

Point Six, Inc.

Wireless IR Counter Model Point Sensor IR Counter

Installation and Operation Instructions

Description

The Point Six IR Point Sensor is a battery operated infrared beam interruption sensor with a 418 MHz radio transmitter. The sensor consists of two parts; the IR transmitter and the IR receiver. The IR receiver has an integrated 6-digit LCD counter and a radio transmitter for truly wireless installation and operation. The IR transmitter produces 16 pulses of IR each second across a distance of up to 60 feet in low power mode and 100 feet in high power mode. The user can select the power mode by pushbutton on the IR transmitter. The IR transmitter flashes 16 pulses of high intensity IR each second. The nature of these IR pulses is such that the IR receiver can distinguish them from any other source of IR. This characteristic allows the IR sensor to operate in almost any environment without interference from ambient lighting.

The IR Point Sensor is designed to require very little energy; the 3 3.6 Volt Lithium batteries will operate the IR receiver for up to 8 years in normal operation. The IR receiver and IR transmitter can be placed in a **Shipping Mode** to lower energy usage and to prevent Radio transmissions during shipping. Holding the pushbutton down for a period of time greater than 10 seconds and then releasing will enter Shipping Mode. IR receiver Shipping mode is indicated by the LCD display counting automatically 1 count each second. When shipped from the manufacturer the IR counter will always be in Shipping Mode. A rapid flashing of the LED indicates IR transmitter shipping mode when the pushbutton is pressed for less than 4 seconds.

Shipping mode is terminated by entry into **Online Mode**. Online mode is entered from Shipping Mode by pushing and holding the pushbutton for greater than 4 seconds and less than 8 seconds or for the IR receiver until the LCD display clears to zero. While in Online Mode the IR Point Sensor can be placed in Shipping Mode by pushing and holding the pushbutton for greater than 8 seconds, upon release the IR Point Sensor will enter Shipping Mode and will begin counting on the LCD display once each second. Note that both the receiver and the transmitter are shipped in Shipping Mode and must be placed in Online Mode for normal operation. The IR transmitter indicates shipping mode by a rapid flashing of the LED whenever the pushbutton is pressed for periods of less than 4 seconds.

While in Online Mode the user can place the receiver in **Setup Mode** by pushing the pushbutton for a short time of 1- 4 seconds. The receiver will be placed in Setup Mode to aid in alignment of the transmitter and receiver. For a period of 2 minutes the LED on the receiver will glow to indicate the

reception of the IR beam from the transmitter. After two minutes or 8-seconds of uninterrupted beam the receiver will exit Setup Mode and return to Online Mode. In Online Mode the LED on the front of the receiver will flash briefly each time the IR beam is interrupted. The LCD counter will count each beam interruption and the internal 24-bit counters will count the beam- interruption and the beam-interruption-time.

The LCD counter and the internal 24-bit counters will perform a **Counter Reset** each time the push button on the IR receiver is pushed and held for more than 4 seconds. Counter reset is best performed after the receiver and transmitter have been setup for Online Mode operation using Setup Mode.

High Power Mode is entered by pressing and holding the pushbutton, after 4 seconds the LED will come on steady for 2 seconds. Release the pushbutton *during* the 2 seconds while the *LED is on* to enter High Power Mode. The LED will remain on for 5 seconds after pushbutton release to indicate High Power Mode. High power mode increases the IR range to 100 ft. and reduces the battery life.

Low Power Mode is set by pressing and holding the pushbutton, after 4 seconds the LED will come on steady for 2 seconds. Release the pushbutton *after* the 2 seconds while the *LED is off* to enter Low Power Mode. The LED stays off immediately after pushbutton release to indicate Low Power Mode. Low power mode reduces the IR range to 60 ft. and increases battery life.

Every 30 to 37 seconds or within 10 seconds of a beam status change the receiver will transmit a data packet using the onboard 418 MHz radio.

FCC ID: M5ZIRPC2
MADE IN USA

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 UNDESERED OPERATION

Radio data packets are received and decoded by a Point Six receiver and presented in the following format.

“IRcounter” format IDSSSSSSSSiiiiitttttCCCCCKK<CR>

Note: All fields are in ASCII Hex

“ID”

The device type field: IRcounter has device type 11 hex. A 10 hex when in service mode.

“SSSSSSSS”

The MS-30 bits of these 4-bytes are the serial number of the IRcounter. The LS-2 bits are the status flags for the **beam status**. The LS bit (**bit-0**) is the **Open beam flag** and the next most significant bit (**bit-1**) is the **Closed beam flag**. An open beam is a beam that is currently interrupted.

“iiiiii”

This 24-bit field is the traffic counter stored LS-byte first **count of beam interruptions**.

“ttttt”

This 24-bit field is the **total time in seconds** that the beam has been interrupted since the last counter reset.

“CCCC”

This field is the CRC-16 error check as was originally received and checked. This CRC is over the first 11 bytes of the packet starting with the device type and ending with inclusion of the “cccccc” data.

“KK”

This field is the mod 256 sum of all the 8-bit binary values in the response but does not include the <CR>.

Note: The “KK” field is added by the Point Six receiver and is not actually transmitted by the IR Counter. This field is added to make it easier for the user to perform error decoding on the data packet in cases where the user does not want to perform the CRC-16 error check. If the user application performs a CRC-16 error check there is no need to use the “KK” data check.

FCC Radio Frequency Interference Statement

Wireless IR Sensor

FCC ID: M5ZIRPC2

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B, of the FCC Rules. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause interference to radio communications.

The limits are designed to provide reasonable protection against such interference in a residential situation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna of the affected radio or television*
- *Increase the separation between the equipment and the affected receiver.*
- *Connect the equipment and the affected receiver to power outlets on separate circuits.*
- *Consult the dealer or an experienced radio/TV technician for help.*

MODIFICATIONS

Changes or modifications not expressly approved by **Point Six Inc.** could void the user's authority to operate the equipment.