

CANBAT[®]



GC2 FUEL GAUGE
USER MANUAL

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CANBAT FUEL GAUGE USER MANUAL

This user manual was created by Canbat Technologies Inc. and contains important information relating to the proper care and use of your Fuel Gauge. This manual only applies to Canbat GC2 Fuel Gauge. It does not apply to other monitoring devices. Please read through the guide in detail before installing and using your new Fuel Gauge. Reading this guide in its entirety will help you achieve high performance and a longer life from your lithium batteries. Should you have any questions concerning safety precautions, installation or the use of your Canbat GC2 Fuel Gauge, please contact us:

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Online chat is available 24/7 on our website www.canbat.com

1. OVERVIEW

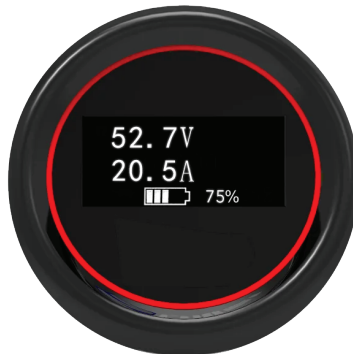
CANBAT GC2 FUEL GAUGE is a monitoring device exclusively designed for the Canbat GC2 Lithium Battery. The gauge utilizes CANBUS communication with the battery to display SOC, current, voltage, fault codes and other real-time information to help you make the most of your battery. The fuel gauge is easy to install and is connected directly to the Canbat GC2 battery. The needed cables are included.

2. TECHNICAL PARAMETERS

- A. Operating voltage: 48V
- B. Baud rate: 125Kbits/s (250 , 500Kbits/s optional)
- C. Short circuit protection
- D. 1.3 Inch OEL Display, 128*64 resolution
- E. Plug-in model: Female molex Minitit pin harness (SUWEI P/N:C00038)
- F. Front IP65: The protection level can be adapted to work in a variety of complex environments
- G. Working temperature: -40°C ~85°C; Storage temperature: -50°C ~ 90°C.

3. DISPLAY SECTION

The fuel gauge features an elegant and sophisticated design, complemented by distinctive and visually engaging running instructions and alarm indicators. The front bezel incorporates LED warning lights, providing clear and immediate feedback on the vehicle's status to the driver. Additionally, the trouble code prompts offer targeted diagnostics, identifying fault sources, analyzing their causes, and delivering efficient, time-saving solutions for vehicle issues. The system also provides intuitive feedback on key metrics such as battery State of Charge (SOC), current, voltage, and additional information, including time, power levels, and operating mode, enabling an enhanced and efficient human-machine interaction.



52.7V	Represents battery voltage
20.5A	Represents the current value of the battery, and "-" is for discharge; '+' is for charging
75%	SOC: State of Charge, Remaining battery capacity
Alarm 1	Fault codes, from '1' to '10'
Err	Communication Failure

The interface displays detailed instructions :

No.	Name	Illustrate
1	Battery Symbol	Display the remaining battery power, when the battery is low, the LED Fault indicator light can be displayed in red
2	Error Code	Displays the fault code of the currently faulty node (controller), multiple faults occur
3	Maintenance Plan	When a system fault is detected, the service symbol appears with the fault code and the fault indicates Indicator light is red
4	Current Hour Meter	The number shows the cumulative power-on time of the current vehicle
5	Fault Indicator	Displays red when a system failure is detected, and green when the system is normal

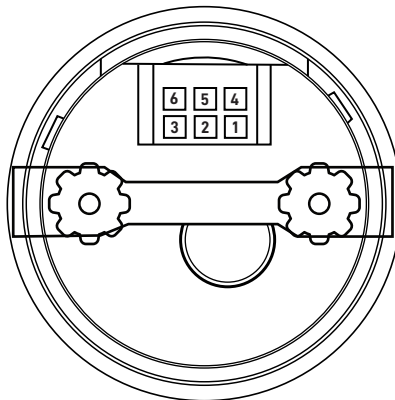
4. FAULT CODE ANALYSIS

The lithium battery is equipped with an intelligent Battery Management System (BMS) that effectively safeguards the battery cells and minimizes the risk of unsafe incidents. To further protect the cells, the BMS may trigger certain alarms; however, not all alarm notifications require immediate action. In some cases, the alarm may simply indicate that the battery is low and needs to be recharged. It is important to note that alarm notifications do not necessarily signify a malfunction; therefore, there is no cause for undue concern. The following fault codes may appear as a result of routine detection processes conducted by the BMS.

Code	Alarm number analysis	Definition	Action Needed
Alarm 1	Single cell highvoltage	Battery almost fully charged	No
Alarm 2	Single cell low voltage	Battery almost fully charged, Low state of charge (SOC)	Yes
Alarm 3	Total high voltage	Battery almost fully charged	No
Alarm 4	Total low voltage	Battery almost fully charged, Low state of charge (SOC)	Yes
Alarm 5	Large voltage difference cell	Charging with low current, charging current<0.5C	Yes
Alarm 6	Discharge overcurrent	Reduce load or increase battery capacity	Yes
Alarm 7	Charge overcurrent	Reduce charging current, charging current<1C	Yes
Alarm 8	High temperature alarm,	Reduce load or increase battery capacity or avoid direct sunlight	Yes
Alarm 9	Low temperature alarm	Charging environment >0°C	Yes
Alarm10	Large temperature difference cell	Check if the battery connection wire is loose	Yes
Alarm 11	Low SOC	Timely charging	Yes
Err	Abnormal communication	check if the communication cable connection between the batteries is normal.	Yes

5. PORT DEFINITION

5.1 Molex Minifit 6 pins plugin



Version	Port	Definition	Description
CAN Pass letter	A1	+B	Positive power supply (power supply range: 9-72V)
	A2	GND	Negative power supply
	A3	CANL	CAN Communication low signal
	A4	CANH	CAN Communication high signal
	A5	CANT	and A6 When shorted, CAN bus access 120Ω resistance
	A6	CANHT	and A5 When shorted, CAN bus access 120Ω resistance

5.2 CAN bus connection

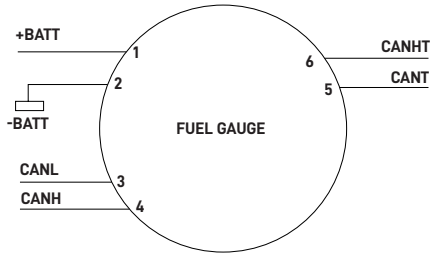
The fuel gauge features a comprehensive CAN bus interface, enabling seamless integration with other electrical devices within the same CAN bus network. Through the CAN bus, it facilitates the exchange of information with connected equipment.

The terminal resistance is pre-configured within the instrument, with a 120 resistor between CANH and CANL (A5 and A6 shorted). As a result, the instrument can function as a terminal module within the CAN network.

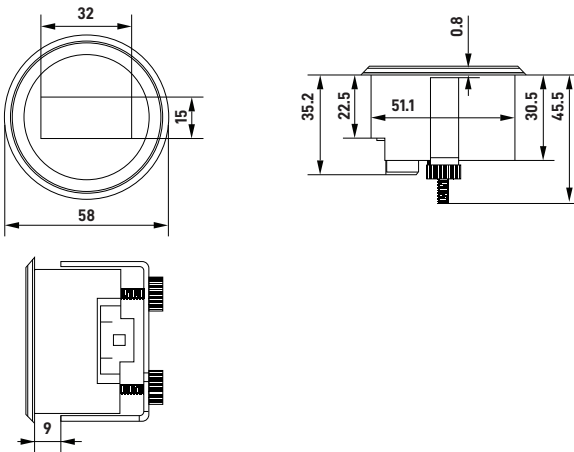
Note: If the CAN-bus fuel gauge fails to receive CAN information within a specified time frame, the fault code "16A06" will be displayed. Once the instrument successfully receives the CAN message, the fault will be cleared.

6. DRAWING

6.1 Wiring Schematic



6.2 Dimensions



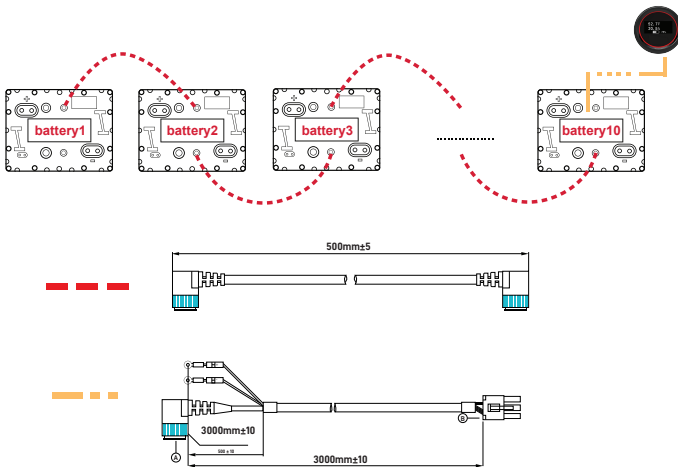
Recommended opening size: 52-55mm

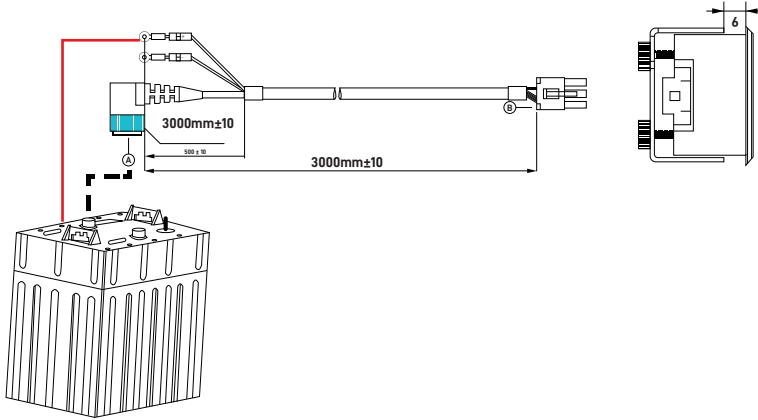
Mounting plate thickness: not less than 1mm , and the maximum installation thickness is not more than 9mm .

7. FUEL GAUGE AND BATTERY WIRING STEPS

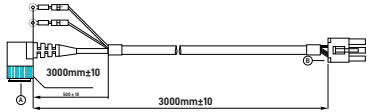

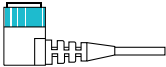
Each Canbat GC2 lithium battery is equipped with two communication ports that operate using the CANbus (Controller Area Network) protocol. This protocol enhances the system's efficiency, reliability, and safety, and is also responsible for monitoring the State of Charge (SOC) of the battery.

Included with the battery meter is a 120 resistor, which serves as a terminator. This resistor should be installed on the battery opposite the fuel gauge, as shown in the image below. The fuel gauge itself is powered by the same battery to which it is connected. Some people prefer to get a separate small battery to power the fuel gauge. The advantage is to minimize imbalance between the GC2 batteries connected in the bank. However, since the fuel gauge has a very low draw, this isn't a major concern, especially with the batteries having communication with each other with the ability to self-balance.





7.3. Accessories are as follows

Serial No	Name of accessories	Accessories pictures
1	Communication cable* 1	
2	CAN FUEL GAUGE *1	
3	120Ω terminal resistor	

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CANADIAN BATTERY MANUFACTURER



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