M-UGS®

CRITICAL INFRASTRUCTURE PROTECTION AND CAMP PROTECTION SURVEILLANCE

M-UGS® is a cutting-edge monitoring system. It is based on a set of ground sensors linking themselves into an ad hoc wireless network, and capable of sending alerts to a central monitoring station responsible for collecting and displaying information gathered in a geo-referenced map.
M-UGS® ground sensors are connected to each other by means of a meshed wireless network. Sensors can be combined as desired and include:

- Seismic sensors (MEMS accelerometers or geophones) to identify ground vibration caused by pedestrians or vehicles;
- Magnetic sensors (MEMS magnetometers) to monitor movement of metal objects such as vehicles.
- Acoustic sensors to detect targets by specific acoustic signatures (noise of engine, tracks etc);
- X-Band Doppler radar sensors to detect movements of objects in a narrow field of view;
- GPS receivers for sensor geo-positioning, build into the above sensor.

The M-UGS as a camp protection system is typically deployed around the forward boundaries of a camp to monitor any approach and subsequent intrusion.
Any approach and intrusion would be instantly identified and communicated back to the command center or, in the case of a mobile camp infrastructure, communicated to a ruggedized notebook. Any intrusion is based on the GPS information available from the sensors.
Optional integration of higher state sensors such as opto-electrical systems/thermal imaging systems or ground surveillance radars is available on request, but these systems are usually limited to stationary camp scenarios.

M-UGS ADVANTAGES:

- Border and wide area protection (e.g. border security, natural reserve surveillance, trafficking, illegal immigration, camp protection, critical infra structure protection);
- Easy integration with higher state sensor;
- System deployment is straightforward and easy;
- Once installed system is fail safe and left to self operate;
- Nearly invisible;
- No maintenance required;
- A cost-friendly solution with low lifecycle cost;
- Detection probability – 95% (cumulative);

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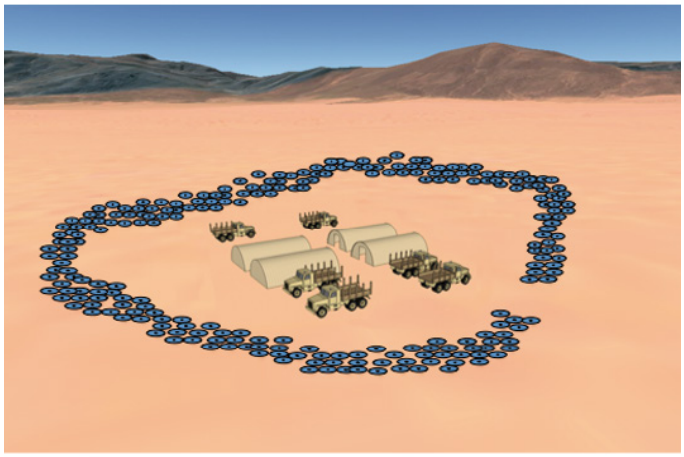
MOBILE CAMP PROTECTION 200 X 200 METER

The mobile Camp Protection system addresses the necessity for security in small mobile camps. These camps are typically short-term, vulnerable and would normally be part of an ongoing moving cross-country operation and are a designated area for military use or similar exercise where immediate surveillance needs to be provided to secure the perimeter. The camp protection system is easy and fast to deploy and provides monitoring information on a ruggedized command and control system.



TECHNICAL DATA

SYSTEM	M-UGS®
Water	Waterproof (IP 67)
Service	No maintenance needed
Temperature	-31°C - +85°C
Humidity	Up to condensation point
SEISMIC SENSOR	
Detection range	5 - 20 m (*)
Sensitivity	28.8 V/m/s (0.73 V/in/s)
Type	Geophone
GPS	
Channel	12 channel/satellite
Protocol	NMEA-0183
Technology	SiRF III technology
Receiving altitude/speed	Up to 18.000 m/s up to 515 m/s
MAGNETIC	
Detection range	5 - 20 m (*)
Sensitivity	0.8 – 1.2 mV/Gauss
DOPPLER RADAR	
Detection range	5 - 50 m (*)
Design	Proprietary-based security technology
Type	X-Band Doppler radar motion detector
ACOUSTIC	
Detection range	25 - 100 m (*)
Sensitivity	–42 dB @ 1 kHz
Bandwidth	100 Hz – 800 Hz
Type	Omni-directional MEMS microphone
COMMUNICATION	
Type	Single chip transceiver for ISM and SRD frequency bands
Transmitter type	QPSK UHF transmitter/receiver
Tuning range	300 MHz – 2.4 GHz
Encryption	Communication amongst ensors and sensor network interface is encrypted
Type	Frequency hopping

(*) Depending on type of intrusion

MOBILE CAMP

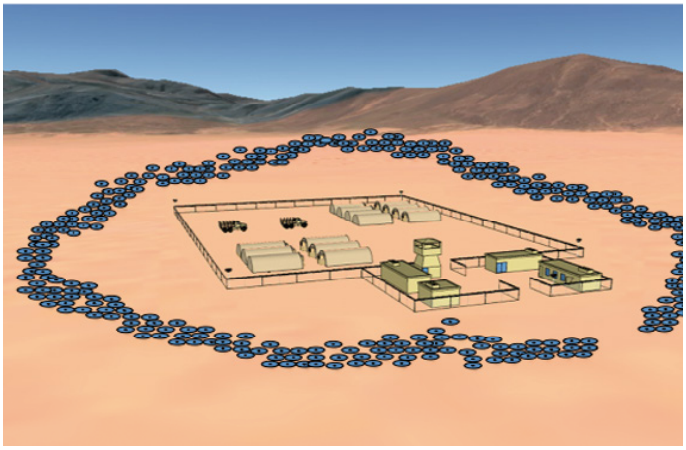
TYPICAL CAMP SIZE	200 x 200 m
Perimeter measurement	800 m
Command and control system	Mobile C²I Systemsystem
Number of sensors	150 sensors (actual mix of sensors to be confirmed) - Doppler radar sensors incl. GPS receiver and compass - Magnetic sensors - Audio sensors
Sensor network interfaces	Two sensor network interfaces
Accessories	- Ruggedized notebook - Opto-electrical systems - Thermal imagin systems

MOBILE CAMP PROTECTION 500 X 500 METER

The Camp Protection system addresses the need for security for medium-sized camps. The camps are typically a more permanent post, outpost or FoBs, where surveillance needs to be provided to secure the perimeter.

The camp protection system is easy and fast to deploy and provides monitoring information through a containerized command and control system.

Integration with higher state sensors is available.



TECHNICAL DATA

SYSTEM	M-UGS®
Water	Waterproof (IP 67)
Service	No maintenance needed
Temperature	-31°C - +85°C
Humidity	Up to condensation point
SEISMIC SENSOR	
Detection range	5 - 20 m (*)
Sensitivity	28.8 V/m/s (0.73 V/in/s)
Type	Geophone
GPS	
Channel	12 channel/satellite
Protocol	NMEA-0183
Technology	SiRF III technology
Receiving altitude/speed	Up to 18.000 m/s up to 515 m/s
MAGNETIC	
Detection range	5 - 20 m (*)
Sensitivity	0.8 – 1.2 mV/Gauss
DOPPLER RADAR	
Detection range	5 - 50 m (*)
Design	Proprietary-based security technology
Type	X-Band Doppler radar motion detector
ACOUSTIC	
Detection range	25 - 100 m (*)
Sensitivity	–42 dB @ 1 kHz
Bandwidth	100 Hz – 800 Hz
Type	Omni-directional MEMS microphone
COMMUNICATION	
Type	Single chip transceiver for ISM and SRD frequency bands
Transmitter type	QPSK UHF transmitter/receiver
Tuning range	300 MHz – 2.4 GHz
Encryption	Communication amongst ensors and sensor network interface is encrypted
Type	Frequency hopping

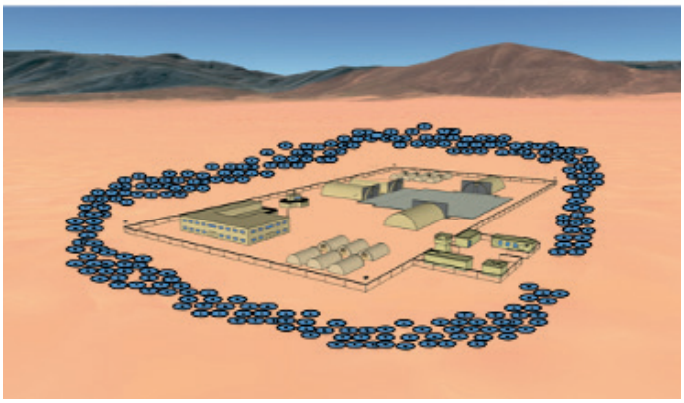
(*) Depending on type of intrusion

MOBILE CAMP

TYPICAL CAMP SIZE	500 x 500 m
Perimeter measurement	2.000 m
Command and control system	Mobile C²I Systemsystem
Number of sensors	150 sensors (actual mix of sensors to be confirmed) - Doppler radar sensors incl. GPS receiver and compass - Magnetic sensors - Audio sensors - Seismic sensors
Sensor network interfaces	Two sensor network interfaces
Accessories	- Opto-electrical systems - Thermal imaging systems - Ground radar surveillance systems

MOBILE CAMP PROTECTION 1.000 X 2.000 METER

The mobile Camp Protection can be utilized for larger more permanent bases that can be a considerable size and include more established buildings and security systems. These camps are typically mid- or long-term camps or FoBs where immediate surveillance needs to be provided to secure the perimeter. The camp protection system is easy and fast to deploy and provides monitoring information through a containerized command and control system.



Integration with higher level sensors is available.

TECHNICAL DATA

Water	Waterproof (IP 67)
Service	No maintenance needed
Temperature	-31°C - +85°C
Humidity	Up to condensation point
SEISMIC SENSOR	
Detection range	5 - 20 m (*)
Sensitivity	28.8 V/m/s (0.73 V/in/s)
Type	Geophone
GPS	
Channel	12 channel/satellite
Protocol	NMEA-0183
Technology	SiRF III technology
Receiving altitude/speed	Up to 18.000 m/s up to 515 m/s
MAGNETIC	
Detection range	5 - 20 m (*)
Sensitivity	0.8 – 1.2 mV/Gauss
DOPPLER RADAR	
Detection range	5 - 50 m (*)
Design	Proprietary-based security technology
Type	X-Band Doppler radar motion detector
ACOUSTIC	
Detection range	25 - 100 m (*)
Sensitivity	–42 dB @ 1 kHz
Bandwidth	100 Hz – 800 Hz
Type	Omni-directional MEMS microphone
COMMUNICATION	
Type SRD frequency bands	Single chip transceiver for ISM and
Transmitter type	QPSK UHF transmitter/receiver
Tuning range	300 MHz – 2.4 GHz
Encryption	Communication amongst ensors and sensor network interface is encrypted
Type	Frequency hopping

(*) Depending on type of intrusion

MOBILE CAMP

TYPICAL CAMP SIZE	1.000 x 2.000 m
Perimeter measurement	6.000 m
Command and control system	Mobile C²I Systemsystem
Number of sensors	1.200 sensors (actual mix of sensors to be confirmed)
	- Doppler radar sensors incl. GPS receiver and compass
	- Magnetic sensors
	- Audio sensors
	- Seismic sensors
Sensor network interfaces	Four sensor network interfaces
Accessories	- Opto-electrical systems
	- Thermal imaging systems
	- Ground radar surveillance systems

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