ICP NewTech
ULTIMATE SOLUTIONS

AVENGER 2.0

FEATURES & CAPABILITIES

AVENGER CORE CAPABILITIES

PRIMARY FEATURES

- Outstanding capabilities for reach, lift, mobility, and deployment of EOD Tools & CBRN sensors
- Fourteen (14) I/O Ports for cameras, sensors and detection devices
- Wide tracks and stance control feature
- Ascends / descends stairs up to 45°
- Manipulator Arm with 7 Degrees of Freedom
- Standard preset configurations for Manipulator
- Variable speed control for Manipulator Arm with significant lifting capability
- Low profile to reach under vehicles
- Turret and claw rotate 360 degrees in both directions
- Four independent firing circuits
- Four cameras as standard
- Two-way directional audio communications
- Compact storage for transportation
- Two sets of three 12V sealed lead acid (SLA) batteries
- Typical operating time of 4+ hours (dependent upon mission activity)
- Hard-anodized (MIL-A-8625F) aluminum chassis and over-painted in RAL7048.
- Ingress Protection IP66 (ROV), IP65 (Console)
- Ethernet and CANBUS architectures both running through the entire system, for safety critical data streams controlling firing circuits, mobility and redundancy
- Weighs only 112 kg (242.5 lb) (batteries included) for ease of transport in smaller response vehicles
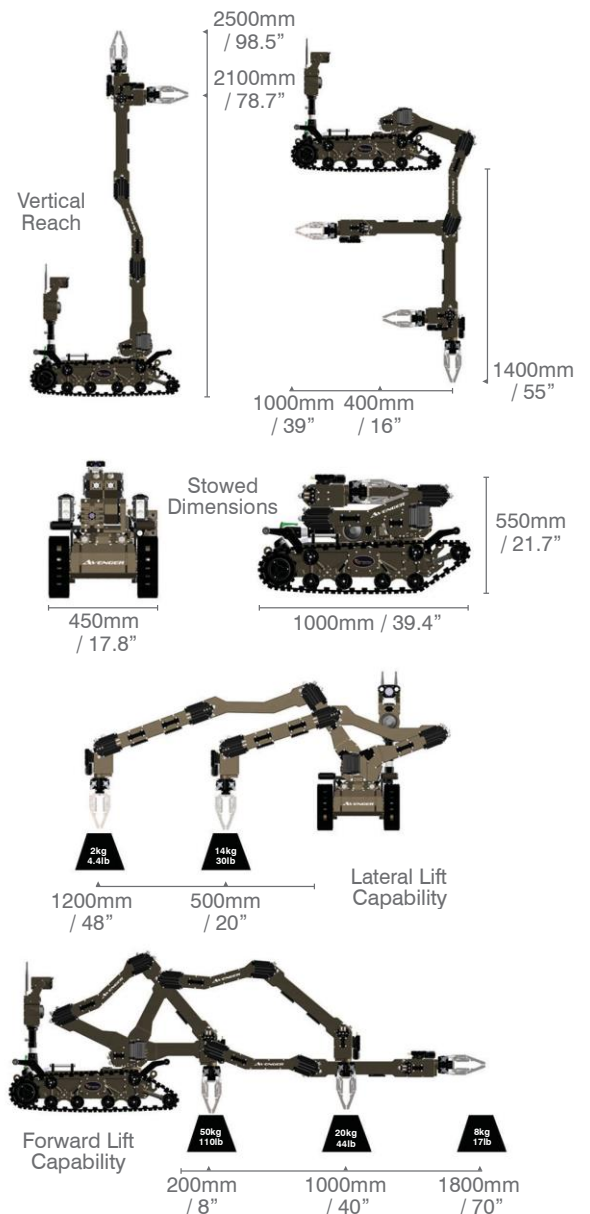
ROVISS INTEGRATED SENSOR SUITE

Avenger can help manage high risk CBRNE threats by concurrently deploying multiple 3rd party sensors to remotely detect hazardous threats from:
- Explosives
- Radiation
- Chemical and Biological Agents
- Toxic Industrial Chemicals & Materials (TICs & TIMs)
- Meteorological factors

Using optional specialized software, sensor data is fused in the on-board computer then relayed to the Command Post where it is displayed on the X500 Command Console. Software permits real-time accurate mapping, plume prediction, and threat management.

PHYSICAL PROPERTIES

2500mm / 98.5"
2100mm / 78.7"
Vertical Reach
1400mm / 55"
1000mm / 39" 400mm / 16"

Stowed Dimensions
550mm / 21.7"
450mm / 17.8"
1000mm / 39.4"

2kg 4.4lb 14kg 30lb
Lateral Lift Capability
1200mm / 48" 500mm / 20"

Forward Lift Capability
50kg 110lb 20kg 44lb 8kg 17lb
200mm / 8" 1000mm / 40" 1800mm / 70"

MODULAR DESIGN

Avenger uses a modular system architecture for compatibility with future enhancements and for ease of maintenance. Select modules include:
- Vehicle Control Unit
- Embedded PC
- Stalk Communication Mast
- On-Board Cameras
- Claw
- Command Console
- Several Modular Accessories

To learn more about how the Avenger's capabilities, can meet your operational requirements, please contact ICP NewTech Ltd. or your authorized ICP NewTech representative.

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DRIVE, SPEED & CLIMBING

- Innovative in-line track system to eject debris from the tracks while in motion
- Two high torque BLDC (Brushless Direct Current) motors, with brakes that release only when power is applied
- Variable speed up to 8 km/h (5 mph)
- Drive system incorporates a gas suspension system for reduced vibration
- Low centre of gravity and high-torque motors provide excellent climbing abilities:

STANCE CONTROL

New variable-position track Stance Control:

- Raised Position for climbing stairs or raised obstacles
- Lowered Position for greater stability when lifting or delivering heavy payloads, and descending stairs
- Driving Position for maximizing track tension
- Maintenance Position for changing tracks
- Tracks can be manually adjusted to any position between 'Raised' and 'Lowered' to aid with mobility
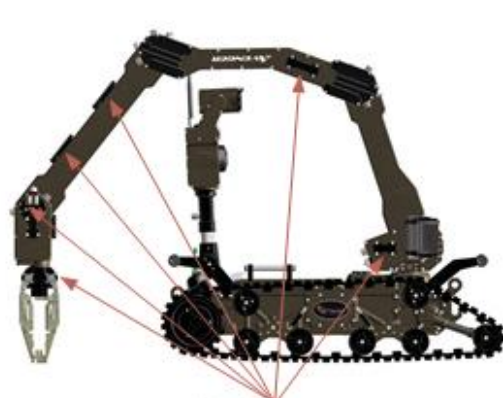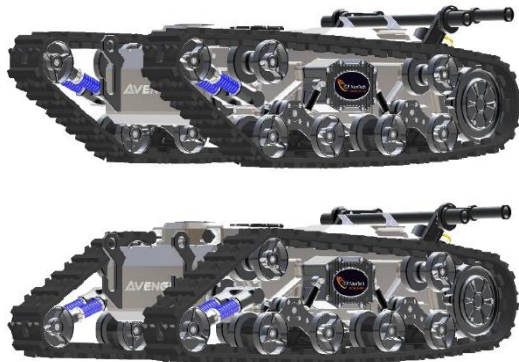
MANIPULATOR ARM

- Seven (7) degrees of freedom
- Several factory presets assist the end user with rapid positioning of the Manipulator Arm for storage, battery access and weapon loading
- Eleven Picatinny Rails (conforming to MIL- STD-1913) are mounted on the Arm
- for optional cameras and accessories

Wrist articulation is 0-360°

Upper Arm is 0-335°

Middle Arm is 0-340°

Lower Arm is 0-195°
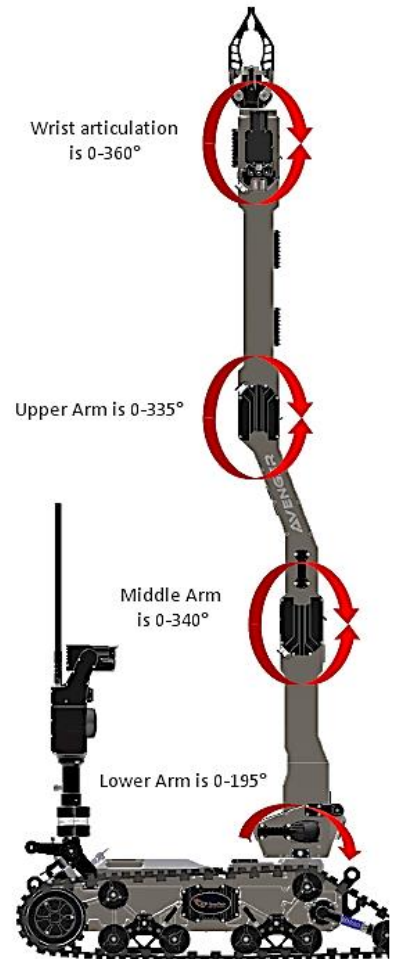
Picatinny Rails

Picatinny Rails

AVENGER CORE CAPABILITIES

FIRING CIRCUITS

Four (4) independent firing circuits with safety features to attach four separate electrically initiated payloads:

- Two on the left-hand side of the Upper Arm;
- One on the Wrist; and,
- One in the Claw

CAMERAS & ILLUMINATION

- 4 cameras included: Turret, Stalk, Wrist, and Gripper; Several optional cameras available
- Turret Camera has 2 LED Clusters controlled independently from other illumination; 2200 Lumens. Turret Camera also includes built-in IR illumination.
- Stalk Camera has 2 high-intensity dimmable LEDs; 500 Lumens; includes IR mode.
- Wrist Camera brings clear vision at night with 0.5 lux performance and day/night mode switching, with viewing distances of up to 5 - 10m. Wrist Camera also includes built-in IR illumination.
- Gripper Camera provides an optimum view of the gripper when conducting manipulation tasks
- Gripper Camera has dedicated LED controlled independent from other illumination.

Stalk (PTZ) Camera
Turret (Drive) Camera
Gripper Camera
Wrist (GEN) Camera
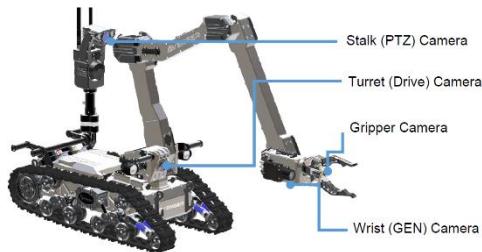
CLAW

- Heavy-duty claw with 300mm (12 in) opening optionally includes an integrated wire cutter and belt cutter
- Multi-connector provides Power Over Ethernet (POE), firing port and reversible 24V DC power
- Multi-connector enables connection of selected tools such as disruptors, sensors, and other power tools

AUXILIARY PORTS

Fourteen (14) Auxiliary Ports on the Chassis and Manipulator Arm, to support CBRNE sensors, additional cameras, EOD tools, and 3rd party equipment

LASER

Laser Range Finding Camera for accessories such as the Disruptor and Shotgun Mount

AUDIO SYSTEM

A directional two-way audio (intercom) system for communicating with people near the robot

GLOBAL NAVIGATION SATELLITE SYSTEM

Displays latitude and longitude on the X500 Command Console. Compatible with GPS, GLONASS, Galileo, and BeiDou

WIRELESS SYSTEM

- COFDM Point to Multi-Point (PtMP) wireless system capable of operating from 1.427 to 1.447GHz and 2.401 to 2.481GHz, the user can select the frequency to suit the mission as standard
- Line of Sight: Up to 1000m
- Non-line of Sight: Up to 300m

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AVENGER CORE CAPABILITIES

X500 COMMAND CONSOLE

The X500 Console controls the drive track movement, manipulator arm & claw, cameras and optional devices, as well as firing tools. The X500 Console can view multiple cameras, thermal imagers, X-Ray images, aiming cameras, etc. and display or send data from multiple sensors to a secondary computer system.

The X500 Command Console is housed in a ruggedized laptop, weighs only 6kg (13.2 lbs) for ease of mobility, and meets:

- MIL-STD-810G,
- MIL-STD-461F,
- IP65

Secondary Camera Feed

Mimic Display

Drive Control Panel

Primary Camera Feed

Communication Control Panel

HAND CONTROL

Two game type hand controllers included allowing more natural operation of the ROV drive and manipulator arm

ROV Controller permits direct controller-to-ROV communication for basic ROV positioning

Console Controller permits controller-to-X500 console communication for deployment at up to full wireless range

Weighs only 0.28kg (0.62lb)

X500 FEATURES

- Graphical User Interface (GUI)
- Touch-screen interface
- Screen displays any 2 camera views (primary and secondary) of the 4 standard cameras or optional cameras
- Full screen display (single camera)
- FlyEye software provides an additional FlyEye 4 & FlyEye 7 multiscreen display feature
- Saves captured photos, video and audio files to hard drive for analysis and evidence recovery
- 15.6" TFT LCD with Getac QuadraClear Sunlight Readable Display
- Mimic Display depicts the robot and Arm Assembly joint positions
- Displays status of console battery, RF signal, drive mode and drive current
- Weapons arming and fire control display panel
- Specialized control panels
- Drive control
- Illumination control
- Communication Control Panel
- Accessory control
- Latitude/Longitude Positional Information
- Internal short range antenna and external long range relay station
- Independently tested to military standards for harsh conditions
- Supports Windows® 10, and several interface ports: LAN; USB; Serial; external VGA; WLAN and HDMI
- Displays Windows information in any one of 35 languages

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OPTIONS & SUPPORT

AVENGER ACCESSORIES

Fibre Optic Spooler
- Permits tethered control of the robot up to 300m (984') from the X500 Command Console
- Cable Management Wand feeds and layers the cable evenly to avoid fouling

Firing Cable Reel
- Enables deployment of a weapon or explosive charge remotely up to 50m (164') from the robot to avoid physically damaging the robot
- Mounts and Software for Integrating 3rd Party X-Ray and CBRN Sensors

Disruptor Mounts
- Mounts accommodate most common disruptors and incorporate laser aiming
- Available as a bundle with any of the optional cameras

Universal Disruptor Mount with Range Finder Camera

- Window Breaker
- RF Diversity Station Soft Case
- EOD Multi Tool kit
- Avenger UGV Reusable Transit Case
- Benelli M3 and M4 Shotgun Mounts
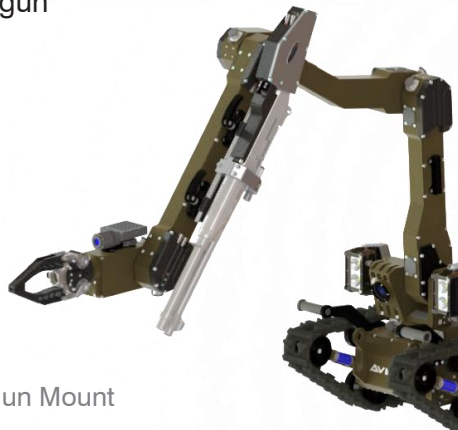
M4 Shotgun Mount

OPTIONAL CAMERAS

Wrist (GEN) Camera
- A multi-point mounting High Resolution, IP Camera with built-in IR illumination

Rear Drive Camera
- High Resolution IP camera that can be mounted to the rear of the chassis to enhance situational awareness while driving

Laser Range Finding Camera
- IP Camera with integrated red dot range finding laser aids end effector placement by permitting accurate gripper-to-target or payload-to-target distance measurement
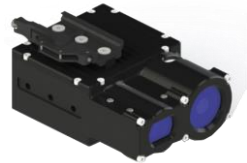
Range Finding Camera

TRAINING COURSES

- Operator
- Advanced Operator
- Maintenance
- Refresher
- Train the Trainer
- ROVISS (CBRN Sensor) Operator

SPARE PARTS

Kit Level 1: Includes the most common items to support 1 year (approx.) of operation and maintenance

Kit Level 2: Includes items to support maintenance over the typical lifetime of the robot

REFERENCE DOCUMENTS

- User Guide
- Operational Checks & Maintenance
- Repair & Workshop Manual
- Illustrated Parts Catalogue
- Accessory Supplements

For complete Product Specifications, please contact your authorized ICP NewTech representative.