M5	2.2 Nm
M6	5 Nm
M8	17.5 Nm
M10	30 Nm
M12	50 Nm

Physical

UPS Shipping Weights and Dimensions

	Weight kg	Height mm	Width mm	Depth mm
20-50 kW UPS 400 V	235	1680	640	990
20-50 kW UPS with N+1 power module 400 V	250	1680	640	990
60 kW UPS 400 V	263	1680	640	990
60-100 kW UPS with N +1 power module 400 V*	250	1680	640	990
80-100 kW UPS 400 V	275	1680	640	990
120 kW UPS 400 V*	250	1680	640	990
150 kW UPS 400 V*	250	1680	640	990

NOTE: The UPS models marked with an * in the table above are shipped with one power module preinstalled in the UPS and two power modules shipped separately.

Power Module Shipping Weights and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVPM20KD	48	330	580	780
GVPM50KD	62	330	580	780

UPS Weights and Dimensions

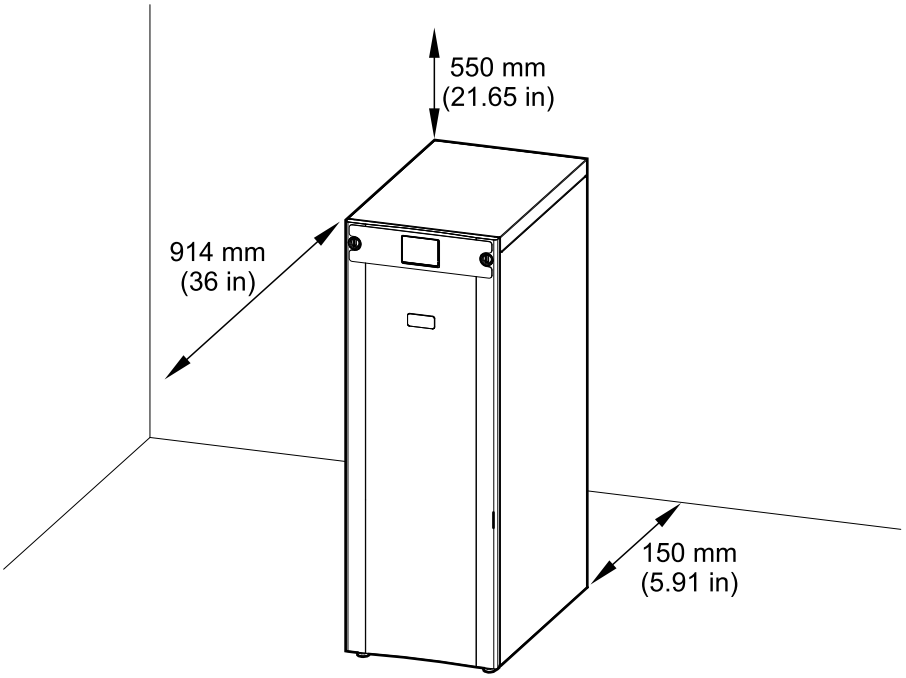
	Weight kg	Height mm	Width mm	Depth mm
20-50 kW UPS 400 V	206	1485	521	847
20-50 kW UPS with N+1 power module 400 V	250	1485	521	847
60 kW UPS 400 V	238	1485	521	847
60-100 kW UPS with N +1 power module 400 V	290	1485	521	847
80-100 kW UPS 400 V	250	1485	521	847
120 kW UPS 400 V	278	1485	521	847
150 kW UPS 400 V	290	1485	521	847

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 is 150 mm (5.91 in).

Front View of the UPS



Environment

	Operating	Storage
Temperature	0 °C to 50 °C with load derating above 40 ° C.[11]	-15 °C to 40 °C for systems with batteries. -25 °C to 55 °C for systems without batteries.
Relative humidity	0-95% non-condensing	10-80% non-condensing
Elevation	Designed for operation in 0-3000 m elevation. Derating required from 1000-3000 m: Up to 1000 m: 1.000 Up to 1500 m : 0.975 Up to 2000 m: 0.950 Up to 2500 m: 0.925 Up to 3000 m: 0.900	
Audible noise one meter from unit	400 V: 60 dB at 70% load, 68 dB at 100% load	
Protection class	IP21	
Color	RAL 9003, gloss level 85%	

Heat Dissipation for 400 V in BTU/hr

20 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	1138	1030	1063	551	565	573
50% load	1498	1406	1446	641	629	641
75% load	1925	1757	1813	730	697	706
100% load	2321	2170	2208	791	779	776

20 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	777	900	835	1092	1092	1092
50% load	819	872	851	1467	1467	1467
75% load	847	897	887	1894	1894	1894
100% load	899	926	928	2320	2320	2320

30 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	1315	1211	1257	608	591	600
50% load	1925	1757	1813	730	697	706
75% load	2529	2385	2419	826	809	809
100% load	3357	3122	3192	952	925	939

30 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	791	868	835	1280	1280	1280
50% load	847	897	887	1894	1894	1894
75% load	926	939	945	2610	2610	2610
100% load	1006	1038	1026	3378	3378	3378

11. For temperatures between 40 °C and 50 °C, derate the load power rating with 2.5% per °C.

40 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	1498	1406	1446	641	629	641
50% load	2321	2170	2208	791	779	776
75% load	3357	3122	3192	952	925	939
100% load	4577	4333	4285	1120	1094	1086

40 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	819	872	852	1467	1467	1467
50% load	899	1268	928	2320	2320	2320
75% load	1006	1038	1026	3378	3378	3378
100% load	1123	1185	1144	4641	4641	4641

50 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	1726	1576	1619	689	669	668
50% load	2888	2624	2718	889	843	845
75% load	4294	3985	4026	1079	1059	1053
100% load	6268	5804	5673	1288	1247	1234

50 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	834	846	867	1663	1663	1663
50% load	952	965	970	2815	2815	2815
75% load	1088	1109	1113	4223	4223	4223
100% load	1261	1253	1256	5971	5971	5971

60 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	2131	2131	2131	885	885	885
50% load	3382	3273	3273	1138	1138	1138
75% load	4909	4746	4746	1394	1394	1394
100% load	6982	6546	6328	1650	1650	1650

60 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	991	1044	1097	2579	2579	2579
50% load	1243	1243	1347	3820	3820	3820
75% load	1394	1550	1394	5237	5237	5237
100% load	1858	1858	1650	6982	6982	6982

80 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	2711	2622	2626	997	992	972
50% load	4378	4177	4187	1331	1303	1279

80 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
75% load	6545	6150	6045	1702	1630	1605
100% load	8964	8394	8104	1928	1860	1802

80 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	1328	1369	1382	2866	2866	2866
50% load	1497	1509	1537	4641	4641	4641
75% load	1768	1783	1763	6756	6756	6756
100% load	1962	1952	1931	9281	9281	9281

100 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	3129	2959	2988	1074	1064	1046
50% load	5438	5115	5090	1517	1497	1436
75% load	8179	7626	7466	1812	1761	1750
100% load	12004	11373	10752	1344	2269	2211

100 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	1370	1402	1424	3242	3242	3242
50% load	1635	1624	1669	5630	5630	5630
75% load	1938	1921	1884	8445	8445	8445
100% load	2392	2266	2272	11942	11942	11942

120 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	3710	3710	3710	1347	1347	1347
50% load	6328	6328	6111	1858	1858	1858
75% load	9818	9492	9166	2475	2475	2475
100% load	14402	13964	13091	3300	2885	2885

120 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	1663	1663	1663	NA	NA	NA
50% load	2067	2067	2067	NA	NA	NA
75% load	2475	2475	2475	NA	NA	NA
100% load	2885	2885	2885	NA	NA	NA

150 kW	Normal operation			ECO mode		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	4638	4638	4638	1553	1422	1422
50% load	7910	7638	7638	2323	2063	2063
75% load	12273	11865	11457	3094	3094	2704
100% load	18552	16909	16364	4125	3606	3606

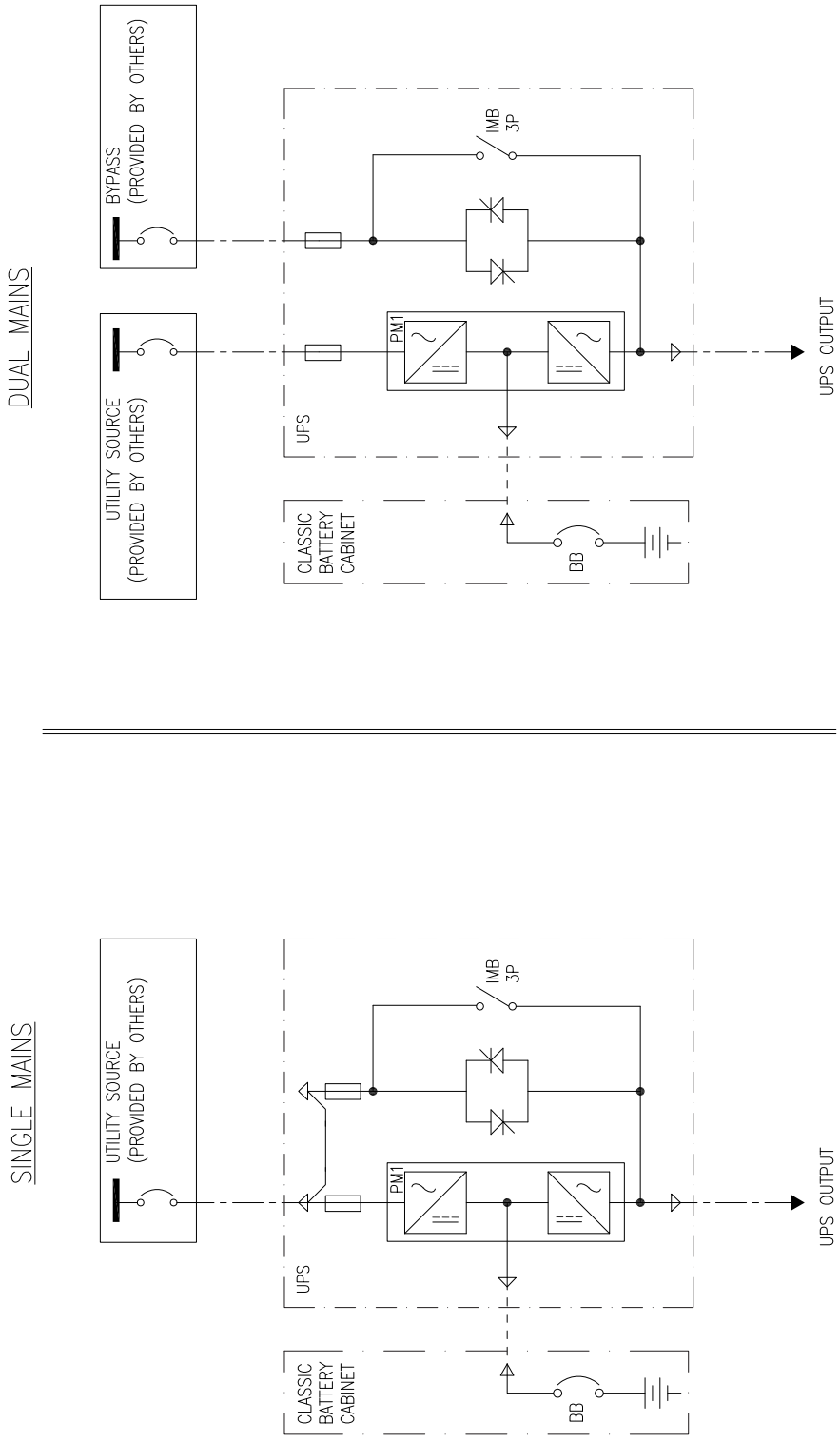
150 kW	ECOnversion			Battery operation		
Voltage (V)	**380**	**400**	**415**	**380**	**400**	**415**
25% load	1816	1816	1947	NA	NA	NA
50% load	2323	2323	2323	NA	NA	NA
75% load	3094	2704	2704	NA	NA	NA
100% load	4125	3606	3606	NA	NA	NA

Drawings

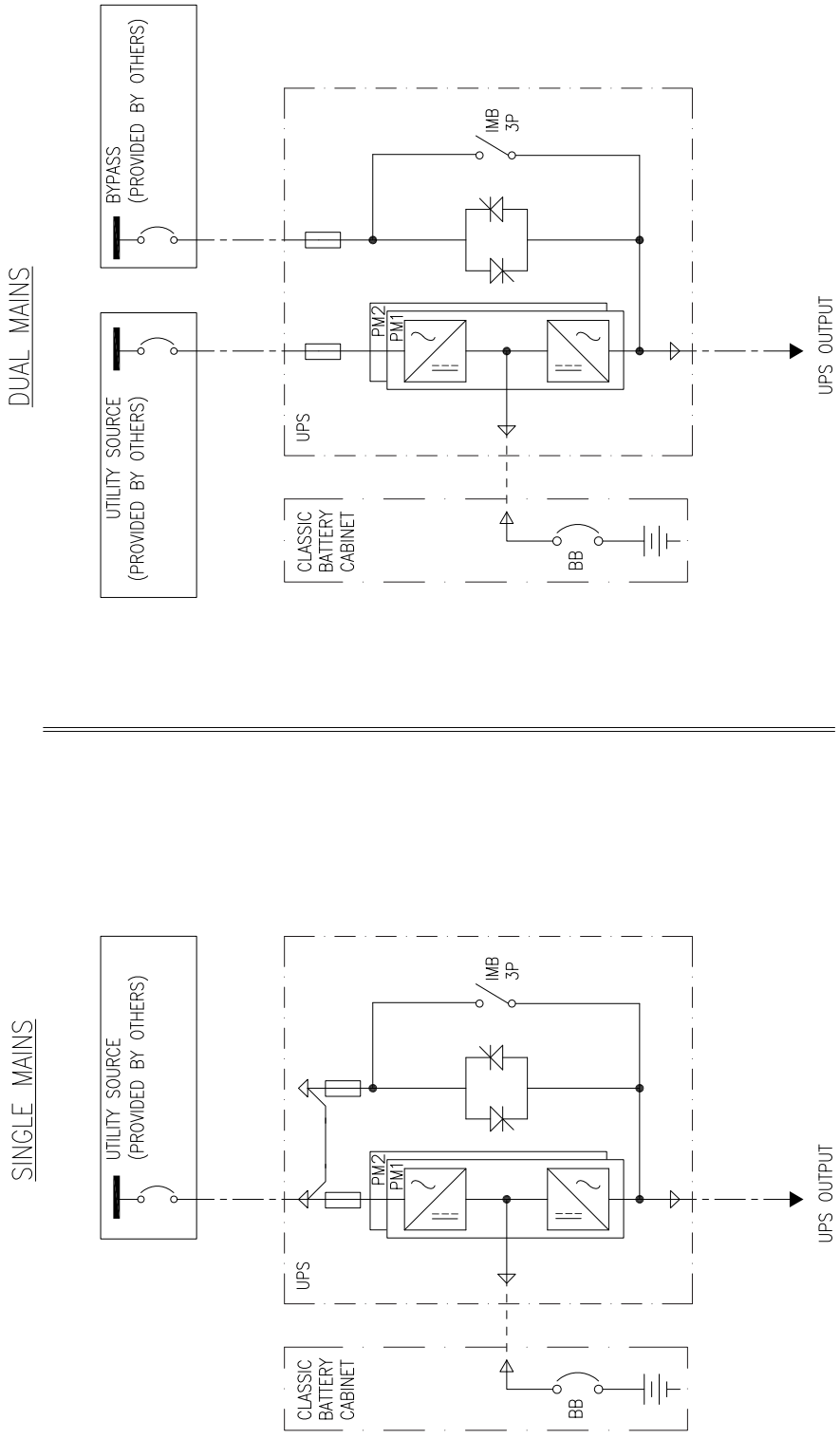
NOTE: A comprehensive set of drawings is available on www.se.com.

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

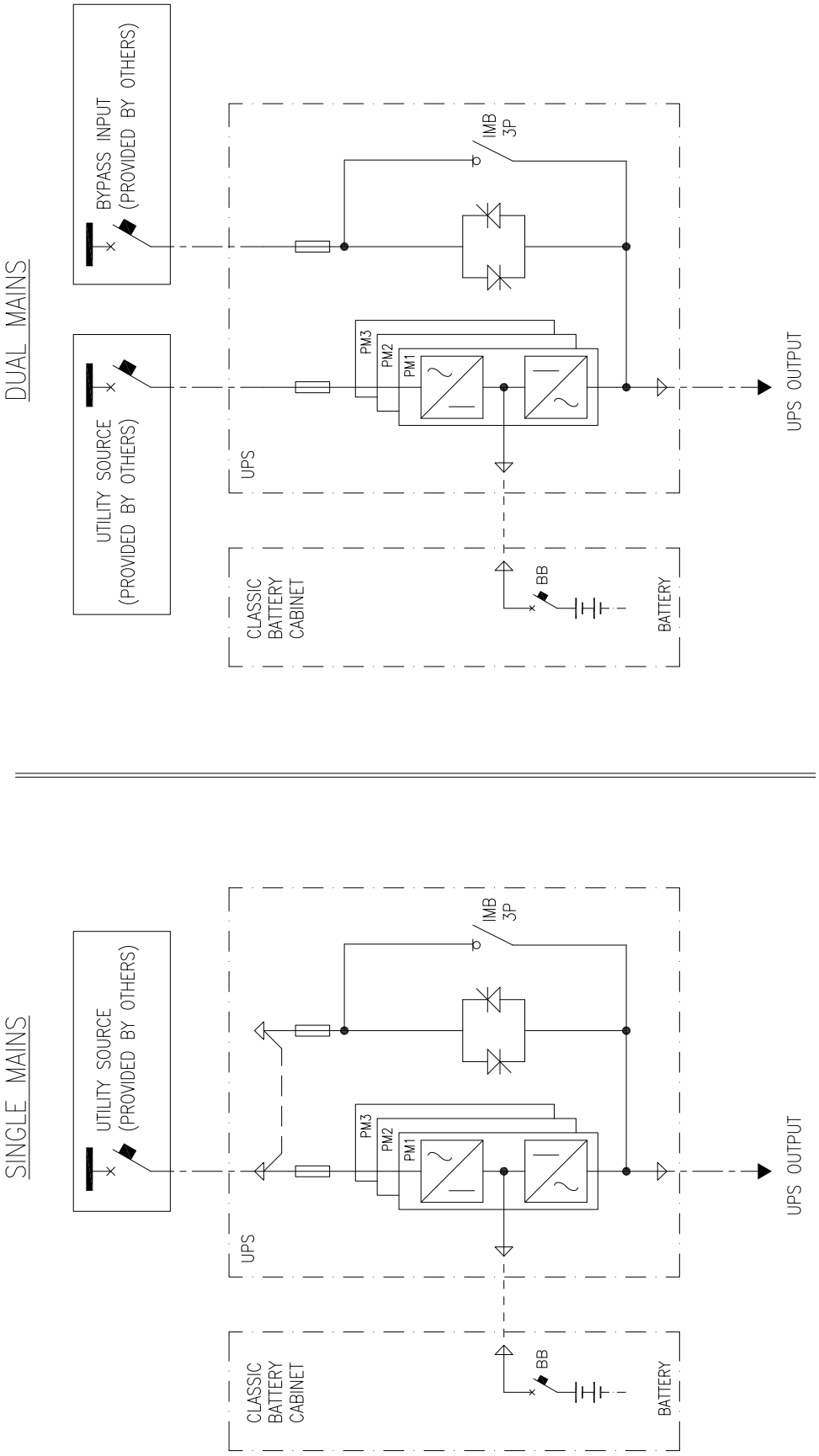
20-50 kW 400 V UPS



60-100 kW 400 V UPS



120-150 kW 400 V UPS



Options

Configuration Options

- Compact design, high density technology, and modular architecture
- Single or dual mains
- Up to 4+0 UPSs in parallel for capacity
- Up to 3+1 UPSs in parallel for redundancy
- Default rear or bottom cable entry
- ECO mode
- ECOnversion mode
- EcoStruxure IT compatible
- Generator compatible
- Touchscreen LCD
- Replacement of power module in any operation mode (Live Swap)[12]

Hardware Options

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

Power Module

- Power module 50 kW 400 V (GVPM50KD)
- Power module 20 kW 400 V (GVPM20KD)

Galaxy Lithium-Ion Battery Cabinet

Battery cabinet including Lithium-Ion batteries and battery breaker.

- Galaxy Lithium-Ion battery cabinet with 13 battery modules (LIBSESMG13IEC)
- Galaxy Lithium-Ion battery cabinet with 16 battery modules (LIBSESMG16IEC)

Modular Battery Cabinet

Modular battery cabinet including battery breaker.

- Modular battery cabinet for up to six smart modular battery strings (GVSMODBC6). Can be installed adjacent to the UPS with the use of optional installation kit GVSOPT030.
- Modular battery cabinet for up to nine smart modular battery strings (GVSMODBC9). Can only be installed remote to the UPS.

Battery Modules

9 Ah smart high capacity battery modules for use with GVSMODBC6 and GVSMODBC9:

- Galaxy VS 9 Ah Smart High Capacity Battery Module (GVSBTHU)
- Galaxy VS 9 Ah Smart Modular High Capacity Battery String (GVSBTH4)

9 Ah smart long-life high capacity battery modules for use with GVSMODBC6 and GVSMODBC9:

12. In all systems configured for Live Swap.

- Galaxy VS 9 Ah Smart Long-Life High Capacity Battery Module (GVSBTHULL)
- Galaxy VS 9 Ah Smart Modular Long-Life High Capacity Battery String (GVSBTH4LL)

NOTE: Always use the same battery module type in the UPS system. Do not mix different battery module types.

Classic Battery Cabinets

Classic battery cabinet including batteries and battery breaker.

- 710 mm wide, classic battery cabinet (GVSCBC7C, GVSCBC7D, GVSCBC7E)
- 1010 mm wide, classic battery cabinet (GVSCBC10A2, GVSCBC10B2)

Empty Battery Cabinets

Empty battery cabinet for use with third party batteries. Battery breaker kit is required (sold separately).

- 700 mm wide empty classic battery cabinet (GVECB7)
- 1100 mm wide empty classic battery cabinet (GVECB11)

Battery Breaker Box

Wall mounted battery breaker box for use with third party battery solutions.

- 20-80 kW battery breaker box (GVSBBB20K80H)
- 100-200 kW battery breaker box (GVSBBB100K200H)

Battery Breaker Kit

Battery breaker kit for use with empty battery cabinets or third party battery solutions.

- 20-80 kW battery breaker kit (GVSBBK20K80H)
- 100-200 kW battery breaker kit (GVSBBK100K200H)

Maintenance Bypass Panel

Maintenance bypass panel for complete isolation of the UPS during service operations. Only for single UPS or 1+1 parallel system for redundancy.

- 10-20 kW maintenance bypass panel (GVSBPSU10K20H)
- 20-60 kW maintenance bypass panel (GVSBPSU20K60H)
- 80-120 kW maintenance bypass panel (GVSBPSU80K120H)
- 150 kW maintenance bypass panel (GVSBPSU150KH)

Parallel Maintenance Bypass Panel for Two UPSs

Maintenance bypass panel for complete isolation of two UPSs in a parallel system. 10-120 kW in 1+1 parallel system for redundancy, 20-240 kW in 2+0 parallel system for capacity.

- 10-30 kW maintenance bypass panel (GVSBPAR10K30H)
- 40-50 kW maintenance bypass panel (GVSBPAR40K50H)
- 60-120 kW maintenance bypass panel (GVSBPAR60K120H)

Auxiliary Cabinets

- Empty auxiliary cabinet (GVEAC7)

Optional Installation Kits

- Seismic kit for UPS (GVSOPT002)
- Parallel kit for UPS (GVSOPT006)
- IP22 kit for UPS (GVSOPT026)
- Mounting skid kit for the UPS for marine or industrial installation (GVSOPT027)
- Cable kit for GVSMODBC6 installed adjacent to the UPS (GVSOPT030)
- IP52 kit for the UPS (GVSOPT033)
- IP52 kit for GVSMODBC6 (GVSOPT034)
- Live Swap kit for the UPS (GVSOPT038)

Optional Network Management Card

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

Air Filter

- Air filter kit (GVSOPT001)

Temperature Sensors

- Extra temperature sensor for second classic battery bank (0J-0M-1160). Not for use with modular battery cabinet solution.
- Temperature sensor for network management card (AP9335T)
- Temperature/humidity sensor for network management card (AP9335TH)

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.

Maintenance Bypass Panel Shipping Weights and Dimensions

Commercial reference	Weight kg	Height mm[13]	Width mm	Depth mm[13]
GVSBPSU10K20H	40	260	537	590
GVSBPSU20K60H	35	830	800	1200
GVSBPSU80K120H	50	950	800	1200
GVSBPSU150KH	58	950	800	1200

Maintenance Bypass Panel Weights and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVSBPSU10K20H	12	450	400	150
GVSBPSU20K60H	25	600	550	220
GVSBPSU80K120H	40	800	600	280
GVSBPSU150KH	48	800	600	280

Parallel Maintenance Bypass Panel Weights and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVSBPAR10K30H	35	700	650	210
GVSBPAR40K50H	50	850	750	250
GVSBPAR60K120H	83	1000	900	280

Parallel Maintenance Bypass Panel Shipping Weights and Dimensions

Commercial reference	Weight kg	Height[14] mm	Width mm	Depth[14] mm
GVSBPAR10K30H	55	460	800	1200
GVSBPAR40K50H	75	500	865	1200
GVSBPAR60K120H	113	565	1000	1200

Battery Breaker Box Shipping Weights and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVSBBB20K80H	45	530	1220	840
GVSBBB100K200H	55	530	1220	840

13. The product is packaged in a horizontal position, so the shipping height and depth dimensions differ from the product itself.
14. The parallel maintenance bypass panel is packaged in a horizontal position, so the height and depth dimensions differ from the product itself.

Battery Breaker Box Weights and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVSBBB20K80H	25	650	500	280
GVSBBB100K200H	35	800	500	280

Classic Battery Cabinet Shipping Weights and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVSCBC7A	600	1980	815	970
GVSCBC7B	768	1980	815	970
GVSCBC7C	920	1980	815	970
GVSCBC7D	589	1980	815	970
GVSCBC7E	810	1980	815	970
GVSCBC10A2	1300	1980	1130	970
GVSCBC10B2	1532	1980	1130	970

Classic Battery Cabinet Weights and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVSCBC7A	580	1900	710	845
GVSCBC7B	748	1900	710	845
GVSCBC7C	900	1900	710	845
GVSCBC7D	569	1900	710	845
GVSCBC7E	790	1900	710	845
GVSCBC10A2	1280	1900	1010	845
GVSCBC10B2	1512	1900	1010	845

Empty Battery Cabinet Shipping Weight and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVEBC7	205	2100	930	970
GVEBC11	250	2100	1330	970
GVEBC15	405	2120	1700	1000

Empty Battery Cabinet Weight and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVEBC7	190	1970	700	850
GVEBC11	230	1970	1100	850
GVEBC15	390	1970	1500	854

Modular Battery Cabinet Shipping Weights and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVSMODBC6	175	1664	635	990
GVSMODBC9	206	2082	755	1010

NOTE: The modular battery cabinet is shipped without battery strings installed.

Modular Battery Cabinet Weights and Dimensions

Commercial reference	Weight kg	Height mm	Width mm	Depth mm
GVSMODBC6 – Empty – With six battery strings	 145 913	1485	521	847
GVSMODBC9 – Empty – With nine battery strings	 186 1338	1970	550	847

NOTE: One battery module weighs approximately 32 kg.

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