



# EM130

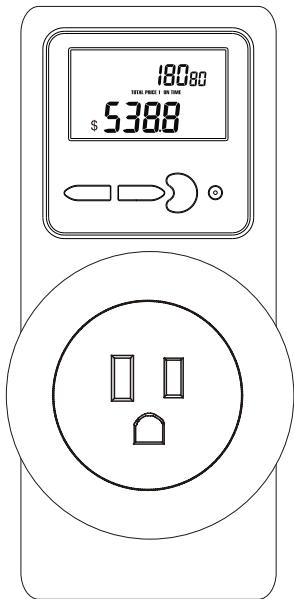
## Dual rate energy meter

### OWNER'S MANUAL

EM130 is an energy meter that allows you to measure the amount of electricity used by an appliance. It enables you to enter the electricity price per Kilowatt Hour (Kwh) for two different time periods to calculate the total cost of an appliance's power consumption, and to monitor the electricity usage. It also detects energy overloads and records the maximum wattage, while recording the time of the occurrence.

### FEATURES

- Energy monitor and consumption tracking
- Maximum current load and wattage readings
- Energy cost calculation
- Energy usage time
- Overload warning
- Dual price



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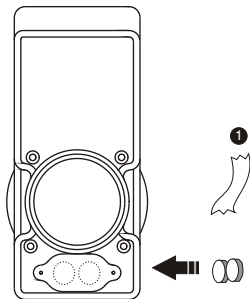
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# BATTERIES

Your new energy meter comes with two button cell batteries already installed. To begin operation, you must first remove the ribbon from the battery compartment located at the back of the unit.

- 1 Carefully pull out the ribbon from the battery compartment; this will activate the batteries.

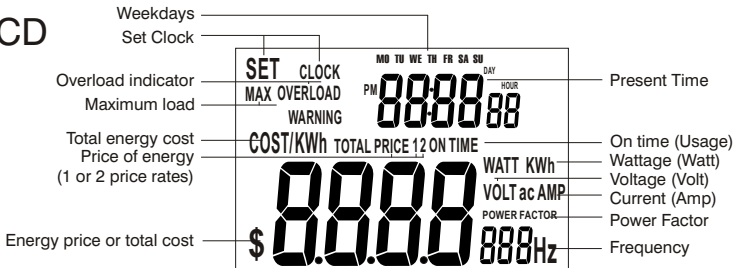
- 
- To replace batteries that are worn out, remove the battery cover.
  - Ensure the two button cell batteries are properly in place, then replace the battery cover. (Be careful not to bend any of the metal contacts)



Replace batteries as required to ensure the proper operation of this unit. The batteries serve as a memory backup for the readouts and settings. If the energy meter is not in use for an extended period of time it is recommended to remove the batteries from the unit.

# LCD DISPLAY AND BUTTONS

## LCD



## Buttons

**MODE** - switch modes (Energy or Price)

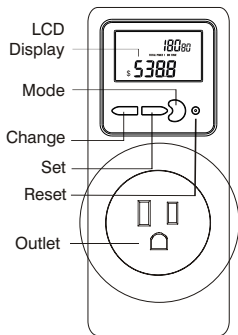
**CHANGE** - press to scroll to a setting

**SET** - press to confirm setting

**RESET** - clear settings

**OUTLET** - plug-in for appliance

**LCD Screen Display:** Note that is normal for the LCD screen to appear blank when the unit is not in use. Simply press any button to activate the LCD display.



# ENERGY OR MEASUREMENT MODE

## ENERGY MODE

Using the MODE button you can switch the display from one to the next. The MEASUREMENT mode displays the measured value of the following:

- (V) Voltage = Line Voltage and frequency
- (A) Amperage = Current with power factor
- (W) Wattage = Real Power (voltage x current x power factor)with power factor
- Maximum Wattage = Highest level of daily Wattage recorded
- (KWh) Kilowatt hour = (amount of energy used) - Used for pricing
- Total On time (running time appliance is in use) & total cost

Please note these are standard units of measurement for electricity. Further information about these units can be found in common reference materials such as encyclopedias or science textbooks. Kilowatt hours are the units measured by your electric company for billing. The price of electricity should be listed on your electricity bill as an amount of cents or dollars per kilowatt hour (KWh).

# ENERGY MODE

## 1) VOLTAGE / FREQUENCY

Displays the present time, voltage and frequency.

### Example

Time: Saturday 2:18:33 PM  
Line voltage: 120 V (AC)  
Frequency: 60 Hz.  
Symbol: "VOLT ac"



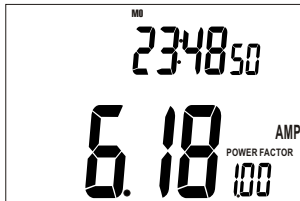
Note: Time (Hour : Minute : Second)  
Time may be displayed in 12 or 24 hour format

## 2) AMPERAGE / POWER FACTOR

Press MODE again to enter the AMP mode.  
Displays the present time, current (Amp) and power factor.

### Example

Time: Monday 23:48:50 (24hr format)  
Current: 6.18 A  
Power Factor: 1.00 (ranges from 0.01 to 1.00)  
Symbol: "AMP"



Note: The "POWER FACTOR" is the 3 digit number beneath the power factor symbol.

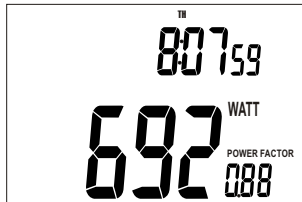
# ENERGY MODE

## 3) WATTAGE

Press MODE again to enter the WATT mode. Displays the present time, power (Watt) and power factor.

### Example

Time: Thursday 8:07:59 AM  
Power: 692 W  
Power Factor: 0.88 (range from 0.01 to 1.00)  
Symbol: "WATT"



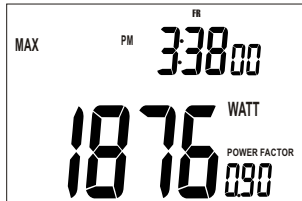
The power consumed by the load (in Watt mode) is calculated by the following formula:  
$$\text{power} = \text{voltage} \times \text{current} \times \text{power factor}$$

## 4) MAXIMUM WATT / MAXIMUM WATT TIME

Press MODE again to enter the MAX WATT mode. Displays the present time, maximum wattage and the time it occurred.

### Example

Max. Watt: 1876W  
Power Factor: 0.9 (range from 0.01 to 1.00)  
Max. watt time: FRI 3:38:00PM  
Symbol: "MAX" & "WATT"



## ENERGY MODE

### 5) KILOWATT HOUR (KWh)

Press MODE again to enter the KWh mode.

Displays the present time and KWh consumption.

#### Example

Time: Monday 17:38:56 (24hr format)

Consumption: 801.28 KWh

Symbol: "KWh"



## COST TOTAL / ON TIME

### 6) COST TOTAL / ON TIME

Press MODE again to enter the COST TOTAL / ON TIME mode.

The COST TOTAL / ON TIME mode displays the total accumulated "energy costs" and running "on time" used by the appliance plugged into the meter.

The total energy cost range is from \$0.001 to \$999,999. The number of decimal places will depend on the accumulated cost. When the total cost is over \$999.9 no decimal place will be shown.

If the total on time is less than 3000 hours, the display will be in Hour/Minute format. If the total on time is greater than 3000 hours, the display will be in Day/Hour format. The minimum reading increment is 1 minute for total time less than 3000 hours, or 1 hour for over 3000 hours of use. The maximum tracking period is 1 year (365 days).

# COST TOTAL / ON TIME

## Example 1 (less than 3000 hours)

Total On Time: 823 hours and 37 minutes

Total Cost: \$962.8

Symbol: "TOTAL ON TIME"

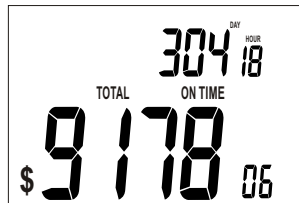


## Example 2 (more than 3000 hours)

Total On Time: 304 days and 18 hours

Total Cost: \$9178.06

Symbol: "TOTAL ON TIME"



## CLEAR READING

To clear the COST TOTAL / ON TIME totals, and begin a new interval, press and hold the MODE key for 5 seconds.

## ENERGY PER PRICE

Press the MODE key again to view the total cost for energy price 1.

The number 1 will appear in front of the ON TIME symbol.

Press MODE again to see total cost for price 2.

The number 2 will appear in front of the ON TIME symbol.

(This only applies if a second energy price has been previously entered, Press MODE to return to the Volt mode.)

# CLOCK SETTING

The energy meter must be in the Volt, Amp, Watt or KWh mode to begin the clock setting mode. The energy meter must not be in Max Watt or Cost mode or the clock setting function will not be available.

## SET TIME

- Press SET to select the weekday and time.
- Press CHANGE to scroll to correct day, hour and minute.
- Press SET between the weekday, hour and minute setting to confirm each.

### Time Setting Order:

(SET) → weekday will flash (CHANGE) →

(SET) → hour will flash (CHANGE) →

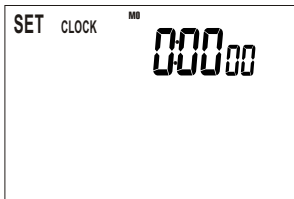
(SET) → minute will flash (CHANGE) →

(SET)

The final SET will exit clock setting mode, or if no key is pressed for 60 seconds normal display will return automatically.

## 12/24 HOUR CLOCK

The clock display may be set either 12 hour (AM/PM) or 24 hour (0-23) format. To alternate from one format to the other, press CHANGE in Volt, Watt or KWh mode; this will toggle between 12 and 24 hour display mode.



## PRICE MODE

This energy meter tracks the price per Kilowatt of the electricity used by the appliance plugged into the unit. The user must manually enter the price per Kilowatt charged by their local power company. If only one rate is charged per Kilowatt, then only one price is required.

However, some power companies charge two electricity rates, one price for standard use and a different price for peak consumption periods. Therefore, the energy meter has a function which allows for two separate energy rates and corresponding time periods to be entered. For example, if the hours between 5pm to 7pm are considered a peak period of energy consumption, then the peak rate should be set at the peak rate price beginning at 5pm while the regular price begins at 7pm.

In PRICE mode, the price per Kilowatt hour is displayed and set. The price per /KWh may range from \$0.001/KWh to \$999.9 /KWh. The accumulated energy cost used by the appliance is calculated by multiplying the appliance running "on time" by the energy price(s). If the user changes the energy price per Kilowatt, the total cost(s) will also be updated. The price /KWh reading increases in increments of \$0.01/KWh; the maximum is \$9999.99/KWh. The total usage (ON TIME) hours and dollar costs (\$ TOTAL COST) may be viewed in the TOTAL / ON TIME mode.

# PRICE MODE

## **ENTER ONLY ONE PRICE /KWh**

- 1) Press MODE for 3 seconds to enter the PRICE mode while viewing Volt, Amp, Watt or KWh.
- 2) Press SET to begin entering price.
- 3) Press CHANGE to increase the number then press SET to move to next digit.
- 4) Once the last digit is entered, press SET again to make the decimal blink.
- 5) Press CHANGE to move decimal and SET to accept is position.  
"ON TIME" and three dashes appears. Press MODE once to skip.
- 6) Press MODE for 3 seconds to exit the PRICE mode

## **ENTER PRICE 1/KWh AND PRICE 2/KWh (WITH START TIMES)**

- 1) Press MODE for 3 seconds to enter the PRICE mode while viewing Volt, Amp, Watt or KWh.
- 2) Press SET to begin entering price.
- 3) Press CHANGE to increase the number then press SET to move to next digit.
- 4) Once the last digit is entered, press SET again to make the decimal blink.
- 5) Press CHANGE to move decimal and SET to accept is position.
- 6) Three dashes and the "on time" symbol appears.
- 7) Press CHANGE to select the weekday (it will sequence between each weekday, Monday to Friday, MO-SA, SA-SU, then all 7 days).
- 8) Press SET again, then press change to select the start time. (Eg. 7pm)
- 9) Press SET again, to end setting Price 1 and start time.
- 10) Press MODE to advance to Price 2 setting.
- 11) Repeat steps 3-7 to set Price 2.
- 12) Press mode for 3 seconds to exit the PRICE MODE.

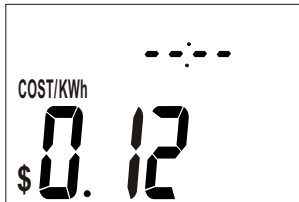
# PRICE MODE

## Example - Default Price /KWh

Price: \$0.12 / KWh

Symbols: "COST/KWh" & "\$"

Note: --:-- means that only one price is entered. Therefore the Price 1 or Price 2 are not required and cost will be based on only this price.



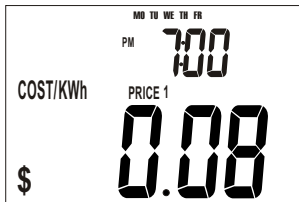
## Example - Price 1/KWh (Regular)

Price: \$0.08/ KWh

Symbols: "Price 1 & COST/KWh" & "\$"

Time Period: 7:00pm to 5:00pm the next day

(Price 1 is the regular price /KWh. It's applies to all energy use except for the peak period; which is weekdays from 5pm-7pm.)



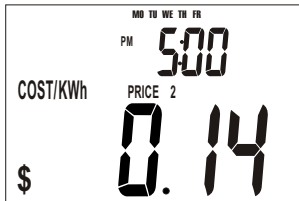
## Example - Price 2 /KWh (Peak)

Price: \$0.14 / KWh

Symbols: "Price 2 & COST/KWh" & "\$"

Time Period: 5:00pm to 7:00pm

(Price 2 time period is from 5pm - 7pm every weekday evening. This represents a typical peak period.)



## MAX LOAD

Maximum load is the standard current level which your appliance is rated to operate at. If an appliance is operating efficiently the max load should not be exceeded. If an appliance is operating inefficiently power surges may occur in which the maximum load is exceeded.

The user may set the maximum load value according the rating label on the appliance, whenever this value is exceeded the "OVER LOAD WARNING" symbol will flash. The symbol "OVERLOAD WARNING" will continue flashing to indicate the overload condition has occurred.

Note: If "OVER LOAD WARNING" is displayed, unplug the appliance and press MODE key to clear the warning. Check the MAX LOAD values and re-enter them if they are incorrect. For example, the MAX LOAD setting may be set too low causing the OVERLOAD warning to activate in error.

Please see next page for setting instructions.

# MAX LOAD

## 1) ENTER MAX LOAD VALUE

Press MODE for 3 seconds to enter the PRICE mode.  
Press MODE once so the MAX LOAD symbol appears.

Press SET to begin entering max load value. Press CHANGE to increase the values from 0 to 9. Press SET to accept and move to next.

SET →

1st Digit (Increase with CHANGE) → SET →

2nd Digit (Increase with CHANGE) → SET →

3rd Digit (Increase with CHANGE) → SET → etc.

Or press CHANGE again one time to move decimal.

Press MODE to go to price entry screen

Press MODE for 3 seconds to exit the  
MAX LOAD and price mode

### Example

Max. Load: 3.00A

Symbols: "MAX LOAD & AMP"



# TROUBLESHOOTING

## Problem

## Solution

The display is blank or dim when the energy meter is unplugged from the outlet.

Replace old batteries with fresh batteries.  
Battery type = button-cell (AG13 or Lr44)  
Note that it is normal for the LCD screen to appear blank when the unit is not in use.  
When the unit is unplugged for sometime, the display will turn off automatically. Simply press any button to activate the LCD display.

If the energy meter shows an abnormal display or if the buttons no longer function (i.e. unit becomes “frozen”)

Press the RESET button to return the unit to normal operation or remove the cell batteries for 3 minutes, then re-insert. The energy meter should resume normal function but please note that all previous memory and settings will be lost.

### For more help:

[www.upm-marketing.com](http://www.upm-marketing.com)  
1-888-468-6876

# TECHNICAL SPECIFICATIONS

Operating Voltage	120V 60Hz
Load Current	15A maximum
Min. measurable current	0.03A (4W @ 120V)
Voltage Display (in VOLT ac)	80V - 150V
Current Display (in AMP)	0.00A - 15A
Wattage (in Watt)	0W - 1800W
KWh Display (in KWh)	0.00KWh - 9999.99KWh
Frequency Display (in Hz)	40 - 70 Hz
Power Factor Display	0.00 - 1.00
Batteries	2 x Button-cell (AG13 or LR44)

# LIMITED ONE-YEAR WARRANTY

This product is warranted, excluding battery, to be free from defects in the materials or workmanship, under normal use and service, for a period of one (1) year from the date of purchase by the consumer.

**If the product is defective, return it, with a dated proof of purchase, to the retailer from which you purchased it.**

This warranty shall not apply if the defect or malfunction was caused by damage which occurred while the product was in the possession of the consumer. This includes accidental dropping or abuse of the product.

THE MANUFACTURER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OF ANY KIND, INCLUDING ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING, DIRECTLY OR INDIRECTLY, FROM ANY BREACH OF ANY WARRANTY, EXPRESS OR IMPLIED, OR ANY OTHER FAILURE OF THIS PRODUCT. .

THIS WARRANTY IS THE ONLY EXPRESS WARRANTY ON THIS PRODUCT. THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IS HEREBY LIMITED TO THE DURATION OF THIS WARRANTY.

If you have any questions concerning this warranty, please call our customer service centre at 1-888-468-6876, Monday to Friday, from 9:00am to 5:00pm MST

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