INSTRUCTION FOR USE

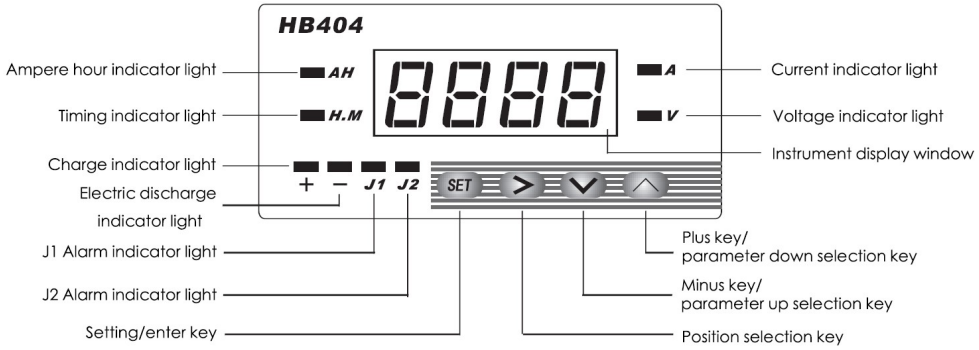
HB404 INTELLIGENT AMMETER

- **Compatible input DCA: 5A、1A、75mV; DC: 500V、100V;**
- **Free setting for zero value, full value and decimal point of current and voltage;**
- **Multiple-level digital filter selection filters out the interference effectively and eliminate critical digital change;**
- **Realize alarm and control output of current, voltage and ampere value, effectively protect battery charge and discharge;**
- **Cycle display ampere hour, current, voltage and charge discharge time;**

I. Main technical indexes

1. Working voltage: AC85～260V (DC85～360V) /2W
2. Display scope: Voltage: DC 0～500V;
Current: 0～9999A(Combined diverter, Free to set)
Ampere hour: 0.001～9999AH
3. Measurement precision:
Voltage and Current : ±0.5%FS+3d;
Ampere hour : ±1%+3d
4. Timing time: 1 minute ～99 hours 59 minutes
5. Input mode: Common input
6. Sampling speed: 3 times/second
7. Out-of-limit display: “EEEE” or “-EEE”
8. Use environment: 0～+50℃: ≤85%RH
9. Relay contact capacity: AC220V(DC30V)/3A
10. Relay contact service life: 105 times
11. Feed output: DC24V/30mA
12. Overall dimension and hole size:
Size of digital tube: 0.56 (inch), Overall dimension (mm): 96×48×82, Hole size (mm): 92+1×44+1

II. Panel description



Key Function Description:

In the measurement state:

1. Press the key “＞”, Used to switch display between current, voltage, ampere value and timing time;
2. Press the key “∨ ” for more than 3 seconds, At the same time, the buzzer sounds. Ampere value and timing time are cleared;
3. Press the key “∧ ” for more than 3 seconds, At the same time, the buzzer sounds and the time is cleared;
4. When the buzzer sounds, you can press any key to eliminate the alarm sound;

III. Description of parameter setting

(I) Set range display parameter (access method: input password 0036 after pressing “SET”)

1. Introduction to range display parameter

Parameter prompt	Parameter name	Parameter meaning	Option or selection scope	Factory value	Remark
A-Sn	A-Sn	Current input number	5A/1A/75mV	5A	Note 1
APuL	APvL	Current input zero value	-1999～9999	0.000	Note 2
APuH	APvH	Current input full value	-1999～9999	5.000	Note 3
Adot	Adot	Decimal places	0～3	3	Note 4
u-Sn	U-Sn	Voltage input number	500V/100V	500V	Note 5
uPuL	UPvL	Voltage input zero value	-1999～9999	000.0	
uPuH	UPvH	Voltage input full value	-1999～9999	500.0	
udot	Udot	Decimal places	0～3	1	

FILt	FILt	Digital filter coefficient	0～3	0	Note 6
End	End				

2. Description of parameter definition

Note1: Current input number(A-Sn): Current measurement range,5A(-1～5A),1A(-0.2～1A),75mV(-15～75mV);

Note 2: Current input zero value (APvL): the corresponding display value when the input signal is 0 and can be used for zero point correction or initial value deviation. The value is set as 0000 at usual condition;

Note 3: Current input full value (APvH): the corresponding display value when the input signal is maximum in the positive direction;

The different full values correspond to different resolution ratio. The smaller the full value is, the lower the resolution ratio is and the display is stable. See the table below for full value setting with connection with 5A as an example;

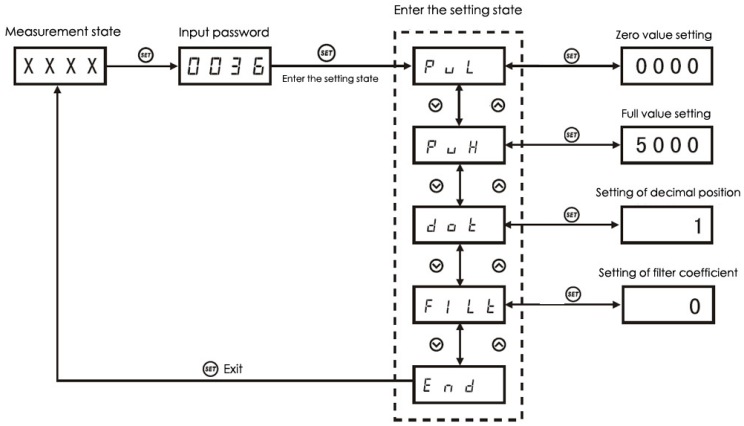
Full value setting	Position of decimal point	Instrument display	Resolution ratio
0500	2	5.00	10mA
5000	0	5000	1mA

Note 4: Position of decimal point (Adot): the position of decimal point may be set arbitrarily;

Note5: Voltage input number(U-Sn): Current measurement range,500V(-100～500V),100V(-20V～100V);

Note 6: Digital filtering coefficient (FILt): may be set as 1, 2, and 3. 0 indicates no digital filter, 1 weak, 2 medium, 3 strong. The larger the filter coefficient is, the more stable the display is and the large the lag is;

3. The setting method for range display parameters



Key points for setting:

1) Press “SET” to enter the setting state;

2) Input the password by using position selection key “ > ” minus key “∨”.and plus key “∧”;

3) Select new parameters by using parameter up selection key “∨” or parameter down selection key “∧”;

4) Press “SET” to enter;

(II) Set the instrument alarm parameters (the setting methods: input password 0001 after pressing “SET”) .

Parameter prompt		Description of parameter prompt	Parameter setting scope	Factory value
J1	J1	Relay J1 alarm object	A/V/AH	A
AH1	AH1	Relay J1 pull-on value	-1999～9999	0.200
AL1	AL1	Relay J1 release value	-1999～9999	0.100
J2	J2	Relay J2 alarm object	A/V/AH	A
AH2	AH2	Relay J2 pull-on value	-1999～9999	0.200
AL2	AL2	Relay J2 release value	-1999～9999	0.100
End	End	End		

2. The setting method for alarm parameters are the same as that for range display parameters.

3. The setting description for pull-on value and release value of the relay

(1) Setting AH1=AL1（AH2=AL2）, the relay is invalid.

(2) Setting AH1>AL1（AH2>AL2）, if the measurement value is ≥AH1, the relay pulls on; when the measurement value is ≤AL1, the relay releases. See figure 1 for action of the relay and often used for upper limit alarm.

(3) Setting AH1<AL1（AH2<AL2）, if the measurement value is ≤AH1, the relay pulls on; when the measurement value is ≥AL1, the relay releases. See figure 2 for action of the relay and often used for lower limit alarm.

(4) The pull-on value does no equal to the release value. The area between them forms the no-action area of the trip. The no-action area of the trip usually consists 3～5 characters.

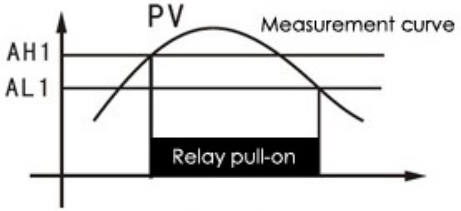


Figure 1

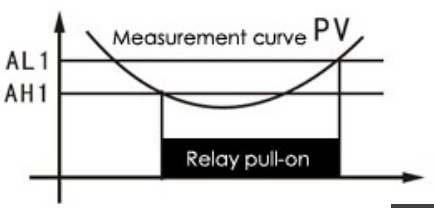
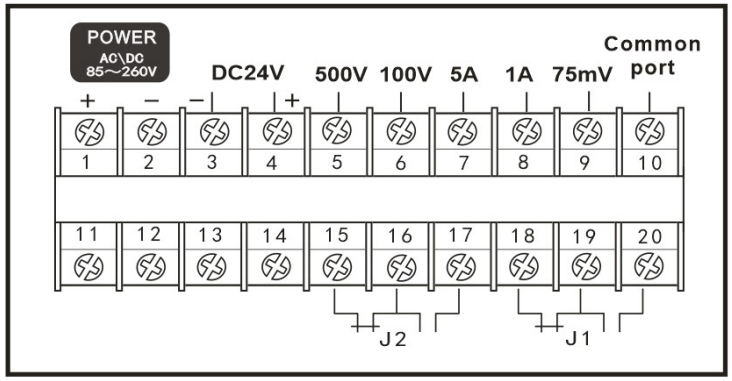


Figure 2

4. Relay alarm object: Relays J1 and J2 can alarm the current (A), voltage (V) and ampere value (AH);

When AH (ampere value) is set as the alarm object, the method of setting the position of the decimal point is as follows: press the “ > ”key, the decimal point flashes, and then press the “∨ ”key and “∧ ” key to change the position of the decimal point;

IV. Terminal diagram



V. Type selection and application example

For example: Monitor the discharge ampere of 3.6V/ 1.2Ah lithium battery. When the discharge current is >1.200A or the battery voltage is <2.80V, the discharge loop of the system is cut off. The power supply of the system is AC220V and hole size of the instrument is 92×44 (mm).

1. Instrument selection: the instrument is HB404-AH Intelligent ammeter with the function of relay output.

2. Wire connection of the instrument: Such as below

3. Parameter setting

1) Input the password 0036 and set the input signal number as follows:

Current input number(A-Sn)=5A;

Current input zero value (APvL)=0.000;

Current input full value (APvH)=5.000;

Position of decimal point (Adot)=3;

Voltage input number (V-Sn)=100V;

Voltage input zero value (VPvL)=00.00;

Voltage input full value (VPvH)=99.99;

Position of decimal point (Adot)=2;

Digital filter coefficient (FILt)=0;

2) Input the password 0001 and set alarm parameters as follows:

Relay J1 alarm object=A;

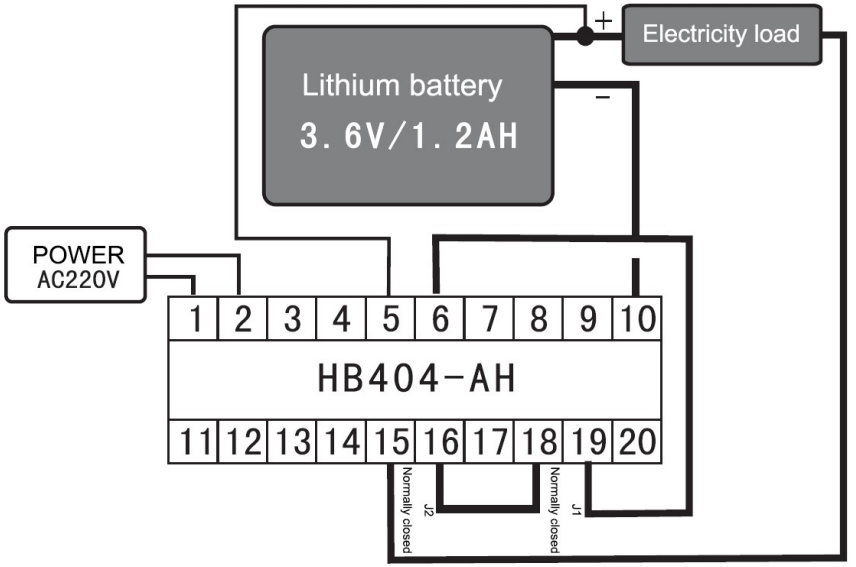
Relay J1 pull-on value (AH1)=1.200A;

Relay J1 release value (AL1)=1.196A;

Relay J2 alarm object=V;

Relay J2 pull-on value (AH2)=2.80V;

Relay J2 release value (AL2)=2.84V;



Note: The thick wire is the current loop wire

Ordering instruction

The function of relay alarm and transmitting are optional function. Please indicate clearly when ordering.