



SELEX GALILEO

A Finmeccanica Company



ROAD MARSHALL INTEGRATED VEHICLE SITUATIONAL AWARENESS SYSTEM

SELEX Galileo has extensive experience and a broad range of technologies to enhance the battlespace capability for its Customers. In land, the Company draws from its unique experience to develop tailored vehicle architectures and a complete range of system solutions and services.

In modern day conflicts the traditional enemy and battlefield no longer exist. The threat is now asymmetric, and simultaneously fought on many fronts. The people are smarter and well informed, with their own global network communication system via the internet and mobile phone networks, and often have 24-hour satellite imagery of the battlefield at their disposal through television and the media.

To effectively counter this threat, modern forces are required to change their traditional ways of operating. They need to have the latest information as soon as it's available, and have to be able to react quickly and effectively before its value is reduced.

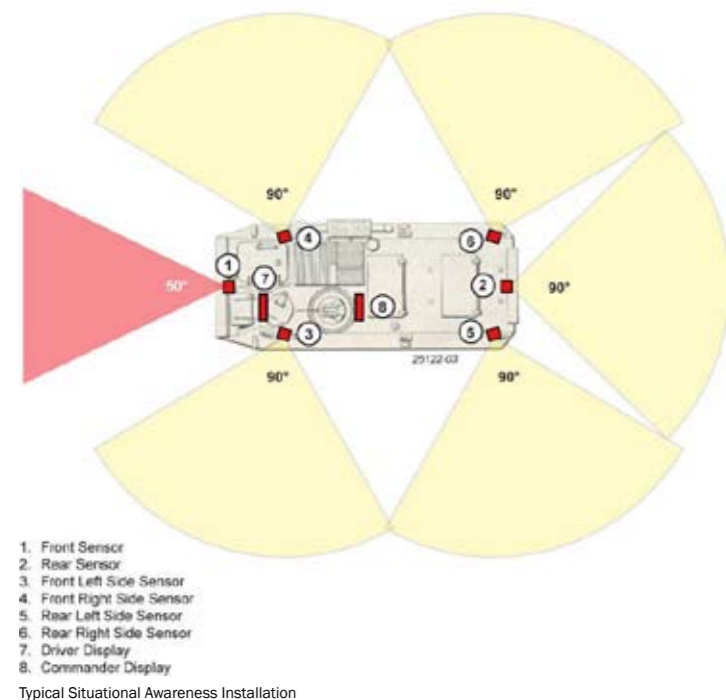
SELEX Galileo's Road Marshall is an integrated vehicle situation awareness system that has been designed to provide military vehicles with the capability to operate effectively in today's battlefield. It provides a flexible and effective modular solution that can be optimised for any vehicle in order to enhance its survivability and effectiveness.

Road Marshall combines optical and acoustic technologies from three sub-systems into one fully integrated solution, providing the user with an enhanced capability and simplified Man Machine Interface (MMI).

All the equipment is currently in service with NATO forces and is fully combat proven.

- Close-In Situation Awareness
- Long Range Surveillance and Target Acquisition
- Fully Stabilised Remote Weapon Station
- Acoustic Sniper detection with integrated "Slew to Cue" to the Weapon Station or Surveillance Sensor
- 24-hour Operational capability
- Driver's Night Vision
- Integrated GPS/ Navigation OPTION
- Digital mapping.

CLOSE-IN SITUATION AWARENESS



The system has been designed to meet the requirements for both new build and vehicle upgrade programmes.

It is a modular solution addressing the need for Driver's Night Vision and vehicle Situational Awareness, up to full 360° coverage around the vehicle and with independent operation from multiple crew stations in the vehicle.

Close-in Situational Awareness provides the commander and crew with vital intelligence about the area immediately in front of and all around the vehicle before dismounting, which is essential for today's military operations with the threat from IEDs, EFPs and RPGs.

The system uses any combination of the latest uncooled Thermal Imaging technology, colour CCD daylight or Low Light TV sensors with optional Infra-red illumination to provide the optimum vehicle solution.

The sensors are all interchangeable and allow individual vehicles to be tailored to meet specific operational requirements. Sensors may be swapped to meet different mission demands.

The system is fully qualified for both wheeled and tracked military fighting vehicles and is combat proven.

Road Marshall incorporates auxiliary inputs to accept video signals from external sources such as Remote Weapon Stations or Vehicle Gunner's Sights.

A range of displays/crew stations are available to suit the individual needs of the Driver, Commander and Crew and includes a "picture in picture" facility in the 10.4 inch display and a 10.4 inch PC based unit.



Sensor Unit with wiper



Crewstation Display

SYSTEM OPTIONS INCLUDE:

- Integrated GPS / Navigation system
- Vehicle Inclinator and display
- Long Range Surveillance sensor capability.

TECHNICAL SPECIFICATIONS

Thermal Imager

Uncooled	8 to 14 μ m
Wide Field of view	52° horizontal x 38° vertical

DAY / Lowlight Camera

Field of view	90° horizontal x 75° vertical
Sensitivity	0.009 to 100,000 Lux
Optional IR Illuminator	

Crew Stations 8.4 inch display

Display Type	Colour LCD
Resolution	800 x 600

10.4 inch display

Display Type	Colour LCD
Resolution	1024 x 768
Picture in Picture capability	

10.4 inch display with PC

Display Type	Colour LCD
Resolution	1024 x 768
Picture in Picture capability	
Full PC operation	

REMOTE WEAPON STATION



Remote Weapon Station

KEY FEATURES

- Full under armour operation
- Slew to cue capability
- Round counter
- Manual reversionary operating mode
- Pre-set fire inhibit zones
- Zero Vehicle Intrusion
- Combat proven.

SPECIFICATIONS

Powered traverse	n x 360°
Powered elevation	-10 to + 45°
Manual elevation	-12 to + 60°
High speed	1.0 rad/sec
Low speed	0.5 mrad/sec
Weight Above roof assembly	139 kg
In hull assembly	21 kg
Height above roof	535mm

Ammunition capacity (linked)

7.62mm	1000 rounds
12.7mm	500 rounds
40mm	96 rounds

SURVEILLANCE TARGET ACQUISITION AND WEAPON SIGHT

Waveband	8-12 μ m
Wide Field of View	12° x 9°
Narrow Field of View	4° x 3°
NETD	> 60 mK typical

Typical Range Performance (NATO std target)

Daylight Camera	Detection > 7.5 Km
	Recognition > 2.9 Km
	Identification > 1.6 Km
Thermal Imager	Detection > 5.5 km
	Recognition > 2 Km
	Identification > 1Km

The integrated Remote Weapon Station is designed to be fitted to most military vehicles, and replaces older vehicle cupolas, to provide the crew with the ability to carry out long range surveillance and reconnaissance activities, and if required to engage targets under armour from the protection of the vehicle.

The Remote Weapon Station accepts most small calibre weapons including 7.62mm / 12.7mm (50 Cal) and 40mm Automatic Grenade Launcher (AGL).

The system features a high performance Surveillance Target Acquisition and Weapon Sight (STAWS) which provides the vehicle with a 24-hour all weather surveillance and targeting capability. The sensor incorporates the latest uncooled Thermal Imaging technology as well as a colour day camera and eyesafe Laser Range Finder (LRF) for accurate ranging of targets.

Both non-stabilised and stabilised variants are available to allow surveillance and firing on the move.

The Joystick unit utilises a quick release mechanism and can be passed to the Commanders to operate the system and if necessary fire the weapon.

NAVIGATION AND DIGITAL MAPPING

Data from the Integrated GPS is overlaid onto the image to provide the operator with current location, bearing, waypoint and steering data.

With the 10.4 inch PC based crew station, a digital mapping system such as SELEX Galileo's VANTAGE can also be installed to provide the operator with complete Situational Awareness from the vehicle's own sensors. When networked with other friendly vehicles, a complete tactical image of the area is provided, including real time images from other vehicles, dismounted soldiers or airborne assets.

With the integrated shot detection ability fitted, the system also plots any detected shooter position onto the digital map.



10.4" Crewstation with PC

LONG RANGE SURVEILLANCE SENSOR

To provide the vehicle with a Long Range Surveillance and Reconnaissance capability, a high performance mast mounted sensor can be added to Road Marshall. The system backbone is designed to allow connection of the sensor head and joystick control into one of the existing crew station displays eliminating the need for additional crew stations and allowing the vehicles to be mission configurable.

The fully stabilised mount features a high performance thermal imaging sensor, colour CCD sensor and Laser Range Finder. Additional devices such as laser pointers can be added to the payload if required.

KEY FEATURES

- High Performance cooled 3rd generation Thermal Imager with zoom
- Colour daylight CCD sensor
- Eyesafe Laser Range Finder
- Continuous n x 360° rotation
- Over 120° elevation
- Fully Stabilised.



Long Range Surveillance Sensor

SNIPER (SHOT) DETECTION SYSTEM

KEY FEATURES

- Audible and visual bearing / range and elevation
- Only responds to the supersonic acoustic signature from small arms fire
- Provides 360 degree coverage of any shots entering a 60m perimeter around the vehicle
- Does not respond to own shots
- Linked with RWS / Long Range sensor to provide "Slew to Cue" capability.

SPECIFICATIONS

Bearing accuracy within	<2.5° RMS
Range accuracy	± 15%
Elevation accuracy	<2.5° RMS
Response time	<1.5 seconds
Operation moving Vehicle	up to 60 mph.



Sniper Detection System sensor mast

The Sniper Detection (or Shot Detection) capability provides a 75m acoustic bubble around the vehicle.

Any small arms projectiles entering this bubble are detected by the system and both audible and visual warnings are given to the crew.

The system determines the bearing from where the shot was fired, the range and the elevation angle, to allow the threat to be quickly identified and addressed.

Acoustic signature processing in the system analyses the detected sound waves and only responds to the unique supersonic signature from small calibre weapon fire, thereby eliminating false alarms and providing the operators with a high level of confidence.

SLEW TO CUE (RWS AND MAST MOUNTED SENSOR)

In order to speed up the response and target acquisition time, the system also sends the bearing / range and elevation data directly to either the Remote Weapon Station or Long Range Surveillance Sensor operator screens. Once the operator accepts the data, the Weapon Station or Surveillance Sensor slews directly at the detected shot position, allowing the operator and or vehicle commander to view the location where the shot came from, identify the nature of the threat and take the appropriate action.

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