

*PBAT-Gate For VRLA Lead Acid Battery  
Data Center and UPS Application*

**PBAT-Gate BMS Including**

**Management Layer**

- **PBAT-Gate:** Intelligent Gateway with web server  
(One Per UPS, Monitor Max. 4 Strings, Each string Max. 120pcs Batteries)



**Battery String Sensor**

- **PBAT600:** Battery String Sensor  
(One Per String, Each string Max. 120pcs Batteries)



**Battery Cell Sensor**

- **PBAT61-02:** Battery Cell Sensor
- **PBAT61-06:** Battery Cell Sensor
- **PBAT61-12:** Battery Cell Sensor  
(One Per Battery Cell)



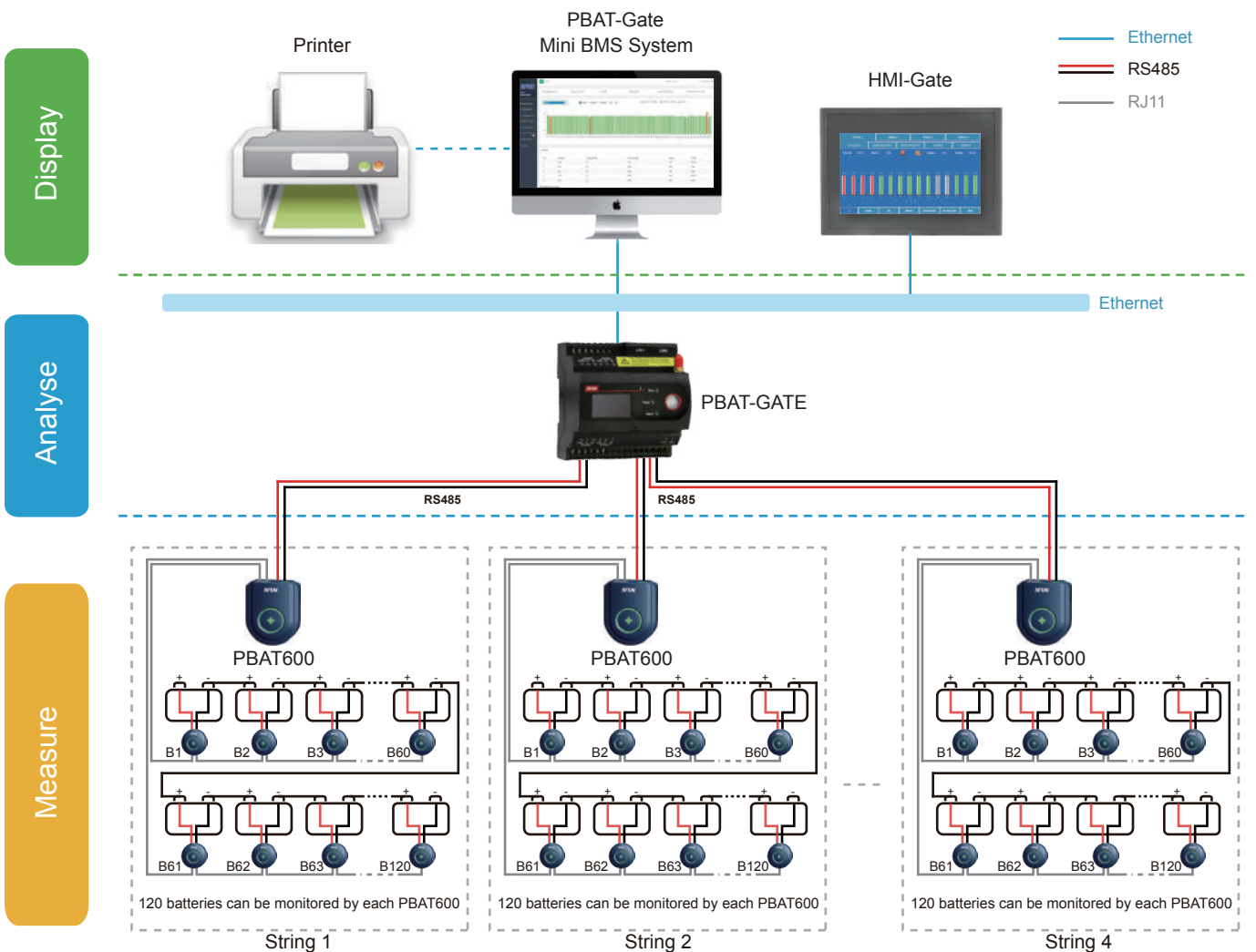
## Feature

- 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
- Local Display via HMI
- On-line Balancing
- On-line Remote Firmware Upload
- Auto-Sensing for the Battery Sensor's ID Address
- Multi-Communication Protocol (MODBUS-TCP, SNMP)
- Support 4G sending SMS alarm
- Apply with IEEE 1188-2005 Standard



24/7 Hours! Get Your Back Up Battery Under Your Eyes

## System Structure



## Management Layer

### PBAT-Gate Intelligent Gateway

- Real-time monitoring 1 UPS with Max. 480 batteries
- Data logging for all measuring data for 12 months
- Build-in web server with bar chat and trend curve analysis for Voltage, Charge and Discharge current, Internal Temperature, Impedance
- Auto-Balancing Function
- 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)
- Setpoint alarm for 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)
- 4 DI Ports for Digital Input Connecting (Optional)
- Support SNMP, Modbus TCP protocol
- Support 4G sending SMS alarm

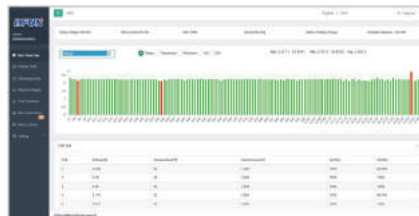


PBAT-GATE

All-in-One



Login Interface



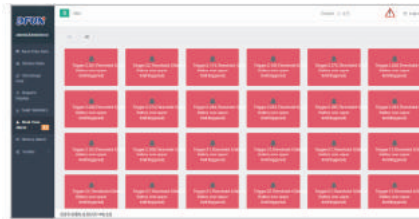
Real-time Data



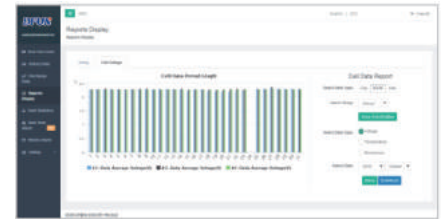
Historical Data



Analysis



Alarm

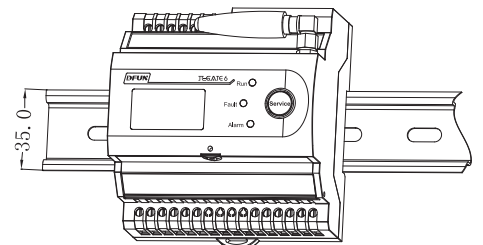
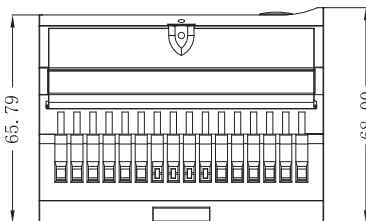
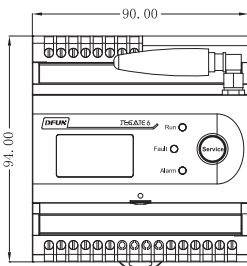


Report

## Technical Specification

Hardware			
CPU	ARM Cortex A8 800MHz	Memory	512MB Flash and 8GB TF memory card.
Operating System	Embedded Linux	Communication	Baudrate: 1200bps ~ 115200bps
Display	LCD with High Resolution		4CL: 4 RS485 serial ports, 2 Ethernet Ports (10/100M)
RAM	512MB RAM		2ZL: 2 RS485 serial ports, 2 Ethernet Ports (10/100M)
Power Supply	18V~36VDC	Optional Function	4 DI, 2AI, 1DO (only for PBAT-Gate-2ZG)
Weight	650g	Operation Temperature	-15°C ~ +55 °C
Dimension	90mmX94mmX68mm	Operation Humidity	10% ~ 95% Non-condensing
Power Consumption	< 5W	Safety Standard	CE

## Dimension and Installation



## Battery String Sensor

### PBAT600 Battery String Sensor

- Monitor Battery String Voltage, Charge and Discharge Current
- Calculate Battery State Of Charge (SOC)
- Auto Balancing
- Data Acquisition
- Auto-sensing for Whole Battery String Sensor's ID address
- Assories: 1) Hall Sensor and Cable: Range from 0~±1000A with 2m cable  
2) Communication Cable : 5m with RJ11 port



Running Status



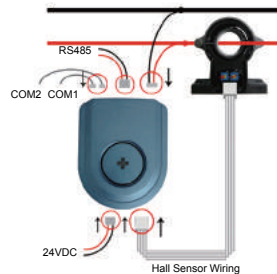
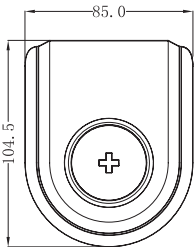
Alarm Status



Hall Sensor

Item	External Power Supply	Measuring Range		
		Voltage	String Current	Power Consumption
PBAT 600	12~36VDC	20V~800V (±0.5%)	-1000A ~ +1000A (By Hall sensor) (±2.0%)	1W

## Dimension and Installation



## Battery Cell Sensor

### PBAT 61-02 / 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)
- Calculate Individual Battery State Of Charge (SOC), State of Health (SOH)
- Auto-Balancing
- Hot pluggable, 3M Adhesive Tape Mounting
- Accessories: 1) Battery measuring cable: 30cm  
2) Communication Cable : 40cm & 70cm with RJ11 port (optional)



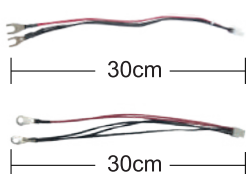
Running Status



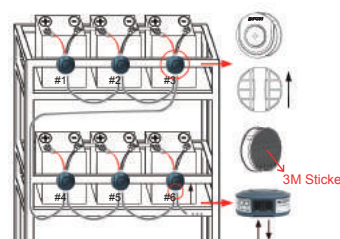
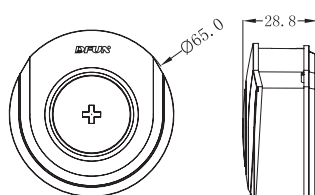
Alarm Status

Item	Rated Input		Measuring Range		
	Voltage	Voltage	Internal Temperature	Impedance	Power Consumption
PBAT61-02	2V	1.6V~2.6V (±0.2%)	-20°C~85°C (±0.5%)	0.1mΩ~100mΩ	Runing: <110mW Sleeping: <12mW
PBAT61-06	6V	4.8V~10V (±0.2%)		Repeatability Error: 1.0%±25uΩ	Runing: <90mW Sleeping: <10mW
PBAT61-12	12V	7.5V~15.6V (±0.2%)		Conformity Error: 1.5%±25uΩ	Runing: <90mW Sleeping: <10mW

## Dimension and Installation



Item	Description	
	Length	30cm
	Terminal and size	U Type, Hole Diameter: 8mm O Type, Hole Diameter: 8mm

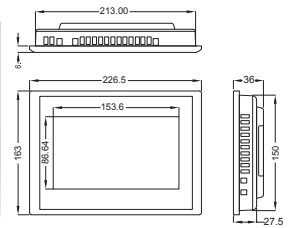


## Local Display & Operation Layer (Optional)

### HMI-Gate

Unit: mm

- 7" inch Touch-Screen HMI for Display and Operation
- One HMI Connect with One PBAT-Gate, Max. 480pcs batteries
- **Real-time Data Inquiry**
  - 1) Individual Battery Voltage, Impedance, Inner Temperature, SOC, SOH
  - 2) String Voltage, Charge and Discharge Current, SOC, Balance degree
- **Alarm Data Inquiry**
  - 1) Real-time alarm state and related alarm information (Faulty battery ID, Date / Time, Alarm Reason, communication state etc..)
  - 2) 1000 Alarm Records for each string battery



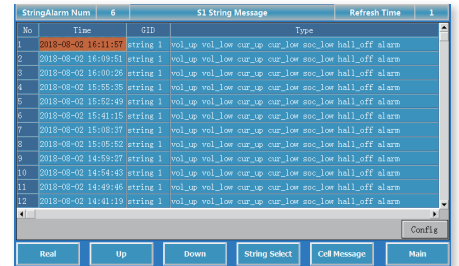
HMI-Gate



Dashboard



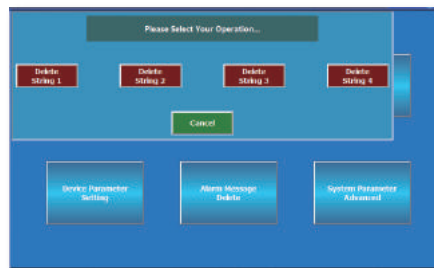
Real-time Data Inquiry



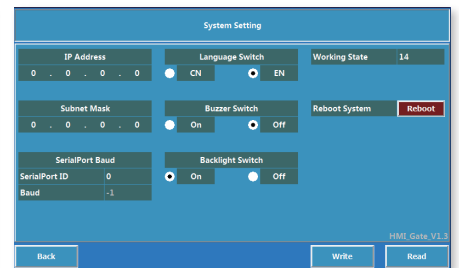
Alarm Data Inquiry



String Status



Alarm Release



Network Setting

## Technical Specification

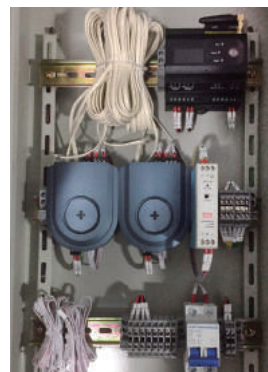
Hardware			
Display	7" inch TFT display LED Backlight Resolution: 800 X 480	CPU	ARM cortex-A8, 400MHz
		Flash	128M NAND
		RAM	64M DDR2
Communication	1 Ethernet Port 2 Ethernet Ports (10/100M) (Connect with PBAT-Gate)	Dimension	226.5mm X 163mm X 36mm Mounting Hole: 215mm±0.5 X 152mm±0.5
Power Supply	24VDC, 20% / 300mA max.	Power Consumption	< 5W

## Cabinet for Pre-Wiring in Factory

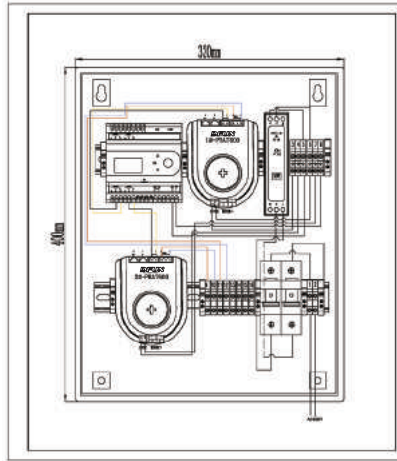
### PBAT-BOX

- Pre-install & Pre-wiring for PBAT-Gate, PBAT600 and Power Supply Converter Inside
- Pre-mount PBAT-HMI if selected
- Provide Wiring Drawing

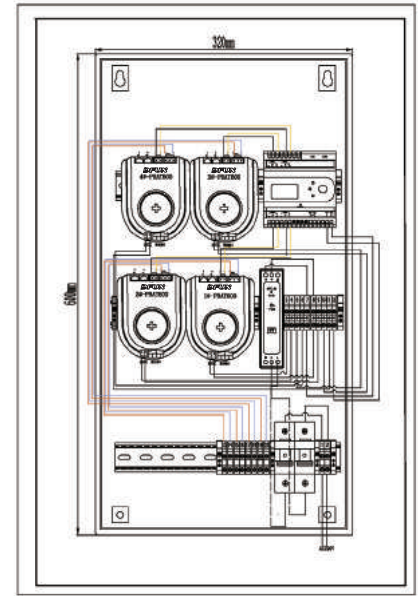
Hardware		
Dimension	For 1~2 Battery Strings	<b>PBAT-BOX-400:</b> 400*320*138.5mm (H*W*D)
	For 3~4 Battery Strings	<b>PBAT-BOX-600:</b> 600*320*138.5mm (H*W*D)
Installation	Wall-Mount, Hang on the Battery Rack	
Material	Steel Plate, With Rock	



## Dimension and Installation





Cabinet for 1~2 Battery String



Cabinet for 3~4 Battery String

## Order Information

System Structure		Order Code	Description	Remark
Management Layer		PBAT -GATE -4CL	PBAT-Gate Intelligent Gateway with 4 RS485 ports, Support 4G sending SMS alarm	One Per UPS Max. 4 strings × 120 batteries = 480 batteries
		PBAT -GATE -2ZL	PBAT-Gate Intelligent Gateway with 2 RS485 ports, 4 DI, 2AI, 1DO, Support 4G sending SMS alarm	One Per UPS Max. 2 strings × 120 batteries = 240 batteries
Battery String Sensor		PBAT 600	Battery String Sensor	One Per String 1 RS485 port, One PBAT600 can connect Max. 120pcs PBAT61 series battery sensor
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	
		PBAT-COM-70	Cable Terminal: RJ11 Port, Length: 70cm (Standard)	
	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 PBAT600	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	MDR-20-24	24VDC Power Source, 220VAC to 24VDC		
Optional Module	Local Display & Operation	PBAT-HMI	7" inch Touch Screen HMI	One Per PBAT-Gate Communication With PBAT-Gate via Ethernet
	Cabinet for Pre-Wiring in Factory	PBAT-BOX-400	Dimension: 400*320*138.5mm (H*W*D)	Pre-install & Pre-wiring for PBAT-GATE, PBAT600 and power supply converter Pre-mount PBAT-HMI if customer selected
PBAT-BOX-600		Dimension: 600*320*138.5mm (H*W*D)		