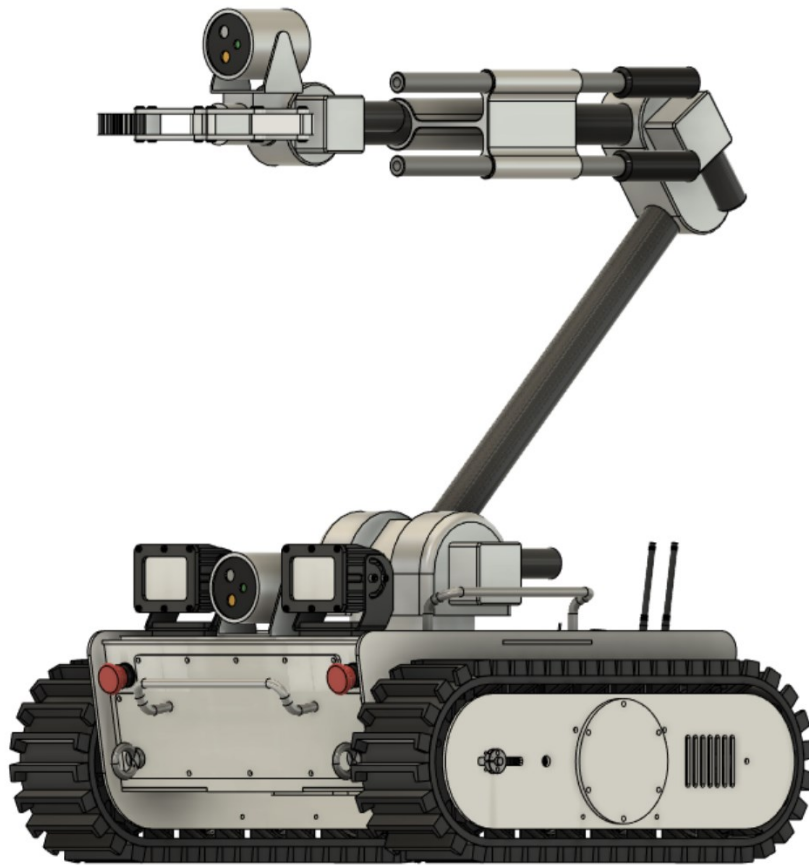




# **SAFE PRO USA**

Safety with Confidence

**MULTIFUNCTIONAL, VERSATILE AND ROBUST ROV FOR ALL TERRAINS**

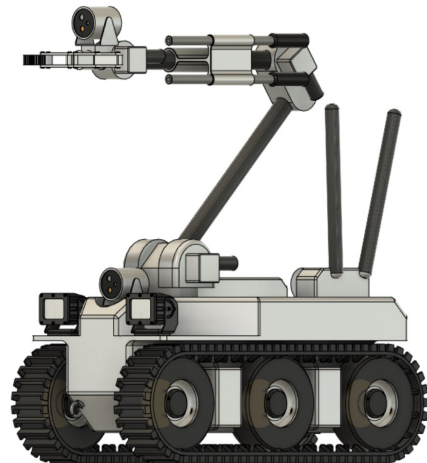
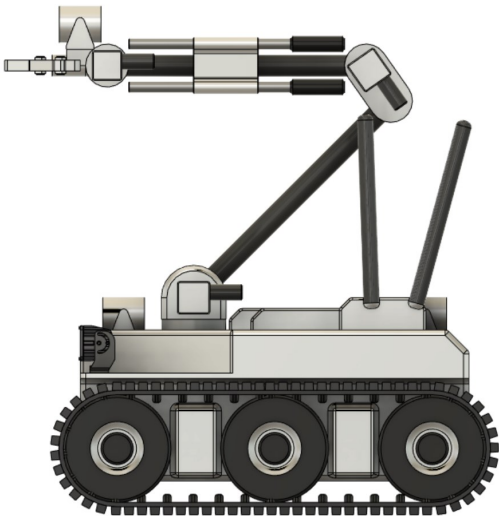
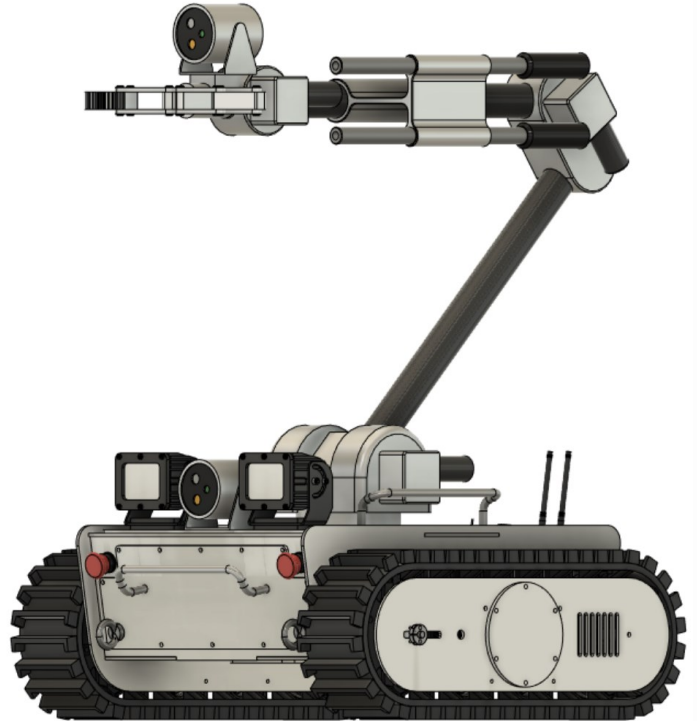
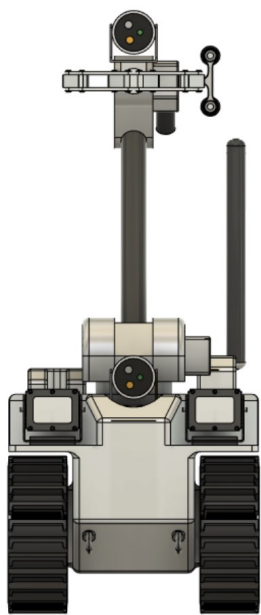


## **CRUSADER REMOTELY OPERATED VEHICLE (ROV)**



# CRUSADER REMOTELY OPERATED VEHICLE (ROV)

## Model: SPI-ROV-12



- CRUSADER Remote Operated Vehicle is a Robust, Advanced, Sophisticated, Versatile, Reliable and Flexible in use
- CRUSADER Remote Operated Vehicle is a Tactical Robot specially designed for Heavy Lift and Reconnaissance operations
- CRUSADER Remote Operated Vehicle is wholly manufactured in the USA. It is fabricated using components from top-rated suppliers in the USA



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### MODEL: SPI-ROV-12

### CUSTOM MADE

### MANUFACTURED IN THE USA

- **X-RAY MOUNT:** X-ray Mounting bracket to mount major X-ray Systems and imaging plate are provided
- **RF EXTENDER:** RF extender is included in this offer which Increases Video/Data distance up to 500 ft (152m) and overcomes LOS obstacles
- **FIRING SYSTEM FOR DISRUPTOR:** Firing system is shock tube initiated, with shock tube activated breech. 2-Channel Shock Tube initiator is offered
- **UNDER VEHICLE INSPECTION KIT:** Under vehicle inspection kit is included in this offer
- **SPARE PARTS KIT INCLUDES:**
  - One set of Fasteners
  - 2-Cameras (Front and Rear)
  - 2-Sensors (Front and Rear)
  - Battery (1)
  - Battery Charger (1)
- **WIRELESS HANDHELD CONTROLLER:** Wireless handheld controller unit is included in supply.
- **ANTI FLIP FEATURES:** The vehicle is equipped with anti flip features in two different flip directions: Rear and Front
- **HANDHELD OCU:** Handheld OCU which controls driving robot, sensors, accessories firing and manipulation function  
Brand: OZ Robotics; Model: MIRA-12X-1, U.S.A.
- **SUNLIGHT / DAYLIGHT READABLE DISPLAY:** Sunlight Readable LCD Display
- **DISPLAY SIZE:** 19" inches. Daylight Readable TFT LCD Screen Display
- **LINE OF SIGHT:** 500m Line of Sight
- **SOFTWARE:** Safe-Pro USA LLC Proprietary Software; Proprietary software #: SPI-PS-03. The software is proprietary to the Manufacturer, Safe-Pro USA LLC.
- **HANDHELD CONTROLLER:** Handheld Controller unit controls all functions. Multifunctional Joysticks (2) in the unit will be provided. The control unit displays battery status indicator which shows the percent of battery charge at all times. USB PORT is available for Data Transfer. 6.75 Kgs weight of Entire Operating Control Unit.
- **BATTERY TYPE FOR CONTROLLER:** Lithium Ion Phosphate, 2 x 12V, 5.2 Ah, with integrated battery management system
- **CONTROLLER:** Unit is water resistant. Electronics are enclosed within a waterproof case mounted on the vehicle
- **CAMERAS:** Zoom capability available, Optical Zoom: X46; The unit is equipped with Tilting Camera, explosion proof 4K camera; Color CCD cameras 4K explosion proof IR lights
- **FRONT LIGHTS:** Quantity Two (2) Ultra Bright LED Lights are mounted on the ROV equipment, Part # LED-EQ3X2CPR. Brightness of each light is 2100 lumens



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**CUSTOM MADE**

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- **DIMENSIONS:** Total Length: 36 inches without tracks/ and 40 inches with tracks. Total Height 29" at stowed position.
- **SPEED:** 3 km per hour (forward and reverse). Maximum Speed: 5.25 km per hour.
- **DRIVE CHARACTERISTICS:** The Drive consists of two high performance permanent magnet type 24 VDC motors and equipped with electric brake release and with chain tensioning capability.
- **OPERATIONAL TIME WITH ONE BATTERY:** 3.75 hours on level terrain with one battery.
- **FUNCTIONAL CHARACTERISTICS:**
  - Can be used for performing numerous EOD functions with the application and operation of the manipulator arm attached to the robot
  - Equipped with a high definition, tilt and zoom cameras which can be used for conducting remote inspection, surveillance and reconnaissance purposes
  - Can be used for under vehicle inspection with the use of its manipulator arm
  - Designed with self-collision avoidance technology with two single beam forward sensors and two single beam rear sensors for a total of four (4) sensors which protect the robot from impacting self- damage during operation
- **BATTERY WEIGHT AND TYPE:** Weight of the basic set of batteries is 25.4 Kgs with 2 batteries (12.7 Kg with one battery); 2 x 24V 55 Ah DC Lithium-Ion Phosphate batteries
- **MANIPULATOR ARM:** The manipulator arm is retractable, and is capable of manipulating (performing multiple actions such as picking up, moving, angling, raising, lowering) small objects. It is also designed and capable of carrying a disrupter, shotgun or other tools on a mount, which are included in this offer. Manipulator arm can pick up objects at the close-in distance of only 8" in front of the vehicle. Vertical reach: 76 inches. Horizontal reach: 44 inches from the leading edge of the chassis. Minimum movement of 5 degrees is available. Turret: 200 degrees of freedom is available. Shoulder: Minimum movement of 160 degrees is available. Wrist: Minimum movement of 270 degrees is available. Elbow: Minimum movement of 165 degrees is available. Claw Rotating Joint: 360 degrees of continuous rotation is available. Gripper opening of up to 19 cm maximum. Gripper Force is minimum 40 Kgs. Retracted Lift Arm capacity is Minimum 23 Kgs. Extended Lift Arm Capacity is 8.2 Kgs. Lift capacity with arm extended is 8.5 Kgs. Vertical Reach is 76 inches. Horizontal Reach is 44 inches. Vertical Reach Beneath is 8.2 inches.
- **OVERLOAD PROTECTION:** The offered ROV is designed with Overload Protection. Arms and extension are powered by 24V VDC linear actuators.
- **PORTS FOR PAYLOAD:** Ports for additional payloads are available for attachment of hitch to carry larger dimensional and weight loads. Ports for two tow hooks are provided in the front and back plus port for trainer hitch is available
- **DISRUPTOR AND SHOTGUN MOUNTS:** The offered ROV is designed to support two (2) disruptors and one (1) shotgun
- **CLAW ATTACHMENT KIT:** Four (4) Obstacle viewing sensors are supplied and four (4) camera sensors are supplied. The Claw Kit Model is: SPI-CLAW-KIT-3. This kit includes window breaker, tire deflator, finger extension, utility knife, Box Cutter, Small Side Cutters, and Hook and Line accessories. The Hook and Line accessories include hooks, carabiners, shackles, pulleys, stainless steel extension rods, line branch, self tapping screw eyes and hook eyes with bolts.



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- **CUSTOM DESIGNED:** This Remote Operated Vehicle (ROV) can be custom designed and manufactured to meet the exact specifications of the customer.
  - The offered ROBOT is robust, sophisticated, versatile, reliable and flexible in use. This Tactical robot is specially designed for heavy lift and reconnaissance operations. It is capable of being configured very quickly through preset mission modes for different mission characteristics
- **TRACK:** The Track is fabricated of high strength reinforced rubber sections which enclose six rubber wheels moving inside the track. The fiber reinforced rubber tracks can be removed, leaving only the wheels for specific missions as desired.
- **TOTAL WEIGHT:** 180 kgs with batteries, with applicable standard manufacturing tolerance of +/- 5%
- **OPERATIONAL MODE:** Electro-Mechanical
- **STORAGE MODE:** The ROV is stored in a water and corrosion resistant housing
- **TOW/ DRAG CAPACITY WITH GRIPPER:** 100 Kgs with Gripper (standard manufacturing tolerance of 7.5%)
- **GROUND CLEARANCE:** The ROV has the following overall dimensions: With tracks: 3 inches; Without tracks: 2.5 inches.
- **OBSTACLE CLEARANCE FEATURES:** Stair Climbing 8 inches in height; Capable of negotiating 41 degrees of gradient; capable of clearing vertical obstacle of 30.5 cm; capable of clearing horizontal obstacle of 35.2 cm; capable of minimum side tilt of 30 degrees
- **CHEM-BIO WASHDOWN:** The ROV is designed to allow washdowns of Chem-Bio
- **INGRESS PROTECTION:** IP55
- **DEPLOYMENT TIME:** 5 minutes or less
- **PORTABILITY:** The ROV is Portable. It is designed with provisions for Lifting and Rolling capability from the bed of a truck
- **OPERATIONAL TEMPERATURE TOLERANCE:** The ROV is capable of withstanding maximum operational temperature of 50 degrees C
- **FORDING DEPTH:** 132 mm
- **DESIGNED TO BE HEAVY AND CAPABLE OF DEFLECTING BLAST FORCES/ BLAST WAVE:** The ROV weighs 180 Kgs and is engineered with a very low height, heavy and stable base with a low Center of Mass which imparts high stability and resistance to Flipping against blast forces. For EOD missions, the ROV can be equipped with a special blast resistant shield (supplied) to divert and deflect blast forces.



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- **THERMAL IMAGING CAMERA:** The ROV is equipped with high-end thermal imaging camera
- **VIDEO CAPABILITY:** The ROV is equipped with video recording capability and has storage capacity of 320 GB
- **AUXILIARY CAMERA:** High quality, auxiliary camera from a top rated U.S. supplier
- **RANGE FINDER:** 1Km range supplied from a top rated U.S. supplier
- **ZOOM CAMERA:** Zoom camera: U.S. Brand, top rated supplier.
- **TILT CAMERA, FRONT, BACK AND GRIPPER CAMERAS:** Top rated U.S. Brand

### **Main Features / Details of Tilt, Front, Back and Gripper Cameras:**

- 1/2.8" Sony 327 progressive scan CMOS sensor
  - Up to 2 Megapixels (1920×1080) resolution @ 30fps
  - 46x optical zoom (7-322mm), 16x digital zoom
  - H.265/H.264/MJPEG video compression algorithm
  - Starlight low light performance
  - 0.001Lux/F1.5(color),0.0005Lux/F1.5(black/white)
  - 255 PTZ presets, 8 patterns, home position
  - Support Optical Defog
  - Provide audio I/O and alarm I/O
  - 3D DNR, BLC, HLC, EIS, 120dB WDR
  - Support local SD card storage, up to 256GB
  - Optional Bluetooth, Wi-Fi, 4G LTE extension modules
  - Compact dimension, fits into most of regular PTZs / explosion proof PTZs / bullet enclosures
  - Intuitive WEB GUI and free CMS software, flexible OEM service
  - 134.5mm x 63mm x 72.5mm or 5.3" x 2.48" x 2.85"
- **RADIO:** ROV is equipped with a radio communication capability. The Radio has LOS Range: 900m, NLOS Range: 350 m.
  - **NIGHT SEARCH / HEAD LIGHTS:** Ultra Bright Head Lights (2) with 2100 Lumens brightness are mounted in the front and rear of the ROV. These lights are intended for night search operations.
  - **SELF CALIBRATION:** The OCU has Self Calibration capability. Self-calibration results are displayed on the display screen of Operator Control Unit ("OCU") (Brand: top rated U.S. supplier).
  - **GPS:** The ROV is equipped with GPS locator system
  - **SELF-RECOVERY IS ENABLED ON THE ROV:** Self-diagnostics is available on OCU screen. The Troubleshooting Screen has an integrated self-diagnostics option. The OCU is equipped with I/O ports.



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- **SELF DIAGNOSTICS CAPABILITY:** The ROV is equipped with Self-Diagnostics capability. Self-diagnostics is available on the Operator Control Unit (OCU) screen. The Troubleshooting Screen has an integrated Self-Diagnostics option
- **I/O PORTS:** The OCU is equipped with I/O Ports
- **U.N. MARKING:** The ROV will be marked in BOLD with BLACK U.N. marking on WHITE Background color
- **STANDARD TOOLS SUPPLY:** Standard tools and accessories will be supplied and include:
  - Standard metric socket wrench set
  - Standard metric Allen keys Set
  - Standard Set of Pliers
  - Standard Set of Screwdrivers
  - Standard Cutting tools: Snips and Hacksaw
- **ISO 9000 QUALITY MANAGEMENT STANDARD COMPLIANCE CERTIFICATE:** Safe-Pro USA LLC has Quality Management System which is complaint to the ISO 9000 Quality Management Standard
- **POWER REQUIREMENT FOR THE ROV:** DC 24V source. Power source is replaceable and rechargeable within 2 hours 220V + 10%, 50 Hz Standard Power Source. Battery operation time is 4 hours
- **BATTERY BRAND AND MODEL:** Brand: Renogy (Model: RBT2450LFP-US; Country of Origin: USA), Manufacture and Assembly: USA. One set of replaceable batteries will be provided. Battery Charger is supplied.
- **ROV CHASSIS:** The ROV robot is constructed on a chassis of 1/4" min. thick aluminum with powder coat and with durable powder coated polyester epoxy hybrid paint
- **OPERATIONAL TEMPERATURE RANGE:** -20 to +45 C. ROV Robot is capable of operating in all-weather and terrain conditions (including mountains, deserts, snow, ice demolition, rubble and heavy wet mud)
- **WARRANTY:** The ROV has Manufacturer's Warranty
- **LIST OF SPARES INCLUDES:** Track, Tires, Battery and Charger, Sensors, Drive Motor, Set of Cameras, Manipulator Arm, Gripper Jaws, LED Lights, Disruptor Kit, Multifunction Tool Kit for use with ROV
- **MAINTENANCE:** Maintenance Manual is supplied and Maintenance Training is provided in-person



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