

Team Information

Team name / Company: Force Ware / Force War
Team leader: Dr. Jürgen Braunstein
Nationality: Germany
Systems: KNIGHT
Course: 1. Reconnaissance and surveillance
2. EOD
3. Transport and mule
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www.forceware.de
picture of team leader:

Team Description:

The Force Ware Team comprises of the Force Ware GmbH and WMRobots. It is their entry into the ELROB2008. The team is led by Dr. Jürgen Braunstein (Mr.) from Force Ware GmbH located in Eningen, Germany accompanied by his team mate Bob Wolstenholme (Mr.) from WMRobots located in Colmar, PA, USA. Our vehicle is called the “KNIGHT” robot. The Knight is based on a proprietary design powered by 48 V DC battery pack that can deliver 2 to 10 hours of on duty time. The robot is controlled via fibre optic cable for secure operation or optional RF radio. All

processing takes place on a PC 104 stack, powered by a battery-backed, electronically controlled power system. The robot is controlled via the real time visual feedback delivered by as many as 7 on board cameras that can all have individual zoom capability. The robot has the ability to climb steps as much as 45 degrees as well as a variety of uneven surfaces and a range of surface conditions including snow via the removable tracks. The tracks can be removed to run strictly on the tires giving better life to the batteries and easier mobility on flat surfaces. The robot has 7 degrees of freedom in the manipulating arm that features infinitely variable speed of all axes simultaneously thru the use of joysticks. The arm also is 100% backlash free giving optimum precise control when making the smallest of movement commands. The robot also has 2 way audio that along with the video have permanent recording capability for post reference use. The robot also has integrated sensor software giving the robot the capability to interface directly with a variety of sensors such as chemical, radiation, X-ray, etc. The robot and control station are waterproof and can be operated in -20 °C to +50 °C selection.

Picture of the vehicle:



Name of vehicle: Knight
Explosive & Ordnance Disposal Robot

Basic data about vehicle

Specifications in cm, kg

| | |
|---------|---|
| Height: | 102 cm (Total height from ground to top, including antennas etc.) |
| Width: | 71 cm |
| Length: | 136 cm |
| Weight: | 275 kg (Including all accessories, but no weapons) |

Ground clearance: 12 cm
Climbing performance: 45 °
Wheel or track driven: 6 wheels with optional tracks
Propulsion: batteries
Endurance: 2-10 h depending on mission and communication method
Max. speed: 4 km/h
Payload: 18 kg Manipulator arm payload

2 Communication equipment

Type1: Analogue
Type2: Analogue
Type2: Digital Frequency Hopping
Frequency1: 2.3 - 2.5 GHz
Frequency2: 150 MHz
Frequency3: 902-928 MHz
Possible frequency range: from 150 MHz to 2.5 GHz
Power1: 5 W
Power2: 2 W
Power3: 100 mW or 1 W
Modulation: -
Number of channels1: 8
Number of channels2: 4
Number of channels3: Frequency hopping patterns selection only

3 Sensors equipment

Laser: optional
Vision: 2 x Sony 300:1 Zoom 640x480 cameras mounted on a custom pan/tilt. With up to 5 additional
GPS: optional
Radar: optional
Inertial measurement unit: optional

4 Computing equipment on vehicle

Number of computers: 1
Number of CPUs: 1

Type of CPU: 386 processor

Operating system(s): Proprietary

5 Basic data about control station



Number of operators (mandatory/optional): 1

Number of computers: 1

Number of CPUs: 1

Type of CPU: 286

Operating system: Custom

Space needed for control station: 54.6 x 38 x 25.4 cm stored

106 x 60 cm work area

Weight of control station: 22 kg

Power source needed: Built-in battery or 120/220 V 50/60 Hz

For more details please see attached leaflet.