

GUARDIAN REMOTELY OPERATED VEHICLE

TURNING VISION INTO REALITY

NSN 1385-99-173-8187

GUARDIAN is ABP's "next generation" small ROV.

It's unique combination of size, payload capacity, reach, dexterity, manoeuvrability, operability and ability to negotiate a wide variety of urban and rural terrain combined with its "future proof" modular / open architecture construction, eclipse the capabilities of current competitors.

It will provide a capable, versatile and an upgradable platform to meet the ever more demanding requirements encountered by its users.



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REACH & DEXTERITY

GUARDIAN has an arm that extends to a reach of 2.6m vertically or 2.1m horizontally.

The GUARDIAN'S hybrid extending / folding arm has been designed to be strong and robust allowing deployment of significant payloads with the arm extended and up to 30kg with the arm retracted. The arm extension capability avoids deployment difficulties in confined spaces often encountered with unfolding arm systems.

The elbow joint provides "reach over" and "reach in" capability as required when deploying equipment into such areas as aircraft overhead lockers and car boots. Maximum vertical reach with the vehicle in "tip toe" mode is 2.6m.

MOBILITY

GUARDIAN has a gap crossing capability of 500mm and a top speed of 4.5kph.

The GUARDIAN chassis has been developed to offer a highly stable and manoeuvrable platform. Track modules are able to move continuously through 360 degrees as independent front and rear pairs, ensuring great versatility in positioning, which in turn provides class leading obstacle negotiation capability and extremely stable stair climbing.

The ability to significantly change the vehicles footprint ensures stability, allows extended arm reach when required and aids adjustment to minimum size when accessing confined spaces. Off road wheels are fitted to enhance the cross-country capability, whilst retaining the track modules to assist in obstacle negotiation. Maximum ground clearance has been maintained to prevent "beaching" on obstacles in uneven terrain.



CONTROL

GUARDIAN has 4 cameras onboard

The GUARDIAN control station is housed in an attache' style case and has been developed to offer the operator maximum situational awareness with minimum operator workload and intuitive control. Video images from the four vehicle cameras are displayed on a dedicated 17" (430mm) high brightness TFT display.

Picture in picture capability allows display of multiple camera images in a variety of configurations. Key functions are achieved by dedicated controls whilst sub functions are controlled by a separate 10.5" (265mm) touch screen situated in the base of the case. A powerful and unique feature that provides the operator with crucial information is the 3D vehicle mimic displayed on the touch screen. This image is an accurate representation of the vehicle and its position and takes account of configuration and terrain position. This information allows the operator to automatically see potential instability or situations where actions such as weapon firings may impact on the vehicle. GPS is also included as standard to provide additional positional data. Communication between the vehicle and base station can be by either radio or fibre optic cable.

The fibre optic cable can be deployed from either a passive or active "intelligent" spooler.



VERSATILITY, ADAPTABILITY & EQUIPMENT INTEGRATION

GUARDIAN has a lifting capacity of 30kg / 10kg.

A key design driver during GUARDIAN development has been to ensure that integration with related equipment and payloads is straightforward. GUARDIAN has a quick - change equipment carrier on the payload head to allow fitting of a variety of equipments including Disruptors, X-Ray systems, Laser range finder, chemical agent or explosive detectors and ECM equipment. A number of power supplies and data ports are positioned at the base of the arm to allow connection of customer specified equipment.



SIZE AND WEIGHT – VEHICLE:

Weight (without payload or accessories) - 63kg
Broken down into:

Chassis 27kg
Battery Pack 8kg
Extending Arm and Payload Head 28kg

Size

Width 417mm max
Length 758mm max (in drive configuration)
Height 504mm max (in stowed configuration)

MANOEUVRABILITY AND SPEED:

Stair Climb/ Descend capability, using auto configuration, stair angle +45° with max raiser & tread of 300mm. Steep angles possible with manual configuration.

Single obstacle climbing height of 400mm. Greater heights achievable with suitable driver training.

Ground clearance: Tracked 60mm, Wheeled 70mm.
Auto braking when drive command released (can be disabled).
Ability to turn within its own diagonal length.

Speed (proportional control):
Tracked 0 to 2.7kph in forward & reverse
Wheeled 0 to 4.5kph in forward & reverse

PAYLOAD CARRYING AND DEPLOYMENT:

Extending Arm:

Maximum vertical reach "tiptoe" mode - 2.6m, drive mode 2.1m.
Maximum horizontal reach - 2.1m

Position of arm:- Adjustable from +80 degrees (Vertically upwards) to minimum -7 degrees (below horizontal).

Turntable:- ± 180 ° from centre axis

Data port to allow communication with externally mounted sensors or accessories

12V and 24V DC power supplies for externally mounted sensors or accessories

Payload Carrying Head (situated at end of Extending Arm):
Elbow joint provides additional degree of freedom of movement with 400mm reach provided, allowing reach over obstructions or into voids (overhead lockers, car trunks etc).

Lifting capacity:

Payload Head allows quick change mounting of disruptors, de-armers, manipulators, sensors and other accessories. Disruptor or other accessory can be moved independently to provide clear working space for the manipulator

Maximum payload 10kg arm extended, 30kg arm retracted.

Four firing circuits to allow initiation of disruptors and other accessories.

Manipulator has jaw capable of opening from 0 to 100mm.
Continuous rotation capability, grip force - 10kgf/cm²
Optional manipulator 0 to 230mm jaw opening.

POWER SYSTEM:

Vehicle - 24V NiMH battery system, endurance min 2 hours from full capacity.

Control Station - Li-ion battery system, min 2 hours continuous use.

VISION / CAMERA SYSTEM:

Four cameras as follows:

Colour, wide angle with integral LED IR lighting in 3 positions:
1 forward facing drive camera, 1 rearward facing drive camera both mounted in chassis, 1 forward facing situation awareness camera mounted in base of mast.

1 Pan & Tilt colour zoom (300 X) task camera mounted in the Payload Head with white and IR LED light ring. Auto I/R configuration at low light levels.

One extra camera socket for additional camera.

CONTROL STATION KEY FEATURES:

Brief case style

Control Station:

Weight 24kg (inc battery)
Size..... W - 440 mm, L - 570 mm, H - 291mm

Hard controls:

- Dedicated drive joystick
- Arm / Head selectable control joystick
- Firing Circuit Control
- E-Stop

10.5" (265mm) Touch Screen for sub functions, vehicle status and sensor feedback. (3D mimic)

17" (430mm) TFT monitor, with 4 way picture in picture display facility for video images.

The Control Station can be powered between the ranges 10V to 36V DC or 110V to 230V ac.

Other facilities include:

- Video & Audio out
- Fibre Optic connection
- Speaker/ headphone / microphone connection
- Ethernet connection
- USB connection
- Antenna connections
- Vehicle mounted microphone

COMMAND DATA LINK:

Radio control or fibre optic cable link. The COFDM radio system can be configured to meet user requirements, operational range of greater than 300m LOS. With suitable antenna up to 1Km can be achieved.

Fibre optic cable is 150m as standard, with passive "feed under friction" spooler. Optional "intelligent" spooler to manage cable release and retraction.

SERVICE PACKS:

ABP are able to offer engineering solutions to incorporate user specified accessories and equipment. Various standard sensor / accessory packs are also available:

X-ray system – Integrated into vehicle system via fibre optic cable. Various mounting options. Results can be displayed at the Control Station.

Chemical Detector – Available with a bespoke mount. Results can be displayed at the Control Station.

Laser Range Finder

Any accessory with serial data output.

Quick Fit Wheel Kit – 4 wheels that fix quickly and simply onto the outside of the track system.

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