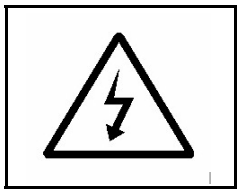
PRESSURE CONTROLLER/MONITOR

Model : PPS-9312

Your purchase of this PRESSURE CONTROLLER/MONITOR marks a step forward for you into the field of precision measurement. Although this PRESSURE controller is a complex and delicate instrument, its durable structure developed. Please read the following instructions carefully and always keep this manual within easy reach.

OPERATION MANUAL

Caution Symbol



Caution :

* Risk of electric shock !

Caution :

* Do not use fingers or any tool to touch the Wire Terminals.
* Do not apply the relay contact load current > 0.5 Amp.
* The instrument contains no user serviceable parts and should not be opened by the user.
* Repair or after service should be done by a qualified technician only.
* Power supply should apply the correct ACV power voltage
* Cleaning - Only use the dry cloth to clean the plastic case !

*** Equipment protected throughout by Double Insulation or Reinforced Insulation.**

Environmental Condition

* Comply with EN61010.
  Transient over voltage at Mains Supply 2500V.
* Pollution Degree 2.
* Altitude up to 2000 meters.
* Indoor use.
* Relative humidity 80% max.

TABLE OF CONTENTS

1. FEATURES

* Meter connects with 2, 5, 10, 20, 50, 100, 200, 400 bar sensor, no calibration procedures are necessary typically when change a new sensor .
* Unit select : Bar, PSI, Kg/cm^2, inch Hg, mm Hg, inch H2O, meter H2O, Atmosphere, hPa, KPa.
* Large red LED display, high brightness and easy to read.
* Control setting, Hi/Lo alarm setting.
* Control relay output, alarm relay output.
* Alarm Relay will make action when the reading value reach to high/low alarm value.
* Control Relay will make action when the reading value reach to control value.
* Hysteresis value setting for control and alarm function.
* Microprocessor circuit ensures high accuracy and provides special functions and features.
* Power : 90 ACV to 260 ACV, 50/60 Hz.
* Cooperate the 4-20 mA pressure input, sensor can install in the faraway position.
* DC 24V output, used for the power of pressure sensor.
* RS-232/USB computer interface.
* DIN size : 96 x 48 mm. Depth : 110 mm.
* Optional pressure sensor, TR-PS2W-xxBAR, PS93MA-xxBAR.
* Optional USB cable, USB-01.
* Optional data acquisition software.
* Optional GSM controller.

2. SPECIFICATIONS

2-1 General Specifications

Display	4 digits red LED, digit size : 14 mm. x 10, x100 indicator
Circuit	Custom chip of microprocessor LSI circuit.
Sensor type	Can cooperate with optional 2, 5, 10, 20, 50, 100, 200, 400 bar two wires 4 to 20 mA pressure sensor, new calibration are not necessary typically when change the new sensor . ** Sensor type can make the internal setting with default*
Display units	Bar, Psi, Kg/cm^2, mm Hg, inch Hg, meter H2O, inch H2O, Atmosphere, hPa, KPa. ** Unit can make the internal setting with default*
Accuracy	± (0.5% + 2 d) ** Meter only.* ** Within 23 ℃± 5 ℃*
Pressure sensor ** optional*	Cooperate the optional two wires (or four wires) 4 to 20 mA pressure sensors (transmitters). ** two wires sensor : TR-PS2W-xxBAR* ** Four wires sensor : PS93MA-xxBAR*
Offset adjust	It can make the internal Offset setting with default.
Gain adjust	It can make the internal Gain setting with default
Input signal from sensor	** Input 4 mA = 0 pressure* ** Input 20 mA = full scale pressure*
Sampling Time	Approx. 1 second.

Relay Output	Number	2 relays
	Function	*Relay 1 :* Control relay.
		Relay 2 : High/Low alarm relay.
	Max load 	0.5 ACA/250 ACV 0.5 DCA/24 DCV **** Do not apply the relay contact load current > 0.5 A, otherwise the relay may be damaged permanently without warranty.***
Setting Function	*1st layer setting procedures*	CtLo (Control low limit) CtHi (Control high limit) ALLo (Alarm low limit) ALHi (Alarm high limit)
	Second layer setting procedures	tyPE (Sensor type) FiLt (Digital filter) CtHy (Control hysteresis set) ALHy (Alarm hysteresis set) oFSt (Offset adjustment) GAin (Gain adjustment) Unit (Unit set)
External Power Supply	DC 24 V, 50 mA max.	
Data Output	RS 232 PC serial interface.	
Operating Temperature	0 to 50 ℃.	
Operating Humidity	Less than 80% R.H.	
Power Supply	90 to 260 ACV, 50/60 Hz.	
Power Consumption	Approx. 7.3 VA/AC 110V. Approx. 11 VA/AC 220V.	
Weight	258 g/0.57 LB.	
Dimension	DIN size : 96 x 48 mm. Depth : 110 mm.	

Accessories Included	Instruction manual..... 1 PC Case holder with screw.....2 PCs
Optional Accessories	Two wires pressure transmitters, Model : TR-PS2W-xx BAR * Range : 2, 5, 10, 20, 50, 100 400 BAR.
	* Data Acquisition software, SW-U801-WIN. * RS232 cable, UPCB-02. * USB cable, USB-01.
	* Real time SD card datalogger DL-9602SD
	* GSM controller, GSM-889. * Interface cable (cable between meter to GSM-889), GMCB-89.

3. FRONT PANEL DESCRIPTION

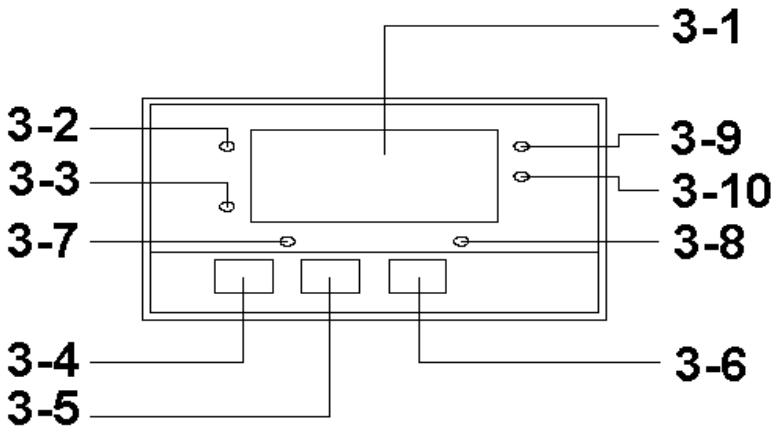
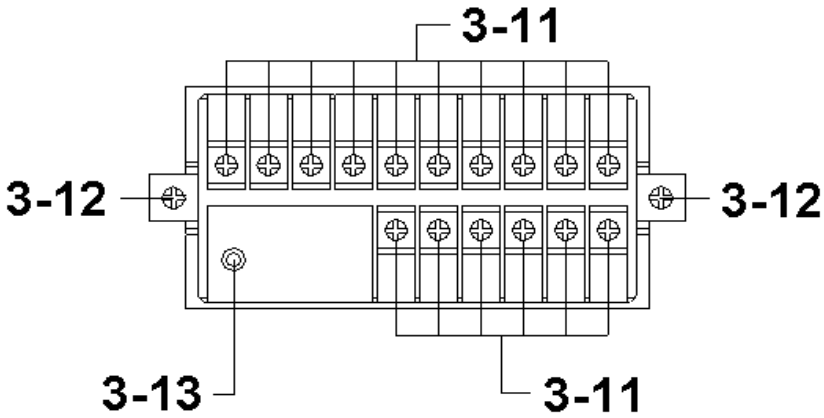
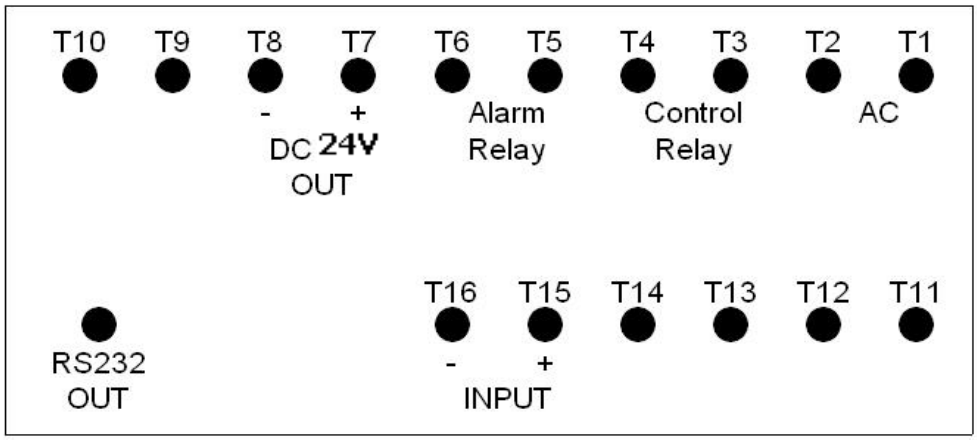


Fig. 1



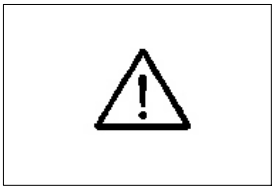
3-1 Display
3-2 PV (process value) indicator
3-3 SV (set value) indicator
3-4 Set Button
3-5 ▼ Button
3-6 ▲ Button
3-7 Control relay indicator
3-8 Alarm relay indicator
3-9 X10 indicator
3-10 X100 indicator
3-11 Wire terminals
3-12 Case holder
3-13 RS232 terminal

4. MEASURING PROCEDURE



4-1 Terminal connection

1) Input the ACV power (90 to 260 ACV) to T1, T2.



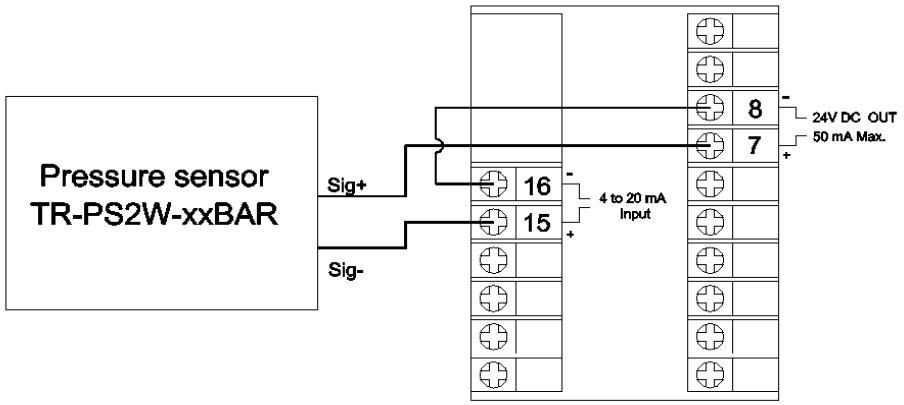
Do not input the over voltage to the AC input terminals.

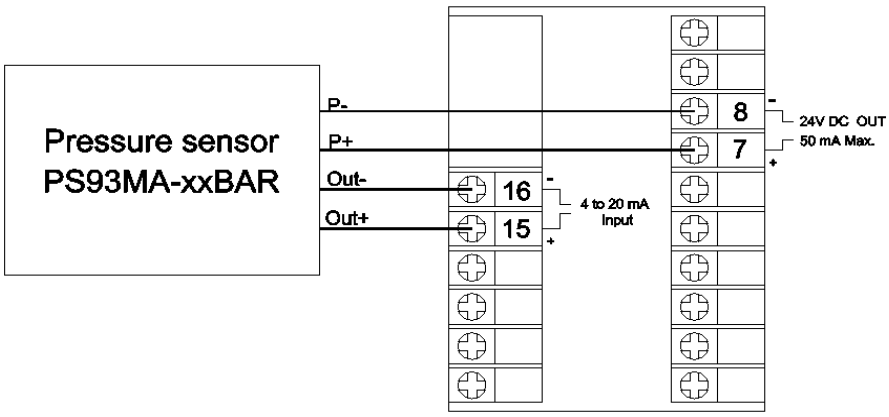
2) Connect the " Control Relay " output from T3, T4.
   Connect the " Alarm Relay " output from T5, T6.

4-2 Pressure measurement

1) Prepare the optional two wires pressure sensors (transmitters), TR-PS2W-xxBAR.
   or
   the optional four wires pressure sensors (transmitters), PS93MA--xxBAR.

2) Make the wires installation as following :





3) Select the sensor type, please refer Chapter 4-2, page 10.
Select the sensor unit, please refer Chapter 4-2, page 14.

4-3 1st layer setting procedures

CtLo	Control low value setting
CtHi	Control high value setting
ALLo	Alarm low value setting
ALHi	Alarm high value setting

Control low value setting

1) Press the " Set Button " (3-4, Fig. 1) once, the " Display " will show " CtLo ", now the meter is ready for the " Control low value " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Control low value ".

Remark :

* *When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

Control high value setting

1) After set the " Control low value ", press the " Set Button " (3-4, Fig. 1) twice, the " Display " will show " CtHi ", now the meter is ready for " Control high value " setting.
2) Use the " " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Control high value ".

Remark :

* *When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

Alarm low Value Setting

1) After set the " Control high value ", press the " Set Button " (3-4, Fig. 1) twice, the " Display " will show " ALLo ", now the meter is ready for " Alarm low value " setting.

2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Alarm low value ".

Remark :

* *When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

Alarm high Value Setting

1) After set the " Alarm low value ", press the " Set Button " (3-4, Fig. 1) twice, the " Display " will show " ALHi ", now the meter is ready for " Alarm high value " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Alarm high value ".

Remark :

* *When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

4-4 2nd layer setting procedures

tyPE	Sensor type
FiLt	Digital filter
CtHy	Control hysteresis set
ALHy	Alarm hysteresis set
oFSt	Offset adjustment
GAin	Gain adjustment
Unit	Unit set

Sensor type setting

1) Press the " Set Button " (3-4, Fig. 1) continuously at least two seconds, the " Display " will show " tyPE ", now the meter is ready for the " Sensor type " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Sensor type ".

Remark :

* *The sensor type can select 8 types of pressure sensor : 2.000 Bar, 5.000 Bar, 10.00 Bar, 20.00 Bar, 50.00 Bar, 100.0 Bar, 200.0 Bar, 400.0 Bar*
* *The sensor type setting should correspond to the optional pressure sensor that is used (TR-PS2W-xxBAR).*
* *When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

3) After finish the " Sensor type " setting, press the " Set Button " (3-4, Fig. 1) once will save the sensor type into the internal memory with default.

Digital filter setting

1) After finish the " Sensor type setting ", press the " Set Button " (3-4, Fig. 1) once, the " Display " will show " FiLt " , now the meter is ready for the " Digital filter " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Digital filter " value from 1 to 100.
   * *The more " Digital filter " value, will get more stable value.*
3) After finish the " Digital filter " setting, Press the " Set Button " (3-4, Fig. 1) once will save the Digital filter into the internal memory with default.

Control Hysteresis value setting

1) After finish the " Digital filter setting ", press the " Set Button " (3-4, Fig. 1) once, the " Display " will show CtHy ", now the meter is ready for the " Control Hysteresis value " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Control Hysteresis value ".

Remark :

* *When adjust the " Control Hysteresis value " , the " SV indicator " (3-3, Fig. 1) will light.*
* *The function of " Control Hysteresis value " setting, refer to page 11, Fig. 3.*

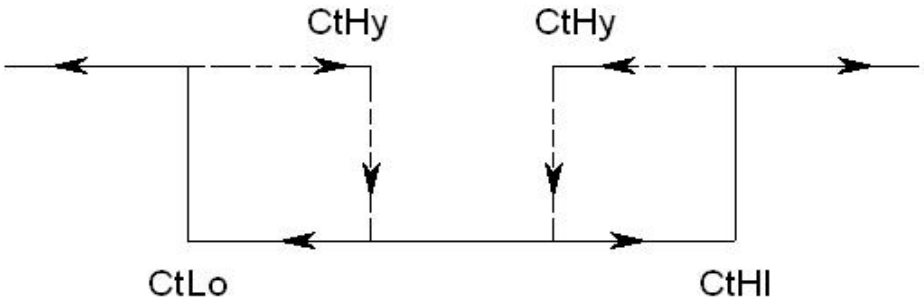


Fig. 3

* For example :
Control High limit value (CtHi) : 500
Control Low limit value (CtLo) : 100
Control Hysteresis value (CtHy) : 5

a. The control relay will On when measuring value up to 500. The control relay will Off again when measuring value down to 495.
b. The control relay will On when measuring value down to 100. The control relay will Off when measuring value up to 105.
c. When the measuring value equal 0, control relay will Off.

Alarm Hysteresis value setting

1) After select the " Control Hysteresis value " , press the " Set Button " (3-4, Fig. 1) twice, the " Display " will show " ALHy ", now the meter is ready for the the " Alarm Hysteresis value " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Alarm Hysteresis value " .

Remark :

* *When adjust the " Alarm Hysteresis value " , the " SV indicator " (3-3, Fig. 1) will light.*
* *The function of " Alarm Hysteresis value " setting, refer to page 12, Fig. 4.*

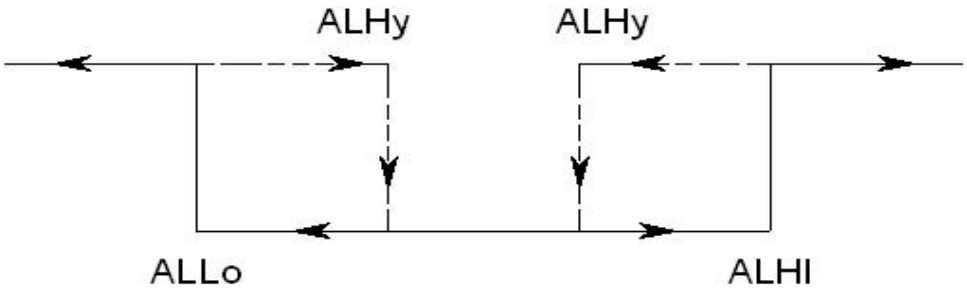


Fig. 4

* For example :

Alarm High limit value (ALHi) : 100
Alarm Low limit value (ALlo) : 20
Alarm Hysteresis value (ALHy) : 5

a. The alarm relay will On when measuring value up to 100. If the reading value > 100, the Display will flashing. The alarm relay will Off again when measuring value down to 95.
b. The alarm relay will On when measuring value down to 20. If the reading value < 20, the Display will flashing. The alarm relay will Off when measuring value up to 25.
c. When the measuring value equal 0, alarm relay will Off and the Display will flashing.

Offset value adjustment

1) After finish the " Alarm hysteresis value setting " , press the " Set Button " (3-4, Fig. 1) twice, the " Display " will show " oFSt ", now the meter is ready for the " Offset value adjustment " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Offset value ", press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

* *During adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

Gain value setting

1) After finish the " Offset value setting " , press the " Set Button " (3-4, Fig. 1) once, the " Display " will show " Gain ", now the meter is ready for the the " Gain value adjustment " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Gain value ", press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

* *During adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*
* *The Gain value setting range is 0.001 to 9.999, the default value is 1.000.*

Unit setting

1) After finish the " Gain value setting " , press the " Set Button " (3-4, Fig. 1) once, the " Display " will show " Unit ", now the meter is ready for the the " Unit setting "
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Unit no. " (0 to 9), press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

** The Unit no. setting is from 0 to 9, total 10 kind units can be selected.*

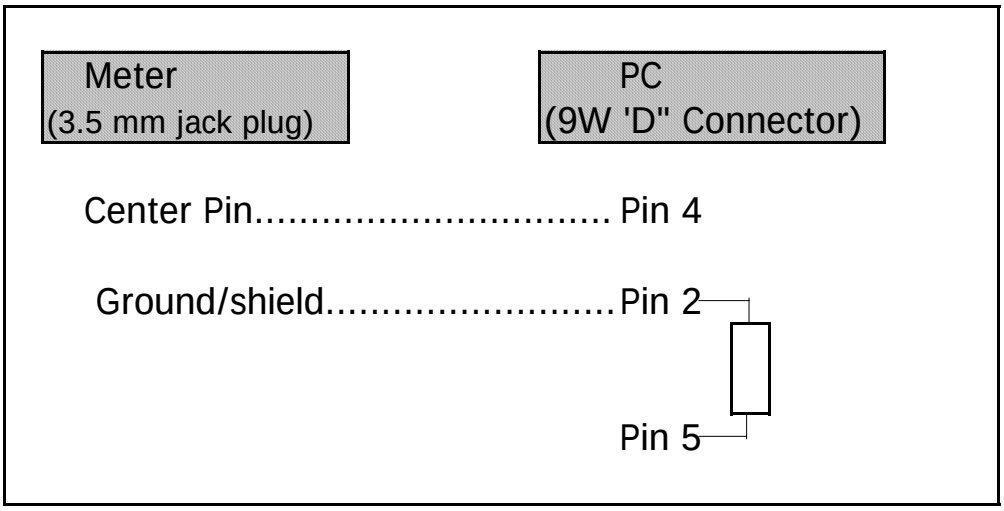
0 : Bar	5 : PSI
1 : Kg/cm^2	6 : inch Hg
2 : mm Hg	7 : inch H20
3 : Meter H20	8 : hPa
4 : ATP (Atomsphere)	9 : KPa

5. RS232 PC SERIAL INTERFACE

The instrument has RS232 PC serial interface via a 3.5 mm terminal (3-13, Fig. 1).

The data output is a 16 digit stream which can be utilized for user's specific application.

A RS232 lead with the following connection will be required to link the instrument with the PC serial port.



The 16 digits data stream will be displayed in the following format :

D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0

Each digit indicates the following status :

D15	Start Word		
D14	4		
D13	1		
D12 & D11	Annunciator for Display		
	Bar = 22	mm Hg = 78	inch H20 = 25
	Psi = 23	inch Hg = 80	ATP = 26
	hPa = 91	KPa = 88	
	Kg/cm^2 = 77	meter H20 = 79	
D10	Polarity 0 = Positive 1 = Negative		
D9	Decimal Point(DP), position from right to the left 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP		

D8 to D1	Display reading, D8 = MSD, D1 = LSD. For example : If the display reading is 1234, then D8 to D1 is : 00001234
D0	End Word

RS232 setting

Baud rate	9600
Parity	No parity
Data bit no.	8 Data bits
Stop bit	1 Stop bit

6. SYSTEM RESET

Power on the meter, use the two fingers to press " Set Button " (3-4, Fig. 1) and " ▼ Button " (3-5, Fig. 1) continuously more than 5 seconds until the Display show the text " rSt ", release the buttons. After " rSt " text flashing 2 times will return to the normal screen. The meter system will be reset, all the calibration data will be cleared, the meter's internal function will return the default value.

7. OPTIONAL PRESSSURE SENSORS (Optional 2 wires pressure transmitters)

2 WIRES PRESSURE TRANSMITTER **Model : TR-PS2W-xxBAR**
* Range : 2, 5, 10, 20, 50, 100, 400 BAR. * Output : 4 to 20 mA DC. 4 mA = 0 pressure, 20 mA = full scale pressure * 2 wires, both for signal and power supply. * Power : DC 9V to 30V.

* Precision ceramic type pressure sensor.
* External zero and span adjustment.
* Output with socket, easy replacement.
* Allow high cable load resistance, transmitter can install far away from the controller/indicator.
* Protection for the reverse wires connecting.
* TR-PS2W can cooperate the " Pressure controller/monitor, PPS-9312 or the " 4-20 mA Controller/Alarm/Indicator CT-2012 ".

8. THE ADDRESS OF AFTER SERVICE CENTER