

High Energy Type

15.1kWh Battery Module



- › Optimized liquid cooling battery solution for marine applications
- › Fully compliant with maritime safety standards and rules
- › Excellent power-to-energy balance
- › Optimal thermal management via liquid cooling feature
- › IP56 compliant enclosure
- › Safe design to support hazard-free operations
- › Long cycle and calendar life (Over 8,000 cycles and up to 15 years¹)
- › Highly intelligent BMS² for sophisticated system control and monitoring

1. Depending on the load profile, the warranty condition may differ / 2. BMS: Battery Management System

System Configuration

Item	Specification	Remarks
Configuration	Up to 12 modules in series	Module + BPU + Fuse Box

Module Specification

Model: KMD255151E220L0 / KMD255151E220L1

Item	Specification	Remarks		
Electrical				
Module Configuration	2P20S	Cell: KCL255103EN0 (103Ah)		
Installed Energy	15.1kWh	-		
Usable Energy ¹	13.6kWh	@ 0.2P discharge, BOL		
Nominal Voltage	73.6Vdc	-		
Operating Voltage Range	64.0 ~ 82.6Vdc	-		
Charging	Power	Rated ²	7.5kW	0.5P
		Max ³	15.1kW	1P
	Current	Rated ²	103.0A	0.5C
		Max ³	206.0A	1C
Discharging	Power	Rated ²	7.5kW	0.5P
		Max ³	30.3kW	2P
		Peak	45.4kW	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	DC 73.6V Internal Power	-		
Mechanical				
Dimension	335 (W) x 734 (D) x 467 (H) mm	±2mm		
Weight	127kg	±5%		
IP Grade	56	-		
Communication				
Communication Interface ⁴	iso-SPI	mBMS ↔ mBMS ↔ sBMS		
Operating Conditions⁵				
Operating Temperature	Charging	0 ~ 10 °C	<0.2P	
		10 ~ 35 °C	<1P	
		35 ~ 45 °C	<0.5P	
	Discharging	0 ~ 45 °C	-	
Cooling Type	Liquid Cooling	Coolant Pressure: Max.3bar Flow Rate: 1 ~5 L/min, Max. 7 L/min Coolant Temperature: 23±1 °C		
Environment				
Ambient Temperature	0 ~ 45 °C	-		
Storage Humidity	35 ~ 85% RH	Non-condensing		
Storage Temperature	1 year	-20 ~ 25 °C	30% ≤ SOC ≤ 50%	
	6 months	-20 ~ 35 °C		
	3 months	-20 ~ 45 °C		
	<1 week	-20 ~ 60 °C		
Expected Cycle & Calendar Life⁷				
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 until the cell temperature returns to 25±3 °C

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

4. mBMS: Module BMS / sBMS: String BMS

5. Operating temperature is based on cell temperature

6. 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.

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

BPU Specification

Model: KBP100050EC200

Item	Specification	Remarks
General		
Embedded Safety Devices	String BMS, Switch Disconnecter, contactor, etc.	Fuse box is provided separately
Electrical		
Input Supply Power	AC 220V External Power	-
On/ Off Management	Switch Disconnecter	-
String BMS self-consumption	<3.6W	-
Operating Max. Voltage	DC 1,000V	-
Operating Max. Current	500A	-
Mechanical		
Dimension	335 (W) x 776 (D) x 467 (H) mm	± 2mm
Weight	50kg	± 5%
IP Grade	56	-
Communication		
Communication Interface	Ethernet/RS-485	sBMS ¹ ↔ Upper Device
Monitoring	RS-232C	-

1. sBMS: string BMS

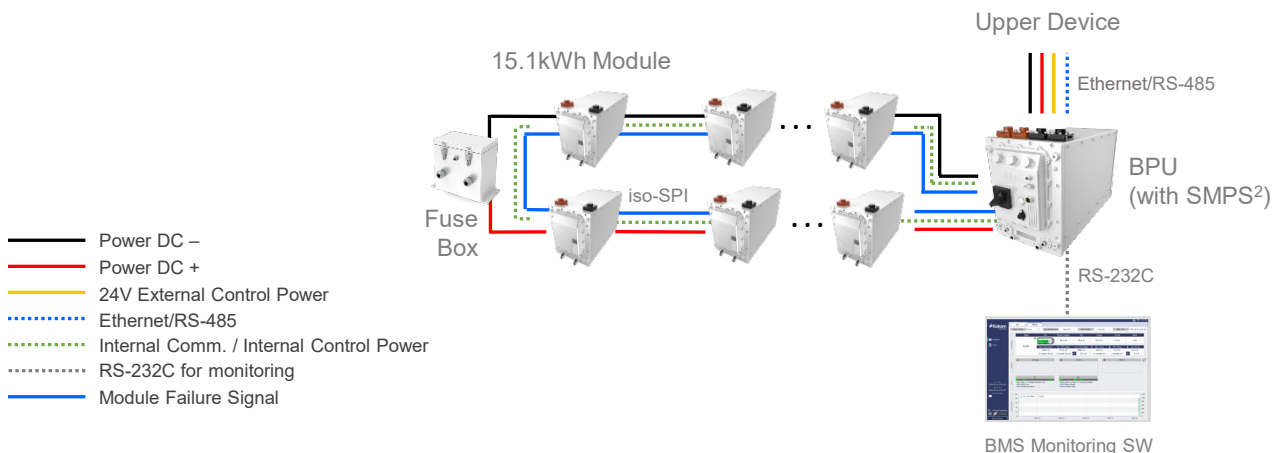
*The BPU does not support parallel connection

Fuse Box Specification

Model: KFB15005000

Item	Specification	Remarks
Electrical		
Rated Voltage	DC 1,500V	-
Rated Current	500A	-
Rated Breaking Capacity	100kA	-
Mechanical		
Dimension	304 (W) x 191 (D) x 244 (H) mm	± 2mm
Weight	6kg	± 5%
IP Grade	56	-

Up to 12 Modules in series

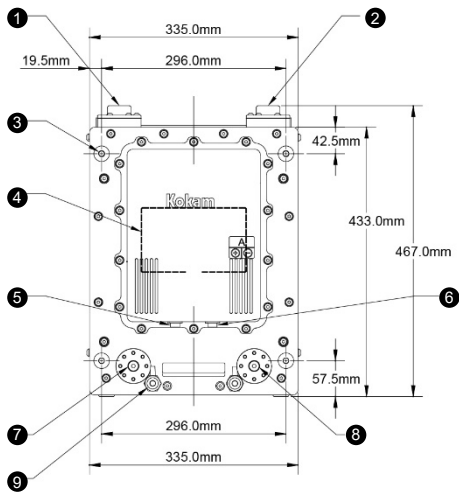


2. SMPS: Switched- Mode Power Supply

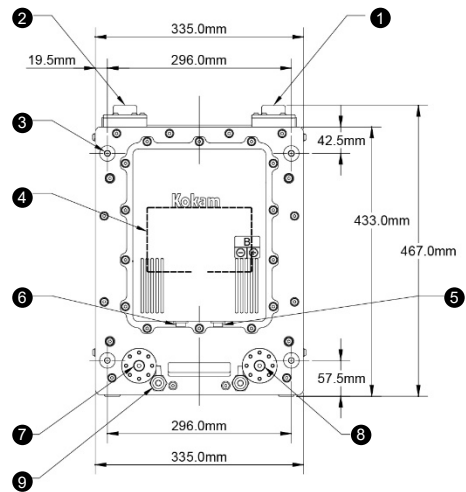
*The products above are references. The actual products may look different.

Module Drawings

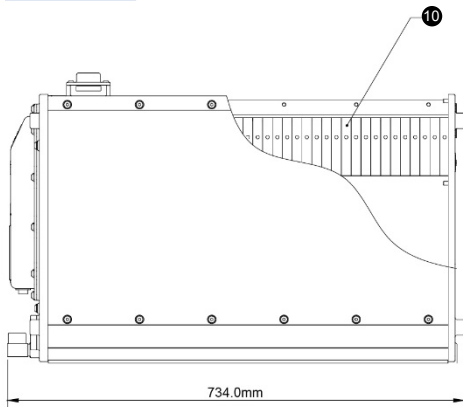
Front View – Type A



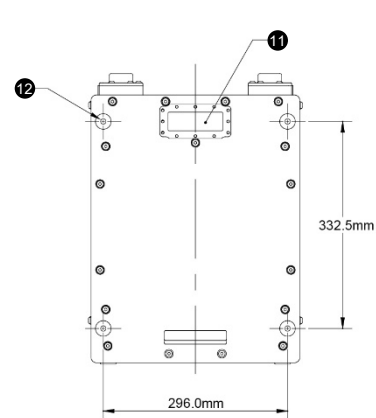
Front View – Type B (Reversed)



Side View



Rear View



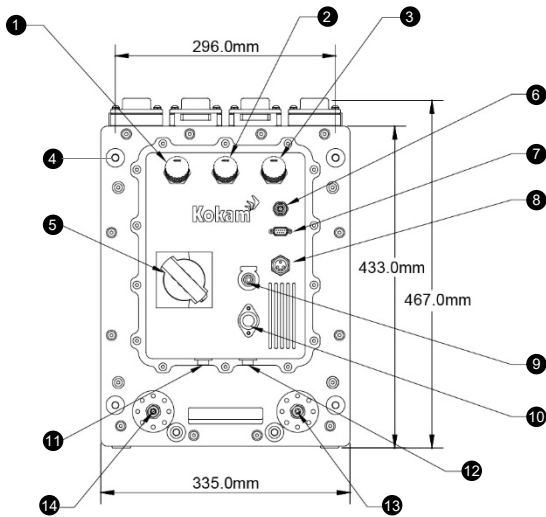
Description

- ① DC Power (+)
- ② DC Power (-)
- ③ Mounting Hole (M10 Depth 15mm, 4EA)
- ④ Module BMS
- ⑤ Connector – Communication (In)
- ⑥ Connector – Communication (Out)
- ⑦ Coolant Outlet
- ⑧ Coolant Inlet
- ⑨ Drain Valve
- ⑩ Cell Cartridge
- ⑪ Vent Hole
- ⑫ Mounting Hole (M10 Depth 15mm, 4EA)

*Module Type B has reversed positions of the Connector Comm. In/Out and Power(+)/(-)

BPU Drawings

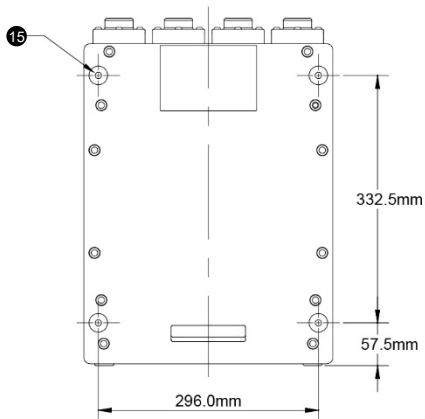
Front View



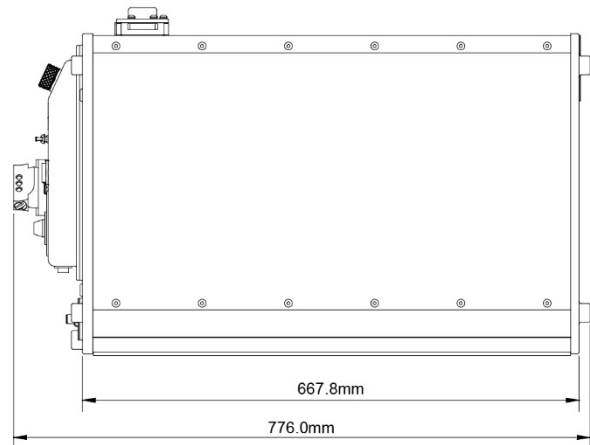
Description

- ① Ethernet Port
- ② RS-485 Port #1
- ③ RS-485 Port #2
- ④ Mounting Hole (M10 Depth 15mm, 4EA)
- ⑤ Switch Disconnector
- ⑥ Connector – Signal #2
- ⑦ RS-232 Port
- ⑧ Connector – Control Power
- ⑨ Control Power Switch

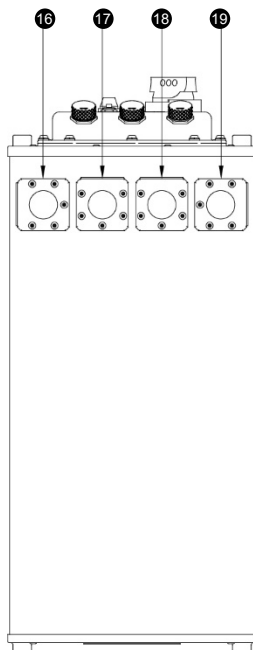
Rear View



Side View



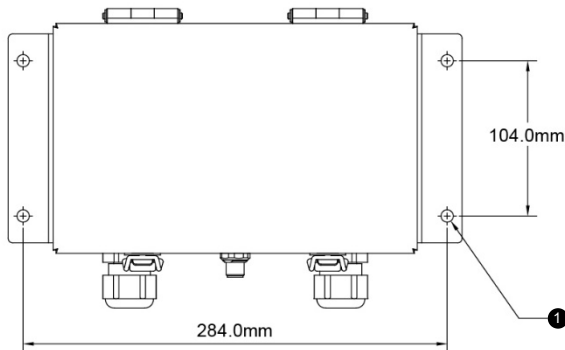
Top View



- ⑩ Fuse
- ⑪ Connector – Communication (Module Last)
- ⑫ Connector – Communication (Module First)
- ⑬ Connector – Signal for Fuse / Water
- ⑭ Connector – Signal #1
- ⑮ Mounting Hole (M10 Depth 15mm, 4EA)
- ⑯ DC Power (-) for Module First
- ⑰ DC Power (-) for Upper Device
- ⑱ DC Power (+) for Upper Device
- ⑲ DC Power (+) for Module Last

Fusebox Drawings

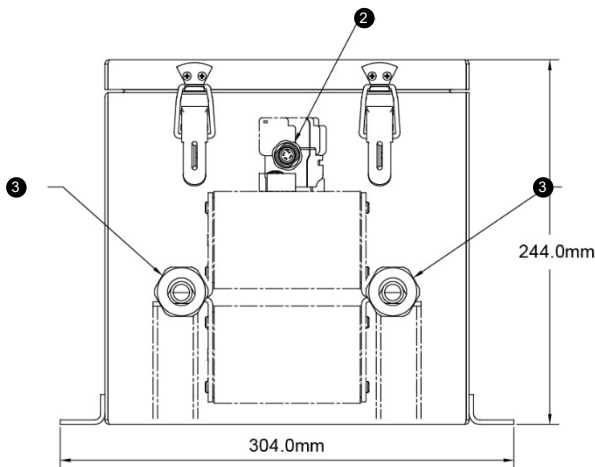
Top View



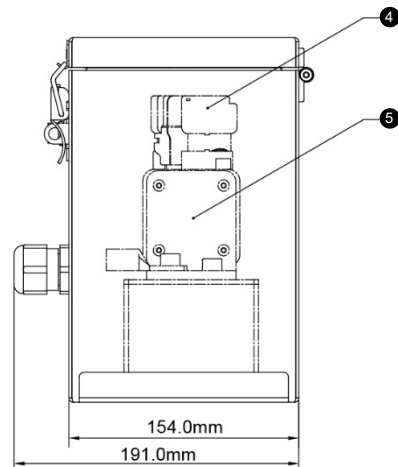
Description

- ① Ø9.0 Mounting Hole, 4EA
- ② Connector – Fuse Status
- ③ Cable Gland for Power Cable Connection
- ④ Fuse Contactor
- ⑤ Fuse

Front View



Side View



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