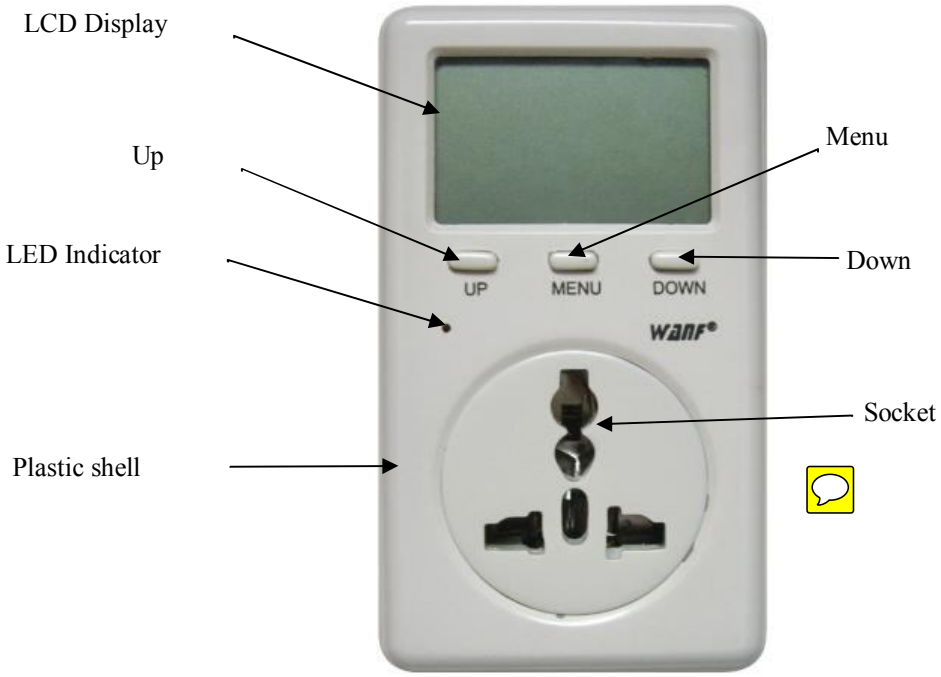
Mini Ammeter User Manual WF-D02A

Foreword

Thanks for choosing this product.



This product not only provides power connection for the electric appliances; but also records operations of the appliances. Operation conditions on the display includes: voltage of power supply, real-time running power, electricity consumption, electricity cost, running time… At the same time, it provides analysis on real-time running power and gives out alarm automatically once abnormal operation occurs. This helps to use and maintain the appliances scientifically as well as save power and reduce waste. So, it is also called "power-saving guardian".

Usage

Extremely easy to use:

1. Connect the ammeter to an outer power supply, it starts working; the red indicator and the LCD backlight are lightened immediately.

2. Insert the detection-waiting appliance into the ammeter, the ammeter starts real-time detection for operation condition of the appliance.

3. Connect the ammeter to the power supply only, but disconnect it with any other appliance, the following operations are still working:

Voltage of power supply can be measured;

Records of the former accumulated electricity consumption and cost can be read;

Relative functions and data can be set, including: electricity price, ratio of operation condition, standby power.

4. Adaptable voltage: 220V/50Hz or 110V/60Hz (for different versions)

Peak load: 15 A

5. Limit to indoor use. Environmental Conditions: Temperature: -10 ~ 60 °C; Humidity: 10~95% RH

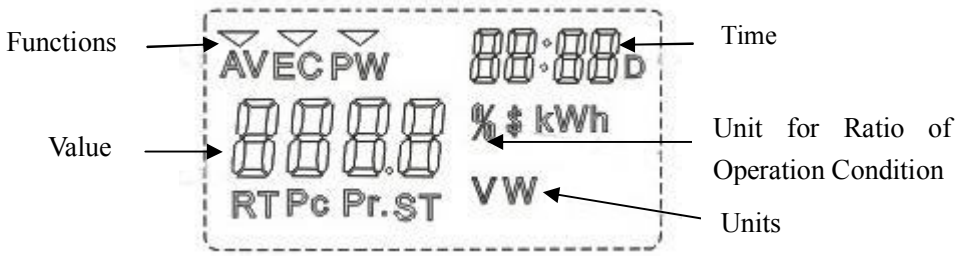
6. New functions:

1) Two ways for calculating operation time: time in single operation period and accumulated time in all operation periods; can be manually cleared to 0.

2) Two ways for calculating power consumption and power cost: electricity consumption and electricity cost in single operation period and accumulated electricity consumption and electricity cost in all operation periods; can be manually cleared to 0.

3) Ratio of operation condition and standby power can be pre-set.

Display



Ⅰ **Display scope:**

1. AC Voltage: 160~280V/50Hz or 90~150V/60Hz (for different versions)
2. Power: 1~3000W (can display running power less than 1W.)
3. Electricity consumption: 0.0001 ~ 999.9 KWh
4. Electricity cost: 0~9,999 $
5. Ratio of operation condition: 0~100%

6. Running Time：0 ~ 60 minutes to 24 hours to 999 days
7. Measurement Accuracy: ±1%
8. Refresh rate: more than one time per second

Ⅱ Display Status：

1. Default display shows the voltage；
2. Ratio of operation condition: **Ratio between accumulated running time per hour (running power is over pre-set standby power) and 1 hour.** The indicator light will flicker when the real ratio reaches the set ratio.
3. Re-start this ammeter after power down, running time on the display restarts with 0.
4. The background light of LCD can Auto. Off after 15 seconds.

Ⅲ Display units:

1. AC Voltage: ×××× V ;
2. Accumulated electricity consumption: ×××.× kWh
3. Accumulated electricity cost: ××.×× $
3. Running Power: ×××.× W ;
4. Ratio of operation condition:×××%;
5. Time: ××:×× (hours: minutes)
   ××× D (days)

IV Buttons:

UP: Check data, add value, clear accumulated records into 0.

Press on "UP" button, the cursor on the top of the display will move to the left, and data on the display changes accordingly to show different measured value; under set mode, press "UP" button to add preset value; press and hold "UP" button for 10~15 seconds to clear accumulated record into 0, including all accumulated records in all operation periods.

DOWN: Check data, reduce value, clear records in simple operation period into 0.

Press on "DOWN" button, the cursor on the top of the display will move to the right, and data on the display changes accordingly to show different measured value; under set mode, press "DOWN" button to reduce preset value; press and hold "DOWN" button for 10~15 seconds to clear racords in single operation period into 0, including all calculated records in single operation period.

MENU: Short press to check accumulated records in all operation periods, including accumulated operation time, electricity consumption and electricity cost; press and hold "MENU" button for 5~10 seconds, the ammeter steps into set mode, and "SET" cursor flickers on the display. Three values can be preset: unit price for electricity, standby power and alarm point of the ratio of operation condition. Press "UP" or "DOWN" button to adjust the values, and press "MENU" again to confirm the preset value. If there's no operation on the buttons for some time, the ammeter will automatically exit set mode and turn to normal measurement mode.

Set up

Ⅰ. **Set up unit price for electricity cost:**

Press "**MENU**" button for 5~10 seconds, when the screen shows "Pr." and "ST" on the bottom, "ST" flickers, and unit shows "$", figures show the unit price for electricity(as shown below); figures (unit price) can be changed by pressing "**UP**" or "**DOWN**" button. When setting is completed, press "**MENU**" button again, thus price setting is completed.

Ⅱ**. Set up ratio of operation condition**

Press "**MENU**" button for 5~10 seconds, when the screen shows "RT" and "ST" on the bottom, "ST" flickers, and unit shows "%", figures show the ratio of operation condition(as shown below); figures can be changed by pressing "**UP**" or "**DOWN**" button. When setting is completed, press "**MENU**" button again, thus the ratio of operation condition is set.

III. Set up standby power

Press "**MENU**" button for 5~10 seconds, when the screen shows "PW" on the top and "ST" on the bottom, "ST" flickers, and unit shows "W", figures show the standby power(as shown below); figures can be changed by pressing "**UP**" or "**DOWN**" button. When setting is completed, press "**MENU**" button again, thus the ratio of operation condition is set. Standby power is usually stated on appliance or its user manual; users can set up standby power on the ammeter accordingly (a bit higher than the stated one on appliance is better).This product will automatically monitor the operation condition of appliance according to the set standby power and the ratio of operation condition, as well as give out alarm accordingly.

IV. Clearance of records

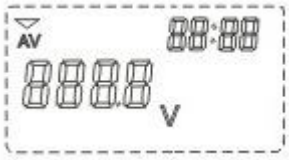
Press and hold "**UP**" button for 10~15 seconds to clear accumulated record into 0, including all accumulated records in all operation periods;

Press and hold "**DOWN**" button for 10~15 seconds to clear records in single operation period into 0, including all calculated records in single operation period.

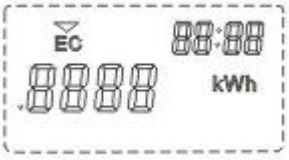
Operation Manual

---

1. **Voltage measurement for power supply**: insert the ammeter into electrical outlets, repeatedly press "UP" or "DOWN" button to make the screen displays "AV" and the unit shows "V", figures on the screen show the real-time voltage of the power supply (as shown below). This product can be used to measure and display 160~280V AC voltage (or 90~150V AC for US version).



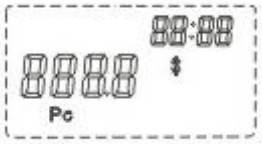
2. **Check electricity consumption:** operate as above to make the screen display "EC" and the unit shows "kWh", figures on the screen show the electricity consumption (as shown below). The ammeter displays amount in four decimals; when accumulated electricity consumption is over 1kWh, it displays in pure decimal and integer alternately. It can real-time measure and display 0.0001 ~ 999.9 kWh of electricity consumption; if connect with electrical appliance of 1,000W, the last figure will increase by one in about three seconds.
   Moreover, with data storage function under power-down mode, all records won't be lost under long-time power down. Accumulated electricity consumption can be cleared to zero by pressing "DOWN" button for 5~10 seconds, but the accumulated electricity cost and running time will be cleared to zero at the same time.



3. Measure real-time running power: operate as above to make the screen display "PW" and the unit shows "W", figures on the screen show the real-time running power of the appliance(as shown below).

4. Check electricity cost: operate as above to make the screen display "PC" on the bottom and the unit shows "$", figures on the screen show the electricity cost (as shown below). This ammeter can real time measure the electricity cost for electrical appliance; the smallest sub-display unit is "cent". If electricity is priced at $0.6/kWh,

using with electrical appliance of 1,000 watts for about one minute, the last figure will increase by one (the electricity cost is 1 cent). Accumulated electricity cost can be cleared to zero by pressing "DOWN" button for 5~10 seconds, but the accumulated electricity consumption and running time will be cleared to zero at the same time.



5. Monitor operation conditions of electrical appliance:

Operate as above to make the screen display "RT" and the unit shows "%", figures on the screen show the real-time ratio of operation condition.(as shown below)

Principle: Red indicator light flickers if the real-time running power is over the set standby power for a period of time (=1 hour x the ratio of operation condition, accumulated time in 1 hour). For example:

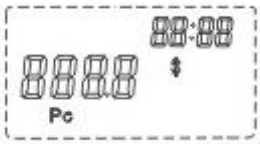
1) set ratio to 100% and standby power to 70W:
   When the real-time running power is over 70W during the past 1 hour, the ammeter will give out alarm (the indicator flickers);
2) Set ratio to 50% and standby power to 70W:
   When the real-time running power is over 70W for 30mins (50% x 1 hour) during the past 1 hour, the ammeter will give out alarm (the indicator flickers).

This function is particularly applicable to the refrigeration, heating and other equipment to monitor their operation conditions.

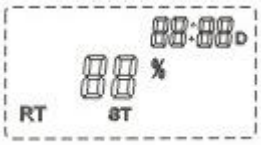
6. Check running time of electrical appliance: running time shows on the top right corner. It is the running time record of both the appliance and the ammeter. It stops recording while power down, and restart to record from zero when connect to the power again. Running time can be cleared to zero by pressing "DOWN" button for 5~10 seconds, but the accumulated electricity consumption and cost will be cleared to zero at the same time.

Two formats for display:

① hh: mm (hours: minutes),":" flickers once a second, figures on "mm" increase by one every 60 seconds (as shown below).



② ××× D (day): unit shows "D" beside the figures(as shown below).



When the running time is less than 24 hours, figures will show in format ① ; when running time surpasses 24 hours, figures will show in both format ① and ② alternately.

Application Example

1、Measure if the power supply has electricity and if the socket is in good condition:

Insert the ammeter into the socket of power supply, if the power supply has electricity and the socket is in good condition, the LED indicator will flicker and LCD backlight will be lightened. It can replace the neon-electroscope, especially when you find there is electricity in the socket by the neon-electroscope, but it is abnormal when connecting with the electrical equipments. At this very moment, it is easy and effective to use this ammeter to tell whether the power supply or socket is in good condition.

2、Observe the real-time voltage fluctuations of power supply:

Choose the Voltage Measurement function, you can real-time observe and measure the voltage fluctuation of power supply. It can be functioned to replace voltmeter.

3.、Measure whether the energy-saving lamp saves energy or not, and how much energy it save in the end:

Choose the Power Measurement function, you can observe the luminance of the energy-saving lamp, and measure the lamp's real power consumption. Then, comparing to other lamps with the same power, you can clearly know the energy-economizing effect of the energy-saving lamp.

4、Measure the power consumption on electrical equipments:

This product has functions of Power Measurement, kilowatt-hour measurement, etc; you can choose any of both to measure power consumption on electrical equipments. Specially, it has 4 decimals to display kilowatt-hour, you can clearly and intuitively see power consumption on electrical equipments at per second, per minute, per hour. Further more, you can also easily measure detailed power consumption of these electrical equipments in a period of time, through resetting time and power measurement to zero.

5、Clearly see the power consumption of electrical appliances:

You are able to know exactly how much do your appliances (like rice cooker, induction cooker, electric heater) cost in a day or a month, when using them to do the cooking or boiling water. After that, you can see which one is the cheapest to use, comparing with gas.

6、Clearly see how much you spend on your daily-used household appliances, like Microwave Ovens and Washing machines:

Connect the ammeter with your appliances; reset the accumulated power consumption to zero, and then turn on your appliances. When it finishes working, you can exactly read how much the consumption is, and then switch to see Electric power charge, you can see how much you need to pay for cooking or washing.

7、Does TV still consume electricity in Standby Mode?

Connect the TV with the ammeter, choose Power Measurement function, you can clearly read its real power consumption when TV is in Standby Mode. This product can measure electrical equipments with power as low as 1 watt. (If the power of electrical equipment is 1 Watt, it has to keep on working 1 year to reach 1 KWH.)

8、How to set up air-conditioner in a good operation condition, to meet the requirements of comfort and energy-saving?

When the ambient temperature, humidity and other things are changing, the air-conditioner's temperature or mode needs to be adjusted accordingly, to ensure the comfortable and energy-efficient environment. You can choose the Power Measurement function, or Kilowatt-Hour Measurement function or Operation Condition function, adjust the air-conditioner's temperature to select different operation modes (such as cooling, dehumidification**,** ventilator and so on). This can help find out real power consumption of air-conditioner in different operation modes. Finally, it helps you find the appropriate operation modes under different weather conditions, which also meet your needs of comfort and energy-saving.

9. Detect if the air conditioner or the refrigerator is under normal operation, if it is necessary to add refrigerant:

Without special tools, it is very difficult for the laypeople to promptly find whether the air conditioner and the refrigerator are under normal operation. This ammeter can help you make it. Under normal operation, the operation power of air conditioner or refrigerator should be close to the power rating shown on the label. Based on this, you can use the Power Measurement function to detect the operation power, and then you can tell if your air conditioner or refrigerator is under normal operation or not, as well as if refrigerant is needed or not. If operation power is over greater (more than 20% greater) or over lower (more than 20% lower), operation of your air conditioner or refrigerator is abnormal. Over greater operation power indicates that the compressor or auxiliary fan relay is over loaded. Blockage may exist in the ventilation system or pipeline, and it needs cleaning; besides, there may be something wrong with the compressor or auxiliary fan

relay, needs repairing. Small problems often caused by short of refrigerant, this can be judged by the ratio of operation condition together with the cooling effect. Long-time operation with faults will largely increase power consumption and shorten the useful time of your air conditioner and refrigerator as well.

Moreover, you can use the ratio of operation condition and the standby power to detect and judge if your air conditioner and refrigerator is under normal operation, like described in the operation manual (point 5 on **page 8**).

As is known to everyone, according to rooms in different size and different environment conditions, you need to choose compatible air conditioners in different power. If you choose one with larger power than you need, it will increase power consumption and cause waste of power; if you choose one with lower power than you need, it is difficult to achieve comfortable temperature even the air conditioner works day to night. With compatible power, if environmental temperature is not too high, operation condition of the air conditioner is not abnormal, and the operating temperature is set up scientifically (that is set up by 5 to 7 degrees lower than environmental temperature.), the ratio of operation condition will not be larger than 50%. Similarly, if environmental temperature is not too high, refrigerating temperature is not set too low (that is to say it is suitable for refreshment of the vegetables and fruits.), and the refrigerator is under normal operation, the ratio of operation condition will not be larger than 30%.

Set up the ratio of operation condition and the standby power accordingly, if the ammeter gives out alarm, you should firstly check the following situations: if doors and windows are closed, if environmental temperature is much higher than before, or if the air-conditioner's temperature is set too low. If not, there may be some faults existed or the air-condition needs refrigerant. The same as refrigerator, if there are no great changes on working environment, but the ammeter gives out alarm, there may be some faults or short of refrigerant. At this very moment, please check the real power and comparing it with the power rating, then you can clearly know if refrigerant is needed. Quick treatment is needed while the alarm is given out; Or else, the cooling effect of air-conditioner or refrigerator will become worse and power consumption will also increase.

10.Other applications:

1) How much should you pay for your air conditioner within one hour and within one night? How much should you pay for your refrigerator for one day?
2) Which takes more power consumption? The host of computer or the monitor? How much is the power consumption while all the computer equipment are under working?
3) How much does it cost for charging the mobile phone battery once?
4) How much is the power consumption for charging the electric motor car once? How much does it cost to drive one kilometer?
5) While living in shared accommodation, how to tell the power consumption of respective appliance?
6) This ammeter can be used as a timer.
7) This ammeter can be used as a socket adapter for kinds of electric plugs (two pins, three pins, square pins, round pins, flat pins).

8) ...

Just imagine, you can find many more applications of this ammeter.

Note

·This product is protected by the Chinese Patent **(Patent No. ZL2006200165630).** Introductions and explanations of the product's characteristics and functions as well as other information are all the latest effective information; and all information are printed accurately. The Company retains the right of correcting the direction and the right of changing any information or explanation, and the power of prior notice does not bear any responsibility.

·The company owns all software copyright of this product possibly including the software stored in the semiconductor memory or other chips. Therefore, within the limits prescribed by law, any individual is not allowed to amend, anti-design, market or reproduce the software owned by the company in any way.

·This product will not result in harmful interference, and is able to bear interference, including the interference which may lead to erroneous operation.

·This product should not be used for a long time with appliance over 2000W. If need to measure appliance over 2000 W, exact working time can be judged by touching the product's shell; if it is overheating, please cut down the power supply connection of the appliance and this ammeter.

·Measurement data is only for reference. If problem occurs, please go to the designated repair and maintenance service shop for professional repair, or contact with the supplier; voluntary dismantlement is not allowed since it may bring damage to the product and cause danger.

·Quality guarantee period is 1 year.

Scientific use, clearly consumption, power saving guardian save electricity with you!