ELK-6030 Wireless PIR Motion Sensor

APPLICATION & OVERVIEW
The ELK-6030 Wireless PIR Motion Sensor is designed for use with control/transceivers that accept Elk's two-way technology; such as the ELK-M1XRFTWM. It is intended for use in residential and light commercial installations and incorporates many features designed to ensure its reliable performance.

The dual element pyroelectric sensor in the 6030 detects movement within a specific coverage area, by sensing the infrared energy that is emitted from an intruder moving across the sensor's field of view. A change in the infrared energy creates a temperature change in the sensor's zones, which is then processed to determine if the occurrence qualifies as a legitimate motion detect event. If it does then the built-in radio will be triggered.

The two-way radio (RF) in the 6030 transmits alarm, tamper, supervisory, and low battery messages to the control/receiver. Each sensor has a unique TXID number which is enrolled into the control during installation. With its two-way capability, the 6030 radio listens after every transmission for a positive acknowledgment from the control. This makes the sensor very energy efficient since it doesn't waste battery power repeating transmissions unless they are not acknowledged.

Like all battery powered motion detectors, the 6030 has a mandatory sleep cycle function to help extend the battery life. After detecting motion, the sensor's radio will transmit the event to the control and wait for acknowledgment. Upon acknowledgment the sensor will enter the mandatory sleep cycle. During the sleep cycle time it cannot transmit additional events. There are two (2) time choices for the sleep cycle selected via DIP Switch #4. After the sleep cycle expires the sensor will once again be capable of transmitting a new event.

The 6030 introduces the industry's first Security/Convenience Light™. This bright white LED projects a beam of light out in front of the sensor. The modes of activation/operation are: Quick blip when motion is detected and walk test mode is active. Flash during an audible alarm activation. On Solid for several seconds when Control is Armed Away and motion is detected. On Solid for several seconds when motion is detected (regardless of armed state) and Control Output #4 is On. Flash for several seconds by command from Control (use as a special attention grabber or general purpose indicator). On Solid for several seconds by command from Control (can be used to help illuminate the immediate area for cameras, etc.).

PACKAGING CONTENTS
1 - 6030 PIR electronics assembly & back housing
1 - Standard swivel bracket, locking disc, screws & anchors
1 - Blanking plug
2 - CR123A Lithium Batteries
1 - Cover locking screw
1 - Bracket screw (#4 x 3/8", pan head, sheet metal)

FEATURES
• Wireless two-way communication
• Dual element pyroelectric sensor
• Selectable pulse count
• Selectable Hi/Lo range
• Excellent immunity from white light, RF, and ESD interference
• Bi-Color RF Acknowledge LED (Green + Org/Red)
• Security/Convenience™ LED (White)
• Long life Lithium batteries (supplied)
• Low battery trouble signal
• Sleep Cycle "Battery Saver" (2 time settings)
• Periodic (64 min.) Supervisory check-in
• Cover tamper protection
• Swivel mounting bracket included
• Optional deluxe 90° swivel bracket for ceilings sold separately

SPECIFICATIONS
• Dimensions: 2.8"W x 4.4"H x 1.9"D
• Mounting Height: 6 1/2 to 7 1/2 ft
• Sensor: Dual element pyroelectric
• Coverage: Hi Range = 49 ft x 49 ft (15m x 15m) @ 88.2°
  Lo Range = 39 ft x 39 ft (12m x 12m) @ 88.2°
  20 dual element zones (2 Long, 10 intermediate, 4 mid, 4 short) plus look down (creep zone)
• Pulse Count: 1-2 or 3-4, selectable
• Sleep Time: Selectable 30 sec. or 120 sec.
• RF Signal Acknowledge Indication: Bi-Color LED
• Security/Convenience Light: White LED
• Warm Up Period: 10 seconds
• Operating Voltage: 3.0 Volts DC
• Battery Type & Size: 2 x Lithium CR123A
• Quiescent Current: < 10 µA
• Operating Temp: 32° to +120° degrees F
• Humidity: 95% RH (max.), non-condensing
• Frequency: 902 - 928 MHz channel hopping
GUIDELINES FOR USE

The 6030 Sensor is for indoor use only. It may be mounted directly on a wall or in a corner, with or without the supplied swivel bracket.

It is recommended that the ELK-6030 be located within 100 feet of the control/transceiver. While an open-air range of 400 feet or more is possible, adverse indoor and environmental conditions can significantly reduce the actual transmission range. Small changes to the sensor's mounting can often make a big difference in transmission range.

Always locate the sensor where an intruder is most likely to walk across the coverage pattern. Aim the sensor so that it faces inward toward a solid reference point such as a wall. Corner mounting often provides the best detection coverage. See Figure 1.

Choose the location and mounting height carefully. For optimum performance the recommended mounting height should be 6 1/2 to 7 1/2 ft. The surface must be solid and free of any noticeable vibrations. As with all PIR sensors, select a location that avoids direct sunlight, glass windows, fireplaces, heating or cooling sources, and areas of high humidity. Always ensure the sensor has a clear line of sight of the area to be protected. Understand that infrared energy does not pass through glass windows, fireplaces, heating or cooling sources, and areas of high humidity. Always ensure the sensor has a clear line of sight of the area to be protected.

PIR sensors, select a location that avoids direct sunlight, glass windows, fireplaces, heating or cooling sources, and areas of high humidity. Always ensure the sensor has a clear line of sight of the area to be protected. Understand that infrared energy does not pass through solid objects, including glass.

DO NOT mount a wireless sensor near metal duct work or other large metallic surfaces that might shield or adversely affect the RF signals. Prior to permanent mounting, we recommended a walk test be performed with the control/transceiver to verify acceptable operation of the wireless sensor at its intended location.

Motion Sensors are not recommended for areas where a pet can roam. Pets can and will trigger a motion sensor.

Windows should be closed in any area which has an armed motion sensor.

COVERAGE PATTERNS

1. OPENING THE HOUSING - Remove the locking screw along the bottom (if installed). Push in the retainer tab and lift the front away from the backplate.

   1. Remove locking screw (if installed)
   2. Push in on retainer tab
   3. Lift here to separate

   Figure 2. Opening the Housing

2. MOUNTING - To mount directly onto a wall WITHOUT the swivel bracket, start by inserting the supplied blanking plug into bracket mounting hole. This is very important! See Figure 3. Next, locate the 9 dimple marks on the inside of the backplate. Choose 2 (or more) of these for use as the screw mounting holes. Drill out the necessary holes using 1/8" bit. To prevent air or contaminants from getting into the sensor, DO NOT leave any exposed or unused holes!

   Bracket mounting hole
   Backplate
   Blanking Plug

   Figure 3. Prep for Wall Mounting (No Bracket)

   To mount with the supplied Swivel Bracket, start by attaching the bracket's base to the wall in the chosen location. Next, fit the backplate over the bracket and install the locking disc with bracket screw provided. Do not tighten this screw until the angle and direction have been adjusted as required.

   Locking Disc
   Backplate
   Swivel Bracket

   Figure 4. Standard Swivel Mounting

NOTE: A deluxe 90° swivel bracket may be purchased and used in lieu of the standard swivel bracket. The deluxe bracket has a short extended arm and allows the sensor to be aimed at up to a 90° offset from the wall or base. This bracket also allows the sensor to be drop mounted from a ceiling. Refer to page 4.

3. SENSOR ENROLLMENT FROM KEYPAD

   3.1 Make sure the M1XRTFW Transceiver is powered up and enrolled with the M1 Control.

   3.2 Enter M1 Keypad Installer Programming and navigate to Menu: 14-Wireless Setup

   3.3 Scroll up to sub-menu: 3: Learn Sel Wireless Transmtr and press Select (right arrow)

   3.4 Scroll to and select an unassigned WZone (wireless zone) and press Learn (right arrow) to enroll.

   3.5 Insert the Batteries in the 6030 when the keypad displays Push Transmitter Button and the M1G speaks "Press transmitter button for zone xx") . Upon successful enrollment the keypad will chime and briefly display the 6 digit TXID printed on the sensor. If the TXID of the sensor is not displayed then enrollment was unsuccessful. To attempt enrollment again you must remove the batteries and wait 20 seconds before re-inserting.

   Rapid-Enroll auto advances to the next vacant wireless zone to await another enrollment. To keep the previous 6030 sensor from accidentally enrolling a second time, place it face down so that its sensor cannot detect motion while the tamper is open. Repeat enroll steps for each new sensor.

   3.6 After all wireless sensors are enrolled, press the ELK or Select Wireless key to stop Rapid-Enroll.

   3.7 Set the Loop ID. Scroll to each 6030 wireless zone and press the HI (left arrow) button. An 8 digit number (the TXID in decimal) will now display followed by Loop = 0. For the 6030 move the cursor to the right (press RIGHT arrow) and enter a “2” for the Loop ID. This is VERY IMPORTANT! Press the ELK key to return back to the wireless zone display. Loop ID informs the M1 how to handle the input transmission, and thus permits the use of multi-input sensors. A 6030 PIR is a single input device and must always be Loop “2”. NOTE: The M1 default for all wireless zones is Loop “0”.

   3.8 Set Supervision Type - Set this to “1” (Normal Supervision). Press the ELK or the Select Wireless key to locate Sub-Menu: 2:Xmit Transmitter Opt. Scroll to the desired wireless zone and press Select (right arrow). Scroll to Option 2: Supervision Type and set to “1”. The control will now expect a supervisory check-in report every 64 minutes. If set to “0” the control will not expect a supervisory check-in from the sensor. NOTE: A separate M1 option sets the number of missed supervisory check-ins before a sensor is declared missing.

   3.9 PIR Auto Restore - DO NOT Enable. This option is needed for other brands of wireless PIRs which do not transmit restorals. The 6030 PIR is designed to transmit its own restore following an alarm.

3.10 PROGRAM THE ZONE DEFINITION - This must be done from Keypad Menu 5 - Zone Definitions.

   2 x CR123A Lithium Batteries
   Battery #2
   Battery #1
   Tamper Switch
   Option Switches

   Figure 5. Back View of Sensor
4. SENSOR ENROLLMENT FROM ELKRP

4.1 Launch the ElkRP PC software and open the desired Customer Account file.

4.2 Click the "*" next to Zones (Inputs) to expand the view. Look to see if there are any existing wireless zone groups. If there are none then it will be necessary to add or create a new group. To create a wireless group, right click on Zones (Inputs) and click New Wireless Zones. Place a check mark in the box to be added, starting with Group 2. Click OK. Repeat if more wireless groups are required.

NOTE: The M1 Control requires all expanded zones to be defined in groups of 16. E.G. Zones 17-32 = Group 2, zones 33-48 = Group 3, etc. Furthermore, when an M1XRFTW Two-Way Transceiver is included, it must always be enrolled at database address 2 (the first expander). This also means that the first group of wireless sensors should be defined as group 2. Since M1 allows a maximum of 144 wireless zones, the last potential wireless zone can never be higher than Zone 160. If a large number wireless zones is anticipated, it would be a good idea to avoid conflict with any future Hardwired Zones in the 17 to 160 range by NOT enrolling any Hardwired Zone Expanders (M1XIN) at any data bus addresses below 10.

4.3 Double click on Wireless - Group, (the group just added) and double click one zone at a time to define the Zone Name, Definition, Type, Attributes, etc.

4.4 The next step is to enter the sensor’s TXID and other wireless setup data. This may be done directly from each zone definition screen (click the Wireless Setup button) OR from the separate Wireless Setup menu accessed from the folders column.

4.5 Place a check mark in the Enabled box.

4.6 Set Supervision type to "1" (Normal Supervision) when an M1XRFTW Two-Way Transceiver is included. It must always be enrolled at database address 2 (the first expander). This also means that the first group of wireless sensors should be defined as group 2. Since M1 allows a maximum of 144 wireless zones, the last potential wireless zone can never be higher than Zone 160. If a large number wireless zones is anticipated, it would be a good idea to avoid conflict with any future Hardwired Zones in the 17 to 160 range by NOT enrolling any Hardwired Zone Expanders (M1XIN) at any data bus addresses below 10.

4.7 Skip past the block titled: This device is a PIR (auto restore). Do Not Enable. The 6030 PIR will transmit a restore after each alarm as long as all functions return to normal. This M1 option is for other supported brands of wireless PIRs that do not transmit restores.

4.8 Skip to the TXID box and enter the Sensor TXID that is printed on the small label attached to the sensor.

4.9 Skip to the LOOP box and enter a 2.

4.10 Click Save. Repeat the entire step 4 for each additional Wireless Zone and Sensor.

5. DIP SWITCH OPTION SETTINGS

<table>
<thead>
<tr>
<th>Position</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Future use -</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>- Future use -</td>
</tr>
<tr>
<td>3</td>
<td>1-2</td>
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<tr>
<td>4</td>
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<td>Range</td>
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<tr>
<td>5</td>
<td>HI</td>
<td>Sleep Cycle</td>
</tr>
<tr>
<td>6</td>
<td>LO</td>
<td>SEC/CONV. LED</td>
</tr>
<tr>
<td>7</td>
<td>YES</td>
<td>RF ACK. LED</td>
</tr>
</tbody>
</table>

6. After enrolling the sensor into the control and setting the Option Switches, reposition sensor over the back housing and snap it into place. This action will activate the Walk Test mode for the next 10 minutes. Perform an immediate Walk Test according to the procedure that follows.

7. If the swivel mount bracket was used then it will be possible to adjust (fine tune) the Sensor coverage. If the swivel bracket was not used, and the sensor was fixed mounted to the wall, the coverage pattern is based on the mounting height and position.

8. After Walk Testing has been completed, secure the sensor to the back housing using the locking screw provided (small countersunk screw).

WALK TEST

Walk test is a way to verify that the sensor is operating as desired and in the optimum location. Slow and short steps should be taken across the coverage zones in both directions. When motion is detected, the White LED will blink once followed by a quick blink of the Green RF ACK LED. The Green LED indicate that the sensor transmitted an alarm signal and that the control/transceiver acknowledged that transmission. See paragraph titled: RF ACKnowledge LED

NOTE: Walk Test mode bypasses the Sleep Cycle timer allowing the Sec/Convenience LED and the RF ACK LED to operate regardless of DIP switches 2, 3, and 4.

There are two Walk Test methods.

1. Sensor Walk Test - This is started by opening and closing the sensor housing to violate the tamper switch. Sensor Walk Test will end after 10 minutes.

NOTE: Sensor Walk Test can be forced to end by either arming the M1 (any arm mode) or by entering and exiting the System Walk Test mode.

2. System Walk Test - This is started by activating Keypad User Menu 3 - Walk Test Area. A wireless command is sent to each enrolled 6030 PIR telling it to join the System Walk Test mode. As each sensor is tripped the keypad will chime and display visual results. Press the asterisk (*) key to end this walk test mode.

NOTE: Two-way commands are not immediate. It can take several seconds for the sensor to receive the command to enter or exit the walk test mode.

RF ACKnowledge (Green) LED

This LED is located in the clear lens on the sensor front. It's a bi-color LED providing visual status of the two-way acknowledge (response) from the control/transceiver. In normal brightness conditions this LED may be difficult to see. DIP Switch #2 allows the Green LED to be disabled for all operations except the Walk Test Mode.

GREEN blink = Sensor has successfully transmitted a violation (alarm) transmission to the transceiver and that signal has been received and acknowledged by the transceiver. The green blink is not provided for a sensor restore transmission.

ORG/RED blink = Sensor was not successful in transmitting after multiple attempts. POSSIBLE CAUSES: a)Sensor is not enrolled. b)M1XRFTW is powered on. c)Sensor is not enrolled. d)Distance between the sensor and the transceiver is too great. Check the following:
A. Verify that the M1 Control is powered on.
B. Verify that the M1XRFTW Transceiver is powered on and that it is enrolled with the M1.
C. Verify that the sensor is properly enrolled.
D. Trip a different wireless sensor to determine if it can successfully communicate.
E. If above steps are OK, temporarily move the failed sensor closer to the transceiver and retest. If sensor successfully communicates at the closer range then it may be necessary to:
1. Relocate the transceiver to a closer and more central location to this and all other sensors.
2. Purchase and install an additional "remote" transceiver to cover the area where this sensor was mounted.

DISABLING RF ACKnowledge (Green) LED

DIP Switch #2 allows the RF ACKnowledge (Green) LED to be disabled for regular operation, helping prevent unauthorized persons from learning the coverage patterns. It also helps extend battery life. Place DIP Switch #2 in the "NO" position to disable the RF ACK LED, or in the "YES" position to enable the RF ACK LED.

NOTE: DIP Switch #2 does not disable this LED from working in the Walk Test Mode.
ANTI-TAMPER SWITCH
This switch detects the separation of the front housing from the backplate, resulting in a signal being transmitted to the control/transceiver that will cause the associated zone to become violated. Snapping the front housing back onto the backplate will restore a.

FUNCTIONAL ‘SYSTEM’ TESTING
A system test should be done by physically walking across the 6030 coverage pattern while the system is fully armed. NOTE: Allow time for the Sleep Cycle Timer to expire before testing. Always notify the Central Monitoring Station prior to performing any.

BATTERIES
The 6030 holds 2 x CR123A Lithium batteries. The estimated service life is 5 to 7 years in a typical residential installation with the Sleep Cycle set to LG (Long). Battery #1 (lower) is supervised for low voltage. When the sensor detects the voltage has reached 2.6 VDC or less (under load), a Sensor Low Battery trouble will be transmitted to the control/transceiver. This trouble will be attached to all future transmissions until fresh new batteries are installed. Battery #1 is the primary power source for all critical functions (motion detect and radio transmission) of the 6030 sensor.

Battery #2 (upper) is not-supervised for low voltage. This battery is a secondary (reserve) power source for the 6030’s critical functions, and it is the primary (primary) power source for the White Security/Convenience LED. The White Security/Convenience LED will not operate without a good battery installed in Battery #2 location.

We strongly recommend installing a battery in both locations. These 2 batteries are electrically isolated in such a way that critical functions of the 6030 can draw power from either battery, but the White LED Conveniences can only draw power from Battery #2.

To clear a sensor low battery trouble condition, remove old batteries and WAIT AT LEAST 20 seconds before installing new batteries. Once the new batteries are installed, trip the sensor a couple of times. This should send an “all good” and clear the low battery trouble.

Caution: Excessive use of the White Security/Convenience LED will reduce the life of Battery #2. More importantly, because the 6030 sensor is able to tap into Battery #2 for secondary power, any reduction of its life naturally reduces the overall operational life of the sensor. If maximum sensor operational life is the top priority, the Security/Convenience LED may be disabled by turning DIP Switch #3 OFF.

BATTERY REPLACEMENT
Use only approved 5V Lithiums. Replace both batteries at the same time and with same date code if possible. Replacements can be obtained from Alarm Distributors.
1. Remove sensor from back housing.
2. Remove both old batteries from sensor.
3. WAIT AT LEAST 20 SECONDS before installing new batteries. Observe correct polarity when installing new batteries. Do not bend or damage the metal battery holder contacts. Approved 3.0 Lithium Batteries are: Panasonic CR123A, Duracell DL123A, Varta CR123A.
4. Re-test sensor operation with the control.

BATTERY WARNING: Risk of fire, explosion and burns. Do not attempt to recharge or disassemble. Do not incinerate or expose to heat above 212°F (100°C). Dispose of used batteries properly. Keep away from children.

ACTIVATING THE WHITE SECURITY/CONVENIENCE LIGHT™
The Security/Convenience Light (White LED) illuminates out the sensor front and has several operating modes. Use this Quick tip in walk test when motion is detected. Flash during audible alarms. On Solid when control is armed to Away and motion is detected. On Solid when output 4 is 0 and motion is not commanded. Battery #2 expires before testing. This note should it ever be utilized as a substitute for a visual notification appliance.

LIMITATIONS
The 6030 Passive Infrared (PIR) Motion Detector is a highly reliable intrusion detection device, it does not offer guaranteed protection against burglary. Any intrusion detection device is subject to compromise or failure to warn for a variety of reasons:

PIR Detectors can only detect movement within a specific coverage area as diagrammed in this manual. To detect movement, the PIR Detector senses the infrared energy that is emitted from an intruder moving across the sensor’s field of view.

PIR Detectors do not provide volumetric area protection. They create multiple beams of protection. Intrusion can only be detected in unobstructed areas covered by those beams.

PIR Detectors cannot detect motion or intrusion that takes place behind walls, ceilings, floors, closed doors, glass partitions, glass doors, or windows.

The radio transceiver only provides communications. It does not have anything to do with detecting motion.

The 6030 PIR is not a Life Safety device. The Security/Convenience Light feature is not a substitute for, nor should it ever be utilized as a substitute for a visual notification appliance.

LIMITED WARRANTY
The 6030 Wireless PIR Sensor is warranted to be free from defects in material and workmanship for a period of 2 years from date of manufacture. Batteries used with wireless devices are not warranted. Elk makes no warranty, express or implied, including that of merchantability or fitness for any particular purpose with regard to batteries used with wireless devices. Refer to Elk’s website for full warranty statement and details.

FCC AND IC COMPLIANCE STATEMENT:
This device complies with Part 15 of the FCC Rules and Industry Canada License-Exempt RSS Standards. 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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is no more than that necessary for successful communication.

Conformément à la réglementation d’Industrie Canada, l’émetteur radio peut fonctionner avec une antenne de type et de gain maximum (ou inférieur) approuvée pour l’émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l’intention des autres utilisateurs, il faut choisir l’antenne de type et de gain de telle sorte que la puissance isotropiquement rayonnée équivalente (p.i.r.e.) ne dépasse pas l’intensité nécessaire à l’établissement d’une communication satisfaisante.

ELK-6030 Wireless PIR
FCC ID: TMAELK-6030X
IC: 4353A-6030X
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