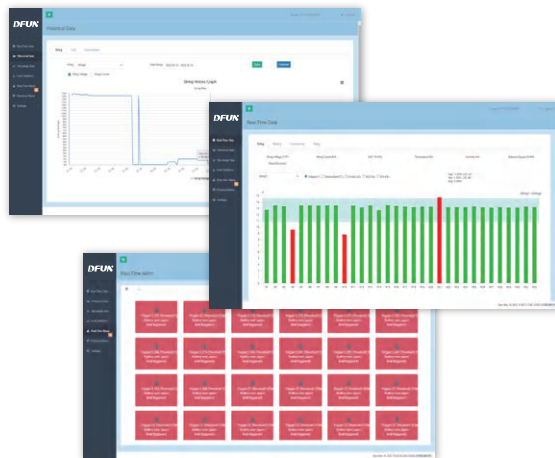


 **UL Certified** **4G Wireless Upload** **Build-in Webpage** **5 Years Storage** **Real-time Alarm** **Ripple Current / Ripple Voltage**

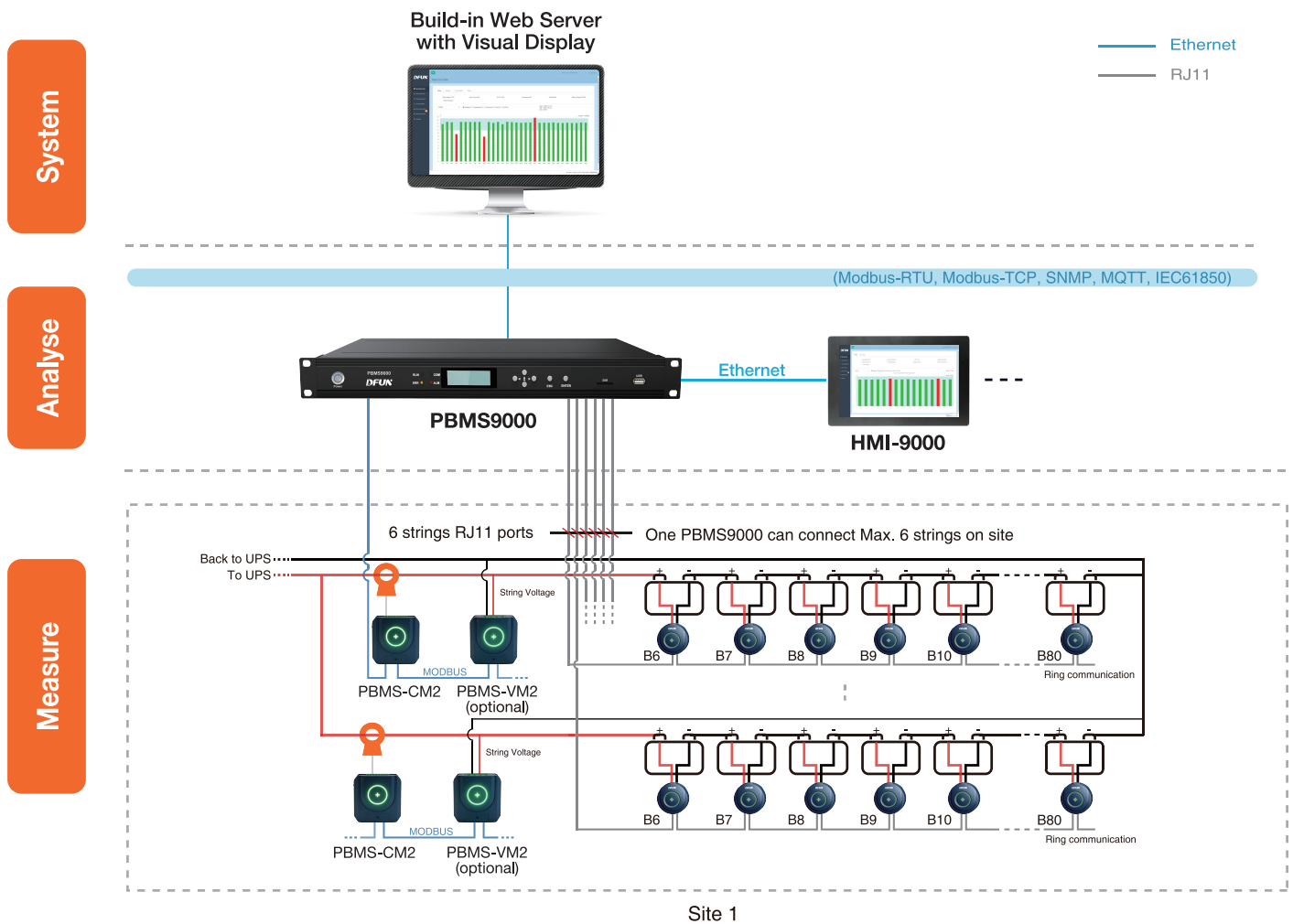
Feature

- Apply to UPS and data center application
- Measure lead-acid or multi-pole battery
- Ring communication, any communication failure will not affect other sensors communication
- Monitor battery voltage, current, impedance, insulation resistance, ripple current & voltage, SOC, SOH, etc.
- Support Modbus, SNMP, MQTT and IEC61850 protocols
- Auto-sensing for the battery sensor's ID address
- Dual-source to avoid power shutdown
- Anti-interference design, support to connect with high-frequency UPS
- Comply with IEEE 1188-2005
- Thermal runaway management(Optional temperature and humidity sensor)
- The product has obtained CE, FCC, Rohs, UL certification



PBMS9000 for Data Center

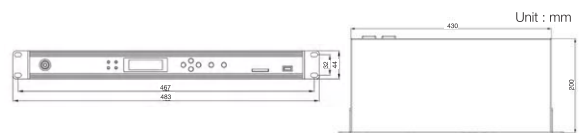
System Structure



Management Layer

PBMS9000 Battery Management Controller

- Standard 1U design for distribution cabinets
- Dual-source to avoid power shutdown
- Built-in web server with visual display
- Monitors Max. 6 strings battery, in a total of 480 batteries
- Measures battery string current & voltage, ripple voltage & current, charge & discharge current, internal temperature, impedance, insulation resistance, ambient temperature & humidity, SOC and SOH
- Alarm notifications via SMS or Email
- Supports Modbus-TCP, Modbus-RTU, SNMP and IEC61850 protocols
- Supports MQTT for JSON format to data upload
- 1 RS485 port, 2 Ethernet ports and 1 4G antenna port for data upload
- 6 DI ports (for digital Input connecting)
- 6 DO ports (for sound and light alarms)

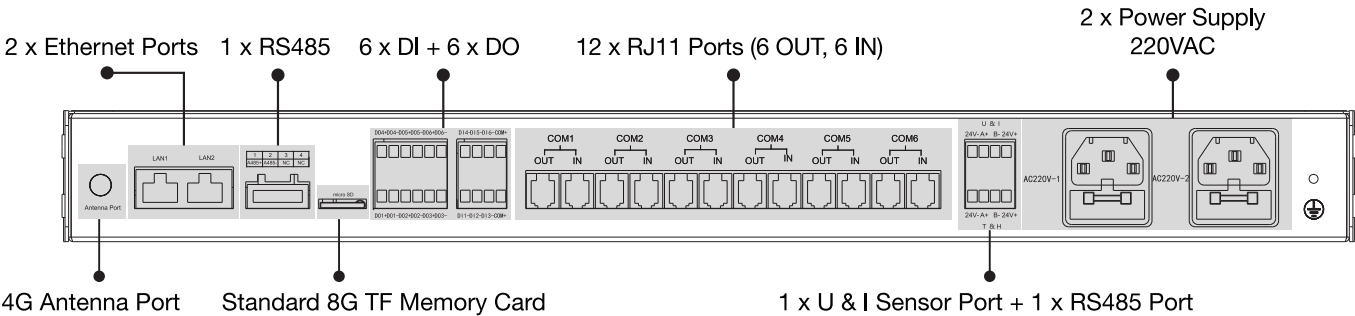


Pre-install & Pre-wiring for PBMS9000 and HMI-9000 (Optional)



PBMS9000 for Data Center

Interface Description



Technical Specification

CPU	ARM cortex-A7 528MHz	Up-link Communication	2 Ethernet ports(10/100M), MODBUS-TCP, SNMP, IEC61850 1RS485 port, MODBUS-RTU, baudrate: 9600bps/19200bps/38400bps(optional)	
Memory	512MB flash 4G EMMC + 8G TF memory card			
Display	2-inch LCD with backlight	Down-link Communication	6 Channels RJ11 ports, each port Max. connect ≤ 80pcs batteries, total Max. 480pcs	
MTBF	≥100,000 hours	Measure Range	Voltage	1~6 strings, Range: 20~1000V DC (±0.5%), Resolution: 0.01V
Power Supply	Rated: 220VAC Range: 85~264VAC / 120~370VDC		Ripple Voltage	1~6 strings, Range: 2~100V (peak), Resolution: 0.01V
Dimension	Standard 19-inch 1 U device 483mm × 206mm × 44.5mm (W*D*H) Open Hole: 440mm×46mm (L*H)		Current	1~6 strings, Range: -2000~2000A DC (±2.0%fs, 15°C~35°C), Resolution: 0.01A
Power Consumption	≤15W (Only main controller)		Ripple Current	1~6 strings, determined by the Hall rated measuring current I, Range: 0~0.4*I (peak), Resolution:0.01A
Additional Port	6 x DI dry contact 6 x DO relay output, 250VAC/5A or 30VDC/5A	Operation Environment	Operating Temperature: -15~60°C Storage Temperature: -40~70°C Humidity: 10~95%RH, non-condensing	
		Extension Sensor (Optional)	-RS485 for Max.6 strings ambient temperature & humidity measuring -RS485 for 1~6 strings DC insulation resistance measuring	

String Measuring Sensor

PBMS-CM2 String Current Measuring Sensor & Hall Sensor

- 1 string needs 1 PBMS-CM2, each PBMS-CM2 with 2 hall sensor ports
- Measure battery string charge and discharge current, ripple current
- Hall sensor measuring range: -1000A~-+1000A(single-pole) / -2000A~-+2000A(dual-pole)
- Supports floating charge hall detection



Hall sensor



Item	Power Supply	Hall Interface	Environment
PBMS-CM2	24VDC (range: 9~32VDC) Power consumption: <0.5W	2 channels, DC ±4V	-10℃ ~ +55℃ , accuracy: ±1℃

PBMS9000 for Data Center

Battery Cell Sensor

PBAT61-02/PBAT61-06/PBAT61-12 Battery Cell Sensor

- PBAT61-02 for 2V battery
- PBAT61-06 for 6V battery
- PBAT61-12 for 12V battery
- Monitor individual battery voltage, internal temperature (negative pole), Impedance(ohmic value)
- Auto-balancing



Running Status

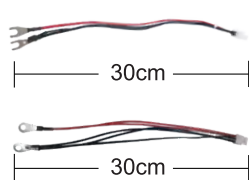


Abnormal Status

Technical Specification

Item	Rated Input Voltage	Measuring Range			
		Voltage	Internal Temperature	Impedance	Power Consumption
PBAT61-02	02V	1.6~2.6V ($\pm 0.2\%$)	$-20^{\circ}\text{C} \sim 85^{\circ}\text{C}$ ($\pm 0.5^{\circ}\text{C}$)	Range: 0.1~50m Ω Repeatability accuracy: 1.0% $\pm 25\mu\Omega$ Consistency accuracy: 1.5% $\pm 25\mu\Omega$	Running: <70mW Sleeping: <8mW
PBAT61-06	06V	4.8~10V ($\pm 0.2\%$)			
PBAT61-12	12V	7.5~15.6V ($\pm 0.2\%$)			

Dimension and Installation



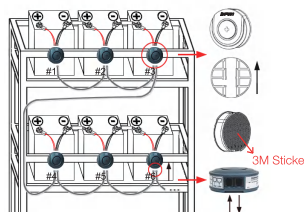
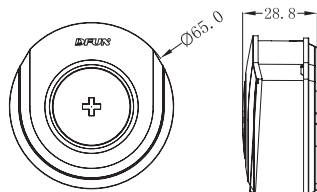
Item	Description
	Length
	Terminal & Size

30cm

30cm

U type, hole diameter: 8mm

O type, hole diameter: 8mm



Extension Module (Optional)

Ambient Temperature & Humidity Sensor

- Dual RJ45 interface, fast wiring, support cascade use
- Adsorption by magnet
- Temperature: $-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$ ($\pm 0.4^{\circ}\text{C}$), resolution: 0.1 $^{\circ}\text{C}$. Humidity: 0 ~ 100%RH ($\pm 3\%$ RH), resolution: 0.1%RH
- Cable(9000-H-THD-RJ45-500): 5 meter RJ45 convert to 4P terminal wire



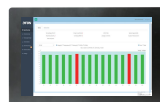
PBMS-VM2 String Voltage Measuring Sensor

- 1 PBMS-VM2 can measure 1 string's voltage
- Measure battery string voltage and ripple voltage
- Built-in ground fault detection & testing



10.1-inch Android HMI

- 10.1" inch touch-screen HMI for local display and operation
- OS: Android 10.0
- CPU: R818 (4-core A53 1.6GHz)
- Running memory: 1GB,
- EMMC: 8GB
- Support the reading and configuration of all parameters of the system



Hydrogen (H2) Sensor

- Class of protection: IP65
- Measuring range: 0~1000ppm
- Accuracy: $\pm 5\%$ FS
- Resolution: 1ppm(100K Ω ~50K Ω)
- Cable: 2 meter Aviation port to 4P terminal wire



DC Leakage Current Sensor

- Monitoring string leakage current to prevent fire caused
- Cable: 2 meter hall sensor port to 4P terminal wire
- Accuracy: $\pm 1\%$ FS

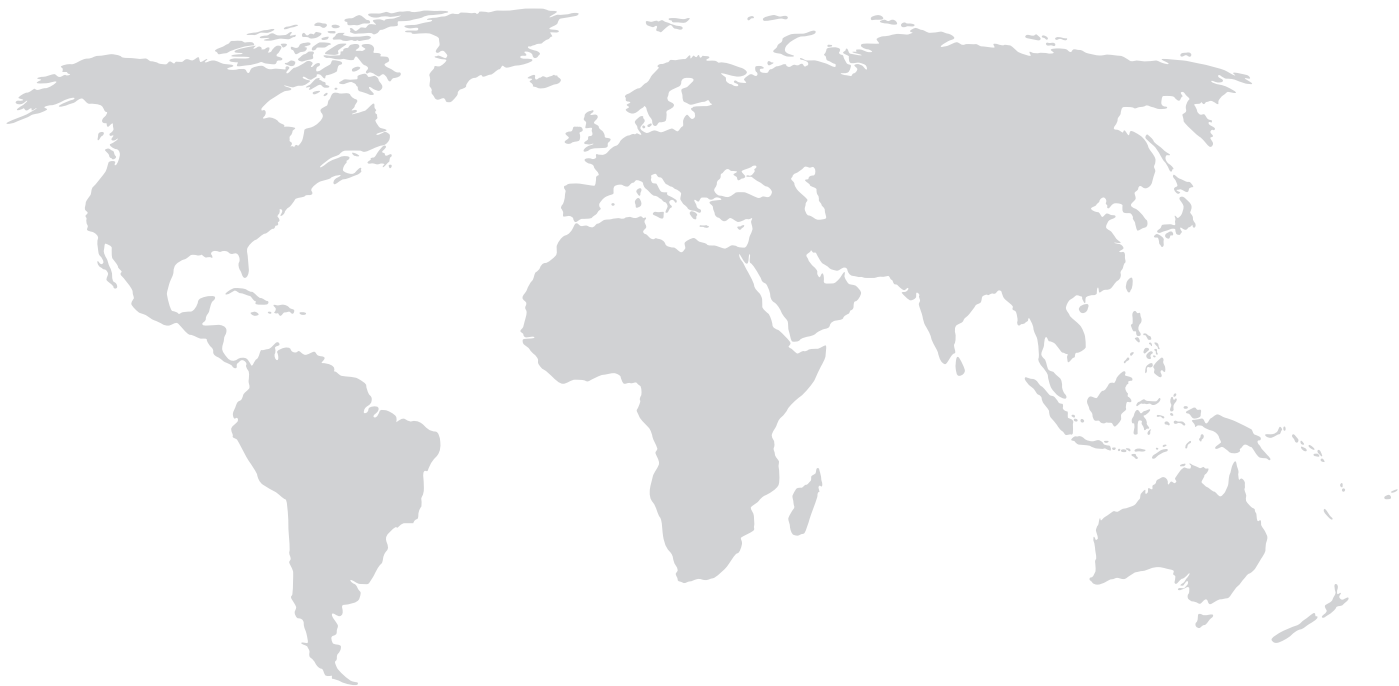


PBMS9000 for Data Center

Order Information

System Structure		Model	Description	Remark
Management Layer	BMS Main Controller	PBMS9000	Battery monitoring system main controller	One per UPS One PBMS9000 can monitor Max.6 battery strings (Max.480 batteries)
		PBMS9000-V1-1P	48VDC Operation Single Power Supply Input	
		PBMS9000-L	Battery monitoring system main controller with 4G antenna port	
		PBMS9000-V1-1P-L	48VDC Operation,Single Power Supply, with 4G antenna port	
	Protocol(optional)	PBMS9000-CP	DFUN standard IEC61850 model available. For customized needs, please contact our sales team.	
String Measuring Sensor		PBMS-CM2	String current measuring sensor	One PBMS-CM2 per string, each is equipped with 2 Hall sensor ports, and can connect a maximum of 2 Hall sensors. If is used for multi-pole batteries, we can configure the PBMS-CM2 according to the number of poles Hall sensor cable: 2m Communication cable: 5m(with RJ45 port)
		PBMS-VM2	String voltage measuring sensor	One per string (optional)
Battery Cell Sensor		PBAT 61-02	02V battery cell sensor	One per battery cell
		PBAT 61-06	06V battery cell sensor	One per battery cell
		PBAT 61-12	12V battery cell sensor	One per battery cell
Accessory	Cell Sensor Communication Cable	PBAT-COM-40	Cable terminal: RJ11 port, length: 40cm (standard)	
		PBAT-COM-70	Cable terminal: RJ11 port, length: 70cm	
	Battery Measuring Cable	PBAT-C1-U-M8-30	Cable terminal: U type  , hole diameter: 8mm, length: 30cm (standard)	
		PBAT-C1-O-M8-30	Cable terminal: O type  , hole diameter: 8mm, length: 30cm	
	Hall Sensor for PBMS-CM2	DXEEK03-50A-V4	Rated input: 50A	Measure Range: -50A~-+50A, Φ20mm
		DXEEK03-100A-V4	Rated input: 100A	Measure Range: -100A~-+100A, Φ20mm
		DXEEK05-25A-V4	Rated input: 25A	Measure Range: -25A~-+25A, Φ40mm
		DXEEK05-200A-V4	Rated input: 200A	Measure Range: -200A~-+200A, Φ40mm
		DXEEK05-300A-V4	Rated input: 300A	Measure Range: -300A~-+300A, Φ40mm
		DXEEK05-400A-V4	Rated input: 400A	Measure Range: -400A~-+400A, Φ40mm
		DXEEK05-500A-V4	Rated input: 500A	Measure Range: -500A~-+500A, Φ40mm
		DXEEK05-600A-V4	Rated input: 600A	Measure Range: -600A~-+600A, Φ40mm
		DXEEK05-800A-V4	Rated input: 800A	Measure Range: -800A~-+800A, Φ40mm
		DXEEK05-1000A-V4	Rated input: 1000A	Measure Range: -1000A~-+1000A, Φ40mm
Optional Module	HMI for Local Display & Operation	HMI-9000	10-inch touch-screen HMI for local display & operation	One per six (max) PBMS9000 Communication with PBMS9000 via Ethernet
		HDR-30-12	12VDC power coverter (220VAC to 12VDC)	If selected HMI-PBMS9000, then must select power supply converter
	DC Leakage Current Sensor	STL8S-MT2-300mA-DF	Rated Input: ±300mA	Measure Range: -360mA~-+360mA, Φ72mm
	Ambient Temperature & Humidity	H-THDRJ45	Temperature: -20°C ~ 60°C (±0.4°C) Humidity: 0 ~ 100%RH (±3%RH)	One PBMS9000 can connctet Max. 6pcs
	Hydrogen (H ₂) Sensor	PBMS-H ₂	Measuring Range: 0~1000ppm	One per one PBMS9000
	Cabinet for Prewiring In Factory	PBMS-BOX-260	Dimension: 535*260*335mm (W*H*D)	Pre-install & pre-wiring for PBMS9000 and HMI-9000
		PBMS-BOX-730	Dimension: 535*730*335mm (W*H*D)	Pre-install & pre-wiring for Max.4 PBMS9000 and one HMI-9000
	Ethernet Switch	IES318	1. Power supply 24VDC 12~48VDC 2. 8 x 10/100M Ethernet ports	If selected PBAT-BOX-730, then must select IES318

Note: If battery terminal is M5, M6, M10, M12, M16, please contact our sales for customize requirements before placing the order.



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