# CSS-4/5 MICRO-PROCESS METER RELAY
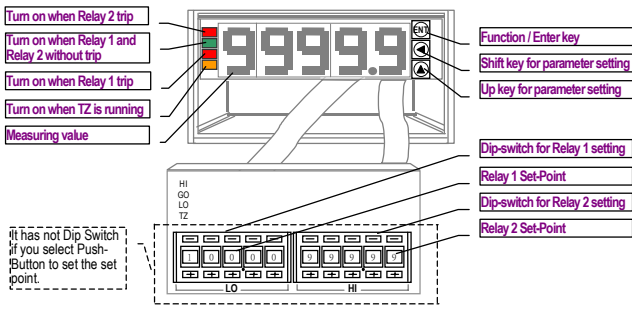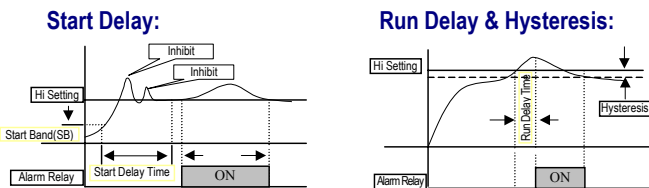
## ■ FRONT PANEL
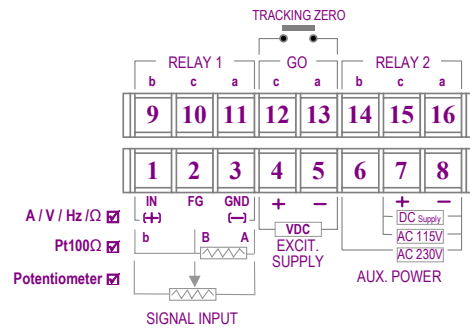
Turn on when Relay 2 trip
Turn on when Relay 1 and Relay 2 without trip
Turn on when Relay 1 trip
Turn on when TZ is running
Measuring value

**9999.9**

Function / Enter key
Shift key for parameter setting
Up key for parameter setting

HI
GO
LO
TZ

It has not Dip Switch if you select Push-Button to set the set point.

Dip-switch for Relay 1 setting
Relay 1 Set-Point
Dip-switch for Relay 2 setting
Relay 2 Set-Point

LO     HI

## ■ CONNECTION DIAGRAM

TRACKING ZERO

| RELAY 1 | | | GO | | RELAY 2 | | |
|---|---|---|---|---|---|---|---|
| b | c | a | c | a | b | c | a |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| IN | FG | GND | + | − | | + | − |

A / V / Hz /Ω ☑   IN (+)   FG   GND (−)   VDC EXCIT. SUPPLY   DC Supply / AC 115V / AC 230V
Pt100Ω ☑   b   B   A
Potentiometer ☑   AUX. POWER

SIGNAL INPUT

## ■ DIMENSIONS

FRONT VIEW   48.0
96.0   7.0   139.0   12.0

PANEL CUT-OUT   45.0 +0.8
93.0 +0.8

Unit: mm

## ■ INSTALLATION

**9999**

PANEL CUT OUT:
92 +0.8 (W) x 44 +0.8 (H) mm

1.0~8.0 mm

FIX:
120 mm(L) / W M4

## ■ RUN DELAY & START DELAY FOR RELAY

**Start Delay:**

Inhibit
Inhibit
Hi Setting
Start Band(SB)
Alarm Relay   Start Delay Time   ON

**Run Delay & Hysteresis:**

Hi Setting
Run Delay Time
Hysteresis
Alarm Relay   ON

## ■ HI-LO-GO SEQUENCE

Measuring
Relay 2 Set-Point (Hi)
Relay 1 Set-Point (Lo)

Relay 2 Trip ( Hi )   ON
Relay Go Trip ( Go )   ON
Relay 1 Trip ( Lo )   ON

S1   S2
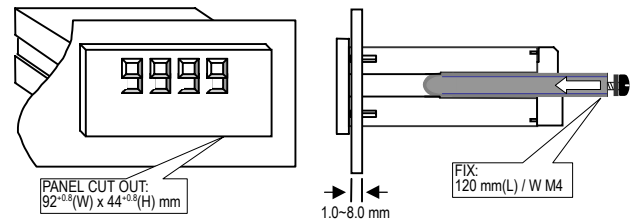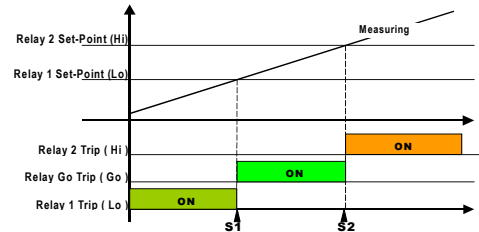
## ■ INPUT RANGE PROGRAMMING

**Process Signal Input Range Section (on input module):**

| DIP-SWITCH | SW1 | | | |
|---|---|---|---|---|
| | ON 1 2 3 4 | | | |
| **Input Range** | 1 | 2 | 3 | 4 |
| 0 ~ 20 mA | | | | |
| 4 ~ 20 mA | on | | | on |
| 0 ~ 5 V | | | on | |
| 1 ~ 5 V | on | | on | |
| 0 ~ 10 V | | on | | |
| 2 ~ 10 V | on | on | | |

**Excitation Supply Output Range Section (on excitation module):**

| JUMPER | JP1 | | | JP2 | | |
|---|---|---|---|---|---|---|
| | 1 2 3 | | | 1 2 3 | | |
| **Excitation Supply** | 1 | 2 | 3 | 1 | 2 | 3 |
| DC 10 V | | ■ | | | ■ | |
| DC 24 V | ■ | | | ■ | | |

It has not Dip Switch if you select Push-Bottom to set the set point.

MD3
MD2
MD1

**Voltage Input Range Section (on power board):**

| JUMPER | CN1 | | CN2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 2 | | 1 3 5 7 | 2 4 6 8 | | | | | | |
| **Input Range** | 1 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 10 V | | | | ■ | | | | | ■ | |
| 100 V | | | | ■ | ■ | | | | ■ | |
| 200 V | | | | ■ | | ■ | | | | |
| 300 V | | | | ■ | ■ | | | | | |
| 600 V | | | | ■ | | ■ | | | | |
| **Process Signal Input** | ■ | | | | | | | | ■ | |
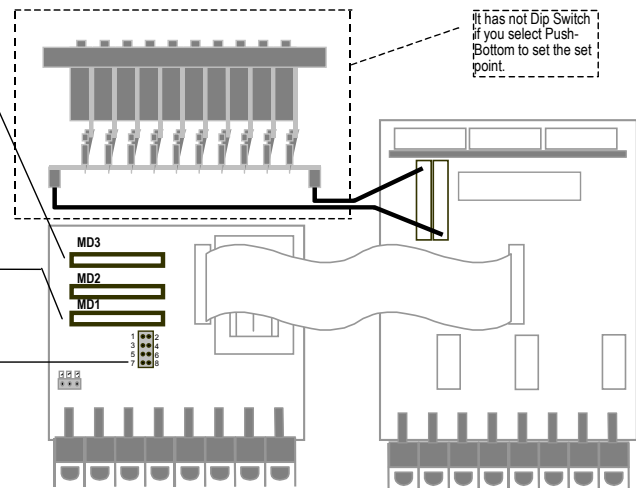
## ■ INPUT MODULE:

**PLEASE REFER TO THE MODULES INSTALLATION:**

| ITEM | INPUT TYPE | MODULE ON MD1-SLOT | MODULE ON MD2-SLOT | MODULE ON MD3-SLOT |
|---|---|---|---|---|
| 1 | Vdc < 2V (Range fixed) | YMIC/3-4 (IPDC-AMP) | **Close J2** on soldering side | YMIC/6-4 (EXCIT) |
| 2 | Vdc > 2V (Programmable) | YMIC/1-4 (IPDC-Buffer) | **Close J2** on soldering side | YMIC/6-4 (EXCIT) |
| 3 | Vac-avg < 2V (Range fixed) | YMIC/3-4 (IPDC- AMP) | YMIC/4-4 (IPAC-AVG) | X |
| 4 | Vac-avg > 2V (Programmable) | YMIC/1-4 (IPDC-Buffer) | YMIC/4-4 (IPAC-AVG) | X |
| 5 | Vac-trms < 2V (Range fixed) | YMIC/3-4 (IPDC- AMP) | YMIC/5-4 (IPAC-TRMS) | X |
| 6 | Vac-trms > 2V Programmable) | YMIC/1-4 (IPDC-Buffer) | YMIC/5-4 (IPAC-TRMS) | X |
| 7 | Adc (Range Fixed) | YMIC/4-4 (IPDC-AMP) | **Close J2** on soldering side | X |
| 8 | Aac-avg (Range Fixed) | YMIC/4-4 (IPDC-AMP) | YMIC/4-4 (IPAC-AVG) | X |
| 9 | Aac-trms (Range Fixed) | YMIC/4-4 (IPDC-AMP) | YMIC/5-4 (IPAC-TRMS) | X |
| 10 | Frequency (Range Fixed) | YNCSS/7-4 (NCSS-FQ1) | YNCSS/8-4 (NCSS-FQ2) | YMIC/6-4 (EXCIT) |
| 11 | RTD (Range Fixed) | YNCSS/9-4(RTD1-RTD) | YNCSS/10-4(RTD2-RTD) | X |
| 12 | Potentiometer (Range Fixed) | YNCSS/16-4(RTD1-PT) | YNCSS/17-4(RTD2-PT) | X |
| 13 | Resistance (Range Fixed) | YNCSS/18-4(RTD1-RES) | YNCSS/19-4(RTD2-RES) | X |
| 14 | Process Signal | YMIC/2-4 (IPDC-Program) | **Close J2** on soldering side | YMIC/6-4 (EXCIT) |

**REMARK: *Excitation supply is option function. Please specify on the order.**

## ■ SOFTWARE FUNCTION:

**PLEASE FILL IN THE SETTING VALUE ON USER'S SETTING COLUMN SO THAT CAN BE MANAGING IN FIIELD:**

| DISPLAY | FUNCTION | SETTING RANGE | INITIAL VALUE | USER'S SETTING | DESCRIPTION |
|---|---|---|---|---|---|
| P.Cod ⇩ ENT | Code-Checking | 4 digits: -9999~9999 5 digits: 00000~99999 | 1000 | | If the code you key-in is correct, you will be allowed enter function setting level. If not the screen will return to normal display. |
| dP ⇩ ENT | Decimal-point | 4 digits: 0 ~ 3. 4 1/2 digits: 0 ~ 4. 5 digits: 0 ~ 4. | 1. | | Decimal point will influence the resolution and scaling range. |
| HS ⇩ ENT | High Scale | Dip-Switch type: 4 digits: -9999~+9999 4 1/2 digits: 00000~+19999 | 9999 | | Set point ≦High Scale |
| LS ⇩ ENT | Low Scale | 5 digits: 00000~+99999 Push Button type: 4 digits: -1999~+9999 | 0000 | | Low Scale ≦Set point |
| LoCut ⇩ ENT | Low Cut | 4 digits: -19999~+19999 5 digits: -19999~+99999 | 0000 | | Set Low Cut > 0, The meter shows "0" when reading is between 0 and + Low Cut ( 0 < reading < + low cut ). Set Low Cut < 0, The meter shows " - Low Cut " when reading is under - low cut (reading < - Low Cut). |
| mAuG ⇩ ENT | Moving Average | 1~9 times | 9 | | Moving Average function wouldn't influence the response time, unless power on a moment. |
| AuG ⇩ ENT | Period Average | 1~99 times | 5 | | Average function will influence the response time. |
| AHL 1 ⇩ ENT | Relay 1 High Trip or Low Trip | HI or LO | LO | | Hi: Reading > Set-Point 1● Relay 1 Trip LO: Reading < Set-Point 1● Relay 1 Trip |
| HY 1 ⇩ ENT | Relay 1 Hysteresis | 4 digits: -9999~+9999 4 1/2 digits: 00000~+19999 5 digits: 00000~+99999 | 0 | | Set AHL1 to be LO level trip: Display < Set-point ● Relay 1 Trip Display > Set-point + HY ● Relay 1 Reset |
| rd 1 ⇩ ENT | Relay 1 Trip Delay Time | 0~99 seconds | 0 | | If the display lower (or higher) than relay 1 set point, the relay 1 will be delay trip some times you set. |
| AHL 2 ⇩ ENT | Relay 2 High Trip or Low Trip | HI or LO | HI | | Hi: Reading > Set-Point 1● Relay 2 Trip LO: Reading < Set-Point 1● Relay 2 Trip |
| HY2 ⇩ ENT | Relay 2 Hysteresis | 4 digits: -9999~+9999 4 1/2 digits: 00000~+19999 5 digits: 00000~+99999 | 0 | | Set AHL2 to be HI level trip: Display > Set point ● Relay 2 Trip Display < Set-point - HY ● Relay 2 Reset |
| rd2 ⇩ ENT | Relay 2 Trip Delay Time | 0~99 seconds | 0 | | If the display lower (or higher) than relay 2 set point, the relay 2 will be delay trip some times you set. |
| Sb ⇩ ENT | Start Band for first cycle | 4 digits: -9999~+9999 4 1/2 digits: 00000~+19999 5 digits: 00000~+99999 | 0 | | The relays wouldn't trip between -SB~+SB even the display is already reaching set points. |
| Sdt ⇩ ENT | Start Delay Time for first cycle | 0~99 seconds | 0 | | The start delay function will be skip when the start band is to be "0". The relay is stand by reading over the start band and the start delay time. |
| CodE ⇩ ENT | Security Code | 4 digits: -9999~9999 4 1/2 digits: 00000~19999 5 digits: 00000~99999 | 1000 | | Please don't forget. |

## ■ PROGRAAMMING SEQUENCE:

| ITEM | PROGRAMMING SEQUENCE | DISPLAY | | SETTING RANGE |
|---|---|---|---|---|
| | Please check the specification again then power on | | | |
| | **Self diagnostic and shows error massage** | | | |
| | ᏟᎯᏟᎽ : System error | ᏟᎯᏟᎽ | | Please send back to our factory |
| | ᏴᎡᎡᎧ ᏴᎡᎡ Ꮖ : Parameter setting error | ᏴᎡᎡᎧ ᏴᎡᎡ Ꮖ | | Reset the **EEPROM** to initial |
| | ᎯᏧᏖᎡ : A/D converter error | ᎯᏧᏖᎡ | | Please send back to our factory |
| | ᎧᎬᏞ : Over-flow | ᎧᎬᏞ | | Please re-calibration again |
| | ⁻ᎧᎬᏞ : Under-flow | ⁻ᎧᎬᏞ | | Please re-calibration again |
| | The meter will pass to normal display if it works well. | 0000 | | Accounting to the scaling |
| | * If the meter is first time, please enter the **ENGINEER LEVEL** to set the parameter. * <br> **PS. In the ENGINEER LEVEL, the meter will return to normal display when you push ⒺⓃⓉ&◀ keys at same time or no longer push any key over 2 minutes.** | 0000 | | The response of Push Button is about 0.2 second. You can press and hold push button to get rolling. |
| 1-1 | Press ⒺⓃⓉ key to enter the **SECURITY CODE** screen. | ᏢᏟᎧᏧ | 00000 | 4 digits: 1000 <br> 4 1/2 digits: 1000 <br> 5 digits: 01000 |
| 1-2 | Press ◀ key, then the setting digit will be flashing. | 0000"0" | | |
| 1-3 | Press ◀ key to shift digit or ▲ key untill the desired value is disply. | 0"1"000 | | |
| 1-4 | Press ⒺⓃⓉ key to lock in the value. | 01000 | | |
| 2-1 | If the security code is correct, then enter **DECIMAL POINT** screen. If the security code is wrong, then return to normal display. | ᏧᏢ | 1. | 4 digits: 3. max <br> 4 1/2 digits: 4. max <br> 5 digits: 4. max <br> Decimal point will influence the resolution and scaling range. |
| 2-2 | Press ◀ key, then the setting digit will be flashing. | "1." | | |
| 2-3 | Press ◀ key to shift digit or ▲ key untill the desired value is disply. | "2." | | |
| 2-4 | Press ⒺⓃⓉ key to lock in the value and pass to the next parameter. | ᏧᏢ | 2. | |
| 3-1 | Enter **HIGH SCALE** screen | ᎻᏚ | 999.99 | 4 digits: -9999~+9999 / *1999~+9999* <br> 4 1/2 digits: 0~+19999 / *19999~+19999* <br> 5 digits: 00000~+99999 / *19999~+99999* <br> This is the maximum displayed value corresponding to the input range. |
| 3-2 | Press ◀ key, then the setting digit will be flashing. | 999.9"9" | | |
| 3-3 | Press ◀ key to shift digit or ▲ key untill the desired value is disply. | "1"20.00 | | |
| 3-4 | Press ⒺⓃⓉ key to lock in the value and pass to the next parameter. | ᎻᏚ | 120.00 | |
| 4-1 | Enter **LOW SCALE** screen | ᏞᏚ | 000.00 | 4 digits: -9999~+9999 / *1999~+9999* <br> 4 1/2 digits: 0~+19999 / *19999~+19999* <br> 5 digits: 00000~+99999 / *19999~+99999* <br> This is the minimum displayed value corresponding to the input range. |
| 4-2 | Press ◀ key, then the setting digit will be flashing. | 000.0"0" | | |
| 4-3 | Press ◀ key to shift digit or ▲ key untill the desired value is disply. | "1"00.00 | | |
| 4-4 | Press ⒺⓃⓉ key to lock in the value and pass to the next parameter. | ᏞᏚ | -100.00 | |
| 5-1 | Enter **LOW CUT** screen | ᏞᎧᏟᏌᏖ | 0 | 4 digits: -9999~+9999 / *1999~+9999* <br> 4 1/2 digits: 0~+19999 / *19999~+19999* <br> 5 digits: 00000~+99999 / *19999~+99999* |
| 5-2 | Press ▲ key, then the setting digit will be flashing. | "0" | | |
| 5-3 | Press ◀ key untill the desired value is disply. | "5" | | |
| 5-4 | Press ⒺⓃⓉ key to lock in the value and pass to the next parameter. | ᏞᎧᏟᏌᏖ | "5" | |
| 6-1 | Enter **MOVING AVERAGE** screen | ᏁᎯᏙᏩ | 9 | 1~9 times |
| 6-2 | Press ▲ key, then the LEDS will be flashing. | "9" | | The meter reads times you setting and averages them. Then reads the newest one and throw out the earliest reading and averages them. The meter will get smoothly display when you setting high |
| 6-3 | Press ▲ key untill the desired value is disply. | "5" | | |
| 6-4 | Press ⒺⓃⓉ key to lock in the value and pass to the next parameter. | ᏁᎯᏙᏩ | "5" | |
| 7-1 | Enter **PERIOD AVERAGE** screen | ᎯᏙᏩ | 1 | 1~99 times |
| 7-2 | Press ◀ key, then the setting digit will be flashing. | "1" | | The meter reads times you setting and averages them. In next period the meter reads and averages as same as last period. So, the meter will get smoothly display and lower response |
| 7-3 | Press ◀ key to shift digit or ▲ key untill the desired value is disply. | "1"5 | | |
| 7-4 | Press ⒺⓃⓉ key to lock in the value and pass to the next parameter. | ᎯᏙᏩ | 15 | |
| 8-1 | Enter **RELAY 1 TRIP LEVEL** selection screen | ᎯᎻᏞ Ꮖ | LO | HI or LO |
| 8-2 | Press ▲ key, then the "LO" or "HI" will be flashing. | "LO" | | Hi: Reading > Set-Point 1● Relay 1 Trip <br> LO: Reading < Set-Point 1● Relay 1 Trip |
| 8-3 | Press ▲ key untill the desired trip level (HI or LO) is disply. | "LO" | | |
| 8-4 | Press ⒺⓃⓉ key to lock in the value and pass to the next parameter. | ᎯᎻᏞ Ꮖ | LO | |
| 9-1 | Enter **HYSTERESIS** of relay 1 screen | ᎻᎽ Ꮖ | 0 | 0~9999 counts |
| 9-2 | Press ◀ key, then the setting digit will be flashing. | 0.0"0" | | Set AHL1 to be LO level trip: <br> HY must be < I HS-Low Set Point I <br> Display < Set-point● Relay 1 Trip |
| 9-3 | Press ◀ key to shift digit or ▲ key untill the desired value is disply. | "0".50 | | |

| ITEM | PROGRAMMING SEQUENCE | DISPLAY | | SETTING RANGE |
|---|---|---|---|---|
| 9-4 | Press ENT key to lock in the value and pass to the next parameter. | HY1 | 0.5 | |
| 10-1 | Enter **RUN DELAY** of relay 1 screen | rd1 | 0 | 0~99 seconds |
| 10-2 | Press ◄ key, then the setting digit will be flashing. | "0" | | If the display lower (or higher) than relay 1 set point, the relay 1 will be delay trip some times you set. |
| 10-3 | Press ◄ key to shift digit or ▲ key untill the desired value is disply. | "3" | | |
| 10-4 | Press ENT key to lock in the value and pass to the next parameter. | rd1 | 3 | |
| 11-1 | Enter **RELAY 2 TRIP LEVEL** selection screen | AHL2 | HI | HI or LO |
| 11-2 | Press ▲ key then the "HI" or "LO" will be flashing. | "HI" | | Hi: Reading > Set Point 1● Relay 1 Trip |
| 11-3 | Press ▲ key untills the desired trip level (HI or LO) is disply. | "HI" | | LO: Reading < Set Point 1● Relay 1 Trip |
| 11-4 | Press ENT key to lock in the value and pass to the next parameter. | AHL2 | HI | |
| 12-1 | Enter **HYSTERESIS** of relay 2 screen | HY2 | 0 | 0~9999 counts |
| 12-2 | Press ◄ key, then the setting digit will be flashing. | 0.0"0" | | Set AHL1 to be HI level trip: HY must be < I High Set point-LS I |
| 12-3 | Press ◄ key to shift digit or ▲ key untill the desired value is disply. | "0".50 | | Display > Set-point● Relay 2 Trip |
| 12-4 | Press ENT key to lock in the value and pass to the next parameter. | HY2 | 0.5 | Display < Set-point - HY● Relay 2 Reset |
| 13-1 | Enter **RUN DELAY** of relay 2 screen | rd2 | 0 | 0~99 seconds |
| 13-2 | Press ◄ key, then the setting digit will be flashing. | "0" | | If the display lower (or higher) than relay 2 set point, the relay 2 will be delay trip some times you set. |
| 13-3 | Press ◄ key to shift digit or ▲ key untill the desired value is disply. | "3" | | |
| 13-4 | Press ENT key to lock in the value and pass to the next parameter. | rd2 | 3 | |
| 14-1 | Enter **START BAND** screen | Sb | 0 | 4 digits: -9999~9999 |
| 14-2 | Press ◄ key, then the setting digit will be flashing. | "0" | | 5 digits: 00000~99999 |
| 14-3 | Press ◄ key to shift digit or ▲ key untill the desired value is disply. | "1"0 | | The relays wouldn't trip between -SB~+SB even the display is already reaching set points. |
| 14-4 | Press ENT key to lock in the value and pass to the next parameter. | Sb | 10 | |
| 15-1 | Enter **START DELAY TIME** screen | Sdt | 0 | 0~99 seconds |
| 15-2 | Press ◄ key, then the setting digit will be flashing. | "0" | | The start delay function will be skip when the start band is to be "0". |
| 15-3 | Press ◄ key to shift digit or ▲ key untill the desired value is disply. | "10" | | The relay is stand by reading over the start band and the start delay time. |
| 15-4 | Press ENT key to lock in the value and pass to the next parameter. | Sdt | 10 | |
| 16-1 | Enter **SECURITY CODE** screen | CodE | 01000 | 0000~9999 |
| 16-2 | Press ◄ key, then the setting digit will be flashing. | 0100"0" | | |
| 16-3 | Press ◄ key to shift digit or ▲ key untill the desired value is disply. | 0"2"000 | | **Please enter the newest code when you want to enter the function group next time.** |
| 16-4 | Press ENT key to lock in the value and pass to the next parameter. | CodE | 02000 | |
| 17-1 | 【 **RESET SETTING DATA TO INITIAL** 】 | | | |
| 17-2 | Turn off aux. power first. Pressing and holding ENT key, thenturn on the aux. Power to enter the RESET function | Erro | YES | |
| 17-3 | The meter shows Err0. Press ▲ key to YES. | YES | no | |
| 17-4 | Press ENT key to reset data to initial. | 0000 | | |

## ■ SET TRIP POINT BY PUSH BOTTOM: <<*Those functions will be cancel if you select Dip Switch type >>*

| ITEM | PROGRAMMING SEQUENCE | DISPLAY | INITIAL | SETTING RANGE |
|---|---|---|---|---|
| A-1 | Press ◄ key to enter set point 1 screen, when it is in normal display | SP-1 | 000.00 | Please don't set the trip point over the **high scale** or under the **low scale**. |
| A-2 | Press ◄ key, then the setting digit will be flashing. | 00.0"0" | | |
| A-3 | Press ◄ key to shift digit or ▲ key untill the desired value is disply. | "0"5.00 | | |
| A-4 | Press ENT key to lock in the value and pass to the next parameter. | SP-2 | 50.00 | |
| B-1 | Press ◄ key to enter set point 1 screen, when it is in normal display | SP-2 | 000.00 | Please don't set the trip point over the **high scale** or under the **low scale**. |
| B-2 | Press ◄ key, then the setting digit will be flashing. | 00.0"0" | | |
| B-3 | Press ◄ key to shift digit or ▲ key untill the desired value is disply. | "1"00.00 | | |
| B-4 | Press ENT key to lock in the value and pass to the next parameter. | SP-2 | 100.00 | |
| C-1 | Enter the **LOCK** function screen | LoCk | no | If the LOCK = YES, the SP-1 & SP-2 will be locked. |
| C-2 | Press ▲ key, then the setting digit will be flashing. | no | | |
| C-3 | Press ▲ key, untill the desired function is disply. | no | YES | |
| C-4 | Press ENT key to lock in your selection, and pass to the normal display screen. | 0000 | | |