



Build-in web server



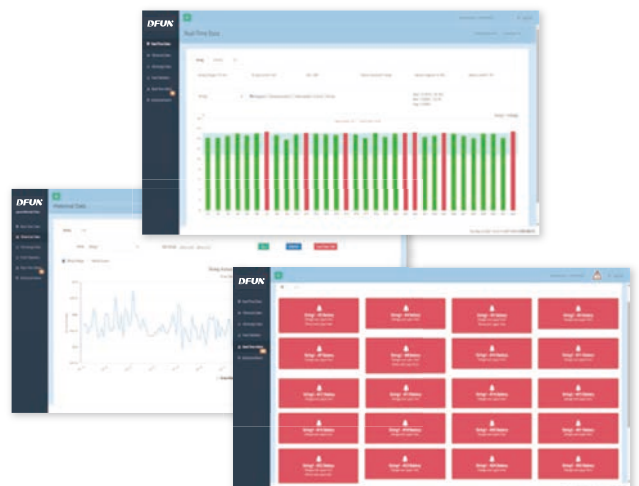
Data storage



4G wireless upload to the third party

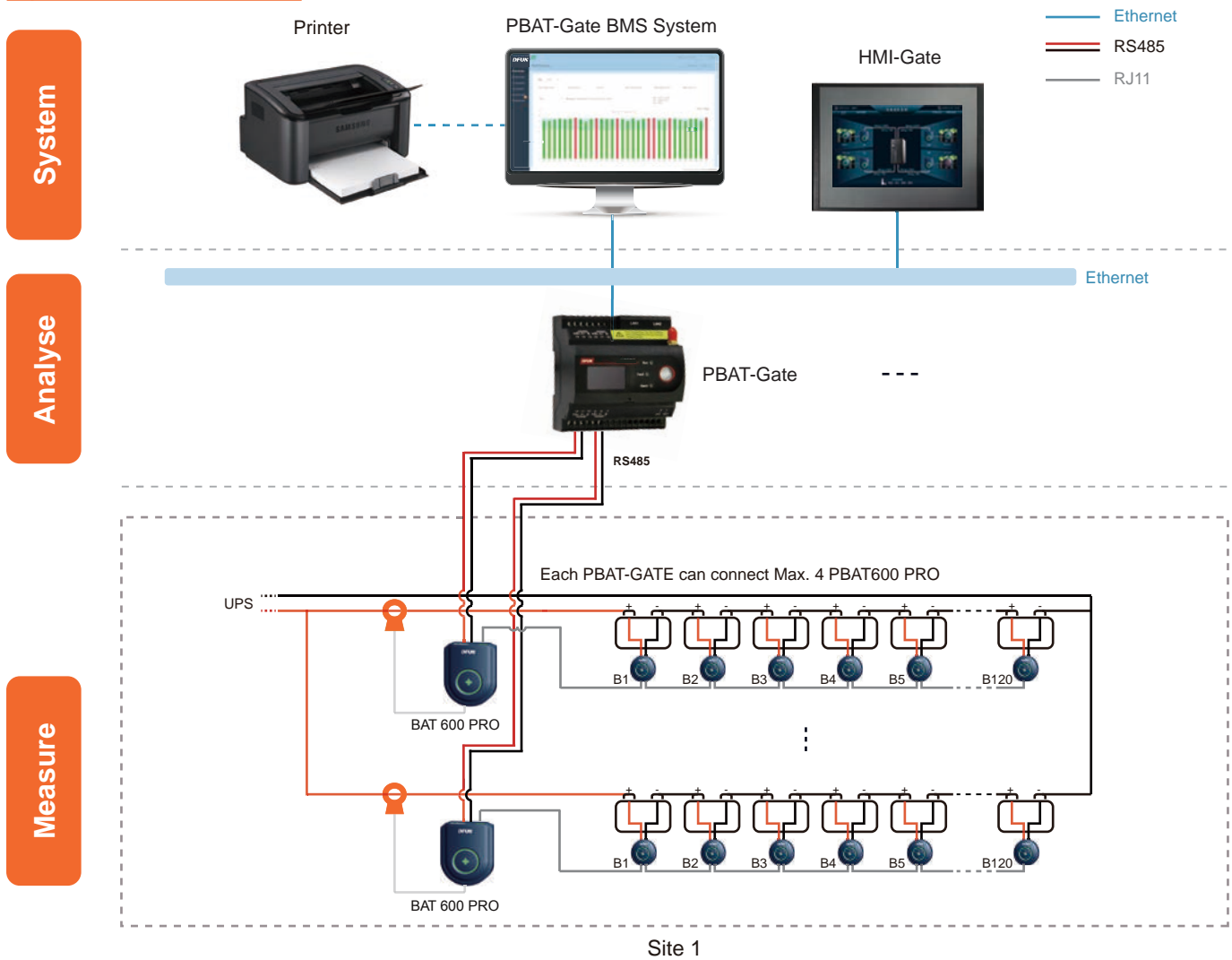
## Feature

- 24/7 hours on-line monitoring & remote alarms notification
- Suitable for UPS and data center application
- Anti-interference design, support to connect with high-frequency UPS
- Build-in web server with visual display
- Auto-sensing for the battery sensor's ID address
- Multi-communication protocol (MODBUS-TCP, SNMP)
- Support 4G sending SMS alarm or wireless upload to cloud
- Comply with IEEE 1188-2005



# PBAT-Gate Battery Monitoring Module

## System Structure



## Management Layer

### PBAT-Gate Battery Monitoring Gateway

- Real-time monitoring 1 set UPS with Max. 480 batteries
- Data logging for all measuring data for 12 months
- Build-in web server with bar chart and trend curve analysis for voltage, charge and discharge current, internal temperature, impedance
- Report for battery string voltage & current, individual battery voltage, temperature, impedance, support export PDF, CSV etc. document
- Setpoint alarm for cell voltage, internal temperature, impedance, SOC, SOH (upper limit / lower limit) and string voltage, current, SOC (upper limit / lower limit)
- 2 AI ports for ambient temperature & humidity sensor (optional), 1 DO port for sound and light alarm (optional), 4DI ports for digital input connecting (optional)
- Support SNMP, Modbus TCP protocol
- Support RESTful API, JSON, XML format
- Support SMS/Email alarm
- Support 4G data upload to the 3rd party



PBAT-Gate

All-in-one

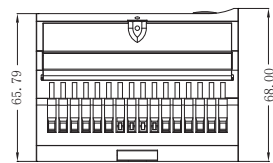
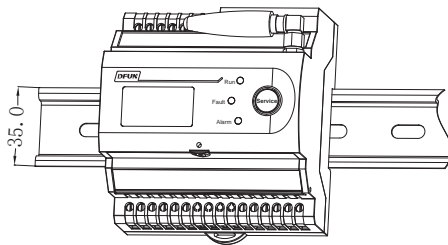
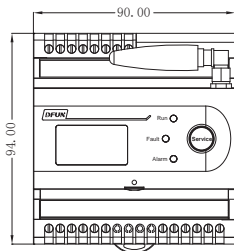


# PBAT-Gate Battery Monitoring Module

## Technical Specification

CPU	ARM cortex-A8 800MHz	Dimension	90mm x 94mm x 68mm	
Memory	512MB flash, 8G TF memory card	Operating system	Embedded linux	
Flash	Nand flash 512MB	Communication	4CL	4 RS485 serial ports, 2 Ethernet ports
MTBF	≥ 50,000 hours		2ZL	2 RS485 serial ports, 2 Ethernet ports
Display	OLED	Power consumption	< 5W	
Weight	650g	Optional function	4 DI, 2 AI, 1 DO ( only for PBAT-GATE-2ZL )	
Baudrate	1200 ~ 115200bps	Operation temperature	-15°C ~ 55°C	
Power supply	18 ~ 36VDC	Operation humidity	10% ~ 95% Non-condensing	

## Dimension and Installation



Unit: mm

## Battery String Sensor

### PBAT600 PRO Battery String Sensor

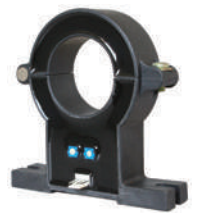
- Monitor battery string voltage, charge and discharge current
- Calculate battery status of charge (SOC)
- Auto-balancing
- Data acquisition
- Auto-sensing for whole battery string sensor's ID address



Running status



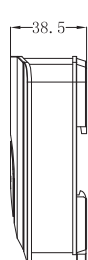
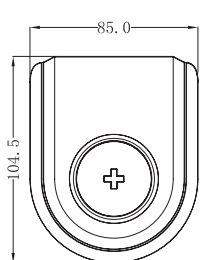
Alarming status



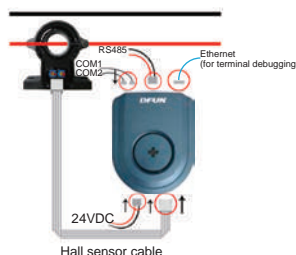
Hall sensor

Item	Measuring range		External power supply	Power consumption
	Voltage	String current		
BAT 600 PRO	0 ~ 800VDC ( ±0.5% )	-1000 ~ 1000A by hall sensor ( ±2.0% )	12 ~ 36VDC	1W

### > Dimension and Installation



Unit: mm



# PBAT-Gate Battery Monitoring Module

## Battery Cell Sensor

### BAT61-02/BAT61-06/BAT61-12 Battery Cell Sensor

- BAT61-02 for 2V battery, BAT61-06 for 6V battery, BAT61-12 for 12V battery
- Monitor individual battery voltage, internal temperature (negative pole), Impedance(ohmic value)
- Auto-balancing



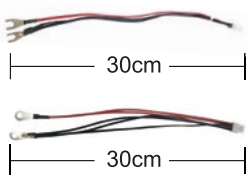
Running status



Abnormal status

Item	Rated input voltage	Measuring range			
		Voltage	Internal temperature	Impedance	Power consumption
BAT6 1 -0 2	2V	1.6 ~ 2.6V ( $\pm 0.2\%$ )	-20°C ~ 85°C ( $\pm 0.5\%$ )	Range: 0.1m $\Omega$ ~50m $\Omega$ Repeatability error: 1.0% $\pm 25\mu\Omega$ Conformity error: 1.5% $\pm 25\mu\Omega$	Running: <110mW Sleeping: <12mW
BAT6 1 -0 6	6V	4.8 ~ 10V ( $\pm 0.2\%$ )			Running: <90mW Sleeping: <10mW
BAT6 1 -1 2	12V	7.5 ~ 15.6V ( $\pm 0.2\%$ )			Running: <90mW Sleeping: <10mW

### > Dimension and Installation

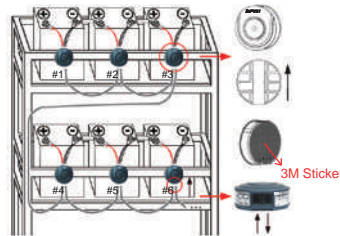
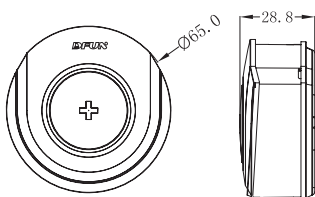


Item	Description
	Length
Terminal & Size	U type, hole diameter: 8mm
	O type, hole diameter: 8mm

Φ8mm



Φ8mm

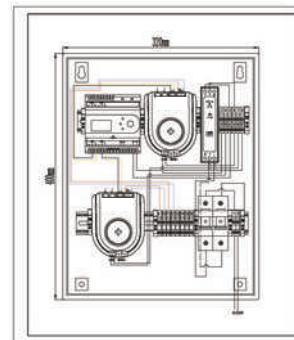


## Cabinet for Pre-wiring in Factory

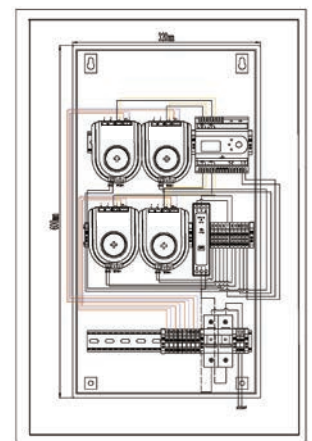
### PBAT-BOX

- Pre-install & pre-wiring for PBAT-Gate, PBAT600 PRO and power supply converter inside
- Pre-mount HMI-Gate if selected
- Provide wiring drawing

Hardware		
Dimension	For 1 ~ 2 battery strings	<b>BAT-BOX -4 0 0</b> 400*320*138.5mm (H*W*D)
	For 3 ~ 4 battery strings	<b>BAT-BOX -6 0 0</b> 600*320*138.5mm (H*W*D)
Installation	Wall-mount, hang on the battery rack	
Material	Steel plate, with rock	





BAT-BOX -4 0  
0



BAT-BOX -6 0  
0

# PBAT-Gate Battery Monitoring Module

## Order Information

System structure		Model	Description	Remark
Management layer		<b>BAT-G ATE-4 CL</b>	Battery monitoring gateway with 4 RS485 ports, SMS/Email alarm, 4G data upload	One per UPS Max. 4 strings x 120 batteries = 480 batteries
		<b>BAT-G ATE-2 ZL</b>	Battery monitoring gateway with 2 RS485 ports, 4DI, 2AI, 1DO, SMS/Email alarm, 4G data upload	One per UPS Max. 2 strings x 120 batteries = 240 batteries
Battery string sensor		<b>BAT 600 PRO</b>	Battery string sensor	One per string 1 RS485 port, one PBAT600 PRO can connect Max. 120pcs PBAT61 series battery sensor, Max. 2 hall sensor & 2m cable, range from 0 ~ ±1000A, 5m communication cable with RJ11 port
Battery cell sensor		<b>BAT6 1 -0</b>	2 volt battery cell sensor	One per battery cell
		<b>BAT6 1 -0</b>	6 volt battery cell sensor	One per battery cell
		<b>BAT6 1 -1</b>	12 volt battery cell sensor	One per battery cell
Accessory	Cell sensor communication cable	<b>BAT-COM-4 0</b>	Cable terminal: RJ11 port, length: 40cm (standard)	
		<b>BAT-COM-7 0</b>	Cable terminal: RJ11 port, length: 70cm	
	Battery measuring cable	<b>BAT-C1 -U-M8 -3 0</b>	Cable terminal: U type  , hole diameter, 8mm, length: 30cm (standard)	
		<b>BAT-C1 -O-M8 -3 0</b>	Cable terminal: O type  , hole diameter, 8mm, length: 30cm	
	Hall sensor for PBAT600 PRO	<b>CS050EK1T5</b>	Rated input: 50A	Measure range: 0 ~ ± 100A, Φ20mm
		<b>CS100EK2T5</b>	Rated input: 100A	Measure range: 0 ~ ± 200A, Φ40mm
		<b>CS200EK2T5</b>	Rated input: 200A	Measure range: 0 ~ ± 400A, Φ40mm
		<b>CS400EK2T5</b>	Rated input: 400A	Measure range: 0 ~ ± 800A, Φ40mm
<b>CS500EK2T5</b>		Rated input: 500A	Measure range: 0 ~ ± 1000A, Φ40mm	
Power supply	<b>HDR-30-24</b>	24VDC power source, 220VAC to 24VDC		
Optional module	Local display & operation	<b>HMI-Gate</b>	7-inch touch screen HMI for local display	One per PBAT-Gate communication with PBAT-Gate via Ethernet
	Cabinet for pre-wiring in factory	<b>PBAT-BOX-400</b>	Dimension: 400*320*138.5mm (H*W*D)	Pre-install & pre-wiring for PBAT-GATE, PBAT600 PRO and power supply converter, pre-mount HMI-Gate if customer selected
		<b>PBAT-BOX-600</b>	Dimension: 600*320*138.5mm (H*W*D)	