AMULET Vehicle-Mounted Mine Detection System for EOD and Search Applications

Cobham Antenna Systems

The most important thing we build is trust

Protecting Lives and Livelihoods

Cobham has developed a scalable modular detection system called AMULET which is capable of detecting buried Improvised Explosive Devices (IEDs), Anti-Tank (AT) mines and other Explosive Remnants of War (ERW) in a wide variety of soil conditions from a mounted vehicle platform. The AMULET detection system has been designed to be low size, weight and power, as well as to be easy to train and easy to use. It is suitable for fitting to a wide variety of host platforms from small robotic systems through to the largest of Mine-Protected Ambush-Resistant (MRAP) vehicles. The vehicle-mounted variant can be rapidly deployed without leaving the safety of the cab, significantly improving the ease of operational deployment. It can also be automatically stowed when not in use, restoring the mobility of the host platform to close to that achieved without the system fitted.

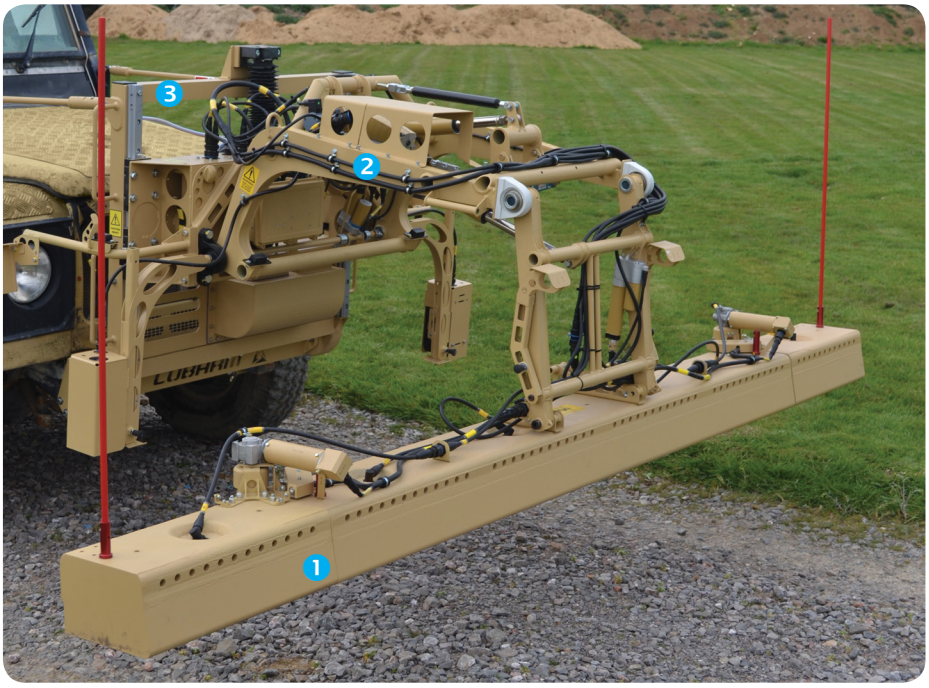
AMULET QuadPack

The AMULET system incorporates Cobham's scalable 'QuadPack' Ground-Penetrating Radar (GPR) modules, which allows detection swathe widths from as small as 0.5m to as large as 4m. The sensor system is optimised for low size, weight and power, as well as interoperability with other vehicle mounted systems. The QuadPack GPR technology is based upon Cobham's highly successful MINEHOUND™ VMR3 dual-sensor handheld detector.

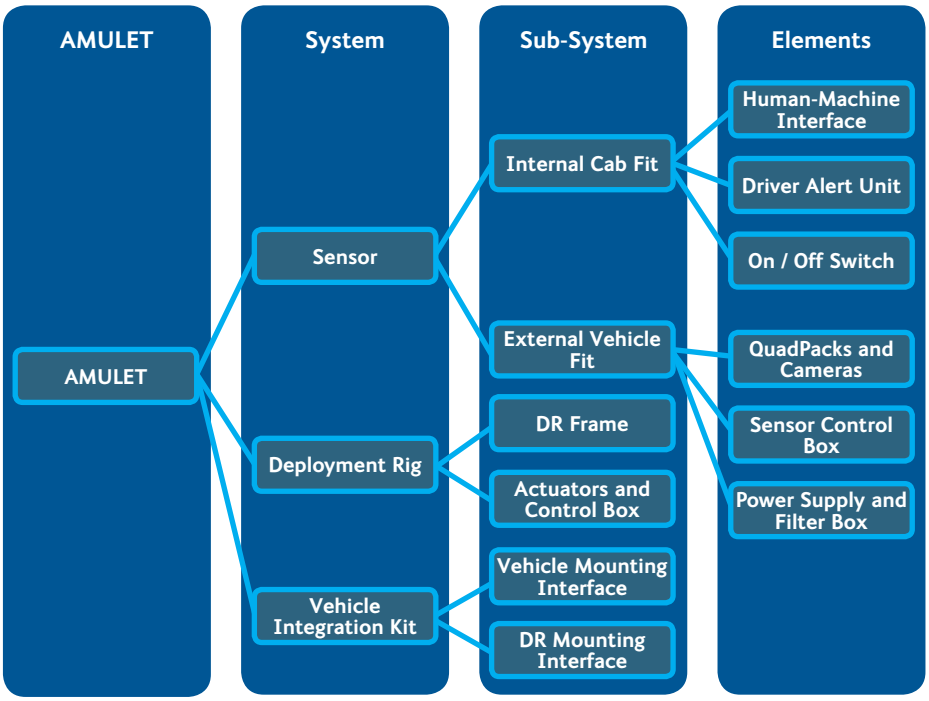
AMULET System Description

The AMULET system comprises of three key system elements:

- The **AMULET sensor system** that performs the detection role
- A **deployment rig** that articulates the sensor system between three positions on the host vehicle (stowed, deployed and calibration)
- A **vehicle integration kit** that mounts the deployment rig to the host vehicle



AMULET system: ❶ detection sensor ❷ deployment rig ❸ vehicle integration kit



The AMULET system equipment structure is represented in the figure above, with key system elements and components shown at the top and overleaf.

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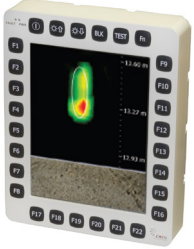
AMULET System Description (cont'd)

The AMULET sensor system comprises of a number of QuadPack sensor elements placed in ground proximity in the detect role. These QuadPacks are mounted on the Deployment Rig mechanism.

The host vehicle cab fit elements provide detection indications to the driver and vehicle commander, with control of the AMULET system being provided by the commander Human-Machine Interface (HMI). The power switch also acts as an emergency stop in the event that this is required.

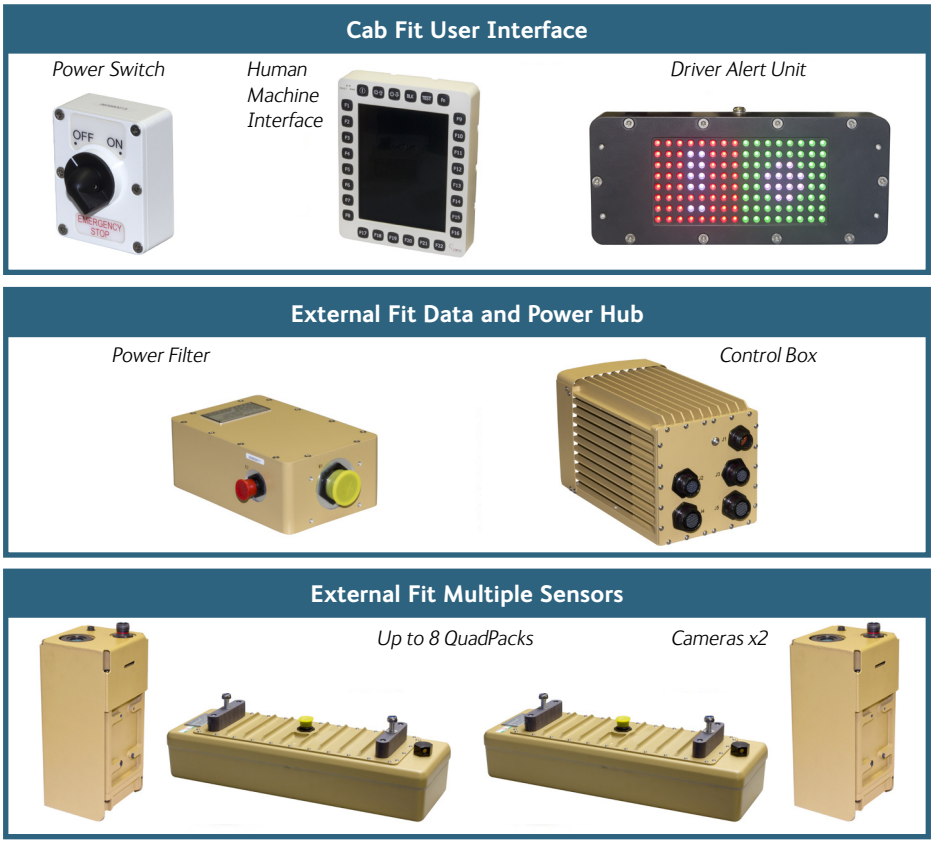
The QuadPacks and cameras are deployed using the externally fitted control box which provides for up to eight QuadPacks and two cameras. Power is provided by the power filter box which conditions the host vehicle power supply for use with the AMULET system. The QuadPacks and cameras provide the sensor data and detection information, which is displayed on the cab fitted HMI and Driver Alert Unit (DAU).

The vehicle commander HMI provides for two key information display modes which are shown below. The simple mode provides indication of an anomaly with a minimum of interpretative information. The advanced mode provides more diagnostic information allowing the operator to interpret size, shape and symmetry of the detected threat with stronger signal returns showing as red and low signal returns showing as green.



Advanced colour map display mode

Simplified display mode



AMULET system components

AMULET Specification

Parameter	Value	Units	Comment
Detection Swathe	0.5 to 4	m	
Rate of Advance	5	Kph	Nominal
System Weight	150	Kg	Excludes vehicle integration kit (VIK) Full milspec VIK weighs up to 150 Kg
Power Consumption	900	W	Sensor = 300 W, DR = 600 W (during actuation)
Power Supply Voltage	18 to 30	V DC	
Operator Display			Simple or advanced display modes
Driver Alert Unit			Red and green signal lights with audible warning

Cobham

Cobham protects lives and livelihoods with its differentiated technology and know-how, operating with a deep insight into customer needs.

The Group offers an innovative range of technologies and service to solve challenging problems across commercial, defence and security markets. The most important thing Cobham builds is trust.

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