

IBIS

**EOD/IEDD
and Combat Robot**



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IBIS is a robot for pyrotechnic and combat missions. It is designed especially for operations in difficult and diverse terrain (including sand, snow, rocks). High speed of the robot enables taking dynamic actions. Robot's manipulator provide big range of activities and applications. Precision drive system gives fluidity of the movement of every part of the robot, even during fast ride.



Unique features of IBIS robot

- High speed of the robot (8,5 km/h.).
- Mobile platform with six-wheel drive.
- Each wheel is powered with independent drive.
- Longitudinal axis of front wheels is able to turn in wide range.
- Wheel arms used in robot's suspension, provide very good grip to the ground.
- Huge lifting capacity of the robot's arm (15 kg – unfolded arm, 30 kg - folded arm).
- The range of manipulator with gripper is over 3m.
- Possibility of robot remote control by fibre optic cable.
- Robot's control system enables independent and simultaneous steering of it's every drive.
- Auto diagnostic system detects all faults and projects text announcements on the LCD monitor.
- The robot is compatible with different additional equipment: pyrotechnical disrupters, chemical and radioactive contamination sensors, bus bar for remote detonation of explosives, barbed wire cutters, drills, recording devices and many others.



Basic features of IBIS robot

- The manipulator can be controlled in two modes: independent control of each segment, direct control of the gripper (the speed of movement of the manipulator's remaining segments is controlled automatically).
- The manipulator is protected from damage by 3 independent systems: mechanical clutches, electronic protection, dynamic analysis of allowed movement range.
- The robot is equipped with 4 cameras: front camera: colour/infrared; powerful LED lamps, rear camera: colour/infrared; powerful LED lamps, gripper camera: colour; LED lamp, main camera: colour/infrared or thermo vision; powerful LED lamps; vertical and horizontal rotation.
- Fluid control of each driver speed (from 0 to maximum) provides precision of the operation. There is also a possibility of reduction maximum speed of all drives movements, which gives more precision to all activities (after pressing appropriate button maximum movements speed can be reduced to 20 %).
- Special manipulator's drive system is minimizing the result of recoil, during shooting from pyrotechnical disrupter or explosion of item carried in the gripper.
- The manipulator is equipped with:
 - manipulator's arms extreme position sensors,
 - position sensors in main manipulator's degrees of freedom,
 - gripping force sensor,
 - sockets for fixing of so-called 'whiskers' on the gripper's master jaw (for visual estimation of distance),
 - an omni directional microphone.
- The robot is powered by the batteries inside the mobile base.
- Time of the operation when powered by batteries is up to 8 hours (it depends on the kind of carried out activities).
- Convertible, suitcase-like shape operator's post is mechanical damages resistant.
- The operator's post is equipped with color LCD monitor, which shows the view from one chosen camera or 4 cameras at the same time; additional LCD monitor shows graphic interpretation of the manipulator's arm and data from robot's sensors.
- Fibre optic cable with rolling device, using interchangeably with radio control, is very light and tough.
- Advanced negotiation system (an option).
- The robot is easily adaptable for cooperation with wide range of additional devices, offered by PIAP or adapted to Client's needs.



Standard equipment of IBIS robot

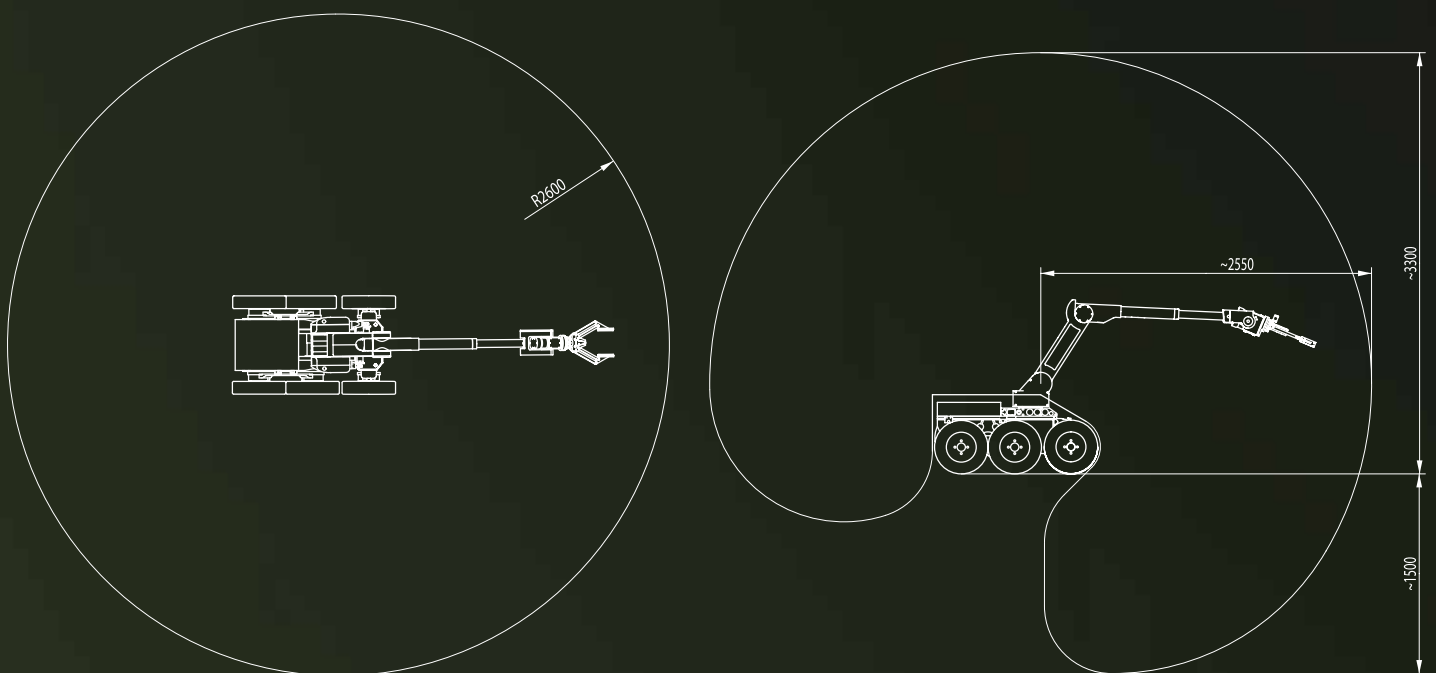
- Overload clutches in the main manipulator's degrees of freedom.
- Sensors of manipulator's arm extreme position (max-min).
- Position sensors in main manipulator's degrees of freedom.
- Gripping force sensor.
- 3 sockets (at front and back of the mobile platform and at upper manipulator arm) for powering and controlling of additional equipment and weapon.
- Main camera head fixed to upper arm of manipulator, with a possibility of camera's position remote control (up and down, right and left).
- Main camera color/infrared, zoom, lights.
- Other three cameras:
 - front camera, color/infrared, wide-angles lens, IR lights,
 - back camera, color/infrared, wide-angles lens, IR lights,
 - gripper camera, color, wide-angle lens, lights.
- Omni directional microphone on the robot.
- Program for automatic manipulator folding to transport position.
- Additional LCD monitor at operator's post for graphic interpretation of the data collected by robot sensors.
- Sound alarm signal in the control panel.
- Service tool kit and basic additional equipment.



The equipment of the robot can be extended with other devices chosen by the client or developed according to the special order. It is also possible to modify the robot to adapt it to the client's needs.

Technical data

Mass	295 kg
Width	780-850 mm (depending on tyres used)
Length	1300 mm
Height	950 mm with folded arms
Maximum speed	8,5 km/h
Number of degrees of freedom	7
Manipulator base rotation range	400°
Lower arm rotation range	220°
Upper arm rotation range	220°
Telescopic arm linear motion	0,5 m
Wrist rotation range	220°
Gripper jaws rotation range	infinite
Gripper jaws opening range	0-350 mm
Manipulator maximum lift	30 kg
Manipulator maximum reach	3150 mm
Operator's control panel weight	22 kg
Control system	radio/fibre optic cable
Maximum battery operation time	8 h



The manufacturer reserve the right to change the robots features and technical parameters.