

# Modular Opto-electronic Surveillance System

Reconnaissance and security in operation areas help protect man and materials. The Opto-electronic surveillance system from Carl Zeiss Optronics enables day and night detection and recognition of stationary and moving objects at medium range. It is primarily suited for all types of mine proof and ABC proof all-terrain vehicles (e.g. DINGO).

The modular design and utilization of universal components allows the surveillance system to be used for a variety of tasks. The base vehicle can be retrofitted into a surveillance vehicle in less than two hours using simple field equipment.

Two versions of the modular opto-electronic surveillance system are available to meet customer specifications:

- as a retrofit kit in the form of a frame construction with all the necessary components (elevation mast, multi-sensor platform) covered with a GFRP hardtop
- as a surveillance container with an aluminum sandwich construction, which, as a self-contained module, contains all system components (elevation mast, multi-sensor platform).

The system is operated via the BSAE control unit installed in the driver's cabin. Camera images are displayed on a monitor and can also be recorded. An electronic map showing detected targets can be seen on the second monitor.

This system thus fulfills all the requirements on mobility and flexibility that arise during surveillance and monitoring missions under military conditions in operation areas.

The surveillance system consists of reliable, tested standard system components (industry standard).



## Technical data

### Modular Opto-electronic Surveillance System

#### Vehicle

Retrofit kit (DINGO)	Frame construction with fiberglass hardtop
Retractable unit	Lifting mast
Weight	approx. 225 kg

#### Surveillance container (DINGO)

Aluminum sandwich construction	
Retractable unit	Lifting mast
Weight	approx. 650 kg

**Note: Both the retrofit kit and the surveillance container can be equipped as follows:**

Thermal imaging device	OPHELIOS	ATTICA MW/LW
Spectral range	7.5 $\mu\text{m}$ to 10.5 $\mu\text{m}$	3 $\mu\text{m}$ to 5 $\mu\text{m}$ /8 $\mu\text{m}$ to 12 $\mu\text{m}$
Cooling system	Low-noise linear cooling system	Low-noise linear cooling system
Wide field of view	5.2° x 7°; 9° x 12°; 12.3° x 16.4°	4.7° x 6.2°; 11° x 15°
Narrow field of view	1.5° x 2°; 2.7° x 3.5°; 3.6° x 4.8°	1.6° x 2°; 3.6° x 4.8°
Detector	CMT IRCCD 96 x 4	MW: 288 x 384 or 240 x 320 LW: 288 x 384 or 480 x 640
Video outputport	CCIR	CCIR; Optional: video digital 16 bit
Power consumption	80 W (typical)	50 W (typical)

#### CCD camera

Chip	1/3" Color
Pixels (h x v)	752 x 582 effective image elements
Zoom	10 x
Video signal	CCIR

#### MOLEM laser rangefinder

Transmitter	ND:YAG-Laser with Raman cells
Wavelength	1543 nm
Range display	50 m to approx. 20,000 m
Measuring accuracy	5 m
Laser class	1M as per IEC 60825/2001
Eye-safe distance NOHD	0 m

#### Pan and tilt head

Positioning range azimuth	n x 360° (mit Schleifring)
Positioning range elevation	<sup>3</sup> -30° bis +30°
Positioning speed azimuth	<sup>3</sup> 40°/s
Positioning speed elevation	<sup>3</sup> 20°/s
Manual control	Joystick

#### Operating and video equipment

Control console (BSAE) for thermal imaging device, CCD camera, laser rangefinder and pan and tiltswivel/tilt headTFT monitor  
Video recording (analog and digital) Computer

#### Options

- Visual Camera Complex (VCC), consists of CCD-camera and LLL TV
- Military laptop with virtual console and joystick
- Electronic map
- Radio
- Tracking