GERCHAMP

G-BS

BATTERY MANAGEMENT SYSTEM

for BESS

INTRODUCTION

G-BS BMS offers an advanced solution for battery energy storage system, integrating real-time monitoring, fault diagnosis, early warnings and multi-layer protection against battery anomalies. Built on a 3+1 level architecture, it supports BESS up to 1500V and incorporates data acquisition, analysis, mapping, and logic processing, along with precise SOC/SOH estimation, providing overdischarge, overcurrent, overtemperature and short-circuit protection for the battery pack and ensuring the efficient, reliable, and safe operation.

ADVANTAGES

Enhanced Safety

- Real-time monitoring at the cell, pack, and cluster levels
- Automatic charging & discharging control with three-tier protection
- Data analysis for full battery lifecycle management

Advanced Performance

- ≥95% SOC estimation accuracy featuring intelligent algorithm
- Reduced PCS Y-capacitance impact, boosting insulation collection cycle by 50%
- 20:1 compression, supporting 8G+128G data logging

User-friendly O&M

- Multiple protocols enabling seamless external communication
- Automatic address coding with closed-loop bidirectional IO control
- USB and upper computer software upgrades

SYSTEM CONFIGURATION

GBMU Module

Using 32-bit automotive-grade MCU chip + AFE collection + CAN communication architecture; using 2-channel bidirectional IO ports and secondary lock terminals to realize multi-BMU loop automatic address coding

GRCU Module

Using ARM-M3 chip+2-channel total voltage collection+2-channel Large/small range current sensors + CAN communication architecture, insulation collection optimal design, to avoid the influence of Y capacitors in PCS

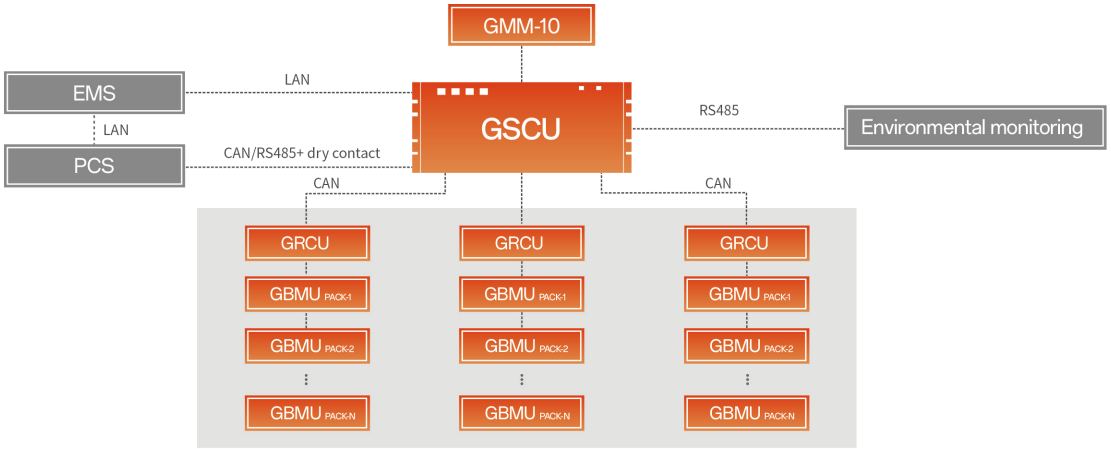
GSCU Module

Using ARM-A7 CPU+3-channel Ethernet+ 3-channel CAN communication+4-channel RS485+1-channel 232 communication architecture to meet multi-environment sensor and device access. The software can directly upgrade GSCU, GRCU, GBMU module programs online to meet IEC61850 communication protocol

GMM-10 Module

Display battery pack voltage, current, SOC/SOH and other data; Display data such as voltage, temperature, SOC/SOH of battery cell; Display battery pack status and other data

SYSTEM ARCHITECTURE



3+1 Level

SPECIFICATIONS

	Cell Voltage		Cell Temperature		Cell Equalization	
Battery Cell Type	Range	0~5V	Range	-40~125°C	Current	100mA/3.3V
	Resolution	1mv	Resolution	0.1°C	Equalization resistance	33Ω
	Accuracy	≤5mv	Accuracy	≤1℃	/	/
	Cycle	100ms	Cycle	200ms	/	/
	Channel	4~24 strings	Channel	0~12	/	/

	Total Voltage		Total Current		Insulation Monitoring		SOC		SOH	
Battery Pack Type	Range	0~1500V	Range	-500~500A	Range	0~50MΩ	Range	0~100%	Range	0~100%
	Resolution	0.1V	Resolution	0.1A	Resolution	0.1KΩ	Resolution	1%	Resolution	1%
	Accuracy	< 1000V(1%FS) ≥1000V(0.5%)	Accuracy	< 1%FS	Accuracy	<3%(500~1500V and>600KΩ)	Accuracy	< ±5%	Accuracy	< ±8%
	Cycle	100ms	Cycle	50ms	Cycle	8S	/		/	
	Channel	Total positive/ precharge	Channel	Large/small range/CAN	Channel	Total positive/total negative to pack case				

	Ethernet		RS485		RS232		CAN	
Communication Type	Channel Qty	3-channel	Channel Qty	4-channel	Channel Qty	1-channel	Channel Qty	2-channel
	Communication rate	10M/100M	Communication rate	9600bps	Communication rate	9600bps	Communication rate	250Kbps
	Electricalisolation	3820Vdc	Electricalisolation	3820Vdc	Electricalisolation	3820Vdc	Electricalisolation	3820Vdc
	Support protocol	Modbus	Support protocol	Modbus	Support protocol	Modbus	Support protocol	Internet protocol

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