

# ***Watt-Minder***<sup>®</sup>

***APPLIANCE COST & CURRENT METER***

## **Installation and Operating Instructions**

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### **Model 90100G**

Congratulations on your purchase of the model 90100G WATT-MINDER. With virtually no maintenance and minimal care this instrument should give you valuable information about your electrical consumption for years to come.

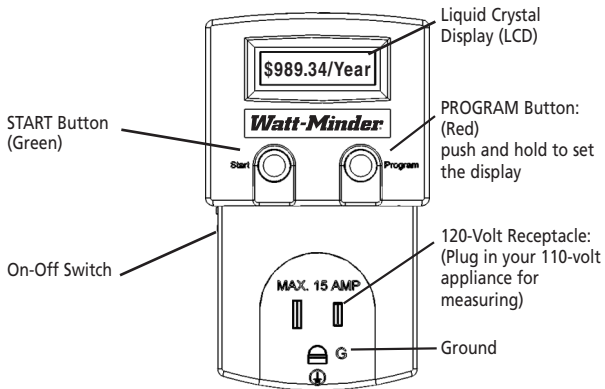
**Your WATT-MINDER meter is a state-of-the-art digital-ranging watt meter which can increase your understanding of the power you consume and the cost of this power based on the meter rates of your power supplier. Among other features your WATT-MINDER will:**

- Display the estimated cost of electricity being consumed for an hour, month and year for any 120-volt appliance or tool compatible with common household outlets.
- Display the elapsed time of measurement
- Allow programming of your cost of power from your supplier
- Operate on two common "AA" batteries
- Measure usage up to 1,800 watts at 125 volts A.C.

## Features and Controls

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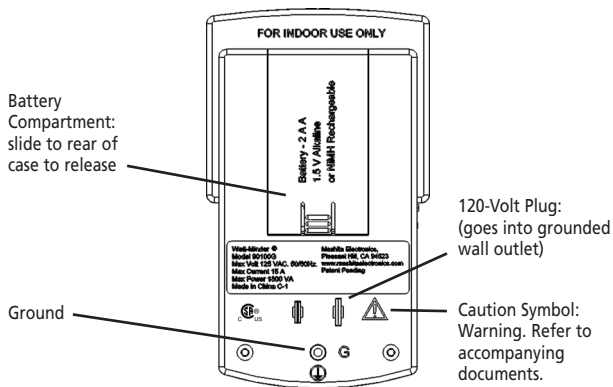
### Front View



# Features and Controls

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## Back View



## QUICK START

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**NOTE: "QUICK START" allows you to get your WATT-MINDER into operation safely, but please take time to read the rest of this manual both for safety concerns and to increase your ability to get the most from your WATT-MINDER.**

- Install batteries (see Step 1 below) and program your energy cost (see Step 2 below).
- Plug the WATT-MINDER into an electrical 120-volt grounded outlet.
- Plug in an appliance, stereo, electric heater, air conditioner, light, fax machine, copier or any other 120-volt appliance or tool into the WATT-MINDER.
- Turn on the appliance.
- Turn on your WATT-MINDER.
- Push the "Start" button (green) twice.
- Note the display as it measures the wattage being consumed, the time of measurement, and your cost by the hour, month and year.
- **After 3 minutes the screen will go blank as a battery saving feature, to refresh the screen, press either the Red or Green button.**

## Connection Considerations & Safety

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The WATT-MINDER must be plugged into a 3 prong electrical outlet. Do not use with 2 prong outlets. Do not remove the ground prong on the WATT-MINDER.

The WATT-MINDER will measure the power consumption of a grounded 120-volt appliance (3 prong) or double insulated appliance (2 prong). When measuring the power consumption of a 2 prong device, be sure and orient the spades of the appliance plug to the WATT-MINDER receptacle.



**Caution! Attention! Read and understand all of the information provided herein before operating the WATT-MINDER.**

The recommended operating temperature is 32°F to 104°F. Higher temperatures may, especially during the measurements of large loads, lead to dangers of overheating and permanent damage to the WATT-MINDER

Do not operate the WATT-MINDER within confined rooms or other adverse conditions where flammable gases, vapors or dust may be present.

Do not plug the WATT-MINDER into three prong adapters. DO not plug the WATT-MINDER into another WATT-MINDER. This product is not a toy and is for adult use only. Do not attempt to open, alter or change the WATT-MINDER in any way. Never open the case or puncture the LCD.

Shock hazard exists. As with all electronic equipment, avoid water and liquids. Do not touch the WATT-MINDER if it is wet or if you are wet. There are no serviceable or repairable parts. Use only properly functioning 120-volt electrical outlets. If the WATT-MINDER is used in a manner not specified herein, the protection provided by the design and construction of the WATT-MINDER may be impaired.

**INDOOR USE ONLY:** Never plug in the WATT-MINDER into an electrical outlet that is exposed to the weather or in a wet area.

## WATT-MINDER Display

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The WATT-MINDER Display will show a repeating series of information screens as it is estimating costs.

When the unit is turned on the first screen will show the pre-programmed rate per KWH. The first time you turn on your WATT-MINDER the Display will show the costs of energy at \$0.1159 per KWH. To change the cost of energy, go to Step #2 below.

### Program Cost of Power – Screen A

Price Per Kilowatt Hour (\$/KWH): See **Step 2** for Setting Costs

\$0.1159 KWH

### Then push Green Button – Screen B

*Display will read*

START

To begin measurements depress the green (start) button again.

*Once you have started measuring, you will see...*

### Screen C

Elapsed Time (Hours, Minutes, Seconds) –

Elapsed time since the WATT-MINDER started measuring.

0000:00:00

**Then: Screen D**

Estimated Cost Per Hour to operate your appliance.

**\$ 0.3100 / HOUR**

**Then: Screen E**

Estimated Cost Per Month to operate your appliance.

**\$ 89.20 / MONTH**

**Then: Screen F**

Estimated Cost Per Year to operate your appliance.

**\$1062.00 / YEAR**

**Then: Screen G**

Estimated watts currently being consumed by your appliance-

This shows the current estimated rate of consumption of the item being measured.

**1568.00 WATTS**

*Then the display returns to Screen C and repeats.*

After 3 minutes the screen will go blank (goes to sleep) in order save batteries. To refresh the display (wake up the unit), press either the Red or Green button.

If, during measuring or at Start Up, the "Low Battery" warning is displayed, the batteries need to be replaced.

**LOW BATTERY**



### **If you want to use the pre-set cost, go on to Step 3.**

The WATT-MINDER comes preset with an energy cost of 11.59 cents per kilowatt hour (KWH). A kilowatt is 1000 watts, measured for one hour. By way of reference, the average 75 watt bulb, left on for 8 hours consumes 6/10 of one kilowatt hour or .6 KWH (600 watts / 1000 watts).

### **To change the pre-set energy cost...**

- a) Determine your electricity cost (cost per kilowatt hour, \$/KWH). This can be done by reviewing your electricity bill from your local power company, or by calling the local customer service department of your power company.
- b) The rate is usually expressed as a dollars per kilowatt hour (\$/KWH). Many power companies and energy providers use a stepped rate plan. As the customer uses more power, the cost per KWH increases. This is usually done to discourage wasting energy. It is your option to determine which cost factor you want to program the WATT-MINDER to reflect your own energy usage. If a multi-tier rate plan applies to your usage, then review a number of monthly bills and select the rate that you seem to pay most frequently. If you rarely use sufficient amounts of electricity to place you in an upper price tier, or your power company does not bill based on a multi tier rate structure, then selecting the lowest rate shown on your bill will provide a fair estimate of energy costs.
- c)
  - i) Turn the WATT-MINDER on.
  - ii) Push the Start Button (Green) once and the display should now read "Start"
  - iii) Push the Program Button (Red) once and the first digit in the existing pre-programmed cost should begin to flash
  - iv) Using the Program Button, push it to adjust the number until it reads the correct amount.
  - v) When the first digit is correct, push the Start Button again to advance the flashing digit to the next position.

- vi) Repeat the steps in iv) and v) until the display shows the desired rate.
- vii) After setting the last digit, press the Start Button again to return the display to reading "Start". You have completed the process and are ready to begin.

### **STEP 3: Start Measuring**

- a) After completing Step 1 (Battery Installation) and Step 2. (Setting your Electrical Cost) above, and reading the entire information that came with your WATT-MINDER.
- b) Turn off the appliance being measured.
- c) Plug the WATT-MINDER directly into the 120-volt grounded wall outlet.
- d) Plug the item being measured directly into the WATT-MINDER.
- e) Turn the On/off switch to On (switch up towards meter display). Upon doing so, the cost per kilowatt hour setting will be shown in the display.
- f) Verify that you have set the WATT-MINDER with the correct cost per kilowatt hour for the area serving your home/business. If you need to change the cost per kilowatt hour, go to Step 2 and do so now.
- g) Turn on the appliance being measured.
- h) Push the Start Button (Green) on the WATT-MINDER twice.
- i) Note the various information shown on the Display.
- j) After 3 minutes of measuring the WATT-MINDER will automatically go into sleep mode. This does not stop the WATT-MINDER from continuing to measure the appliance usage, it only turns off the display and helps extend battery life.

To clear a reading when switching appliances either 1) press the Start Button twice or 2) turn the WATT-MINDER "OFF" then "ON" (just like CNTR-ALT-DEL for your computer). Cost information, wattage and elapsed time will be reset, and program information (electrical cost for KWH) will be maintained.

When reading the WATT-MINDER when it is unplugged from the appliance (and/or from the wall outlet), remember that it is keeping a running average, and when unplugged this average will degrade over time. The most accurate readings are those viewed as soon as possible after unplugging the WATT-MINDER, and those taken after a long measurement period.

Note: The Watts screen (Screen G) will show as 0000.00 WATTS after the WATT-MINDER is un-plugged.

## EXTENSION CORDS

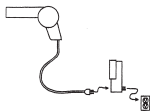
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The WATT-MINDER may be used in conjunction with extension cords. It is very important that the extension cord be compatible with the appliance. For example, use only a 3 wire extension cord for a 3 prong equipped appliance. In all cases, the extension cord should be rated to match the electrical loads of the appliance.

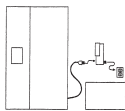
### Methods of Connection

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#### Without Extension Cords

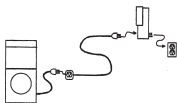


Standard use:  
grounded appliance

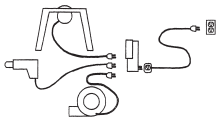


Hard to read plug?  
Move plug to easy to read outlet.

#### With Extension Cords



Use an extension cord if needed.  
Grounded appliance? Use a three wire extension cord.



## Using your WATT-MINDER as a watt-METER

The WATT-MINDER is an easy to use watt-METER. No need to split leads or wire in series as with most multi-meters. The WATT-MINDER reads the current with a current sensing coil around the hot lead. The WATT-MINDER has been calibrated with an assumed 118-VOLT 60 Hz. A.C. power source. Apply the ratio of actual voltage/118 to the watt reading to correct to the actual voltage.

Example:

Known A.C. Line voltage	112
WATT-MINDER reads	3.2 KWH

To correct for lower known voltage, divide 112/118 which equals .94915. Multiply the result (.94915) times 3.2 KWH which equals 3.037 KWH. The adjusted watt usage due to the lower voltage is estimated to be 3.037 KWH.

### Keep in mind:

- Always use the appliance in a typical manner while connected to the WATT-MINDER. The cost projections will reflect how heavily that device is used.
- Some appliances will have a higher cost of electricity depending on the season (air conditioner, refrigerator, space heater, etc.).
- Some appliances will have such a low power consumption that Cost/Hour may be very small (small radios, battery chargers, nightlights, etc.).
- Certain appliances (such as a toaster), or tools (such as table saw) operate only on an "on demand" short duration. An average cost for these devices is not actually appropriate as they are used sporadically; the most beneficial information is the cost per minute of the device, observed during the operation of the device.
- Realize that Cost/Year and Cost/Month are calculated ASSUMING the same cycle of use for the device over long time periods. Measuring your TV while ON for 4 hours does NOT show a real Cost/Year. Measuring your TV for a week of TYPICAL usage will show a much better yearly cost estimate.

- Inductive currents such as that caused by fluorescent light ballast may cause a watt reading with nothing is plugged into the WATT-MINDER. These phantom readings will not affect the accuracy of actual measurements.

## **ACCURACY OF MEASUREMENT**

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The WATT-MINDER uses Auto-Ranging technology to give reliable readings over an 1800 watt range. It is very usual that the supply of electricity to any given home or business is not uniform, thus precise measurement would be very expensive. The WATT-MINDER display of watts will be accurate to better than 90% of the reading. For cost estimates, the cost of usage is PROJECTED over the span of 1 hour, 1 month, or 1 year and the cost accuracy is improved by averaging over time. Thus if used properly to monitor an appliance over a sufficient interval of time, the accuracy should be better than 95%.

Generally, the longer the WATT-MINDER is left to measure the usage – the more accurate the cost projections will be. For instance, to measure the cost of a refrigerator, the WATT-MINDER will IMMEDIATELY begin to report the YEARLY projected cost of use. However, it may be an hour before the motor/compressor turns on and any cost projections over time periods less than this would be unrealistic. For such an appliance, the WATT-MINDER should be left to measure for several hours – or even better – several days before the cost projections are a true reflection of the cost of use.

This WATT-MINDER is only designed for use as an indicator or estimator for the average cost and average amount of electricity used for electrical appliances. Even with the accuracy of its design it is not certified or registered with any governmental body or group and therefore measurements cannot be used as evidence in any claim or disagreement between the utility provider and the user. Neither the manufacturer nor Mashita Electronics shall be responsible for any incorrect measurements and/or any consequences that occur should an incorrect measurement occur.

The WATT-MINDER is not be used for medical purposes or public information.

## **Cleaning**

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The WATT-MINDER may be cleaned using a soft dry towel or cloth. Do not use liquids, solvents or soap products to clean. Do not disassemble. There are no spare parts. No preventative maintenance is required. If the case breaks or other physical damage is apparent, do not use.

### **Environmental Conditions**

- Altitude up to 2000 meters.
- Temperature 0° to 40° degrees Celsius (32° F to 104°F).
- Maximum relative humidity 80 percent for temperatures up to 31° Celsius decreasing linearly to 50 percent relative humidity at 40° Celsius
- Main supply voltage fluctuations not to exceed +/- 10 percent of nominal voltage.
- Other Supply Voltage fluctuations as stated by the manufacturer.
- Installation Category II: Local Level, appliances, Portable equipment etc., with smaller transient overvoltages than installation Category (overvoltage Category) III.
- Pollution Degree 2.

## LIMITED WARRANTY

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Mashita Electronics warrants that this WATT-MINDER has been carefully inspected and warrants that WATT-MINDER will be free from defects in material or workmanship for the period of ninety (90) days from the date of original purchase, subject to the below stated limitations. This warranty is limited to the original purchaser.

This warranty is void if the instrument has been altered, modified, misused, abused, damaged due to negligence, neglect or unauthorized repair; or used contrary to the operating instructions.

The WATT-MINDER and proof of purchase in the form of the original sales receipt clearly identifying the distributor (retailer), model number and date of purchase must be returned to:

Mashita Electronics  
Post Office Box 1652,  
Martinez CA 94553-0652  
Attention: Customer Service

postage pre-paid for examination and verification of defect under warranty.

During the period of this warranty, Mashita Electronics will, at its sole option, repair or replace any WATT-MINDER adjudged defective by Mashita Electronics due to faulty workmanship or material from the factory. The liability of Mashita Electronics shall be limited to the repair or replacement at its sole option of any defective product. All parts or units replaced under warranty become property of Mashita Electronics.

**MASHITA ELECTRONICS MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. THIS WARRANTY AND THE OBLIGATIONS AND LIABILITIES OF SELLER THEREUNDER ARE EXCLUSIVE AND IN LIEU OF AND BUYER HEREBY WAIVES ALL OTHER REMEDIES, EXPRESS WARRANTIES, GUARANTEES OR LIABILITIES. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE OBLIGATIONS AND TIME LIMITS STATED IN THIS WARRANTY ARE HEREBY DISCLAIMED BY MASHITA ELECTRONICS AND EXCLUDED FROM THIS WARRANTY.**

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**THIS WARRANTY SHALL NOT BE EXTENDED, ALTERED OR VARIED EXCEPT BY A WRITTEN INSTRUMENT SIGNED BY SELLER AND BUYER.**

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For information or other questions, please contact in writing:

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saveenergy@watt-minder.com

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Patent Pending

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