Xtreme HV 1.0

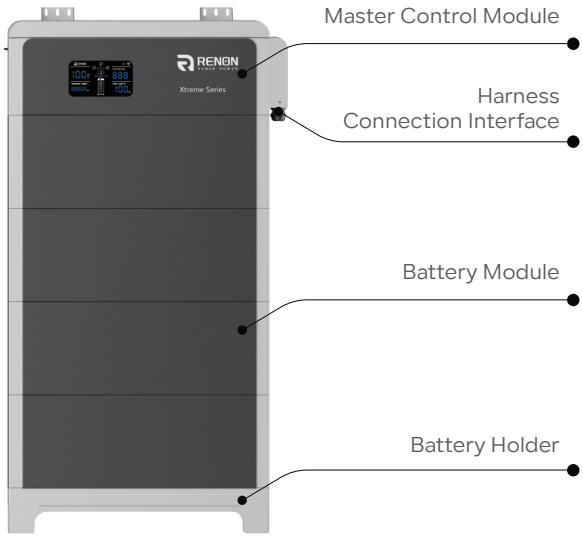
Modular HV Battery System

High Efficiency and Scalability: The high voltage system offers a nominal voltage of 192~384V, reducing transmission losses, and its modular design provides 2 to 4 module stacking solutions, ensuring high operational reliability with dynamic current equalizing techniques.

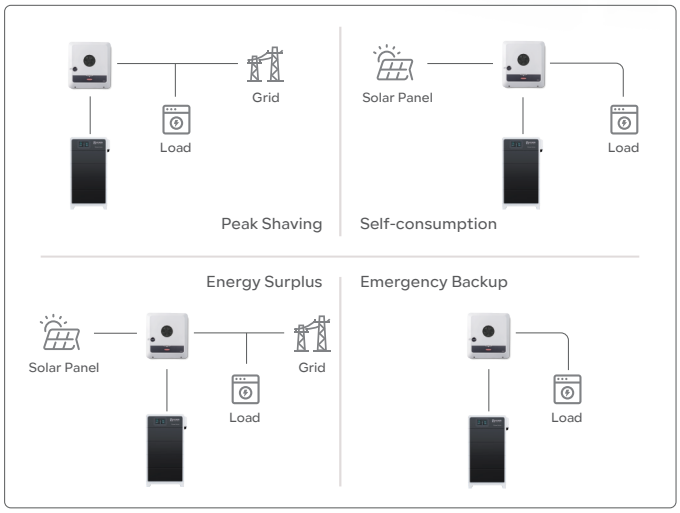
Advanced Smart Management: Wireless design with WiFi connectivity, and the intelligent energy management system (EMS) allow for easy activation, unified management, real-time monitoring, and fault pre-warning.

Superior Safety and Durability: With a built-in battery optimizer, up to 8000 cycle life, IP55 protection rating, and comprehensive certifications, the system ensures long-term stable operation and global safety compliance.

Product Details



System Layout



Application Scenario

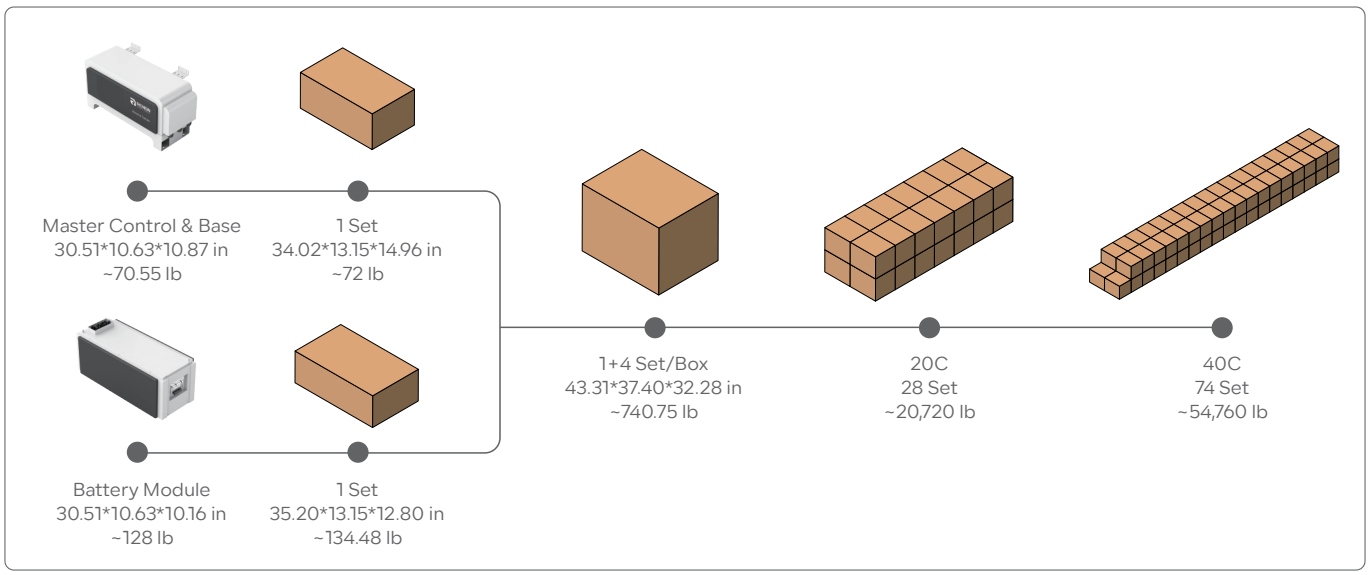
Battery Energy Storage			
Product Model	R-XH009021	R-XH014031	R-XH019041
Product Module QTY	2	3	4
Battery Chemistry		LiFePO4	
Battery Combination	1P60S	1P90S	1P120S
Cell Capacity (Ah)		50	
Nominal Energy (kWh)	9.6	14.4	19.2
Max.Charging/Discharging Current(A)		48	
Input Voltage Range (V)	162~219	243~328.5	324~438
Nominal Voltage (V)	192	288	384
Max. Charging Voltage (V)	219	328.5	438
Recommend Discharge Cut-off Voltage	175.8	263.7	351.6
Dimensions - W*D (mm/in)	775*270/30.5*10.6	775*270/30.5*10.6	775*270/30.5*10.6
Dimensions - H (mm/in)	854/33.6	1112/43.8	1370/53.9
Total Weight - (kg/lb)	148/326	208/459	268/590

General Parameters	
Scalability	Max. 4 cluster in parallel
Storage Conditions	–4°F ~ 131°F(32°F ~ 95°F Recommended) Up to 90%RH, non-condensing Initial SoC: 50%
Operating Temperature	Charge: 32°F ~ 122°F Discharge: –4°F ~ 122°F
Cooling	Natural Cooling
Max. Altitude	4000m / 13123ft
Cycle Life	8000 Cycles
Communication	RS485, CAN, WiFi

System Characteristic	
Master Control Model	R-MC050-XTH01
Battery Model	R-EM096050-XTH01
Battery Compliances	IEC62619, MSDS, UN38.3 UL 1973, UL 9540, UL 9540A(Coming soon)
Installation Method	Stack Mounting
Installation Scene	Indoor or Outdoor
IP Rating	IP55
Warranty [1]	10 Years

[1] Please refer to the warranty letter for details

Packaging & Shipping Details



GEN24 / GEN24 Plus

HV Hybrid Inverter

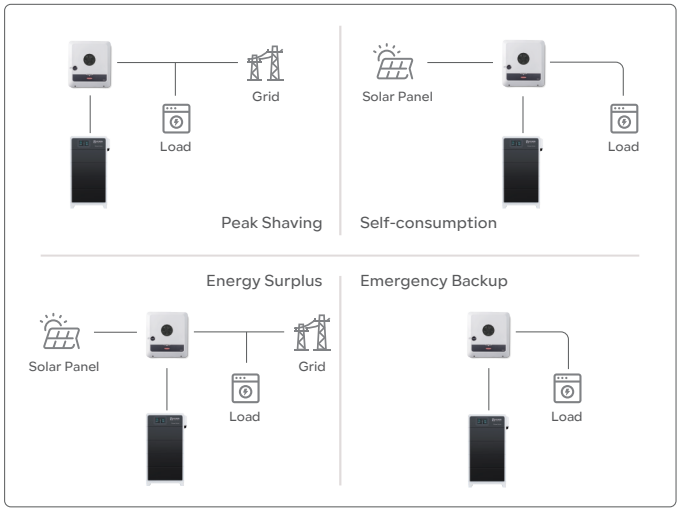
Optimized performance: Equipped with Dynamic Peak Manager, Fronius' intelligent shade management, the Fronius GEN24 achieves the highest yields even in shaded conditions, eliminating the need for module-level optimization.

Built-in longevity: Active Cooling Technology safeguards internal components by preventing excessive heat buildup. Together with a powerful fan and innovative heat sink, it ensures reliable performance and extends the service life of the Fronius GEN24.

Versatility as standard: With open interfaces, the Fronius GEN24 integrates seamlessly with third-party components, providing unmatched flexibility and long-term reliability. Its advanced energy management maximizes self-consumption, minimizes grid dependence, and delivers lasting cost savings

Product Details

System Layout



Application Scenario

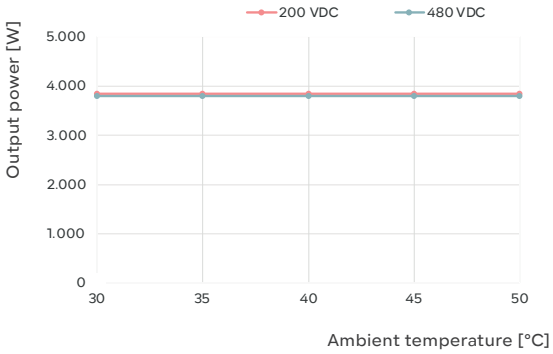
GEN24 / GEN24 Plus

Impressive Power Data

The Fronius GEN24 and Fronius GEN24 Plus impress with premium efficiency and maximum power at high temperatures.

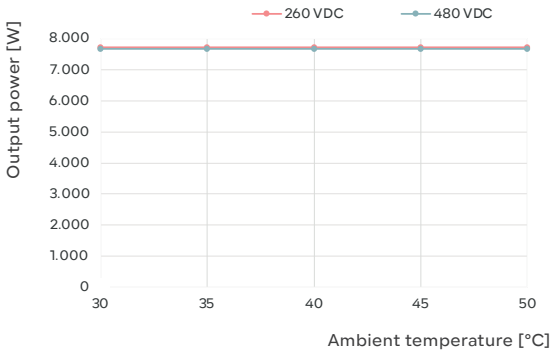
Fronius Primo
GEN24 3.8 208-240 [Plus]

Temperature derating (240VAC)



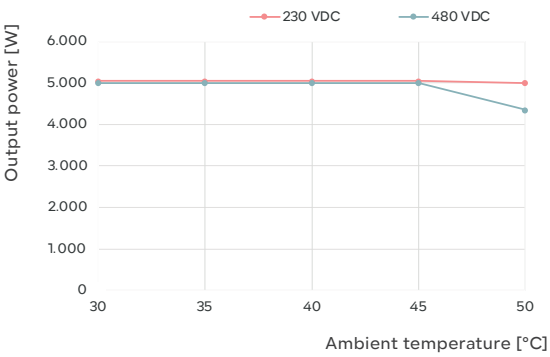
Fronius Primo
GEN24 7.7 208-240 [Plus]

Temperature derating (240VAC)



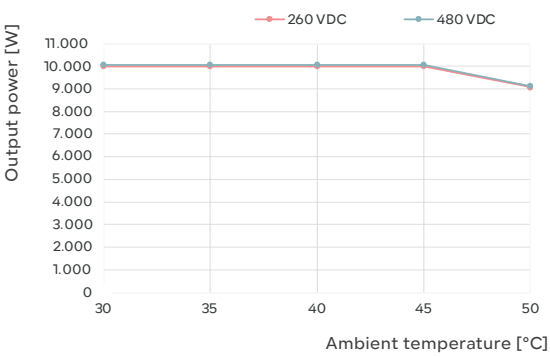
Fronius Primo
GEN24 5.0 208-240 [Plus]

Temperature derating (240VAC)



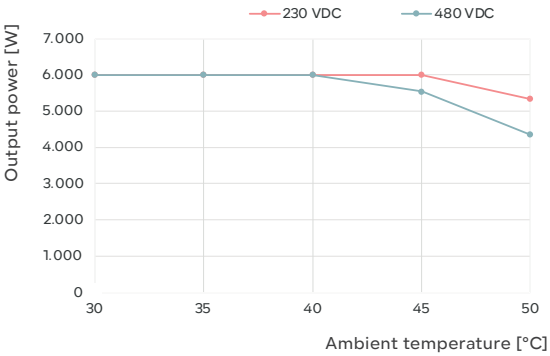
Fronius Primo
GEN24 10.0 208-240 [Plus]

Temperature derating (240VAC)



Fronius Primo
GEN24 6.0 208-240 [Plus]

Temperature derating (240VAC)



DC Input	3.8			5.0			6.0		
Number of MPP Trackers	2			2			2		
Max. System Voltage (Vdc)	600								
	208 Vac	220 Vac	240Vac	208 Vac	220 Vac	240Vac	208 Vac	220 Vac	240Vac
Rated Input Voltage (V)	360	380	400	360	380	400	360	380	400
Feed-in Start Voltage (V)	80			80			80		
Operating Voltage Range (V)	65~480			65~480			65~480		
Rated MPP Voltage Range (V)	200~530			230~530			230~480		
	MPPT1	MPPT2		MPPT1	MPPT2		MPPT1	MPPT2	
Max. Short Circuit Current per MPPT - ISC (A) [1]	36	19		36	19		36	19	
Number of DC Connections [2]	2	2		2	2		2	2	
	MPPT1	MPPT2	Total	MPPT1	MPPT2	Total	MPPT1	MPPT2	Total
Max. Usable DC Power (W)	3,940	3,940	3,940	5,150	5,150	5,150	6,190	6,190	6,190
Max. PV Generator Output (Wpeak)	5,700	5,700	5,700	7,500	6,800	7,500	8,000	6,800	9,000

AC Output									
	208 Vac	220 Vac	240Vac	208 Vac	220 Vac	240Vac	208 Vac	220 Vac	240Vac
AC Rated Power (W)	3,800	3,800	3,800	5,000	5,000	5,000	5,740	6,000	6,000
Apparent Power (Va)	3,800	3,800	3,800	5,000	5,000	5,000	5,740	6,000	6,000
Max. Output Power (VA)	3,800	3,800	3,800	5,000	5,000	5,000	5,740	6,000	6,000
Rated AC Output Current (A)	18.3	17.3	15.8	24	22.7	20.8	27.6	27.3	25
Mains Connection (V)	Single phase 208 V / 220 V / 240 V (-12 / +10%)								
Frequency (Hz)	50/60(45 ~ 66)								
Distortion Factor	< 3.5								
Adjustable Power Factor	0.8 - 1 ind. / cap.								

Output Data for PV Point	
	120 Vac
Rated Output Power PV Point (VA)	1,560
Rated AC Voltage PV Point (V)	Single phase 120 V / 220 V / 240 V
Switching Time	< 23s

The Fronius GEN24 can be upgraded to a Fronius GEN24 Plus hybrid inverter in the future through the UP.storage software upgrade. This upgrade activates battery functionality, enabling the possibility of a Full Backup power solution. However, external grid switching devices are required for this functionality.
The technical specifications for battery operation and Full Backup operation are detailed below:

Output Data - Full Backup(GEN24 Plus Only)						
	220 Vac	240 Vac	220 Vac	240 Vac	220 Vac	240 Vac
Rated Output Power Full Backup (VA)	3,800	3,800	5,000	5,000	6,000	6,000
Mains Connection Full Backup (V)	1~NPE 220 V / 240 V					
Switching Time	< 35s					

Battery Connection(GEN24 Plus Only)			
Number of DC Inputs	1		
Max. Input Current (A)	22		
DC Input Voltage Range [4] (V)	150–455		
Connection Technology DC Battery	1x DC+ and 1x DC- spring-type terminals for solid: copper AWG 12-8		
Max. Charging Power with AC Coupling [5] (W)	3,800	5,000	6,000

General Parameters	3.8	5.0	6.0
Dimensions - W*D*H (in/mm)	18.7*6.5*20.4 / 474*164*518		
Weight (lb/kg)	35.56 / 15.08		
Protection Class	Type 4X		
Protection Class	1		
Night consumption (W)	< 10		
Overvoltage category (DC/AC) [6]	2/4		
Cooling	Active Cooling Technology		
Installation	Indoor and outdoor installation		
Ambient Temperature Range (°F/°C)	-40 ~ 140 / -40 ~ 60		
Permissible Humidity	0 ~ 100%		
Noise Emissions - dB (A)	< 42		
Max. Altitude (ft/m)	13,123 / 4,000		
Connection Technology DC PV	2x DC+1, 2x DC+2 and 4x DC- spring-type terminals for solid: copper AWG 14-8		
Connection Technology AC	Spring-type terminals for solid: copper stranded fine stranded: copper: AWG 14-8 Backup power spring-type terminals: AWG 16-8		
Certificates and standard compliance	UL 1741 Third Edition (incl. UL1741 Supplement SA and SB), UL CRD - Non-Isolated EPS Interactive PV Inverters Rated Less Than 30kVA UL1998 (for functions: AFCI, RCMU, PVRSE and isolation monitoring), IEEE 1547:2018 incl. IEEE 1547a:2020, IEEE 1547.1:2020, IEEE 1547:2003 incl. IEEE 1547.1:2005 ANSI/IEEE C62.41, FCC Part 15 A & B, CSA C22. 2 No. 107.1-16 (reaffirmed 2021), CSA C22.2 No.290-19, CSA C22.2 No.330-23, CSA C22.3 No.9:20, UL1699B:2021		
Country of Manufacture	Austria		

Efficiency									
	208 Vac	220 Vac	240Vac	208 Vac	220 Vac	240Vac	208 Vac	220 Vac	240Vac
Max. Efficiency	97.4%	97.4%	97.6%	97.4%	97.4%	97.6%	97.4%	97.4%	97.6%
CEC (ηCEC)	96.5%	96.5%	96.5%	97%	97%	97%	97%	97%	97%
MPP Adjustment Efficiency	> 99.9%								

Protection Devices	
DC Insulation Measurement	Integrated
DC Disconnector	Integrated
Reverse Polarity Protection	Integrated
Arc Fault Circuit Interruption (Arc Guard)	Integrated

Interfaces	
WLAN / 2 × Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
6 digital inputs	Connection to ripple control receiver, energy management
6 digital inputs/outputs	Integrated
Emergency shutdown (WSD)	Integrated
Data Logger and Web Server	Modbus RTU SunSpec (third-party provider)/Fronius Smart Meter, battery (GEN24 Plus), Fronius Ohmpilot

1. The combined Isc of each string, multiplied by a factor of 1.25, must be less than or equal to the Isc of the respective MPPT.
2. The maximum usable input current of the 3.8kW, 5.0kW, and 6.0kW is 22A for MPPT1 and 12A for MPPT2.
3. For Full Backup, additional external components are required for grid separation.
4. AC power derating of the inverter occurs with a DC battery input voltage of 419.7 V and higher.
5. Depending on the connected battery.
6. According to UL 1741.

DC Input	7.7			10.0		
Number of MPP Trackers	2					
Max. System Voltage (Vdc)	600					
	208 Vac	220 Vac	240Vac	208 Vac	220 Vac	240Vac
Rated Input Voltage (V)	365	365	385	360	380	400
Feed-in Start Voltage (V)	80					
Operating Voltage Range (V)	65~530			65~530		
Rated MPP Voltage Range (V)	260~480			260~480		
	MPPT1	MPPT2		MPPT1	MPPT2	
Max. Short Circuit Current per MPPT - ISC (A) [1]	41.25	36		41.25	36	
Number of DC Connections [2]	2	2		2	2	
	MPPT1	MPPT2	Total	MPPT1	MPPT2	Total
Max. Usable DC Power (W)	8,000	8,000	8,000	10,250	10,250	10,250
Max. PV Generator Output (Wpeak)	11,520	11,520	11,520	13,500	13,000	15,000

AC Output						
	208 Vac	220 Vac	240Vac	208 Vac	220 Vac	240Vac
AC Rated Power (W)	7,680	7,680	7,680	9,450	10,000	10,000
Apparent Power (Va)	7,680	7,680	7,680	9,450	10,000	10,000
Max. Output Power (VA)	7,680	7,680	7,680	9,450	10,000	10,000
Rated AC Output Current (A)	36.9	34.9	32.0	45.45	45.45	41.7
Mains Connection (V)	Single phase 208 V / 220 V / 240 V (-12 / +10%)					
Frequency (Hz)	50 / 60 (45 ~ 66)					
Distortion Factor	< 3.5					
Adjustable Power Factor	0.8–1 ind. / cap.					

Output Data for PV Point						
	120 Vac	220 Vac	240Vac	120 Vac	220 Vac	240Vac
Rated Output Power PV Point (VA)	1,560	2,860	3,120	1,560	2,860	3,120
Rated AC Voltage PV Point (V)	Single phase 120 V / 220 V / 240 V					
Switching Time	< 23s					

The Fronius GEN24 can be upgraded to a Fronius GEN24 Plus hybrid inverter in the future through the UP.storage software upgrade. This upgrade activates battery functionality, enabling the possibility of a Full Backup power solution. However, external grid switching devices are required for this functionality.
The technical specifications for battery operation and Full Backup operation are detailed below:

Output Data - Full Backup(GEN24 Plus Only)				
	220 Vac	240 Vac	220 Vac	240 Vac
Rated Output Power Full Backup (VA)	7,680	7,680	10,000	10,000
Mains Connection Full Backup (V)	1~NPE 220 V / 240 V			
Switching Time	< 45s			

Battery Connection(GEN24 Plus Only)		
Number of DC Inputs	1	
Max. Input Current (A)	22	
DC Input Voltage Range [4] (V)	150 ~ 455	
Connection Technology DC Battery	1x DC+ and 1x DC- spring-type terminals for solid: copper AWG 12-8	
Max. Charging Power with AC Coupling [5] (W)	7,680	10,000

General Parameters	7.7	10.0
Dimensions - W*D*H (in/mm)	20.8*7.1*23.0 / 529*180*583	
Weight (lb/kg)	45.97 / 20.85	
Protection Class	Type 4X	
Protection Class	I	
Night consumption (W)	< 10	
Overvoltage category (DC/AC) [6]	2/4	
Cooling	Active Cooling Technology	
Installation	Indoor and outdoor installation	
Ambient Temperature Range (°F/°C)	-40 ~ 140 / -40 ~ 60	
Permissible Humidity	0 ~ 100	
Noise Emissions - dB (A)	< 52	
Max. Altitude (ft/m)	13,123 / 4,000	
Connection Technology DC PV	2x DC+1, 2x DC+2 and 4x DC- spring-type terminals for solid: copper stranded / fine stranded: copper AWG 14-8	
Connection Technology AC	Spring-type terminals for solid: copper stranded fine stranded: copper: AWG 14-8 Backup power spring-type terminals: AWG 16-8	
Certificates and standard compliance	UL 1741 Third Edition (incl. UL1741 Supplement SA and SB), UL CRD - Non-Isolated EPS Interactive PV Inverters Rated Less Than 30kVA UL1998 (for functions: AFCI, RCMU, PVRSE and isolation monitoring), IEEE 1547:2018 incl. IEEE 1547a:2020, IEEE 1547.1:2020, IEEE 1547:2003 incl. IEEE 1547.1:2005 ANSI/IEEE C62.41, FCC Part 15 A & B, CSA C22. 2 No. 107.1-16 (reaffirmed 2021) CSA C22.2 No.290-19, CSA C22.2 No.330-23, CSA C22.3 No.9:20, UL1699B:2021	
Country of Manufacture	Austria	

Efficiency	208 Vac	220 Vac	240Vac	208 Vac	220 Vac	240Vac
Max. Efficiency	97.2%	97.2%	97.5%	97.2%	97.2%	97.5%
CEC (ηCEC)	96.5%	96.5%	97%	96.5%	96.5%	97%
MPP Adjustment Efficiency	> 99.9%					

Protection Devices	
DC Insulation Measurement	Integrated
DC Disconnector	Integrated
Reverse Polarity Protection	Integrated
Arc Fault Circuit Interruption (Arc Guard)	Integrated

Interfaces	
WLAN / 2 × Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)
6 digital inputs	Connection to ripple control receiver, energy management
6 digital inputs/outputs	Integrated
Emergency shutdown (WSD)	Integrated
Data Logger and Web Server	Fronius Smart Meter WR / Modbus RTU (third-party)

1. The combined Isc of each string, multiplied by a factor of 1.25, must be less than or equal to the ISC of the respective MPPT.
2. The maximum usable input current of the 7.7kW and 10.0kW is 22A for MPPT1 and 22A for MPPT2.
3. For Full Backup, additional external components are required for grid separation.
4. AC power derating of the inverter occurs with a DC battery input voltage of 419.7 V and higher.
5. Depending on the connected battery.
6. According to UL 1741.