

Product Specifications

Nova Ray® ROV Model 3500 Package

The robust Model 3500 Nova Ray® ROV offers comprehensive imaging and project applications. This model provides user versatility with three configurations for multiple applications. Its high resolution sonar, both side scan and 360 degree forward scan, delivers full range imaging. Three configurations are included standard with this model.



Standard Features

- ◆ Side scan and forward scan sonar
- ◆ 3 configurations for multiple tasks
- ◆ Removable nose extension with viewing dome replacement
- ◆ Nova+ skids for extra payload
- ◆ Proprietary Command and Control software with interval upgrades
- ◆ Fully digital onboard electronics
- ◆ Two, 1/4 hp thrusters
- ◆ Dual operation mode (tow it in up to 9 knot currents or use thruster power)
- ◆ External and Internal camera system
- ◆ Integrated surface control console: (3-axis joystick; laptop; LCD video monitor; water tight case with wheels and telescoping handle)
- ◆ Tools & Parts Standard Kit (TAPS)
- ◆ Transport/operation cases with wheels and telescoping handles
- ◆ 3-auto pilot modes for multi tasking
- ◆ Dual quartz lighting system
- ◆ 300-ft. umbilical
- ◆ Patented channel and rail system for user add-on technology

Multiple Project Applications in One Compact ROV

The M3500 incorporates the Nova Ray® ROV patented arcuate (bow shaped) wing that solves cable drag problems in strong currents and cross currents. The wing design allows the Nova Ray® ROV to use its tether to advantage. It can be towed-- operating much like a kite -- or fly under its own thruster power.

Two additional configurations are standard with the M3500. Removal of the nose extension system converts the ROV to the viewing dome model pictured below. From basic surveys to full range imaging, the M3500 does it all. Where needed, an optional conversion kit is available for converting the Nova Ray® ROV to a digitally operated conventional ROV. Other user-specified peripheral devices can be added to this ruggedly designed ROV (ie., manipulators).



Fast Mobilization and Field Serviceability

Like all Nova Ray® ROVs, Model 3500 delivers unequalled maneuverability, stability and performance. This portable, multi-use platform includes the specially designed Nova+ skids that provide for extra payload. Fast mobilization from inflatable boats to larger vessels makes the M3500 adaptable to applications in oceans, ports, rivers and wilderness lakes. With its true-axis flight, Model 3500 helps



Project Applications

- ◆ Towed ROV Operations
- ◆ Wide area search/survey
- ◆ Repetitive, recordable coastline/harbor surveys
- ◆ Ship hull surveys
- ◆ Chemical, biological radiation detection with user add-on sensors
- ◆ Pipeline Inspections; oilfield platform inspection
- ◆ Aquaculture
- ◆ Environmental monitoring and research
- ◆ Police/fire dept. emergency response
- ◆ Recreational, tourism

Category	Standard Feature	Nova Ray® ROV Model 3500 Specifications
Performance		
Depth	Depth Rating	305meters (1,000 feet).
Currents	Stability in Strong Currents	Arcuate wing design counters destabilizing effects of cable drag. Results in faster, more stable performance in currents with less cable.
Maneuverability	Dual Operation Mode	Can be towed or use thruster power in strong currents. See Speed for knots.
	Speed	Up to 9 knots in currents under tow. With thrusters: 4 to 6 knots (¼ or 1/3hp respectively)
	Cable to Depth Ratio	Under tow, Nova Ray® provides deeper operation with less cable than other Underwater Towed Vehicles (UTV). Nova Ray® can operate up to 70% deeper than conventional UTV systems using the same cable length. Under tow, operates at a ratio of 2.38:1. With thrusters, the Nova Ray® can reduce the ratio to 2:1. With less cable, the Nova Ray® system is lighter, smaller and easy to deploy anywhere in the world on a rapid response basis.
	Thrusters	DC brushless rare earth motors. Two (1 port; 1 starboard) magnetic drive: ¼ hp standard with 150 volts DC. Optional 1/3 hp. Propellers and Thruster Guards (HMW plastic): 75mm for 1/4 hp., and 90 mm for 1/3 hp.
	Control Surfaces	Rudder provides directional control; two elevons provide vertical positioning (depth control).
Umbilical	Length, Diameter, Type	Length: 300 ft (91.4 m). Diameter: 15mm. Type: 12-conductor, neutrally buoyant.
	Custom Umbilical	Length to fit user specifications; optional fiber optic available.
Temperature Rating	Operating Range	-2 to 42 degrees C.
Command and Control System		
	Integrated Control Console	3 axis joystick; mode selection buttons and slide throttle; auto pilot capability; LCD monitor; laptop with proprietary Windows™ based software; LCD video display. I/O: video out, monitor in; RS232 and RS 485, hydrophone ready.
	Digital Onboard Electronics	Fully Digital: Precise control and easy integration of digital peripheral devices. Proprietary embedded software.
	Proprietary Software	Aeronautical style display showing pitch & roll and elevon, rudder and thruster direction and magnitude. Reports depth, heading, internal temperature. Heads-up video overlay enabled.
	Flight Control	Choice of manual or 3 auto pilot modes: Heading Hold, Wings Level and Depth Hold (optional altimeter provides an additional mode: Altitude Hold).
Instrumentation		
	Depth Sensor	Depth gauge with range of 0 to 340 meters.
	Compass	Solid state with pitch and roll correction and integrated thermometer.
Imaging		
	Side Scan Sonar	Digital multi-frequency; up to 240m or 800 ft. coverage. 12VDC and GPS Interface; data file storage: 10-15MB/hour.
	Forward Scan Sonar	360 degree scan; multi-frequency: 310 kHz, 675 kHz, 1 MHz. 20-36VDC at < 5 watts; interface RS-485 or RS-232.
Video, Camera, Lights		
Video Display	Flat Panel Monitor	254mm color LCD video display monitor. NTSC or PAL Composite. Out Port: RCA and S Video.
Internal Camera	Type and Resolution	Color. 480 TVL (Hi Res maximum for color), 1/3" CCD, NTSC or PAL.
	Sensitivity and Lens	1 lux @ F1.2 for color camera. Lens: 4mm, F1.2 or wide angle: 2.6mm, F1.6.
	Focus and Tilt	Adjustable with auto white balance and auto iris. Manual tilt range: 90 degrees.
External Camera	Type and Resolution	Color. 480 TVL with CS (Hi Res maximum for color), 1/3" CCD, NTSC or PAL.
	Sensitivity, Lens, Power, Current	1 lux. 2.9mm F1.4 standard, or 3.7mm F1.4. Power: 12Vdc only; Current: 160mA max.
	Focus and Scanning	Standard 100mm to infinity. Scanning: 525 line 60Hz NTSC or 625 line 50Hz PAL.
	Signal to noise ratio, view angle of view, composite video output	Signal to noise ratio: >48dB (AGC off). View angle: 92 diagonal in air; 65 in water for 2.9mm lens. 78 diagonal in air; 56 in water for 3.7mm lens. Video output: 1.0V pk-pk.
Lights	Front Lights	Dual 150 Watt mini quartz. Beam pattern 78 degrees (included angle to half power point).
ROV Characteristics		
Physical	Length, Width, Height, Weight	L: 1,114mm. W: 997mm. H: Body: 268mm; Rudder: 393mm. Weight: 37 kg.
Electrical	Connectors	Standard watertight bulkhead connectors and two accessory connectors.
	Line & Umbilical Voltage, Power	Line: 120 VAC 60hz. Umbilical: 109 VAC. Power Consumption: 900 -1100 Watts.
Housing	Construction	Single piece, anodized 6061 T6 aluminum hull with patented channel and rail system for wings, thrusters, skids & add-on devices (no welds nor hull penetration, and includes triple "O" rings to ensure watertight integrity of housing system. Includes nose extension and Nova+ skids.
ROV Construction	Material	Key ROV molded components: impact resistant, light weight polyurethane resin. Accessory fittings and mounts are stainless steel or aluminum for corrosion resistance and durability.
	View and Light Ports	View dome: annealed, impact-resistant 3/8" acrylic. Lights: ¼" quartz window and depth rated to 1,000 meters.
Other		
	Transport Cases	Water-tight control console case is carry-on commercial airline luggage. 4-cases for ROV and umbilical shipped as commercial luggage. All include telescoping handles and wheels.
	Shipping Weight	Control Console: 20 kg. Transit Cases: 86 kg. total.
Tools & Spares	Tool Kit	TAPS Kit (Tools and Parts Standard) provides for basic field assembly and servicing.
Warranty	Agreement	Details available from customer service.