

AOB18Series Digital Display Voltmeter(Ammeter) Operational Instruction Manual V14.8

Please read through the manual before installment and operation
Please keep the manual for future use

Chapter 1. General Introduction

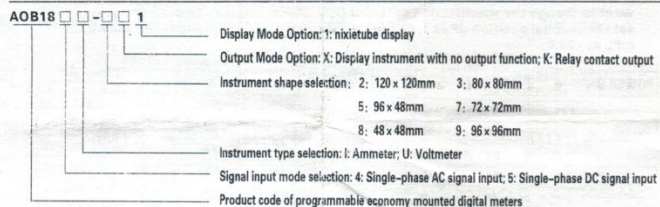
1.1 Usage

AOB184U, AOB185U, AOB184I, AOB185I Series digital display voltmeters(ammeters) are a new generation of programmable economy digital display mounted meters, which are mainly used in the real-time measurement and indication on AC or DC voltage(ammeter) in an electric circuit. With features of high precision, good stability and calibration-free long-term operation, onsite parameter setting on a panel, it is an idea substitute of traditional dial instrument or ordinary digital instrument.

1.2 Feature

- Adopt SMT product techniques, compact circuit, high reliability;
- AC sampling, RMS measuring mode
- With overrun alarm contact output function, the higher and lower limit alarm are programmable.
- Setting function of alarm delay time;
- Display multiply power is programmable and apply to transformer with several specifications.
- Setting function of digital filtering time
- Unique method of installation, can complete the installment easily without tool;
- With performance of intelligent meters, price of common meters, high cost performance.

Chapter 2. Type and Designation



Chapter 3 Technical Parameters

3.1 Measuring range

3.1.1 AOB184U programmable AC voltmeter

Direct measurement: AC 0 - 100V, AC 0 - 500V

Accessory device: AC */100V (The PT rate can be freely programmed)

3.1.2 AOB185U programmable DC voltmeter

Direct measurement: DC 0 - ±500V

3.1.3 AOB184I programmable AC Ammeter

Direct measurement: AC 0.01 ~ 1A, AC 0.05 ~ 5A

Accessory device: AC */1A, AC */5A (*/5A current transformer is necessary

the measuring range can be freely programmed)

3.1.4 AOB185I programmable DC Ammeter

Direct measurement: DC 0 - ±5A

Accessory device: DC -1999 ~ +9999A (*/75mV shunt is necessary

3.2 Accuracy rating: ± 0.5%FS ± 1digit

3.3 Sampling rate: AC once per second, DC twice per second.

3.4 Frequency range of input signal (AC current or voltage): 45-65 Hz

3.5 Input circuit consumption: current < 0.5VA, voltage < 1VA

3.6 Auxiliary power supply: AC 220V ± 10% 50/60Hz

3.7 Auxiliary supply consumption: < 3VA

3.8 Overflow indication: Displaying character "HHHH" or "LLLL"

3.9 Alarm Output: Higher and lower limit alarm output via the same relay contact, contact rating AC250V/1A, DC30V/1A

The measuring value blinks at the same time of executive alarm operation.

3.10 Operational environment: places free of gas corruption with temperature of -10-50°C, and relative humidity ≤ 85%RH.

Chapter 4. Program and Usage

4.1 Panel description



4.2 How to operate

4.2.1 For AC ammeter, pressing the UP key \wedge to set the CT rate(menu "Ct") or the measuring range(menu "dP", "inPH" and "inPL") and "Scr" menu;

4.2.2 When it is with alarm function more, you can set the menus "AH", "AL", "dF" and "dt" by pressing the "DOWN" key \wedge . It will display and flicker AH or AL to indicate the alarm object. If it is without alarm function, this operation is invalid;

Serial code	Parameter code	Parameter name	Setting range	Description
1	dP	Position of decimal point dP	0 ~ 3	Menu :dP" and "inPH" is valid for DC ammeter and AC/DC voltmeter. Menu: dP" is for setting the position of decimal point of the measuring display value. DP=0, displayed in format xxxx, no decimal point DP=1, displayed in format xxx.x, decimal at tens place DP=2, displayed in format xx.x, decimal at hundreds place DP=3, displayed in format x.xxx, decimal at thousands place Menu "inPH" and "inPL" is for setting the measuring range: i.e. 1 when you need specification "input AC 0-500V directly", please set "dP" as 1, "inPH" as 500.0 or set "dP" as 0, "inPH" as 500; i.e. 2 when it is used with PT AC 10kV/100V, please set "dP" as 2, "inPH" as 10.00; i.e. 3 when you need specification of "input DC 4-20mA, display -50.0-50.0", please set "dP" as 1, inPH as 50.0, inPL as -50.0; i.e. 4 when you need specification "DC0-10V input, display 0.0-50.00", to set "dP" as 2, "inPH" as 50.00, "inPL" as 0.00; i.e. 5 when it is used with shunt DC 200A/75mV, to set "dP" as 1, "inPH" as 200.0, "inPL" as 0.0 or to set "dP" as 0, "inPH" as 200, "inPL" as 0.
2	inPH	Higher limit of Measuring range inPH	DC input: -1999 - 9999 AC input: 1 - 9999	
3	inPL	Lower limit of Measuring range inPL (inPL is screened if AC input, it is 0)	DC input: -1999 - 9999	
4	Ct	Setting of current transformer rate Ct	1 - 9999	Ct: Current transformer ratio "Ct": primary side current of CT/secondary side current of CT, when no external CT, please set "Ct" as 1; for example, when CT 200/5A external, please set "Ct" as 40(200 ÷ 5=40), when CT 50/1A external, please set "Ct" as 50(50 ÷ 1=50).
5	Scr	Zero screen of input signal Scr	0.4 - 119.9%	The last two digits of menu "Scr" are for setting the zero screen range. The meter will display a digit(0) even there is no signal inputs because of the temperature, external disturbance, aging component or other reason, so we screen this digit by setting menu "Scr" (default 5%). For AC voltmeter: 500V, it will display 0 when the input signal < 25V(500 × 5.0%). For AC current meter: 5A, it will display 0 when the input signal < 0.25A(5 × 5.0%). For current meter with CT 200/5A external, it will display 0 when the input signal < 10A(200 × 5.0%), other specifications by parity of reasoning. Setting the hundred digit (the second digit) of the menu "Scr" as 1 will change the input specification DC 0-20mA or DC 0-5V to input DC 4-20mA or DC 1-5V. The setting of other input signals are 0. Setting the thousand digit (the last digit) of the menu "Scr" as 1, when the measuring value is 0, it doesn't output even there is alarm. It will become normal when the measuring value is not 0.
6	AH	Higher limit alarm point AH	-1999 - 9999 (the decimal will change upon the menu "dP" or "Ct")	It will output alarm when the measuring value is higher than this setting value. It will close the alarm when setting it as the max. value 9999. Example 1: the meter with CT rate 600/5A, if you want the higher limit alarm to be 400A, please set AH as 400.0. Example 2: the meter with CT rate 50/5A, if you want the higher limit alarm to be 50A, please set AH as 50.00.

7	RL	Lower limit alarm point AL	-1999 - 9999 (the decimal will change upon the menu "dP" or "Ct")	It will output the lower limit alarm when the measuring value is less than or equal to this setting value. It will close the lower limit alarm when you set it as the min. value "1999". Example 1: the meter with CT rate 600/5A, if you want the lower limit alarm to be 100A, please set AL as 100.0; Example 2: the meter with CT rate 50/5A, if you want the lower limit alarm to be 15A, please set AL as 15.00
8	dF	Alarm Switching Difference dF	-1999 - 9999 (the decimal will change upon the menu "dP" or "Ct")	If you want to close the alarm indication (LED splash melt AH or AL), please set the thousand digit (the first digit) of the menu "dF" as 1. The last three digit of menu "dF" is alarm switching difference, which is used to prevent the continuous alarm actions which caused by the fluctuate measuring value. For example, when the AH is set as 400.0, AL as 100.0, dF as 5.0, it will alarm when the measuring value > 400.0 or < 100.0. It will cancel the alarm when the measuring range < 395.0 (400.0 - 5.0) and > 105.0 (100.0 + 5.0).
9	dt	Delay time of alarm output dt	0 - 1999(s)	The thousand digit (the first digit) of menu "dt" is used to switch the output status of the relay: 0: when the meter is power on without alarm, the terminals COM, N/C is closed and COM, N/O is open; when it outputs alarm, the terminals COM, N/C is open and COM, N/O is closed, that means the normally-open contact is closed when alarm. 1: when the meter is power on without alarm, the terminals COM, N/C is open and COM, N/O is closed, when it outputs alarm, the terminals COM, N/C is closed and COM, N/O is open, that means the normally-open contact is open when alarm. The last three digit of menu "dt" are used for setting the delay time of alarm output. For example, "dt" is set as 10s, the relay will output alarm only when the higher or lower limit alarm output status keep for >= 10s. The menu "dF" don't have delay function for cancelling the alarm. It will cancel the alarm without delay.

● The measuring range is inPL-inPH or the primary side current value of external CT.

Chapter 5 Installation and connection

5.1 Shape and hole cutout dimension

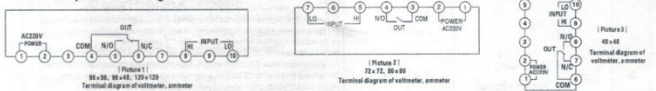
Unit: mm

Size	Panel dimension		Case dimension			Hole cutout dimension	
	W	H	W	H	D	W	H
120 x 120	120	120	110	110	85	111	111
80 x 80	80	80	74	74	85	75	75
96 x 48	96	48	90	44	85	91	45
72 x 72	72	72	66	66	85	67	67
48 x 48	48	48	44	44	85	45	45
96 x 96	96	96	90	90	85	91	91

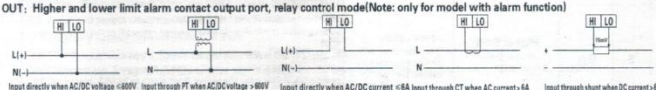
5.2 Method of installation

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

5.3 Description of Wiring and terminal



POWER: The input port of auxiliary power supply, the auxiliary power supply is AC220V ± 10% (please tell us if you need other value)
INPUT: Signal input port, HI represents "+" port of DC input signal, one wire of AC voltage input signal and inlet port of AC current input signal. LO represents "-" port of DC input signal, the other wire of AC voltage input signal and outlet port of AC current input signal.



Input directly when AC/DC voltage < 800V Input through PT when AC/DC voltage > 800V Input directly when AC/DC current < 5A Input through CT when AC current < 5A Input through shunt when DC current > 5A

Chapter 6. Cautions

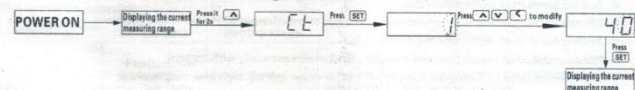
- 6.1 Please confirm if the power supply, input signal and each terminal wiring of the meter are correct and reliable before applying the power.
- 6.2 The instrument should not be rapped, knocked and vibrate excessively and its using environment should meet the technical requirements.
- 6.3 The meter has been calibrated according to the measuring range required by the customer upon order. The user should check once 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

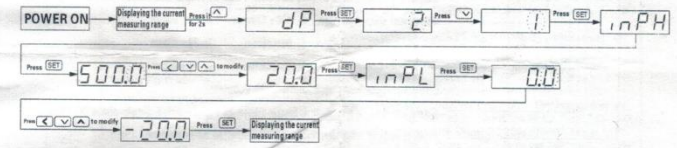
The instrument and accessories with packing should keep storage conditions cool and dry and free of wet and gas corruption with temperature not more than 70°C, and not less than -40°C, and relative humidity < 85%

* Examples of Programming

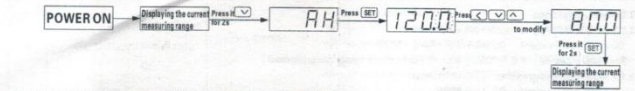
i.e.1: The factory specification of AC ammeter is AC 5A ("Ct"=1), if the user want to use an external CT 200/5A, he should change the menu "Ct" as 40 (=200 ÷ 5)



i.e.2: When the factory specification is "input DC4-20mA, display 0.00-50.00", if the user want to change the specification to "input DC4-20mA, display -20.0-20.0", please set the decimal position dP as 1, change the display measuring range inPH as 20.0, inPL as -20.0



i.e.3: If the factory specification is AC500/5A, if the user want it to output alarm signal at once when the current is over 400A, please set the higher limit alarm AH as 80.0% (= 400 ÷ 500 × 100%).



i.e.4: When the factory specification is DC 500A/75mV, if the user want to change the specification to DC 100A/75mV, please set the decimal position dP as 1, change the display measuring range inPH is 100.0

