SitepItalia
Vision Beyond Technology

Multirole Acoustic Stabilized System

CS-524

- Powerful Acoustic Hailer
- Stabilized Optronic System
- Accurate Target tracking
- Combat System Integration

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Overview

The MASS – Multirole Acoustic Stabilized System is a defence device offering a solution for naval, defence and security forces facing asymmetrical threats in all those operative scenarios limited to self-defence, operational patrolling, combat support or any situation during which non-lethal deterrent actions against small or medium sized vessel might be indispensable.

Deterrent actions are carried out combining high intensity long range acoustic and dazzling emissions directed towards the target through an integrated electro-optical payload enabled neural network based tracking software.

Additional features beside these main functionalities are provided by the integration of a searchlight for nocturnal illumination of medium range targets and the system capability of recording both the audio messages sent and the video stream from the cameras for future use or as a proof of countermeasures used for the target deterring.

MASS can also find application in situations where no deterrent action shall be taken but the long-range acoustic and illumination capabilities can be useful to finalize search and rescue missions, typically in refugees saving operations.

Payload and features:

MASS CS-524 integrates the following devices and features:

- **Acoustic Hailer**
- **Thermal Camera**
- **Laser Range Finder**
- **Laser Dazzler**
- **Search Light**
- **Stabilized Pedestal**
- **Video Tracking Module**
- **Remote Control Console**

Applications:

- **Search & Rescue missions**
- **Anti-piracy missions**
- **Ship's self-defence**
- **Harbour and Port Protection**
- **Airports Bird Repelling**
- **Critical Infrastructure Protection**
- **Homeland Security**

EXTERNAL UNIT:

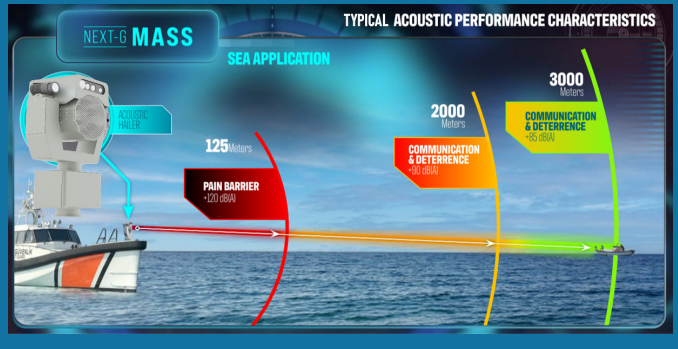
Dimensions	1,526 (h) x 950 (w) x 660 (d)
Weight:	230 kg
Material	Aluminiun, Carbon Fiber, Stainless Steel
Power Supply	115-230Vac, 50-60Hz
Consumption	600W (average), 1,5KW (maximum)

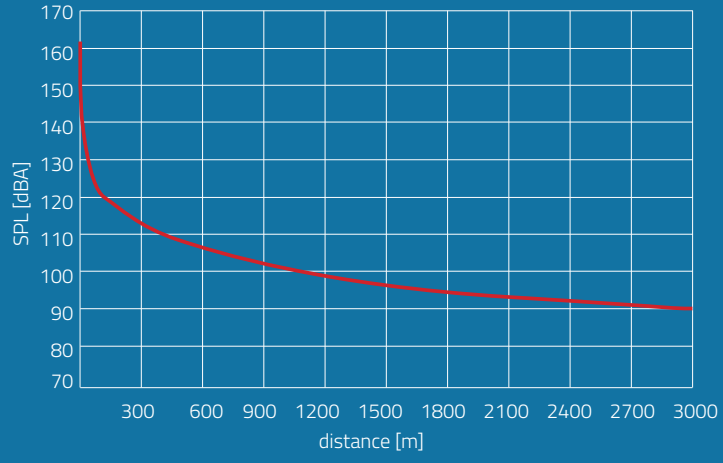
STABILIZED PEDESTAL:

Azymuth Performances	0°-359°
Elevation Performances	+/- 90°
Pointing Accuracy	±0.5°
Rotation Speed	50°/sec
Rotation Safety	Mechanical Limits

AHD - ACOUSTING HAILING DEVICES:

Maximum sound pressure level @1m	161dB peak
Long range and directive acoustic communication	3000m maximum range for intelligible voice messages (ideal conditions)
Max. output directivity	2 kHz of ± 10° (20° conical) with more than 3dB reduction compared to the beam centre
Frequence response	250Hz – 9KHz
Additional features	Audio Messages: Voice (live via microphone or pre-defined server stored messages, text to speech capability and language translation





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SEARCH LIGHT:

Bezel diameter	125mm
Length	233mm
Weight	3950g
Power Supply	12-32V
Power Consumption	60W
Protection Grade	IP67
MTBF	10000h

VIOS:

N.1 HD Camera
N.1 Thermal Camera
N.1 Laser Range Finder
N.1 Laser Dazzler

The Vios® (visible & infrared optical system) is a vertical hardware-software architecture for the handling and processing of multiple video sources developed by Sitep Italia as the natural evolution of the existing electro-optic systems for the legacy branch products

- Overall control of the visible and thermal protocols
- Tri-axial stabilization (mechanical/software stabilization combination)
- Up to 4K resolution video
- Different type thermal sensors (LWIR, MWIR, etc...) custom integration
- Physical dimension minimization for ease of integration
- Sitep Italia proprietary know how

HD CAMERA:

- Noise reduction
- Wide Dynamic Range Mode (Wide-D)
- Visibility Enhancer and Defog
- Super+ Image Stabilizer

Sensitivity	ICR-Off mode: 0.009 lx (Shutter Speed: 1/30 s), 0.0012 lx (Shutter Speed: 1/4 s or 1/3 s) ICR-On mode: 0.00008 lx (Shutter Speed: 1/30 s), 0.000005 lx (Shutter Speed: 1/4 s or 1/3 s, 30%
Optical zoom	30x Enhanced Optical Zoom; 36x StableZoom; 12x Digital Zoom
Resolution	full HD 1920X1080
FOV	58.1° to 2.3°

Thermal camera:

Type	uncooled multiplatform
Resolution	640 x 480
FPS	60 max
Focal length	25mm or 60mm°
FOV	17.5° x 13.1°, 7.3° x 5.4°

LASER RANGE FINDER:

Range performance on beam filling target	8.000 m
Range performance on.2.3x2.3m target size	5.500 m
Range Accuracy 20 to 5000 m	± 1 m
Range Accuracy 0 to 20 m	± 0.3 m
Nominal wavelength	1550 nm
Laser class per IEC 60825-1:2014, Ed.3	Class 1
Pointer beam divergence	0.3 mrad

LASER DAZZLER:

Laser Power	5.000 mW
Wavelength	532um
Beam output (module)	100 micron core fiber
Divergence	5 mrad (up to 10 mrad)
Type of emission	Continuous or Strobe mode (10 Hz)

CONTROLE CONSOLE:

The Control Console Unit is the HMI of the MASS system allowing the direct, simultaneous, or redundant control of the external units though the connection to the internal server network of the system to locally handle the following features:

- Pedestal motion activation
- Acoustic Messages emission
- Laser dazzler activation
- HD camera video display
- Video Tracking Module hosting
- Operator target locking on the video stream
- Full operation of the system

SERVER INTERFACE UNIT:

The Server Interface is a sheltered unit housed in a 19" rack

Environmental characteristics:

Vibration	MIL-STD-167-1A
Shock	MIL-STD-901D grade A
Max. operative temparature	MIL-STD-810G Meth. 501.5 Proc. II (60°C)
Min. operative temparature	MIL-STD-810G Meth. 502.5 Proc. II (-33°C)
Rain	MIL-STD-810G Meth. 506.5, Proc. I, Blowing rain
Humidity	MIL-STD-810G Meth. 507.5, Proc. II "aggravated cycle"
Salt fog	MIL-STD-810G Meth. 509.5
EMC	MIL-STD-461F Class IV

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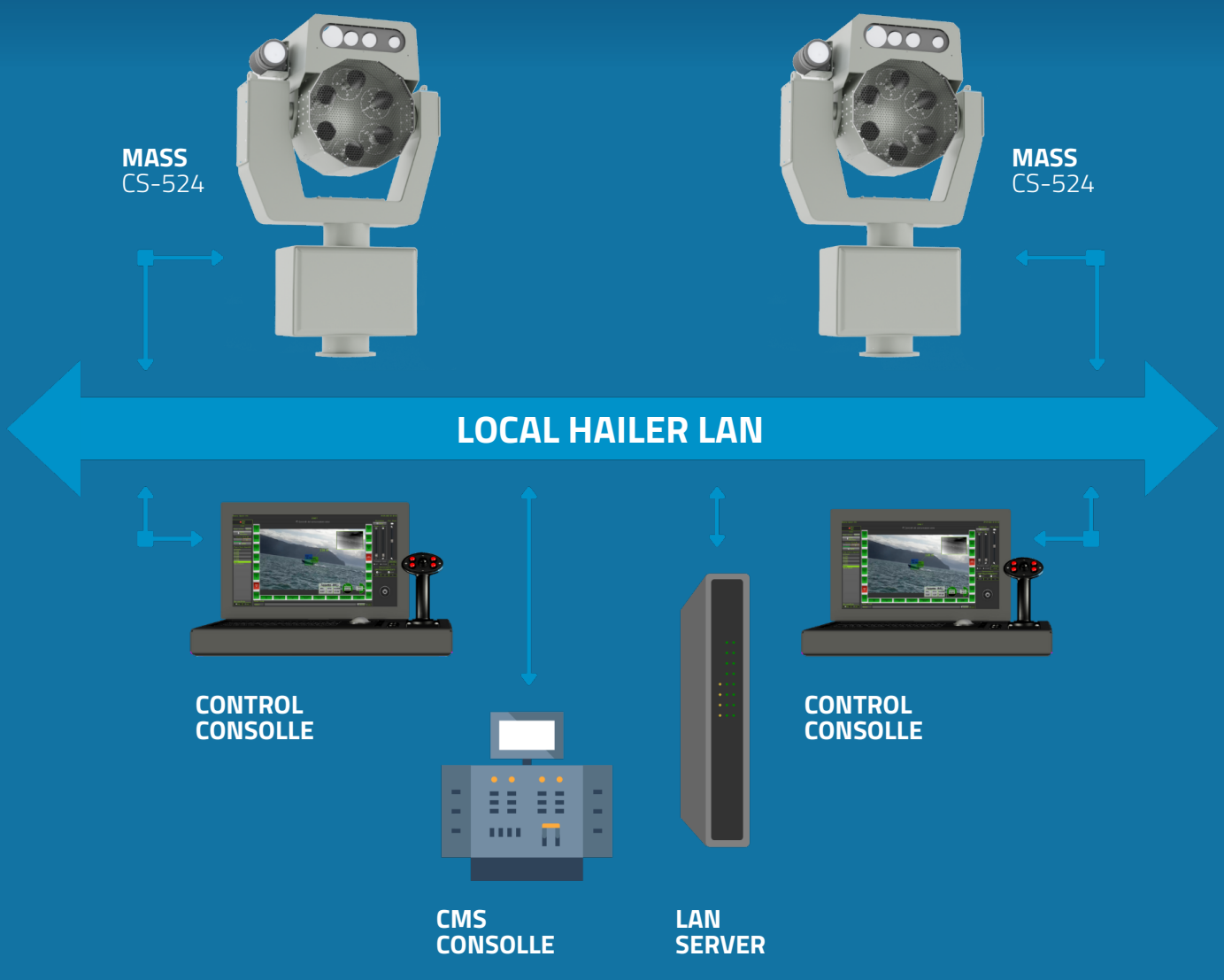
System Configuration

For ships or infrastructures of big size, usually the system is composed of two Pedestals CS-524 (installed in PORT and STBD side on ships) so as to have a complete coverage of the horizon.
Furthermore, the two MASS Pedestals, beyond the system's Control Console, can be driven and from the ship's or infrastructure Combat Management System (CMS).
In this case it is required the Optional LAN server, to allow the direct control of one or both Pedestals CS-524 from the CMS.

As an option, the LAN server can be equipped with a LCD screen, keyboard and joystick. In this case it can act as additional Control Station for one or both the MASS devices.
The Control Console is connected to the other system components (two MASS Pedestals, the Control Console, the LAN Server etc) through a Local Area Network (LAN) that can be either the ship's LAN or a dedicated LAN.
In the following block diagram, it is shown the configuration with double emitter integrated with the CMS.



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