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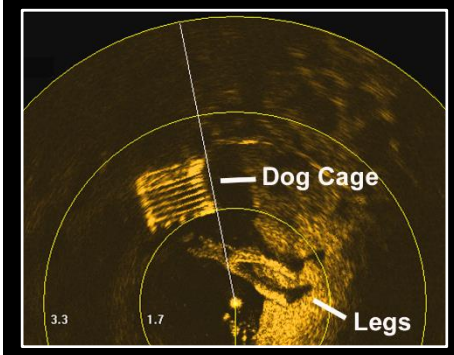
Pole mounted

Image of area around pier



Drowning Victim with dog cage marker

SCAN650 mounted on ROV

Data Sheet

Scan 650

Sector Scanning Sonar

- **High Resolution Picture of Sea Bottom**
- **Fast Scan Even on ½ Degree Steps**
- **1/2 , 1, 1 ½ or 2 Degree Steps**
- **360 Degree Continuous Sweep**
- **Target Sizing**
- **Pairs with laptop or tablet**
- **Transducer, 150' of cable, processor box, GPS, and software come standard with purchase**

Performance/Descriptions

- **Frequency -** 650 kHz.
- **Beam width -** horizontal x vertical - 2.4/1 deg. by 40 deg.
- **Ranges** - 5, 10, 20, 40, 60 meters.
- **Max depth** - 300 m (1,000 ft.)
- **Input voltage**-
  - **Sonar Processor** - 9-12 VDC or 120/220 VAC , 5w
  - **Sonar Head** - 9-36 from ROV, 7w or from Sonar Processor
- **Cable - 2 or 4 conductor**

J.W. Fishers Exclusive **2 Year** Unconditional Warranty

Dimensions & weights

- **Processor** – 14in.(W) x 13in.(D) x 6in.(H) - 7 lbs.
- **Cable 150 -** 2,000 feet 7 - 90 lbs.

Scan 650A

- **Sonar -** 3.5" to 7"D x 10.5"L 3.6 -7 lbs.

Scan 650B

- **Sonar head** 3.5" to 7"D x 4.25"L 1.4 to 3 lbs.
- **Housing** 3.5"D x 9"L 2.8 lbs.

Options

- Up to 2,000 feet of cable
- Narrow beam (1 degree)
- Carrying case
- Microsoft Surface ® tablet mounted in control box lid
- Rugged, splash proof Panasonic Toughbook ® laptop

Sector Scanning sonar is an ideal tool for underwater search because it produces a "picture" of the underwater environment regardless of the water visibility. It does this by sending out a sound wave that reflects off objects on the bottom or in the water column. The reflected wave returns to the sonar head where it is received and sent to the surface for display.

Fishers SCAN-650 is a high performance scanning sonar system that can be mounted on an ROV, pole-mounted for use from a small boat in shallow water, or mounted on a tripod (see above). The scanning sonar serves as an obstacle avoidance system and provides target identification. The sonar beam sweeps in a 360 degree circle (or any portion of 360) allowing any object in the sonars "field of view" to be seen and displayed topside. In a typical application the sonar head or transducer is mounted on top of an ROV. The head scans a circle around the ROV and "sees" targets in all directions, including those that are well beyond camera range. The sonar images are displayed on the topside computer. The operator, using the sonar for direction bearings, drives the ROV to the various targets for identification and recording.

Scanned data files are stored on a hard drive along with boat's GPS position, time, date, and other pertinent data. The recorded files can be played back at anytime. Software is provided to allow post-processing of data including editing and merging of files. Small file sections, including screen shots, can be edited out and copied to a small file for emailing. A sizing tool is included in the software which allows the operator to determine the size of the targets on the screen.

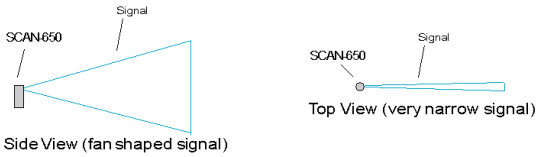
The SCAN-650 uses a unique data transfer technique when transfer-ring data between the scanning head and the upstairs sonar processor that cuts the time to complete a scan by as much as 50% over other manufacture's units; and it does it without any loss of data. Operating at twice the scan speed is very important when having to search large areas.

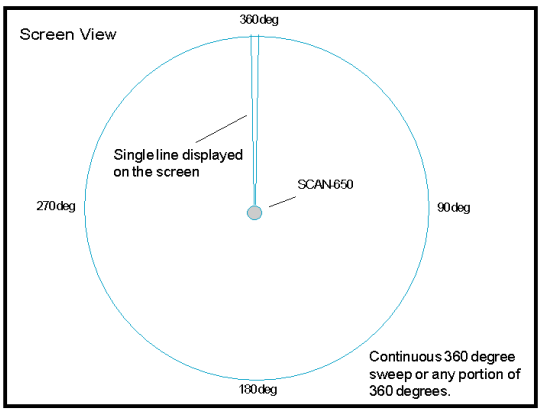
An optional Panasonic Toughbook® is available for small, open boat operations. The 10.1" XGA sunlight-viewable LED 1024 x 768 resis-tive touchscreen computer is MIL-STD-810G certified (6' drop, shock, vibration, rain, dust, sand, altitude, freeze/thaw, high/low tem-perature, temperature shock, humidity, explosive atmosphere).

A Windows tablet can also be mounted to the inside of the control box lid for a "sleeker" package versus the standard laptop.

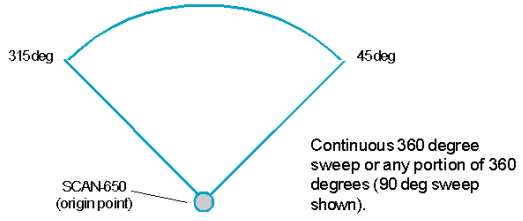
SCANNING SONAR - How they work

Scanning sonars operate very similar to radar, a signal is sent out from its antenna and then it listens for return signals. The signal is fan shaped and very narrow in width. The return ech-oes are displayed on the computer screen as a very narrow line that changes color along its length depending on the intensity of the echoes.

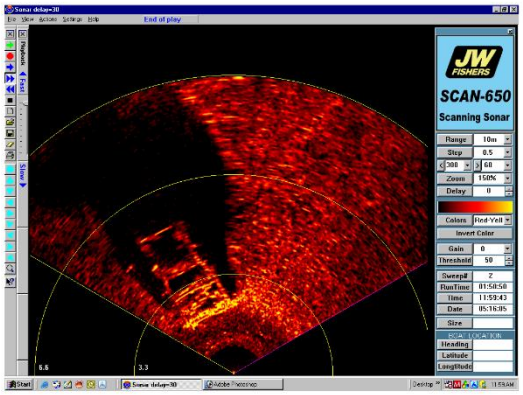




After the line is displayed, the antenna (called a transducer in sonar) rotates (steps) slightly to the right and the sequence is repeated. The smaller the step (1/2, 1, 1 1/2, or 2 degree) the higher the resolution of the picture. The transducer continuous-ly steps, and the display quickly fills with the sonar image. The sequence is repeated, and if nothing moves (targets or sonar), then the identical picture will be overlaid over the previous pic-ture (one line at a time). If a 360 degree continuous sweep is selected, at 1 degree steps, then 360 steps will make up a com-plete picture (720 steps for 1/2 degree). The operator can select 360 degree continuous sweep or any portion of 360 degree (from any degree to any degree).



The operator can move the origin point of the signal to anywhere on the screen. If a 360 degree sweep is used, the select-ed origin point would be in the center of the screen. If 315 degree to 45 degree was selected (drawing above) then the origin point would be moved to the bottom center of the screen thus giving a very large viewing area (image from top to bottom of screen). The origin point can also be moved to the corners of the screen when it is advantageous to do so. Range mark rings on the display allow the distance from the target to the sonar head to be easily displayed.



SCAN-650 OPERATOR CONTROLS

Fishers scanning sonars have a full set of operator controls and indicators which are conveniently located on the front of the sonar processor and on the PC screen. The controls are:

- Record and Playback. A complete set of controls for both recording and playback of files.
- Range Setting. Selection from 5 to 60 meters allowing both short range scanning for the smallest of targets to long range for locating larger targets. The range settings are 5, 10, 20, 40, and 60 meters.
- Step Degree. From 1/2 deg to 2 deg in four steps. The smaller the step the higher the resolution and detail. The larger the step the more coarse the picture, but the faster the sweep.
- From and To Sweep angles. The system can perform con-tinuous 360 degree sweeps or "back and fourth" sweeps between any two selected degree angles.
- Zoom. Zooms in or expands/enlarges picture
- Print Delay. Delays start of image on screen.
- Size. Displays size of selected target.
- Amplifier adjustments. Allow the operator to fine-tune the received signal for the sharpest displayed picture.
- Gain. Increases overall gain of picture.
- Colors. Different color scales are selectable.
- Color Bar. Displays the range of colors selected. A small return signal displays the color on the left end of the bar, a large return displays the color on the right end of the bar.
- Invert Color. Inverts the color bar to give a different look to the target.