



Monitor Ni-cad & Lead-acid battery



Monitor battery leakage and liquid level



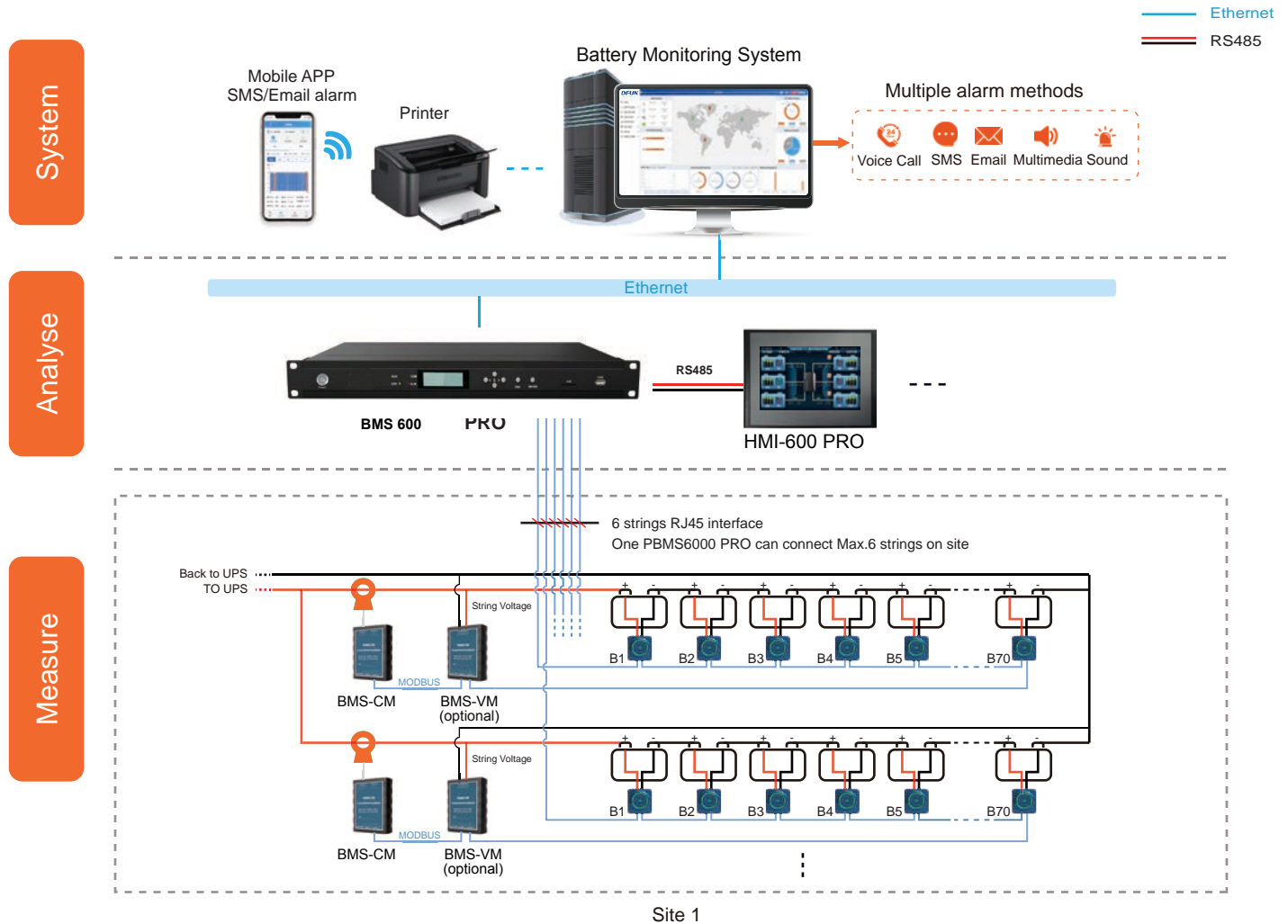
Powered by communication bus

Feature

- Apply to DC power system like substation, train locomotive etc
- 24/7 on-line monitoring & remote alarm notifications
- Monitor Max. 6 strings and 420pcs batteries in total
- Measure ni-cad, lead acid, and muti-pole battery
- Powered by communication bus, no consuming battery power
- Measure string ripple current and ripple voltage
- Anti-interference design, support to connect with high-frequency UPS
- Anti-reverse protection, no damaging the cell sensor and battery
- Comply with IEEE 1188-2005

BMS 600 PRO Battery Monitoring Module

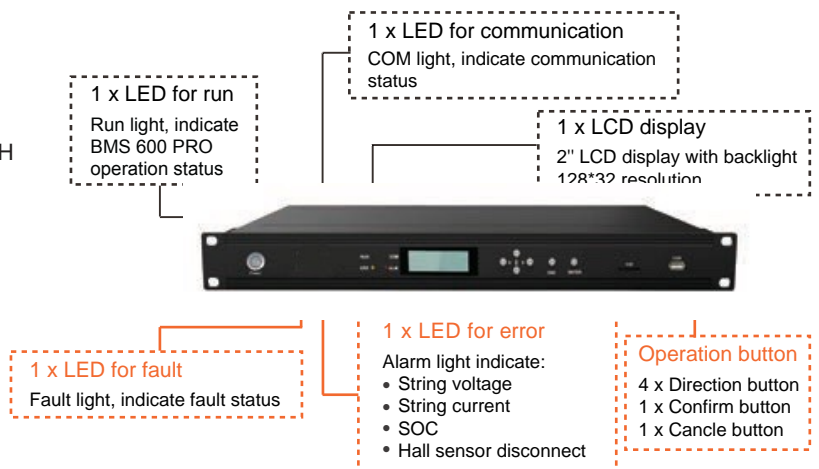
System Structure



Management Layer

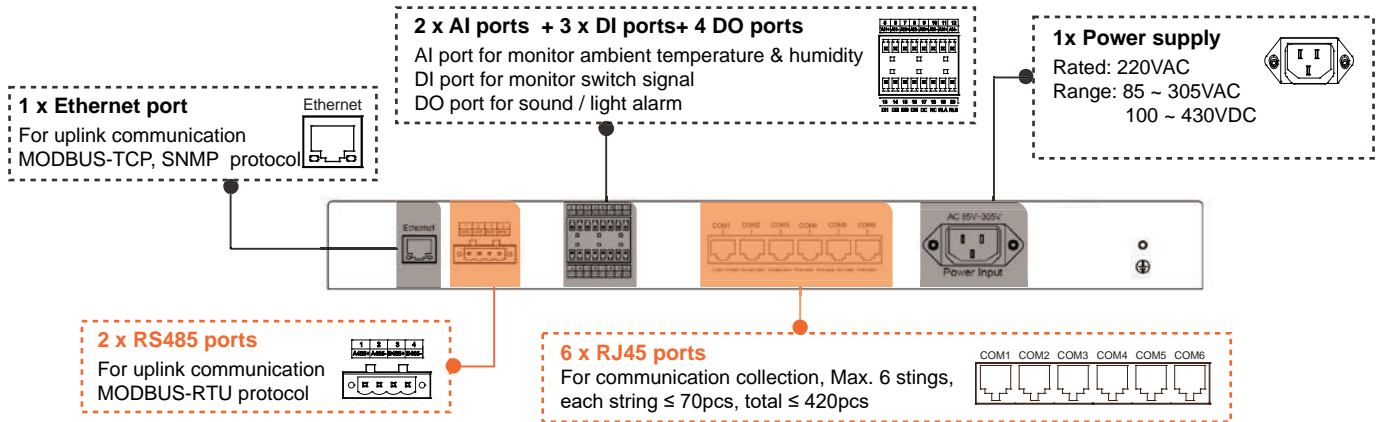
BMS 600 PRO Battery Monitoring Master

- Standard 1 U design for distribution cabinet
- String voltage up to 1000V, battery capacity up to 3000AH
- Measure battery string status, voltage, ripple voltage, charge and discharge current, ripple current
- Calculate battery string SOC, individual SOC / SOH
- Setpoint alarm (upper limit / lower limit)
- Auto-sensing for the battery sensor's ID address
- Multi communication protocol (MODBUS-TCP, MODBUS-RTU, SNMP)
- Support 3rd party system (DCIM)
- Auto-balancing
- Local display via HMI



BMS 600 PRO Battery Monitoring Module

Dimension and Installation



Technical Specification

CPU	ARM cortex M4 180MHz	Up-link communication	1 Ethernet port (10/100M), MODBUS-TCP, SNMP	
Flash	128Mbit flash		2 Channels RS485 ports, MODBUS-RTU, baud rate: 9600bps, 19200bps, 38400bps (optional)	
Display	2" inch LCD with backlight			
MTBF	≥ 100,000 hours	Down-link communication	6 Channels RJ45 ports, each port Max. connect≤70pcs batteries, total Max. 420pcs	
Power supply	Rated: 220VAC Range: 85~305VAC 100~430VDC	Additional port	2 x AI, 4 ~ 20mA, input impedance 50Ω 3 x DI, dry contact 4 x DO, 250VAC/5A or 30VDC/5A	
Power consumption	< 15W (only master)	Measure range	Voltage	1~6 strings, range: 20 ~ 1000VDC (±0.5%), resolution: 0.01V
Dimension	Standard 19-inch 1 U device 482.6mm x 204.5mm x 44mm Open hole: 465mmx32mm		Current	1~6 strings, range: -2000 ~ 2000ADC (±2.0%, under 15°C ~ 35°C), resolution: 0.01A
		Operation environment	Working temperature: -15°C ~ 55°C Storage temperature: -40°C ~ 70°C Humidity: 5% ~ 95% non-condensing	

Battery Cell Sensor

BAT-02 / BAT-12 Battery Cell Sensor

- BAT-02 for 2V lead-acid battery or 1.2V Ni-cad battery
- BAT-12 for 12V lead-acid battery
- Monitor individual battery voltage, internal temperature (negative pole), impedance(ohmic value)
- Calculate individual battery state of charge (SOC), state of health (SOH)
- Support battery leakage and liquid level monitoring (optional)
- Powered by communication bus, no consuming battery power
- Auto-balancing
- Accessories:
 - 1) Battery measuring cable: 30cm
 - 2) Communication cable : 50cm with RJ45 port



Running status

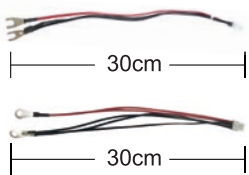
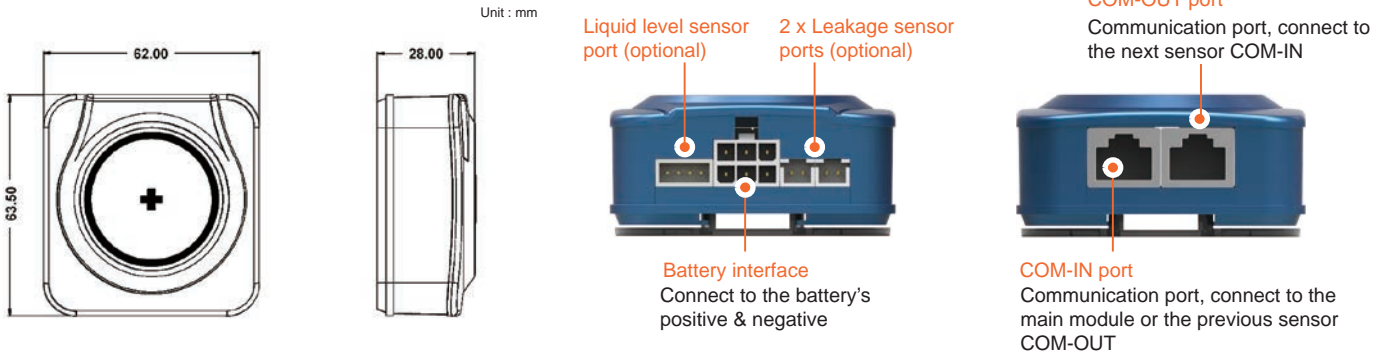


Abnormal status

Item	Power supply	Rated input voltage	Measuring range		
			Voltage	Internal temperature	Impedance
BAT-02	24VDC Power consumption: < 0.25W	2V / 1.2V	0.5 ~ 3VDC (±0.2%)	-20°C ~ 85°C (±0.5°C)	Range: 0.1mΩ ~ 50mΩ Repeatability error: 1.0%±25μΩ Conformity error: 1.5% ±25μΩ
BAT-12		12V	5 ~ 18VDC (±0.2%)		

BMS 600 PRO Battery Monitoring Module

Dimension and Installation



Battery measuring cable	Item	Description
	Length	30cm
Terminal & size	U Type, hole diameter: 8mm	
	O Type, hole diameter: 8mm	



String Measuring Sensor

BMS-CM String Current Measuring Sensor & Hall Sensor

- One string need 1 BMS-CM, each BMS-CM with 2 hall sensor ports
- Measure battery string charge and discharge current, ripple current
- Measure multi-pole battery's string charge and discharge current and ripple current with flexible module and hall sensor
- Accessories:
 - 1) Hall sensor and cable: range from 0 ~ ±1000A with 2m cable
 - 2) Communication cable : 2m with RJ45 port



BMS-CM



Hall Sensor

Item	Power supply	Measuring range		Environment
		String current	Ripple current	
BMS-CM	24VDC (range: 9 ~ 32VDC) Power consumption: < 0.5W	1 Hall sensor: -1000 ~ 1000A 2 Hall sensor: -2000 ~ 2000A (±2.0%, 15°C ~ 35°C)	20% of hall sensor Rated current (peak value) Frequency: 50Hz ~ 1KHz	Working temperature: 0°C ~ 45°C Working temperature limit: -15°C ~ 55°C Humidity: 5% ~ 95%RH, non-condensing Storage temperature: -40°C ~ +70°C

BMS-VM String Voltage Measuring Sensor (Optional)

- One PBMS-VM can measure 1 string's voltage
- Measure battery string voltage and ripple voltage





BMS-VM

Item	Power supply	Measuring range		Environment
		String voltage	Ripple voltage	
BMS-VM	24VDC (range: 9 ~ 32VDC) Power consumption: < 1W	8 ~ 1000VDC (±0.5%)	2 ~ 100VDC (peak value)	Working temperature: 0°C ~ +45°C Working temp limit: -15°C ~ +55°C Humidity: 5% ~ 95%RH, non-condensing Storage temperature: -40°C ~ +70°C

BMS 600 PRO Battery Monitoring Module

Order Information

System Structure		Model	Description	Remark
Management layer		BMS 6600 PRO	Battery monitoring master	One per each UPS One PBMS6000 PRO can monitor Max. 6 strings, Max. 420pcs batteries
String measuring sensor		BMS-CM	String current measuring sensor	One per each string, each has 2 hall sensor ports, can connect Max. 2 hall sensor. If use for multi-pole battery, then we can configure PBMS-CM according to the number of pole. Hall sensor and cable: range from 0 ~ ±1000A with 2m cable. Communication cable : 2m with RJ45 port
		BMS-VM	String voltage measuring sensor	One per each string (optional)
Battery cell sensor		BAT -02	1.2 / 2 volt battery cell sensor	One per battery cell
		BAT -12	12 volt battery cell sensor	One per battery cell
Accessory	Cell sensor communication cable	PBAT-COM-RJ45-50	Cable terminal: RJ45 port, length: 50cm (standard)	
	Battery measuring cable	BAT-C1 -U-M8 -3 0	Cable terminal: U type  , hole diameter: 8mm, length: 30cm (standard)	
		BAT-C1 -O-M8 -3 0	Cable terminal: O type  , hole diameter: 8mm, length: 30cm	
	Hallsensor for PBMS-CM	CS050EK1T5	Rated input: 50A	Measure range: 0~±100A, Φ20mm
		CS100EK2T5	Rated input: 100A	Measure range: 0~±200A, Φ40mm
		CS200EK2T5	Rated input: 200A	Measure range: 0~±400A, Φ40mm
		CS400EK2T5	Rated input: 400A	Measure range: 0~±800A, Φ40mm
CS500EK2T5		Rated input: 500A	Measure range: 0~±1000A, Φ40mm	
Power supply	HDR-30-24	24VDC power source, 220AC to 24VDC, for HMI-6000 PRO		
Optional module	Local display & operation layer	H M I - 6 0 0 PRO	7-inch touch screen HMI for local display	One per BMS 600 PRO Communication with BMS 600 PRO via RS485
	Liquid level sensor	BMS-ELS	Monitor liquid level	One per each battery, length: 30cm
	Leakage sensor	BMS-LS-O5 6	Monitor leakage with two ports (connect to the battery +/- port)	One/Two per each battery, length: 30cm