



SecurOS™ Soffit

Intelligent system for escorting pedestrians by dynamic illumination to prevent traffic accidents involving people at unregulated crosswalks



SecurOS™ Soffit draws the driver's attention to the pedestrian by escorting them with dynamic illumination along the pedestrian crossing.

The dynamic illumination significantly increases the speed of driver's visual-motor response, so they will have the ability to brake in time to avoid accidents.

The use of SecurOS™ Soffit provides a significant increase in road safety and reduces the overall number of pedestrian accidents and fatalities.

SecurOS Soffit is designed to operate automatically 24/7, while illuminating the pedestrian crossing only at night.

The SecurOS Soffit video analytics detectors are based on artificial intelligence technologies. They provide video processing from an IP-camera, pedestrian detection, as well as highly accurate determination of people's location in every video frame, and tracking the trajectory according to change in people's movement speed. The algorithms are designed to work well in challenging conditions that include rain, snow, trees, and shadows falling on pedestrian crossing. Machine learning technologies are also used to accurately minimize the detection of non-human objects.

UNLIKE SOLUTIONS WHERE STATIC OR DYNAMIC ILLUMINATION OF THE ROAD SIGNS OR THE WHOLE PEDESTRIAN CROSSING IS USED, THE **SECUROS SOFFIT** ILLUMINATION FOCUSES DRIVER'S ATTENTION ON PEDESTRIANS EXCLUSIVELY, WITHOUT DISTRACTING THEM TO OTHER OBJECTS.

KEY ADVANTAGES

- Combined static illumination of a pedestrian crossing and dynamic illumination of people as they move through the "zebra".
- Constant and pulsating illumination modes supported (in active mode).
- No glare for drivers due to special LED projector design.
- Neural network detector of "People".
- Ability of transmitting video and statistical data to 3rd-party systems.
- High protection class — IP66.
- Adjustable brightness of LED modules.
- LED Illuminators activated by the built-in light sensor / or signal from traffic light controller (when the traffic light is switched to "standby mode").
- Ease of install.

SECUROS SOFFIT SUPPORTS INTEGRATION WITH SECUROS TRAFFIC VIOLATION DETECTION SYSTEMS, THUS ENSURING THE DETECTION OF SUCH VIOLATIONS AS NOT GIVING WAY TO PEDESTRIANS, SPEEDING, NOT FOLLOWING ROAD SIGNS, WRONG-WAY TRAFFIC DETECTION, DRIVING ON THE SIDEWALK, DRIVING IN THE BUS LANE, etc...

CONFIGURATION

SecurOS Soffit consists of three main hardware components, installed on a pole next to the pedestrian crossing:



IP-camera with a motorized lens, temperature-proof housing, communication box and a bracket.

It monitors the pedestrian crossing and sidewalk areas on both sides of the road, transmitting video stream to the video analytics controller.

The white light LED illuminator is a set of eight (8) LED modules with an installed lighting controller and a communication box.

Each of the eight LED modules illuminates its own section of the pedestrian crossing while people are on it. Activated by the light sensor.

The brightness of LED modules is adjusted according to the original lighting condition of the pedestrian crossing.



The video analytics controller (the controller is in a temperature controlled cabinet and is mounted near the IP-camera and white light LED illumination). It includes:

Server:

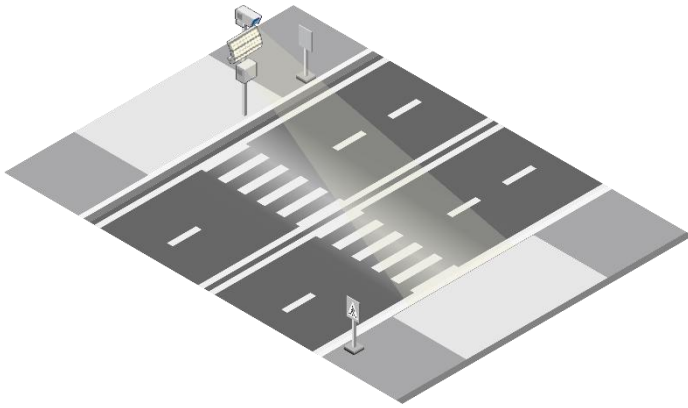
- receives and analyzes the video stream (detects people, tracking their movement along the pedestrian crossing);
- processes and temporarily stores the video and data from the IP-camera and traffic light controller (if available);
- signal transmission to the Soffit light controller to control dynamic illumination;
- collects and records data on the connected equipment operation.

Network switch

Power supply

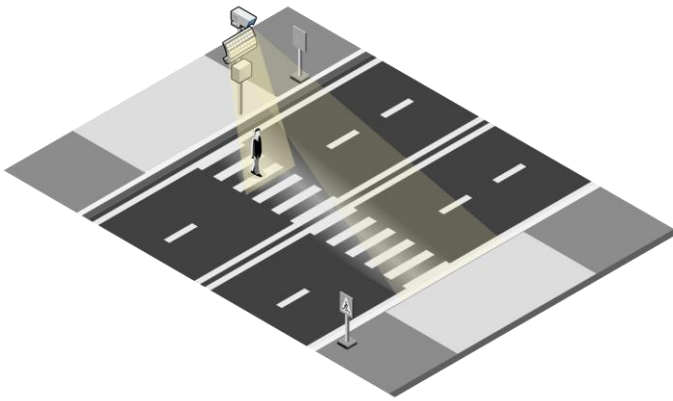
Brackets for mounting to a pole and cables (power, Ethernet) are included in the SecurOS Soffit package.

HOW DOES IT WORK



Standby mode

The white light LED illumination provides the pedestrian crossing with static illumination and can be used instead of the native pedestrian crossing lighting if necessary.



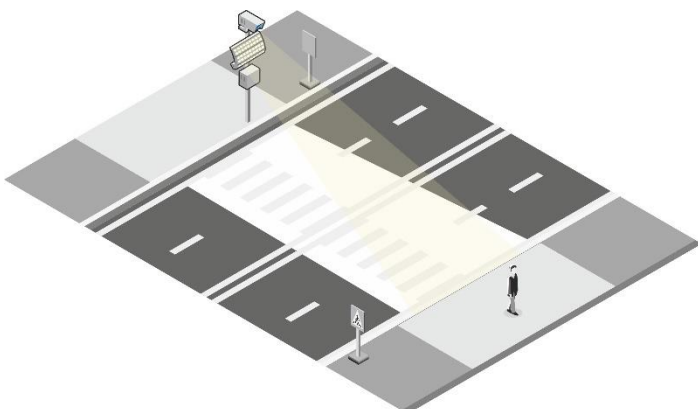
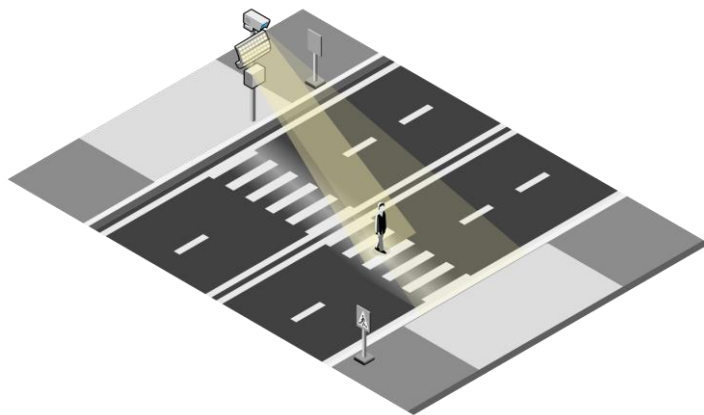
Active mode

The dynamic illumination mode is activated by the corresponding LED module's additional power. The static illumination of other LEDs continues to operate at lower power (as in standby mode).

A continuous light escorting a pedestrian walking through the crosswalk is provided.

The directed light of the LEDs illuminates only pedestrians and does not blind drivers.

Dynamic illumination can be constant or pulsating. Pulsating illumination makes the pedestrian even more visible to the driver in the light from lamps, bright signs, advertising video displays, and headlights of other vehicles.



Standby mode

After the pedestrian crosses the road, the white light LED illumination returns to standby mode.

The width of the control zone monitored by the SecurOS Soffit standard package is up to 49.2 ft (15 meters). By installing an additional IP-camera and a white light LED illuminator, the control zone can be expanded.

SPECIFICATIONS

| White light LED illuminator | |
|---|---|
| Type of illumination | LED, white light |
| Illumination entity | Ground pedestrian crossings |
| Backlight control | Automatic, program control |
| Illuminated area length | up to 49.2 ft (15 meters) — 4 lanes |
| Illumination of a pedestrian crossing (lux) | At least 45 lux in standby mode; At least 60 lux in active mode |
| Operational characteristics | |
| Bracket | On a vertical post by brackets |
| Height of mounting regarding the road surface (m) | 20 ft ... 21.3 ft (6.1 ... 6.5) — for white light LED illumination and an IP-camera; 11.5 ft (3.5 m) recommended (not less than 8.2 ft (2.5 m)) — for video analytics controller |
| Power consumption (W) | No more than 1,000 W |
| Voltage of the power supply | 110 ... 240 V, 49 ... 51 Hz |
| Operating temperature range (°C) | -60°C ... +40°C |
| Class of protection | IP66 for white light LED illumination and IP-camera; IP55 for video analytics controller |
| Weight | SecurOS Soffit (camera + LED Illuminators): 26.5 lbs (12 kg); SecurOS Soffit (with brackets and outdoor cabinet): 122.8 lbs (55.7 kg) |
| Value of average workflow (hours) | 20,000 hours |
| Average service life before major maintenance (years) | At least 5 Yrs (if regulatory work conducted) |

SecurOS Soffit ensures interoperability with third-party security systems via standard HTTP / RESTful API interfaces.

INTEROPERABILITY WITH TRAFFIC VIOLATIONS DETECTION SYSTEMS

SecurOS Soffit can operate with SecurOS Velox and SecurOS Crossroad, thus ensuring the detection of the following traffic violations:

- not giving way to pedestrians;
- not following speed limit;
- driving through red light,
- driving through stop sign;
- driving in bus lane;
- driving wrong way in a lane;
- not following road signs and many other traffic violations.

SecurOS Velox and SecurOS Crossroad gather a necessary dataset, which also includes video frames and video fragments — as an evidence base of each detected traffic violation. The data is transferred to a 3rd-party system (e.g. Police) for the subsequent traffic violation ticket processing.

Joint use of SecurOS Soffit and traffic violations detection systems SecurOS Velox and SecurOS Crossroad addresses two important public safety challenges: increasing the pedestrians' safety and motivating drivers to comply with the traffic regulations.

Sample diagram of hardware component placement for 4 lanes of traffic:

