

Ground STAndoff Mine Detection System (GSTAMIDS) Quadrupole Resonance Sensor (GQRS)



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An InVision Technologies Company

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VENDOR DESCRIPTION

The GSTAMIDS Confirming Sensor (CS) provides transmission/excitation via quantum mechanics of specific material (Nitrogen) contained in all explosives. When excited by electrons, the protons contained in Nitrogen react to the stimulus. On returning to stasis, the material generates a brief, unique RF signal which is detected and decoded by the system, allowing a declaration to be made as to whether an explosive is present or not.

As detected signals are in fact RF, it is necessary to provide RFI mitigation to allow detection in the presence of the competing signals. Some 60-80dB of mitigation is provided, by a combination of shielding, filtering and active processing. Significant technical challenges are also present in damping the transmitter quickly and in maintaining a suitable level of EMI control, allowing detection near the noise floor.

The CS System, which has been successfully evaluated at blind Government test lanes, is presently in the Technology Development phase, with a potential SDD effort in GFY 2004. The configuration as planned for SDD will contain all processing, computation and power conditioning in a single 19" RFI-tight rack-mount bay of approximately 48" in height and 27" in depth. Externally, there is a coil of approximately 40" diameter on an extendible arm allowing coverage of a three-meter path;



an RF Assembly located near the coil; an RFI Assembly to detect unwanted signals; and, possibly, an e-field antenna if judged needed. These components will be mounted in a vehicle to be selected by the integrating contractor and depending on program objectives.

The GSTAMIDS Scanning Sensor (SS) is presently under C&TD effort. The goal of the program is to allow detection/declarations to occur as the appropriate vehicle is passing down a road or equivalent, as opposed to the CS, which is stationary over a suspect site for some seconds.



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Power Source	Environmental
An Auxiliary Power Unit, vehicle-contained, presently requiring 10kw of single-phase 110V AC power. Also, for cooling, an Environmental Protection Unit of approximately 5kw will be required. These values are to be selected by the vehicle integrator, based on total requirements.	As a Technology Development unit, environmental requirements have not been included in the CS design, and are subject to the requirements developed for SDD.

Sensor	Description	Detection	Size/Weight	Features	
Radio-Frequency	Detects signals returned by explosive-containing materials in the 500KHz-5MHz band.	Tracked Vehicle Wheeled Vehicle Personnel	TBD TBD TBD	All TBD	<ul style="list-style-type: none"> All TBD; personnel safety has been considered a primary requirement.

Device	Description	Message Type	Size/Weight	Features
Monitor (optional)	Provides the capability, if desired, to display sensor transmissions and declarations. Can also be used to relay sensor data to a remote manned vehicle.	Binary-coded Decimal	Equipment Bay: As described, weight <140 lbs External Coil: 100 lbs External RF Assembly: 30 lbs External RFI Assembly: <20 lbs	<ul style="list-style-type: none"> Great flexibility in mounting is available in this configuration, allowing use of a wide range of host vehicles.