



Rack Specification

Model No.: ATE-C1331V280Ah-1C

Nominal Energy Capacity: 372.7KWh

Cooling Method: Liquid Cooled

VOLTAGE: 1331.2V DC

Revision: V0	Date Issued: 20-May-2020	Confidential level:	Confidential
Note:	The product specification is only available to NDA customer, it is not allowed to be supplied to any third-party.		



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Acronyms and Abbreviations

ACAN	CAN between BMU and HCU
BMU	Battery Management Unit
BMS	Battery Management System
BOL	Begin of Life
CAN	Controller Area Network
CCAN	CAN between BMU and CSC
CSC	Cell Supervision Circuit
CSU	Current Sample Unit
DCAN	CAN for calibration
EOL	End of Life
ETH	Ethernet Module
MSD	Manual Switch Disconnecter
SBMU	Slave Battery Management Unit
SCAN	CAN between BMU and CSU
SOC	State of Charge
SOE	State Of Energy
SOH	State of Health
SOP	State Of Power



1 Product Description

Battery rack consists of 8 battery modules and one control box, chiller, fire protection, etc. Battery cell is the most basic battery unit. BMS is composed of CSC and SBMU. BMS gathers status data from cell, module and rack, and exchange information with other components.

Battery module consists of 1P52S Battery Cell and one CSC. Control Box responses for controlling the main power line.

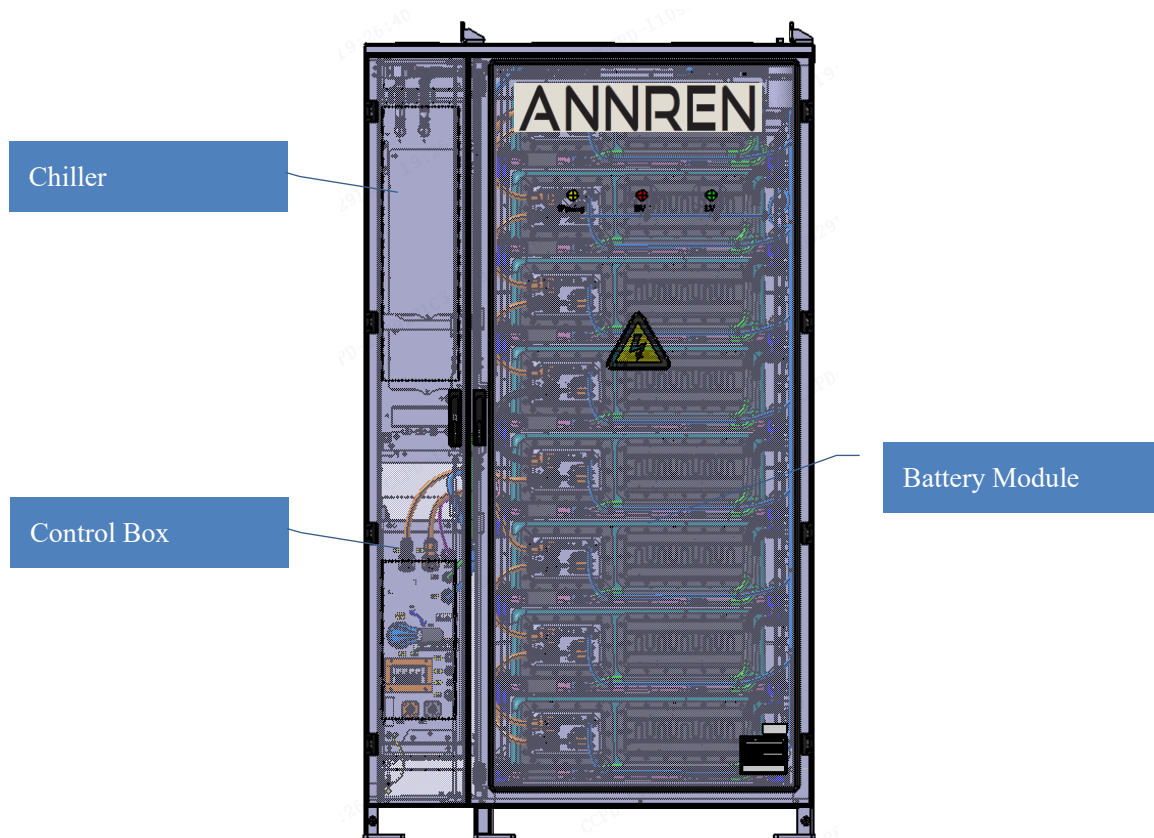


Figure 1 battery rack

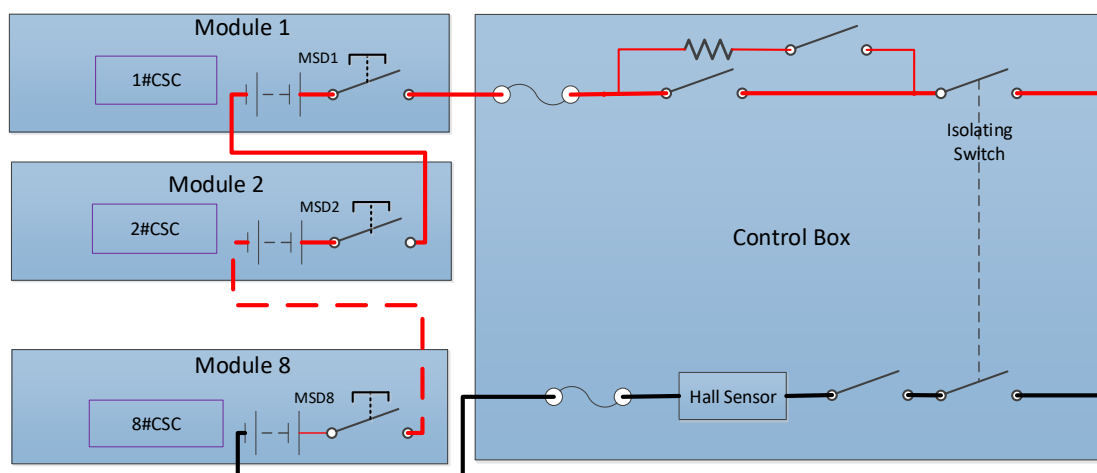


Figure 2 Battery rack system

1.1 Constituent Parts

Components of battery rack

Table 1 Components of Battery Rack

Components	Number	Remark
Rack Frame	1	2280mm(H)*1300mm(W)*1300mm(D)
Battery Modules	8	With CSC
Control Box	1	
Chiller	1	
Fire protection	1set	Including smoke detector, heat detector and aerosol

2 Product Specification

Table 2 Battery Rack Characteristics

Battery Rack			
Product model	ATE-C1331V280Ah-1C		
Product Type	LFP battery rack		
NO.	Item	Specification	Remark
1	Configuration	1P416S	
2	Rated Energy	372.7kWh	
3	Rated Voltage	1331.2VDC	
4	Voltage Range	1164.8~1497.6VDC	



5	Charging Current	Rated	280A	
		Maximum	320A	Lasts 1 min
6	Discharging Current	Rated	280A	
		Maximum	320A	Lasts 1 min
7	Operating Ambient Temperature	Charge	-30~55°C	
		Discharge	-30~55°C	
8	Auxiliary power supply	Voltage range	176-264V AC	50/60Hz
		power	Heating-3000W	
			Cooling-3300W	25°C
9	environment requirements	Storage Temperature	-40~60°C	
		Application altitude	≤2000m	
10	General Parameters	Size	2280mm(H)*1300mm (W)*1300mm(D)	
		Weight	3550kg	
		IP Level	IP66	
		Cooling mode	Liquid Cooling	
		Communication agreement	CAN	
		Power connection	Fast Plug	
		Communication connection	Fast Plug	
		AUX Power connection	Fast Plug	
		Coolant	50% Ethylene glycol aqueous solution	
11	Standard requirement	cell	UN38.3	
			UL1973	
			UL9540A	
			IEC62619	
		rack	UL1973	
			IEC62619	
			IEC62477-1	
			UL9540A	
			IEC61000-6-2/-4	



3 Interface

3.1 Electrical Interface

3.1.1 Definitions of connectors

The panel diagram of control box is shown as figure 3:

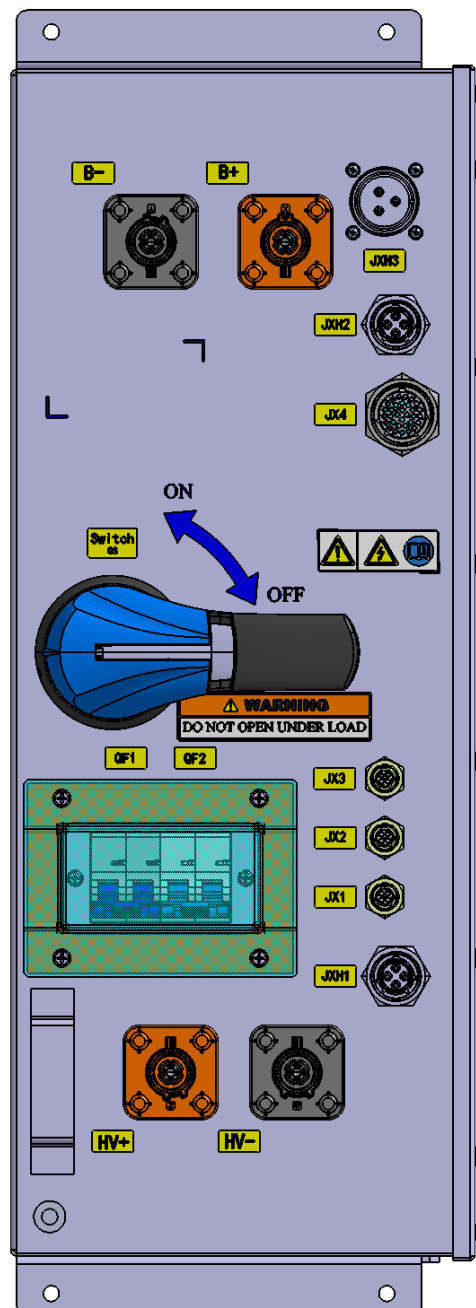


Figure 3 Control box panel



Table3 Information of the control box

No.	Connector	Definition	Connector information	Remark
1	JX1-1	M-CAN-H	Plug receptacle: LPT07A-8-4P (005) Plug: LPT06SE-8-4S (005) Manufacturer: Amphenol	Debug
2	JX1-2	M-CAN-L		
3	JX1-3	C-CAN-H		
4	JX1-4	C-CAN-L		
5	JX2-1	M-CAN-H	Plug receptacle: PT07A-12-8P(E)(005) Plug: PT06E-12-8S(005) Manufacturer: Amphenol	Connect to the next rack
6	JX2-2	M-CAN-L		
7	JX2-3	Smoke detector-output +		
8	JX2-4	Smoke detector-output -		
9	JX2-5	Heat detector-output +		
10	JX2-6	Heat detector-output -		
11	JX2-7	Aerosol fire extinguisher-output +		
12	JX2-8	Aerosol fire extinguisher-output -		
13	JX3-1	M-CAN-H	Plug receptacle: PT07A-12-8PW(E)(005) Plug: PT06E-12-8SW(005) Manufacturer: Amphenol	Connect to the previous rack
14	JX3-2	M-CAN-L		
15	JX3-3	Smoke detector-input +		
16	JX3-4	Smoke detector-input -		
17	JX3-5	Heat detector-input +		
18	JX3-6	Heat detector-input -		
19	JX3-7	Aerosol fire extinguisher-input +		
20	JX3-8	Aerosol fire extinguisher-input -		
21	JXH1-1	Control power-Input-L	Plug receptacle: PT07A-14-AAS(RDS)(E)(005) Plug: PT06E-14-AAP(005) Manufacturer: Amphenol	It should be connected to UPS
22	JXH1-2	Control power-Input-N		
23	JXH1-3	Chiller power-input-L		



24	JXH1-4	Chiller power-input-N		
25	HV+	Positive output	Plug receptacle: ES095-01M8-2SYZ-01(orange) Plug: ES095-03C95-2SYZ-01 (orange) Manufacturer: SANCO	
26	HV-	Negative output	Plug receptacle: ES095-01M8-1SYW-01 (black) Plug: ES095-03C95-1SYW-01 (black) Manufacturer: SANCO	

3.1.2 Information of Switch

Table 4 information of switch

No.	Switch	Name of switch	Function
1	QF1	Breaker	To connect and cut off the power supply of control system
2	QF2	Breaker	To connect and cut off the power supply of water chilling unit
3	QS	Isolation switch	To cut off the output of battery system. (Cannot operate with load)

3.1.3 Definitions of indication lights

Table 5 Definition of indication lights

No.	Indicator lights	Name of indicator lights	Function
1	HV(Red)	Indicator lights of primary circuit	Lights on when primary circuit connect
2	LV(Green)	Indicator lights of secondary circuit	Lights on when secondary circuit connect
3	Warning(Yellow)	Indicator lights of Warning	Lights on when warning happen

3.1.4 Communication Protocol

Adopt Annren standard communication protocol

BMS information can be referenced in BMS specification.



3.2 Mechanical Interface

3.2.1 Foot Margin

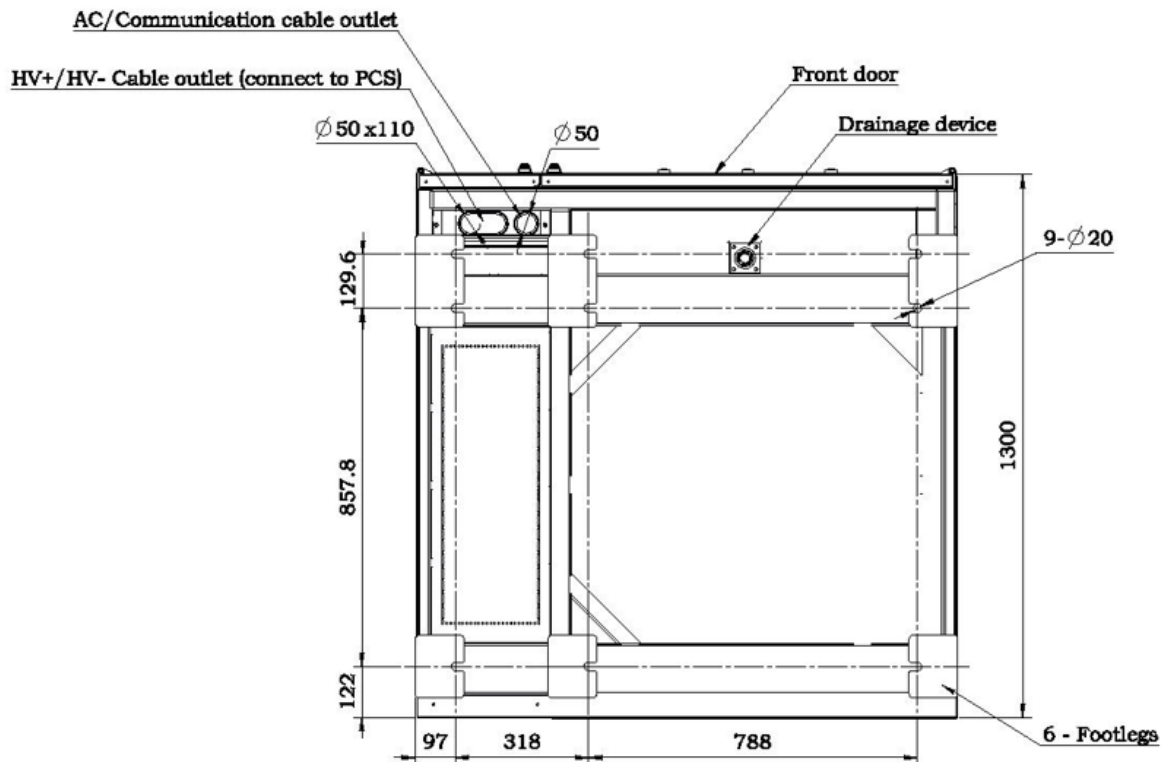


Figure 4 Foot margin

3.2.2 Layout of the rack

Varied layouts of the rack are presented in the figures below:

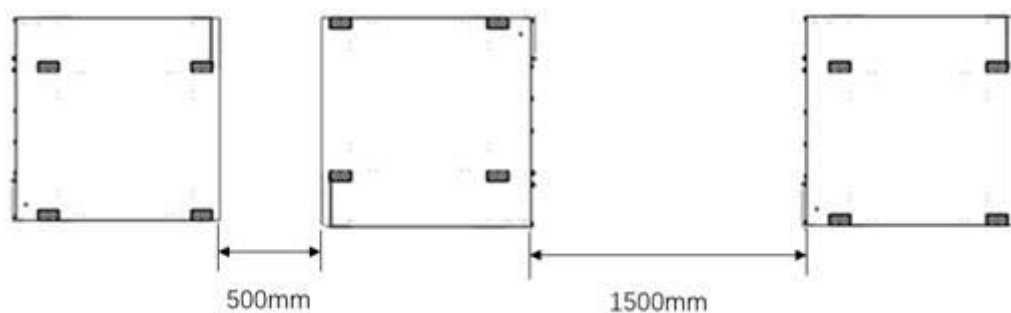


Figure 5 Back-to-back arrangement (Top view)

For back-to-back arrangement, the minimum clearance between racks is 500mm, and the recommended clearance between the front side of the rack and another rack is 1500mm.

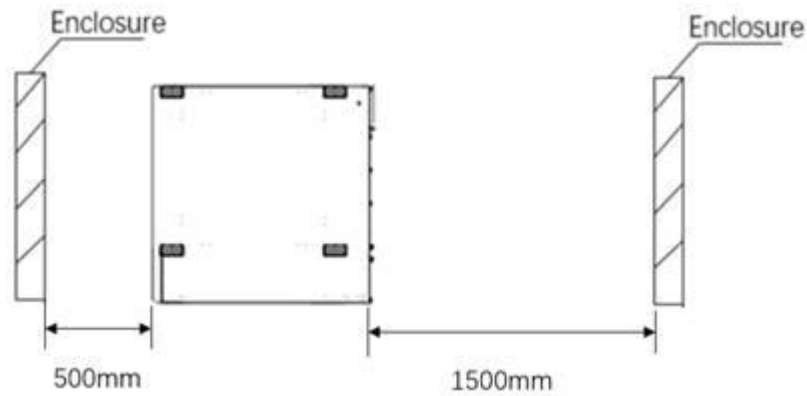


Figure 6 Back-to-enclosure arrangement (Top view)

For back-to-enclosure arrangement, the minimum clearance between the back side of rack and the enclosure is 500mm, and the recommended clearance between the front side of rack and the enclosure is 1500mm. (For installation and maintenance).

Other size detail of the rack can be seen in the appendix.



4 Appendix

4.1 Product Series Main Parameters.

ATE-C 6 Product Series Main Parameters Table 6

configuration	O852280-P 8*1P52S	O752280-P 7*1P52S	O652280-P 6*1P52S	O552280-P 5*1P52S	O452280-P 4*1P52S
Cell type	LFP 280Ah	LFP 280Ah	LFP 280Ah	LFP 280Ah	LFP 280Ah
Nominal Energy	372.7kWh	326.1kWh	279.6kWh	233.0kWh	186.4kWh
Nominal Capacity	280Ah (under standard charge/discharge condition)				
Nominal Voltage	1331.2V	1164.8V	998.4V	832.0V	665.6V
Voltage Range	1164.8- 1497.6V	1019.2- 1310.4V	873.6- 1123.2V	728-936V	582.4-748.8V
Max. charge/discharge power	372.7kW	326.1kW	279.6kW	233.0kW	186.4kW
Communication Protocol	CAN 2.0				
Operating Ambient Temperature	-30~55°C				
Humidity	≤95% RH (No Condensing)				
Recommended Operating Temperature	15~30°C				
Storage Temperature	-40~60°C				
Altitude	≤2000m				
Cooling mode	Chiller + Liquid cooling(50% Ethylene glycol aqueous solution)				
Dimension	2280mm(H)*1300mm(W)*1300mm(D)				
Ingress Protection	Rack body: IP20; Main control box: IP66; Battery module: IP66				

4.2 Salt Spray Requirement

The rack is composed of rack body & chiller & main control box & battery module assembly; The body of rack & chiller used by C3~C5 level H processing refer to ISO12944 can meet NSS below testing time without blistering、cracking、falling off. The main control box & battery module assembly can meet IP66 Level.



Table 7 Corrosion Rate & Typical environmental cases in humid climate (external)

Corrosion Rate		Typical environmental cases in humid climate (external)
C1	Very low	/
C2	low	The atmosphere with low pollution level is mostly rural.
C3	middle	Urban and industrial atmosphere, moderate sulfur dioxide pollution and low salinity coastal areas.
C4	high	Industrial and coastal areas with medium salinity.
C5	very high	Industrial areas with high humidity and harsh atmosphere and coastal areas with high salinity.
CX	Extra high	Marine areas with high salinity and tropical and subtropical industrial areas with extremely high humidity and aggressive atmosphere.

Table 8 Spray test mode & requirement

Corrosion Rate	Durability range	ISO 6270-1 Condensation test h	ISO 9227 NSS h	ISO 12944-9 Cyclic aging test h
C2	lower	48	-	-
	middle	48	-	-
	high	120	-	-
	Very high	240	480	-
C3	lower	48	120	-
	middle	120	240	-
	high	240	480	-
	Very high	480	720	-
C4	lower	120	240	-
	middle	240	480	-
	high	480	720	-
	Very high	720	1440	1680
C5	lower	240	480	-
	middle	480	720	-
	high	720	1440	1680
	Very high	-	-	2688



Table 9 Coating parameter configuration of liquid-cooled rank

Atmospheric corrosive environment	Durability	Zinc rich primer	Epoxy intermediate paint	Hardtop AS	Total film thickness,μ	NSS testing,h
C3	H	40	80	40	160	480
C4	H	50	100	40	200	720
C5	H	60	140	40	260	1440



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