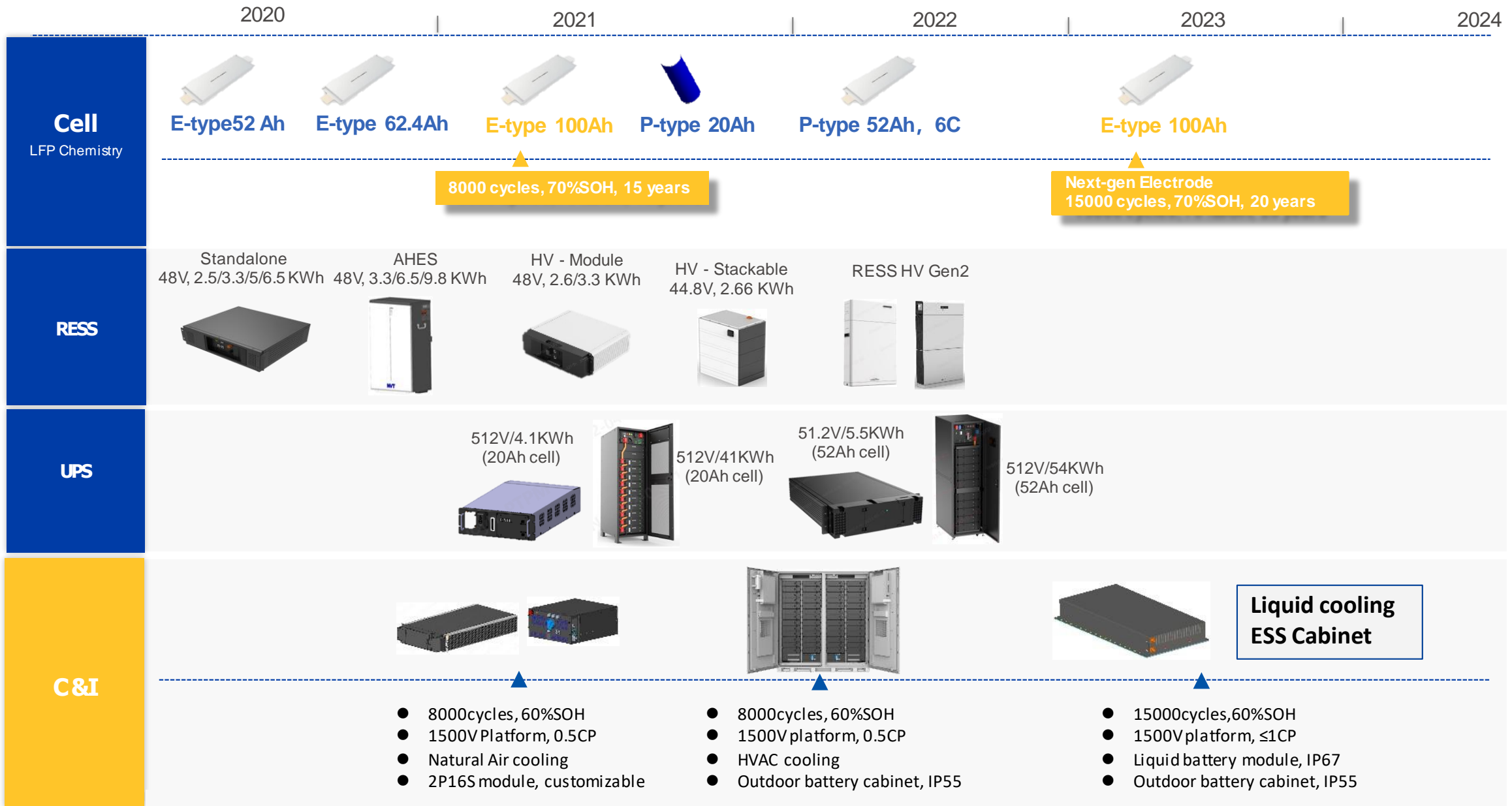


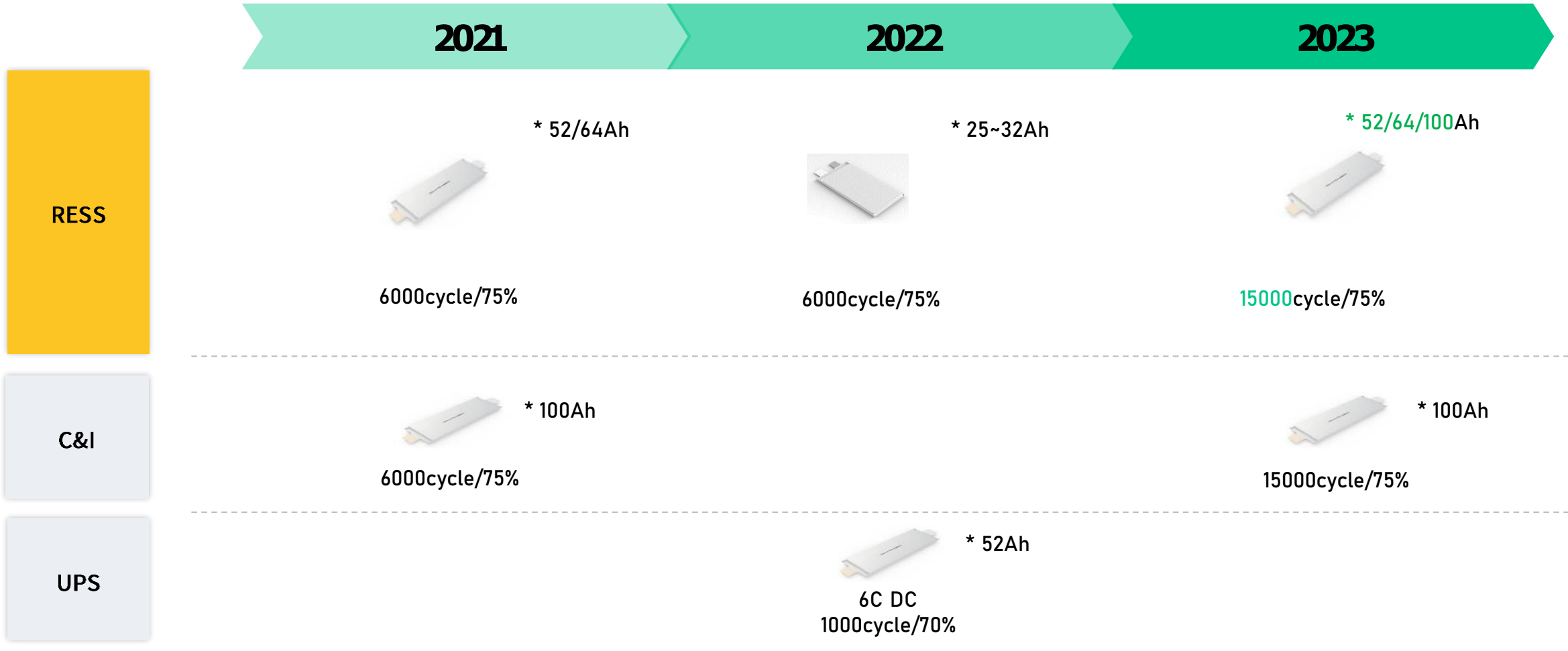
# ESS Product Portfolio



# ESS Product Portfolio

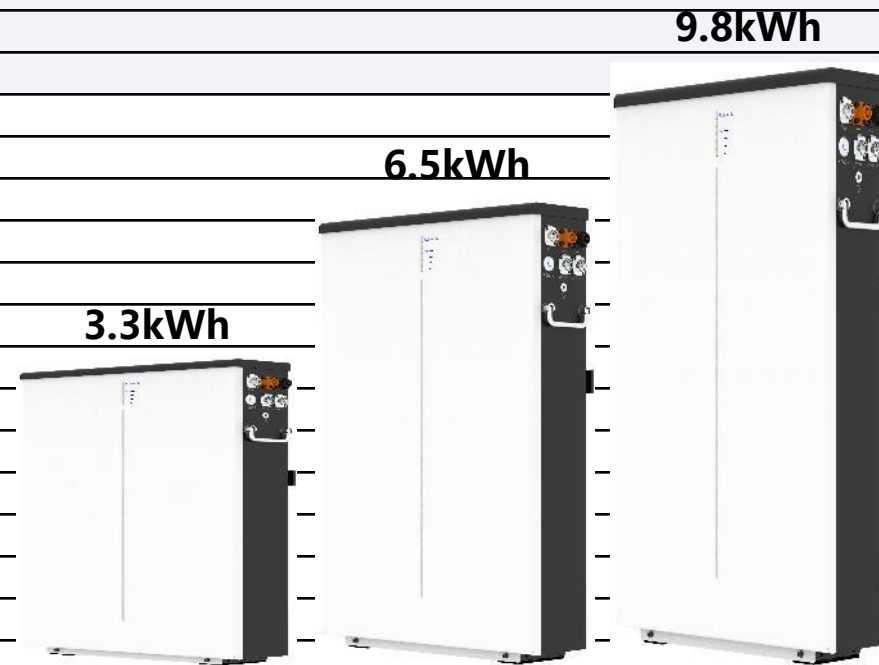


# ESS Cell Roadmap



# RESS-LV-AHES 48V IP55 Series

Items	Specifications		
	3.3kWh/48V	6.5kWh/48V	9.8kWh/48V
Cell Configuration in Pack	16S1P	16S2P	16S3P
Total Capacity	64Ah	128Ah	192Ah
Total Energy	3.3kWh	6.5kWh	9.83kWh
Rated/Usable Capacity	59Ah	118Ah	177Ah
Rated/Usable Energy	3.0kWh	6.0kWh	9.0kWh
Rated Voltage	51.2 V	51.2 V	51.2V
Operating Voltage	44.8~57.6 V	44.8~57.6 V	44.8~57.6V
Max. charging current	62.4A	104.2A	104.2A
Max. discharging current	62.4A	104.2A	104.2A
Max. charging and discharging power	3kW	5kW	5kW
Peak charging and discharging power(@3S)	3.3kW	6.9kW	6.9kW
Dimension(W*D*H)	475*145*480mm	475*145*765mm	475*145*1180mm
Weight(kg)	33±1	58±1	85±1
Operating ambient temperature	-10°C~50°C		
Storage conditions	Temperature: -20°C~+45°C; Humidity: 5%-95%RH; Within 6 month after each charge		
RTE	95%		
DOD	94.5%		
Room Temperature Calendar Life(25°C±2°C)	10 years/60% SOH		
Room Temperature Cycle Life(25°C±2°C)	6000 Cycle/60%SOH		
Cooling	Natural cooling		
Installation	Wall-mounted installation/floor standing installation		
Altitude	≤2000m		
Ingress protection	IP55		
Cell safety certification	IEC62619/UL1973		
PACK safety certification	IEC62619/UL1973/CE/RCM /CE		
UN transportation test standard	UN38.3+PI965 (Sea)		
Communication port	CAN2.0B; RS485		
Parallel connection	Max 8 PACKs		



# RESS-LV-Standalone48V IP20 Series

Items	Specifications			
	2.5kWh/48V	3.3kWh/48V	5.0kWh/48V	6.5kWh/48V
Cell Configuration in Pack	16S1P	16S1P	16S2P	16S2P
Total Capacity	53.3Ah	64Ah	106.6Ah	128Ah
Total Energy	2.73kWh	3.3kWh	5.46kWh	6.55kWh
Rated/Usable Capacity	49.4Ah	58.9Ah	98.8Ah	118.6Ah
Rated/Usable Energy	2.53kWh	3.0kWh	5.06kWh	6.07kWh
Rated Voltage	51.2V	51.2V	51.2V	51.2V
Operating Voltage	44.8~57.6V	44.8~57.6V	44.8~57.6V	44.8~57.6V
Max. charging current	52A	62.4A	90A	90A
Max. discharging current	52A	62.4A	90A	90A
Max. charging and discharging power	2.5kW	3kW	4.3kW	4.3kW
Peak charging and discharging power(@3S)	3.4kW	4.12kW	5.95kW	5.95kW
Dimension (W*D*H)	445*131*336.8mm	445*131*377.4mm	445*131*578.8mm	445*131*659.5mm
Weight(kg)	26±1	30±1	46±1	58±1
Operating ambient temperature	-10°C~50°C			
Storage conditions	Temperature: -20°C~+45°C; Humidity: 5%-95%RH; Within 6 month after each charge			
RTE	95%			
DOD	94.5%			
Room Temperature Calendar Life(25°C±2°C)	10 years/60% SOH			
Room Temperature Cycle Life(25°C±2°C)	6000 Cycle/60%SOH			
Cooling	Natural cooling			
Installation	Wall-mounted installation/floor standing installation			
Altitude	≤2000m			
Ingress protection	IP20			
Cell safety certification	IEC62619/UL1973			
PACK safety certification	IEC62619/UL1973/CE/RCM /CE			
UN transportation test standard	UN38.3+PI965 (Sea)			
Communication port	CAN2.0B;RS485			
Parallel connection	Max 6 PACKS			

**2.5/3.3/5.0/6.5KWh**



# RESS-HV-2.66KWh Module

Items	Specifications						
	100V	150V	200V	250V	300V	350V	400V
Cell Configuration in Module	16S1P/32S1P						
Module Capacity	53.3Ah						
Module Number in Pack	2S	3S	4S	5S	6S	7S	8S
Total Capacity Pack	52Ah						
Total Energy Pack	5.32kWh	7.99kWh	10.98kWh	13.31kWh	15.97kWh	18.64kWh	21.3kWh
Rated/Usable Capacity Pack	49.14Ah						
Rated/Usable Energy Pack	5.03kWh	7.59kWh	10.06kWh	12.58kWh	15.09kWh	17.61kWh	20.13kWh
Rated Voltage	102.4V	153.6V	204.8V	256V	307.2V	358.4V	409.6V
Operating Voltage	89.6~115.2V	134.4~172.8V	179.2~230.4V	224~288V	268.8~345.6V	313.6~403.2V	358.4~460.8V
Max. charging current	52A						
Max. discharging current	52A						
Max. charging and discharging power	4.99kW	7.49kW	9.98kW	12.48kW	14.98kW	17.47kW	19.97kW
Peak charging and discharging power(@5S)	5.83kW	10.31kW	13.75kW	17.18kW	20.62kW	24.05kW	27.49kW
Dimension (W*D*H)	HV BOX :400*188*131 mm; Module:445* 337.5*131 mm						
Weight (kg)	HV BOX:6±1; Module:25±1						
Operating ambient temperature	-10°C~50°C						
Storage conditions	Temperature: -20°C~+45°C;Humidity:5%-95%RH;Within 6 month after each charge						
RTE	95%						
DOD	94.5%						
Room Temperature Calendar Life(25°C±2°C)	10 years/60% SOH						
Room Temperature Cycle Life(25°C±2°C)	6000 Cycle/60%SOH						
Cooling	Natural cooling						
Installation	Wall-mounted installation/floor standing installation						
Altitude	≤2000m						
Ingress protection	IP20						
Cell safety certification	IEC62619/UL1973						
PACK safety certification	IEC62619/UL1973/CE/RCM/CE						
UN transportation test standard	UN38.3+PI965 (Sea)						
Communication port	CAN2.0B;RS485						
Parallel connection	Max 4 PACKs						

## HV BOX



## 52Ah-Module



# RESS-HV-3.3KWh Module

Items	Specifications						
	100V	150V	200V	250V	300V	350V	400V
Cell Configuration in Module	16S1P/32S1P						
Module Capacity	64Ah						
Module Number in Pack	2S	3S	4S	5S	6S	7S	8S
Total Capacity Pack	62.4Ah						
Total Energy Pack	6.39kWh	9.83kWh	13.11kWh	16.38kWh	19.66kWh	22.94kWh	26.21kWh
Rated/Usable Capacity Pack	58.97Ah						
Rated/Usable Energy Pack	6.04kWh	9.06kWh	12.08kWh	15.1kWh	18.11kWh	21.13kWh	24.15kWh
Rated Voltage	102.4V	153.6V	204.8V	256V	307.2V	358.4V	409.6V
Operating Voltage	89.6~115.2V	134.4~172.8V	179.2~230.4V	224~288V	268.8~345.6V	313.6~403.2V	358.4~460.8V
Max. charging current	52.5A						
Max. discharging current	52.5A						
Max. charging and discharging power	5.04kW	7.56kW	10.08kW	12.6kW	15.12kW	17.64kW	20.16kW
Peak charging and discharging power(@5S)	6.94kW	10.41kW	13.88kW	17.35kW	20.82kW	24.29kW	27.76kW
Dimension (W*D*H)	HV BOX : 400*188*131 mm; Module: 445* 377* 131 mm						
Weight (kg)	HV BOX : 6±1; Module: 27.5±1						
Operating ambient temperature	-10°C~50°C						
Storage conditions	Temperature: -20°C~+45°C; Humidity: 5%-95%RH; Within 6 month after each charge						
RTE	95%						
DOD	94.5%						
Room Temperature Calendar Life(25°C±2°C)	10 years/60% SOH						
Room Temperature Cycle Life(25°C±2°C)	6000 Cycle/60%SOH						
Cooling	Natural cooling						
Installation	Wall-mounted installation/floor standing installation						
Altitude	≤2000m						
Ingress protection	IP20						
Cell safety certification	IEC62619/UL1973/JET						
PACK safety certification	IEC62619/UL1973/CE/RCM/CE/JET						
UN transportation test standard	UN38.3+PI965 (Sea)						
Communication port	CAN2.0B;RS485						
Parallel connection	Max 4 PACKs						

**HV BOX**



**64Ah-Module**



# RESS-HV-3.15KWh Module

Items	Specifications						
	200V	300V	400V	500V	600V	700V	800V
Cell Configuration in Module	30S1P						
Module Capacity	33.25Ah						
Module Number in Pack	2S	3S	4S	5S	6S	7S	8S
Total Capacity Pack	32.65Ah						
Total Energy Pack	6.27kWh	9.39kWh	12.52kWh	15.65kWh	18.78kWh	21.91kWh	25.04kWh
Rated/Usable Capacity Pack	30.85Ah						
Rated/Usable Energy Pack	5.92kWh	8.88kWh	11.84kWh	14.8kWh	17.76kWh	20.72kWh	23.68kWh
Rated Voltage	192V	288V	384V	480V	576V	672V	768V
Operating Voltage	168~216V	252~324V	336~432V	420~540V	504~648V	588~756V	672~864V
Max. charging current	32A						
Max. discharging current	32A						
Max. charging and discharging power	5.76kW	8.64kW	11.52kW	14.4kW	17.28kW	20.16kW	23.04kW
Peak charging and discharging power(@5S)	7.93kW	11.89kW	15.86kW	19.83kW	23.79kW	27.75kW	31.72kW
Dimension (W*D*H)	HV BOX :445*240*108 mm; Module:445*335*108 mm						
Weight (kg)	HV BOX :10±1; Module :28±1						
Operating ambient temperature	-10°C~50°C						
Storage conditions	Temperature: -20°C~+45°C; Humidity:5%-95%RH; Within 6 month after each charge						
RTE	95%						
DOD	94.5%						
Room Temperature Calendar Life(25°C±2°C)	10 years/60% SOH						
Room Temperature Cycle Life(25°C±2°C)	6000 Cycle/60%SOH						
Cooling	Natural cooling						
Installation	Wall-mounted installation/floor standing installation						
Altitude	≤3000m						
Ingress protection	IP20						
Cell safety certification	IEC62619/UL1973						
PACK safety certification	IEC62619/CE/RCM /CE/VDE 2510-50						
UN transportation test standard	UN38.3+PI965 (Sea)						
Communication port	CAN2.0B;RS485						
Parallel connection	Max 4 PACKs						

## HV BOX

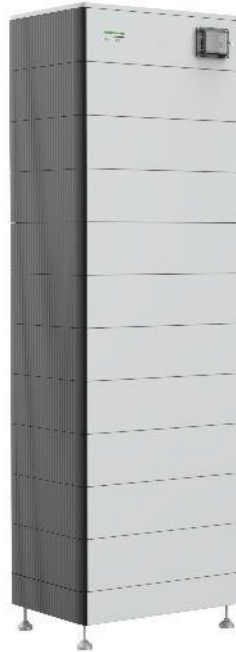


## 32Ah-Module





# RESS-HV-Stackable Gen 1

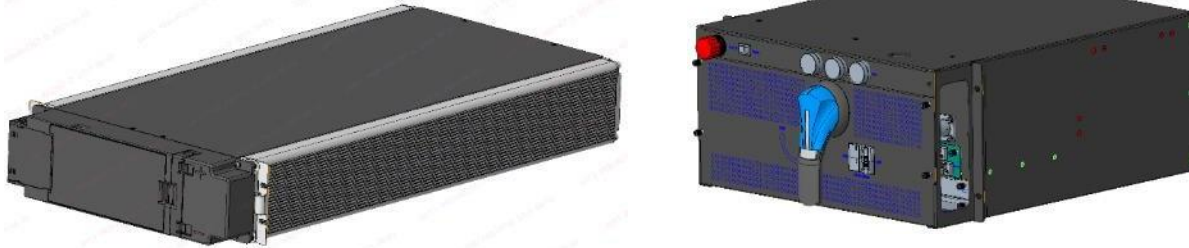


Items	Specifications							
	100V	150V	200V	250V	300V	350V	400V	450V
Cell Configuration in Module	14S1P							
Module Capacity	53.3Ah							
Module Number in Pack	3S	4S	5S	6S	7S	8S	9S	10S
Total Capacity Pack	52Ah							
Total Energy Pack	6.99kWh	9.32kWh	11.65kWh	13.98kWh	16.31kWh	18.64kWh	20.97kWh	23.3kWh
Rated/Usable Capacity Pack	49.14Ah							
Rated/Usable Energy Pack	6.6kWh	8.81kWh	11.01kWh	13.21kWh	15.41kWh	17.61kWh	19.81kWh	22.01kWh
Rated Voltage	134.4V	179.2V	224V	268.8V	313.6V	358.4V	403.2V	448V
Operating Voltage	117.6~151.2V	156.8~ 201.6V	196~ 252V	235.2~ 302.4V	274.4~ 352.8V	313.6~ 403.2V	352.8~ 453.6V	392~ 504V
Max. charging current	40A							
Max. discharging current	40A							
Max. charging and discharging power	5.04kW	6.72kW	8.4kW	10.08kW	11.76kW	13.44kW	15.12kW	16.8kW
Peak charging and discharging power(@5S)	6.94kW	9.25kW	11.56kW	13.88kW	16.19kW	18.5kW	20.82kW	23.13kW
Dimension(W*D*H)	480*365*622.3	480*365*753.8	480*365*885.3	480*365*1016.8	480*365*1148.3	480*365*1279.8	480*365*1411.3	480*365*1542.8
Weight (kg)	92.7	119.7	146.7	173.7	200.7	227.7	254.7	281.7
Operating ambient temperature	-20°C~60°C							
Storage conditions	Temperature: -20°C~+45°C;Humidity:5%-95%RH;Within 6 month after each charge							
RTE	95%(0.2C charge/discharge 25°C)							
DOD	94.5%							
Room Temperature Calendar Life(25°C±2°C)	10 years/60% SOH							
Room Temperature Cycle Life(25°C±2°C)	6000 Cycle/60%SOH							
Cooling	Natural cooling							
Installation	floor standing installation							
Ingress protection	IP55							
Cell safety certification	IEC62619/UL1973*							
PACK safety certification	IEC62619/CE/RCM /CE/VDE 2510-50							
Communication port	CAN2.0B;RS485							
Parallel connection	Max 4 P							

# RESS-HV-Stackable Gen 2



Items	Specification				
	200V	300V	400V	500V	600V
Cell Configuration in Module	32S1P				
Module Capacity	32Ah/3.27kWh				
Module Number in Pack	2S	3S	4S	5S	6S
Total Capacity Pack	32Ah				
Total Energy Pack	6.55	9.83	13.11	16.38	19.66
Rated/Usable Capacity Pack	30.24Ah				
Rated/Usable Energy Pack	6.19	9.29	12.39	15.48	18.58
Rated Voltage	204.8	307.2	409.6	512	614.4
Operating Voltage	179.2~230.4V	268.8~345.6V	358.4~460.8V	448~576V	537.6~691.2V
Max. charging/discharging current	32A				
Peak discharging current (5s)	37.76A				
Max. charging and discharging power	6.144kW	9.216kW	12.288kW	15.36kW	18.432kW
Peak charging and discharging power (@5S)	7.250kW	10.875kW	14.5kW	18.125kW	21.75kW
Dimension (W*D*H)	720*180*900	720*180*1150	720*180*1400	720*180*1650	720*180*1900
Weight (kg)	85	120	155	190	225
Operating ambient temperature	-20°C~60°C				
Storage Conditions	-30°C~60°C/7 days; -20°C~45°C/12 months; 5%-95%RH				
Room Temperature Calendar Life (25°C±2°C)	10 years				
Room Temperature Cycle Life (25°C±2°C)	≥6000 cycles/60% SOH				
RTE	95% (0.2C charge/discharge 25°C)				
Cooling	Natural cooling				
Communication between PACK and DC/DC or PCS	RS485/CAN				
Safety Certification	IEC62619/UL1973*				
PACK Parallel	Max 4P				
Use IP Rating	IP55				



## ❑ Application

- Modular, standard size and various interface, friendly for product integrators.

## ❑ Compatibility design

- The height of the module is 3U, and a 19-inch cabinet is used
- Support max. 1500V application
- Modular decoupling design makes easy and flexible configurations
- Multi comm. Ports and DI/DO for system integration

## ❑ Design for e-maintenance

- Modular pluggable BMS design for easy maintenance

## ❑ Simplicity

- Neat appearance , Non-Exposed wiring harness

## Module

Items	Specifications
Cell Type	LFP, 100Ah
Connection	2 parallel 16 series (2P16S)
*Total Capacity/ Energy	200Ah/10.24kWh
*Usable/Capacity/Energy	196Ah/10.03kWh
*Nominal Voltage	51.2V
Output Voltage Range	44.8~57.6V
Max. Charge/Discharge Power	5.12kW (0.5CP)
*Room Temperature Cycle Life(25°C ±2°C)	8000cycles @60%SOH
Room Temperature Calendar Life(25°C±2°C)	15 years
Module Safety Certification	IEC62619 /UL1973/UL9540A/GBT36276/RCM/CE EMC /FCC
UN Transportation Test Standard	UN38.3
Ingress Protection	IP20
Optimal operating temperature	15°C~30°C
Operating ambient humidity	5%~95%, No condensation
Dimension	W445*D913.2*H129 mm (without bracket)
Altitude	≤3000m
Weight	80kg
Installation	Rack-mounted installation

## HVB

Items	C-H1000100SA1	C-H1500100SA1
Max. Operating Voltage Range	Max. 1000V DC	Max. 1500V DC
Max. Input / Output current		120A
Optimal operating temperature		15°C~30°C
Environment temperature range		-10°C~50°C
Communication between HV-BOX and PCS		Ethernet
Max. Module Serial Connect	17S	26S
Max. Parallel		32
Dimension	W442*D500*H217.2 mm	W442*D500*H217.2 mm
Weight	26kg	26kg
Ingress Protection		IP20

# C&I Products- Outdoor battery cabinet (1500V,0.5CP)



## □ Application

- Support max. 4 cabinets in parallel, friendly for middle-sized project integrators.

## □ DC side all-in-one design

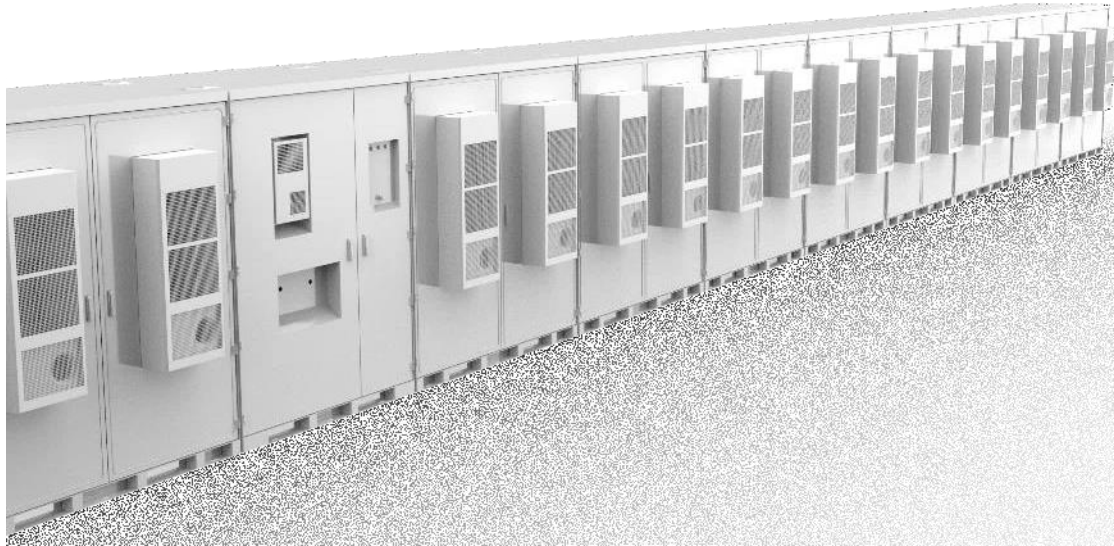
- Integrated with the battery module, HVB, Power distribution box, UPS, FFS, Air conditioner and so on, is an complete DC side system.

## □ Explosion prevention design

- Equipped with gas detector and gas exhaust fan in accordance with NFPA69.

Items	Specifications
*Total capacity	400Ah
*Usable capacity	392Ah
*Total energy	532.48kWh
*Usable energy	521.83kWh
Nominal voltage	1331.2V
Operating voltage range	1164.8~1497.6 V
Max. Charge/Discharge power	266.2kW (0.5CP)
*Room Temperature Cycle Life(25°C ±2°C)	8000cycles@60%SOH
Room Temperature Calendar Life(25°C±2°C)	15 years
Operating ambient temperature	-30°C~55°C
Optimal operating temperature	15°C~30°C
Operating ambient humidity	5%~95%, No condensation
*RTE	≥94% for fresh battery
Rack Parallel connection	Max. 4 units in parallel
Ingress Protection rate	IP54
Anti-corrosivity Category	C3
Cooling	HAVC, cooling capacity: 10kW for 0.5CP,
Dimension	W2200mm*H2443mm*D1400mm
Weight	5800kg
Altitude	≤3000m
Communication between PCS and battery system	Ethernet
Regulation compliance	IEC62619 /UL1973/GB/T 36276/CE EMC/FCC
EMC standard	EN61000-6-1&EN61000-6-3
UN Transportation Test Standard	UN3841(Sea) for battery cabinet,UN38.3(Sea) for pack
Environment protection standard	RoHS, REACH, TSCA, battery directive

# C&I Solution- Outdoor Battery System (1500V,0.5CP)



## □ Application

- Support max. 8 cabinets in parallel, friendly for large scale project integrators.

## □ Explosion prevention design

- Equipped with gas detector and gas exhaust fan in accordance with NFPA69.

Items	Specifications
*Total capacity	400Ah
*Usable capacity	392Ah
*Total energy	532.48kWh
*Usable energy	521.83kWh
Nominal voltage	1331.2V
Operating voltage range	1164.8~1497.6 V
Max. Charge/Discharge power	266.2kW (0.5CP)
*Room Temperature Cycle Life(25°C ±2°C)	8000cycles@60%SOH
Room Temperature Calendar Life(25°C±2°C)	15 years
Operating ambient temperature	-30°C~55°C
Optimal operating temperature	15°C~30°C
Operating ambient humidity	5%~95%, No condensation
*RTE	≥94% for fresh battery
Rack Parallel connection	Max. 8 units in parallel
Ingress Protection rate	IP54
Anti-corrosivity Category	C3
Cooling	HAVC, cooling capacity: 10kW for 0.5CP, 6kW for 0.25CP
Dimension	W2200mm*H2443mm*D1400mm
Weight	5800kg
Altitude	≤3000m
Communication between PCS and battery system	Ethernet
Regulation compliance	IEC62619 /UL1973/GB/T 36276/CE EMC/FCC
EMC standard	EN61000-6-1&EN61000-6-3
UN Transportation Test Standard	UN3841(Sea) for battery cabinet, UN38.3(Sea) for pack
Environment protection standard	RoHS, REACH, TSCA, battery directive

# ESS Cell - Ampace vs Competitors



	Competitor 1	Competitor 2	Ampace (M1C24A)	
<b>Capacity (Ah)</b>	90Ah	100Ah	100Ah	
<b>Cell Dimension (mm)</b>	37.2*130.6*200	28*174*205	22.5*122*360	Easy to upgrade at pack level Design 3U height pack
<b>VED (Wh/L)</b>	310	318	330	
<b>GED (Wh/kg)</b>	145	165	180	↑ 24% (vs. Competitor 1) ↑ 10% (vs. Competitor 2)
<b>Rate @1C</b>	98%	96.2%	98.0%	
<b>Low Temperature (°C)</b>	≥0°C (Charge) ≥-20°C (Discharge)	≥0°C (Charge) ≥-20°C (Discharge)	≥-20°C (Charge/Discharge)	Good experience in low temp. application
<b>Cycle Life 100%DOD</b>	5000cls (70%)	4000cls (70%)	6000cls (75%)	Much better cycle performance