



**E N E R G Y E Y E<sup>TM</sup>**  
*Control Your Resources*



## **Energy Eye<sup>TM</sup> System User Manual**

V1.3

- 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 UNDESIRE OPERATION**

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# I. Introduction

Congratulations on the purchase of your Energy Eye™ System! Finally you can begin controlling your wasted guestroom electricity expenses using the most efficient system of its kind. The Energy Eye™ System uses passive infrared and door/window contact sensors to control wasted energy costs by setting back a guestroom's HVAC (Heating, Ventilation, Air Conditioning) to an optimized level while guests are away. The Energy Eye™ System's components communicate using radio frequency (RF) technology to minimize installation and maintenance costs. Because each property has different needs, the Energy Eye™ System allows for full customization of setbacks and timer settings that should be determined before installation. For any questions you may have that are not covered in this instruction manual please contact your distributor or Electritech's Energy Eye™ product division directly at (USA) 1-866-463-3135.

## **Warnings!**

- HVAC units may contain hazardous voltages of 120 VAC to 277 VAC.
- **To prevent personal injury and/or death, insure that all power is disconnected before installation and connection inside the HVAC unit.**
- The Energy Eye™ System should be installed by qualified personnel only.
- All electrical connections and wiring must conform to the National Electrical Code and applicable local codes at the time of installation.
- The Energy Eye™ receiver and sensors contain sensitive electronic components, DO NOT attempt to repair or clean with chemicals or abrasives.
- DO NOT touch the infrared lens located inside the passive infrared sensor with your finger.
- Be careful with any tools near or around your working/installation environment.

## **Before you Install**

The most important decisions to consider before installing an Energy Eye™ system are:

- 1) Where each of the components in the system should be placed inside your guestrooms and if more than the standard components (refer to "Standard components" and "Product Placement" sections for detailed information) are required.
- 2) It is important to understand each component, how it works, and its limitations in order to ensure that the system functions correctly after installation. Because no two properties are exactly alike, make it a point to understand the particular physical layout of each guestroom and your operating environment.

## **Required Tools**

\*NOTE: Additional tools might be required depending on property construction type, local environment, HVAC accessibility and HVAC age.

- Philips Screwdrivers (various sizes)
- Wire cutter/stripper
- Plastic Electrical tape
- 1 set Electrical caps
- 1 small coin (size of a U.S. Penny or Dime)
- 1 set Sheet-metal screws (only if installing on metal door frame)

## II. Product Overview and Descriptions

\*Note: Each guestroom system operates independently on a spectrum of over 10,000 RF codes to insure no interference with a neighboring guestroom system.

### Brain Unit (Microprocessor and receiver)

The processing receiver or “Brain” Unit is the most important part of the Energy Eye™ system. The Brain processes information sent to it by both the door and window sensor(s) and PIR sensor(s). It then communicates directly to the HVAC interfaced power pack in order to accurately control room temperature while guests are out.

Functions of the Brain Unit include:

- “Auto/Manual” switch that gives hotel/motel management and staff the ability to completely disable the system at will.
- Low-battery indication lights that let hotel staff know when one or all of the Energy Eye™ wireless components is low on battery life. The GREEN light on the Brain Unit blinks continuously when one or more of a component’s battery life is low and solid GREEN when completely discharged and requires replacement.
- Programmable setback timer intervals: 30 seconds, 5/10/15 minutes.
- Temperature setback range: 50 to 90 degrees Fahrenheit with 5-degree increments.
- Two (2) minute re-cycle timer feature for ease on PTAC compressor lifespan.
- Built in YELLOW LED to see “Signal Reception” from Energy Eye™ components (PIR(s) and/or Door/Window Sensor(s)).
- Mode A and B (custom management selected modes for both economic and generous control)
- Internal thermostat temperature sensing.
- Fuse: There is an internal fuse supplied in order to prevent damage to the Energy Eye™ system during any type of power fluctuation



### PIR (Passive Infrared People Sensor)

Energy Eye™’s passive infrared people sensor (PIR) is specially designed for detecting the presence of people in a room by omitting a tri-band infrared spectrum to cross-reference both motion and body heat. Like all Energy Eye™ wireless products, the PIR uses a 315MHz (RF) to communicate with the Brain unit. Once the PIR determines guestroom occupancy a signal is then instantly sent to the Brain unit to perform the appropriate function. The Energy Eye™ PIR has a detection range of approximately 24 - 30 ft. (8 - 10 meters) long and a maximum angle detection of 110 degrees. The PIR is powered by a standard 9V Lithium battery provided by Electritech Inc. For efficiency purposes, Energy Eye™ PIRs self-check their battery level. Low battery signal is displayed by a flashing GREEN LED on the Brain Unit.



## Door and Window Sensor

The door and window sensors are used to identify when the main door (window or balcony door) has been opened and closed. Each standard Energy Eye™ System can be programmed to operate a maximum of three (3) Door and Window Sensors. At least one (1) sensor is required for the main guestroom door however an additional two (2) door and window sensors can be programmed to control additional windows and or (sliding) doors. Like all Energy Eye™ wireless products, the door and window sensor(s) use a 315MHz (RF) to communicate with the Brain Unit. The door and window sensors have a communication range of approximately 24 - 30 ft. (8 - 10 meters) and are powered by a single 2450 lithium battery. The door and window sensor(s) self-check their battery level. Low battery signal is displayed by a flashing GREEN LED on the Brain Unit. A simple jumper setting inside the sensor itself makes the distinction between a primary door sensor and an additional door/window sensor easy (see "Door and Window Sensor Installation" for details).



## Power Pack

The power pack is the only piece of the Energy Eye™ System that physically interfaces with the HVAC. The power pack serves two functions: 1. Provides power to the Energy Eye™ Brain Unit and 2. Provides the necessary relay switch to turn the HVAC on and off. The power pack is compatible with 120/277 VAC 50/60 Hz and can handle a maximum load of 20 AMPS. Energy Eye's™ power pack is UL approved. Please refer to the technical data sheet included with each power pack for more information.



## Wire

Each Energy Eye™ System Kit includes high-grade Shielded Triple Conductor Stranded Wire for wiring the Power Pack to the Energy Eye™ Brain Unit main board.

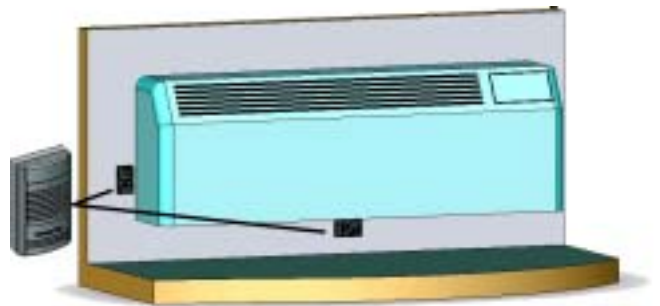
### III. Product Placement and Mounting

**\*\*\*Before mounting the Brain unit make sure that the timer and temperature settings are within the management determined parameters. (See Section IV)\*\*\***

#### **Brain Unit – Placement**

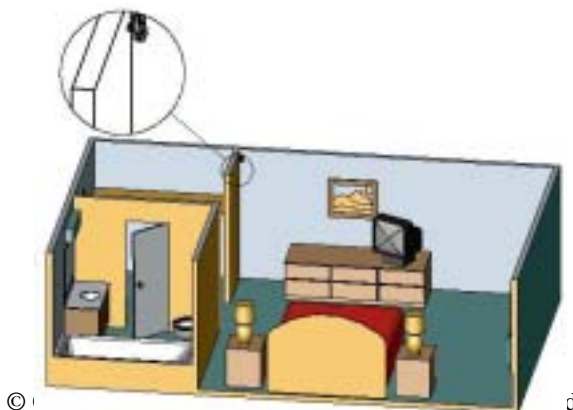
Like the power pack, the Brain Unit placement might vary from hotel to hotel because no two hotels are alike. However, the following are a few **HIGHLY RECOMMENDED** points that should be considered when determining Brain Unit placement in both a standard guestroom and or a multiple-room suite.

- Brain Unit should be out of site as much as possible to the guests and children.
- Brain Unit should be within a quick view of hotel maids or staff for battery level status.
- Energy Eye™ Brain uses its own internal thermostat to gauge a room's temperature. For this reason, the Brain Unit should not be placed directly in front of a vent or anything that could substantially compromise temperature reading.
- To avoid range problems, the Brain Unit should not be more than 80 feet (26 meters) from any Energy Eye™ components.
- Brain Unit should be placed to avoid contact with any guestroom door(s) and guest luggage.
- Make sure that you leave sufficient room for wiring of the power pack when determining Brain Unit placement.



#### **PIR - Placement**

- 7 feet (2.5 meters) from floor if placed in a corner
- 10 – 15 feet (3.3 – 5 meters) from floor if positioned parallel with the wall (not in the corner)
- PIR should look down 15 degrees (+/-) at the guestroom.
- PIR should NOT be positioned to face a mirror or window.
- Like all Energy Eye™ wireless components, PIR should be less than 80 (26 meters) feet from Brain Unit.
- PIR people detection range coverage: 24 – 30 feet (8 - 10 meters) long, 110 degrees wide (see diagram)
- PIR cannot be exposed to steam (example: do not install unit in bathrooms).

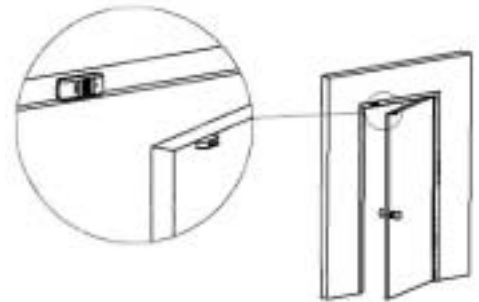


## PIR - Mounting



## Door and Window Sensor(s) – Placement

- Place at the top of main entrance door
- Minimize gap as much as possible between magnet and door/window sensor
- Magnet must align with the right side of sensor
- Sensor should be mounted firmly to door or window
- Unless absolutely necessary, do not mount directly on a metal surface



## Power Pack – Suggestions for Placement

The power pack should be completely hidden from guests and is often mounted inside or underneath a guestroom HVAC system before wired. The Power pack should not be exposed to temperatures less than 14 degrees Fahrenheit and greater than 160 degrees Fahrenheit. Because every hotel HVAC system can be configured differently there is not one specific area to place the power pack.

## IV. Jumper Settings for the Energy Eye™ System

### Standard Energy Eye™ Jumper Default Settings:

- Monitoring Timer: 10 minutes
- Custom management selected modes: Mode B
- Temperature setback: 65 degrees (minimum) and 80 degrees Fahrenheit (maximum)
- HVAC 2-minute cycling timer (designed for all standard PTAC HVAC units): ON
- 110V power environment option
- Door and window sensor programmed as MAIN DOOR only

### Brain Unit – Jumper Settings and Options

#### Monitoring timer

The monitoring timer setting refers to the time that the PIR(s) look for people in a guestroom before switching to an “unoccupied” status. The monitoring timer selection choices are 30 seconds (use for testing only) 5, 10 and 15 minutes. Select timer setting by placing the jumper on desired time. For the 15-minute timer selection, add both 5 and 10-minute jumpers by placing jumpers on *both* settings. (see diagram pg.8).

## Mode A and Mode B

Mode A or Mode B **must** be selected. The custom management selected modes (Mode A and Mode B) refer to a setting that allows for added guest comfort or greater energy savings. In Mode A the front door can remain open while the HVAC remains in operation allowing guest to move in and out of the room without compromise. Mode B automatically sets HVAC into temperature setback after the front door remains open for more than 5 minutes, allowing for added energy savings. To select between the two, simply place the appropriate jumper on the desired Mode (see diagram pg.8).

## TN and TV

The TN and TV settings give hotel/motel management full control over room temperature setback. TV is the “Temperature Vacant” setting in which the Energy Eye™ temperature setback functions are enabled while the room is vacant or unoccupied. This means that only when a guestroom becomes unoccupied the Energy Eye™ System will maintain the room temperature within the management pre-selected temperature settings. This allows for *maximum* guest comfort. TN is the “Temperature Narrow” setting in which the Energy Eye™ regulates room temperature only while the guest is occupying the room. This means that the Energy Eye™ System will maintain the management pre-selected temperature range even when the room is occupied. This setting guarantees that the guest does not abuse energy by setting the thermostat to an unreasonably low or high temperature. This setting will also allow the room temperature to float to its own equilibrium while the room is unoccupied, allowing for *maximum* energy savings. These settings are indicated on the Brain unit main board by the marking “temp. setback” (see diagram pg.8).

## Temperature setback

The temperature setback function on the Energy Eye™ System has the most effect on your guestroom’s energy conservation. The temperature setback refers to the minimum and maximum temperature allowed for the HVAC to operate within (high and low). The minimum temperature refers to the coolest temperature allowed while the maximum refers to the warmest temperature allowed while guests are out of their rooms. To select the minimum and maximum settings place the jumper on the management-selected temperatures (see diagram pg.8).

## 2-minute HVAC Re-cycling timer (suggested for standard PTAC HVAC units)

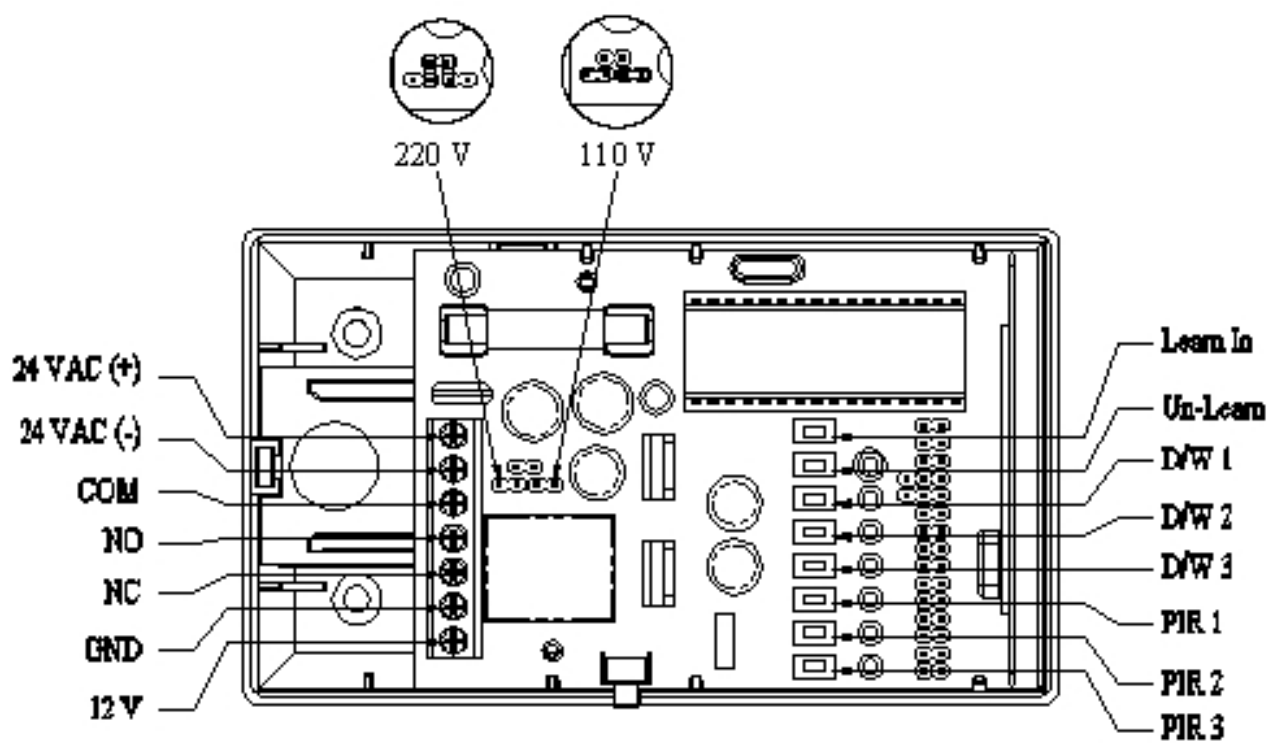
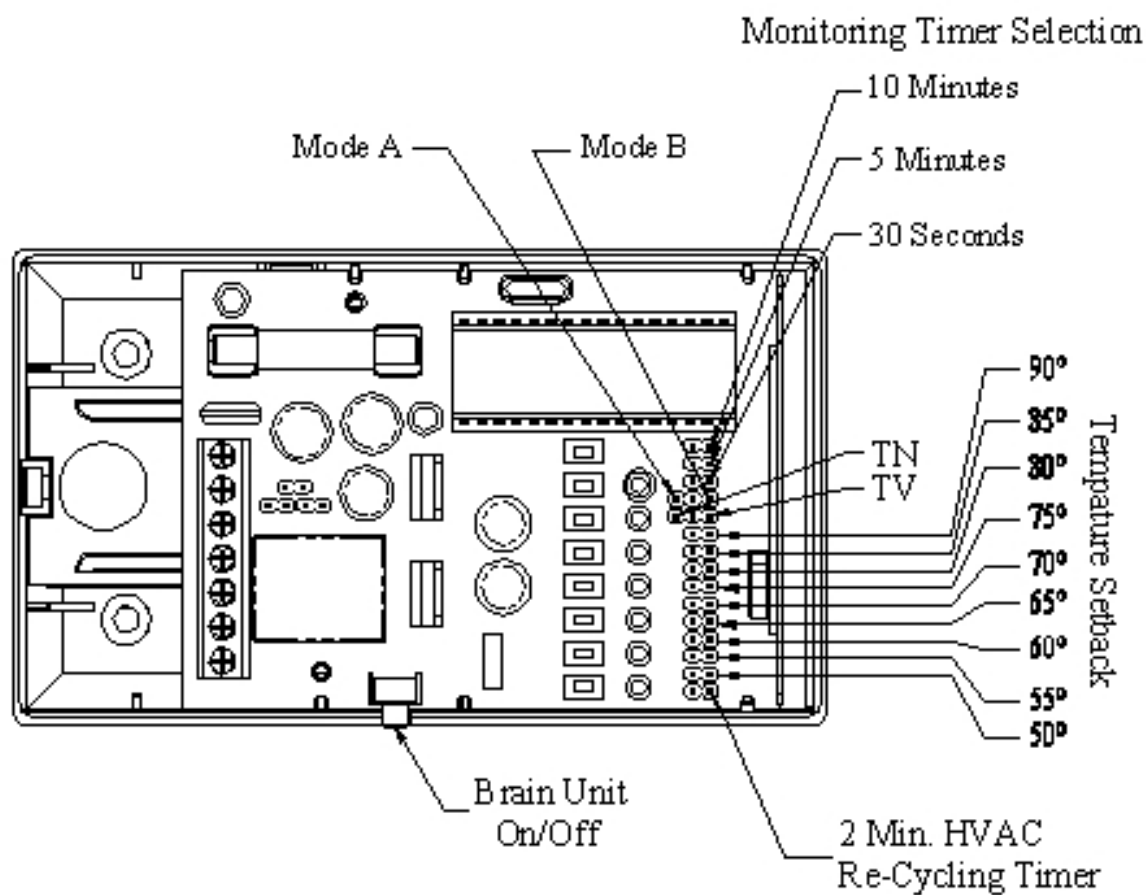
To activate the 2-minute HVAC re-cycling timer, place the jumper on the setting marked “RT” located at the far right of the jumper row on the top of the Energy Eye™ Brain Unit main board. To de-activate this feature, simply remove the jumper. This setting was incorporated to extend the life of your PTAC unit by easing wear and tear on the compressor. With Energy Eye™ you don’t have to rely on responsible guest operation of your PTAC units (see diagram pg.8).

## 110V and 220V operation

The default setting for Energy Eye™ is 110V for use in the United States. If you are in a country that operates in a 220V environment it is necessary to change the jumper settings marked P R. (see diagram pg.8)

- 1) For 110V use place the jumpers facing vertically (i.e. so the jumpers are touching NM and LK)
- 2) In order to operate in 220V you must place the two jumpers facing horizontally and adjacent to each other (i.e. so the jumpers are touching PM and RL).

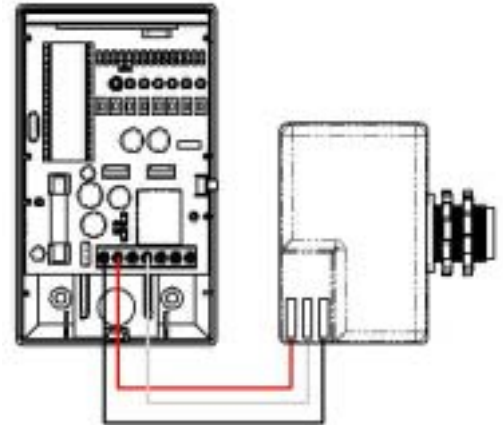




## V. Wiring the Energy Eye™ System

### Wiring the Power Pack to the Energy Eye™ Brain Unit

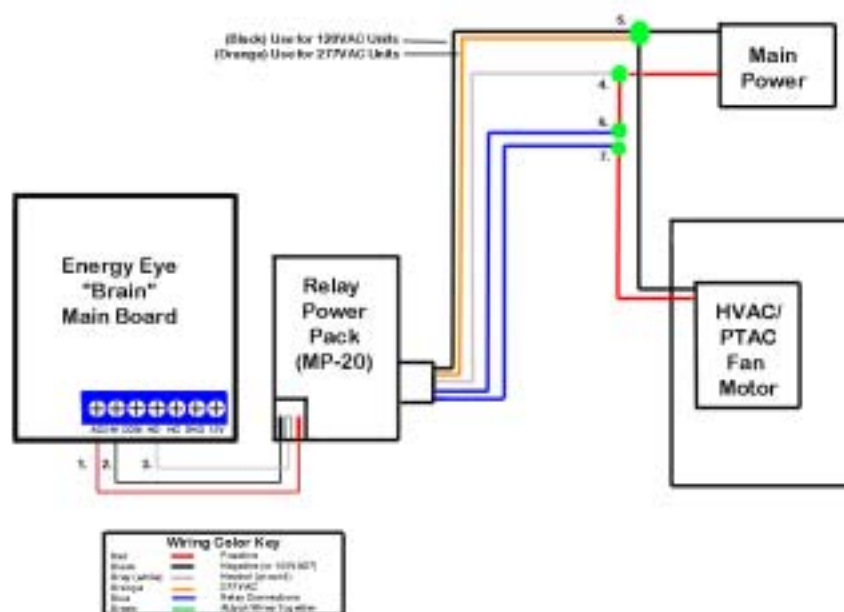
1. Strip the supplied wire so it is exposed about ½" on both ends (you will notice that there are actually three (3) separate wires located within the wire, strip each one individually).
2. Locate the three small tabs color coded RED, BLACK, and WHITE on your power pack.
3. Insert RED, BLACK and WHITE wires into the corresponding female receptors in the power pack.
4. Run the other end of the main wire through the hole located in the back of the Energy Eye™ Brain Unit.
5. Locate the BLUE terminal marked "24VAC" on the far left hand side of the Energy Eye™ Brain Unit main board.
6. Insert RED wire into the far left hand side terminal of the board marked "24VAC(+)" (see diagram pg.8) and tighten down fastener.
7. Insert BLACK wire in the second terminal from the left marked "24VAC (-)" (see diagram pg.8) and tighten down fastener.
8. Insert WHITE wire into terminal marked "NO" (see diagram pg.8) and tighten down the fastener.
9. Energy Eye™ is now ready to receive power and send its necessary command signals to the power pack.



### Wiring the Power Pack to a typical PTAC Unit

\*Note: Because every HVAC system is different, it is necessary to determine Power Pack wiring to the HVAC on a case-by-case basis.

### PTAC Wiring Diagram



## VI. Learning the Energy Eye™ Components

Once you have determined product placement, set the Brain Unit jumpers and installed each component, you must finally “learn” in the PIR(s) and Door/Window Sensor(s) to the Brain Unit.

### PIR(s)

\*Note: Additional PIR(s) are needed in suites or guestrooms with more than one living area and/or bedrooms.

1. Remove the PIR cover and install the 9V Lithium type battery supplied with your Energy Eye™ kit.
2. Verify power by the GREEN and YELLOW LED lights flashing intermittently.
3. Place a small coin (i.e. a U.S. penny or similar size) over the PIR sensor
4. Find the small rectangular button labeled “LEARN” (see diagram pg.8) on the Brain Unit main board.
5. While holding down the “LEARN” button on the Brain Unit, simultaneously press the small rectangular button labeled PIR1 (PIR2 or PIR3 depending on which one you are learning in) (see diagram pg.8).
6. You should begin to see the small RED LED light above the PIR1, PIR2, or PIR3 (depending on which one you are learning in) begin to flash.
7. Now it is time to activate the PIR by pressing the small round RED button labeled “TEST.”
8. Once the Brain Unit has detected the signal from the PIR, the RED LED on the Brain Unit main board will stop flashing and turn solid RED, indicating that the PIR is learned into position PIR1.
9. Replace cover.
10. Repeat steps 1-9 for learning in additional PIR(s) into position PIR2 and PIR3.

### *Additional PIR(s) for multi-room suites*

1. Mount additional PIR(s) as identified in section “PIR Placement”.
2. Disconnect power to all PIR(s) other than the one you are learning in. For example, when learning in PIR2, you should first disconnect the 9V lithium battery from PIR1 before continuing.
3. After learning in all of the PIR(s) needed, reconnect power to all of the units by installing the supplied 9V Lithium battery(s). This is to avoid any chance that Energy Eye™ may confuse signals between the PIR(s) during programming.

\*Note: Even if power is disconnected from a PIR it will not lose its position in the Brain unit. This means that when it is time to replace the battery(s) it is not necessary to re-learn in any of your Energy Eye™ components, .

## Door and Window Sensor(s)

Even though Energy Eye™ can operate up to three door and window sensors, there are only two (2) program modes available for each sensor: one (1) **MAIN DOOR** and two (2) **SECONDARY** (secondary window and/or sliding door).

1. Remove the battery cover from the unit. To the left of the battery cradle, there is a small jumper positioned in the corner. When installing for the MAIN entrance door, make sure that this jumper is in place. If installing for secondary window or sliding door then remove the jumper.
2. Place the included 2450 lithium coin cell battery into the cradle, making sure the flat side of the battery is facing toward you.
3. Locate the small rectangular button labeled "LEARN" (see diagram pg.8) on the Brain Unit main board.
4. While holding down the "LEARN" button on the Brain Unit, simultaneously press the small rectangular button labeled MT1 (see diagram pg.8 reference D/W 1).
5. You should begin to see the small RED LED light above the MT1, MT2, or MT3 (depending on which one you are learning in) begin to flash.
6. Now it is time to activate the door/window sensor by separating the two pieces that make up the sensor so a signal can be sent (if mounted on the door, simply open the door to separate). You will know that the signal from this sensor is detected and learned when the RED light on the Brain main board becomes solid RED indicating that a PIR is learned into position MT1.
7. Replace battery cover.
8. Repeat steps 1-7 for learning in additional door/window sensor(s) into position MT2 and MT3.
9. Reset Energy Eye™ when you are completely finished learning components (see **RESETTING THE SYSTEM**)

### *Additional Door and Window Sensors*

1. Mount additional Door and Window Sensors as identified in section "Door and Window Sensor(s) Placement".
2. In the case of learning in additional door/window sensor(s), it is very important to make sure the sensors are not transmitting. When learning in MT2, you should first make sure that the MT1 door window contact is not in the open or broken positions (i.e. the magnet and the sensor are separated) before going through step 4. This is to avoid any chance that Energy Eye™ may confuse signals between the door/window sensor(s).

\*Note: Even if power is disconnected from a door/window sensor it will not lose its position in the Brain Unit. This means that when it is time to replace the battery(s) it is not necessary to re-learn in any of your Energy Eye™ components.

**\*\*\*IMPORTANT!! : Once all components are learned in it is necessary to reset the Energy Eye™ System. Please open and close the front (Main) door at least once, making sure you are detected by the PIR(s). This resets all timers and allows Energy Eye™ to become aware of its functions. Once this is done Energy Eye™ will instantly be ready to start saving your electricity and overhead expenses!**

## **Un-learning (erasing) Components From The Energy Eye™ Memory That Are No Longer In Use:**

1. Look for the small rectangular button labeled “ERASE” (see diagram pg.8 reference Un-Learn) on the Brain Unit main board. While holding down the “ERASE” button on the Brain Unit, simultaneously press the small rectangular button corresponding to the component you are erasing (i.e. PIR1, PIR2, PIR3, MT1, MT2, or MT3).
2. You will see the small RED LED light above the corresponding button turn off. You have now successfully erased that component.
3. Repeat steps 1 through 4 to erase additional components.
4. Reset Energy Eye™ when you are completely finished erasing components (see Section VII - RESETTING THE SYSTEM).

## **VII. Testing**

Once the Energy Eye™ has been installed you will want to test the functionality.

1. Make sure that the system is in Manual Mode (system disabled i.e. the main GREEN LED is off) (see diagram pg.7 reference “Brain Unit On/Off”).
2. Once the system is disabled set the timer for 30 seconds using the appropriate jumper setting located on the Brain Unit’s main board (see settings).
3. Turn on the Energy Eye™ system into AUTO mode (see diagram pg.8 reference “Brain Unit On/Off”).
4. Open and close the door two (2) times in order reset all of the system timers.
5. Leave the room making sure the front door is fully closed.
6. After 30 seconds the HVAC should turn off. If you are using the 2-minute cycling timer wait a full 2 minutes, other wise you can then re-enter the room immediately and you should hear the HAVC turning on again.
7. If the HVAC is running as you enter the room then your test is a success.
8. If the HVAC is not running after you enter the room there may be a problem. Consult the owners manual first and make sure that you have properly followed the learning in procedures, and that all jumper settings are correct. After review, if you are still having problems call Electritech’s toll free tech support at 1-866-463-3135.
9. Re-set the timer for your desired management position using the appropriate jumper setting located on the Brain Unit’s main board.

## **VIII. Additional Information**

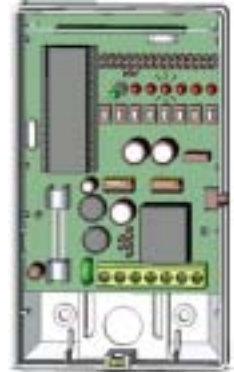
### **Resetting the System After Changing Settings**

After making any changes to the Energy Eye™ Brain Unit jumper settings (i.e. Mode A/B or temperature setback), or after learning in any new components, it is necessary to reset the system.

1. Turn Energy Eye™ into “Manual mode” by pressing the Auto/Manual button located on the side of the Brain Unit (see diagram pg.8 reference “Brain Unit On/Off”), indicated by the GREEN LED turning off.
2. Turn Energy Eye™ back on into “Auto mode” by pressing the Auto/Manual button located on the side of the Brain Unit (see diagram pg.8 reference “Brain Unit On/Off”), indicated by the GREEN LED turning on.
3. Open and close the front (Main) door at least once, making sure you are detected by the PIR(s). This resets all timers and allows Energy Eye™ to become aware of its functions.

## Batteries

- Door/Window Sensor is powered by a 2450 lithium battery, with an expected life of 2 years under normal usage.
- PIR is powered by standard 9V lithium battery with an expected life of 3 years under normal usage.
- When battery is in need of replacement the GREEN LED on the face of the Energy Eye™ Brain Unit will flash on and off.
  - Open Energy Eye™ Brain front cover, the corresponding RED LED to whichever component needs battery replacement will light solid
  - Replace all necessary batteries as soon as possible to avoid a lapse in service
  - If a battery is completely empty Energy Eye™ will automatically go into “Standby Mode” to avoid any possible system failure or guest discomfort. This is indicated when the GREEN LED on the face of the Energy Eye™ Brain Unit turns off.



For battery reorder please contact Energy Eye™ toll free at 1-866-463-3135

**NOTES:** \_\_\_\_\_

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**For Further Information Please Contact Energy Eye Inc., A Product Division of Electritech Inc.**

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Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: 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.