EBCHQ

OPERATION MANUAL OF AOB29 SERIES DIGITAL VOLTMETER&AMMETER

(Version V15.1 with alarm)

Chapter 1. General instruction

AOB29 series digital voltmeter/ammeter are used in the real-time measurement and indication on AC/DC voltage/current in the electric circuit. And it can be added one channel of alarm output.

Chapter 2. Type and designation

Function & shape / REF Number	Measure and display		Size	Alarm contact
	AC voltage	AC current	Unit: mm	
79505	●		48X48	YES
79515	●		72X72	YES
79525	●		96X48	YES
79535	●		96X96	YES
79565		●	48X48	YES
79575		●	72X72	YES
79585		●	96X48	YES
79595		●	96X96	YES

Function & shape / REF Number	Measure and display		Size	Alarm contact
	DC voltage	DC current	Unit: mm	
79805	●		48X48	YES
79820	●		96X48	YES
89902		●	48X48	YES
89917		●	96X48	YES

Chapter 3. Technical parameters

3.1 Measuring range(can be overload 1.2times, please ask us if you need other specifications)

3.1.1 AC voltmeter

direct measurement: AC 0~100V or AC 0~500V

need PT external: AC */100V

3.1.2 DC voltmeter

direct measurement: DC 0~ ±500V

3.1.3 AC ammeter

direct measurement: AC 0~1A or AC 0~5A

need CT external: AC */1A or AC */5A

3.1.4 DC ammeter

direct measurement: DC 0~ ±5A

need shunt external: DC */50mV or other specifications

3.2 Accuracy: 0.5

3.3 Frequency of AC input signal: 45~65Hz

3.4 Sampling rate: 1.5 times/s(can be 3 times/s also)

3.5 Input circle power consumption: <0.5VA

3.6 Auxiliary power supply : 220V $^{+10\%}_{-15\%}$, 50/60Hz, <3VA (can customize 380V)

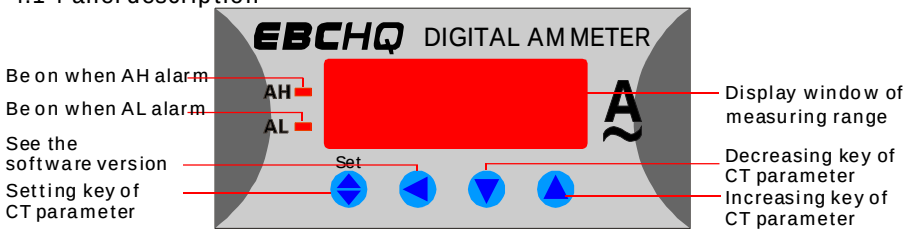
3.7 Overflow indication: plus overflow display ___ , minus overflow display ___

3.8 Alarm output: the higher and lower limit alarm output from the same relay, contact capacity 1A/250VAC, 1A/30VDC, resistive load

3.9 Working environment: places which is free of gas corruption with temperature -10~50℃, humidity ≤85%RH

Chapter 4. Programming

4.1 Panel description



4.2 Key explanations

SET key: Under the measuring display mode, it can enter the programming mode by pressing SET key for 2s(enter directly only when codE=0(default)), otherwise need to enter the right password to enter the programming code.)
Under the programming mode, pressing SET key once can switch to the next menu.
Pressing this key for 2s can quit the programming mode.

SHIFT key: Under the measuring display mode, it can see the software version by pressing SHIFT key for 2s.
Under the programming mode, pressing SHIFT key once can move the cursor to the left one. Pressing this key for 2s can back to the previous menu.

DOWN key: Under the programming mode, pressing DOWN key for 2s will decrease the parameter values of menu.

UP key: Under the measuring display mode, if pressing UP key for 2s, it will prompt "rSt" and release the alarm lock(when the meter is with alarm and in locked status)
Under the programming mode, pressing UP key for 2s will increase the parameter value of menu.

Under the programming mode, it will automatically return to the measuring display mode if there is no key operation for more than 120s.

4.3 Menu explanations

Serial code	Parameter code	Parameter name	Setting range	Explanations
1	dP	Position of decimal point dP	0~9999	Ones digit of DP is used to define the position of the decimal point. InPH defines the display value corresponding to the higher limit of input, inPL defines the display value corresponding to the lower limit of input. Ones place of dP is 0, no decimal point, display format is XXXX (if the ones place of dP is non 0~3, treate it as 0) Ones digit of dP is 1, decimal points in tens place, display format is xxx.x Ones digit of dP is 2, decimal points in hundreds place, display format is xx.xx Ones digit of dP is 3, decimal points in thousands place, display format is x.xxx The display value setting examples are as follows: (other and so on): 1. Input specification is AC/DC 500V (Set: dP=1, inPH=500.0, inPL=0.0) 2. Input specification is AC/DC 5A (Set: dP=3, inPH=5.000, inPL=0.000) 3. Input specification is AC 110kV/100V (Set: dP=1, inPH=110.0, inPL=0.0) 4. Input specification is AC 200A/5A (Set: dP=1, inPH=200.0, inPL=0.0) 5. Input specification is DC 1000A/75mV (Set: dP=0, inPH=1000, inPL=0) 6. Input specification is DC 4-20mA, display -1.000~1.000, (Set: dP=3、inPH=1.000、inPL=-1.000) 7. Input specification is DC 0-10V, display 0.00~50.00 (Set: dP=2, inPH=50.00, inPL=0.00) In short, just need to make sure the display values corresponding the higher and lower limit of measuring range and add the decimal point setting. Thousands place of dP is used for setting different menu display 1~8(default 0): Thousands place of dP is 5, only display dP, inPH and codE Thousands place of dP is 6, only display dP and inPH Thousands place of dP is not 5 or 6, all menus will be displayed
2	inPH	Higher limit of input display value inPH	-1999~9999 (the position of decimal point is up to the unit of DP)	
3	inPL	Lower limit of input display value inPL	-1999~9999 (the position of decimal point is up to the unit of DP)	
4	biAS	Input shift correction biAS	-1000~1000 (the position of decimal point is up to the unit of DP)	BiAS make the shift correction to the display value. Display value(after correction) = Display value(before correction)+ biAS If there is no standard equipment for inspection, please do not set it at random. The factory default is 0
5	gAin	Input gain correction gAin	-0.100~0.100	Gain make the gain correction to the display value. Display value(after correction) = Display value(before correction) - inPL) × (1+gAin) If there is no standard equipment for inspection, please do not set it at random. The factory default is 0
6	Scr	Input zero shield Scr	0.1~10.0%	Due to temperature drift, environmental interference, components aging and other reasons, the instrument may display a non inPL value in the absence of input signals. Set the "Scr" can shield it. That is: when |(display value - inPL)|<(inPH - inPL) × Scr / 100, it will fixed display inPL.
7	inE	Input expansion settings inE	0~9999	Hundreds place of inE is 1: the sampling switching rate is 3 times/s Tens place of inE is 1: when the display value<0, it fixed display 0. Ones place of inE is 1, it will switch the input specification from DC 0-5V to DC 1-5V or switch the input specification from DC 0-20mA to DC 4-20mA. Ones place of inE is 2, it will switch the input specification from DC */75mV to DC */60mV

The following are the alarm function menus				
Serial code	Parameter code	Parameter name	Setting range	Explanations
8	codE	Programming password codE	0~9999	CodE is for setting the programming code. If codE=0, Under the measuring display mode, it can enter the programming mode directly by pressing SET key for 2s. Otherwise it will prompt the password window and can enter the programming code only upon the right password.
9	AH	Setting value of higher limit alarm AH	-1999~9999 (the position of decimal point is up to the unit of DP)	when the display value≥AH, it will output the higher limit alarm. Setting AH as 9999 will close the higher limit alarm function.
10	AL	Setting value of lower limit alarm AL	-1999~9999 (the position of decimal point is up to the unit of DP)	when the display value≤AL, it will output the lower limit alarm. Setting AL as -1999 will close the lower limit alarm function.
11	dF	Alarm switch difference dF	0~9999 (the position of decimal point is up to the unit of DP)	dF has no effect on the generation of alarm. The dF effort on the releasing alarm as following: when the display value<(AH-dF), it will release the higher limit alarm, when the display value>(AL+dF), it will release the lower limit alarm,
12	ont	Delay time of generating alarm ont	0~9999s	Ont is the delay time of the relay output when the instrument is switched from the "non-alarm state" to the "alarm state".When the alarm duration is<ont, the switching process will be ignored. If ont=0, the relay will switch to the "alarm state immediately when alarm.
13	oFt	Delay time of releasing alarm oFt	0~9999s	Oft is the delay time of the relay output when the instrument is switched from the "alarm state" to the "non-alarm state". When the releasing alarm duration<oFt, the switching process will be ignored. If oFt=0, the relay will switch to the "non-alarm state immediately when releasing alarm.
14	ALE	Alarm extension settings ALE	0~9999	Thousands place of ALE: it is used to switch the relay output status when it is 0: after power on, when not alarming, terminals COM and N/C is closed, COM and N/O is open. When alarming, COM and N/C is open, COM and N/O is closed when it is 1: after power on, when not alarming, terminals COM and N/C is open, COM and N/O is closed. When alarming, COM and N/C is closed, COM and N/O is open. When the hundreds place of ALE is1: to start the alarm lock. That means, after the alarm, even if the alarm conditions disappear, the relay output and warning lights will always be in the alarm state. Under the measuring display mode, if pressing the UP key for 2s, it will release the alarm lock. Tens place of ALE: when it is1, it will not alarm when the display value is 0 when it is 2, it will not alarm when the display value is 0 + power on alarm suppression when it is 3, power on alarm suppression Power on alarm suppression, means it will not alarm immediately even if it meets the alarm condition when power on. When the alarm condition is cancelled, the alarm output will be started if meeting the alarm condition again. The ones place of ALE 1~9: The display value change from 0 to non-0, the alarm will start running after the delay time setting of ALE ones place. To use this function, please start the "not alarm when the display value is0 or close the lower limit alarm at the same time. For example, the ones place of ALE is 5, when the display value change from 0 to non-0, the alarm will start after the delay time 5s. This function is used to shield the alarm from the shutdown or standby mode to the normal operating condition. For example, the current is 0 when the motor is not working, but the instant current of starting is big, you can set the ones place of ALE more than the starting time of motor.

Chapter 5 Installation and Connection

5.1 Shape and hole cutout dimension(unit: mm)

Instrument shape	Panel dimension		Case dimension			Hole cutout dimension	
	W	H	W	H	D	W	H
160×80	160	80	150	75	100	152	76
120×120	120	120	110	110	80	112	112
80×80	80	80	75	75	80	76	76
120×60	120	60	115	55	80	116	56
96×48	96	48	90	44	100	92	45
72×72	72	72	67	67	80	68	68
48×48	48	48	44	44	100	45	45
96×96	96	96	91	91	80	92	92

5.2 Method of installation

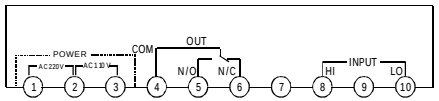
Choose the corresponding hole cutout dimension according to the meter's dimension from the table above, make a hole in the installation screen, insert the meter into the hole, place the two clamping pieces into the clamping holder, push and tighten them by hand.

5.3 Description of Wiring and terminal

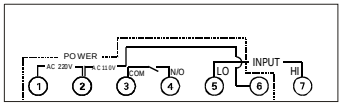
POWER: Auxiliary power input port, default 220V/110V $^{+10\%}_{-15\%}$, 50/60Hz,if you need other specification, please tell us when ordering

INPUT: Input port of measuring signal(when DC input, HI is +, LO is -).

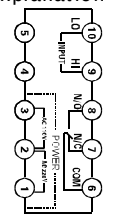
OUT: Relay contact output port. N/O is normally open contact, N/C is normally closed contact, COM is the common port. When without power, the terminals COM and N/C is closed, COM and N/O is open. When power on, the relay output status please see the explanation of thousands place of ALE.



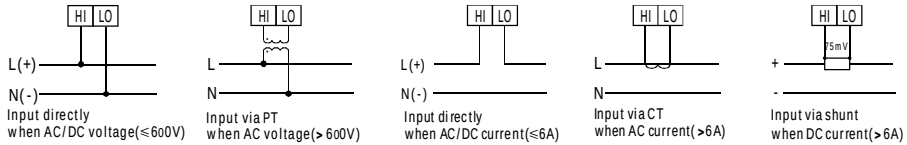
Pic.1: 96×96, 96×48, 160×80, 120×120 Terminal arrangement



Pic. 2: 80×80, 120×60, 72×72 Terminal arrangement



Pic.3: 48×48 Terminal arrangement



Chapter 6. Cautions

6.1 Please confirm if the power supply, input signal and each terminal wiring of the meter are correct and reliable before applying the power.

6.2 The instrument must be preheated for 15 minutes to guarantee the precision of measurement.

6.3 The instrument should not be rapped, knocked and vibrate excessively and its using environment should meet the technical requirements.

6.4 The meter has been calibrated according to the measuring range required by the customer upon order. The user should check again if the measuring range of the meter is fit with the specifications of the transformer or shunt and set the measuring range again if not.

Chapter 7. Packing and Storage

The instrument and accessories with packing should keep storage conditions cool and dry and free of wet and gas corruption with temperature not more than 70℃ and not less than -40℃, and relative humidity≤85%