48V 200Ah

INTEGRATED RACK-MOUNTED LITHIUM BATTERY PACK TECHNICAL SPECIFICATIONS

"Join the green revolution and harness the unlimited power of the sun with solar energy solutions from eTUIT".

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This specification describes the external dimensions, characteristics, technical requirements, and matters needing attention of the Energy Storage battery. This specification applies to eTUIT 48V 200Ah lithium phosphate battery produced by eTUIT Battery Co., LTD.

KEY FEATURES

- High cycle life and deep cycle ability: more energy with less weight and footprint
- More usable capacity:
- High cycle times and longer service life of >6000 cycles @80% DOD;
- Long battery life (up to 3 times the battery life of a conventional battery)
- High efficiency between charging and discharging. (Short charge period)
- Higher continual power available
- Wide operating temperature
- Predictable end of life due to BMS controller
- Multiple anti-theft solutions (optional): software, gyroscope, material, etc.
- Other functions (optional): Heating/LCD/Dry Contact
- Superior DOD (100% over lead acid batteries

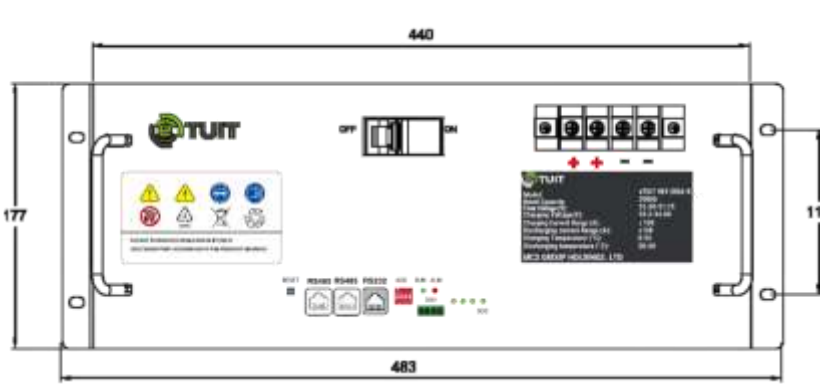
Product Certification

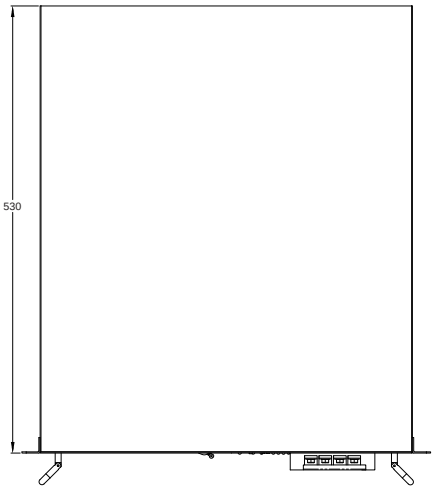
- CE
- UN38.3
-
-

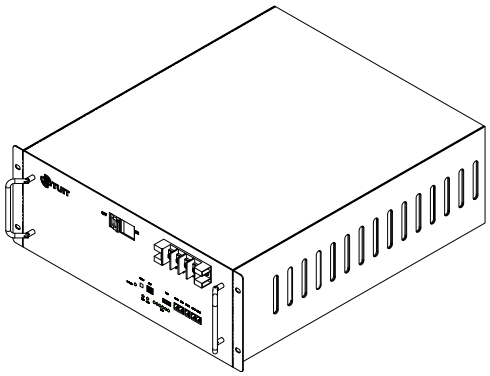
MECHANICAL DESIGN

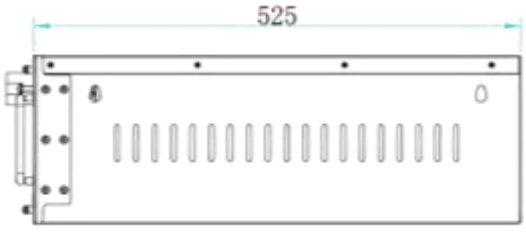
Battery Specification:	48V, 200Ah
Battery Dimension:	440*525*220mm
Combination Method:	15S

48V 150Ah Overall Dimension









48V 200Ah BATTERY LABEL

TUIT

Model:	eTUIT 48V 200A-R
Rated Capacity:	200Ah
Float Voltage (V):	51.00-51.75
Charging Voltage(V):	52.5-54.00
Charging Current Range (A):	≤ 100
Discharging current Range (A):	≤100
Charging Temperature (°C):	0-55
Discharging temperature (°C):	20-60

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BATTERY PACK BASIC PERFORMANCE 3

BASIC PERFORMANCE

No.	ITEM	PARAMETER	REMARK
1	Rated capacity	200Ah	23°C ± 5°C, 0.2°Cconstant current discharging, 40.5V cut off
2	Rated voltage	48V	Battery module-rated voltage
3	Standard charge current	40Ah (0.2°C)	0°C~45°C, 0.2°C CC charge to 54.75V, then CV charge cut off when charging current ≤0.05°C
4	Maximum charge current	100Ah	0°C~45°C, less than 100Ah
5	Charge cut-off voltage	54.75V	
6	Maximum continuous discharge voltage	100Ah	23°C ± 3°C, continuous 100Ah discharge
7	Discharge cut-off voltage	37.5V	
8	Maximum pulse discharge current	110Ah	25°C ± 3°C: ≤1 S
9	Working temperature (charge)	0°C~55°C	During charge, battery and ambient temperature should not exceed 55°C
10	Working temperature (discharge)	-20°C~60°C	The battery can work at a specified temperature range with capacity loss intolerance
11	Weight	86± 2kg	
12	Impendence	≤20mΩ	AC 1kHz impendence with half electricity

MAIN PERFORMANCE 4

4.1 BATTERY PACK MAIN PERFORMANCE PARAMETER

No.	ITEM		STANDARD	TEST METHOD
1	Discharge rate character	0.2°C	100%	Test temperature: 25°C ± 3 °C Charge: 0.2°C CC charge to 54.75V, transfer to constant voltage, cut off when current ≤0.05°C Discharge: 0.2°C/0.5°C/1°C constant current discharge cut off at 37.5V
2		0.5°C	≥98%	
		1°C	≥97%	
3	Capacity & Temperature character	55°C	≥95%	
4		45°C	≥95%	Charge: 0.2°C CC charge to 54.75V, transfer to constant voltage, cut off when current ≤0.05°C Discharge: 0.5°C CC discharge cut off at 37.5V; 2-hour intervals for the temperature.
5		25°C	100%	
6		0°C	≥65%	
7		-10°C	≥50%	
8	Life cycle character		≥3 500	After finishing the standard charging, lay aside for 30min, in 25°C ± 5, 0.3°C CC discharge to 80% DOD; then go for the next cycle.
9	Storage character			
10		25°C 6 months	≥95%	Charge battery with 60%~75% capacity for storage.
11		45°C 3 months	≥90%	
12		60°C 1 month	≥90%	

4.2 MAIN PERFORMANCE AMBIENT CHARACTER

1	Steady damp heat test	No fire. No explosion. No leakage. Discharge capacity cannot be lower than 60% of the initial capacity.	After a standard charge, test as below: *Temperature*: 40°C ± 5°C *Relative humidity*: 90%~95% *Standing time*: 48 hours Take out and place for 2 hours at room temperature. Then discharge with 1°C until cut off voltage.
2	Vibration	No fire. No explosion. No leakage.	After a standard charge, fix to the vibration machine and vibrate 30min each at XYZ direction: Frequency sweeping rate: 1oct/min. Vibration frequency: 10Hz~30Hz Displacement amplitude (single): 0.28mm. Vibration frequency: 30Hz~55Hz Displacement amplitude (single): 0.19mm
3	Low pressure	No fire. No explosion. No leakage.	Under 25±3°C ambient temperature, put the cell into a vacuum cabinet, and reduce internal pressure gradually to not higher than 11.6kPa. (Simulated altitude 15240m) Keep it for 6 hours
4	Drop test	No fire. No explosion. No leakage.	Under the condition of shipment, the battery-free fall from a height of 1m onto a concrete floor of 5cm thick. Repeat 3 times from the X, Y, and Z axis directions.

4.3 MAIN PERFORMANCE SAFE PERFORMANCE

No.	ITEM	STANDARD	TEST METHOD
1	Overcharge test	No fire. No explosion. No leakage.	After standard charge; under 25°C ± 3°C ambient temperatures for 1 hour. Then under the same temperature, 0.5°C constant current charge to 5V (simple cell)
2	Over discharge test	No fire. No explosion. No leakage.	After standard charge; under 25°C ± 3°C ambient temperatures for 1 hour. Then under the same temperature, 0.2°C constant current charge to 0V (simple cell)
3	Heat shock	No fire. No explosion. No leakage.	Put the battery in a hot cabinet, the temperature is up to 5°C
4	High-temperature test	No fire. No explosion. No leakage.	After the standard charge, place the battery at 85°C for 4 hours
5	Short circuit	No fire. No explosion. No leakage.	After standard charge in ambient temperature for 1 hour. Then put the battery in an external short circuit for 10 minutes. The outside line resistance should be less than 100mΩ

BMS (BATTERY MANAGEMENT SYSTEM) 5

5.1 PROTECTION PARAMETER

No.	ITEM		DESCRIPTION	STANDARD	TEST METHOD
1.	Overcharge parameter		Unit overcharge warning voltage	3600	mV
			Unit overcharge protection	3650	mV
			Battery pack overcharge warning voltage	54	V
			Battery pack over charge protection voltage	54.75	V
2.	Over discharge parameter		Unit over-discharge Warning Voltage	2700	mV
			Unit over-discharge Protection Voltage	2 500	mV
			Battery pack over-discharge Warning voltage	40.5	V
			Battery pack over-discharge Warning voltage	37.5	V
3.	Charge over current parameter		Charge over-current warning	105	A
			Charge 1st over-current	110	A
			Short circuit at the charging port	YES	
4.	Discharge over the current parameter		Discharge Over-Current warning	105	A
			Discharge 1st over-current	110	A
			Discharge 2nd over-current	120	A
			Short circuit at the discharging port	YES	
5.	Temperature Protection	Charge	High-temperature warning	50.0	°C
			Low-temperature warning	5.0	°C
			High-temperature protection	55.0	°C
			Low-temperature protection	0.0	°C
		Discharge	High-temperature warning	55.0	°C
			Low-temperature warning	-15.0	°C
			High-temperature protection	60.0	°C
			Low-temperature protection	-20.0	°C

5.2 ELECTRICAL PARAMETER

No.	ITEM	MIN	TYPICAL	MAX	UNIT
1.	Manage cell qty	-	15	-	个
2.	Normal Working Voltage	-	48	54.75	V
3.	Working temperature range	-20	25	60	℃
4.	Continuous charge current	-	20	100	A
5.	Continuous discharge current	-	50	100	A
6.	Total operating power consumption	-		45	mA
7.	Total dormant power consumption	-		200	uA

5.3 BMS MANAGEMENT PARAMETERS

No.	FUNCTION	DESCRIPTION
1.	Setup address devices	By dial switch
2.	System rest	Using reset button
3.	Communicate interface	RS485 connecter allows several devices to connect in parallel to enlarge battery capacity. RS232 interface communicates with the computer, CAN communication, and inverter communication
4.	Gyroscope sensor	When the inclination angle is more than 60 degrees, open the protection
5.	LCD display	CAN dynamically evaluate SOC for each battery pack and display the remaining power by 4 green LEDs.
6.	SOC Evaluate and Display	CAN dynamically evaluate SOC for each battery pack and display the remaining power by 4 green LEDs.
7.	Operation status display	CAN display system operation status by 1 green LED.
8.	Failure warning display	CAN display system failure by 1 red LED.
9.	Data storage	CAN record the battery array's voltage, temperature, charge, and discharge power.
10.	Low consumption	Very slight static consumption deviation, and low operation & standby consumption.
11.	SOH evaluation	Per sampling information, we can do a SOH evaluation for the whole battery.
12.	Balance management	The balanced opening voltage is 3380mV and the opening voltage difference is 30mV to improve the battery consistency
13.	Unit voltage inspection	The test cell unit's voltage, 15S Max can be inspected
14.	Temperature inspection	Battery temperature protection function, battery high & low-temperature protection, and component high-temperature protection.
15.	Charge & Discharge control	Disconnect failed modules when at an abnormal charge, over-discharge, over-hot, over current, or short circuit, separate each defective module timely, and reduce defective scope.
16.	Short circuit protection	When the battery has a short circuit, the system will be automatically protected within 300Us, disconnect the load, and recover.
17.	Communication	Through the connection between the upper computer and BMS, can remote signalling. Remote control, remote adjust,
18.	Battery in parallel connection management	Support multiple-unit battery connection in parallel and set up address. The charge limiting current is 20Ah. (0.2°C).

STORAGE AND TRANSPORTATION REQUIREMENTS 6

ITEM		REQUIREMENT
Storage temperature	Less than 1 month	-20°C ~ + 55°C
	Less than 5 months	-10°C ~ +35°C
Humidity		＜70%RH
Storage SOC		60% ~ 75% SOC

ACCESSORIES LIST 7

No.	PRODUCT	DESCRIPTION	QUANTITY	LIMIT
1.	Positive pole of power line	L500mm 25mm² Quick connector at one end and 25mm² terminal at one end.	1	PCS/ module
2.	The negative pole of the power line	L500mm 25mm² Quick connector at one end and 25mm² terminal at one end.	1	PCS/ Module
3.	Battery-positive parallel line	L200mm 25mm² Red quick connectors at both ends	1	PCS/ module
4.	RS485 communication line	Length: 500mm, RJ45 port * 2	1	PCS/module
5.	RS485-USB converter cable	Length: 1 500mm	1/8	PCS / 8 modules
6.	RS232-USB converter cable	Length: 1 500mm	1/8	PCS / 8 modules
7.	CAN communication line	Super class 5 8-core 3 000mm long RJ45 terminals with two ends pressed	1	PCS/module

NOTE FOR BATTERY USAGE 8

8.1 PROHIBITION

TO AVOID BATTERY LEAKAGE, HEAT RADIATING, AND EXPLOSION, THE BELOW PREVENT TIPS SHOULD BE TAKEN CARE OF:

A) Prohibition of disassembly or re-assembly.
B） Prohibition of short-circuited battery.
C） Prohibition to use near hot source.
D） Prohibition of dumping of batteries into water, ocean, or getting battery wet.
E） Prohibition of charging near fire or under sunlight.
F） Charge with specified charge according to charging requirement.
G） Prohibition of inserting nails into the battery, hammering, or stepping on foot.
H） Prohibition of throwing.
I） Prohibition of using a damaged or deformed battery.

8.2 ATTENTION

A） Prohibit using batteries in sunlight, it could cause overheating, fire, function failure, and life reduction.
B） Prohibit use near static places which is over 64V.
C） Prohibit charge at a temperature below 0°C or above 60°C.
D） When used for the first time, if it has corrosion, bad smell, or any other abnormal, **DO NOT USE**.

ENVIRONMENTAL PROTECTION 9

9.1 THE ENVIRONMENTAL LABEL

This mark indicates that the product described in this manual does not contain toxic and hazardous substances or elements. It is a green product, can be recycled after being discarded, and should not be discarded incorrectly.

9.2 RECYCLE

This mark indicates that the product cannot be disposed of with other waste.
Please refer to the Product recycling Guidelines

After the battery life is terminated, the battery can continue to be used after it is recycled by a professional recycling organization. Do not discard incorrectly.

Recycling must be performed according to national and local regulations for end-of-life treatment of Electrical and Electronic equipment. Printed circuit board assemblies (PCBA) must be handled separately from other waste and kept away from open fire. All work must be done according to good operating practices and the strictest safety standards, considering all relevant health and safety aspects.

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