Marstech

BMS of H3G-TA Lead-acid & Ni-cd Battery Energy Storage

H3G-TA
Battery Monitoring System

Marstech

BMS Technology Serves Global Customers

Founded in 2005

Industry NO.1

3+ Drafting Industry Standards

30+ Patents

High-tech Enterprise

40+ International Business

Marstech

Partners

I. Industry

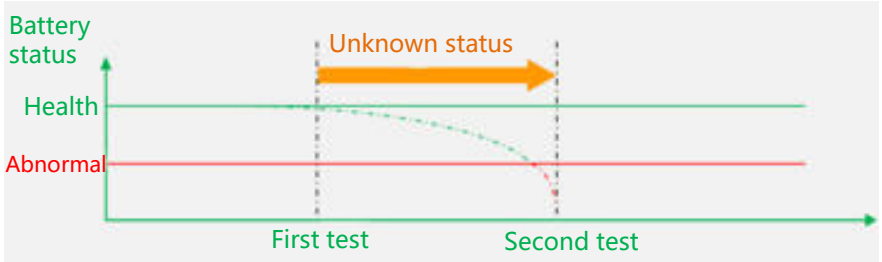
More than 60% of power system problems are caused by battery failure

▪ Battery problems ▪ UPS problems ▪ Human factors

Problem	Situation	Result
Open circuit, short circuit	Abnormal voltage, abnormal capacity, slow charging, fast temperature rise	Power down
Battery loses water	Increased internal resistance, abnormal capacity, rapid temperature rise	Fire
Battery swollen	Increased internal resistance and obvious temperature rise	Power down, fire
Loose terminal	Internal resistance increases, temperature increases	Fire

Disadvantages of manual inspection/ traditional inspection equipment

- The cost of manual inspection is high, wasting time and energy
- High manual operation risk and long cycle
- The traditional inspection instrument has complicated layout and high cost
- Both accuracy is easy to be affected, the data is distorted
- Lack of data analysis and key indicators monitoring to identify backward batteries



Power system down/fire, traditional inspection will

bring losses to the computer room, and even

lead to serious accidents




Battery Maintenance

IEEE 1188-2005IEEE Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead- Acid (VRLA) Batteries for Stationary Applications

Monthly inspection	Quarterly inspection	Annual inspection
String voltage	Cell internal resistance	Connection resistance
Charger output current and voltage	Battery negative temperature	Ripple voltage and current
Ambient temperature	Cell voltage	
Whether the appearance of the battery is rusted, cracked, deformed, or leaking		
Floating current		

International Standards

1.	ANSI/TIA-942: Telecommunications Infrastructure Standard for Data Centers
2.	IEEE – 1491 – 2005 IEEE Guide for Selection and Use of Battery Monitoring Equipment in Stationary Applications

II. Advantages

H3G-TA system can perfectly solve the problem of battery monitoring in the computer room and improve safety

H3G-TA Core Tech.

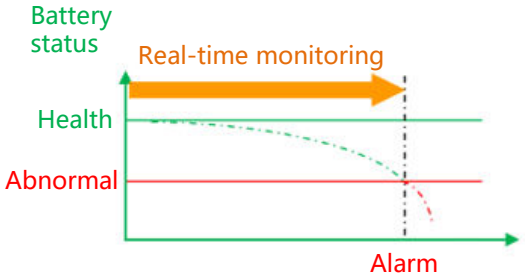
1. Real-time monitoring and alarm
2. Advanced anti-interference and low power consumption design
3. High accuracy data
4. High accuracy SOC/ SOH

1. Real-time monitoring and alarm

- For monitoring cell voltage, cell internal resistance, negative pole temperature
- When the parameters are abnormal, the devices will promptly alarm, which can eliminate the hidden safety problems caused by the detection of the gap period of the traditional inspection
- Work with Huasu BMDM-ND03 software to perform AI analysis on battery data (optional)
- Work with MM-07 monitoring module to comprehensively improve the safety of the computer room (optional)

MM-07 monitoring module (optional)

BMDM software (optional)

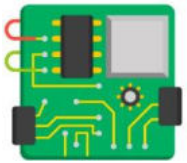


2. Advanced anti-interference and low power consumption design

- Excellent product design, can block the ripple interference of high-power high-frequency UPS
- Working current as low as 3 mA without affecting the cells being monitored

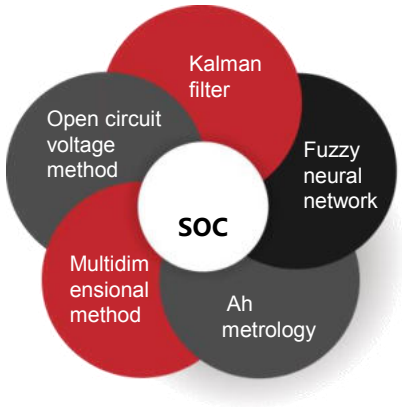
3. High accuracy data

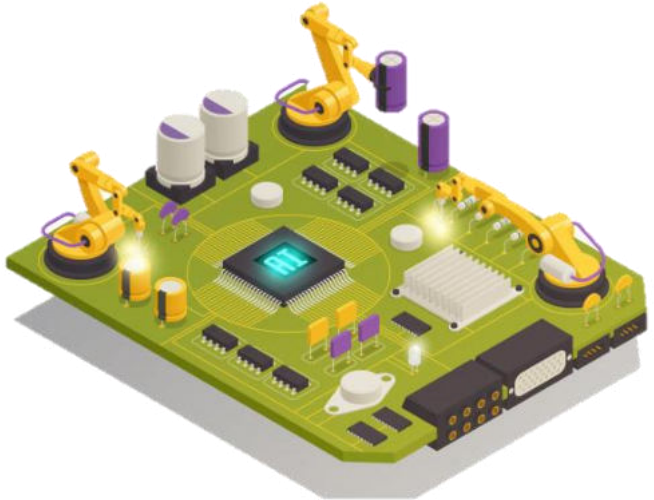
- Adopt Huasu's collection and testing technology patent to achieve accurate measurement of internal resistance, voltage and temperature



4. High accuracy SOC/ SOH

- Online parameter identification, self-correcting charging, no jump, full operating conditions, SOC error ≤5%, improving battery battery efficiency and operating safety;
- Kalman filtering, multi-dimensional algorithms are used. Provides high-accuracy SOC, improving traditional BMS accuracy from ± 10% to ± 5%



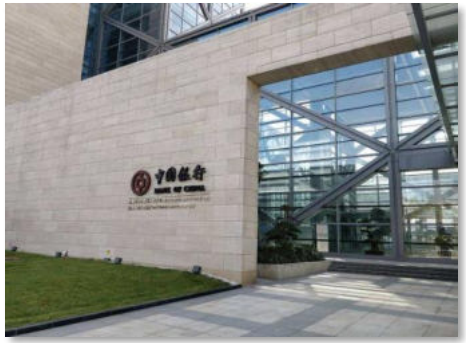


H3G-TA comparison

Category	Item	H3G-TA	Regular BMS	Solution
Security	Anti-ripple interference	High	Low	Block ripple interference of high-power high-frequency UPS
	Data update speed	Fast	Regular	Improve data timeliness and maintain accuracy
Tech.	Power consumption	3mA(Low)	10~200mA	Only 30% of the lowest power consumption of traditional solutions
	SOC/ SOH accuracy	High	Low	SOC/ SOH data is more accurate
	Cell internal resistance	50 ~ 65535μΩ	50 ~ 65535μΩ	Accurate measurement of battery internal resistance
Function	String voltage	20~800V	20~800V	Suitable for most systems on the market
	Cell voltage	1.2V, 2V, 6V, 12V batteries	1.2V, 2V, 6V, 12V batteries	Suitable for most systems on the market
	Cell negative pole	-5 ~ +99.9℃	-5 ~ +99.9℃	Accurate measurement of battery negative temperature

Application cases

BMS of China Bank



BMS of China Baidu Data Center

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Application

Huasu H3G-TA system is widely used in data center, telecom, enterprise, finance, petroleum and petrochemical, power, aviation and other industries

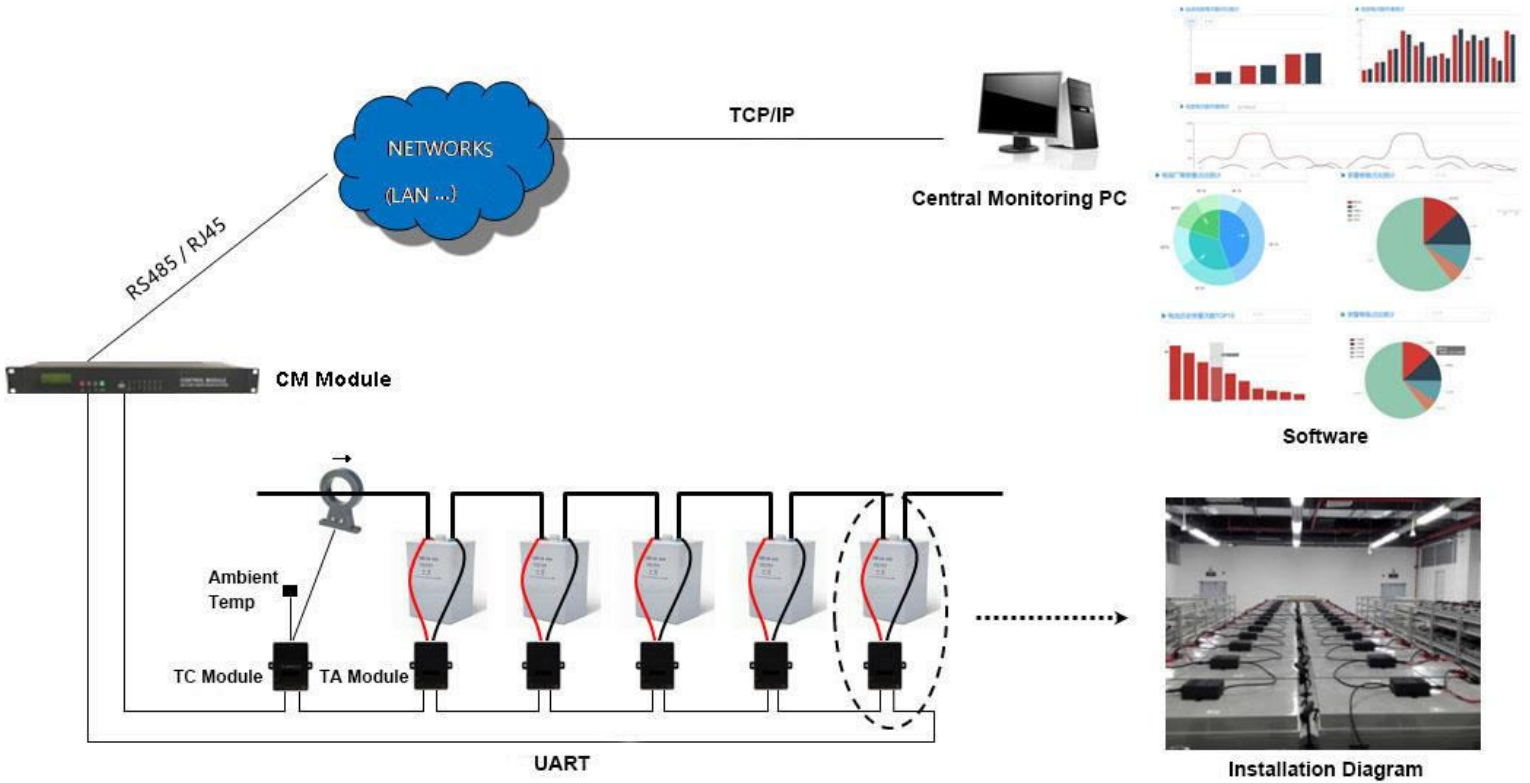
BMS of Data Center

BMS of Telecom

BMS of Company

BMS of Financial System

Topology


NETWORKS
(LAN ...)
TCP/IP
Central Monitoring PC
RS485 / RJ45
CM Module
Software
Ambient
Temp
TC Module
TA Module
UART
Installation Diagram

System components

CM-02N control module

- Max. manage 6 strings or 600 cells
- Data collection, analysis, storage, upload, display
- Support serial/LAN port communication, MODBUS/SNMP protocol
- Built-in HMI
- Built-in SOC/SOH algorithm
- Linkage dry contact output

H3G-TA module

- Distributed architecture, each battery needs 1 unit
- For monitoring cell voltage/ internal resistance/ temperature
- Power consumption current as low as 3mA, far below industry level
- Suitable for 1.2V/ 2V/ 6V/ 12V batteries
- Dual UART communication, MODBUS protocol
- Strong expandability and stable reliability

TC module

- Distributed architecture, each string needs 1 unit
- For monitoring battery string charge/discharge current/ambient temperature
- Support 1.2V/ 2V/ 6V/ 12V batteries
- Strong expandability and stable reliability

Charge/discharge current transformer

- Open Hall sensor
- Work with TC module to monitor battery string charge/discharge current

MM-07 Monitoring module (optional)

- Industrial 7-inch capacitive touch screen with built-in APP
- Support local display control extension

BMDM software (optional)

- Real-time data display, data AI analysis
- Cloud management
- Based on Linux system MySQL database

Main function

Item	Description
Monitoring content	SOC, SOH, cell internal resistance, cell temperature, cell voltage, string voltage, ambient temperature, charge/discharge current; the system has built-in self-developed advanced algorithm model
Charge/discharge process record	Intelligently identify the state of the battery string and automatically record the charge/discharge curves of the whole string and each battery
Over-limit alarm	Automatic limit alarm, buzzer start, alarm indicator closed, alarm status set, alarm dry contact closed or open, alarm threshold can be set
Dry contact	Two alarm dry contact output, divided into battery type alarm and device's own fault alarm, one dry contact input, dry contact can be defined
LCD display/keys	With two lines English display and operation buttons, can extend 7 -inch touch screen
Upload port	RS485，LAN
Communication protocol	MODBUS /RTU, MODBUS /TCP,SNMP

Technical specification

Monitoring content	Range	Accuracy	Resolution
String voltage	20 ~ 800V	±0.5%	0.1V
Cell voltage	1.2V, 2V, 6V, 12V batteries	±0.1%	0.001V
Cell internal resistance	50 ~ 65535μΩ	±2%	1μΩ
Cell temperature	-5 ~ +99.9℃	±1℃	0.1℃
Charge/discharge current	0 ~ 1000A (standard)	±1%	0.1A
Ambient temperature	-5 ~ +99.9℃	±1℃	0.1℃
SOC、SOH	——	±5%	——

IV. Features

All cables and non-metallic enclosures of the system are flame-retardant materials, and the flame-retardant meet the requirements specified in the American UL VW-1, UL94-V0 or GB / T 18380.1 standards.

TA test cable

Communication cable

TC test cable

Power cable

Installation

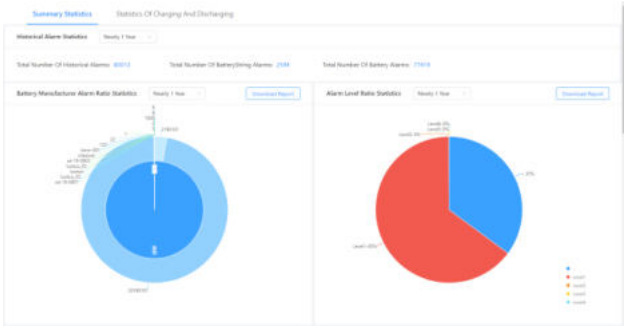
Terminal installation

Control module installation

Sensor installation

BMDM-ND03 Software

- Visual user terminal, can display all battery data and change trend
- Visually reflect alarm conditions, including start and end times



UL, CE, ROHS, Tell Certifications

CERTIFICATE OF COMPLIANCE

SGS

VERIFICATION OF EMC COMPLIANCE

CE

SGS

Verification Report

检验报告

中国泰尔实验室

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Thank you!

Customer First