

High Energy Type

181.9kWh Battery Rack



- › Optimized battery solution for marine application
- › Fully compliant with maritime safety standards and rule
- › Excellent power-to-energy balance
- › Optimal thermal management via liquid cooling
- › IP56 rated protection at module level
- › Safe design to support hazard-free operations
- › Long cycle and calendar life (Over 8,000 cycles and up to 15 years¹)
- › Scalable up to multiple MWh with virtually no limit

1. Depending on the load profile, the warranty condition may differ
*The image above is a reference, and the actual product may differ from the above image

Battery Rack Specification

Model: KST181883L34AED00

Item	Specification	Remarks		
Electrical				
Configuration	Rack	12 modules in series	-	
	Module	2P20S	Cell: KCL255103EN0 (103Ah)	
Installed Energy	181.9.kWh	-		
Usable Energy ¹	163.7kWh	@ 0.2P discharge, BOL		
Nominal Voltage	883.2Vdc	-		
Operating Voltage Range	768.0 ~ 991.2Vdc	-		
Charging	Power	Rated ²	90.9kW	0.5P
		Max ³	181.9kW	1P
	Current	Rated ²	103.0A	0.5C
		Max ³	206.0A	1C
Discharging	Power	Rated ²	90.9kW	0.5P
		Max ³	363.8kW	2P
		Peak	545.8kW	3P, ≤10 sec. from SOC ≥50%
	Current	Rated ²	103.0A	0.5C
		Max ³	412.0A	2C
		Peak	618.0A	3C, ≤10 sec. from SOC ≥50%
Round Trip DC Efficiency	>95%	@ 0.5P, BOL		
Control Power	AC 100 ~ 260V, 50/60Hz	-		
Mechanical				
Dimension	-	Varies depending on installation		
Weight	-			
IP Grade	56	@ Module level		
Communication				
Communication Interface	Ethernet/RS-485	Modbus TCP/ Modbus RTU		
Monitoring	RS-232C	-		
Operating Conditions⁴				
Operating Temperature	Charging	0 ~ 10°C	<0.2P	
		10 ~ 35°C	<1P	
		35 ~ 45°C	<0.5P	
	Discharging	0 ~ 45°C	-	
Environment				
Ambient Temperature	0 ~ 45°C	-		
Storage Humidity	35 ~ 85% RH	Non-condensing		
Storage Temperature	1 Year	-20 ~ 25°C	30% ⁵ ≤ SOC ≤ 50%	
	6 Months	-20 ~ 35°C		
	3 Months	-20 ~ 45°C		
	<1 Week	-20 ~ 60°C		
Expected Cycle & Calendar Life⁶				
Cycle Life @ DoD 90%	≥6,000 cycles	@ 25±3°C, 1C/1C, SOH 70%		
Cycle Life @ DoD 80%	≥8,000 cycles	@ 25±3°C, 1C/1C, SOH 70%		
Calendar Life	Up to 15 years	@ 25±3°C, SOC ≤80%, SOH 70%		
Certifications				
Certifications	UL 1642, IEC 62619, UL 1973, UL 9540A, UN 38.3	Cell level		
	DNV	Module level, available by 3Q 2021		

*P : Power-rate / C : Current-rate

1. The usable energy may change depending on the calendar life of the battery cells

2. Daily cycling is possible at rated power/current condition. For optimal performance, the user shall rest the battery rack until the cell temperature returns to 25±3°C

3. After max. charging or discharging, it is recommended to rest the battery rack until the cell temperature returns to 25±3°C

4. Operating temperature is based on the cell temperature

5. When resting the battery system after an operation for longer than 1 month, the user shall ensure that the SOC is above 30%. The ambient

temperature shall be controlled at 25±3°C when resting the battery system. During storage, the temperature and SOC conditions shall always be adhered to

6. Depending on the load profile, the warranty condition may differ

Offered Solution

System Config. ¹	Installed Energy	Nominal Voltage	Operating Voltage	Rated Charge Power	Rated Discharge Power	Max Charge Power	Max Discharge Power	Max Discharge Current	BCP ² Required	No. of Banks ³
2 Racks	363.8kWh	883Vdc	768 ~ 991Vdc	181kW	181kW	363kW	727kW	824A	Y	1
3 Racks	545.8kWh	883Vdc	768 ~ 991Vdc	272kW	272kW	545kW	1,091kW	1,236A	Y	1
4 Racks	727.7kWh	883Vdc	768 ~ 991Vdc	363kW	363kW	727kW	1,455kW	1,648A	Y	1
5 Racks	909.6kWh	883Vdc	768 ~ 991Vdc	454kW	454kW	909kW	1,819kW	2,060A	Y	1
6 Racks	1,091.6kWh	883Vdc	768 ~ 991Vdc	545kW	545kW	1,091kW	2,183kW	2,472A	Y	1
7 Racks	1,273.5kWh	883Vdc	768 ~ 991Vdc	636kW	636kW	1,273kW	2,547kW	2,884A	Y	1
8 Racks	1,455.5kWh	883Vdc	768 ~ 991Vdc	727kW	727kW	1,455kW	2,911kW	3,296A	Y	1
9 Racks	1,637.4kWh	883Vdc	768 ~ 991Vdc	818kW	818kW	1,637kW	3,274kW	3,708A	Y	1
10 Racks	1,819.3kWh	883Vdc	768 ~ 991Vdc	909kW	909kW	1,819kW	3,638kW	4,120A	Y	2
11 Racks	2,001.3kWh	883Vdc	768 ~ 991Vdc	1,000kW	1,000kW	2,001kW	4,002kW	4,532A	Y	2
12 Racks	2,183.2kWh	883Vdc	768 ~ 991Vdc	1,091kW	1,091kW	2,183kW	4,366kW	4,944A	Y	2
13 Racks	2,365.2kWh	883Vdc	768 ~ 991Vdc	1,182kW	1,182kW	2,365kW	4,730kW	5,356A	Y	2
14 Racks	2,547.1kWh	883Vdc	768 ~ 991Vdc	1,273kW	1,273kW	2,547kW	5,094kW	5,768A	Y	2
15 Racks	2,729.0kWh	883Vdc	768 ~ 991Vdc	1,364kW	1,364kW	2,729kW	5,458kW	6,180A	Y	2
16 Racks	2,911.0kWh	883Vdc	768 ~ 991Vdc	1,455kW	1,455kW	2,911kW	5,822kW	6,592A	Y	2
17 Racks	3,092.9kWh	883Vdc	768 ~ 991Vdc	1,546kW	1,546kW	3,092kW	6,185kW	7,004A	Y	2
18 Racks	3,274.9kWh	883Vdc	768 ~ 991Vdc	1,637kW	1,637kW	3,274kW	6,549kW	7,416A	Y	2
19 Racks	3,456.8kWh	883Vdc	768 ~ 991Vdc	1,728kW	1,728kW	3,456kW	6,913kW	7,828A	Y	2
20 Racks	3,638.7kWh	883Vdc	768 ~ 991Vdc	1,819kW	1,819kW	3,638kW	7,277kW	8,240A	Y	3
21 Racks	3,820.7kWh	883Vdc	768 ~ 991Vdc	1,910kW	1,910kW	3,820kW	7,641kW	8,652A	Y	3
22 Racks	4,002.6kWh	883Vdc	768 ~ 991Vdc	2,001kW	2,001kW	4,002kW	8,005kW	9,064A	Y	3
23 Racks	4,184.6kWh	883Vdc	768 ~ 991Vdc	2,092kW	2,092kW	4,184kW	8,369kW	9,476A	Y	3
24 Racks	4,366.5kWh	883Vdc	768 ~ 991Vdc	2,183kW	2,183kW	4,366kW	8,733kW	9,888A	Y	3
25 Racks	4,548.4kWh	883Vdc	768 ~ 991Vdc	2,274kW	2,274kW	4,548kW	9,096kW	10,300A	Y	3
26 Racks	4,730.4kWh	883Vdc	768 ~ 991Vdc	2,365kW	2,365kW	4,730kW	9,460kW	10,712A	Y	3
27 Racks	4,912.3kWh	883Vdc	768 ~ 991Vdc	2,456kW	2,456kW	4,912kW	9,824kW	11,124A	Y	3
28 Racks	5,094.2kWh	883Vdc	768 ~ 991Vdc	2,547kW	2,547kW	5,094kW	10,188kW	11,536A	Y	3
29 Racks	5,276.2kWh	883Vdc	768 ~ 991Vdc	2,638kW	2,638kW	5,276kW	10,552kW	11,948A	Y	3
30 Racks	5,458.1kWh	883Vdc	768 ~ 991Vdc	2,729kW	2,729kW	5,458kW	10,916kW	12,360A	Y	4

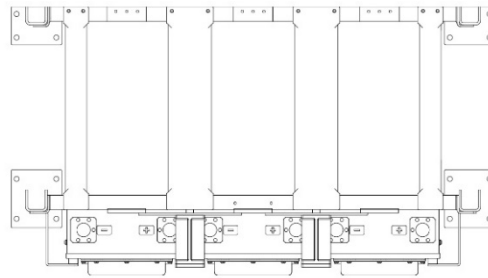
1. Depending on customer requirements, more than 30 racks can be connected in parallel

2. BCP: Battery Connection Panel (Incl. switch disconnecter, system BMS). One BCP is required per bank

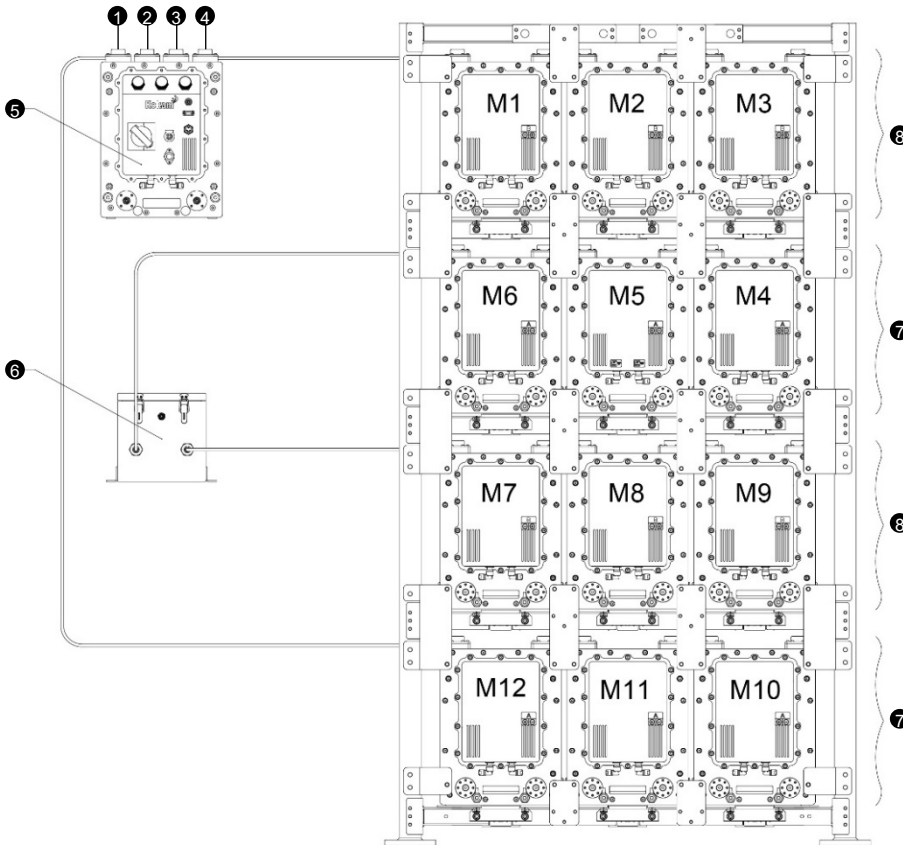
3. Depending on the operational requirements, the quantity of racks per bank and/or the quantity of bank(s) per system may vary

Rack Drawings

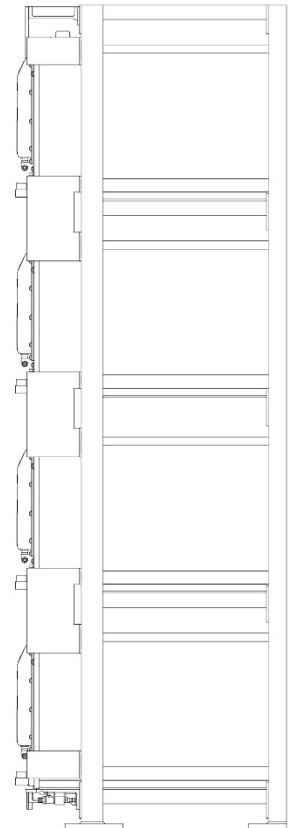
Top View



Front View



Side View



Description

- | | |
|---------------------------------|---------------------------------|
| ① DC Power (+) | ⑤ BPU (Battery Protection Unit) |
| ② DC Power (+) for Upper Device | ⑥ Fuse Box |
| ③ DC Power (-) for Upper Device | ⑦ Module (Type A) |
| ④ DC Power (-) | ⑧ Module (Type B) |

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