

**aselsan**

New Generation FALCONEYE  
Surveillance & Reconnaissance Systems



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# New Generation Surveillance & Reconnaissance Systems

The most important function of the surveillance and reconnaissance systems is to detect, recognize and identify the targets. For that purpose, New Generation Falconeye Surveillance & Reconnaissance System Family has been designed which can be used in both day, night and adverse weather conditions.

New Generation Falconeye Surveillance & Reconnaissance System Family consists of

thermal camera (with different types of detectors operate in different wavelengths), day TV camera, laser range finder (single pulse or multi pulse) and laser target designator as an option.

Several configurations have been composed (Falconeye-MW, Falconeye-MW/LR, Falconeye-LW and Falconeye-IRST) for meeting different requirements.



# Falconeye-MW Falconeye Mid Wave

Falconeye-MW is a light-weight electro optical sensor system that consists of a thermal camera, day TV camera and a laser range finder. It gives the advantage of high performance thermal imaging in both day, night and adverse weather conditions.

The thermal camera operates in 3-5  $\mu\text{m}$  wave length (mid wave) and has the ability of continuous zoom. Day TV camera also has the ability of continuous zoom between the narrowest and widest field of views. Laser range finder can find the range of the targets in eye safe band.

With the Digital Magnetic Compass and GPS, Falconeye-MW can find the target coordinates with high sensitivity. The system can be used with a tripod and pan/tilt unit. The control of the system is done by an external control/display unit.

Depending on the scenario, Falconeye-MW system can be used upon a MAST system, upon a vehicle or upon a stationary tripod.

## Technical Specifications

### Thermal Camera

- Wavelength: 3-5  $\mu\text{m}$
- Detector: 640x512
- Zooming: Continuous
- Wide FOV:  $25^\circ \times 20^\circ \pm 10\%$
- Narrow FOV:  $2^\circ \times 1.6^\circ \pm 10\%$
- Electronic Zoom: x2

### Day TV Camera

- Zooming: Continuous
- Narrow FOV:  $< 1.2^\circ$
- Electronic Zoom: x12

### Laser Range Finder

- Type: Eyesafe Laser
- Wavelength: 1,54  $\mu\text{m}$
- Range: 150m – 10.000m
- First/Last Reflection Choice

### GPS

- High Sensitivity



# Falconeye-MW / Long Range

While the range requirement is not satisfied by Falconeye-MW, with narrower Field of View upto 0.8°, Falconeye-MW/LR can satisfy longer ranges.

- Thermal Camera
- Day TV Camera
- Laser Range Finder
- GPS
- Digital Magnetic Compass

## General Specifications

- Lightweight, small and cost-effective system
- Operates in day, night and adverse weather conditions
- 360° surveillance with pan/tilt unit
- Continuous zooming between narrowest and widest field of views
- Direction and position determination
- Automatic image optimization
- Freeze image
- Change polarity
- Built in test



Falconeye-LW consists of a thermal camera, day TV camera and a laser range finder. The thermal camera has an matrix type detector that operates in 8-12  $\mu\text{m}$  wave length (long wave). Day TV camera has the ability of continuous zoom between the narrowest and widest field of views. Laser range finder can find the range of the targets in eye safe band.

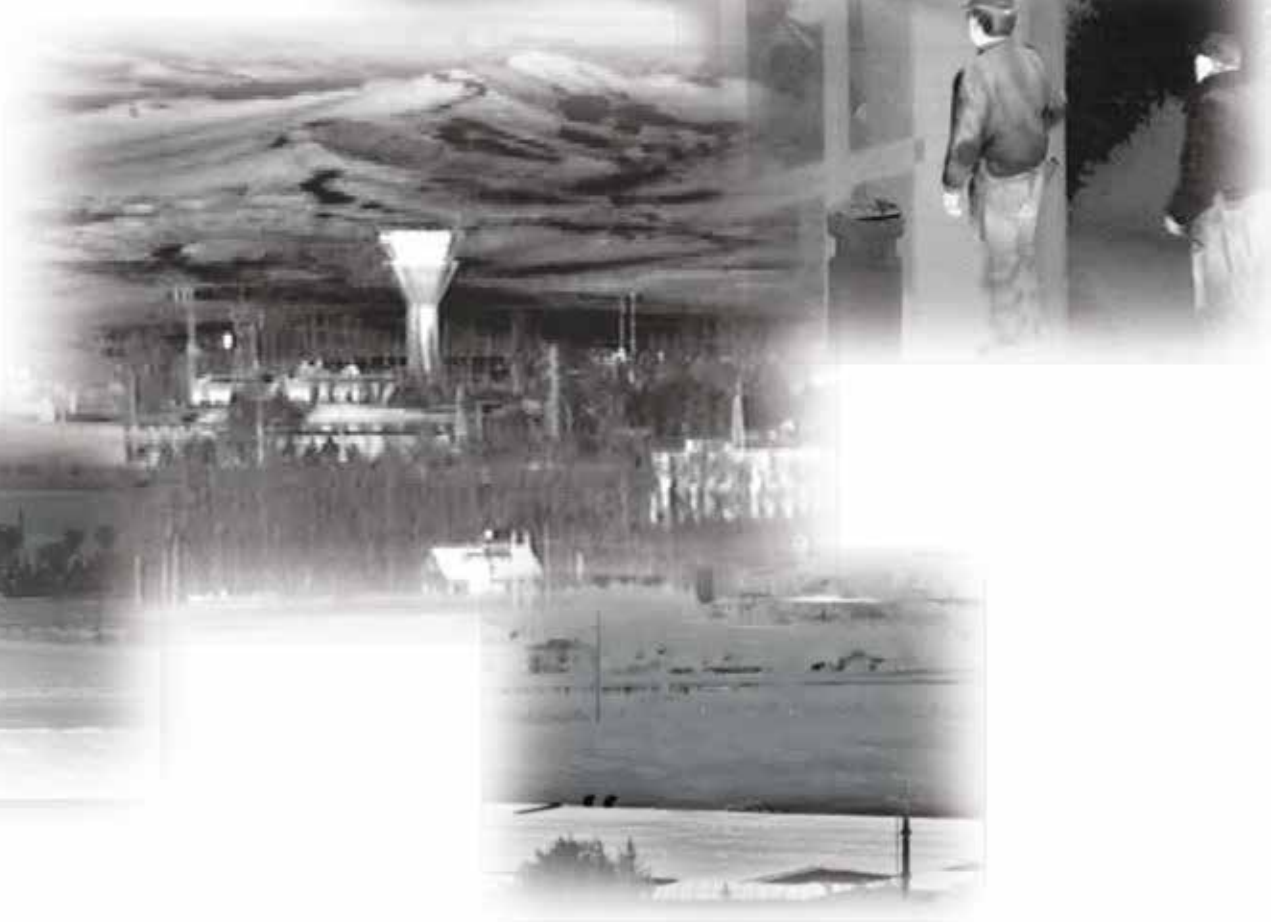
## General Specifications

- Lightweight, small and cost-effective system
- Operates in day, night and adverse weather conditions
- 360° surveillance with pan/tilt unit
- Direction and position determination
- Automatic image optimization
- Freeze image
- Change polarity
- Built in test



## Technical Specifications

- Thermal Camera  
Field of View:  
Narrow:  $3.7^\circ \times 3^\circ \pm 10\%$   
Wide:  $10.3^\circ \times 8.3^\circ \pm 10\%$
- Day TV Camera
- Laser Range Finder
- GPS
- Digital Magnetic Compass



# Falconeye – IRST

ŞaFalconeye-IRST (“Infrared Search and Track”) is a very high performance electro optical sensor system consists of a High Definition thermal camera, High Definition day TV camera, laser range finder and/ or laser target designator. Falconeye-IRST gives the opportunity of 7 days 24 hours 360° panoramic reconnaissance, surveillance, automatic target detection and automatic target tracking.

By its infrared search and track function, Falconeye-IRST can give 360° panoramic image that is refreshed in every second. The system can display all 360° at the same time with multiple monitors or can display in one monitor by sliding the image

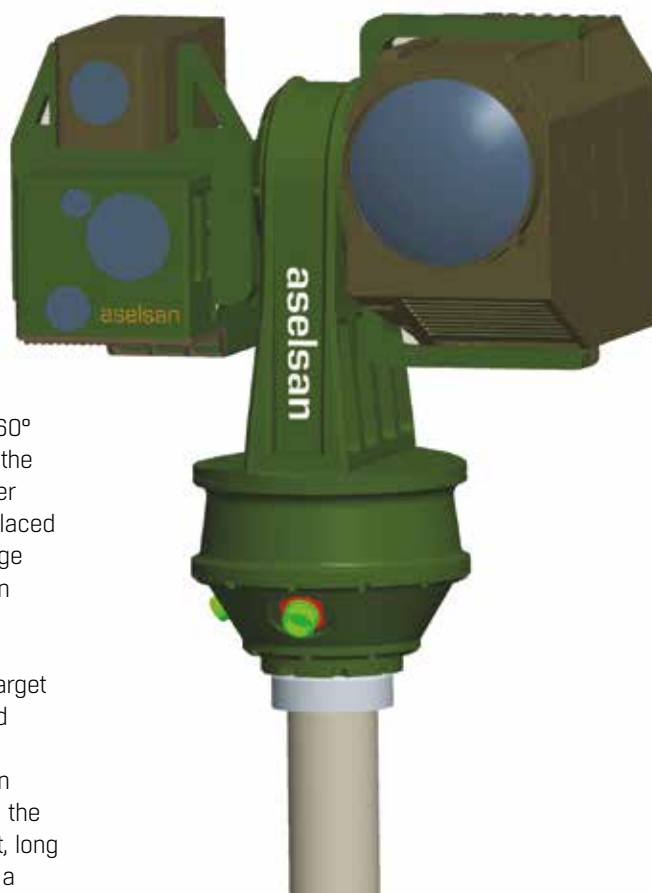
## Configuration

- Electro Optical Sensor Unit
  - Thermal Camera
  - Day TV Camera
  - Laser Range Finder
- Inertial Navigation System
- Control and Display Unit

Falconeye-IRST has a capability of positioning the sensor units 360° in azimuth and in between specific angles in elevation axes with the help of Pan/Tilt Unit. High performance thermal cameras and laser range finders can only achieve the system performances while placed on static platforms. Due to long range target recognition and range finding needs, the Pan/Tilt Unit used in the Falconeye-IRST has an extremely high stabilization accuracy.

In the absence of high performance stabilization and automatic target tracking abilities, the images taken from the imagers get distorted and blurred. So, the imaging performance, eventually the target identification abilities, would be negatively affected. Besides, it can not be possible for the deflecting systems to point the target with the laser beam while stabilization is not accurate enough. As a result, long range imaging and laser range finding becomes impossible with a stabilized pan/tilt unit.

Despite the harshness of the mission, the Falconeye-IRST System has the ability to maintain undistorted thermal and day TV image and long range laser range finding with the help of its high performance Pan/ Tilt unit and automatic target tracking capability while placed on a deflecting MAST even on the move.





## Technical Specifications

### Thermal Camera

- Wavelength: 8-12  $\mu\text{m}$
- Resolution: 576x1690
- Wide Field of View:  $12^\circ \times 7.66^\circ \pm 10\%$
- Narrow Field of View:  $3.6^\circ \times 2.3^\circ \pm 10\%$
- Electronic Zoom
- Video Output: HD-SDI



### Day TV Camera

- Wide Field of View:  $10^\circ \pm 10\%$  (in azimuth)
- Narrow Field of View:  $1^\circ \pm 10\%$  (in azimuth)
- Electronic Zoom
- Video Output: HD-SDI
- Continuous Zoom



### Laser Range Finder (Single Pulse)

- Wavelength: 1540 nm (nominal) eyesafe
- Range: 20 km
- Sensitivity: 5 m
- Multiple target warning

### Laser Range Finder (Multi Pulse)

- Wavelength: 1540 nm (nominal) eyesafe
- Frequency: 20 pulse / sec
- Range: 20 km
- Sensitivity: 5 m
- Multiple target warning



# Falconeye-IRST

- **IRST Mode:** In this operation mode, system operates in 360° in azimuth. In the image that is refreshed every second, if a target is detected the system automatically points the target in the monitor. If wanted, the system can give audible warnings.
- **Manuel Reconnaissance Mode:** In this operation mode, the system moves according to the user's commands. The system can be directed to a point in day and night.
- **Automatic Heading to a Target with Known Coordinates:** If the coordinates of the target is known, the system can directly turn to that point.
- **Automatic Target Tracking Mode:** This mode gives the user the opportunity to track a moving target very accurately. The user can select a target in Manuel Reconnaissance Mode and then automatic target tracking starts. While the vehicle is moving or stable, the field of view and the reticle always stays on the target.

In all of the operation modes explained above, the image can be recorded and with the command of the user, the system can switch to another operation mode immediately.



## General Specifications

- 7 days 24 hours reconnaissance and surveillance
- 360° day/night high definition panoramic reconnaissance,
- Day/night automatic target detection and tracking,
- Very high range performance
- Extremely high stabilization accuracy,
- Day/night data recording,
- Image/video transfer
- Direction and position determination,
- Continuous range finding,
- Target designating (option)
- Video output options such as HD digital, HD analog or SD analog

### IRST Property

- 360° panoramic view refreshed in every second
- Displaying options
- 360° at the same time via multiple monitors
- In one wide screen by sliding the image

# Falconeye-MW/SMS

Integrated to a MAST, Falconeye-MW/SMS supplies user to monitor and control the system from inside the vehicle. Falconeye-MW/SMS which is integrated to Sensor Management System has the following specifications:

- Operates with Sensor Management System
- Motion Detection
- Define Area of Interest
  - Only detects the motion in a defined area that is defined by the user
- Change Detection
  - With defined time intervals, sensor detects the changes with respect to previous scenes.
- Automatic Target Tracking
  - Tracking the target that is defined by the user
- Digital Zoom
- Illustrates the location of the vehicle/sensor in the 3D map
- Shows the location of the target (coordinate is measured by laser)
- Engagement to other sensors (radar etc.)
- Electronic stabilization
- Recording photos and videos
- Image/video transfer



## Applications

- On a MAST system upon an armoured vehicle



- Upon a tripod





ASELSAN A.Ş. is a Turkish Armed Forces Foundation company.

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