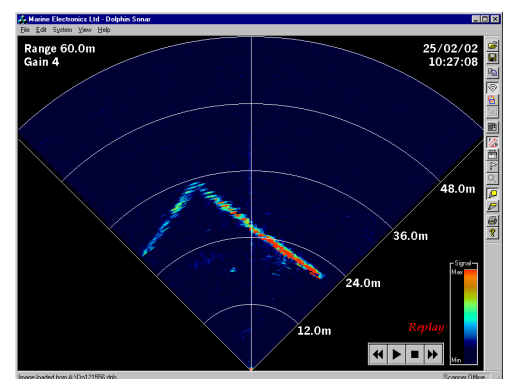
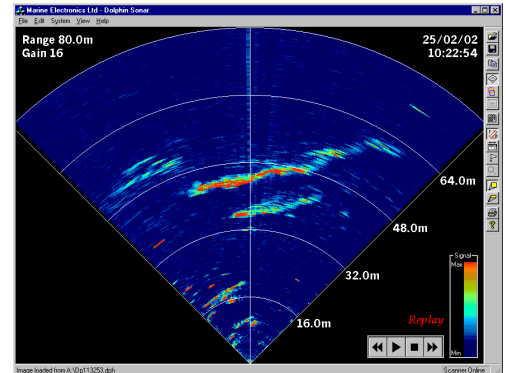
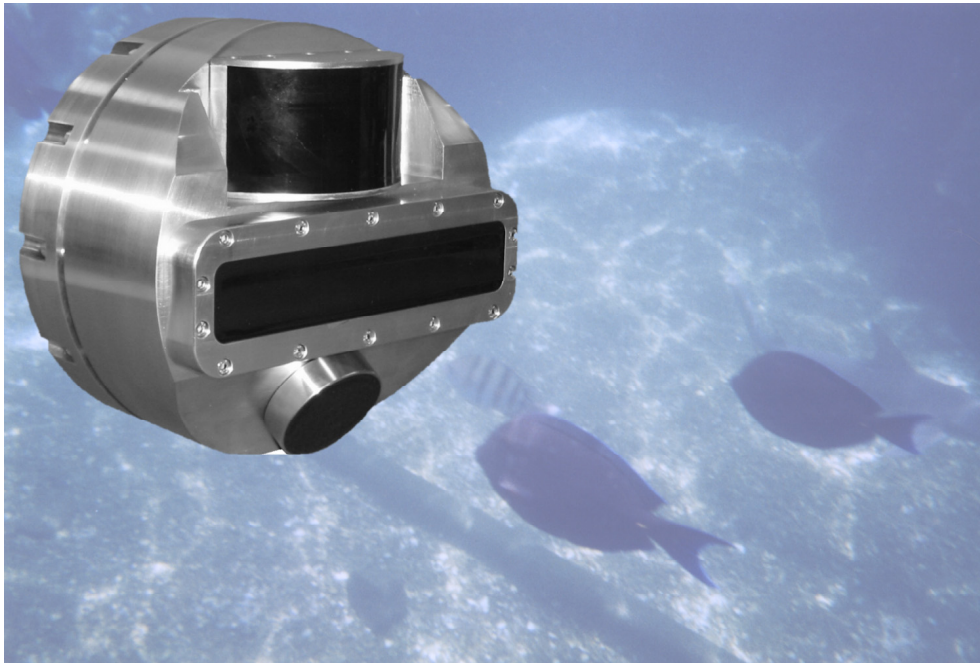


Obstacle Avoidance Sonar

Dolphin Model 6201

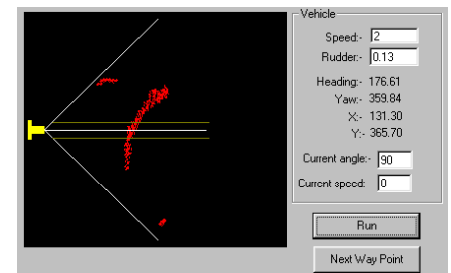
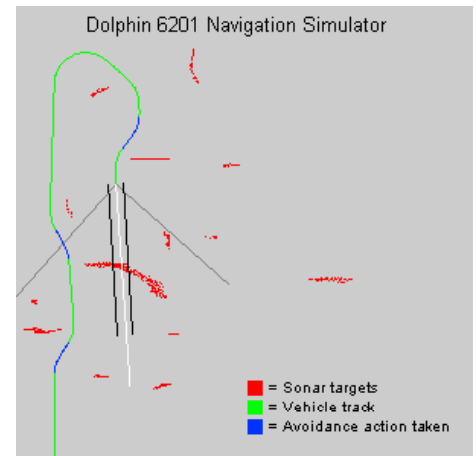


The Dolphin Model 6201 Obstacle Avoidance Sonar has been specifically engineered for A.U.V. and R.O.V. piloting and navigation. The compact stainless steel "nose-cone" housing is rated at 3000m operating depth and incorporates a dual beamwidth transmitter and a forward looking (33°) echosounder as well as the main 60 element phased receiver array.

The beam-forming electronics are mounted directly on the rear of the transducer array in the underwater housing for optimum image definition. The scanning unit is controlled by a small PC104 based computer that may be mounted remotely from the underwater unit. Outputs from the PC104 computer provide navigational directions via RS232 based on multiple targets tracked and analysed by the system. An Ethernet link from the PC104 provides an imaging output for operator viewing on cable linked R.O.V.'s or image storage on A.U.V.'s.

The Imaging software runs under "Windows" and produces displays as shown on the right. The P.C. requirements are met by a notebook as the data input is via Ethernet. The A.U.V. software which runs on the PC104 card provides RS232 navigational messages to avoid targets detected by the sonar without operator intervention.

- **Real Time continuous scanning over 90° sector**
- **Switchable beamwidth acoustic transmitter**
- **RS232 navigational data output for piloting**
- **Raw data logging**
- **Ethernet image output**
- **Rugged compact underwater unit**
- **3000m depth rating**
- **Echosounder built in**
- **200m acoustic range**
- **Track up to 250 targets**



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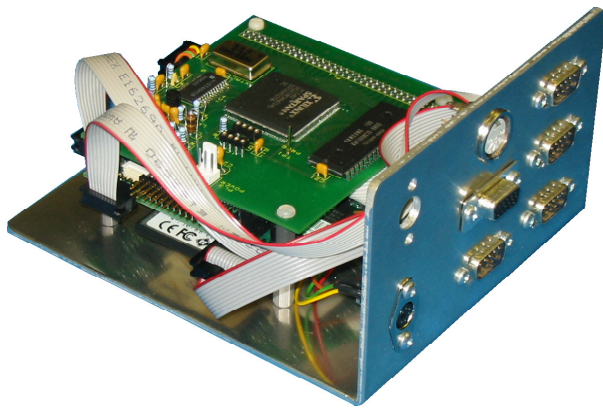
Obstacle Avoidance Sonar

Dolphin Model 6201



The resolution and update speed of the Dolphin Obstacle Avoidance Sonar sets a new performance benchmark for Autonomous Vehicle Navigation. The rugged compact underwater unit can be easily integrated into the nose-cone of the A.U.V. and is rated to 3000m operational depth. The underwater package has a Burton 13 pin connector, which links to the PC104 processing package mounted inside the A.U.V.'s pressure housing. The PC104 software can simultaneously track up to 250 discrete sonar targets.

Each target is assigned an I.D. number and then monitored for range and bearing each data frame at the rate of one frame per second until it disappears from view. Targets that appear along the protected corridor zone in front of the vehicle are analysed for a potential collision hazard and appropriate avoidance messages are then output via an RS232 port if necessary. By connecting a P.C. on the surface to the Ethernet output, the raw image data from each frame may be viewed using a Windows program.



The PC104 processing package comprises of a microprocessor PCB with a compact flash disk drive for program and data storage. Plugged into the PC104 expansion bus is a Marine Electronics data capture card which digitises the output from the Dolphin sonar and buffers the frame of data from every acoustic transmission. The onboard software analyses the raw sonar image and extracts the pertinent target data from the image background as well as transferring the raw image data over the Ethernet link if a network server is present. A secondary RS232 port provides logging facilities for post mission analysis of the navigational decisions. The PC104 system may be separately packaged to suit the application or vehicle or even fitted directly into the underwater housing.

System Specification

<i>Operating Frequency:</i>	250kHz
<i>Operating Range:</i>	200m
<i>Range Resolution:</i>	25mm
<i>Angular Resolution:</i>	1.5°
<i>Sample Rate:</i>	2MHz
<i>Horizontal Beamwidth:</i>	Receive: 1.5° (+/-3dB) Transmit: 110°
<i>Vertical Beamwidth:</i>	Receive: 16° Transmit: 12°/6° (selectable)
<i>Echo Sounder:</i>	250kHz, 8° (+/- 3dB), tilted 33° below horizontal
<i>Update Rate (90° Sector):</i>	200m range, 3frame/sec (Imaging mode) 200m range, 1 frame/sec (Tracking mode)

Pc104 Processor

<i>Dimensions:</i>	150mm x 130mm x 70mm
<i>Power Supply:</i>	5VDC, 20W
<i>Temperature:</i>	Operating: 0° to +40°C Storage: -20° to +60°C
<i>Sample Rate:</i>	2MHz
<i>Data Buffer:</i>	128K bytes
<i>Interfaces:</i>	4 of RS232 ports RJ45 Ethernet
<i>Processor:</i>	586 compatible at 133MHz

Underwater Unit

<i>Dimensions:</i>	220mm dia. X 142mm
<i>Weight:</i>	21.5kg in air 17.2kg in water
<i>Material:</i>	Stainless Steel 316 Polyurethane
<i>Power Supply:</i>	24V DC at 3A max.
<i>Temperature:</i>	Operating: -5° to +40°C Storage: -20° to +60°C
<i>Operating Depth:</i>	3000m
<i>Mating Connector:</i>	Burton 55R1-2013-0004
<i>Transmit Pulse Length:</i>	30µsec to 1msec
<i>Transmit Power:</i>	Variable
<i>Telemetry Link:</i>	RS232 Selectable baud rate
<i>Data Link (for imaging):</i>	Ethernet (RJ-45)



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