

Extended Manual for Collision Sentry

This is a detailed instruction manual for the Collision Sentry product. To make sure this remains up to date, we will keep this exclusively online, updating continually as we increase our installed base of products and continue to conduct and publish testing data. Check back often for the most up-to-date version. All changes will be notated with the date of the update so that you know if you have the latest information.

Where to install:

Collision Sentry is designed to be mounted on a blind corner and warn drivers and pedestrians of a possible collision. Collision Sentry is specifically designed to be installed on the corners of pallet racking. Its integrated magnet mounts make it very simple to snap to any metallic object, including metallic doorways, corners, or any other metal piece. The magnets are mounted within 1.5" (38mm) of the corner, so that the device can be installed even when horizontal beams are installed on the rack. If a metallic corner is unavailable, the magnets can be removed and a set of steel "Z" clips can be installed in their place. The Z clips allow the Collision Sentry product to be mounted to any flat surface via fasteners (not included).

It is extremely important to note that the mounting location should be chosen so that the unit is not blocked from monitoring both sides of the blind corner. A simple rule to follow is if you can see the device, it can see you. Conversely if you cannot see the product from the aisle, most likely the device cannot see you either.

Height:

The sensors for the product are ideally mounted at a height of 7-9' (2.5-3 meters) off the floor. However, testing of the product has found that the product will detect motion if mounted lower or higher than the ideal height. Simple testing will confirm if this will work at a specific height in a specific location. Mount at a location to maximize coverage. Care should be taken, though, that the Collision Sentry device is mounted where the warning light is in the direct and easy field of vision of all drivers and pedestrians to ensure the lights are seen.

Initial Use:

The Collision Sentry ships with the 6 "D" cell alkaline batteries installed. During shipment and before its first use, there will be a battery tab that will interrupt the battery circuit, preventing power to the device. This battery tab is located under the top lid on the front side of the product. Once this battery tab is pulled, the battery circuit is complete and power will flow to the device.

During the initial powering of the unit, the sensors and processors are powering up and the sensors are acclimating to their environment and will not work correctly until this is complete. While the product is booting up, the LED lights on both sides will do a double-flash, once per second, until the unit is ready for use. When it is ready, the double-flashes will cease and the lights will turn on for a full 4 seconds before turning off again, to signify the product's ready state. Once this sequence is complete the product is ready to use.

This start-up sequence is only necessary when power is added to the product, either when new and the battery tab is pulled, or immediately after changing batteries. If the device is moved to a new location, for example, there is no reason to "reset" and the sensors quickly re-acclimate to the new location and begin working within a few seconds.

Detection:

Collision Sentry works by pointing a Passive Infrared detector (PIR) in both directions from a 90 degree corner. The sensor detects motion by looking at changes in the amount and intensity of infrared light. This light is emitted by moving objects such as forklifts or pedestrians, meaning the device will know when there is motion. Only when the sensors detect motion on **both sides** of the corner, meaning there is a possibility of a collision, will the device send out a warning signal. If there is motion on only one side of the corner the device will not send off a warning signal.

The logic programmed into the device allows for a latency of 3 seconds, meaning it will continue to consider a side in motion for 3 seconds after motion is no longer detected. This is done so that any moving object such as a pedestrian will continue to be "seen" even if he is momentarily hidden by objects in the aisle. This extra safety measure can result, in some cases, with the warning lights flashing when a moving object then turns the corner quickly and sets off the sensor on the other side. This is a momentary flashing of the warning signal before the initial side no longer "sees" the movement.

Warning Signal:

The warning signal is a visual only signal. The lack of an audible alarm is for a number of reasons: First, because if there are a number of Collision Sentries mounted in a facility there could be multiple alarms going off at one time. With an audible alarm it is much more difficult to pinpoint the location of the correct device. It is also possible that repeated audible warnings may tend to de-sensitize users to the signals. Additionally, because many facilities require ear plugs or other means of sound protection, it would follow that the Collision Sentry would not be heard. Finally, because the Collision Sentry is a battery powered device it is most energy efficient to send the signal visually only, maximizing the life of the batteries.

The visible warning signal is conveyed by way of LED light fixtures, one on each side of the corner, each containing 2 LED circuits. These red LED lights flash when there is a possibility of a collision. The lights begin to send their flashing signal the instant motion is detected on both sides of the corner. The lights will continue to flash 3 seconds beyond the detection of motion on either side (mentioned above). When there is no longer motion on either or both sides, and the 3 seconds have passed, the Collision Sentry will no longer flash.

Battery Life:

The Collision Sentry product's power comes from the 6 alkaline batteries housed in the device. The product is designed to be extremely energy efficient: The PIR sensors need a minimal amount of energy to keep powered; the LED lights are the most energy efficient light source available, and the quick-flashing signal is optimized to gain the most attention possible using a small amount of battery power. Energy usage, and therefore battery life, will depend on the frequency of the use of the warning lights. The more they are used, the shorter the battery life. The Collision Sentry is designed so that even if the warning signal is continually flashing, meaning sending warning signals 100% of the time, the product's batteries will last 1 full year. If the unit is sending warning signals 10% of the time, the unit's batteries should last more than 7 years, greater than the shelf life of the alkaline batteries.

Low Battery Signal:

When the battery's life is reduced to a specific percentage of life, the Collision Sentry will begin to send off a low-battery state warning. This warning utilizes the same LED lights as the warning. This signal, however, is markedly different from the typical warning signal. When the battery reaches the low limit, the LED lights will flash in a weak, alternating pattern, top, bottom, top, bottom... similar to a railroad crossing signal. During this time the Collision Sentry will continue to operate normally, detecting motion and sending warning signals. Depending on the frequency of use, the device should continue to work normally for 3-4 weeks after the commencement of the low-battery signal. It is highly recommended that once the low battery indicator begins flashing, the batteries should be changed as soon as possible.

Changing Batteries:

The Collision Sentry is powered by 6 "D" cell alkaline batteries. It is highly recommended that the replacement batteries are also of the alkaline variety. Alkaline batteries will power the unit up to 3 times longer than a typical battery. It is also recommended that the replacement batteries be as fresh as possible to ensure the longest shelf life possible for maximum life. If it is at all possible check the shelf-life of a replacement battery before purchasing to ensure maximum life.

To replace the batteries: At the top of the unit there are a set of 3 screws holding the cap to the body of the unit. These screws should be removed. Next, the curved front cover of the unit should be slid upwards and removed, exposing the battery module which holds 2 rows of 3 battery cells each. Remove the existing batteries. Take note of the direction of the existing battery cells so that the replacements are installed in the exact same manner. The batteries fit extremely tightly so they stay in place during the life of the product. A recommended method for replacement is to install the top and bottom cells first, leaving the middle cell for last. Push the lower cell against the battery modules, spring to create the room to install the middle cell.

Once the new batteries are in place, the front cover can be replaced, taking note that the product logo is oriented correctly. The cap can then be replaced and secured using the set of 3 screws. After battery replacement, the device will go through initial power up sequence (see above). Once the power up sequence is complete, the product is ready to use again.

More information:

For more information about the product, or for any other product support, please contact Sentry or an authorized Sentry reseller. Contact information for both can be found at www.sentrypro.com

Frequently Asked Questions:

1. The product is not working: I moved on one side and the warning light doesn't work
 - a. The warning light only works if there is motion on both sides of the corner. Each side independently does NOT set the warning, unless there is also motion from the second side

2. I am setting off the alarm by myself. As I walk around a corner it is lighting up and no one else is around
 - a. The sensors have a 3 second latency built into the program. This means that if a person walking down an aisle is temporarily hidden by an object in the aisle it will continue to detect that person for an extra 3 seconds – an extra level of safety. Sometimes this extra 3 seconds means a person quickly walking around a corner may set the warning light off by themselves. This is okay and the unit should quickly stop blinking.

3. I have used the Collision Sentry successfully but the product doesn't work on certain corners. It just blinks continually
 - a. Conditions exist in buildings or parts of buildings where there can be excess infrared signals. This could emanate from heater systems, reflections, or other unknown (and unseen) sources of infrared light. This may trick the sensor into "seeing" changes in infrared and therefore reporting this as motion. If this happens on both sides the product will send off a warning. If this happens on one side then motion on the other side alone will set off the warning light. If this is the case, try the product in a variety of locations to verify this situation.

4. Is the product designed for use outdoors?
 - a. No, this product is not designed to be used outdoors. The product's case is not water-tight and the electronics are designed to be used at ambient temperatures, not extremes.

5. What about freezer applications?
 - a. We have not tested the product in sub-freezing temperatures for an extended period of time. It may work in those conditions without incident, but we have not done enough testing to definitively state that it will