SD card real time Data Recorder
200 mbar, differential manometer

PITOT TUBE ANEMOMETER

Model : PAM-9212SD

Your purchase of this PITOT TUBE ANEMOMETER with SD CARD DATA LOGGER marks a step forward for you into the field of precision measurement. Although this meter 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

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1 FEATURES

* Pitot tube Anemometer measurements for Air Velocity .
* Dual & differential input, ± 200 mbar max. range.
* Application : Industrial, laboratory, heating, ventilation, medical hospital, used for air or not corrosive and not ionized gas & liquid.
* Sensor is built inside the housing.
* Single plugs for pipe connection.
* Measurement units:
  Air vilocity : m/s, km/h, FPM, mph, knots
  Air pressure: 10 kind display units (mbar, Kg/cm^2 , mm Hg, meter H2O Atmosphere, psi, inch Hg, inch H2O, hpa , kpa) select by push button on the front panel
* Auto shut off saves battery life.
* Zero button on the front panel, easy to offset the zero value.
* Microprocessor circuit assures maximum possible accuracy, provides special functions and features,
* Super large LCD display with contrast adjustment for best viewing angle.
* 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 download the all the measured value with the time information (year/month/date/ hour/minute/second) to the Excel directly, thenuser 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.
*

2. SPECIFICATIONS

2-1 General Specifications

Circuit	Custom one-chip of microprocessor LSI circuit.	
Display	LCD size : 51 mm x 37 mm LCD with green backlight (ON/OFF).	
Display units	Air vilocity : m/s, km/h, FPM, mph, knots Air pressure: psi , inch Hg , inch H2O , h PA , kPA mbar, Kg/cm^2 , mm Hg , meter H2O , Atmosphere.	
Measurement Function	Air vilocity & Dual differential input, data hold, zero/relative, memory.	
Zero adjust	Push button on the front panel.	
Sensor	* Sensor is built inside the housing.	
	* Piezoelectric sensor.	
	* **Used for dry, non-corrosive and non-ionic air and gas only. Liquid is prohibited.**	
Datalogger Sampling Time Setting range	Auto	1 sec to 8 Hour 59 Minute 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 % no. Of total saved data typically.	
Memory Card	SD memory card. 1 GB to 16 GB.	
Advanced setting	* 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 * SD memory card Format * Air density setting	

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	Meter	0 to 50 ℃.
Operating Humidity	Less than 85% 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 7 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. 10 mA.*	
Weight	265 g / 0.59 LB.	
Dimension	Meter	190 x 68 x 45 mm (7.5 x 2.7x 1.8 inch)
Accessories Included	* Instruction manual..... 1 PC. * PLug for quick coupler..... 2 PCs. * Pito tube 018..... 1 PC. * Silicon Soft tube 01(50 cm)..... 2 PCs.	

Optional Accessories	SD memory card (4 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 ℃)

Air velocity

Measurement	Range	Resolution	Accuracy
m/s	4.1 to 100.0 m/s	0.1 m/s	±(3% + a) reading or ±(1% + a) full scale *Air density :1.200
Km/h	14.7 to 360.0 km/h	0.1 Km/h	
Mile/h (mph)	9.1 to 223.7 mph	0.1 mph	
Knot	7.9 to 194.3 knot	0.1 Knot	
Ft/min	81-19685 ft/min	1 Ft/min	
@ a = 0.1 m/s, 0.3 km/h, 0.2 mile/h, 0.2 knot, 20 ft/min			

Note:

m/s - meters per second
km/h - kilometers per hour
ft/min - feet per minute
knot - nautical miles per hour (international knot)
mile/h - miles per hour

Manometer

Unit	*Max. range*		*Resolution*	
mbar	± 200	mbar	1	mbar
psi	± 2.9	psi	0.01	psi
Kg/cm^2	± 0.2	Kg/cm^2	0.001	Kg/cm^2
mm Hg	± 150	mm Hg	1	mm Hg
inch Hg	± 5.91	inch Hg	0.02	inch Hg
meter H_2O	± 2.040	meter H_2O	0.01	meter H_2O
h PA	± 200	h PA	1	h PA
K PA	± 20	K PA	0	K PA
inch H_2O	± 80.2	inch H_2O	0.05	inch H_2O
Atmosphere	± 0.2	Atmosphere	0.001	Atmosphere

Unit	*Max. range*		*Accuracy*
mbar	± 200	mbar	± 2 % F. S.
psi	± 2.9	psi	
Kg/cm^2	± 0.2	Kg/cm^2	*Note :*
mm Hg	± 150	mm Hg	* *23 ℃ ± 5 ℃ .*
inch Hg	± 5.91	inch Hg	* *F.S. : full scale*
meter H2O	± 2.040	meter H2O	* *Included linearity,*
h PA	± 200	h PA	*hysteresis and*
K PA	± 20	K PA	*repeatability*
inch H2O	± 80.2	inch H2O	
Atmosphere	± 0.2	Atmosphere	

Remark :

Measuring unit	Display unit
psi	**PSI**
inch Hg	**In Hg**
inch H_2O	**In H2O**
h PA	**h PA**
KPA	**_ PA**
mbar	**- bAr**
Kg/cm^2	**_ g C2**
mm Hg	**- - Hg**
meter H_2O	**-** t **H2O**
Atmosphere	**AtP**

3. FRONT PANEL DESCRIPTION

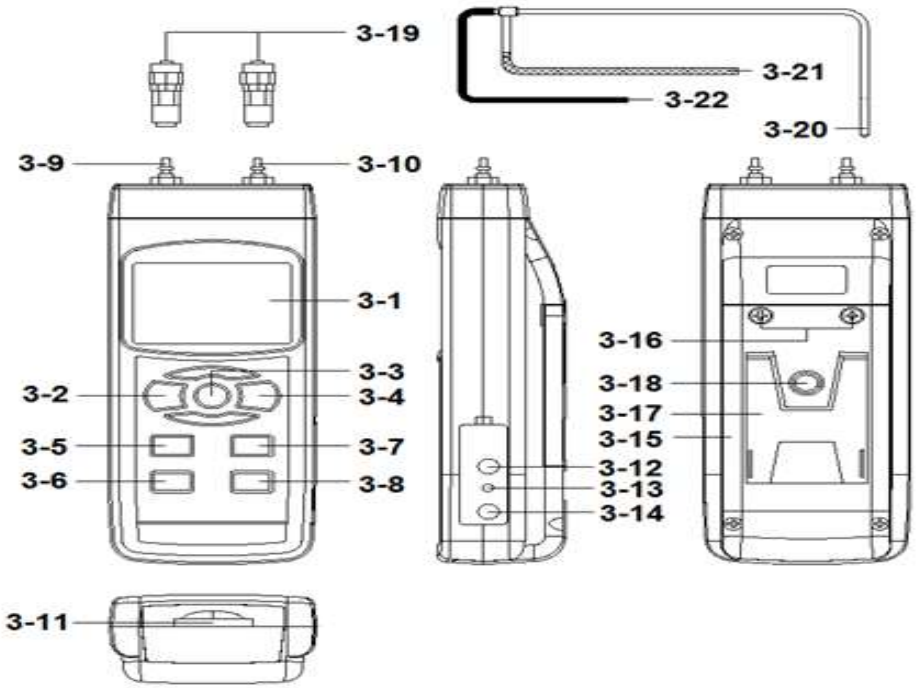


Fig. 1

3-1	Display	3-12	RS-232 Output Terminal
3-2	Power Button	3-13	Reset Button
3-3	Hold Button / Backlight Button	3-14	DC 9V Power Adapter Input Socket
3-4	REC Button	3-15	Battery Compartment/Cover
3-5	UNIT Button , ▲ Button	3-16	Battery Cover Screws
3-6	Function Button , ▼ Button	3-17	Stand
3-7	Set Button , Time Button	3-18	Tripod Fix Nut
3-8	Log Button , Enter Button	3-19	Plug/quick coupler
3-9	P1 Input Socket	3-20	Pitot Tube
3-10	P2 Input Socket	3-21	soft tube
3-11	SD card socket	3-22	soft tube

4. MEASURING PROCEDURE

A.Air vilocity

1) Power ON the meter by pressing and holding the " Power Button " (3-2, Fig. 1)for at least 1.5 seconds .
   ** Pressing the " Power Button " (3-2, Fig. 1) continuously and > 1.5 seconds again will turn off the meter.*

2) pressing and holding the " Function Button " (3-7, Fig. 1) to Select to Air vilocity Function.

3) pressing and holding the " Unit Button " (3-5, Fig. 1) to Select the desired Air vilocity units (m/s, Ft/min, Km/h, Knot, Mile/h)

4) **Zero adjusting**
   pressing and holding the the " ▲ Button " (3-5, Fig. 1) and " ▼ Button " (3-6, Fig. 1) for at least 1.5 seconds to the display reading will show zero .

5) Pitot tube, sensing soft tube (3-22, Fig. 1) Install to P1 Input Socket (3-9, Fig. 1),and sensing soft tube (3-21, Fig. 1) Install to P2 Input Socket (3-10, Fig. 1)

6) The meter is build the two input socket (P1 input socket, P2 input socket) for accepting the Pitot tube sensing Air speed input, The LCD will show the measuring Air vilocity value.

B. Manometer

1) Power ON the meter by pressing and holding the " Power Button " (3-2, Fig. 1)for at least 1.5 seconds .

   * *Pressing the " Power Button " (3-2, Fig. 1) continuously and > 1.5 seconds again will turn off the meter.*

2) pressing and holding the " Function Button " (3-7, Fig. 1) to Select to manometer Function.

3) pressing and holding the " Unit Button " (3-5, Fig. 1) to Select the desired manometer units (mbar, , Kg/cm^2 , mm Hg meter H2O, Atmosphere, psi , inch Hg , inch H2O, hPA , kPA)

4) **Zero adjusting**
   pressing and holding the the " ▲ Button " (3-5, Fig. 1) and " ▼ Button " (3-6, Fig. 1) for at least 1.5 seconds to the display reading will show zero .

5) Install the measuring pipe to " Plug/quick coupler " (3-19, Fig. 1).

6) The meter is build the two input socket (P1 input socket, P2 input socket) for accepting the differential pressure input.
   Connecting the pipe along the " Plug " (3-19, Fig. 1) to

   a. *" P1 input socket " (3-9, Fig. 1) only*
   b. *" P2 input socket " (3-10, Fig. 1) only*
   c. *Both P1 & P2 input socket*

   The LCD will show the measuring pressure value.

   Note :
   * *If the P1 pressure > P2 pressure, the display will get positive reading.*
   * *If the P1 pressure < P2 pressure, the display will get negative reading.*

REMARK:

Pressure quick connector use :

1)connect with the meter pressure quick connector, you can insert directly.

2)To disengage from the meter, the pressure quick connector has a slide device, slide it to the last position, then Pull out.

7) 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.

8) 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.

b) Press the " REC Button " (3-4, Fig. 1) again, the " REC MIN " symbol along with the minimum value will appear on the display.

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.

9) 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.

10 For quick measurement, follow the procedures shown below :

Main procedures :

POWER ON → *ZERO ADJUST* → *DETERMINE UNIT*

Optional measuring procedures :

- DATA HOLD
- MEMORY RECORD (Max., Min.)
- RS232 OUTPUT

datalogger function

Auto datalogger function or Manual datalogger function

Power management

AUTO POWER OFF or MANUAL POWER OFF

(Not activated during Memory Record Selection)

5. DATALOGGER

5-1 Preparation before execute datalogger function

a. Insert the SD card

Prepare a " SD memory card "(1 GB to 16 GB, optional) insert the SD card into the "SD card Socket" (3-11, Fig. 1).The front panel of the SD card should face against the down case.

*** It recommend use memory card capacity is ≦ 4 GB.**

b. SD card Format

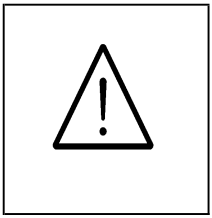
If SD card just the first time use into the meter, it recommend to make the " SD card Format " at first,please refer chapter 7-6, page21.

*** If the SD card exist the trouble during format by the meter, use the computer to reformat again can fix the problem.**

c. Time setting

If the meter is used at first time, it should to adjust the clock time exactly, please refer chapter 7-1, page 18.

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 7-5, page 20.

5-2 Auto Datalogger (Set sampling time ≧ 1 second)

a. Start the datalogger

Press the " LOG Button (3-8, Fig. 1) > 1.5 seconds continuously, the LCD will show the text of " DATALOGGER " indecator and flashing per sampling time, 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 7-2 , page 19 .***
- ***How to set the beeper sound is enable, refer to Chapter 7-4, page 20 .***

b. Pause the datalogger

During execute the Datalogger function, if press the " LOG 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 " DATALOGGER " symbol will stop flashing.

Remark :
If press the " LOG Button " (3-8, Fig. 1) once again will execute the Datalogger again, the " DATALOGGER " symbol will flashing.

c. Finish the Datalogger

During execute the Datalogger function, press the " LOG Button (3-8, Fig. 1) > 1.5 seconds continuously again will finish the Datalogger function, the " DATALOGGER " text will be disappeared and finish the Datalogger function.

5-3 Manual Datalogger (Set sampling time = 0 second)

a. Set sampling time is to 0 second

Press the " LOG Button (3-8, Fig. 1)>1.5 second, the LCD will show the indecator " DATALOGGER " and " Position no. " symbol then press the " LOG Button " (3-8, Fig. 1) once , the " DATALOGGER " symbol 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 .

Remark :
During execute the Manual Datalogger, it can use the " ◢ Button " (3-5, Fig. 1) or " ◤ Button " (3-6, Fig. 1) to set the measuring position (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

During execute the Datalogger function, press the " LOG Button (3-8, Fig. 1) > 1.5 seconds continuously again will finish the Datalooger function, the Position no. " PXX " will be disappeared and finish the Datalogger function.
the " DATALOGGER " indication will be disappeared and finish the Datalogger.

5-4 To check the time and sampling time information

During the normal measurement (not execute the Datalogger), If press " Time " (3-7, Fig. 1) once , the LCD display will present the time information of Year/Month/Date , Hour/Minute/Second and the Sampling time information .

5-5 SD Card Data structure

1) When the first time, the SD card is used into the meter, the SD card will generate a route :
   PMA01

2) If the first time to execute the Datalogger, under the route PMA01\, will generate a new file name PMA01001.XLS.
   After exist the Datalogger, then execute again, the data will save to the PMA01001.XLS until Data column reach to 30,000 columns, then will generate a new file, for example PMA01002.XLS

3) Under the folder PMA01\, if the total files more than 99 files, will generate anew route, such as PMA02\ .....
4) The file's route structure :

PMA01\
  PMA01001.XLS
  PMA01002.XLS
  .....
  PMA01099.XLS
PMA02\
  PMA02001.XLS
  PMA02002.XLS
  .....
  PMA02099.XLS
PMAXX\
  .....
  .....

Remark :
XX : Max. value is 10.

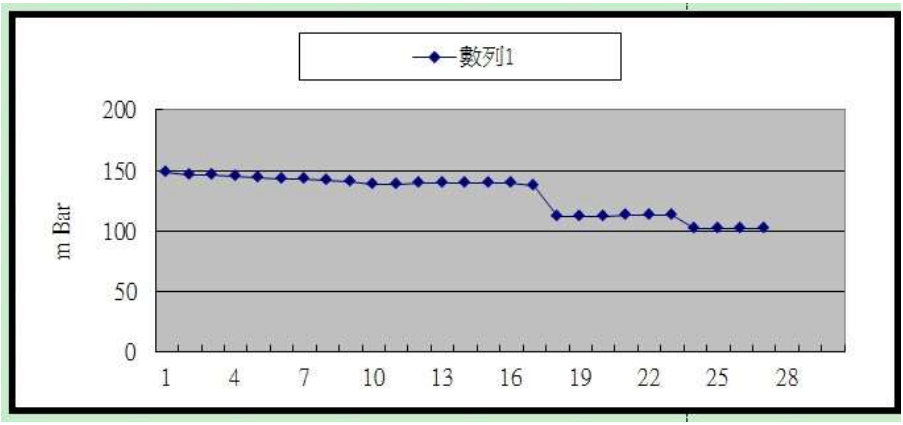
6. Saving data from the SD card to the computer (EXCEL software)

1) After execute the Data Logger function, take away the SD card out from the " SD card socket " (3-11, 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 ". Download the saving data file (for example the file name : PMA01001.XLS, PMA01002.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	F	G
1	Position	Date	Time	Ch1_Valu	Ch1_Unit		
2	1	2003/8/2	09:33:57	148.9	m Bar		
3	2	2003/8/2	09:33:58	146.1	m Bar		
4	3	2003/8/2	09:34:00	146.1	m Bar		
5	4	2003/8/2	09:34:02	145.1	m Bar		
6	5	2003/8/2	09:34:04	144.2	m Bar		
7	6	2003/8/2	09:34:06	143.2	m Bar		
8	7	2003/8/2	09:34:08	142.3	m Bar		
9	8	2003/8/2	09:34:10	141.4	m Bar		
10	9	2003/8/2	09:34:12	140.1	m Bar		
11	10	2003/8/2	09:34:14	138.7	m Bar		
12	11	2003/8/2	09:34:16	138.9	m Bar		
13	12	2003/8/2	09:34:18	139	m Bar		
14	13	2003/8/2	09:34:20	139	m Bar		
15	14	2003/8/2	09:34:22	139.1	m Bar		
16	15	2003/8/2	09:34:24	139.1	m Bar		
17	16	2003/8/2	09:34:26	139.1	m Bar		
18	17	2003/8/2	09:34:28	137.8	m Bar		
19	18	2003/8/2	09:34:30	111.6	m Bar		
20	19	2003/8/2	09:34:32	112.3	m Bar		
21	20	2003/8/2	09:34:34	112.3	m Bar		
22	21	2003/8/2	09:34:36	112.4	m Bar		
23	22	2003/8/2	09:34:38	112.4	m Bar		
24	23	2003/8/2	09:34:40	112.5	m Bar		
25	24	2003/8/2	09:34:42	101.8	m Bar		
26	25	2003/8/2	09:34:44	101.8	m Bar		
27	26	2003/8/2	09:34:46	101.8	m Bar		
28	27	2003/8/2	09:34:48	101.8	m Bar		

EXCEL graphic screen (for example, graphic)



7. ADVANCED SETTING

Under do not execute the Datalogger function, press the " SET Button " (3-7, Fig. 1) continuously at least two seconds will enter the " Advanced Setting " mode. then press the " SET Button " (3-7, Fig. 1) once a while in sequence to select the six main function, the display will show :

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
SD F..... SD memory card Format
dnSt..... Air density

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

7-1 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 " (3-8, 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 " (3-7, Fig. 1) once will save the time value, then the screen will jump to Sampling time " setting screen .

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).

7-2 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 " (3-8, 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 time value (Hour, Minute, Second) press the " Set Button " (3-7, Fig. 1) once will save the sampling value with default then the screen will jump to "Auto power OFF" setting screen (Chapter 7-3).

7-3 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 text 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 " (3-8, Fig. 1) will save the setting function with default.

7-4 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 text to " YES " or " no ".

YES - Meter's beep sound will be ON with default.
no - Meter's beep sound will be OFF with default.

2) After select the upper text to " YES " or " no ", press the " Enter Button " (3-8, Fig. 1) will save the setting function with default.

7-5 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 " USA " or " EURO".
USA - Use " . " as the Decimal point with default.
EURO - Use " , " as the Decimal point with default.

2) After select the upper text to " USA " or " EURO ", press the " Enter Button " (3-8, Fig. 1) will save the setting function with default.

7-6 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 adjust the value to select the upper text 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 " (3-8, Fig. 1) once again, the Display will show text " Ent Sd F " 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.

7-7 Air density

When the lower display show " dnSt "

At this time first digit of will flash,
Use the "▲ Button" (3-5, Fig. 1) or "▼ Button"
(3-6, Fig. 1) to adjust the value (Air density)
After the desired value is set, press the
"Enter Button" (3-8, Fig. 1) once will going to
Next digit adjustment (when 4 digit setting to complete)
press the "Enter Button" (3-8, fig1) once to save setting value,
then short press the "hold" button to exit setting mode.

8. 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 use the DC ADAPTER power supply .

9. 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 " (3-16, 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.

10. 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 :

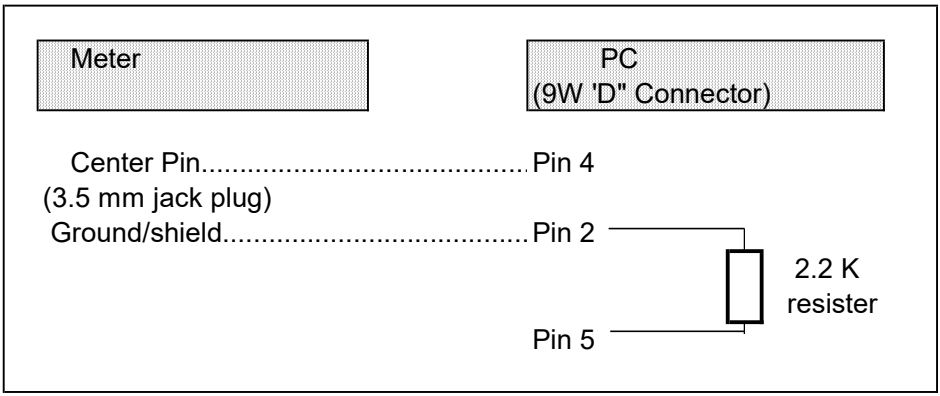
During the power on, use a pin to press the " Reset Button " (3-13, Fig. 1) once a while will reset the circuit system.

11. RS232 PC SERIAL INTERFACE

The instrument has RS232 PC serial interface via a 3.5 mm terminal (3-12, 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		
	mbar = 86	psi = 23	m/s = 08
	mm Hg = 78	inch Hg = 80	Km/h = 10
	inch H2O = 25	Kg/cm2= 77	ft/min = 11
	Atmosphere = 26	meter H2O= 79	mile/h = 12
	K PA = 88	h PA = 91	Knot = 09
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

12. OPTIONAL ACCESSORIES

Mmory card	SD memory card (4GB)

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 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.

13. 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