

TECHNICAL SPECIFICATIONS AND BASIC CHARACTERISTICS

LASER RADAR DETECTING WARNING SYSTEM (LARDESYS- CENTURION)

THE USE AND DESCRIPTION

LARDESYS (LRDWS)-CENTURION is a real-time surveillance system preferably aimed for Naval Forces as well as for the protection of the **Stationary objects** which offers rapid and precise threat reconnaissance and warning in case of an attack. The environment is monitored and the collected data are evaluated. In case of danger, a warning signal is emitted enabling immediate reaction to the threat.

To meet the customers' requirements, LRDWS can be equipped with three various types of detection modules - Hexoculus, Octoculus and Quadroculus with different parameters of sensitivity, angular resolution and spectral range. Adequate number of sensor modules installed at various locations on protected objects provides 360° surveillance in azimuth and 90° surveillance in elevation. Sensor configurations are determined by object size and LASER "Hotspots".

High-speed processors continuously process the received laser signals in real time so that threats approaching the protected object by air, land or sea are detected immediately and engaged effectively. This high coverage improves the situation awareness which is now even more crucial as the present-day battle scenarios are characterized by a wide use of laser devices. Many of them are implemented in extremely lethal weapon systems that can pose a serious threat. LRDWS is designed to enhance protected object survivability by making the users to be able to identify threats before they approach and prevent them from attacking.

LRDWS' central unit consists of an appropriate number of active sections, usually AFT and FWD groups, plus two redundant sections, ready to take on the role for possibly damaged section. In each section, distributed detection modules are connected in daisy-chain loop. Number of detection modules per loop and number of sections per central unit can vary depending on the size of protected object. To achieve optimal signal transmission time, in each loop can be up to 10 detection modules and central unit can consists up to 10 + 2 sections. Operation of each section is internally autonomous or all sections can work in master/slave mode where each section is able to take the master function. This guarantees the system reliability even in the case of partial damage.

Data from each incident are transferred to the central unit with an accurate time-stamp that enables exclusion of the signal from being reflected by the surrounding environment. For this reason all the modules contain an autonomous, accurately synchronized time base. The central unit located inside the operator compartment, processes incoming information from individual modules, evaluates them, and then offers the operator a summary of enemy laser activities. Simultaneously, system suggests a solution to counter the threat (firing of smoke grenades – direction, position of the grenade etc.) which in semi-automatic mode waits for the operator's confirmation and in automatic mode directly executes the countermeasures to defeat enemy activities (not suggested for the stationary objects). The central unit indicates the actual state in real time, and sends this information through the serial link to the superior Tactical System; it also produces an audio signal indicating a threat to the intercom. Simultaneously, it saves all incidents to the internal memory for later review and post-analysis.

LRDWS is fully integrable and interoperable with any on-board Combat Management System. This provides the ability to operate in conjunction with almost all kind of Counter Measure Systems, such as jamming and dazzling laser or decoy launcher systems. The entire counter operation takes place within a very short time span and at a safe distance from the vessel to be protected. LRDWS allows simple and effective management of Threat Libraries. A full integration and modification of all existing Threat Libraries and creation of new ones is quick, easy and accurate. The post-analysis of recorded mission data and the resultant updating of the emitter parameter database is obvious. User-friendly operation of the Seaborne Laser Warning Detector reduces the training costs and risks of training and also improves operator adoption of knowledge and skills. Provided effective training will give you well trained operators able to take advantage of the full capabilities that our system has to offer.

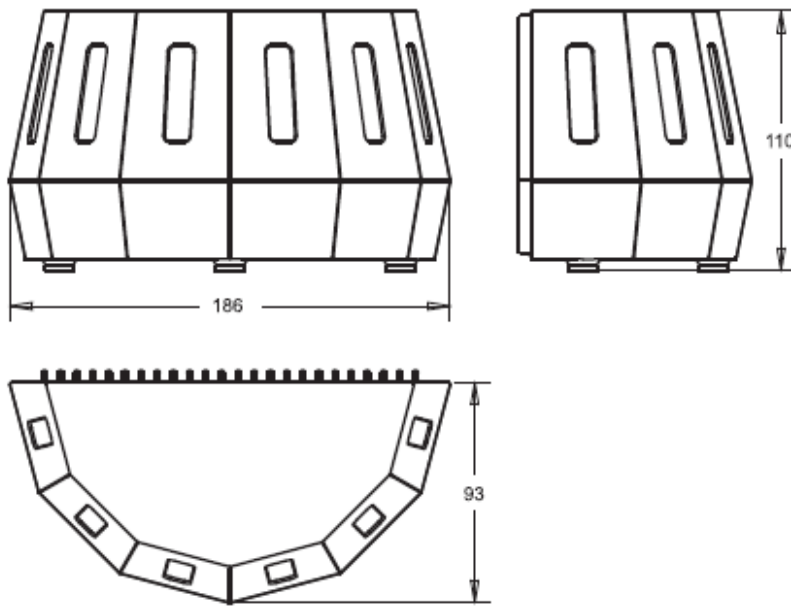
MAIN CHARACTERISTICS

- High sensitivity
- High surveillance capability
- Low false alarm rate
- Extremely low radar cross section
- Rugged aluminium alloy structure
- Optimum angled surfaces
- Meets all current MIL-STD specs
- Power Requirements: 24V
- Easy and high-impact installation
- Friendly use

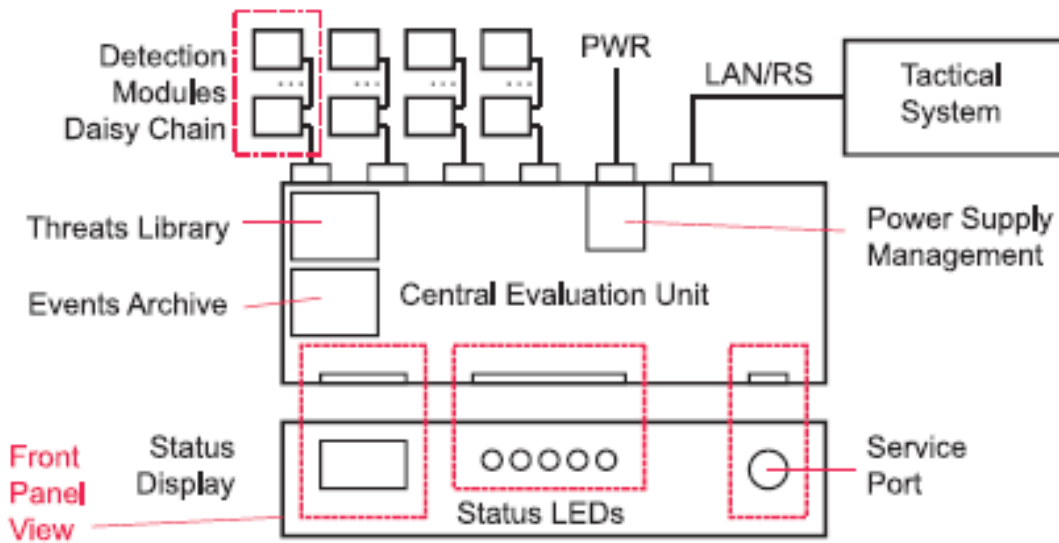
TECHNICAL DATA

Detection Module:	Hexoculus
Sensitivity:	10 W/m ²
Angular Resolution in azimuth:	15°
Angular Resolution in elevation:	90°
Full Angle of View in azimuth:	180° (±90° from central vertical line)
Full Angle of View in elevation:	90° (-20°, +70° from horizontal line)
Pulse Frequency Range:	40 KHz max
Probability of Interception:	99% for single pulse >99% for multi pulse
Operating Temperature:	-30 to +70°C
Pulse width:	5 + 500 ns
Number of detectors:	6
Spectral range:	700+ 1700 nm

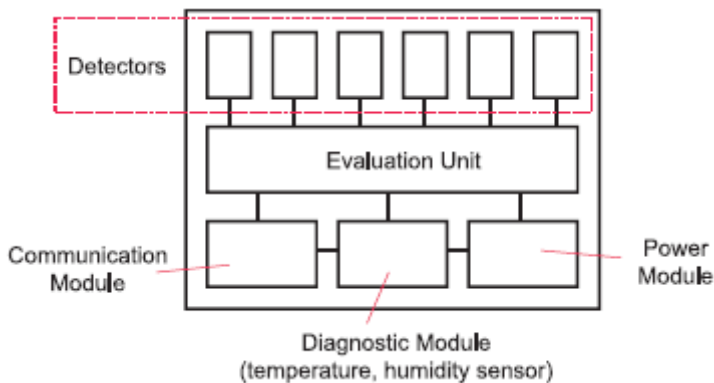
HEXOCULUS MODULE BASIC DIMENSIONS

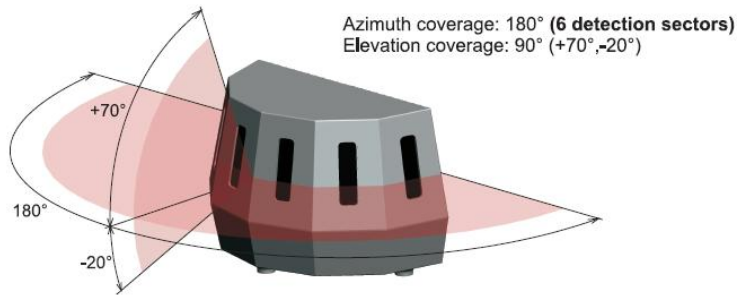


SCHEME OF THE CENTRAL CONTROL UNIT



SCHEME OF THE DETECTION MODULE



HEXOCULUS SENSOR MODULE COVERAGE:

For the effective protection of the Critical Infrastructure there is an example of technical solution in following configuration:

- 2 (two) independent branches (arms)
- 2 (two) concentrators
- Each branch with 5 (five) detecting modules connected onto its own independent concentrators in “daisy-chain”
- Both branches to be connected independently to PC (Military Design) and operated by specific designed Software.

Advisable complementary tool in protection of Critical Infrastructure is Smoke Diesel Generator as the component of Active Protection System. Smoke Generator serves for active camouflage in the Infrared Scale of the Optical Spectrum. Generator is designed for fast, sufficient and long-time production of the smoke for Critical Infrastructure and its surroundings protection against optical and laser guided attacks. Deployment of the Modules is proposed as depicted on the attached drawing to this technical offer.