

# INSTRUCTION FOR USE

## QB404 INTELLIGENT VOLTAGE METER

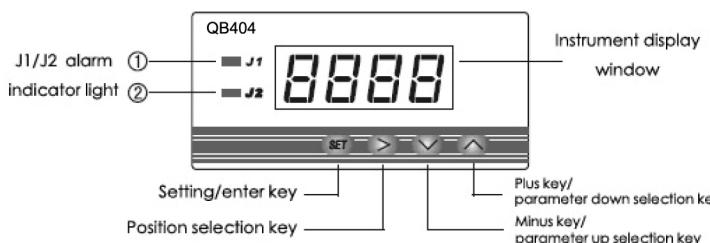
- Compatible input DCV: 500V , 100V , 10V , 1V ; ACV: 500V , 100V , 10V , 1V ;
- Free setting for zero value, full value and decimal point;
- Multiple-level digital filter selection filters out the interference effectively and eliminate critical digital change;
- Implement alarm, control output and transmitting output;

### I . Main technical indexes

1. Working voltage: AC85~260V (DC85~360V) /3W
2. Display scope: DC: -1999~9999; AC: 0~9999
3. Measurement precision: DC  $\pm 0.8\%+3d$ ; AC  $\pm 1.0\%+5d$
4. Response frequency: 40~400Hz
5. Out-of-limit display: "EEEE" or "-EEE"
6. Relay contact capacity: AC220V/3A
7. Relay contact service life:  $10^5$  times
8. Transmitting output precision:  $\pm(0.8\%+3d)$  12 digits
9. Use environment: 0~+50°C; ≤85%RH
10. Overall dimension and hole size:  
Size of digital tube: 0.56 (inch) , Overall dimension (mm): 96×48×82 , Hole size (mm): 92<sup>+1</sup>×44<sup>+1</sup>

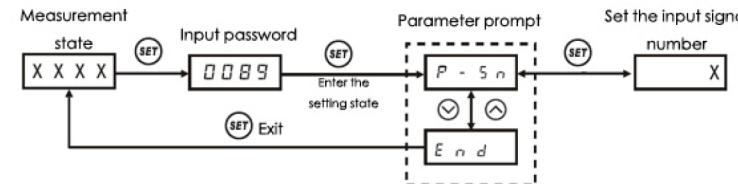


### II . Panel description



### III. Description of parameter setting

( I ) Set the input signal number (access method: input password 0089 after pressing "SET").



Input signal number table (the number is 4 when the instrument is delivered).

Input signal	Input signal number	Input signal scope	Remark
DC current	0	-100~500V	Note 5
	1	-20~100V	
	2	-2~10V	
	3	-0.2~1V	
AC current	4	0~500V	
	5	0~100V	
	6	0~10V	
	7	0~1V	

( II ) Set range display parameter (access method: input password 0036 after pressing 0)

1. Introduction to range display parameter

Parameter prompt	Parameter name	Parameter meaning	Option or selection scope	Factory value	Remark
PvL	PvL	Zero value	-1999~9999	0	Note 1
PvH	PvH	Full value	-1999~9999	500.0	Note 2
dot	dot	decimal places	0~3	1	Note 3
FILT	FILT	Digital filter coefficient	0~3	0	Note 4
End	End				

2. Description of parameter definition

Note 1: zero value (PvL): 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 2: full value (PvH): 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 6KV/100V mutual inductor as an example.

Full value setting	Position of decimal point	Instrument display	Resolution ratio
0600	2	6.00	10V
6000	0	6000	1V

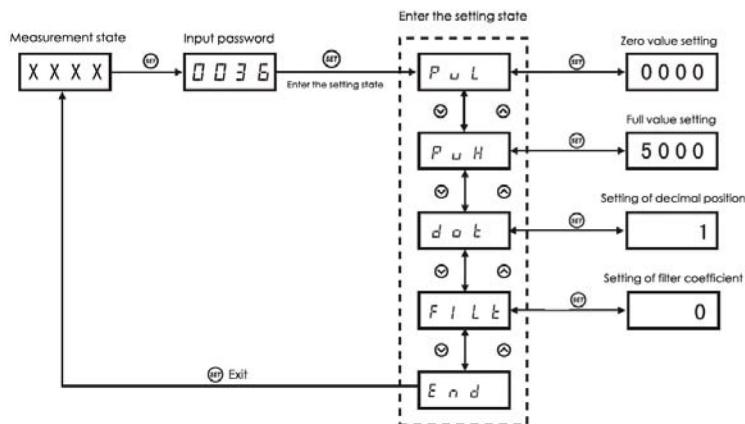
Note 3: Position of decimal point (dot): the position of decimal point may be set arbitrarily.

Note 4: 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.

Note 5: the direct current signal can measure the negative value. The measurement scope is 20% of the positive range. The calculation formula for measurement scope of DC signal: [(zero value-full value) × 20%~full value].

For example: zero value=0, full value=500, the measurement scope of DC signal is: -100~500.

### 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.

### (III) 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
AH1	AH1	-1999~9999	10.0
AL2	AL2		20.0
AH2	AH2		30.0
AL2	AL2		40.0
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 (with AH1 and AL1 as an example).

AH1 is the pull-on value of the relay and AL1 is the release value of the relay.

- (1) When setting AH1=AL1, the relay is invalid.
- (2) When setting AH1>AL1, 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) When setting AH1<AL1, 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

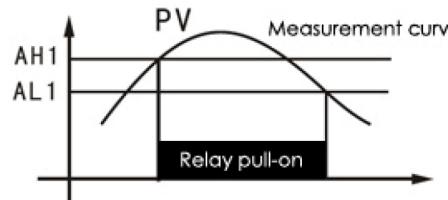


Figure 1

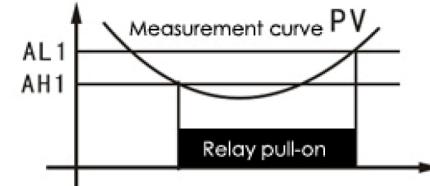


Figure 2

no-action area of the trip. The no-action area of the trip usually consists 3~5 characters.

## (II) Set the transmitting parameters of the instruments (the setting methods: input password 0042 after pressing "SET")

### 1. Introduction to instrument transmitting parameter group

Parameter prompt		Description of parameter prompt	Parameter setting scope	Factory value
obty	obty	Transmitting output type	4-20, 0-20	4-20
obL	obL	The display value corresponding to the lower transmitting limit	-1999~9999	000.0
obH	obH	The display value corresponding to the upper transmitting limit	-1999~9999	500.0
End	End	End		

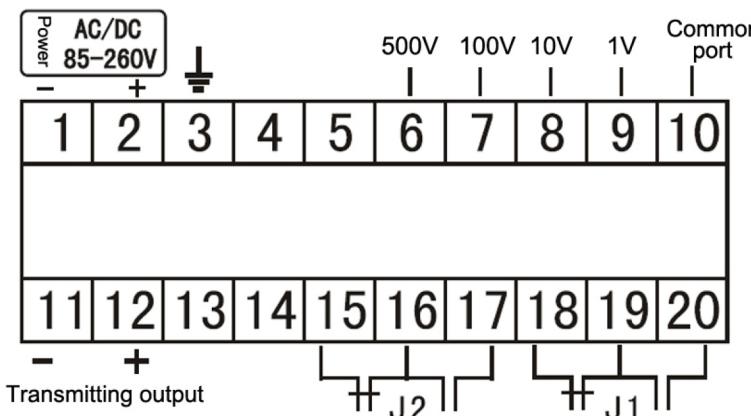
### 2. Description of parameter definition

(1) Selection of transmitting output type (obty): according to the need for transmitting output, 4-20mA or 0-20mA may be selected.

(2) Transmitting output lower limit value (obL): the corresponding display value when the transmitting output is 0mA or 4mA.

(3) Transmitting output upper limit value (obH): the corresponding display value when the transmitting output is 20mA. If the set upper limit values are different, the corresponding resolution ratio is also different. The smaller the upper limit value is, the lower the resolution ratio of transmitting output is.

## IV. Terminal diagram



## V . Type selection and application example

For example: Users intend to measure alternative current 0~380V and require upper limit alarm when the measured current is higher than 400V and lower limit alarm when the measured current is lower than 360V. The 0~380V current will be converted to 4~20mA transmitting output. The power supply of the system is AC220V and hole size of the instrument is 92×44 (mm).

1. Instrument selection: the instrument is VST-VTB INTELLIGENT VOLTAGE METER.

2. Wire connection of the instrument: the input terminal is connected with No 6 and No. 10.

3. Parameter setting

1) Input the password 0089 and set the input signal number as follows:

Input signal number P-Sn-4 (AV: 0~500V);

2) Input the password 0036 and set range display parameters as follows:

Zero value PvL-000.0;

Full value PvH=500.0;

The position of decimal point dot=1 (display scope: 0.0~500.0) ;

The digital filter coefficient FILt may be determined as appropriate according to onsite interference.

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

The current upper limit alarm pull-on value AH1=400.0V;

The current upper limit alarm release value AL1=399.7V;

The current lower limit alarm pull-on value AH2=360.0V;

The current lower limit alarm release value AL2=360.3V;

4) Input the password 0042 and set transmitting output parameters as follows:

Transmitting output type selection obty=4~20mA;

Transmitting output lower limit value obL=0000;

Transmitting output upper limit value obH=3800;

## Ordering instruction

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