efergy®

Industry Canada Industrie Canada
Canada

4000228

CE FC

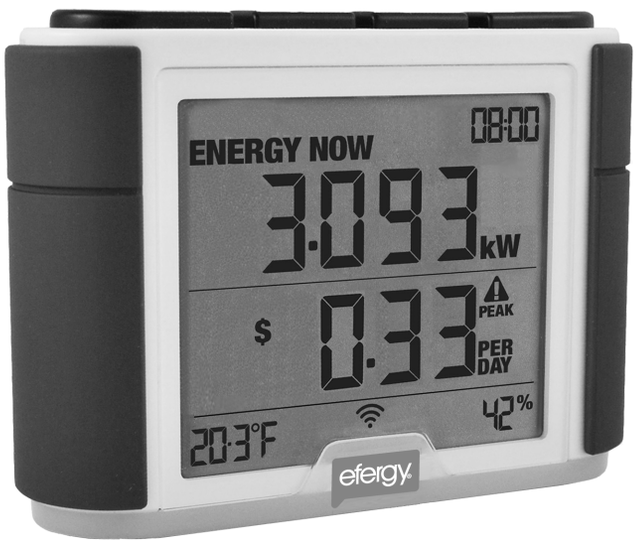
N16354

Tested to comply with FCC standards. This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Complies with Industry Canada RSS-210

ELITE

WIRELESS ELECTRICITY MONITOR

efergy®



INSTRUCTION MANUAL

CONTENTS

INTRODUCTION

Energy metering and monitoring are at the heart of energy management, understanding when and where your energy is consumed is key to saving money.

The **elite** wireless electricity monitor shows the amount of energy that a household is consuming at the time the monitor is read. The monitor can also give the user a reading showing usage in financial terms. You can walk around the home with your elite, switching appliances on and off, to see the difference that each one makes. With a few small changes in your consumption behaviour the e2 can help you reduce your energy costs.

Ask Johnny
If you have any questions about using your **efergy** monitor or if you'd like further advice on monitoring electricity at home, please feel free to contact us, or visit the website for up to date information, downloads and frequently asked questions.

Email your questions to;
info.usa@efergy.com for US
sales@energymonitoring.ca for Canada

Email your technical questions to;
askjohnny@efergy.com for US
support@energymonitoring.ca for Canada

We aim to answer all your emails within 48 hours

www.efergy.us for US
www.energymonitoring.ca for Canada

IMPORTANT SAFETY INFORMATION

It is important that you take some simple precautions before using this product. Incorrect use or poor safety practices can result in injury or fatality. Whenever possible turn off the main breaker outside your home feeding power to your electric panel.

When installing the **efergy** monitor you should find that everything is straight-forward. However there are a number of important health and safety issues which you should be aware of:

- The CT sensor clip fits onto the internal live feed cable inside the electricity meter, which delivers the live supply to your home.
- Please read and act upon the important information on the following pages. Remember the device is not intrusive and does not require rewiring; no wires or cables need to be cut, removed, or modified to perform this installation.
- **efergy** energy monitoring systems are considered **plug and play** devices that meet all regulatory requirements for installation in Canada and the United States.
- In some countries (i.e. Australia) the live cable can only be accessed by qualified electricians.
- If you notice anything unusual about the electricity supply such as loose wires, exposed cabling, burn marks, holes in the insulating materials or damage to the electric wires in the panel or where the CT current sensors are to be attached, stop immediately and report the findings to your supply company.

Do not force or bend the cables at any point during installation. If you are worried or have any concerns about the installation, please contact a qualified electrician immediately.

The user does not need to remove the sensor through the working life of the unit. Battery changes are performed on the transmitter and on the display. There are no batteries to change in the sensor.

Even with the main breaker in the off position, the connection lugs where the main wires terminate at the main breaker may still be live with potentially lethal voltage. Stay clear of these connections during the installation of the CT sensors (see page 6).

The CT sensors themselves are insulated so do not be concerned if they slide down the main wire to the breaker after being secured around the insulated wire. A plastic tie wrap (with 2” of the tie not cut off) secured to the main wire under the desired location for the CT sensor may be used to keep the CT sensor from sliding down the wire.

Millions of these systems have been installed without incident but please follow safe work practices as outlined during the installation.

IN THE BOX

Your **elite** pack contains the following elements:

2 x XL CT Sensors
1 x Transmitter
1 x **elite** Wireless Energy Monitor
6 x AA Batteries

You will need to fit the CT sensors to the live feed cable which connects to the consumer unit. Any power you use in your home will pass through this cable.

The clip on the sensor acts as a current sensor and relays the amount of current being drawn in the home to the transmitter. From there it is sent wirelessly to the **elite** wireless energy monitor, which shows you how much power is being consumed.

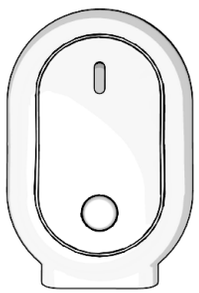
Some transmitters alternatively may be powered by a 5V DC adaptor, which is not included in the box. Contact your local electrical dealer for more information and purchase.

It also includes:

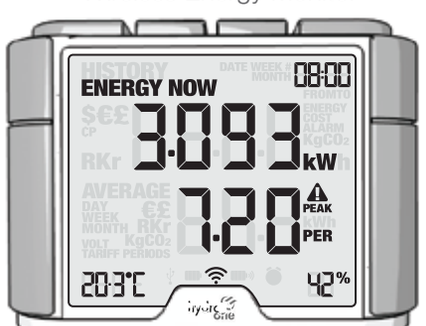
1 x Instruction manual for the monitor
1 x Quick Start Guide

CT sensor

Transmitter



Wireless Energy Monitor



HARDWARE INSTALLATION

PRIOR TO INSTALLATION

The **efergy elite** is installed by clipping the CT sensors around the feed wires of your electric panel. In Canada and the United States, the residential voltage is 120V for small appliances and lighting and 240V for major appliances and equipment, such as central air conditioner, electric water heater and oven.

Note - For a 120/240V panel (typical residential electric panel) power is measured using two CT sensors. Set the reference point voltage during **Monitor Setup** to 120V or 130V for most rural installations. For professional installation please consult the **Technical Notes for Electrician** (see page 20).

Installation for Three Phase Panels
The **elite** is installed by clipping the CT sensors around the feed wires of your electric panel. In the case of a commercial or industrial three phase panel or service, you must use three CT sensors to measure all three phases. Simply order an additional CT sensor from your dealer. Identify the three power wires providing service to your electric panel. Open and place one CT sensor around each of the three main feed wires.

Installing Transmitter for Three Phase
Plug the three CT sensor cables into the transmitter. Mount the transmitter on the wall next to the electric panel. This will make it easier to replace the batteries (alternatively on some transmitters you can use a 5V DC mains adaptor, check your box for details). Readings for a three phase system may not be accurate depending on connection and loading system.

HARDWARE INSTALLATION

MOUNTING INDIVIDUAL OR MULTIPLE CIRCUITS

Many buildings have separate apartments or efficiency apartments being served by the main electric panel with only one electric utility meter. The **elite** allows you to measure the usage for these separate apartments, so you can determine how much electricity is being consumed by the tenants. In both Canada and the United States this is for cost recovery purposes only, **efergy** monitors are not intended for use as revenue meters for the actual sale of electrical energy.

If you wish to monitor various 120V and 240V circuits from the same panel, you can identify which phase (or bus) these circuits are being fed from. Separate the wires for the circuits by phase or bus.

Note 1 - A 120/240V residential panel has two busbars, each providing 120V power to the loads/appliances. Some 120 volt circuit breakers are fed from one bus (bus A), and other circuits are fed from the other bus (bus B).

Note 2 - Commercial and industrial electric panels may be served by two or three phases, (normally designated as phases A, B & C). Some circuit breakers are one phase, others two phases and some major equipment or loads may use three phases.

You can clip a CT sensor around the wire for each of the phases you wish to measure power. This will measure the combined current flow in all of these wires (phases).

You can also place a CT sensor around a number of wires on the same phase to measure the total amount of power travelling through the wires on that phase.

Locate Your Electrical Panel

You can normally find your main electrical panel inside your home on the other side of the wall from your electric utility meter. You may also follow the conduit from your utility meter. In many cases it is located in the garage, utility room, laundry room or hallway inside your home.

If you live in an apartment, it may be in the kitchen, a utility closet or hallway. Also in the case of an apartment, your voltage may be 120/208V. Hardware installation follows the same steps in this case as with an 120/240V panel.

Find the Main Feed Wires for Your Home

Remove the outside cover from your electrical panel and locate the main feed wires. Sometimes, there will be an additional cover inside. These will be the wires that go to the main breaker in your service panel, typically rated at 100 or 200A.

Mounting the Transmitter

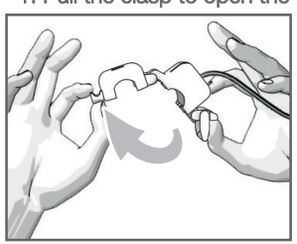
Plug the CT sensor cables into the transmitter. Then mount the transmitter on the wall next to or above the electric panel. This will make it easier to replace the batteries (although the batteries will last for a long time) If the panel is in a finished area, you may mount the transmitter inside the electrical panel. This may reduce transmission distance.

HARDWARE INSTALLATION

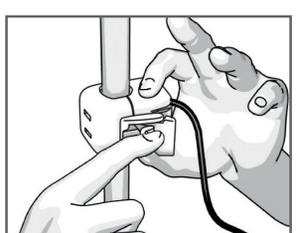
MONITOR INSTALLATION CONSIDERATIONS

The wireless energy monitor can be wall mounted at a convenient location or taken throughout your home to determine how much different electrical loads consume. All **efergy** monitors update every ten seconds so you can apply any new load and watch for the change in the reading on your display.

1. Pull the clasp to open the CT sensor



2. Place the CT sensor around the cable



3. Push the clasp to close securely

Fig. 1 CT Sensor Installation

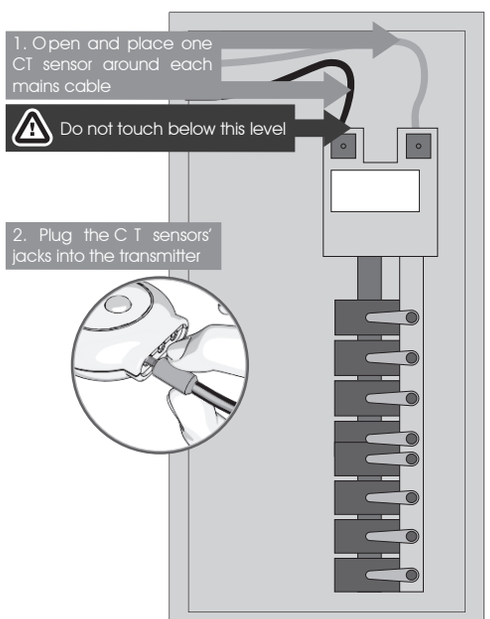


Fig. 2 Typical Service Panel

INSTALLING THE CT SENSORS

IMPORTANT - Always make safety your first priority, see **Important Safety Information** (page 3). Do not touch any metallic connections during the installation of the CT sensors. Do not carry out this installation if under the influence of alcohol or drugs.

Remove a standard ½" knock out from the panel. Feed the CT sensors' leads from inside the panel out through the raw knock out hole, leaving the protective rubber tip on the jacks in place. Open and place one CT sensor around each main feed wire (Fig. 1). The bushing is then pushed on to the CT wires outside the panel and then snapped into the hole. Replace the panel cover(s) when finished installing the CT sensors.

Please note the metal lugs where the main service wires attach to the main breaker. Keep your fingers well away from these lugs unless you are able to turn off the inbound power from your utility source outside. Wiring configurations and types of main panels will vary greatly.

If in doubt, contact an electrician or other qualified person to assist you with the installation of the CT sensors.

You should find up to four feed wires entering your 120/240V or 120/208V main electrical panel: two black wires, one white wire and one green wire. (There may not always be a green or bare ground wire) The two black wires (or sometimes one black and one red) are the live wires feeding the panel. These are the wires used to measure the power being used in your home or business.

The CT sensors will be installed on the black wires or the black and red wires. Two CT sensors are required for monitoring a 120/240V residential panel or 240V appliances or equipment. One CT sensor is required for monitoring a 120V panel or 120V circuits or appliances.

MONITOR SETUP

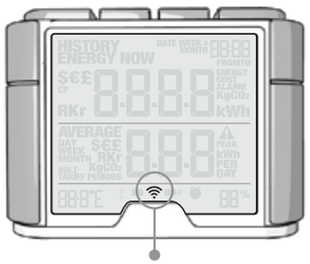
LINKING TRANSMITTER AND MONITOR

Step 1
Ensure three AA batteries are inserted in the wireless energy monitor. Observe polarity when inserting the batteries.

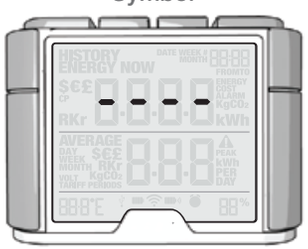
Step 2
Press the **link** button on the back of the wireless energy monitor and hold for two seconds. The transmission signal symbol will flash for one minute or until the transmitter and monitor are linked.

Step 3
While the transmission signal symbol in the display flashes, push the **link** button on the transmitter and wait until the transmission signal symbol becomes solid.

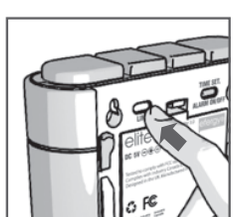
Note - The default value for the transmission frequency is ten seconds. This means the transmitter is sending information to the display every ten seconds. You can change the frequency from 10s to 15s or 20s by pushing and holding the transmitter button for two seconds.



Transmission Signal Symbol



Dashes indicate signals not linked



Portable display unit link button

Transmitter link button

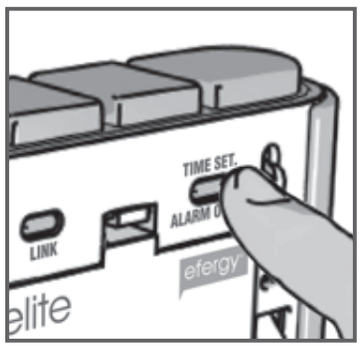
SETTING THE TIME AND DATE

The **elite** monitor needs to know the time and date in order to provide you with the correct information. Set the time and date as follows:

Step 1
On the reverse of the monitor you will find the **time set** button. Press and hold for two seconds. The time setup will flash on the monitor.

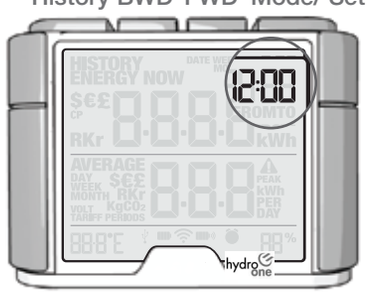
Step 2
Set the hour to the correct time by using the **backward** and **forward** buttons. Press the **mode/set** button once to save the hours. Repeat for minutes, using the **mode/set** button to confirm. Once the correct time and date have been set, push the **mode/set** button to save and move onto the date setup.

Step 3
Set the month by using the **backward** and **forward** buttons. Press the **mode/set** button to confirm and move onto the day and year. Repeat the same process and then press the **mode/set** button to save and exit.



Hold for 2 seconds

History BWD FWD Mode/ Set



MONITOR SETUP

SETUP INSTRUCTIONS

The **elite** monitor needs to know unit cost per kWh charged by your electricity supplier, along with voltage and alarm settings. The following steps will move through each of these settings. If you have multiple tariff rates, please consult the **Dual Tariff Mode** section (see page 15).

Press and hold down **mode/set** button for three seconds to enter the setting mode.

Step 1 - Voltage
Press and hold **mode/set** button for two seconds. Default voltage is set at 120V. Use **backward** and **forward** buttons to change the voltage. Press **mode/set** button to save your setting and move into currency selection setting.

Step 2 - Currency Selection
Select the currency using **backward** and **forward** buttons. Default currency will be **$.** Push **mode/set** button to confirm and to move onto tariff selection set up.

Step 3 - Single Tariff Set Up
On release you will see the **1** in the lower right hand corner of the monitor. If you are charged one single tariff push **mode/set** button to confirm.

Step 4 - Electricity Cost
Default cost is set at 0.1$/kWh. Use **backward** and **forward** buttons to change the cost per kWh. Press **mode/set** button to save your setting.

Step 5 - Carbon Emissions Ratio
Now set your carbon emissions ratio. This value can be increased or decreased using **backward** and **forward** buttons, press the **mode/set** button to store the value. The North American average is 1.04kg.CO2/kWh and is set as the default value.

Step 6 - Alarm
Default alarm is set at 5kW. If the alarm function is switched on, and you are using more than 5kW the alarm will sound and a red light will glow from the bottom of the wireless energy monitor. The value can be decreased or increased using the **backward** and **forward** buttons. Press the **mode/set** button to store the value. Press the **history** button to exit the function setting mode. To activate and deactivate the alarm at any time push the **alarm** button on the reverse of the wireless energy monitor.

Step 7 - Temperature
The temperature setting can be changed between Fahrenheit and Centigrade by pressing the **backward** and **forward** buttons.

Note - Throughout the setup process, push **history** button at any time, your settings will be saved & you will exit the function setting mode.

Note - Twenty seconds of inactivity in setting mode will return the monitor to normal display mode without saving changes.

MONITOR SETUP

DUAL TARIFF MODE

If you have a dual tariff rate meter you may want to setup the dual tariff function.

Step 1 - Activation of Dual Tariff
Press and hold **mode/set** button for three seconds. On release you will see the voltage setting flash. Press **mode/set** button twice and you will move onto the tariff selection setting. Now you will see the symbol flash. Press **backward** and **forward** buttons to select dual tariff set up. Push **mode/set** button to confirm and the symbol will flash.

Step 2 - Set Start & End Time For Tariff 1
Set the start time for Tariff 1 first using **backward** and **forward** buttons. Set the hours and press **mode/set** button to save and move to minute set up. Set minutes using **backward** and **forward** buttons and pushing **mode/set** button to confirm. Now the **FROM** symbol will disappear from the monitor and the **TO** symbol will appear. Repeat the process for setting the time Tariff 1 ends.

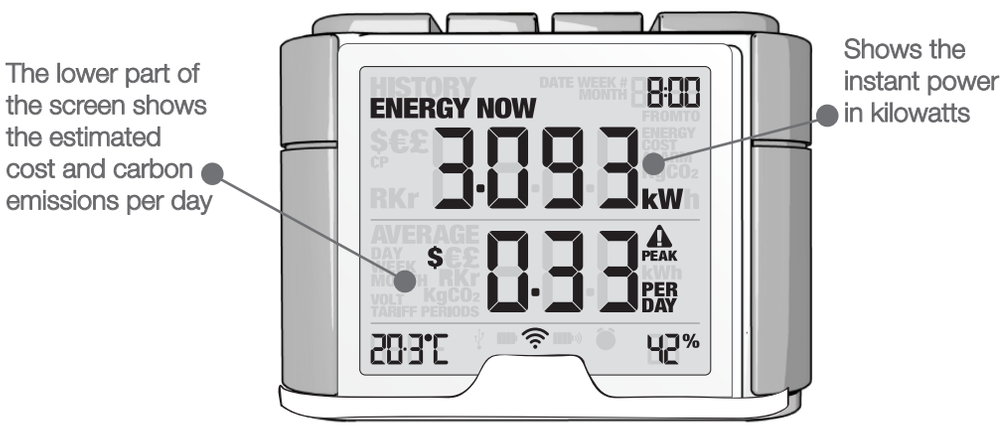
Step 3 - Set Tariff 1 Rate
Use **backward** and **forward** buttons to input the cost per kWh and press the **mode/set** button to save your setting. Tariff 2 setup will flash.

Step 4 - Set Tariff 2 Rate
Use **backward** and **forward** buttons to input the cost per kWh and press the **mode/set** button to save your setting.

Step 5 - Set Tariff 3 & 4 Rate
Use **backward** and **forward** buttons to input the cost per kWh and press **mode/set** button to save your setting. Repeat the process for tariff 4.

INSTANT MODE

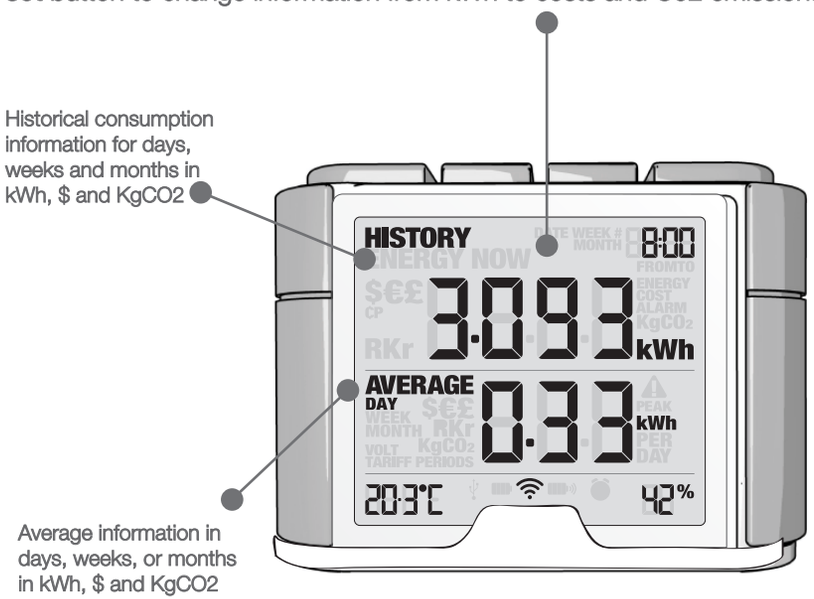
Push the **mode/set** button to change information displayed from kW to cost (displayed in $).



MONITOR SETUP

HISTORY MODE

Push the **history** button to access daily, weekly, and monthly stored data. Use the **backward** and **forward** buttons to scroll between dates and compare consumption data. Press **mode/set** button to change information from kWh to costs and Co2 emissions.



FAQS

If I remove the batteries will I lose the information on the monitor?
The monitor has an internal memory, so if you need to change or remove the batteries and the information stored on it will not be lost.

How do I reset the monitor (clear the stored data and start again)?
Press and hold the **mode/set** and **history** buttons simultaneously for two seconds.

How far does the device transmit?
The transmitter works up to around 230ft/40m within the home. The 433MHz range is well suited for in-home use. This can cover three floors and is also ideal for buildings where electricity meters are situated outside.

I have three dashes (- - -) showing on the monitor. What does this mean?
Move the monitor closer to the transmitter and press the link button. If the dashes remain on the monitor this would indicate that the transmitter and receiver are not communicating. Please contact our customer services to help solve the problem.

The backlight appears to work sometimes and then not others. Is it broken?
No. The backlight is on a timer to save battery life. The monitor should work at darker periods during the day when any buttons are pressed. The LED backlight will be activated from 18:00 to 6:00 hours.

For more information about the **elite** go to www.efergy.us

TECHNICAL INFORMATION

Model Name	**efergy elite**
Frequency	433MHz
Transmission Time	10, 15 or 20 Sec
Transmission Range	230 - 328ft
Sensor Voltage Range	110 - 600V
Measuring Current	50mA - 200A
Memory	64K

The LED backlight will be activated from 18:00 to 06:00 hours.

INSTALLATION NOTES

Date _____

Location Installed _____

Installed By _____

Number of CTs _____

Voltage Set Point _____

Tariff Settings _____

TECHNICAL NOTES FOR ELECTRICIAN

NOTE: This table is for reference only. Accuracy may vary depending on the type of connection and loading system used.

ELECTRICITY SYSTEM	VOLT SETTING
120V, 3 Wire, Single Phase **(TYPICAL RESIDENTIAL SERVICE IN US & CANADA)**	120
240V, 3 Wire, Single Phase	240
120/ 208V, 3 Wire, 2 Phases of a 3 Phase 120/208V Three wires phase 1 live, phase 2 live, Grid 120V is live to neutral and 208 is phase to phase. Assume unbalanced load. **2 CT Sensors**	120
120/ 208V, 4 Wire, 3 Phases, Balanced Load Three phase live, phase 2 live - Neutral, where 120V is phase to neutral and 208V is phase to phase. **1 CT Sensor**	208
120/ 208V, 4 Wire, 3 Phases, Unbalanced Load The display does not recognize unbalanced loads in this configuration. The degree of accuracy will be relative to the amount of unbalanced current. **3 CT Sensors**	120
208V, 3 Phase Delta Balanced Load	208
277/ 480V, 4 Wire, 3 Phases, Balanced Load Three phase live + neutral, where 277V is phase to neutral and 480V is phase to phase. **1CT Sensor**	480
277/ 480V, 4 Wire, 3 Phases, Unbalanced Load Three phase live + neutral, where 277V is phase to neutral and 480V is phase to phase. The display does not recognize unbalanced loads in this configuration. The degree of accuracy will be relative to the amount of unbalanced current. **3 CT Sensors**	277
230/ 400V, 4 Wire, 3 Phases, Balanced Load Three phase live + neutral, where 230V is phase to neutral and 400V is phase to phase. **1CT Sensor**	400
347/ 575V, 3 Phase, Balanced Load. **1CT Sensor**	580
347/ 575V, 3 Phase, Unbalanced Load. The display does not recognize unbalanced loads in this configuration. The degree of accuracy will be relative to the amount of unbalanced current. **3 CT Sensors**	350