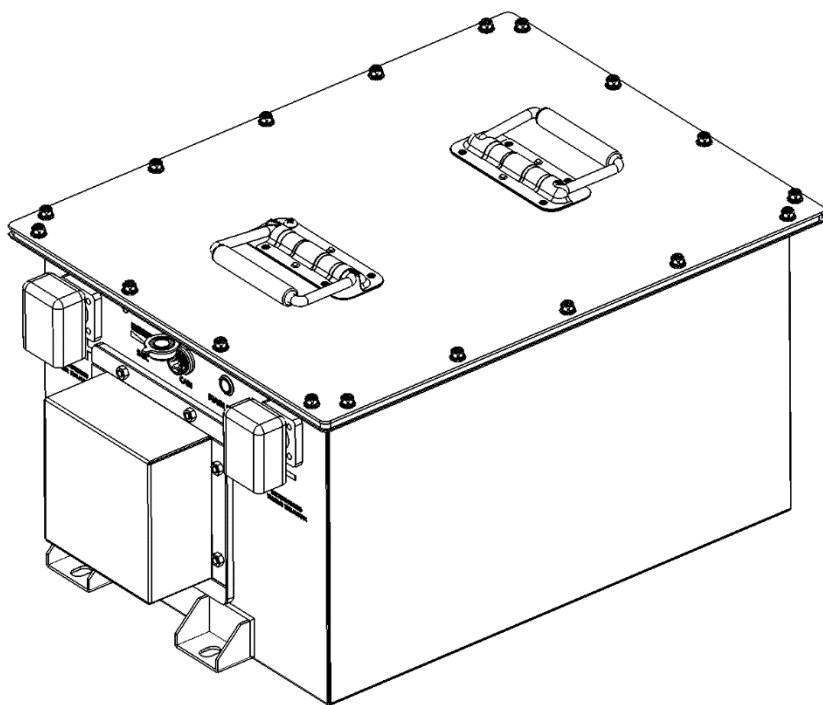




GC51

Lithium-ion Battery User manual

1. INTRODUCTION

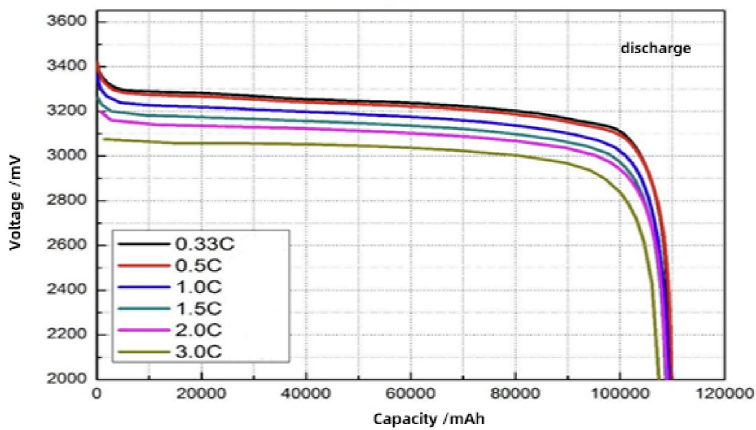
Thank you for purchasing the GC51 Lithium-ion Battery from WHET. Before operation, please read this user manual carefully. This manual includes important safety and maintenance information that is essential to ensure the safe operation of the battery. Most maintenance can be done using common battery installation hand tools, contact your nearest dealer if you need help. All information provided in this manual is protected by copyright, and WHET has the right to make changes to this manual in accordance with the continuous upgrade of the product, subject to change without notice. This manual may not be duplicated, reproduced, or translated into other languages without the express written consent of WHET.

2. Basic parameter

No.	Item	Specification
1	Cell Model	EVE-3.2V-105Ah
2	Array mode	16S1P
3	Nominal Capacity	105Ah (0.2C charge and 0.5C discharge)
4	Minimum Capacity	$\geq 105\text{Ah}$ (0.2C charge and 0.5C discharge)
5	Watt Hour	5.3kWh
6	Nominal Voltage	51.2V
7	Initial AC Impedance	$IR \leq 0.32\text{m}\Omega$ (50%SOC, $25 \pm 2^\circ\text{C}$)
8	Charging Voltage	58.4V
9	Charging cut-off current	2A (0.02C)
10	Discharge cut-off voltage	40V
11	Standard charging method	Constant Current:20A Max Charge Current:100A
12	Standard discharging method	Constant current of 50A
13	Maximum continuous discharge current	200A
14	Discharge Peak Current	$300\text{A} \pm 10\text{A}$ (2000mS) (Can be set)
15	Cycle Life	5000 cycles (0.5C charge , 0.5C discharge, capacity retention $\geq 80\%$)
16	communication mode	CAN 485

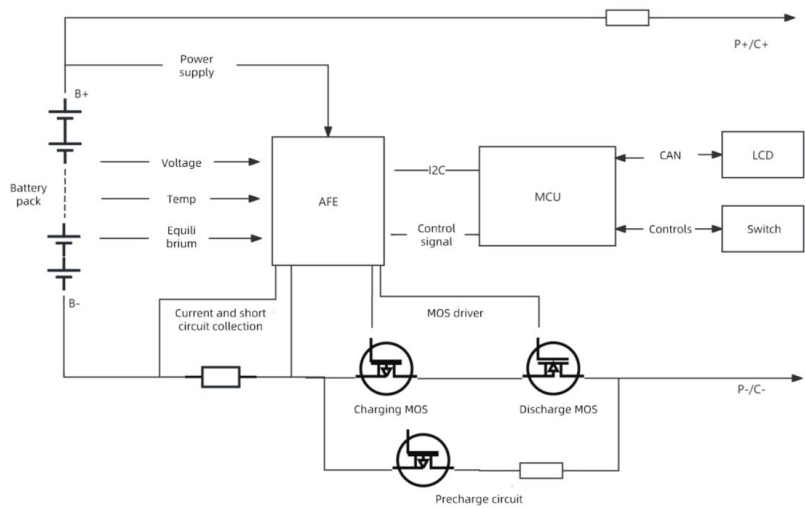
17	Waterproof rating	IP65
18	Weight (Kg)	44.5kG
19	size	487*335*257mm
20	Operating Temperature	Charging: -5℃ ~ 60℃ (cell)
		Discharging: -20℃ ~ 70℃ (cell)
21	Storage Temperature	1 month: -20℃ ~ 45℃
		6months: -10℃ ~ 35℃
		1 year: 0℃ ~ 25℃
22	Relative Humidity	≤70%
23	Delivery Capacity	SOC45%±5%

3. Capacity decay diagram

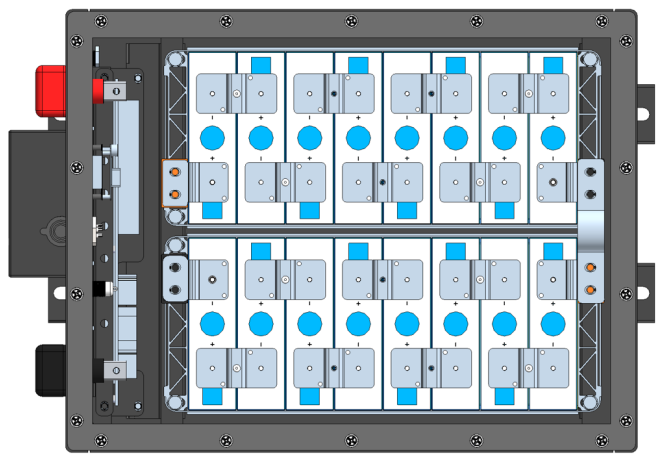


4. Cell structure

Internal schematics



Arrangement mode



5. Reliability Parameter

NO	Project	Condition
1	check progress	current detection progress: $\leq (\pm 2\% \text{FSR} \pm 0.05\text{A})$ voltage detection progress: $\leq \pm 0.3\% \text{FSR} \pm 10\text{mV}$ Temperature detection accuracy: $\leq 4^{\circ}\text{C}$ SOC average accuracy : $\leq 8\%$
2	current threshold	charging current: 1.05A discharge current: 1.05A
3	failure type	Charging MOS fails Discharge MOS failure Temperature detection failure Voltage detection failure (charging is prohibited when the voltage is lower than 1.5V)
4	information storage	Maximum storage of more than 1000 history information, including protection times, current total voltage, current, temperature, SOC, SOH, cycle times and operating status
5	Communication interface	CAN communication, baud rate 250Kbs, support communication port upgrade
6	measurement	Using current integration
7	short circuit	The internal resistance of the battery pack and short circuit shall not be less than $40\text{m}\Omega$, the short circuit current shall not exceed 1800A, and the air switch shall be used to short circuit 50 times.

6. BMS Specification

N o.	Item	Parameter
1	Model	QM-SW16 010-A02
2	Charge Method	CC>CV
3	Max. Charge Current	100A
4	Continuous Discharge Current	$\leq 200A$
5	Over Voltage Protection Threshold	$3.65V \pm 0.025V \quad (1 \pm 0.5S)$
6	Over Voltage Protection Release Conditions	$\leq 3.4V \pm 0.025V \quad (1 \pm 0.5S)$
7	Under Protection Voltage Threshold	$2.5V \pm 0.025V \quad (1 \pm 0.5S)$
8	Under Voltage Protection Release Conditions	$\geq 3.0V \pm 0.025V \quad (1 \pm 0.5S)$
9	Over Current Protection (Discharge)	First-order overcurrent $300A \pm 5\%$ delay $2 \pm 0.5S$
10	Protection Release Condition (Discharge)	Remove Load or gain access to the recharger
11	Short Circuit Current Protection	OK ($1143A \pm 5\%$ $320\mu s \pm 100ms$)
12	Charge overtemperature protection	$60 \pm 5^{\circ}C$ (NTC) Cell surface
13	Discharge overtemperature protection	$70 \pm 5^{\circ}C$ (NTC) Cell surface

14	The MOS high-temperature protection	85±5℃ (Temperature switch)	
15	BMS Consumption current	work:≤10mA	sleep:10uA

Main components

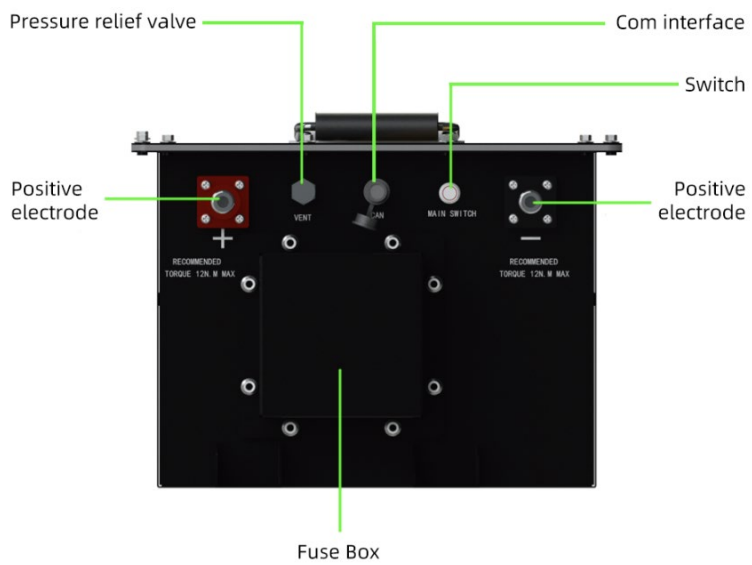
Type	Model	Brand	Quantity
main control IC	N32G452CCL7	Nation	1
acquisition IC	SH367309U	Sino Wealth	1
MOS	BLP014N10-T	BELLING	36

Note: The above BMS material is a key material, if there is any change, we will notify or send the samples again in writing and confirm the change after signing back.

7. Product drawing :



8. Interface definition



Communication interface definition



- 1. CAN-L
- 2. CAN-H
- 3. DC+ (48V)
- 4. DC- (48V)
- 5. RS485A
- 6. RS485B

Tag style: Size 80*50mm

Lithium ion Battery Module

UN38.3

Product Model:	GC51
Nominal Voltage:	51.2V
Rated Capacity:	105Ah
Charge Voltage:	58.4V
Standard Charging Current:	100A
Max. Charging Current:	200A
Max. Discharging Current:	200A
Discharge Cut-off Voltage:	40.0V
Nominal Energy:	5.376KWh
Communication Mode:	RS485/CAN
IP Grade:	IP65
Weight:	~44.5kg
Size:	487×335×257mm
Serial Number:	 GC-51105202502001



9. Storage conditions:

When the battery pack is stored long-term stored, charge the battery pack to about 60% capacity, store in dry and ventilated place, charge 2 h for every 3 months. (Charge Current:50A)

The battery pack and charger should be stored in a clean, dry and ventilated place, avoid contact with corrosive materials and be away from fire and heat.

10.Product liability

We assume no responsibility for the accident of not operating in accordance with the specification.

Specifications, raw materials, production process or production control system is changed, the change will vary depending on the quality and reliability of data written notice to the customer.

11.Battery Handling Precautions

Forbids immersing battery in water or allowing it to get wet!

Don't charge, use and store batteries near a heat source such as fire and heater!

If the battery leaks or releases a strange odor pls remove it from place near fireplace immediately. Fully charge the battery before first-time use.

Forbid to reverse the positive and negative pole!

Forbid throwing the battery pack into fire or heat it!

Forbid short-circuit batteries with wire or other metal objects!

Forbid nails, knocks or trample battery!

Forbid disassemble the battery and battery pack in any way!

Forbid putting the battery into microwave oven or pressure vessel!

If the battery pack gives off odor, gets heat, deformation, discoloration or appears any abnormal phenomenon, stop using it; please remove the battery from electrical appliances and stop using it when the battery is being used or charged!

Forbid battery packing in a very hot environment, such as under direct sunlight or in the car on hot days. Otherwise, the battery pack will overheat, which will affect battery performance and shorten battery life!

If the battery leaks and electrolyte leakage enter the eyes, do not rub, rinse with water immediately and seek immediate medical assistance. If not in time, my eyes will hurt!

Ambient temperature will affect the discharge capacity, if the ambient temperature is beyond the standard environment (25 ± 5), °C the discharge capacity will drop!

Special Considerations:

Technical personnel not authorized by the Company or the Company are strictly prohibited to open the chassis for disassembly and maintenance without authorization, otherwise the electric shock will be removed, and the warranty right will be lost.

Do not attach any wirehead or connector in the BMS to the positive and

negative electrode of the battery, otherwise there may be a risk of short circuits and damage to the circuit board.

Do not be close to the water source or fire source to avoid the battery fire due to short circuit or overheating.

Statement:

statement: The technical specifications of this product are only for reference in customer selection. The Company has the final right to interpret the product specification and has the right to revise the product specification without notice.