# 5 DIGITAL MICRO-PROCESS METER

# GA5

## 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:-19999~99999,decimal point selectable
- Measuring AC, DC Voltage/AC, DC Current/Potentiometer/Resistor/PT-100/Load Cell
- Accuracy:±0.1% F.S.,±1 digit (DC /Potentiometer/Resistor/PT-100/Load Cell)
  ±0.2% F.S.,±1 digit (AC)
- Can buy waterproof one, can reach IP 65 grade

## ORDER INFORMATION : GA5 - Code1 Code 2 Code 3 Code 4

| Code 1 | Input Type |
|---|---|
| D | DC |
| A | AC AVG |
| M | AC TRMS |
| P | 3 Wire Potentiometer |
| I | 2 Wire Resistor |
| T | RTD(Pt-100) |
| L | Load Cell |
| 2 | 2 Wire Sensor |
| 3 | 3 Wire Sensor |
| 4 | 4 Wire Sensor |
| S01 | Multiple Input |
| S02 | Multiple Input |
| S03 | Multiple Input |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 0~50mV | A1 | 0~20uA | P1 | 500Ω~10KΩ | I1 | 0~10Ω | T1 | -50~50℃ | L1 | 1mV/V EX.5V |
| V2 | 0~5V | A2 | 0~200uA | P2 | 10KΩ~100KΩ | I2 | 0~100Ω | T2 | -100~100℃ | L2 | 2mV/V EX.5V |
| V3 | 1~5V | A3 | 0~2mA | P3 | 100KΩ~1MΩ | I3 | 0~1KΩ | T3 | -200~200℃ | L3 | 3mV/V EX.5V |
| V4 | 0~10V | A4 | 0~20mA | P0 | Option | I4 | 0~10KΩ | T4 | 0~600℃ | L4 | 1mV/V EX.10V |
| V5 | 0~36V | A5 | 0~200mA | | | I5 | 0~100KΩ | T0 | Option | L5 | 2mV/V EX.10V |
| V6 | 0~300V | A6 | 4~20mA | | | I0 | Option | | | L6 | 3mV/V EX.10V |
| V7 | 0~600V | A7 | 0~2A | | | | | | | L0 | Option |
| V0 | Option | A8 | 0~5A | | | | | | | | |
| | | A9 | 0~10A | | | | | | | | |
| | | A0 | Option | | | | | | | | |

| Code 4 | Alarm Output |
|---|---|
| N | None |
| R1 | 1 Relay |
| R2 | 2 Relays |

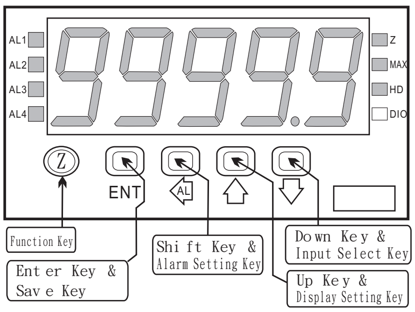
| Code 3 | Aux. Power |
|---|---|
| A | AC/DC100~240V |
| D | DC24~60V |
| 0 | AC 110/220V |

※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 specia 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:

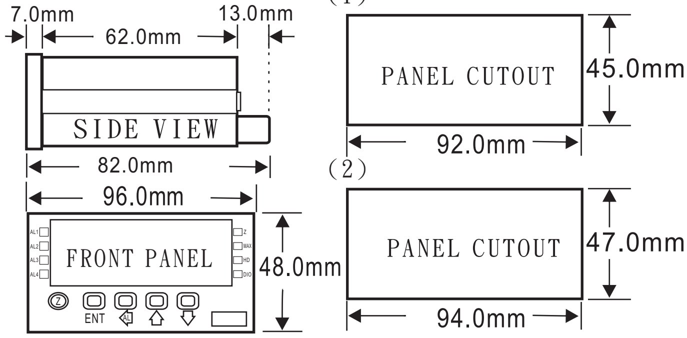
| | |
|---|---|
| Accuracy: | ±0.1%F.S.±1 digit (DC/Potentiometer /Resistor/PT-100/Load Cell) ±0.2%F.S ±1 digit (AC) |
| Display Screen: | High brightness red LED, 20.3mm (0.8") |
| Sampling Time: | 16 cycles/sec |
| Display Range: | -19999~99999 |
| Zero Adjustment: | -19999~99999 |
| Over Range Indication: | doFL / ioFL or -doFL / -ioFL |
| Polarity Indication: | Automatic with "-" indication |
| Parameters Setting: | Push buttons |
| Back Up Memory: | EEPROM |
| Alarm Action: | "≧(Hi) on" or "<(Lo) on" |
| Alarm Run Delay Time: | 0~99 sec |
| Relay Contact: | AC 277V/7A; DC 30V/7A |
| Temperature Coefficient: | 100ppm/℃ (0~60℃) |
| Operating Temperature/Humidity: | 0~60℃; 20~90% RH (non-condensing) |
| Storage Temperature / Humidity: | -10~70℃; 20~90% RH (non-condensing) |
| Power Supply: | AC 99~132 / 198~264 V |
| Power Consumption: | 6.5VA 2 RELAYS (non RELAY 3VA) |
| Withstand Voltage: | 2KVac / 1min (Input / Power) |
| Input Impendence: | Voltage: >2V for 20KΩ/V<br>≦2V for 200MΩ<br>Current: ≧0.2A at 100mV<br><0.2A at 1V |
| Gross Weight: | < 0.3 Kg |

## FRONT PANEL & KEY FUNCTIONS :



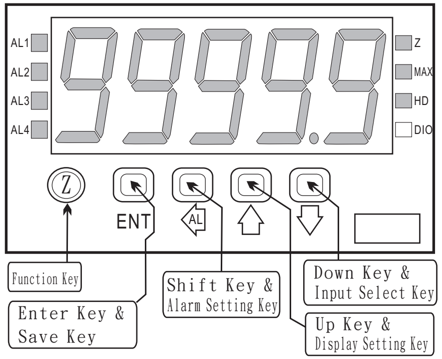

AL1: Alarm 1 Indicator
AL2: Alarm 2 Indicator
AL3: Input 1 Value Display
AL4: Input 2 Value Display
Z: Display Value Reset Indicator
MAX: Max. Hold Indicator
HD: Data Hold Indicator
DIO: No Function

## DIMENSION :




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

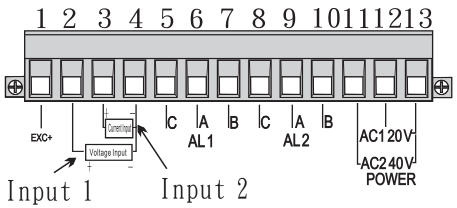
## 1.1 FRONT PANEL




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
DIO: No Function

## 1.2 KEY FUNCTIONS

| | | |
|---|---|---|
| Z | Function Key | 1. In the measuring status, press this key can enable the setting function. |
| ENT | EnterKey& SaveKey | 1. In the measuring status, press this key can enter to parameter groups.<br>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.<br>2. In the parameter page, press this key can enter to parameter setting.<br>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.<br>2. In the parameter page, press this key can back to the last parameter page.<br>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.<br>2. In the parameter page, press this key can go to the next parameter page.<br>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. |



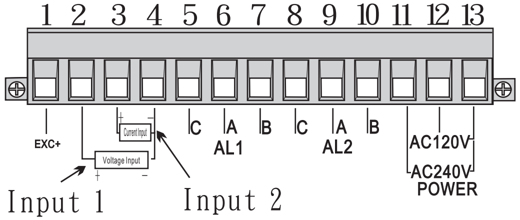

※Note: 1. EXC+≧15V(20mA)
2. connect with Input 1, iP. SEL parameter please switch to i1; connect with Input 2 iP. SEL parameter please switch to i2.
(Same as press ⇩ for 3 sec. in the measuring status.)

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



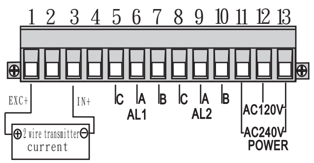
## WIRING CONNECTION:

● Multiple input(S01,S02,S03):

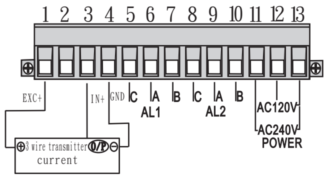



※Note: 1. EXC+≧15V(20mA)
2. connect with input 1, iP.SEL parameter, please switch to i1; connect with input 2 iP.SEL parameter, please switch to i2
(It is same as press ⇩ for 3 sec. in the measuring status.)
3. The wiring connection for 2 wire transmitter:please check example 1
4. Wiring connection for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

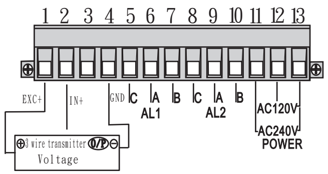
● Example 1:



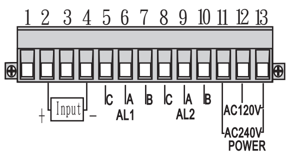

● Example 2:



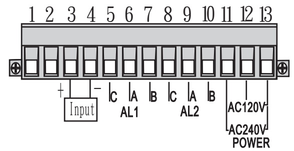

● Example 3:



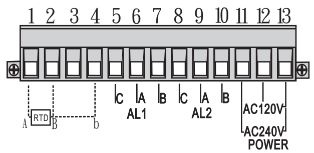

● Voltage,(AC,DC):



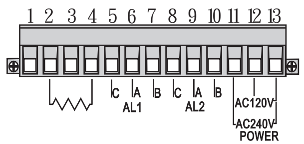

● Current OR Shunt(AC,DC):



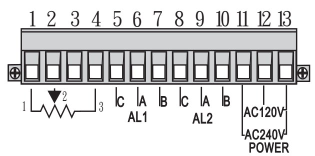

● Temperature (RTD):



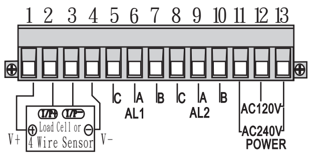

● 2 Wire Resistor:




● 3 Wire Potentiometer:

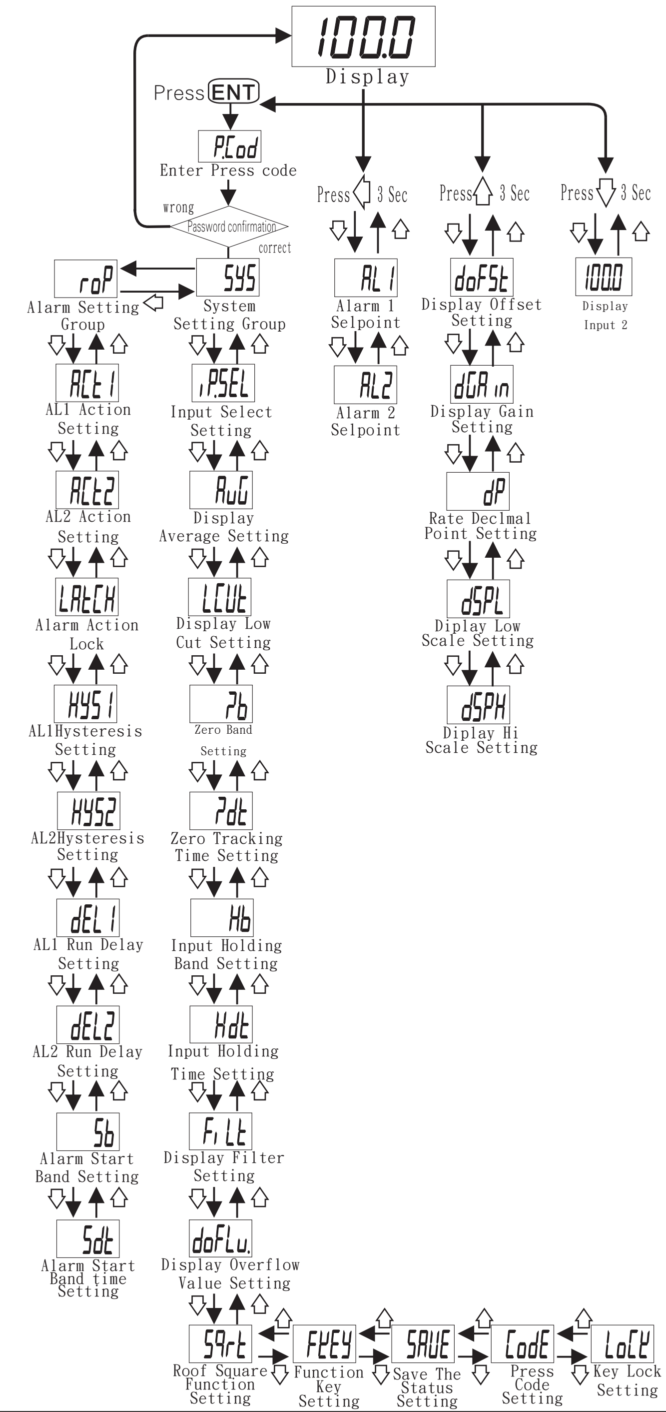



● 4 Wire Sensor or Load cell:






## 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 |
|---|---|---|---|
| AL1<br>PRESS ENT | 00000 | Alarm 1 Setpoint (AL1) | 1. Example：present value 100.0，if AL1 50.0 is required, All must be set at 50.0。<br>Range: -19999~99999<br>2. Press ENT to save the value and go to next parameter. |
| AL2<br>PRESS ENT | 00000 | Alarm 2 Setpoint (AL2) | |

# 2.3 DISPLAY SETTING

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

| Display | Default | Name | Descriptions |
|---|---|---|---|
| doFSt<br>PRESS ENT | 00000 | 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<br>Range: -19999~99999<br>2. Press ENT to save the value and go to next parameter. |
| dGAin<br>PRESS ENT | 00000 | 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)<br>2. Press ENT to save the value and go to the next parameter. |
| dP<br>PRESS ENT | 00000 | Decimal Point Setting (dP) | 1. Decimal Point setting：for change display 100.0 to 10.00, please change the setting from 1 to 2<br>Range: 0, 1, 2, 3, 4 (DP)<br>2. Press ENT to save the value and go to the next parameter. |
| dSPL<br>PRESS ENT | 00000 | Display Low Scale Setting (dSPL) | 1. Ex：Setting 10 for display low scale 10 while input is 0V<br>Range: -19999~99999<br>2. Press ENT to save the value and go to the next parameter. |
| dSPH<br>PRESS ENT | 99999 | Display Hi Scale Setting (dSPH) | 1. Ex：Setting 100 for display Hi Scale 100 while input 10V.<br>Range: -19999~99999<br>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 |
|---|---|
| ioFL | Input signal is over 120% of input range. |
| -ioFL | Input signal is under -10% of input range. |
| AdEr | Input signal is over 180% of input range or meter error. |
| doFL | Input signal is over display range(99999). |
| -doFL | Input signal is under display range(-19999). |
| **In case above-mentioned problems occured, please remove the input signals. If this cannot solve your problem, please contact with your distributor. | |
| E-oo | 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 |
|---|---|---|---|
| iP.SEL<br>PRESS ENT | i1 | Input Select Setting (iP. SEL) | 1. Example：set i1 to display input 1 Could be changed to i1 or i2 input.<br>※ This setting is suitable for multi-input.<br>2. Press ENT to save the value and go to next parameter. |
| AvG<br>PRESS ENT | 00005 | Display Average Setting (AvG) | 1. Instruction：This is suitable for unsteady signal. The bigger setting value, more steady display value with slower reaction.<br>Range: 1~99 (times)<br>2. Press ENT to save the value and go to the next parameter. |
| LCUt<br>PRESS ENT | 00000 | Display Low Cut Setting (LCUt) | 1. Example：if require the display value 0 while value is under 10, then setting value shall be 10。<br>Range: 0~99<br>2. Press ENT to save the value and go to the next parameter. |
| Zb<br>PRESS ENT | 00000 | Zero Band Setting (Zb) | Example： (Zb range:0 ~ 9.999)<br>1. Input 4-20mA display 0-600.0bar<br>Required stationary value is 1.0bar<br>Stationary range is Zero Band ±1.0 bar<br>Calculation: (permille↓)<br>Required stationary value ÷ Hi input display value ×1000 = Zb<br>1.0 ÷ 600.0 × 1000 = 1.666 (Zb)<br>※ while the value within the stationary range of Zero Band, fixed the Zero Band automatically. |
| Zdt<br>PRESS ENT | 00000 | Zero Tracking Time Setting (Zdt) | Instruction:<br>1. If display reach Zb range, the display value swill track after this setting.<br>(P. S.: This function must use with Zb together)<br>Range:0~99 (sec) |
| HL<br>PRESS ENT | 00000 | Input Holding Band Setting (Hb) | Example： (Hb Range: 0~9.999)<br>1. Input 4-20mA display 0-600.0bar Required stabilized value is 0.5bar Stabilized range is input value ±0.5 bar<br>Calculation: (permille↓)<br>Required stabilized value÷ Hi input display value ×1000 = Hb<br>0.5 ÷ 600.0 × 1000 = 0.833 (Hb)<br>※I f display reach input holding band, this display value will stabilize input signal after this setting. |
| Hdt<br>PRESS ENT | 00000 | Input Holding Time Setting (Hdt) | Instruction:<br>1. If display reach Hb stabilized tracking range, will track after this setting.<br>(P.S.: This function must use with Hb together)<br>Range: 0~99 (sec) |
| FiLt<br>PRESS ENT | 00000 | Display Filter Setting (FiLt) | 1. Example： Range: 0, 1, 2, 5<br>If setting 1，digit in ones place display 1,2,3,4(normal display)<br>If setting 2，digit in ones place display 2,4,6,8(even number display)<br>If setting 5，digit in ones place display 0,5(mutipl display of 5)<br>If setting 0，digit in ones place display 0(digit in tens) |
| doFLu<br>PRESS ENT | 99999 | Display Overflow Value Setting (DoFLv.) | 1. Ex：Display Hi scale is 1000，Setting 1100 for display overflow<br>Range: 0~99999<br>2. Press ENT to save the value and go to the next parameter. |
| SqRt<br>PRESS ENT | no | Roof Square Function Setting (Sqrt) | 1. Ex：Setting YES (open) to open Roof Square Function.<br>Rage: no (do not open), YES (open)<br>2. Press ENT to save the value and go to the next parameter. |



| Display | Default | Name | Descriptions |
|---|---|---|---|
| FKEY<br>PRESS ENT | AZ | Function Key Setting (FKEY) | 1. This can modify the function of AZ Key.<br>Range:TEST(panel test)AZ (display reset to Zero), Max (Max hold), HD(date hold), ALrSt(Reset Alarm)<br>2. Press ENT to save the value and go to next parameter. |
| CodE<br>PRESS ENT | 00000 | Pass Code Setting (CodE) | 1. To enter the parameter setting and modify the pass code.<br>Range: 0~19999<br>(Please do remeber new Pass Code) |
| LoCK<br>PRESS ENT | no | Key Lock Setting (LoCK) | 1. Setting YES to lock all keys (except ENT key)<br>Range: no (do not lock), YES (lock)<br>2. Press ENT to save the value and go to next parameter. |
| SAVE<br>PRESS ENT | YES | Save The Status Setting (SAVE) | 1. Insturction： Setting YES(open) to save (AZ, MAX, HD) fuctions to EEPROM<br>※Select NO:This can avoided EEPROM over-write.<br>Range: no(do not open), YES(open)<br>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 |
|---|---|---|---|
| ACt1<br>PRESS ENT | Hi | AL1 Action Setting (ACt1) | 1. Instruction：Setting HI higher than Alarm setpoint, setting LO lower than Alarm setpoint.<br>Range: Hi (≧Alarm setpoint on), Lo (＜larm setpoint on)<br>2. Press ENT to save the value and go to next parameter. |
| ACt2<br>PRESS ENT | Hi | AL2 Action Setting (ACt2) | |
| LAtCH<br>PRESS ENT | no | Alarm Action Lock (LAtCH) | 1. Instruction：Setting YES to lock alarm and display. Use FKEY (Alarm reset) to reset the Alarm.<br>no(close), Yes (open)<br>2. Press ENT to save the value and go to next parameter. |
| HYS1<br>PRESS ENT | 00000 | AL1Hysteresis Setting (HYS1) | 1. After setting alarm action HI, display must lower than alarm setpoint - HYS to close alarm.<br>2. After setting alarm action LO, display must higher than alarm setpoint + HYS to close alarm.<br>Range: 0~99<br>3. Press ENT to save the value and go to next parameter. |
| HYS2<br>PRESS ENT | 00000 | AL2Hysteresis Setting (HYS2) | |
| dEL1<br>PRESS ENT | 00000 | 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.<br>Range: 0~99 (sec)<br>2. Press ENT to save the value and go to next parameter. |
| dEL2<br>PRESS ENT | 00000 | AL2 RUN Delay Setting (dEL2) | |
| Sb<br>PRESS ENT | 00000 | AL Start Band Setting (Sb) | 1. Instruction：Setting 5，if display value do not over 5, alarm will not be turned on.<br>Range: -99~99<br>2. Setting 5，if display display value higher than 5, alarm will be turn on after Sdt setting<br>This function are use to avoid possible errors caused by high inrush current (starting current) |
| Sdt<br>PRESS ENT | 00000 | AL start Delay Time Setting (Sdt) | 1. If display value reach Alarm Start Band, alarm will be turned on after this setting (sec.)<br>P.S.: this function must use with "Sb" together.<br>Range: 0~99 (sec.)<br>2. Press ENT to save the value and go to next parameter. |