

"SCORPIO" Off-Road Vehicle Based Video Surveillance and Thermal Imaging System



Purpose

"SCORPIO" off-road vehicle based video surveillance and thermal imaging system (hereinafter referred to as the system) is intended for round-the-clock video surveillance of secured section within direct visibility in the visible and IR ranges.

The system is transported and mounted on Gazelle "Sobol" vehicle.

The system allows for scanning secured space in manual and video detection mode. The video detection mode provides for automatic scanning of preset positions, detection and tracking of targets with a PTZ camera and thermal imaging camera.

FineTrack and FineDome smart technologies are used to implement this mode.

The distinctive features of the system are the possibility of its rapid deployment and long-term operation in standalone mode.

The system solves the following tasks:

- intellectual video surveillance of large open spaces in real time mode;
- operation in video detection mode – automatic detection and tracking of targets by PTZ camera and thermal imaging camera, and pointing to desired area upon the detector alarm;
- arrangement of communication channel with remote monitoring station;
- equipment elements power management;
- operation in intelligent power saving mode;
- operation in power saving mode with actuation upon the detector alarms;
- integration with security detectors of "Radio Fence" perimeter security system or "Mongoose" fast-deployment mobile perimeter protection system with automatic video confirmation of targets at points of security detectors' actuation;
- autonomous system power supply from storage batteries (hereinafter referred to as SB) or vehicle onboard electric system.

System Design

The vehicle cargo area accommodates STS-10904 pneumatic mast equipped with SDP-881 pan/tilt unit with SDP-8083 long-range video camera and SDP-8815M thermal imaging camera.

The vehicle roof has a hatch, through which the mast rises, and the cover provides a tight fit when folded.

The system is equipped with a module for connecting radio-channel security detectors of "Mongoose" fast-deployment mobile perimeter protection system, which ensures internal security of deployment site and is included in the delivery set. There is also an option for connecting a set of STS-105, STS-102, and STS-110 detectors from "Radio Fence" perimeter security system.

SSW has an option to display and control detectors with their linking to the terrain map. In case of detector alarm, sound and visual notification of the operator actuates, the pan/tilt unit of the video thermal imaging module is automatically pointed to the alarm section.

The system has two power saving modes:

- thermal imaging camera and long-range video camera are switched off;
- all system components are de-energized, except for the pan/tilt unit radio modem.

The system is set to power saving mode with a command transmitted over VHF radio channel. The system can be enabled upon the alarm of the detectors from "Mongoose" or "Radio Fence" system.

The system includes a charger (for recharging the storage batteries) with function of SB unit voltage monitoring and automatic gasoline power generator control (from STL-724 autonomous power supply kit) in accordance with set threshold voltage values. There is an option for connecting the charger to single-phase AC mains or to a third-party gasoline 220V power generator.

The system is managed using the laptop with pre-installed "Scorpio" SSW. There is an option of both wired and WI-FI connection.

The system is equipped with STL-8870-night driving kit with navigator functions to drive the vehicle at night without light devices.

The system includes a radar kit as an additional expansion set supplied on special order. The article SSW allows for visualizing the radar operation and pointing the video thermal imaging module on the target according to the coordinates received from STS-172 radar. The radar is mounted on the pneumatic mast.

Scope of Application

"SCORPIO" off-road vehicle based video surveillance and thermal imaging system is used as a quickly deployed auxiliary security aid, and it system allows for monitoring of large open spaces and long-distance facilities, as well as enforcing fire control in daytime and at night, in the absence of lighting, in a wide range of weather conditions.

Specifications

Parameter	Value
Target detection range by long-range video camera, m	
- of "human" type	up to 8000
- of "vehicle" type	up to 10000
Target detection range by thermal imaging camera, m	
- of "human" type	up to 2700
- of "vehicle" type	up to 6900
Resolution of long range video camera, pixels	1280 x 960.
Pan range, deg.	360
Tilt range, deg.	±45
Speed, deg/s	
- horizontally	0.01-30
- vertically	0.01-15
Video image compression format of long range video camera	H.264 / MPEG4 / MJPEG

Mast height, m	4
Battery unit total capacity, Ah	200
Pointing the long-range camera and thermal imaging camera to desired area using "mouse" or joystick by clicking on the video image or terrain map	Yes
Pointing the long-range camera and thermal imaging camera to desired area in automatic mode upon the detector alarm	Yes
The targets automatic detection and tracking mode	Yes
Automatic control in bypass mode by preset points with the motion detection function at stop points	Yes
Remote power management of some system devices for efficient use of batteries	Yes
Intelligent power saving mode	Yes
Power saving mode with actuation upon the detector alarm	Yes
Automatic scan mode of set control points with target detection	up to 30 points
The technical readiness of the system to perform its functions after applying the power supply voltage, no later than, s	300
DC power voltage, V	24 ± 10%
AC power supply voltage for connecting external consumers, V/Hz	220/50
Storage battery service life, min., years	3
System service life, min., years	10
Temperature conditions of the system equipment operation, °C***	from - 40 to + 50
** Operating temperature conditions of the gasoline power generator from STL-724 autonomous power supply kit, °C	from - 30 to + 50
** Operating temperature conditions of the laptop included in the system, °C	from - 20 to +50