

Enhanced Situational Awareness
(ESA) System

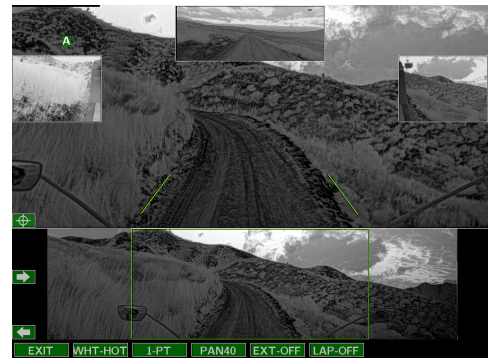
ENHANCED SITUATIONAL AWARENESS (ESA) SYSTEM

IMPROVES SURVIVABILITY AND MISSION CAPABILITY BY PROVIDING USERS WITH ENHANCED COVERAGE.

DRS' Enhanced Situational Awareness system uses the DVE Wide as the heart of the system. Featuring three 17 μm uncooled infrared cameras, it outputs a stitched 107° x 30° field of view video where each of the three internal and up to three external camera videos can be individually selected by the user.

The driver can electronically pan through the 107° total horizontal field of view the new camera provides. This unique capability allows the driver to see the road edges on both sides. The incorporated vehicle wheel track indicators aid the driver in clearly identifying any potential impediments to safe operation, whether driving forward or in reverse.

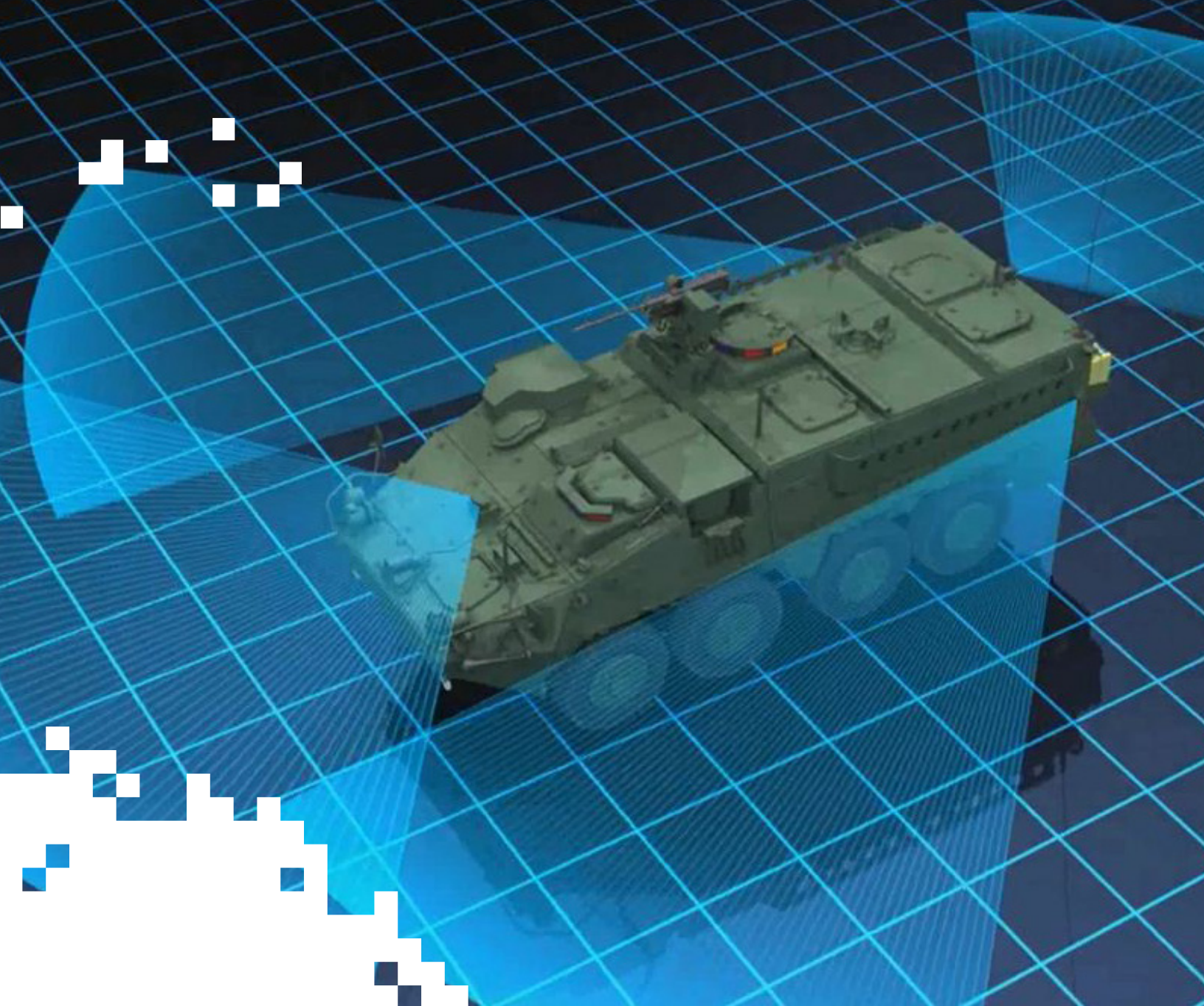
Currently fielded DVE systems can be easily upgraded to an ESA system, with its simple, drop in replacement design. Any vehicle currently equipped with a DVE system can be readily upgraded to a DVE Wide in the field, without altering the system's current configuration.



ESA SYSTEM HIGHLIGHTS

- Custom-tailored to vehicle and mission
- Readily add capability as future mission develops
- Cost effective solution for vehicle and mission
- Drop-in replacement for all legacy DVE installations
- Supports both analog or digital displays
- Adjustable vehicle width indicators for improved safety
- All ESA products are qualified to meet and exceed MIL-PRF-49256 specifications





ESA UNCOOLED INFRARED CAMERAS AND DISPLAY

The ESA system is comprised of one (1) Driver's Vision Enhancer Wide (DVE Wide), two (2) Driver's Vision Enhancer UltraLites (DVE UL), one (1) Driver's Vision Enhancer UltraWide (DVE UW) and one (1) Driver's Vision Enhancer (DVE) Display Control Module (DCM).



DVE UltraWide



DVE Wide



DVE UltraLite



DVE DCM

DRIVER'S VISION ENHANCER WIDE (DVE WIDE)

Eliminate blind spots in the darkest, most obscured conditions, keeping drivers informed and safe.

Leonardo DRS' Driver's Vision Enhancer Wide provides vehicle operators with enhanced situational awareness for combat, tactical-wheeled vehicles, armored security vehicles, and standard security vehicles (i.e. SUV). It improves survivability and mission capability by providing drivers with wider fields of view as well as the elimination of blind spots to safely navigate through dust, sand, haze, smoke, light fog and the blackest night.

The 'front-facing' DVE Wide integrates three state-of-the-art 640 x 480, 17 μ m uncooled infrared sensors, which output a stitched video of a 107 x 30 field of view (FOV). The DVE Wide can receive, manage and display video from multiple external cameras on the vehicle. The driver can electronically pan through the 107° total horizontal field of view allowing the driver the ability to see both sides of the road. The vehicle wheel track indicators aid the driver in clearly identifying any potential impediments to safe operation.

The DVE Wide is fully "backwards compatible" with all fielded DVE units, which means that any vehicle currently equipped with a DVE system can be readily upgraded. It is also forward compatible with new, high resolution, touch-screen displays.



DVE WIDE HIGHLIGHTS

- Fully backwards and forward compatible with all fielded DVE units
- Efficient interface with future high resolution displays
- Provides the driver with a 107° total horizontal fields of view in front of the vehicle
- Ability to see both sides of the road

DRIVER'S VISION ENHANCER ULTRAWIDE (DVE UW)

Provides combat support and tactical-wheeled vehicle operators with increased vision survivability and mobility.

The Driver's Vision Enhancer UltraWide combines industry leading 640 x 480, 17 μm pixel pitch technology with DRS' patented advanced absorber superstructure to provide greater sensitivity and superior image quality. Featuring a wide angle lens, the DVE UW outputs an image with a 114° x 98° field of view. This wide field of view provides the driver and crew with excellent close-in situational awareness and allows troops to deploy from combat vehicles decisively.

Measuring 6.3 x 4.8 x 4.5 inches and weighing less than 3 lbs., the DVE UW is lightweight, small, and very easy to configure and install. Its low power consumption, wide field of view and small weight make it ideal for ground vehicle applications with minimum, size, weight and power consumption requirements.



DVE UW HIGHLIGHTS

- Wide field of view
- Day/night 24-hour capability
- Clear imagery through dust, smoke and haze
- Small size; weighs less than 3.0 lbs.

DRIVER'S VISION ENHANCER ULTRALITE (DVE UL)

Powerful thermal camera that lets operators see clearly in visually degraded environmental conditions.

The Driver's Vision Enhancer UltraLite (DVE UL) thermal camera is the perfect sensor for providing combat support and service vehicle operators with increased driver's vision capability, survivability and mobility during day, night and in adverse weather conditions such as dust, smoke and haze. Featuring an industry-leading 640 x 480, 17 μ m uncooled thermal detector, the DVE UL outputs a 40° x 30° field of view providing the driver with increased awareness and safer operation while driving on cliff edges and hills when facing forward.

Weighing less than 1.25 lbs, DRS' DVE UL requires less than 5 watts of power making it ideal for missions that have minimum weight and power requirements. In addition, the small size of the DVE UL increases product versatility; it can easily be mounted on multiple locations and on various combat vehicles.



DVE UL HIGHLIGHTS

- Small size; weighs less than 1.25 lbs.
- Day/night 24-hour capability
- Lower power consumption; consumes less than 5 watts
- Versatile mounting
- Can be used with DRS' DVE Wide and DVE UltraWide

DRIVER'S VISION ENHANCER (DVE) DISPLAY CONTROL MODULE (DCM)

Best in class rugged display technology for mission-critical situations.

Lightweight and vehicle-mounted, the DVE DCM couples with DVE cameras to provide first-class situational awareness in a compact form factor with operation during night, low light, daylight conditions.

The 10.4" liquid-crystal display is completely flicker-free, with constant real-time imagery for in-vehicle and on-the-move warfighters. User controls and input/output ports deliver an optimal solution for users requiring reliable and durable video display capability - providing only the best technology for today's digital battlefield.



DISPLAY MODES

WIDE DISPLAY MODE

- Provides the user with the ability to pan 107° of the scene in the front of the vehicle.
- The pan position indicator on the bottom half indicates what portion of the scene is displayed on the upper part of the display.
- PAN40 display mode provides the user with the ability to pan the entire 107° scaled to the full display size.



External Cameras On (EXT-ON)
in Wide Display Mode

Vehicle Width Indicators

Pan Position Indicator

REAR DISPLAY MODE

- Provides the user with the ability to view what is behind the vehicle. The image in the bottom of the display shows the scene in front of the vehicle.
- External cameras on (EXT-ON) and external cameras off (EXT-OFF) mode provides the user with the ability to turn on and off the left side, right side and rear camera in WIDE, PAN40, and REAR display mode.



Vehicle Width Indicators are configurable for various vehicle applications

External Cameras On (EXT-ON) in Rear Display Mode

CAMERA SPECIFICATIONS



	DVE UltraLite	DVE Wide	DVE UltraWide
FOCAL PLANE ARRAY			
Detector Type	640 x 480	640 x 480	640 x 480
Detector Pitch	17 μ m	17 μ m	17 μ m
OPTICS			
Field Of View (FOV)	40° x 30°	3X 40° x 30° FOVs, electronically stitched to provide seamless 107° x 30° video	114° x 98°
PHYSICAL			
Weight	< 1.2 lbs.	< 7.5 lbs.	< 3 lbs.
Size	4.8 x 2.8 x 2.8 inches	8.8 x 5.7 x 3.7 inches	6.3 x 4.8 x 4.5 inches
POWER			
Power Consumption	< 5.0 W	< 14.0 W	< 5.0 W
VIDEO			
Communication Interface	RS-232 / USB 2.0	RS-232 / USB 2.0	RS-232 / USB 2.0
Video Interface	RS-170	RS-170, RGB, DVI	RS-170
ENVIRONMENTAL			
Operating Temp	-37.0° C to 49.0° C plus solar load	-40.0° C to 49.0° C plus solar load	-37.0° C to 49.0° C plus solar load

DISPLAY SPECIFICATIONS



DVE DCM

CHARACTERISTIC	MEASUREMENT
Display	10.4-inch SVGA
Pixel resolution	800 x 600 pixels
Horizontal viewing	± 85°
Video input	RS-232
Contrast ratio	500:1 typically
Frame rate	30 ± 1 frames per second
Input power	MIL-STD-1275, 16-33 VDC
Power consumption	45W normal operation, 80W during cold temperature warm-up
Dimensions	10.5 L x 9.0 H x 4.2 D inches
Weight	8.25 lbs
Operating temperature	-37°C to 49°C
Storage temperature	-46°C to 71°C
Temperature shock	From 71°C to -46°C and from -46°C to 71°C after 2 hours
Altitude (operating)	From sea level to 15,000 feet
Altitude (storage)	From sea level to 40,000 feet
Solar radiation	1,120 watts/m ² of not less than 4 hours in each 24 hour cycle
Humidity	Operate up to 88% humidity
Salt fog	5±1 percent solution at a fog rate of 0.5 to 3.0 ml / 80 cm ² per hour
Salt fog duration	48 hours followed by a 48 hour drying period
Leakage	Submersible to 1 meter for up to 10 minutes
Functional shock	40 G for 11 ms
Weapon firing shock	100 G for 1 ms

ENHANCED SITUATIONAL AWARENESS (ESA) SYSTEM

Improves survivability and mission capability by providing users with enhanced coverage.



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