

# 4 DIGITAL MICRO-PROCESS METER

# ABM

## FEATURES:

- Multiple Input/display selectable
- CE approval
- Max. Hold/ Data Hold/ Reset
- High stability, non-flammable case (PC), high safety
- 0.8" high brightness LED display range: -9999~9999, decimal point selectable
- Measuring AC, DC Voltage/AC, DC Current/Potentiometer/Resistor/PT-100/Load Cell
- Accuracy:  $\pm 0.1\%$  F.S.,  $\pm 1$  digit (DC /Potentiometer/Resistor/PT-100/Load Cell)  
 $\pm 0.2\%$  F.S.,  $\pm 1$  digit (AC)
- Can buy waterproof one, can reach IP 65 grade



## ORDER INFORMATION : AMB - Code 1 - Code 2 - Code 3 - Code 4

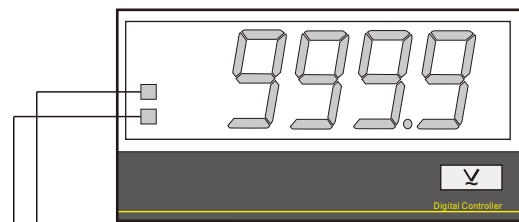
Code 1	Input Type	Code 2	Voltage (V)	Code 2	Current	Code 2	3 Wire Potentiometer	Code 2	2 Wire Resistor	Code 2	RTD (PT-100)	Code 2	Load Cell	Code 4	Alarm Output	Code 3	Aux. Power
D	DC	V1	0~50mV	A1	0~20uA	P1	500Ω~10KΩ	I1	0~10Ω	T1	-50~50°C	L1	1mV/V EX. 5V	N	None	A	AC/DC100~240V
A	AC AVG	V2	0~5V	A2	0~200uA	P2	10KΩ~100KΩ	I2	0~100Ω	T2	-100~100°C	L2	2mV/V EX. 5V	R1	1 Relay	D	AC/DC24~60V
M	AC TRMS	V3	1~5V	A3	0~2mA	P3	100KΩ~1MΩ	I3	0~1KΩ	T3	-200~200°C	L3	3mV/V EX. 5V	R2	2 Relays	O	110V/220V
P	3 Wire Potentiometer	V4	0~10V	A4	0~20mA	PO	Option	I4	0~10KΩ	T4	0~600°C	L4	1mV/V EX. 10V				
I	2 Wire Resistor	V5	0~36V	A5	0~200mA			I5	0~100KΩ	TO	Option	L5	2mV/V EX. 10V				
T	RTD(Pt-100)	V6	0~300V	A6	4~20mA			IO	Option			L6	3mV/V EX. 10V				
L	Load Cell	V7	0~600V	A7	0~2A							L0	Option				
2	2 Wire Sensor	V0	Option	A8	0~5A												
3	3 Wire Sensor			A9	0~10A												
4	4 Wire Sensor			A0	Option												
S01	Multiple Input																
S02	Multiple Input																
S03	Multiple Input																

※Note 1: S01 multiple input, input 1: 0~10V DC, input 2: 4~20mA DC  
 2: S02 multiple input, input 1: 0~600V AC, input 2: 0~5A AC  
 3: S03 multiple input, input 1: 0~600V DC, input 2: 0~50mV DC  
 4: 2 wire type offers excitation power DC24V for 2wire(LOOP POWER) pressure, temperature, humidity sensors using.  
 5: Please specify the input signal and display value, inquiry sales persons for special type.  
 6: Load Cell type of excitation power DC5V can have 2 load cell in parallel; DC10V only can offer 1 load cell to use

## SPECIFICATION:

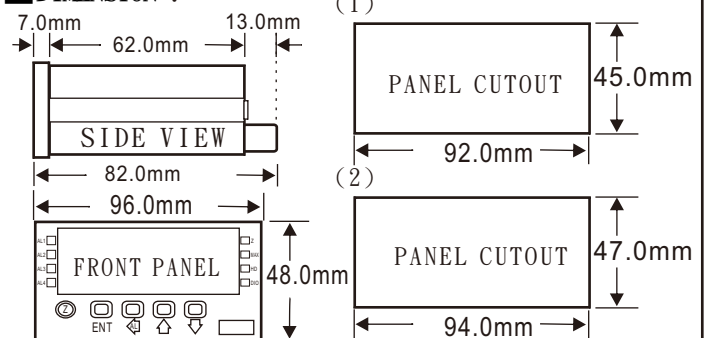
- Accuracy:  $\pm 0.1\%$  F.S.  $\pm 1$  digit (DC/Potentiometer /Resistor/PT-100/Load Cell)  
 $\pm 0.2\%$  F.S.  $\pm 1$  digit (AC)  
High brightness red LED, 20.3mm (0.8")
- Display Screen: 16 cycles/sec
- Sampling Time: -9999~9999
- Display Range: -9999~9999
- Zero Adjustment: doFL / ioFL or -doFL / -ioFL
- Over Range Indication: Automatic with "-" indication
- Polarity Indication: Push buttons
- Parameters Setting: EEPROM
- Back Up Memory: 100ppm/°C (0~60°C)
- Temperature Coefficient: 0~60°C; 20~90% RH (non-condensing)
- Operating Temperature/Humidity: -10~70°C; 20~90% RH (non-condensing)
- Storage Temperature / Humidity: AC/DC 100~240V, AC/DC 22~60V
- Power Supply: 6.5VA 2 RELAYS (non RELAY 3VA)
- Power Consumption: 2KVac / 1min (Input / Power)
- Withstand Voltage: Voltage: >2V for 20KΩ/V  
≤2V for 200MΩ  
Current: ≥0.2A at 100mV  
<0.2A at 1V
- Input Impedence: < 0.3 Kg
- Gross Weight:

## FRONT PANEL & KEY FUNCTIONS :



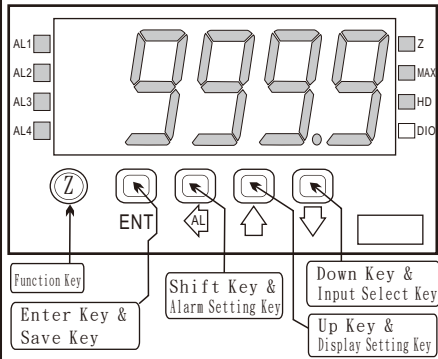
- Indicator of first input displaying.
- Indicator of second input displaying.

## DIMENSION :



※Note: PANEL CUTOUT (1) is standard size, PANEL CUTOUT (2) is attached waterproof cover

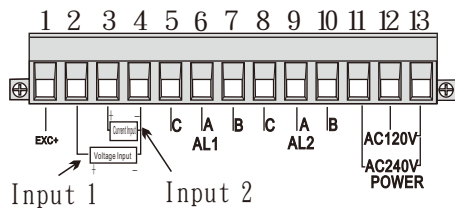
1.1 FRONT PANEL



AL1: Alarm 1 Indicator  
 AL2: Alarm 2 Indicator  
 AL3: Input 1 Value Display  
 AL4: Input 2 Value Display  
 Z: Display Value Reset Indicator  
 MAX: Max. Hold Indicator  
 HD: Data Hold Indicator  
 D10: No Function

1.2 KEY FUNCTIONS

	Function Key	1. In the measuring status, press this key can enable the setting function.
	EnterKey& SaveKey	1. In the measuring status, press this key can enter to parameter groups. 2. In the parameter setting, press this key can save the value & go to the next parameter.
	ShiftKey& Alarm SettingKey	1. In the measuring status, press this key for 3 sec can enter to Alarm Setpoint Modification. 2. In the parameter page, press this key can enter to parameter setting. 3. In the parameter setting, press this key can move the cursor left.
	Up Key & Display Group Setting Key	1. In the measuring status, press this key for 3 sec can enter to Display Group Setting. 2. In the parameter page, press this key can back to the last parameter page. 3. In the parameter setting, press this key can increase the digit
	DownKey	1. In the measuring status, press this key for 3 sec can enter to A/O Group Setting. 2. In the parameter page, press this key can go to the next parameter page. 3. In the parameter setting, press this key can decrease the digit
	Compound Key	1. In any status, press this key can back to measuring status.

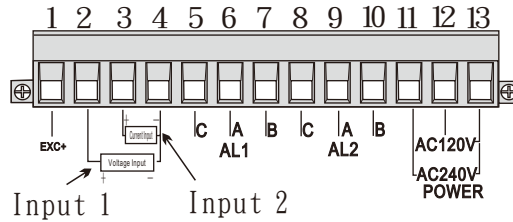


※Note: 1. EXC+≥15V(20mA)  
 2. connect with Input 1, iP\_SEL parameter please switch to i1; connect with Input 2 iP\_SEL parameter please switch to i2. (Same as press for 3 sec. in the measuring status.)

Caution: Multi-input is different from dual input, please do not connect two signals at one time.

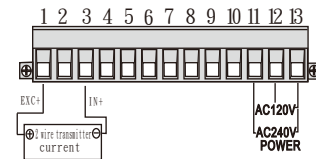
WIRING CONNECTION:

• Multiple input(S01,S02,S03):

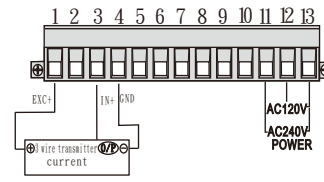


※Note: 1. EXC+≥15V(20mA)  
 2. connect with input 1, iP\_SEL parameter, please switch to i1; connect with input 2 iP\_SEL parameter, please switch to i2 (It is same as press for 3 sec. in the measuring status.)  
 3. The wiring connection for 2 wire transmitter; please check example 1  
 4. Wiring connection for 3 wire transmitter; please check example 2, example 3

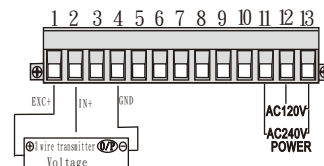
• Example 1:



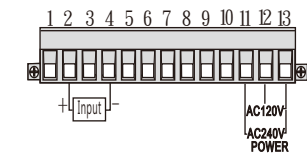
• Example 2:



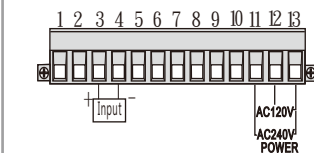
• Example 3:



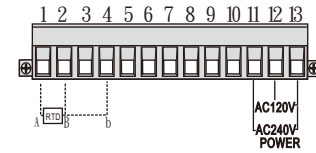
• Voltage, (AC,DC):



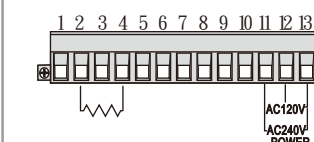
• Current, Shunt (AC,DC):



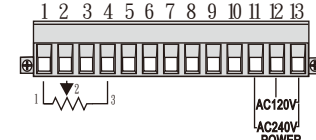
• Temperature (RTD):



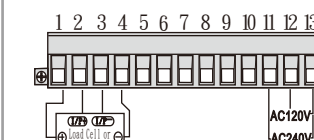
• 2 Wire Resistor:



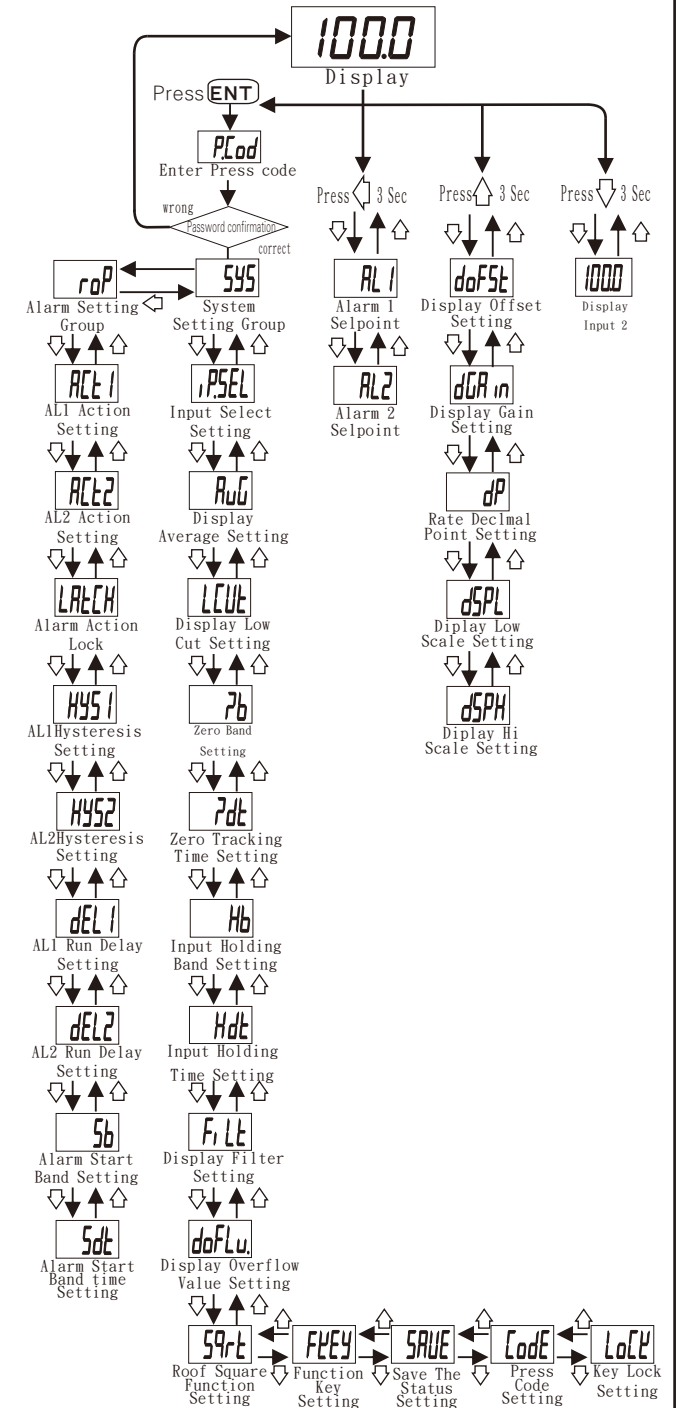
• 3 Wire Potentiometer:



• 4 Wire Sensor or Load cell:



2.1 OPERATING SEQUENCE



## 2. 2 ALARM SETPOINT MODIFICATION

\* In the measuring status, press for 3 sec can enter to Alarm Setpoint Modification.

Display	Default	Name	Descriptions
	0000	Alarm 1 Setpoint (AL1)	1. Example: present value 100.0, if AL1 50.0 is required, All must be set at 50.0 Range: -9999-9999
	0000	Alarm 2 Setpoint (AL2)	2. Press ENT to save the value and go to next parameter.

## 2. 3 DISPLAY SETTING

\* In the measuring status, press for 3 sec can enter to Display Group Setting..

Display	Default	Name	Descriptions
	0000	Display Offset Setting (dOFSt)	1. Example for Zero Band adjustment: when setting input 0V, if display is 3, please input 3 to correct the deviation Range: -9999-9999 2. Press ENT to save the value and go to next parameter.
	0000	Display Gain Setting (dGAIN)	1. Example for display adjustment: when setting input 10V, if display is 99.8, Value ÷ actual value = dGAIN, 100 ÷ 99.8 = 1.002 (please setting 1.002) 2. Press ENT to save the value and go to the next parameter.
	0000	Decimal Point Setting (dP)	1. Decimal Point setting: for change display 100.0 to 10.00, please change the setting from 1 to 2 Range: 0, 1, 2, 3 (dP) 2. Press ENT to save the value and go to the next parameter.
	0000	Display Low Scale Setting (dSPL)	1. Ex: Setting 10 for display low scale 10 while input is 0V Range: -9999-9999 2. Press ENT to save the value and go to the next parameter.
	9999	Display Hi Scale Setting (dSPH)	1. Ex: Setting 100 for display Hi Scale 100 while input 10V. Range: -9999-9999 2. Press ENT to save the value and go to the next parameter.

## 2. 4 ERROR CODE OF SELF-DIAGNOSIS

\*\*In case no connection to specific specification (RTD, load cell, potentiometer), it will cause below situations:

Display	Descriptions
	Input signal is over 150% of input range.
	Input signal is under -140% of input range.
	Input signal is over 180% of input range or meter error.
	Input signal is over display range(9999).
	Input signal is under display range(-9999).

\*\*In case above-mentioned problems occurred, please remove the input signals. If this cannot solve your problem, please contact with your distributor.

ERROR reading/writing suffers the interference (about 1 million times).

\*\*In case of E-00 situation, please select "No" and press "ENT" to save. If the problem (E-00) continues to occur, please contact with your distributor.

## 3. 1 SYSTEM(SYS)SETTING GROUP PROCEDURE

\* While pass code is correct, press can select system setting group.

Display	Default	Name	Descriptions
	11	Input Select Setting (iP.SEL)	1. Example: set i1 to display input 1 Could be changed to i1 or i2 input. * This setting is suitable for multi-input. 2. Press ENT to save the value and go to next parameter.
	0005	Display Average Setting (AvG)	1. Instruction: This is suitable for unsteady signal. The bigger setting value, more steady display value with slower reaction. Range: 1-99 (times) 2. Press ENT to save the value and go to the next parameter.
	0000	Display Low Cut Setting (LCuT)	1. Example: if require the display value 0 while value is under 10, then setting value shall be 10 Range: 0-99 2. Press ENT to save the value and go to the next parameter.
	0000	Zero Band Setting (Zb)	Example: (Zb range: 0 ~ 9.999) 1. Input 4-20mA display 0-600.0bar Required stationary value is 1.0bar Stationary range is Zero Band ±1.0 bar Calculation: $\frac{\text{Required stationary value} + \text{Hi input display value} \times 1000}{1000} = \text{Zb}$ 1.0 ÷ 600.0 × 1000 = 1.666 (Zb) * while the value within the stationary range of Zero Band, fixed the Zero Band automatically.
	0000	Zero Tracking Time Setting (Zdt)	Instruction: 1. If display reach Zb range, the display value will track after this setting. (P.S.: This function must use with Zb together) Range: 0~99 (sec)
	0000	Input Holding Band Setting (Hb)	Example: (Hb Range: 0~9.999) 1. Input 4-20mA display 0-600.0bar Required stabilized value is 0.5bar Stabilized range is input value ±0.5 bar Calculation: $\frac{\text{Required stabilized value} + \text{Hi input display value} \times 1000}{1000} = \text{Hb}$ 0.5 ÷ 600.0 × 1000 = 0.833 (Hb) * If display reach input holding band, this display value will stabilize input signal after this setting.
	0000	Input Holding Time Setting (Hdt)	Instruction: 1. If display reach Hb stabilized tracking range, will track after this setting. (P.S.: This function must use with Hb together) Range: 0~99 (sec)
	0000	Display Filter Setting (FiLt)	1. Example: Range: 0, 1, 2, 5 If setting 1, digit in ones place display 1, 2, 3 (normal display) If setting 2, digit in ones place display 2, 4, 6, 8 (even number display) If setting 3, digit in ones place display 0.5 (multi display of 3) If setting 0, digit in ones place display 0 (digit in tens)
	9999	Display Overflow Value Setting (DoFLu)	1. Ex: Display Hi scale is 1000, Setting 1100 for display overflow Range: 0-9999 2. Press ENT to save the value and go to the next parameter.
	no	Roof Square Function Setting (SqrT)	1. Ex: Setting YES (open) to open Roof Square Function. Range: no (do not open), YES (open) 2. Press ENT to save the value and go to the next parameter.

Display	Default	Name	Descriptions
	AP	Function Key Setting (FKEY)	1. This can modify the function of AZ Key. Range: TEST (panel test) AZ (display reset to Zero), Max (Max hold), HD (date hold), ALrSt (Reset Alarm) 2. Press ENT to save the value and go to next parameter.
	0000	Pass Code Setting (CodE)	1. To enter the parameter setting and modify the pass code. Range: 0-9999 (Please do remember new Pass Code)
	no	Key Lock Setting (LoCK)	1. Setting YES to lock all keys (except ENT key) Range: no (do not lock), YES (lock) 2. Press ENT to save the value and go to next parameter.
	YES	Save The Status Setting (SAVE)	1. Instruction: Setting YES (open) to save (AZ, MAX, HD) functions to EEPROM * Select NO: This can avoided EEPROM over-write. Range: no (do not open), YES (open) 2. Press ENT to save the value and go to next parameter.

## 3. 2 ALARM(ROP)SETTING GROUP PROCEDURE

\* While pass code is correct, press can select Alarm output setting group.

Display	Default	Name	Descriptions
	Hi	AL1 Action Setting (ACt1)	1. Instruction: Setting HI higher than Alarm setpoint, setting LO lower than Alarm setpoint. Range: Hi (≥ Alarm setpoint on), Lo (< Alarm setpoint on)
	Hi	AL2 Action Setting (ACt2)	2. Press ENT to save the value and go to next parameter.
	no	Alarm Action Lock (LAteCH)	1. Instruction: Setting YES to lock alarm and display. Use FKEY (Alarm reset) to reset the Alarm. no (close), Yes (open) 2. Press ENT to save the value and go to next parameter.
	0000	AL1 Hyster esis Setting (HYS1)	1. After setting alarm action HI, display must lower than alarm setpoint - HYS to close alarm.
	0000	AL2 Hyster esis Setting (HYS2)	2. After setting alarm action LO, display must higher than alarm setpoint + HYS to close alarm. Range: 0-99 3. Press ENT to save the value and go to next parameter.
	0000	AL1 RUN Delay Setting (dEL1)	1. Instruction: Setting alarm run delay at 5 sec., While display reach alarm setpoint, the action will be execute after 5 sec.
	0000	AL2 RUN Delay Setting (dEL2)	Range: 0-99 (sec) 2. Press ENT to save the value and go to next parameter.
	0000	AL Start Band Setting (Sb)	1. Instruction: Setting 5, if display value do not over 5, alarm will not be turned on. Range: -99-99 2. Setting 5, if display display value higher than 5, alarm will be turn on after Sdt setting This function are use to avoid possible errors caused by high inrush current (starting current)
	0000	AL start Delay Time Setting (Sdt)	1. If display value reach Alarm Start Band, alarm will be turned on after this setting (sec.) P.S.: this function must use with "Sb" together. Range: 0-99 (sec.) 2. Press ENT to save the value and go to next parameter.