

PBMS9000

Battery Monitoring Module



Dual source



4G wireless upload to the third party



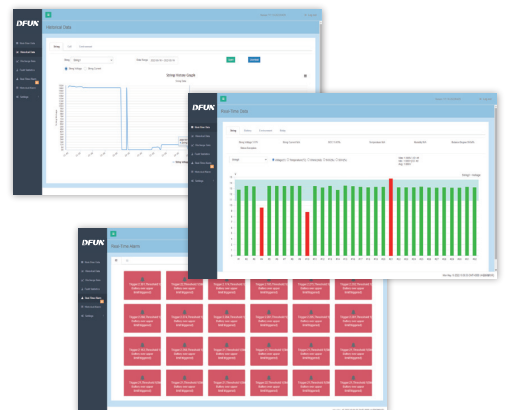
Build-in web server with visual display



Data storage

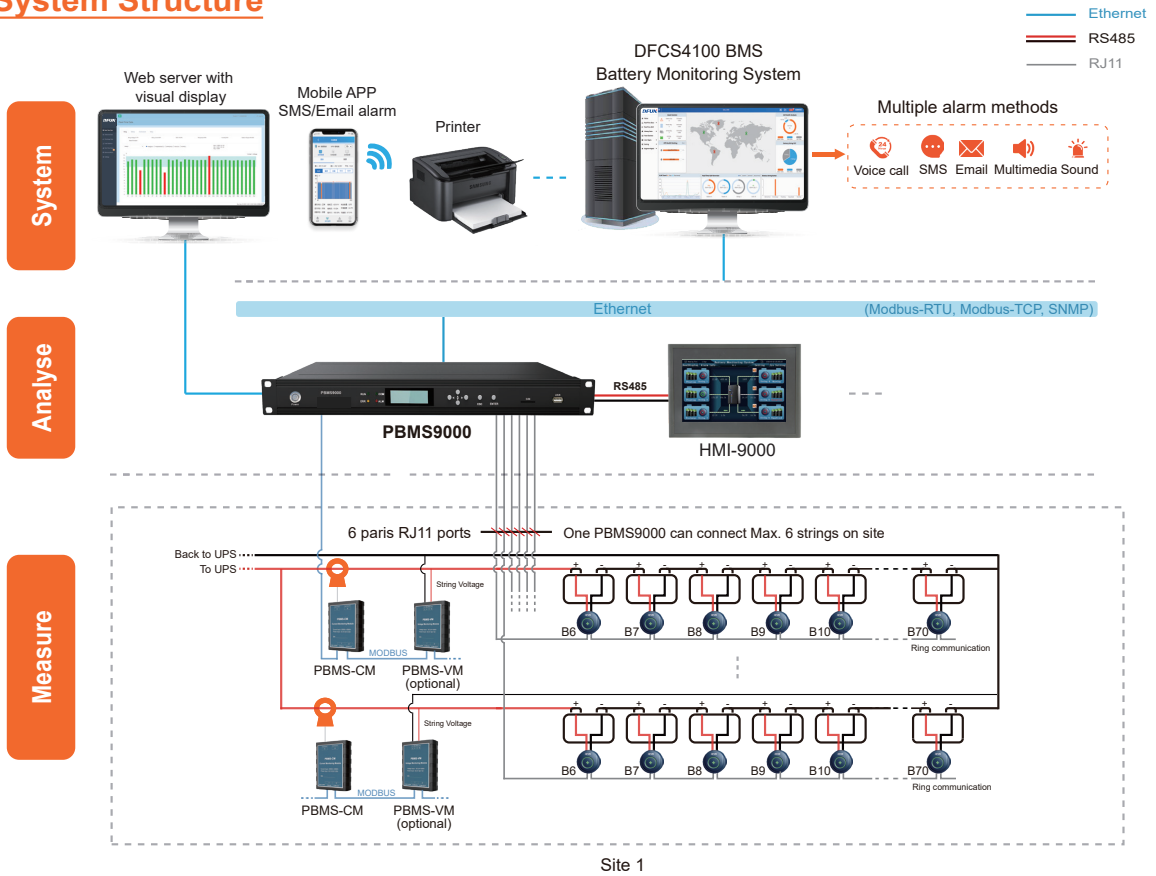
Feature

- 24/7 hours on-line monitoring & remote alarms notification
- Suitable for UPS and data center application
- Measure lead-acid or multi-pole battery
- Anti-interference design, support to connect with high-frequency UPS
- Ring communication, any communication failure will not affect other sensors communication
- Full data measurement, such as voltage, current, impedance, insulation resistance, ripple current, ripple voltage, SOC, SOH, etc.
- Auto-sensing for the battery sensor's ID address
- Dual-source to avoid power shut down
- Comply with IEEE 1188-2005



PBMS9000 Battery Monitoring Module

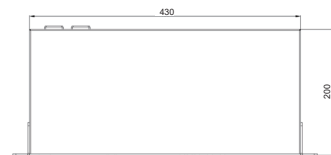
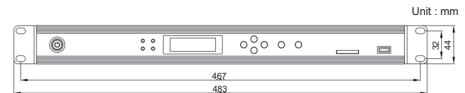
System Structure



Management Layer

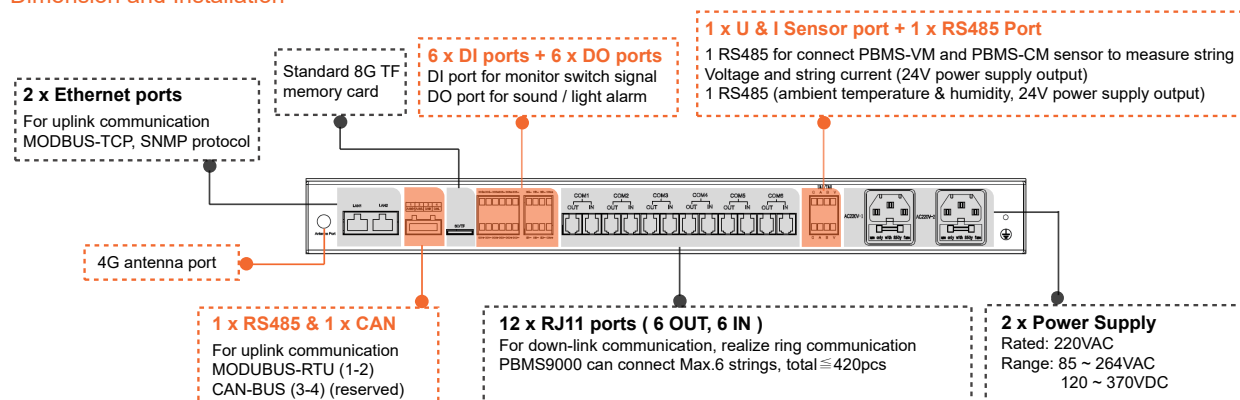
PBMS9000 Battery Monitoring Module

- Standard 1 U design for distribution cabinet
- Monitor Max. 6 strings battery, in a total of 420 batteries
- Built-in web server with visual display
- Measure battery string voltage, string temperature, ripple voltage, ripple current, charge and discharge current, internal temperature, impedance, SOC and SOH
- Setpoint alarm for cell voltage, internal temperature, impedance, SOC, SOH (upper limit / lower limit) and string voltage, current, SOC (upper limit / lower limit)
- Alarm message by SMS or Email
- Support SNMP, Modbus-TCP, Modbus-RTU, CAN-BUS protocols
- Support RESTful API, JSON format to upload data
- 2 Ethernet port for data upload
- 1 RS485 port (support 1~6 strings ambient temperature & humidity acquisition)
- 6 DI ports (digital Input connecting)
- 6 DO ports (sound and light alarm)



PBMS9000 Battery Monitoring Module

Dimension and Installation



Technical Specification

CPU	ARM cortex M4 180MHz	Up-link communication	2 Ethernet ports (10/100M), MODBUS-TCP, SNMP, 1 RS485 port, MODBUS-RTU, baudrate: 9600bps, 19200bps, 38400bps (optional), 1 CAN port, CAN-BUS	
Memory	512MB flash, EMMC 4G + 8G SD memory card		Down-link communication	6 Channels RJ11 ports, each port Max. connect \leq 70pcs batteries, total Max. 420pcs
Display	2" inch LCD with backlight	Measure range		Voltage
MTBF	\geq 100,000 hours		Ripple voltage	1~6 strings, range: 2V~100V (peak), resolution: 0.01V
Power supply	Rated: 220VAC Range: 85 ~ 264VAC 120 ~ 370VDC		Current	1~6 strings, range: DC -2000~+2000A(\pm 2.0%, under 15 C ~ 35 C), resolution: 0.01A
Dimension	Standard 19" inch 1 U device 482.6mm x 204.5mm x 44mm Open hole: 438mm x 318mm		Ripple current	1~6 strings, according to the rated current of the hall sensor, range: DC 0~0.4*1 (peak), resolution: 0.01A
Power consumption	<15W	Ambient temperature & humidity	1~6 in series, measuring range: temperature: -20 C ~ 60 C, humidity: 0 ~ 100%rh Measurement accuracy: temperature: \pm 0.4 C, Resolution 0.1 C, humidity: \pm 3%rh, resolution: 0.1rh	
Additional port	1 x RS485 (ambient temperature & humidity) 6 x DI dry contact 6 x DO relay output, 250VAC/5A or 30VDC/5A	Operation environment	Working temperature: -15°C ~ +55°C Storage temperature: -40°C ~ +70°C Humidity: 5% ~ 95% non-condensing	

String Measuring Sensor

PBMS-CM String Current Measuring Sensor & Hall Sensor

- One string need 1 PBMS-CM, each PBMS-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 ~ \pm 1000A with 2m cable
- 2) Communication cable: 2m with RJ45 port



PBMS-CM



Hall Sensor

Item	Power supply	Measuring range		Environment
		String current	Ripple current	
PBMS-CM	24VDC (range: 9 ~ 32VDC) Power consumption: < 0.5W	1 Hall sensor: -1000A ~ +1000A 2 Hall sensor: -2000A ~ +2000A (\pm 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

PBMS9000 Battery Monitoring Module

PBMS-VM String Voltage Measuring Sensor (Optional)

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



PBMS-VM

Item	Power supply	Measuring range		Environment
		String voltage	Ripple voltage	
PBMS-VM	24VDC (range: 9 ~ 32VDC) Power consumption: < 1W	20V ~ 1000VDC (±0.5%)	2V ~ 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



H-THDRJ45 Ambient Temperature & Humidity (Optional Module)

- Dual RJ45 interface, fast wiring, support cascade use
- Convenient and fast installation mode with magnet adsorption
- LCD display design
- High measurement accuracy, wide range and good consistency
- 1 PBMS9000 can connect Max. 6 ambient temperature & humidity sensors



H-THDRJ45

Order Information

System Structure		Model	Description	Remark
Management layer		PBMS9000	Battery monitoring module	One per each UPS One PBMS6000 can monitor Max. 6 strings, Max. 420pcs batteries
String measuring sensor		PBMS-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
		PBMS-VM	String voltage measuring sensor	One per each string (optional)
Battery cell sensor		PBAT 61-02	2 volt battery cell sensor	One per battery cell
		PBAT 61-06	6 volt battery cell sensor	One per battery cell
		PBAT 61-12	12 volt battery cell sensor	One per battery cell
Accessory	Cell sensor communication cable	PBAT-COM-40	Cable terminal: RJ11 Port, length: 40cm (standrad)	
		PBAT-COM-70	Cable terminal: RJ11 Port, length: 70cm	
	Battery measuring cable	PBAT-C1-U-M8	Cable terminal: U type  , hole diameter: 8mm, length: 30cm (standrad)	
		PBAT-C1-O-M8	Cable terminal: O type  , hole diameter: 8mm, length: 30cm	
	Hall sensor 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		
Optional module	Ambient temperature & humidity	H-THDRJ45	LCD display	One per each string
	Power supply	HDR-30-24	24VDC power source, 220AC to 24VDC, for HMI-9000	
	Local display & operation layer	HMI-9000	7" Touch-screen HMI for local display	One per one PBMS9000 Communication with PBMS9000 via RS485