SD card real time datalogger, RS232/USB

PRESSURE METER

Model : PS-9303SD

Your purchase of this PRESSURE METER with SD CARD DATALOGGER marks a step forward for you into the field of precision measurement. Although this METER is a complex and delicate instrument, its durable structure will allow many years of use if proper operating techniques are developed. Please read the following instructions carefully and always keep this manual within easy reach.

OPERATION MANUAL

TABLE OF CONTENTS

1. FEATURES

* Meter can cooperate optional pressure sensor with 2, 5, 10, 20, 50, 100, 200, 400 Bar, new calibration procedures are not necessary when change the new sensor .
* When change the new pressure sensor, just select pressure type (2, 5, 10, 20, 50, 100, 200, 400 bar) on the front panel button. The sensor type will memorize into the circuit permanently.
* 10 kinds pressure units (Bar, Psi, Kg/cm^2, mm Hg, inch Hg, meter H20, inch H20, Atmosphere, hPA, kPA) , unit select by push button on the front panel.
* Full line optional pressure sensors are available.
* Cooperate the external pressure sensor that its output signal is 100 mV for full scale.
* Zero button on the front panel, easy adjust the zero value of pressure sensor.
* Separate pressure sensor, easy for remote measurement.
* Microprocessor circuit assures maximum possible accuracy, provides special functions and features,
* Real time SD memory card Datalogger, built-in Clock and Calendar, sampling time can set from 1 sec to 8 hour 59 min. 59 sec.
* Manual datalogger is available, during execute the manual datalogger function, it can set the different location no. (position 1 to position 99).
* Innovation and easy operation, computer is not need to setup extra software, after execute datalogger, just take away the SD card from the meter and plug in the SD card into the computer, it can down load the all the measured value with the time information (year/month/date/ hour/minute/second) to the Excel directly, the user can make the further data or graphic analysis by themselves.

* SD card capacity : 1 GB to 16 GB.
* LCD with green light backlight, easy reading.
* It can default auto power off or manual power off.
* Data hold, record max. and min. reading.
* Microcomputer circuit, high accuracy.
* Power by UM3/AA (1.5 V) x 6 batteries or DC 9V adapter.
* RS232/USB PC computer interface.
* Wide applications : Measure pneumatic pressures, measure automobile engine pressures, pressure for super heat measurements, hydraulic servo controls, refrigeration, air conditioning, food processing.

2. SPECIFICATIONS

2-1 General Specifications

Circuit	Custom one-chip of microprocessor LSI circuit.
Display	LCD size : 52 mm x 38 mm LCD with green backlight (ON/OFF).
Sensor type	Can cooperate with optional 2, 5, 10, 20, 50, 100, 200, 400 bar sensor, new calibration are not necessary when change the new sensor .
Display units	Bar, Psi, Kg/cm^2, mm Hg, inch Hg, meter H20, inch H20, Atmosphere, hPA, KPA.
Accuracy	± (0.5% + 1 d) ** Under the signal from the sensor is at full scale (100 mV).* ** Meter only.* ** Within 23± 5 ℃.*
Pressure sensor	Cooperate the optional external pressure sensor that its output signal is 100 mV for full scale. ref. page 28.
Zero adjust	Push button on the front panel.
Span adjust	Push button gain adjustment, usage for calibration precisely if necessary.

Input signal from sensor	DC 100 mV for full Scale.	
Datalogger Sampling Time Setting range	Auto	1 sec to 8 hour 59 min. 59 sec. *@ Sampling time can set to 1 second, but memory data may loss.*
	Manual	Push the data logger button once will save data one time. *@ Set the sampling time to 0 second.* *@ Manual mode, can also select the 1 to 99 position (Location) no.*
Data error no.	0.1% of total saved data max.	
Memory Card	SD memory card. 1 GB to 16 GB.	
Advanced setting	* SD memory card Format * Set clock time (Year/Month/Date, Hour/Minute/Second) * Set sampling time * Auto power OFF management * Set beep Sound ON/OFF * Decimal point of SD card setting * Select sensor type.	
Data Hold	Freeze the display reading.	
Memory Recall	Maximum & Minimum value.	
Sampling Time of Display	Approx. 1 second.	
Data Output	RS 232/USB PC computer interface. ** Connect the optional RS232 cable UPCB-02 will get the RS232 plug.* ** Connect the optional USB cable USB-01 will get the USB plug.*	
Operating Temperature	0 to 50 ℃. (32 to 122 ℉).	
Operating Humidity	Less than 80% R.H.	

Power Supply	* .Alkaline or heavy duty DC 1.5 V battery (UM3, AA) x 6 PCs, or equivalent.
	* .DC 9V adapter input. (AC/DC power adapter is optional).
Power Current	Normal operation (w/o SD card save data and LCD Backlight is OFF) : *Approx. DC 5 mA.*
	When SD card save the data and LCD Backlight is OFF) : *Approx. DC 25 mA.*
	* .*If LCD backlight on, the power consumption will increase approx. 12 mA.*
Weight	350 g/0.77 LB.
Dimension	177 x 68 x 45 mm (7.0 x 2.7x 1.9 inch) ** Meter only*
Accessories Included	Instruction manual.....1 PC
Optional Accessories	Pressure sensor, PS100-xxBAR, ** Refer to page*
	Hard carrying case, CA-06. Soft carrying case, CA-05A.
	SD memory card (1 GB) SD memory card (2 GB) AC to DC 9V adapter. USB cable, USB-01. RS232 cable, UPCB-02. Data Acquisition software, SW-U801-WIN.

2-2 Electrical Specifications (23± 5 ℃)

Sensor type	**2 bar**		**5 bar**		**10 bar**	
	Max. range	Reso-lution	Max. range	Reso-lution	Max. range	Reso-lution
bar	2	0.002	5	0.005	10	0.01
Psi	29	0.02	72.5	0.1	145	0.2
Kg/cm^2	2.040	0.002	5.095	0.005	10.19	0.01
mm Hg	1500	2	3750	5	7500	10
inch Hg	59.05	0.05	147.6	0.1	295.2	0.2
meter H20	20.40	0.02	50.95	0.05	101.9	0.1
inch H20	802	1	2006	2	4010	5
Atmosphere	1.974	0.002	4.935	0.002	9.87	0.01
hPA	2000	2	5000	5	10000	10
kPA	200.0	0.2	500.0	0.5	1000	1

Sensor type	**20 bar**		**50 bar**		**100 bar**	
	Max. range	Reso-lution	Max. range	Reso-lution	Max. range	Reso-lution
bar	20	0.02	50	0.05	100	0.1
Psi	290	0.2	725	1	1450	2
Kg/cm^2	20.40	0.02	50.95	0.05	101.9	0.1
mm Hg	15000	20	37500	50	75000	100
inch Hg	590.5	0.5	1476	1	2952	2
meter H20	204.0	0.2	509.5	0.5	1019	1
inch H20	8020	10	20050	20	40100	50
Atmosphere	19.74	0.02	49.35	0.05	98.7	0.1
hPA	20000	20	50000	50	10000	100
kPA	2000	2	5000	5	1000	10

Sensor type	**200 bar**		**400 bar**	
	Max. range	Reso-lution	Max. range	Reso-lution
bar	200	0.2	400	0.5
Psi	2900	2	5800	5
Kg/cm^2	204.0	0.2	408.0	0.5
mm Hg	150000	200	300000	500
inch Hg	5905	5	11810	10
meter H20	2040	2	4075	5
inch H20	80200	100	160600	200
Atmosphere	197.4	0.2	394.5	0.5
hPA	200000	200	400000	500
kPA	20000	20	40000	50

3. FRONT PANEL DESCRIPTION

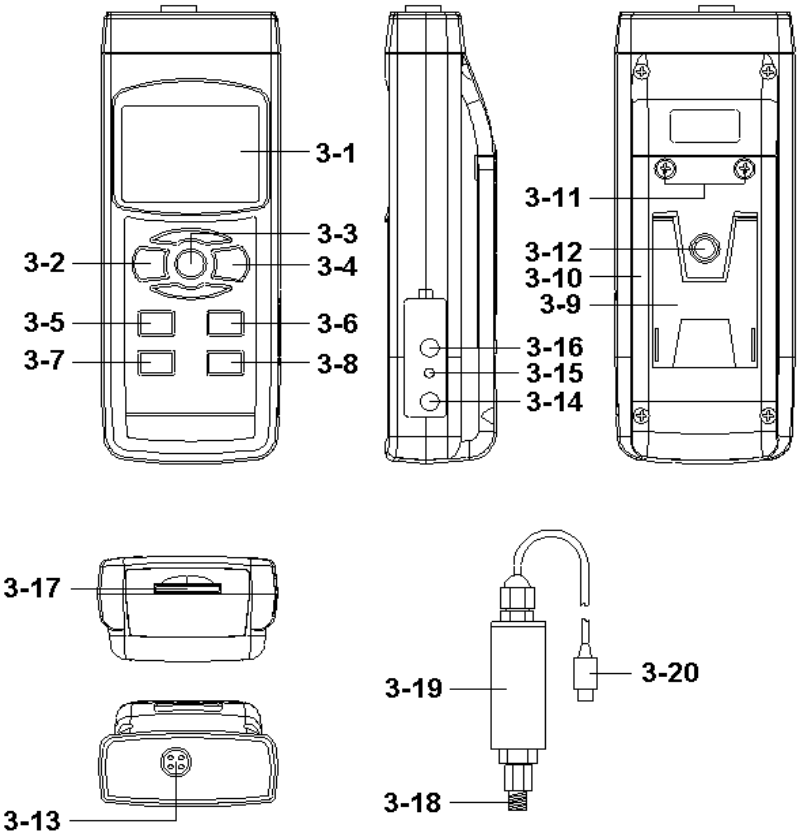


Fig. 1

3-1 Display
3-2 Power Button (Backlight Button)
3-3 Hold Button (ESC Button)
3-4 REC Button (Enter Button)
3-5 Unit Button (▲ Button)
3-6 Sensor type Button (▼ Button)
3-7 Zero Button (Time Button)
3-8 Logger Button (SET Button, Sampling check)
3-9 Stand
3-10 Battery Compartment/Cover
3-11 Battery Cover Screw
3-12 Tripod Fix Nut
3-13 Probe Socket
3-14 DC 9V Power Adapter Input Socket
3-15 Reset Button
3-16 RS-232 Output Terminal
3-17 SD card socket
3-18 Port Connector of Pressure Sensor
3-19 Pressure Sensor Main body
3-20 Plug of Pressure Sensor

4. SENSOR TYPE SELECTION

The meter can cooperate with optional 2, 5, 10, 20, 50, 100, 200, 400 bar sensor, new calibration are not necessary when change the new sensor .

Those different optional pressure sensor are :

* 2 bar pressure sensor, Model : PS100-2BAR
* 5 bar pressure sensor, Model : PS100-5BAR
* 10 bar pressure sensor, Model : PS100-10BAR
* 20 bar pressure sensor, Model : PS100-20BAR
* 50 bar pressure sensor, Model : PS100-50BAR
* 100 bar pressure sensor, Model : PS100-100BAR
* 200 bar pressure sensor, Model : PS100-200BAR
* 400 bar pressure sensor, Model : PS100-400BAR

When change the different sensor (2 Bar, 5 Bar, 10 Bar, 20 Bar, 50 Bar, 100 Bar, 200 Bar, 400 Bar), it should according the procedures that mentioned in Section 9-7, page 23 to select the convenient pressure sensor at first.

After already select the convenient pressure sensor type, press Sensor type Button (3-6, Fig. 1) once, the Display will show the sensor type to confirm.

For example, if the pressure type already select 2 bar pressure sensor (Model : PS100-2BAR), then if press Sensor type Button (3-6, Fig. 1) once, the Display will show :

5. MEASURING PROCEDURE

1) Plug in the " Plug of Pressure Sensor " (3-20, Fig. 1) to meter's " Probe Input Socket " (3-13, Fig. 1)
2) Power on the meter by pushing the " Power Button " (3-2, Fig. 1) once.
3) Press the " Sensor Type Button " (3-6, Fig 1) once to check if the meter's sensor type is same as the external pressure sensor.
4) Press the " Unit Button " (3-5, Fig. 1) once in sequence to select the measuring unit as : Bar, Psi, Kg/cm^2, mm Hg, inch Hg, meter H20, inch H20, Atmosphere, hPA, kPA.

Unit	***Display indicator***
Psi	**PSI**
inch Hg	**In Hg**
inch H20	**In H2O**
hPA	**hPA**
KPA	**_PA**
Bar	**bAr**
Kg/cm^2	**_g C2**
mm Hg	**-- Hg**
meter H2O	**-t H20**
Atmosphere	**AtP**

Remark :
After select the desired unit, power off the meter then power on again, the meter circuit memory will save the selected unit with default.

5) Zero adjustment :
   If the Display is not show zero value, push the " Zero Button " (3-7, Fig. 1), > 10 seconds continuously, the Display value will change to zero value.
6) Connect the " Port Connector of Pressure Sensor " (3-18, Fig. 1) to the installation that intend to measure the pressure value.
7) Apply the pressure, meter will show the pressure value.

6. OTHER FUNCTION

6-1 Data Hold

During the measurement, press the " Hold Button " (3-3, Fig. 1) once will hold the measured value & the LCD will display a " HOLD " symbol.
Press the " Hold Button " once again will release the data hold function.

6-2 Data Record (Max., Min. reading)

1) The data record function records the maximum and minimum readings. Press the " REC Button " (3-4, Fig. 1) once to start the Data Record function and there will be a " REC " symbol on the display.
2) With the " REC " symbol on the display :
   a) Press the " REC Button " (3-4, Fig. 1) once, the " REC MAX " symbol along with the maximum value will appear on the display.
      If intend to delete the maximum value, just press the " Hold Button " (3-3, Fig. 1) once, then the display will show the " REC " symbol only & execute the memory function continuously.

b) Press the " REC Button " (3-4, Fig. 1) again, the " REC MIN " symbol along with the minimum value will appear on the display.
If intend to delete the minimum value, just press the " Hold Button " (3-3, Fig. 1) once, then the display will show the " REC " symbol only & execute the memory function continuously.

c) To exit the memory record function, just press the " REC Button " for 2 seconds at least. The display will revert to the current reading.

6-3 LCD Backlight ON/OFF

After power ON, the " LCD Backlight " will light automatically. During the measurement, press the " Backlight Button " (3-2, Fig. 1) once will turn OFF the " LCD Backlight ".
Press the " Backlight Button " once again will turn ON the " LCD Backlight " again.

7. DATALOGGER

7-1 Preparation before execute datalogger function

a. Insert the SD card

** It recommend use memory card ≤ 4 GB.*

Prepare a " SD memory card " (1 GB to 16 GB, optional), insert the SD card into the " SD card socket " (3-17, Fig. 1). The front panel of the SD card should face against the down case.

b. SD card Format

If SD card just the first time use into the meter, it recommend to make the " SD card Format " at first. , please refer chapter 9-1, page 20.

** It recommend strongly, do not use memory cards that have been formatted by other meter or by a computer. Reformat the memory card with your meter.*

c. Time setting
If the meter is used at first time, it should to adjust the clock time exactly, please refer chapter 9-2, page 20.

d. Decimal format setting

The numerical data structure of SD card is default used the " . " as the decimal, for example "20.6" "1000.53" . But in certain countries (Europe ...) is used the " , " as the decimal point, for example " 20, 6 " "1000,53". Under such situation, it should change the Decimal character at first, details of setting the Decimal point, refer to Chapter 9-6, page 23.

7-2 Auto Datalogger (Set sampling time ≧ 1 second)

a. Start the datalogger

Press the " REC Button (3-4, Fig. 1) once , the LCD will show the text " REC ", then press the " Logger Button " (3-8, Fig. 1), the bottom text " DATALOGGER " will flashing, at the same time the measuring data along the time information will be saved into the memory circuit.

Remark :

- *How to set the sampling time, refer to Chapter 9-3 page 21.*
- *How to set the beeper sound is enable, refer to Chapter 9-5, page 22.*

b. Pause the datalogger

During execute the Datalogger function , if press the " Logger Button " (3-8, Fig. 1) once will pause the Datalogger function (stop to save the measuring data into the memory circuit temporally). In the same time the text of " DATALOGGER " will be no flashing.

Remark :
If press the " Logger Button " (3-8, Fig. 1) once again will execute the Datalogger again, the bottom text of " DATALOGGER " will flashing .

c. Finish the Datalogger

During pause the Datalogger, press the " REC Button " (3-4, Fig. 1) continuously at least two seconds, the " REC " indication will be disappeared and finish the Datalogger.

7-3 Manual Datalogger (Set sampling time = 0 second)

a. Set sampling time is to 0 second

Press the " REC Button (3-4, Fig. 1) once , the LCD will show the text " REC ", then press the " Logger Button " (3-8, Fig. 1) once, the bottom text " DATALOGGER " will flashing once and Beeper will sound once, at the same time the measuring data along the time information will be saved into the memory circuit. The lower Display will show the Position (Location) no. and saved into the SD card too.

Remark :
During execute the Manual Datalogger, press the " ◢ Button " (3-5, Fig, 1) the lower no. (position no.) will flashing. It can use the " ◢ Button " (3-5, Fig. 1) or " ◤ Button " (3-6, Fig. 1) to set the measuring Location no. (1 to 99, for example room 1 to room 99) to identify the measurement location , the lower Display will show P x (x = 1 to 99).

b. Finish the Datalogger

Press the " REC Button " (3-4, Fig. 1) continuously at least two seconds, the " REC " indication will be disappeared and finish the Datalogger.

7-4 To check the time information

During the normal measurement screen (not execute the Datalogger),

1) If press " Time Button " (3-7, Fig. 1) once , the lower LCD display will present the time information of Hour/Minute/Second (h.m.s) in the lower Display.
2) If press " Time Button " (3-7, Fig. 1) once again , the lower LCD display will present the time information of Year/Month/Date (yy.mm.dd) in the lower Display.
3) If press " Time Button " (3-7, Fig. 1) once again , the LCD will return to normal screen.

7-5 Check sampling time information

During the normal measurement screen (not execute the Datalogger), If press " Sampling Button " (3-8, Fig. 1) once , the lower LCD display will present the Sampling time information in second unit.

7-6 SD Card Data structure

1) When the first time, the SD card is used into the meter, the SD card will generate a route :

PSA01

2) If the first time to execute the Datalogger, under the route PSA01\, will generate a new file name PSA01001.XLS.
   After exist the Datalogger, then execute again, the data will save to the PSA01001.XLS until Data column reach to 30,000 columns, then will generate a new file, for example PSA01002.XLS
3) Under the folder PSA01\, if the total files more than 99 files, will generate anew route, such as PSA02\ ……..
4) The file's route structure :

```
PSA01\
   PSA01001.XLS
   PSA01002.XLS
   ……..
   PSA01099.XLS
PSA02\
   PSA02001.XLS
   PSA02002.XLS
   ……..
   PSA02099.XLS
PSAXX\
   ……..
   ……..
```

Remark :
XX : Max. value is 10.

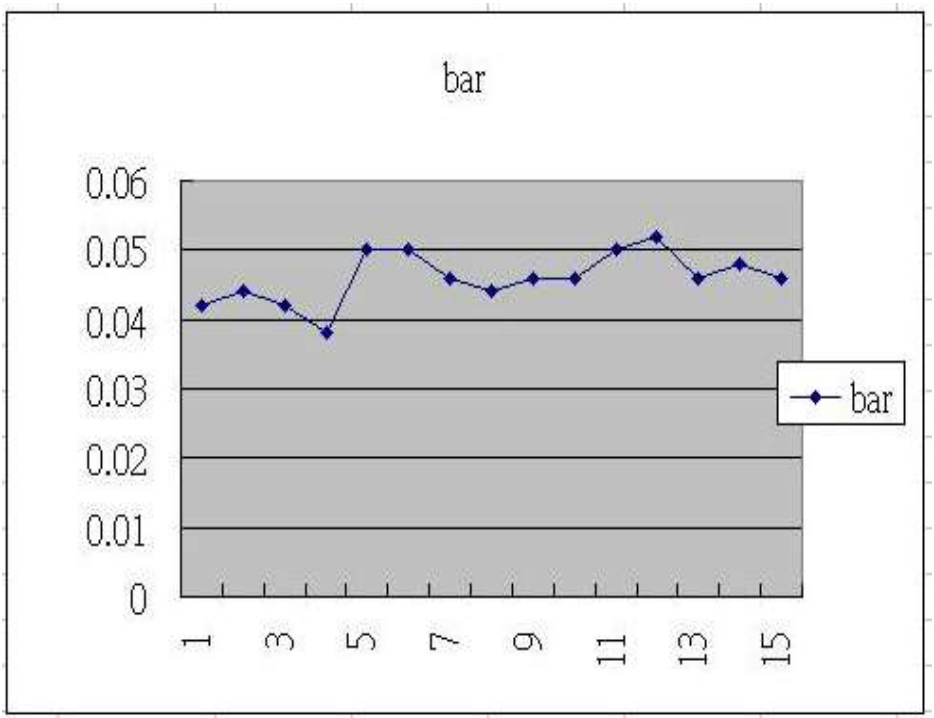
8. Saving data from the SD card to the computer (EXCEL software)

1) After execute the Data Logger function, take away the SD card out from the " SD card socket " (3-17, Fig. 1).
2) Plug in the SD card into the Computer's SD card slot (if your computer build in this installation) or insert the SD card into the " SD card adapter ". then connect the " SD card adapter " into the computer.
3) Power ON the computer and run the " EXCEL software ". Down load the saving data file (for example the file name : PSA01001.XLS, PSA01002.XLS) from the SD card to the computer. The saving data will present into the EXCEL software screen (for example as following EXCEL data screens) , then user can use those EXCEL data to make the further Data or Graphic analysis usefully.

EXCEL data screen (for example)

	A	B	C	D	E
1	Position	Date	Time	Ch1_Value	Ch1_Unit
2	1	2009/10/19	10:18:58	0.042	Bar
3	2	2009/10/19	10:19:00	0.044	Bar
4	3	2009/10/19	10:19:02	0.042	Bar
5	4	2009/10/19	10:19:04	0.038	Bar
6	5	2009/10/19	10:19:06	0.05	Bar
7	6	2009/10/19	10:19:08	0.05	Bar
8	7	2009/10/19	10:19:10	0.046	Bar
9	8	2009/10/19	10:19:12	0.044	Bar
10	9	2009/10/19	10:19:14	0.046	Bar
11	10	2009/10/19	10:19:16	0.046	Bar
12	11	2009/10/19	10:19:18	0.05	Bar
13	12	2009/10/19	10:19:20	0.052	Bar
14	13	2009/10/19	10:19:22	0.046	Bar
15	14	2009/10/19	10:19:24	0.048	Bar
16	15	2009/10/19	10:19:26	0.046	Bar

EXCEL graphic screen (for example, graphic)



9. ADVANCED SETTING

Under do not execute the Datalogger function, press the " SET Button " (3-8, Fig. 1) continuously at least two seconds will enter the " Advanced Setting " mode. then press the " SET Button " (3-8, Fig. 1) once a while in sequence to select the eight main function, the display will show :

Sd F..... SD memory card Format
dAtE..... Set clock time (Year/Month/Date, Hour/Minute/Second)
SP-t..... Set sampling time (Hour/Minute/Second)
PoFF..... Auto power OFF management
bEEP..... Set beeper sound ON/OFF
dEC..... Set SD card Decimal character
tyPE..... Set the external optional sensor type
ESC..... Escape from the advanced setting

Remark :
During execute the " Advanced Setting " function, if press " ESC Button " (3-3, Fig. 1) will exit the " Advanced Setting " function, the LCD will return to normal screen.

9-1 SD memory card Format

When the lower display show " Sd F "

1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to select the upper value to " yES " or " no ".

   yES - Intend to format the SD memory card
   no - Not execute the SD memory card format

2) If select the upper to " yES ", press the " Enter Button " (3-4, Fig. 1) once again, the Display will show text " yES Enter " to confirm again, if make sure to do the SD memory card format, then press " Enter Button " once will format the SD memory clear all the existing data that already saving into the SD card.

9-2 Set clock time (Year/Month/Date, Hour/Minute/ Second)

When the upper display show " dAtE "

1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to adjust the value (Setting start from Year value). After the desired value is set, press the " Enter Button " (3-4, Fig. 1) once will going to next value adjustment (for example, first setting value is Year then next to adjust Month, Date, Hour, Minute, Second value).

   Remark :
   The adjusted value will be flashed.

2) After set all the time value (Year, Month, Date, Hour, Minute, Second), press the " SET Button " (3-8, Fig. 1) once will save the time value, then the screen will jump to Sampling time " setting screen (Chapter 9-3).

Remark :
After the time value is setting, the internal clock will run precisely even Power off if the battery is under normal condition (No low battery power).

9-3 Set sampling time (Hour/Minute/Second)

When the upper display show " SP-t "

1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to adjust the value (Setting start from Hour value). After the desired value is set, press the " Enter Button " (3-4, Fig. 1) once will going to next value adjustment (for example, first setting value is Hour then next to adjust Minute, Second value).

Remark :
The adjusted value will be flashed.

2) After set all the sampling time value (Hour, Minute, Second), press the " SET Button " (3-8, Fig. 1) once will save the sampling value with default then the screen will jump to " Auto power OFF " setting screen (Chapter 9-4).

9-4 Auto power OFF management

When the lower display show " PoFF "

1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to select the upper value to " yES " or " no ".

   yES - Auto Power Off management will enable.
   no - Auto Power Off management will disable.

2) After select the upper text to " yES " or " no ", press the " Enter Button " (3-4, Fig. 1) will save the setting function with default.

9-5 Set beeper sound ON/OFF

When the lower display show " bEEP "

1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to select the upper value to " yES " or " no ".

   yES - Meter's beep sound will be ON with default.
   no - Meter's beep sound will be OFF with default.
   is power ON.

2) After select the upper text to " yES " or " no ", press the " Enter Button " (3-4, Fig. 1) will save the setting function with default.

9-6 Decimal point of SD card setting

The numerical data structure of SD card is default used the " . " as the decimal, for example "20.6" "1000.53" . But in certain countries (Europe ...) is used the " , " as the decimal point, for example " 20,6 " "1000,53". Under such situation, it should change the Decimal character at first.

When the lower display show " dEC "

1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to select the upper text to " bASIC " or " Euro ".

   bASIC - Use " . " as the Decimal point with default.
   Euro - Use " , " as the Decimal point with default.

2) After select the upper text to " bASIC " or " Euro ", press the " Enter Button " (3-4, Fig. 1) will save the setting function with default.

9-7 Set the external optional pressure sensor type

When the lower display show " tyPE "

1) Use the " ▲ Button " (3-5, Fig. 1) or " ▼ Button " (3-6, Fig. 1) to select the upper Display no. to 2, 5, 10 20. 50, 100, 200 or 400.

Selecting no. via the optional pressure sensor type :

If the select no. is " 2 " . The meter will cooperate : 2 bar pressure sensor, Model : PS100-2BAR
If the select no. is " 5 " . The meter will cooperate : 5 bar pressure sensor, Model : PS100-5BAR
If the select no. is " 10 " . The meter will cooperate : 10 bar pressure sensor, Model : PS100-10BAR
If the select no. is " 20 " . The meter will cooperate : 20 bar pressure sensor, Model : PS100-20BAR
If the select no. is " 50 " . The meter will cooperate : 50 bar pressure sensor, Model : PS100-50BAR
If the select no. is " 100 " . The meter will cooperate : 100 bar pressure sensor, Model : PS100-100BAR
If the select no. is " 200 " . The meter will cooperate : 200 bar pressure sensor, Model : PS100-200BAR
If the select no. is " 400 " . The meter will cooperate : 400 bar pressure sensor, Model : PS100-400BAR

2) After Display the convenient pressure sensor type is selected to , press the " Enter Button " (3-4, Fig. 1) will save the setting function with default.

9-8 ESC

When the display show " ESC "

When the Display show the text " ESC ", then press the " SET Button " (3-8, Fig. 1) or " ESC Button " (3-3, Fig. 1) will finish the Advanced Setting procedures.

Remark :

During execute the " Advanced Setting " function, if press " ESC Button " (3-3, Fig. 1) will exit the " Advanced Setting " function, the LCD will return to normal screen.

10. POWER SUPPLY from DC ADAPTER

The meter also can supply the power supply from the DC 9V Power Adapter (optional). Insert the plug of Power Adapter into " DC 9V Power Adapter Input Socket " (3-14, Fig. 1). The meter will permanent power ON when use the DC ADAPTER power supply (The power Button function is disable).

11. BATTERY REPLACEMENT

1) When the left corner of LCD display show "  , it is necessary to replace the battery. However, in-spec. measurement may still be made for several hours after low battery indicator appears before the instrument become inaccurate.
2) Loose the screws of the " Battery Cover " (3-11, Fig. 1) and take away the " Battery Cover " from the instrument and remove the battery.
3) Replace with DC 1.5 V battery (UM3, AA, Alkaline/heavy duty) x 6 PCs, and reinstate the cover.
4) Make sure the battery cover is secured after changing batteries.

12. SYSTEM RESET

If the meter happen the troubles such as :

CPU system is hold (for example, the key button can not be operated...).

Then make the system RESET will fix the problem.
The system RESET procedures will be either following method :

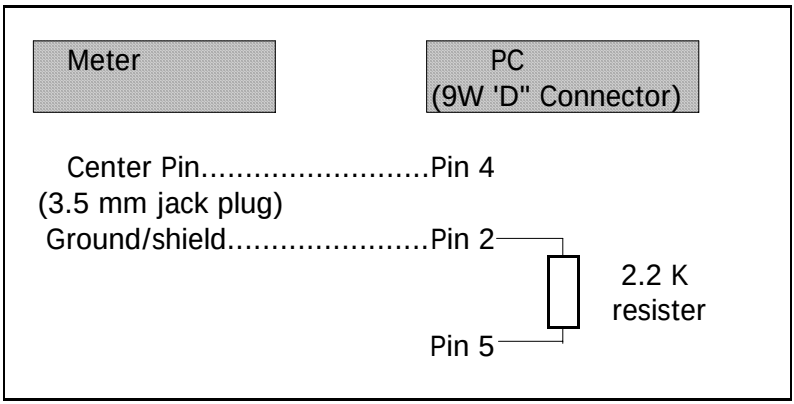
During the power on, use a pin to press the " Reset Button " (3-15, Fig. 1) once a while will reset the circuit system.

13. RS232 PC SERIAL INTERFACE

The instrument has RS232 PC serial interface via a 3.5 mm terminal (3-16, 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	When send the upper display data = 1 When send the lower display data = 2		
D12, D11	Annunciator for Display		
	Bar = 22	mm Hg = 78	inch H2O = 25
	Psi = 23	inch Hg = 80	ATP = 26
	Kg/cm^2 = 77	meter H20 = 79	
	hPA = 91	kPA = 88	
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, D1 = LSD, D8 = MSD For example : If the display reading is 1234, then D8 to D1 is : 00001234		
D0	End Word		

RS232 FORMAT : 9600, N, 8, 1

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

14. OPTIONAL PRESSURE SENSORS

Description	* Optional, pressure sensor that cooperate with PS-9303SD. * Out put : 100 mV DC for full scale. * 4 pin DIN plug, 2 pins to accept DC 5 V exciting voltage(power supply) for pressure transducer, another two pins for output signal of 100 mV full scale. * Size : 30 mm dia. x 85 mm. * Weight : 160 g.
Model	2 bar sensor..... PS100-2BAR 5 Bar sensor..... PS100-5BAR 10 Bar sensor.....PS100-10BAR 20 Bar sensor.....PS100-20BAR 50 Bar sensor.....PS100-50BAR 100 Bar sensor.....PS100-100BAR 400 Bar sensor.....PS100-400BAR
Accuracy *(23 ± 5 ℃)*	PS100-2BAR.....± (2 % + 0.02 bar) PS100-5BAR.....± (2 % + 0.05 bar) PS100-10BAR.....± (2 % + 0.1 bar) PS100-20BAR.....± (2 % + 0.2 bar) PS100-50BAR.....± (2 % + 0.5 bar) PS100-100BAR.....± (2 % + 1 bar) PS100-400BAR.....± (2 % + 4 bar)

15. OTHER OPTIONAL ACCESSORIES

Memory card	SD memory card (2 GB)

RS232 cable UPCB-02	* Computer interface cable. * Used to connect the meter to the computer (COM port).
USB cable USB-01	* Computer interface cable. * Used to connect the meter to the computer (USB port).

Data Acquisition software SW-U801-WIN	The The SW-U801-WIN is a multi displays (1/2/4/6/8 displays) powerful application software, provides the functions of data logging system, text display, angular display, chart display, data recorder high/low limit, data query, text data recorder high/low limit, data report, chart report.. .xxx.mdb data file can be retrieved for EXCEL, ACESS.., wide intelligent applications.

Power adapter	AC 110V to DC 9V. USA plug.
	AC 220V/230V to DC 9V. Germany plug.

16. PATENT

The meter (SD card structure) already get patent or patent pending in following countries :

Germany	Nr. 20 2008 016 337.4
JAPAN	3151214
TAIWAN	M 358970
	M 359043
CHINA	ZL 2008 2 0189918.5
	ZL 2008 2 0189917.0
USA	Patent pending