BRAND ELECTRONICS

DIGITAL POWER METER

MODEL 20-1850

OPERATING INSTRUCTIONS

SPECIFICATIONS

WARRANTY INFORMATION

OPERATING INSTRUCTIONS

The Power Meter has the following displays:

1) **"0000W 0.000kWh (or 0000 kWh)"** This displays the amount of power being used *right now* (Watts) and the amount of power which has been used (kilo-Watt hours). This reading is displayed after the unit is reset or first plugged in (after the calibration cycle).

2) **"000.0 Total hrs".** This displays the amount of time since the Power Meter was last reset.

3) **"$000.00 @10c/kWhr"**. This displays the cost of running the device since the Power Meter was last reset. The rate shown is user selectable (default is 10c). Instructions for resetting this are below.

4) **"$000.00 av/month"**. This displays the estimated cost of running the device for one month (based on 30 days).

5) ◢**Peak 0000 Watts**◣. This displays the peak power. This display is reset by pressing the ENTER button.

6) ◢**00.00Irms 0.00PF**◣. This displays the rms current and power factor of the load. The display shows A----A when first selected while the reading is updated.

7) ◢**000.0 Volts rms**◣. This displays the rms voltage.

8) ◢**0000VA 0000VARs**◣. This displays Volt-Amps and Volt-Amps- Reactive. The display shows A----A when first selected while the reading is updated.

Use of your Power Meter is very simple:

1) Plug the Power Meter into an electrical outlet within reach of the device you wish to measure. The Power Meter automatically turns on and will display "BRAND ELECTRONIX" briefly as the Power Meter performs an automatic calibration of its internal circuitry. The Power Meter will then display "0000 W 0000.0 kWhr" (if something is already plugged in and drawing power, the display may not be zero).

2) Plug your appliance into the receptacle on the Power Meter.

3) Turn on the appliance (if necessary).

<div align="center">

NOTE

Plugging in a device before plugging in the Power Meter is ok, even if the device is "on",

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4) The number displayed on the Power Meter is the power being used by the appliance in "Watts". For example, if you plugged in a lamp with a 100 Watt bulb, the Power Meter would read approximately "100".

5) The "kWhr" value will change depending upon the power being used. For example, if you plug in a 100 Watt lightbulb, the value would be approximately "0.100 kWhr" after 1 hour.

6) To find the cost of running a device, depress the ">" button until the display reads ""$000.00 @10c/kWhr". Now depress the "ENTER" button.   The Power Meter display will show "10.0 cents/kWhr" (10 cents is the default value). Depress the "<" or ">" buttons to decrease or increase the value to the desired amount.   Pushing the "<" or ">" button once will decrease or increase the value by .1 cent; keeping either button depressed will continuously decrease or increase the value. When you have entered the desired value, simply depress the "ENTER" button again, and the Power Meter will begin to display the cost. To see the "W kWhr" display again simply depress the "<" or ">" arrow button. Doing so will not reset any values. You may switch back and forth between the displays at any time.

7) To see the estimated cost of running the device for one month (30 days), depress the "<" or ">" buttons until the display reads "$000.00 av/month". The actual value displayed will depend upon the cost per kilo-Watt hour entered, and the amount of electricity used by the device since the Power Meter was last reset. This display is very useful to find the cost of running devices which cycle on and off (like refrigerators, freezers, air conditioner, etc).

8) The advanced displays described previously are all accessed using the A<A and A>@ buttons.

MEMORY

Your Power Meter is equipped with non-volatile memory for the following information:
kWhr
Cost per kWhr
Total cost
Total Time

These values are updated approximately every 8 minutes (the display will momentarily show ADATA SAVE@ when this happens). If the Meter losses power, the last saved data is used when the Meter is restarted.

To CLEAR the MEMORY, push and hold the ENTER button then press and release the RESET button, the release the ENTER button.

RECALIBRATION

Your Power Meter is capable of approximately 1% accuracy if calibrated with a precision source just before taking a measurement. This procedure should only be used if you have a need for high precision and have access to a high precision power and voltage source: Energize the meter for at least 15 minutes before conducting this calibration.

Plug the Meter into an outlet with NO load attached. During the Brand Electronics display, depress BOTH A<A and A>@ buttons simultaneously for approximately 3 seconds. The meter will briefly display ACal 0 w/no load@ then the Meter will display APress RESET@. Press **ENTER** to continue with the calibration. The meter will display A0000 W Pot1000. Plug in a known load. The display will show a value close to the actual. Depress the A<A or A>@ buttons to decrease or increase the value until the correct power is shown. Press the ENTER button. The meter will display Axxx.x VOLTS Pot 1000@. The xxx.x should be close to the actual value. Change the value as previously described and push the ENTER button. RESET the Meter and use as normal.

SPECIFICATIONS
NOTE: All readings +/- 2 in least significant digit

FUNCTION	RANGE	RESOLUTION/ACCURACY
POWER (Watts)	0-1850	1 Watt/ +/- 1.5%
Power used (kWhr)	.001-9999	1 W-hr/+/- 1.5%
Time (hours)	.1-6555.5	.1 hour/+/- 2%
Cost	0-$655.55	$.01/ +/- 2%
Cost/Month	0-$655.55	$.01/ +/-2%
Peak Watts	0-1850	1 W/ +/- 1.5%
Current (rms) (Amps)	0.20-15.00	.01 A/ +/- 3%
Voltage (rms) (Volts)	70-130.0	.1 V/ +/- 2%
Volt Amps	20-1850*	1 VA/ +/-5%
VARs	20-1850*	1 VAR/ +/-5%
Power Factor	0-1.0 lead or lag*	.01/ +/- 5%
Power Supply	70-130 vac, 30-130 hz. Any waveform.	N/A

* VA and VAR readings below 20 (and amps below .2) are not generally accurate. Power Factor for Loads less than 20 Watts are not generally accurate. These values may not be zero when no load is attached to the Meter.

LIMITED LIFETIME WARRANTY

BRAND ELECTRONICS warranties your Power Meter to be free of defects in craftsmanship and materials for 6 months from date of purchase. Should the Power Meter fail during this period, simply return the Power Meter to the address below for repair or replacement. Please include a note describing the problem and a return address. Should the Power Meter fail (for any reason) after the 6 month period, you may return your meter for repair or replacement for a single $40 payment.

BRAND ELECTRONICS
421 Hilton Road
Whitefield, ME 04353

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eebrand@earthlink.net

COMMENTS

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3) Turn on the appliance (if necessary).

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4) The number displayed on the Power Meter is the power being used by the appliance in "Watts". For example, if you plugged in a lamp with a 100 Watt bulb, the Power Meter would read approximately "100".

5) The "kWhr" value will change depending upon the power being used. For example, if you plug in a 100 Watt lightbulb, the value would be approximately "0.100 kWhr" after 1 hour.

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SOFTWARE INSTALLATION AND USE INSTRUCTIONS FOR MODEL 20-1850/CI

Software installation:

Create a new directory on your PC for the software installation (we suggest "powermeter")

Copy the program (201850CI.exe) into the new directory.

Run the program by double clicking the program (we suggest creating a shortcut).

You MUST select a comm port when the program is first run.

Select Options, then Comm Port. Select the serial communication port (1, 2, 3, 4 or 5) that you will be connecting the Power Meter to (the port is saved, you can change it later if desired).

Connecting the Power Meter to the PC:

Plug you Power Meter into a nearby outlet.

Plug the RJ-11 phone cord into the jack on back of the meter. (*Note, any phone extension cable can be used for greater length, just reuse the provided adapter*).

Plug the RS-232 end of the cable into the comm port you selected.

Software instructions:

Start the program. Ensure the correct comm port is selected.

Using the mouse, select "Connect". You should see the display update within a few seconds. If the communications is not correct you will get an error message; recheck comm port and connections.

The display will update every 4 seconds.

To save data, select one or more of the displays.

Select Options, Interval and choose which interval you desire (5 sec default).

Select, File, Capture Data to file. You will be prompted for a file name. All files are saved as "text files".

The software will continue to save data until you close the file. The number of entries is shown on the bottom of the Power Meter screen.