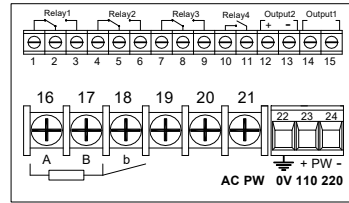
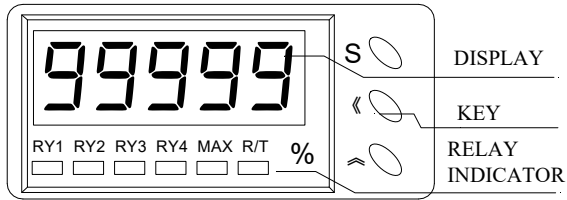


# MMR & MMT MANUAL

## 1. Panel and Keys



## 2. Keys Function

|   |                         |
|---|-------------------------|
| S | : Setting / Select      |
| △ | : Change number / Enter |
| > | : Change position       |

## 3. Parameter Setting

### 3-1 Basic Setting \*In the below setting instruction, P means Press.\*

Long press "S" to enter menu. Press "S" to enter setting. Press > and △ to set.

|  |                                |   |
|--|--------------------------------|---|
| <b>Mode</b> → <b>TYPE</b>                                | Input Type                     | Press > to select input type:(K-R-S-T-J-E )TYPE<br>*RTD(PT100) input no need to set.  |
| <b>Out</b> → <b>4-20</b><br><b>OP-HI</b><br><b>OP-Lo</b> | Output Signal                  | Press > to select 4-20mA/0-20mA or 0-10V/1-5V/0-5V<br>Press S to enter OP_H to set corresponding value(high)<br>Press S to enter OP_L to set corresponding value(low)<br><b>(Note: mA and V can't exchange)</b> |
| <b>Add</b> → <b>baud</b><br><b>PAR</b>                   | Address<br>Baud rate<br>Format | Press > and △ to set address<br>Press S and Press > to select 4800-9600-19200-38400<br><b>Press S and Press &gt; to select None/Odd/Even/ 8n1-8n2.</b>  |
| <b>Adj</b> → <b>19999</b>                                | Display Adjustment             | Press > and △ to adjust display value.<br>Range: -19999~19999Count  |
| <b>Func</b> → <b>0000</b>                                | Advance setting                | No need setting   |
| <b>Save</b> → <b>no</b>                                  | Save                           | Press S to enter <b>no/YES</b><br>Press > to select <b>YES</b> . Press S to save setting.   |

### 3-2 Temperature Unit Switch (°C/°F)

Refer to the 3-1 setting to enter Func mode.

|                           |  |
|---------------------------|--|
| <b>Func</b> → <b>0000</b> | Press > and △ to enter 22. Press S to enter.<br>Press > to select C or F. Press S to show 99.<br>Press S to enter <b>no/YES</b><br>Press > to select <b>YES</b> and press S to save. |
|---------------------------|--|

### 3-2 Relay Setting (Alarm) \*In the below setting instruction, P means Press.\*

Long press "S" to enter menu. Press "△" to enter setting. Press > and △ to set.

| Display                      | Function   | Instruction  |
|------------------------------|--|--|
| <b>H L</b> → <b>HHHH</b>     | Relay setting<br>H=High L=Low  | Press △ to select HI_Alarm or LO_Alarm. Press > to change position<br>(HHHH means 4 sets of HI relays) |
| <b>r 1</b> → <b>00000</b>    | RY1 action point   | Press > and △ to set. Range ±19999   |
| <b>r 1-2</b> → <b>00000</b>  | RY1 deadband   | Press > and △ to set. Range ±19999   |
| <b>r 1-3</b> → <b>0000.0</b> | RY1 delay time   | Press > and △ to set. Range 0~1999.9 second  |
| <b>r 2</b> → <b>00000</b>    | RY2 action point   | Press > and △ to set. Range ±19999   |
| <b>r 2-2</b> → <b>00000</b>  | RY2 deadband   | Press > and △ to set. Range ±19999   |
| <b>r 2-3</b> → <b>0000.0</b> | RY2 delay time   | Press > and △ to set. Range 0~1999.9 second  |
| <b>r 3</b> → <b>00000</b>    | RY3 action point   | Press > and △ to set. Range ±19999   |
| <b>r 3-2</b> → <b>00000</b>  | RY3 deadband   | Press > and △ to set. Range ±19999   |
| <b>r 3-3</b> → <b>0000.0</b> | RY3 delay time   | Press > and △ to set. Range 0~1999.9 second  |
| <b>r 4</b> → <b>00000</b>    | RY4 action point   | Press > and △ to set. Range ±19999   |
| <b>r 4-2</b> → <b>00000</b>  | RY4 deadband   | Press > and △ to set. Range ±19999   |
| <b>r 4-3</b> → <b>0000.0</b> | RY4 delay time   | Press > and △ to set. Range 0~1999.9 second  |
| <b>dELy</b> → <b>00000</b>   | Start delay time   | Press > and △ to set. Range 0~1999.9 second  |
| <b>SAvE</b>                  | Press S to enter <b>no/YES</b> Press > to select <b>YES</b> . Press S to save setting. |  |

## 4. Meter setting example:

Input: 0-400°C Display: 0~100.0°C Output: 4-20mA (0-400.0°C)

Relay: 4 Sets of HI-Alarm

Alarm action point RY1 = 300.0°C ; RY2 = 200.0°C ; RY3 = 100.0°C ; RY4 = 50.0°C

Delay time: 0 second

Parameter setting:

|      |  |     |                 |
|------|--|-----|-----------------|
| MODE |  | OP  | 4-20            |
|      |  |     | OP-hi 0400.0    |
|      |  |     | OP-lo 0000.0    |
|      |  | ADJ | No need setting |

Relay setting:

|     |        |   |      |
|-----|--------|---|------|
| H-L | HHHH   |   |      |
| RY1 | 0300.0 | Delay time  | 0000 |
| RY2 | 0200.0 | Dead band   | 000  |
| RY3 | 0100.0 | <b>*Please refer to title 7 for alarm function explanation.</b> |      |
| RY4 | 0050.0 |   |      |

## 5. Buffer Size (The number of measurements for RMS sliding averaging)

- 1.Fast speed (**FAST**)
  - 2.Midium speed (**HI 9H**)
  - 3.Low speed (**LO!**)
- Preset as medium: (**HI 9H**)

Enter **FUNC 0000** Press > and  $\Delta$  to enter **00011**

Press **Menu** to enter setting

Display Instruction

**HI 9H**

Press > to select **FAST / HI 9H / LO!**

Press **Menu** to save setting.

## 6. Communication Protocol MODBUS – RTU MODE

### Data Format

|                      |                          |                  |               |
|----------------------|--------------------------|------------------|---------------|
| (ID Number)<br>1Byte | (Function Code)<br>1Byte | (Data)<br>N Byte | CRC<br>2 Byte |
|----------------------|--------------------------|------------------|---------------|

### Function Code

|            |                              |
|------------|------------------------------|
| 03 ( 03H ) | Read parameters of the meter |
| 06 ( 06H ) | Set parameter.               |

### EX1. Read meter display value

|   |                              |                                |                                    |                            |
|---|------------------------------|--------------------------------|------------------------------------|----------------------------|
| <b>Master sends message</b> Tx: 01 03 00 01 00 02 95 CB |                              |                                |                                    |                            |
| ID Number<br>1Byte<br>( 01H )                           | Function<br>1Byte<br>( 03H ) | Address<br>2Byte<br>( 00 01H ) | DATA number<br>2Byte<br>( 00 02H ) | CRC<br>2Byte<br>( 95 CBH ) |

**Instruction :** Master calls meter ID No.1 to read address 0002.Data number 0001

### If meter displays 90000

|  |                     |                 |                            |                   |
|--|---------------------|-----------------|----------------------------|-------------------|
| <b>Meter responses to Master</b> RX : 01 03 04 5F 90 00 01 29 CA |                     |                 |                            |                   |
| ID Number<br>( 01H )   | Function<br>( 03H ) | Byte<br>( 04H ) | Data<br>( 5F 90 : 00 01H ) | CRC<br>( 29 CAH ) |

### Ex2. Read parameters of the Meter

|                                      |                              |                                |   |                             |
|--------------------------------------|------------------------------|--------------------------------|---|-----------------------------|
| <b>Master sends message to Meter</b> |                              |                                |   |                             |
| ID Number<br>1Byte<br>( 01H )        | Function<br>1Byte<br>( 03H ) | Address<br>2Byte<br>( 00 02H ) | DATA number<br>2Byte<br>( xxH,xxH = N ) | CRC<br>2Byte<br>( xxH,xxH ) |
| <b>Meter responses to Master</b>     |                              |                                |   |                             |
| ID Number<br>( 01H )                 | Function<br>( 03H )          | Byte<br>( XXH = N )            | Data<br>( N*2Byte)<br>XxH,xxH.xxH.....  | CRC<br>( xxH,xxH )          |

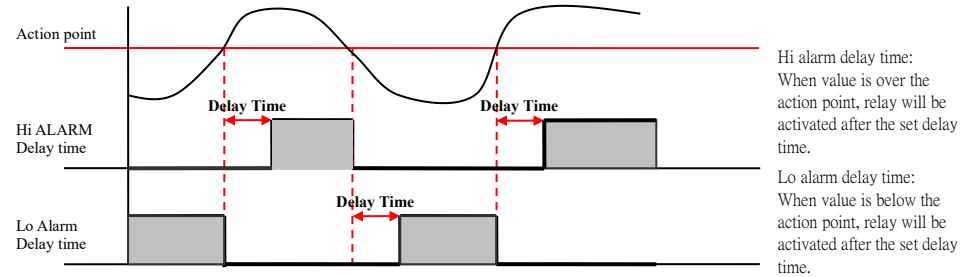
### Parameter/Address cross-reference

| Add<br>ress | Length | Name          | Instruction           | (Read/<br>Write) |
|-------------|--------|---------------|-----------------------|------------------|
| 01          | 4Byte  | Display value | Range: -19999 – 99999 | R                |
| 02          |        |               | 01(low) 02(high)      |                  |

|    |         |               |   |     |
|----|---------|---------------|---|-----|
| 03 | 2Byte   | Decimal point | Decimal Point Position                                    | R/W |
| 04 | 2Byte   | Relay state   | Bit3=RY4 Bit2=RY3 Bit1=RY2 Bit0=RY1<br>(0 = OFF , 1 = ON) | R   |
| 05 | 4Byte   | CT ratio      | Setting range: (-19999 – 99999)<br>05(low) 06(high)       | R/W |
| 06 |         |               |   |     |
| 07 | xxxxxxx |               |   |     |
| 08 |         |               |   |     |
| 09 | 4Byte   | OP_HI         | Setting range: (-19999 – 99999)<br>01(low) 02(high)       | R/W |
| 10 |         |               |   |     |
| 11 | 4Byte   | OP_LO         | Setting range: (-19999 – 99999)<br>11(low) 12(high)       | R/W |
| 12 |         |               |   |     |

## 7. Alarm Function Explanation

### 1 · Delay time.



### 2 · Dead band

