## **Security robot**



Thermal Surveillance Robot



### Intelligent thermal surveillance

The video surveillance system of robots includes a PTZ camera with two sensors (thermal and visible radiation). The IR image enables to observe the people and machines at distances from several hundreds of meters to one kilometer, with totally absent illumination. These robot models feature a built-in supercomputer to process video images from both sensors of the PTZ camera and control it.

In surveillance mode, the PTZ camera performs circular scanning around its axis; if humans, machines or other thermal anomalies are detected, it starts tracking them. Video analytics of the thermal vision channel detect thermal anomalies in a broad range of distances. The visible spectrum sensor image processing program concurrently searches and detects humans, recognizes human faces, provided sufficient illumination. In case of low-light conditions, tracking is performed using the thermal camera image.

The robot's video surveillance system is easily integrated into the ONVIF CMS. As a result, the operator may view videos from both PTZ channels and six panoramic cameras. The operator may suspend automatic control of the PTZ camera and control it manually. The images from PTZ cameras have the resolution suitable for TV, and their sufficient detail is ensured by optical zoom, whereby a minor flow of data from the cameras enables the reliable transmission by wireless channels.

Simultaneously with video flows from the robot's cameras the CMS operator is communicated the robot's current position, in two scales. The maps are transmitted in video format and require no software tweaking by the CMS.

Robots of the series stand out for the low center of gravity and can travel non-perfect roads with minimum tipping risk.

- Dual-spectrum PTZ camera
- Detection and tracking of thermal anomalies
- Human recognition and tracking by PTZ camera
- 360-degree video surveillance by 6 cameras
- Human and face detection by panoramic cameras

All robot models in the series feature:

- Autonomous travel by a learned route
- Site patrolling by a group of robots
- Transmission of ONVIF videos and alarm events over 4G or WIFI
- Sound warning and IP intercom with an operator
- Automatic battery charging

### Robotic night patrolling

Both robot models of the series are fitted with six all-round panoramic video surveillance cameras. They enable to continuously inspect the territory at a short distance from the robot. The solution precludes a human's unnoticeable approach to the robot from the side not covered by the PTZ. In confined areas, where the robot encounters a small risk of external exposure, panoramic cameras may come without a human detector and transmit videos only if requested by the operator. A model that features human detection in the field of vision of panoramic cameras has been designed for areas where an intruder may approach a robot. In that case the operator is shown an alarm and a video of human detection by the robot. With no people around the robot, the videos from all panoramic cameras are sequentially displayed in the common alarm channel.

The analytical features of panoramic cameras may recognize the face of a human beside the robot. The function enables to control the work of security officers during site patrolling and reduce the number of alarm events transmitted to the operator. Automatic human recognition is done in the cloud servers.

The scanning PTZ camera inspects sufficiently vast areas, which enables to station the robots at considerable distances from one another. A high-potential wireless video transmission channel is needed to offer reliable functioning in lengthy facilities. To this end, the robots are fitted with an antenna in the highest point of the robot. The antenna ensures a MESH WIFI data exchange between the robots or a steady broadband 4G connection.

The robot may optionally be fitted with a powerful horn to expose a potential intruder to acoustic effects. If preordered, the robots may come complete with the blocking differential of the rear drive. That configuration enables to enhance cross-country ability in case of snow or dirt.

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### S5.2 IR series

Resolutions

**Detecting Range** 

**Recognition Range** 

Cameras for object detection

Estimated operating time

Typical sector scanning

Embedded computer for video analysis

A sector of the PTZ camera's field of vision

Focal

FOV



Argus

**S5.2 IR IP** 

IP

0.004 lx

#### The comparative characteristics of S5.2 IR series thermal security surveillance robots

#### Name Herschel Label **S5.2 IR Daylight Imaging Camera** 1280 × 720 Resolution panoramic cameras Type of panoramic cameras AHD Sensitivity of panoramic cameras 0.005 lx PTZ camera, zoom 1/4" SONY EX-View HAD CCD Optical: 36X / Digital: 12X Resolution of PTZ camera PAL: 752(H) x 582(V) Sensitivity of PTZ camera Color: 1.4lux; B/W: 0.01lux **Thermal Imaging Camera**

384 x 288 19mm 19.5°x 14.7° Vehicle: 2570m 8431,8' Man: 550m 1804,5' Vehicle: 640m 2099,8' Man: 130m 426,5'

PTZ PTZ and panoramic 2pcs T9 Т9 6 x 2048Kb/s or 4096 Kb/s, 6 x 2048Kb/s 2 x 1024Kb/s, 2 x 0.45GB per hour 10 hours 11 hours 340°

Bitrate and storage size for panoramic cameras 6 x 0.9GB or 1.8 GB per hour Bitrate and storage size per channel for PTZ cameras 100 sec



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