

DPM-3232

Digital DC Power Meter with Data logging capability

User Manual

Introduction

As a digital DC power meter, it measures the real time DC Voltage (5-60V), DC Current (0-60A), Watt, and it also displays the Amp-hour, Watt-hour, Max. Watt, running time when Power Meter has been connected, the maximum & minimum values of voltage and current during the measuring period. There is one pair of leads for source input and another pair for load output, the power meter can either be powered by the input or the output which ever has a minimum 5V DC. The Power Meter can also be powered by an external DC voltage of 5 to 60V DC if DC voltage range of 0-60V is desired.

Once the Power Meter is powered up it starts to data logged Amp hour, Watt-hour, Max. & Min. Voltage & Current values at selectable interval from 30 seconds to 3 minutes.

Up to 1,500 sets of data are stored in the Power Meter Memory (EEPROM) even when the Power Meter is off power. The data can be retrieved by a PC using our optional Data adapter (USB type) and software program.

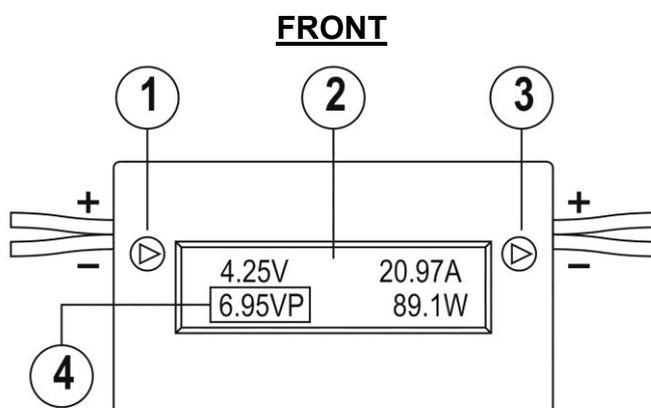
The last set of data such as Ah, Wh, Max. current, Max. Watt, (and sometimes Max. and Min. Voltage) can be displayed when only either the source or the load is connected to a dc source of 5 to 60V.

The power supply can either be mounted to the Snap-On bracket or any ferrous metal surface magnetically.

Precaution

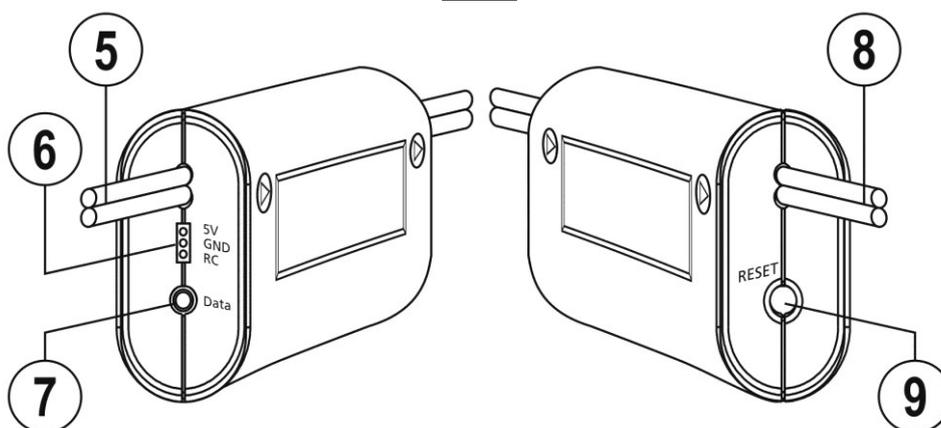
- a. Do not exceed 60A and 60V DC in application of DC Meter.
- b. Do not apply 60A DC more than 5 second and non-repeatable within 60 second
- c. This meter is designed and made for indoor use only.
- d. Do not disassemble or attempt to repair the power meter.
- e. If Startup screen does not appear, immediate remove the power sources.
- f. It is a good practice to have either input or output terminal connected on the supplied terminal block to prevent short circuited.
- g. Double check on the correct polarity. If either input or output connection is in wrong polarity, there is no display on LCD.
- h. Damage to the Power Meter may result if wrong polarity power is applied.
- i. Never short leads connected to either set of leads.
- j. Do not exert pressure on the display to avoid damage to LCD display.

Controls and Indicators



1. Arrow Mark to show Input (Source) leads
2. LCD Display : Constant displays: V, A, and W.
Scrolling displays : Amp Hour, Watt Hour and Max. Watt Hour, Max. & Min. Current, Voltage and total time Power Meter connected.
3. Arrow Mark to show Output (Load) leads
4. Scrolling display : Any one of the scrolling displays can be stopped at your desired display (and released) by one quick press of the "Reset" button (9)

SIDE

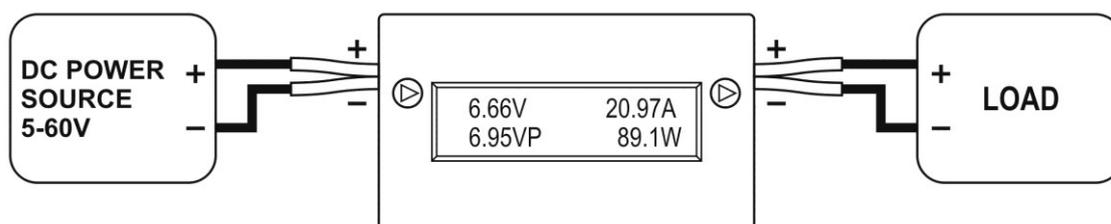


5. Input Source leads
6. External Power Jack: for external power source (5-60V DC) to extend measured voltage to 0-60V DC from 5-60V.
Pin imprint: 5V—GND—RC
5V= Positive 5V to 60V positive of external DC source
GND= Negative of external DC source
RC= This is for deleting stored data, see Fig. ONE.
7. Phone Jack: for connection to optional Data adapter.
8. Output Load leads.
9. Reset Switch: To clear previous saved data

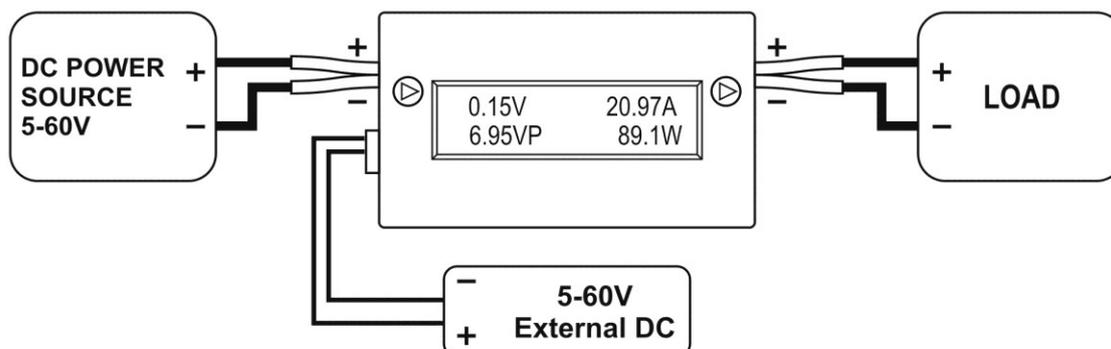
DPM-3232 Connections

A. The following are some examples for four wire meter connections.

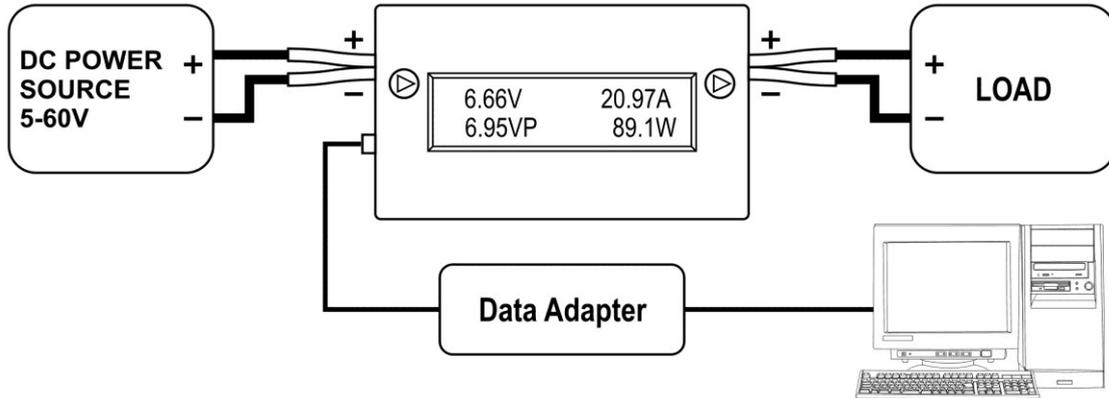
A1. Standard connection



A2. with external DC connection

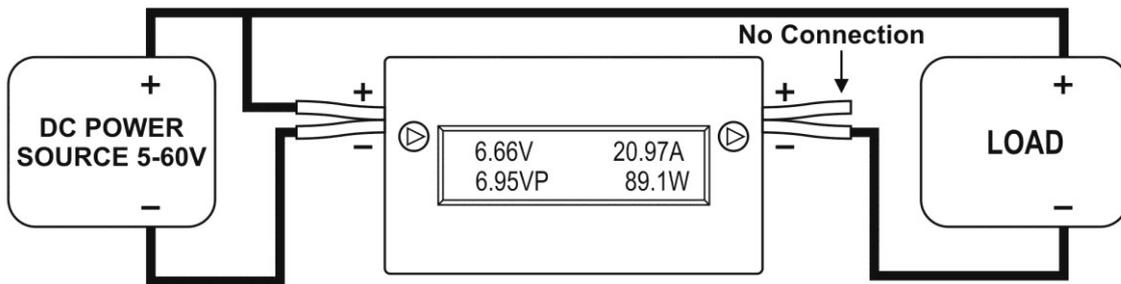


A3. with optional Data adapter

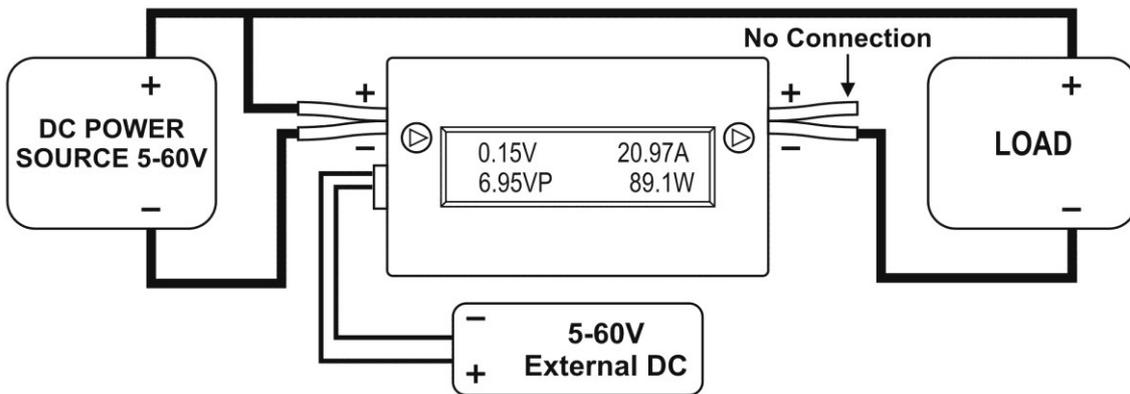


B. The following are some examples for three wire meter connections.

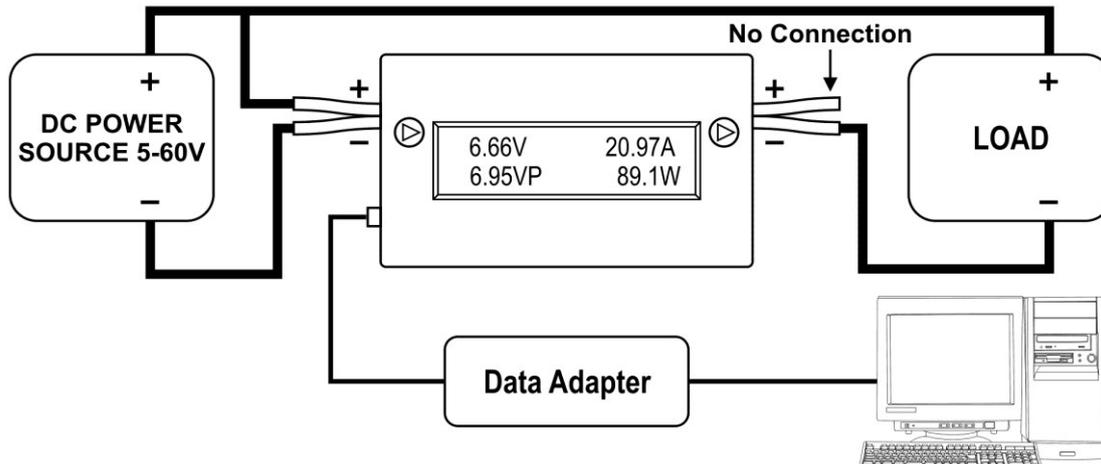
B1. Standard connection



B2. with external DC connection



B3. with optional Data adapter



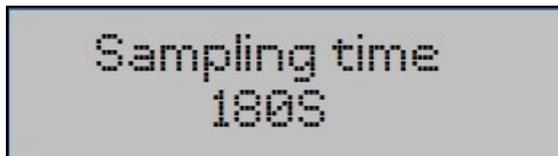
Operations and Displays

Installation of the DC Power Meter.

1. First connect the leads to the side that provides the d.c. power to the meter and check for displays in the LCD.
If no display in LCD then check for reverse polarity.
2. Last set of data will appear on the LCD, you can clear the old data by pressing the Reset Button twice, allow second press for about 5 seconds.
3. Connect the remaining leads to complete the installation of DC Power Meter.

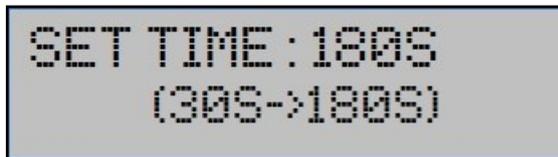
Set data logging time interval (with firmware version 1.8 or above)

1. DPM will display "Sampling time" setting when it power up. To enter sampling time setup mode, **PRESS** and **HOLD** "RESET" button within 5 second while "Sampling time" showing.



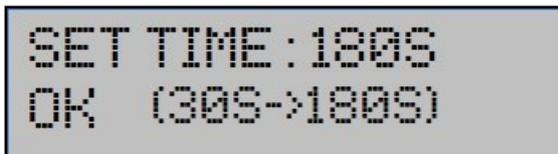
Sampling time
180S

2. The sampling time can be set as integer second between 30s and 180s. It start setup from most left-hand side digit. The digit under setting is keep flashing.
3. Short press of "RESET" button to change value in the digit



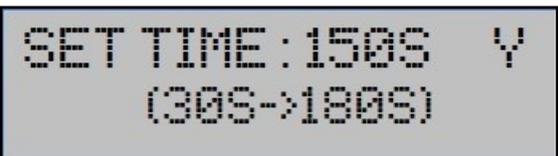
SET TIME : 180S
(30S->180S)

4. **PRESS** and **HOLD** the "RESET" button to confirm number in digit. It show OK then go to set next digit.



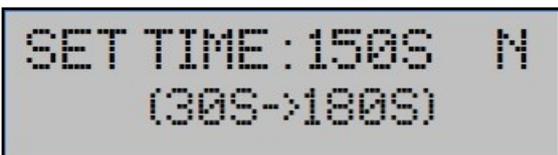
SET TIME : 180S
OK (30S->180S)

5. Repeat step 3 and step 4 to all digit.
6. After all three digits are being set, it will display a "Y" for you to confirm.



SET TIME : 150S Y
(30S->180S)

7. In case it is need to setup the number again, short press "RESET" button to change "Y" to "N". Then **PRESS** and **HOLD** "RESET" button to restart setup from most left-hand side digit again.



SET TIME : 150S N
(30S->180S)

8. In case the setting is correct, then **PRESS** and **HOLD** "RESET" button to confirm the value. It will show OK to confirm sampling time setting. Then the DPM go to operation mode.

A rectangular LCD display with a black border. The text is in a monospaced font. The top line reads "SET TIME: 150S Y" and the bottom line reads "OK (30S->180S)".

DISPLAYS

- A. On the first power up the display shows the firmware version and factory preset data port mode.

A rectangular LCD display with a black border. The text is in a monospaced font. The top line reads "Version: 1.0" and the bottom line reads "USB".

- B. Measured Data Displays

A rectangular LCD display with a black border. The text is in a monospaced font. The top line reads "4.25 V" and "20.97 A". The bottom line reads "6.95 Vp" and "89.1 W". A white rectangular highlight is around the "6.95 Vp" value.

- C. The Volts, Amp and Watt are continuously shown, all other data are shown in a cyclic order at about 3 second interval. The cyclic display can be fixed and released by one quick press of the "Reset" button (9).

1. **Current (Amps A, Peak Amps Ap, MIN. Amps):**

The Amps value is the average current through the Meter's black wire over the last screen update interval.

Ap is the Peak (maximum) is current to the LOAD side, since the startup screen to the present moment. Similarly for Am which is the minimum current.

2. **Voltage (Volts V, Maximum Voltage Vp Minimum Voltage Vm):**

The Volts value is the average voltage over the last screen update interval. Vp is the Peak (maximum) voltage from the source side since startup screen to the present moment. Similarly for Vm(minimum) which is the voltage dip on the source side since startup.

3. **Charge (Amp-hours Ah):**

The value displayed is the total charge in Amp-hours delivered to the LOAD since startup synchronized with the internal clock of the MCU.

4. **Energy (Watt-hours Wh):**

The value displayed is the total energy delivered to the LOAD in Watt-hours since start up.

5. **Power (Watts W, Peak Watts Wp):**

The value displayed is the average power delivered in Meter over the last screen update interval. The displayed Peak Watts value (Wp) is the maximum power drawn on the LOAD side, since the startup.

Display duration time after power ON



Reset DPM

There are two ways to clear all the previous stored data.

1. Press and hold the Reset button until the LCD display show "Press again 5 seconds to reset", then release the Reset button quickly, press again and hold 5 seconds to delete the data.
2. Use the external power source connections see Fig.ONE connect the remote I/O black wire (marked RC at the DPM to source's negative terminal for 3 seconds and then release. It will clear previous data record.)

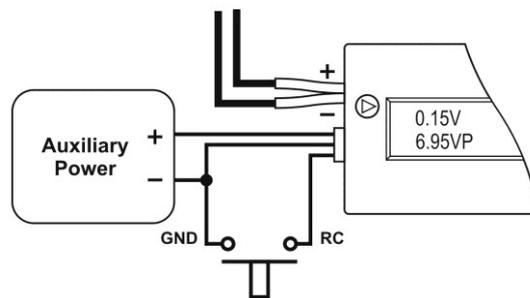


Fig. ONE

Specifications

Measured Parameters	
Current Range Amp.	0-20Amp continuous, 30Amp max. for 30min., 60Amp max. for 5second and non-repeatability within 60second
Voltage Range Volt.	5-60V or 0-60V with external DC source
Resolution of V & I	0.01V, 0.01A
Scrolling Display of Registered Parameters	
Ampere Hour (AH)	Max. recorded AH: 99,999AH Resolution of AH: 0.01AH for total recorded AH < 1,000AH 0.1AH for 10,000 > total recorded AH > 1,000AH 1AH for total recorded AH > 10,000AH
Power Watt (Wp) registered	Max. recorded W: 3600W Resolution of W: 0.1W
Energy: Kilo Watt Hour (KWH)	Max. recorded KWH: 9999.9KWH Resolution of KWH: 0.1KWH
Registered Peak Voltage (Vp), Min. Voltage (Vm), Peak Current (Ap), Min. Current (Am)	The new high and low values of voltage and current will replace the old ones during the metering period and registered at the finish of the metering period
Accumulative Max. Operation Period logged	75 hours
Scrolling speed on LCD	3 seconds for one parameter
Data logging interval	Selectable from 30s to 180s
Operation Voltage & Current	5-60V and 12mA
External DC Source Range	5-60V, 9mA-12mA
Operation Condition	0-40°C, non condensing humidity
Storage Condition	Minus -10°C - 60°C
Construction	
LCD Display	VA=54 x 14.4mm, 16 character x 2 row STN 5*8 dots
Housing Material	Polycarbonate
Dimension & Weight	75(L) x 45(W) x 23(D) mm 100g approx.
Supplied Accessories	User manual, Snap-on mounter, 2 screw-on type connector blocks and external power wire with plug
Optional Accessories	Data adapter module & software for data logging; External DC power box w/socket (battery not included)
Approvals	CE EN 61326 , FCC

REV.3 2014/03
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