



Mianyang Weibo Electronic Co.,Ltd

*Designing, Manufacturing and Supplying WB Series Electric Isolated Sensor and Digital
Electrical Transducer since 1989*

USER MANUAL

WB7660QB-24Z Battery Inspection Unit

www.mywbdz.com

alex827@qq.com

Technical Service: 86 816 2778271

Quality Complain: 86 816 2278273

Fax Line: 86 816 2281934

ISO9001 ISO14000 ISO18000

Certified

Quality Warranty

Any quality problem found in WB series products, we offer

Three years free charge of repair the products, and six months guaranteed free charge of change and return the products.

Mianyang Weibo Electronics Co. Ltd

No.98 Youxian East road, Youxian District, 621000 Mianyang, Sichuan, P. R. China.

Tel: +86-816-2971265 Fax: +86-816-2281934

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WB7660QB-24Z Battery Inspection Unit

Safety Claim

The information in the safety claim of the equipment documentation is intended to ensure that equipment is properly installed in order to maintain it in a condition.

It is assumed that everyone who would be associated with the equipment should be familiar with the contents of that safety section, or this safety guide.

When electrical equipment is in operation, dangerous voltages will be present in certain parts of the equipment (e.g. the input terminal). Failure to observe warning notices, incorrect use, or improper use may endanger personnel and equipment and cause personal injury or physical damage.

Before working in the terminal strip area, the equipment must be isolated.

Proper and safe operation of the equipment depends on appropriate shipping and handling, proper storage, installation and commissioning, and on careful operation, maintenance and servicing.

The operating manual for the equipment gives instructions for its installation, commissioning, and operation. However, the manual cannot cover all conceivable circumstances or include detailed information on all topics. In the event of questions or specific problem, do not take any action without proper authorization. Contact the appropriate WB technical sales office and request the necessary information.

Standard Application

1. Accuracy

Accurate degree is conformed to IEC688:1992

2. Safety

2.1 Overload capability

Overload capability is conformed to IEC688:1992

2.2 Isolation voltage

Can be endured testing voltage is conformed to Q/72085584-0.1-2004

2.3 Insulation impedance

The insulation impedance is no less than 20M Ohm, is conformed to Q/72085584-0.1-2004

3. Electromagnetic Capability

3.1 Electromagnetic field immunity test according to IEC 61000-4-3:1995

3.2 Power frequency magnetic field immunity test according to IEC 61000-4-8:1993

Product Description and Application

The basic function of the WB7660QB-24Z battery inspector is to detect the single cell voltage of the battery group and the total voltage at both ends of the battery group. It is mainly

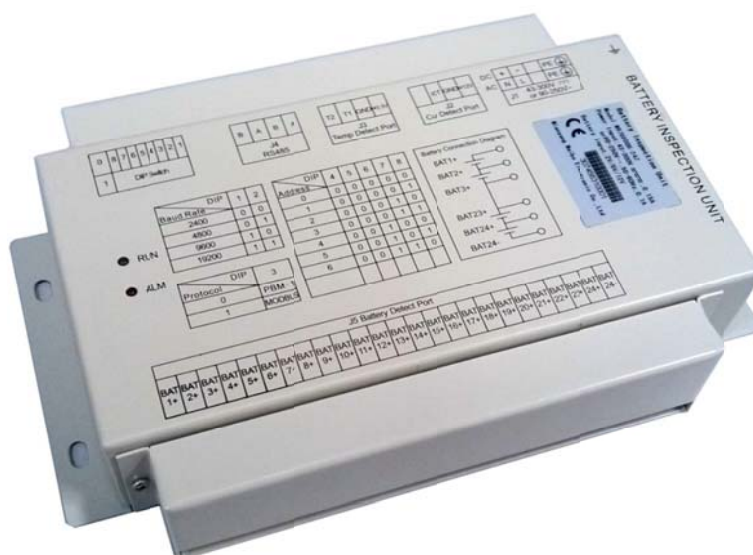
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used to monitor the voltage of the battery group in the DC power supply of the telecommunication machine room and the communication base station. The internal measurement circuit uses high precision A/D to detect the battery voltage in each section. Each measurement port is isolated by the photoelectric isolator and the inner core circuit, and the battery voltage input port is connected with the protective resistance, which ensures the good safety of the battery inspector and the high precision of the measured data. The instrument can measure up to 24 batteries, and the type of single cell is divided into 2V, 6V and 12V. Using RS485 communication interface to output data, it can be directly connected with the monitoring module of the DC screen manufacturer.

The Basic Features of the Product

1. Detect the voltage of the single battery, the total voltage of the battery, the charge and discharge current of the battery, the ambient temperature of the battery cabinet and the surface temperature of the battery.
2. Each unit can monitor up to 24 batteries, multiple inspection units and can monitor the 108 and 220 batteries. The battery is set and connected according to the actual number, such as the only BAT1+ to BAT20+ connection when 19.
3. There is a protective resistor connected to the battery terminal in the battery tester. Please pay special attention to the positive and negative polarity of the battery terminal when wiring.
4. Connection mode: all plug and pull terminal connections are used to facilitate user connection and late product maintenance.
5. Communication mode: RS485 communication interface, Modbus-RTU and Emerson communication protocol can be set up, and the address is selected through the dialing switch.

Product Shape and Installation Size



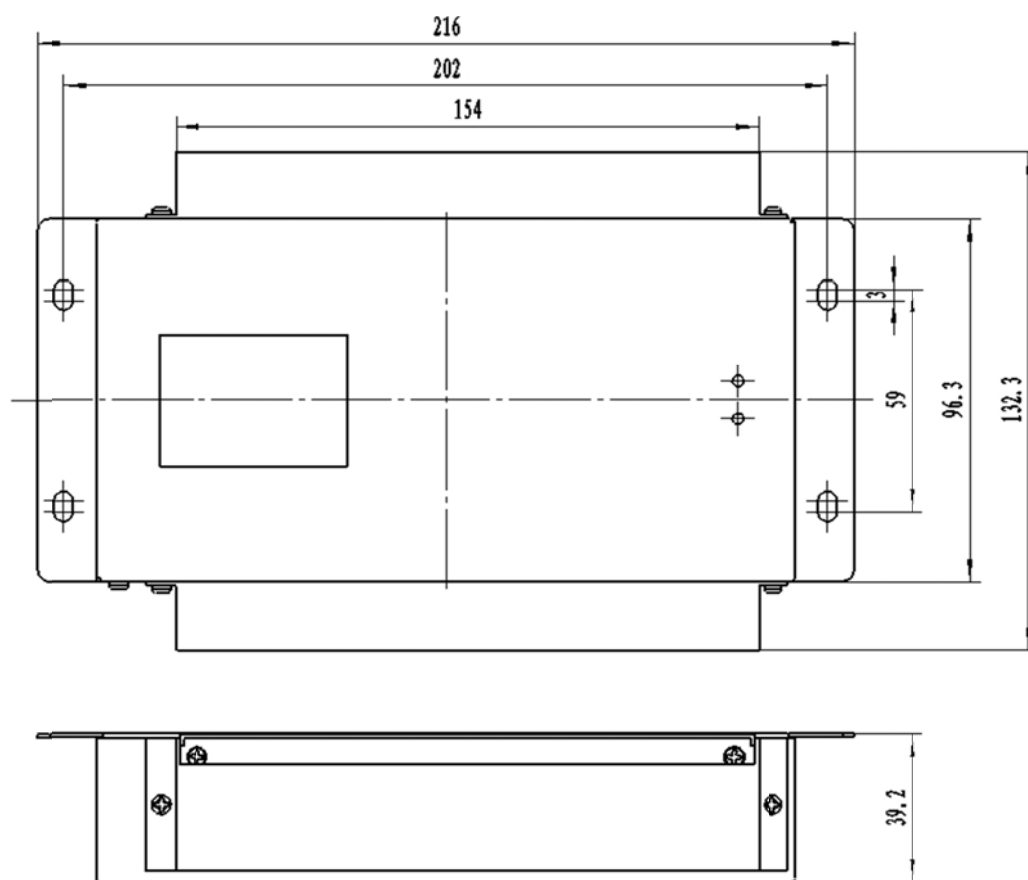


Figure 1. The Shape of Battery Inspector and Size Diagram of Installation (unit: mm)

Key Technical Data

1. **Detection path:** Battery: 24 units; Current: 1path (equipped with Hall sensor);
Temperature: 2 path (equipped with temperature sensor);
2. **Input:** One unit: DC 2V, 6V, 12V(optional), Current: 0~±50A(Default),
Temperature: -20°C~+85°C;
3. **Accuracy :** Voltage: 0.2% (10% ~ 120% rating);
Current: 1% (1% ~ 120% rating);
Temperature: ±1.5°C;
4. **Responding Time:** 3s (about 100ms to detect one unit of battery);
5. **Communication mode:** Half-duplex, RS485 serial communication;
6. **Communication node:** ≤32points;
7. **Baud rate:** 2400/4800/9600/19200BPS, DIP switch (default: 9600BPS).
7. **Power supply:** DC 12V~24V or DC 43V~300V or AC 90V~250V;
8. **Power consumption:** < 3W (include Hall current sensor and temperature sensor);

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9. **Safety:** In line with IEC60950-1:2005/EN60950-1:2006;
10. **Isolation voltage:** Between input and output DC 1kV, 1min
Between power supply and input DC 1.5kV, 1min
Between power supply and output DC 1.5kV, 1min;
11. **Weight:** <700g;
12. **Ambient temperature:** -20°C ~ +65°C;
13. **Relative humidity:** 5% ~ 95% (without corrosion and condensation);
14. **Altitude:** < 4000m;
15. **MTBF(mean time between failures):** > 100000hours

The Position and Definition of the Connecting Terminals

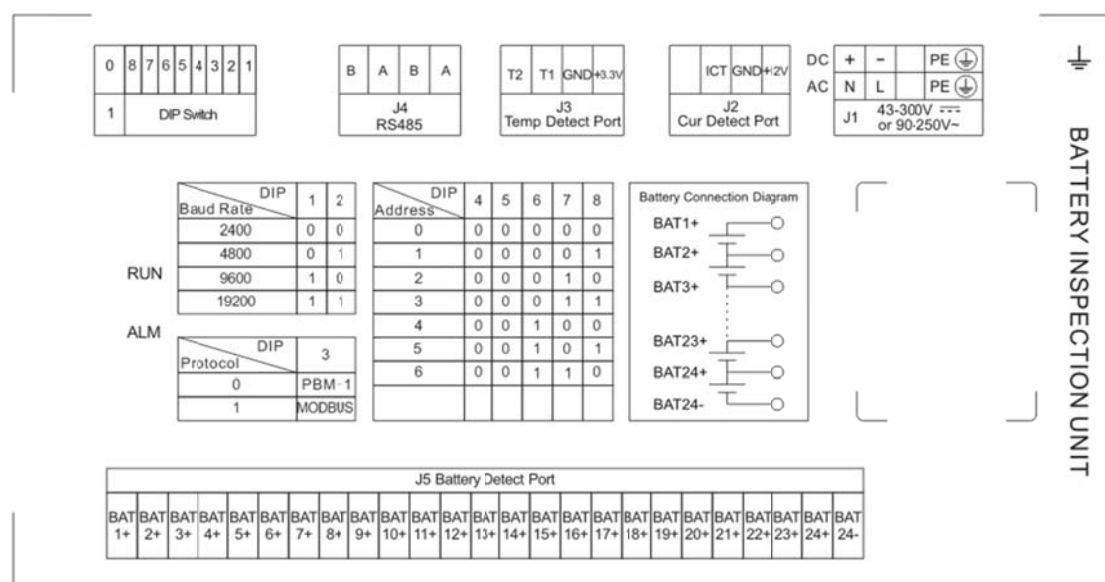


Figure 2. Product Connecting Terminals Drawing (If there is a difference from the actual product, please take the material object as accurate)

Table 1. Definition of the Battery Inspector Connecting Terminals

Port Name	Indicia	Definition	Remarks
J1 Power input port	L/-	AC power supply input phase line / DC power supply input negative pole	AC and DC common terminal, please pay attention to the voltage level when using, so as not to damage the product.
	N/+	AC power supply input midline / DC power supply input positive pole	
	PE	Protective grounding	
J2	+12V	Positive pole of the current sensor	Equipped with Hall sensor

Current detection port		power supply (output)	
	GND	Grounding of the current sensor power supply (output)	
	ICT	The current sensor 1 input	
J3 Temperature detection port	+3.3V	Positive pole of the temperature sensor power supply (output)	Equipped with temperature sensor
	GND	Grounding of the temperature sensor power supply (output)	
	T1	The temperature sensor 1 input	
	T2	The temperature sensor 2 input	
J4 RS485 interface	A	RS485A	Communication with background or monitoring module, double connection port, convenient cascade
	B	RS485B	
J5 Battery detection port	BAT1+~ BAT24+	Positive pole from first section battery to twenty-fourth section battery	If the battery connection polarity is wrong, the value of the detected battery voltage is abnormal
	BAT24-	Negative pole of the battery pack (or negative pole of the twenty-fourth section battery)	
Dial switch	It is used to set up communication protocol, baud rate and the address of battery inspector. Specific settings see " Dial Code Switch Settings ".		

Dial Code Switch Settings

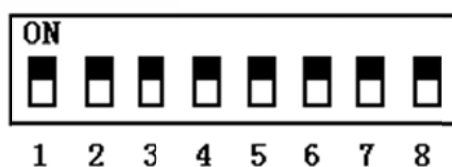


Figure 3. Position Diagram of Dialing Switch

The dial switch 1' ~ 2' bits are used to set the baud rate, 3' bits are used to select the communication protocol. 4' ~ 8' bits are used to set up the binary communication address of the inspector. Switch to "ON" to indicate that the setting is 0. The details are set as follows.

Table 2. Baud Rate Settings

1' Bits	2' Bits	Baud Rate
ON	ON	2400BPS
ON	OFF	4800BPS
OFF	ON	9600BPS
OFF	OFF	19.2KBPS

Table 3. Sensor Address Settings

4' Bits	5' Bits	6' Bits	7' Bits	8' Bits	Sensor Address
ON	ON	ON	ON	ON	0+112
ON	ON	ON	ON	OFF	1+112
ON	ON	ON	OFF	ON	2+112
ON	ON	ON	OFF	OFF	3+112
...	...	...	...	...	...
OFF	OFF	OFF	OFF	OFF	31+112

Table 4. Protocol Selection

3' Bits	Communication Protocol
ON	Emerson monitoring protocol
OFF	MODBUS-RTU

The battery inspector's factory address is 112, and the baud rate is 9600bps. Whether the **Emerson Monitoring Protocol** or the **MODBUS-RTU Protocol** is chosen, the address of the battery inspector is 112 + address of setting of dial switch. If you choose the **Emerson Monitoring Protocol**, the baud rate is fixed to 9600bps; if you choose the **MODBUS-RTU Protocol**, the baud rate is set according to the setting in Table 3.

Installation and Use

1. Installation and wiring of the temperature sensor

The shape and terminal definition of the temperature sensor is in Figure 4. The temperature sensor is installed in the cabinet or the temperature measurement position on the surface of the battery pack. Screw fixation or surface mounting can be used.

When connecting, please connect the terminals of the temperature sensor to the "temperature detection terminal" of the battery inspector.



Figure 4. The Shape and Terminal Definition of the Temperature Sensor

2. Installation and wiring of the current sensor

The shape and terminal definition of the current sensor is in Figure 5. The sensor model is **WBI02F21_1.0**, with the principle of Hall effect. It has the characteristics of strong overload ability and high isolation. It is suitable for the isolation measurement of charge and discharge current of the battery pack. The main technical indicators and installation methods of the current sensor are shown in the corresponding instructions.

When connecting, please connect the terminals of the current sensor to the "current detection terminal" of the battery inspector. It is recommended to use 3 core cables for connection.

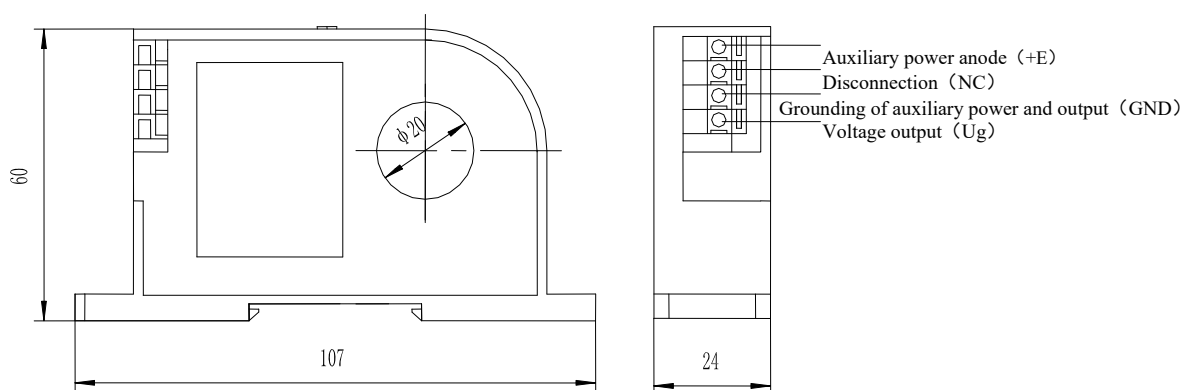


Figure 5. The Shape and Terminal Definition of the Current Sensor

3. Installation and wiring of battery inspection unit

The shape of battery inspector and the size diagram of installation are shown in Figure 1.

Using wall mounted installation. Battery inspector belongs to precision measuring instrument. Attention should be paid to the following conditions when installing:

1. Keep away from heat source and interference source. Do not install near the outlet of charging module and air duct outlet.
2. The battery inspector adopts metal shell, and the shell is connected with the PE terminal of the power input terminal. When using, the PE terminal should be connected to the protective grounding of the system.
3. There is a high voltage risk and short circuit risk, because the battery inspector is directly

connected to the terminal of the battery. In the process of installation, the wiring must be prevented from short circuit. The battery wiring diagram is shown in Figure 6.

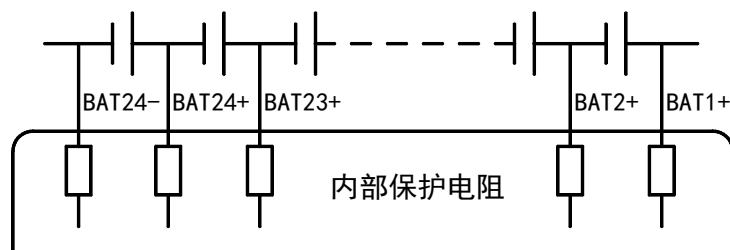


Figure 6. The Battery Wiring Diagram

Usage Method

1. Address setting

Specific settings see the **Dial Code Switch Settings**.

2. Parameter configuration

Battery inspector can be very convenient to set the specifications and the sections of the battery, the measurement range of the current sensor, and so on. It can be set up by the **WB7660 Battery Inspection Unit** software provided by our company. When setting, First select the MODBUS-RTU communication protocol and carry out the correct "**Serial Port Setting**", then configure and download the configuration information in the "**Configuration**" page of the test software, and then it can be used normally after completion.

3. Runtime Attentions

There are 2 lamps on the battery inspection unit:

Running indicator lamp "**RUN**": Slow flash in normal operation and communication, Fast flash when communication is not suggested.

Alarm indicator lamp "**ALM**": This version is not bright.