

New Spherical Transducer

Furuno's advanced acoustic technology produced the revolutionary spherical transducer which allows 360-degree horizontal searches and 0 to 90 degree "blind-spot-free" vertical searches at all range. This transducer enables the FSV-30/30S to suit virtually all types of the fishing vessels.

Transducer elements

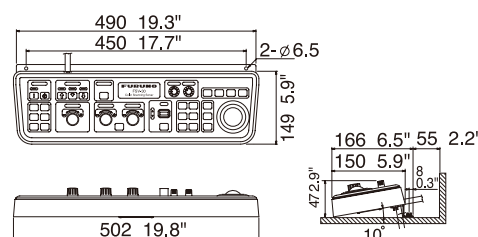
This transducer consists of hundreds of highly sensitive elements, which achieve high efficiency in energy conversion. This ensures detection with small output power compared with other spherical transducer types. This low power consumption of the FSV-30/30S makes their transceiver unit compact, offering space-saving installation.

Multi-frequency transmission and reception: 21-27 kHz

This new transducer element has another unique feature; "multi-frequency transmission and reception". This allows the FSV-30/30S to conduct multi-frequency scans with frequency ranging from 21 kHz to 27 kHz without affecting the sensitivity of transmission and reception. The operating frequency is easily changed by menu settings. This is helpful in reducing the interference from other sounding equipment in a congested fishing area.

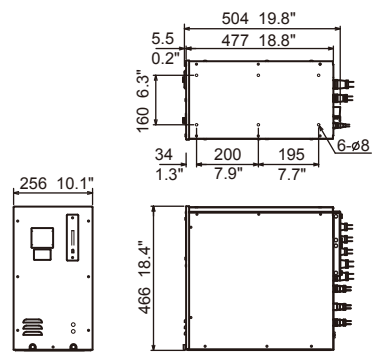


CONTROL UNIT FSV-3001 4.2 kg, 11.5 lb



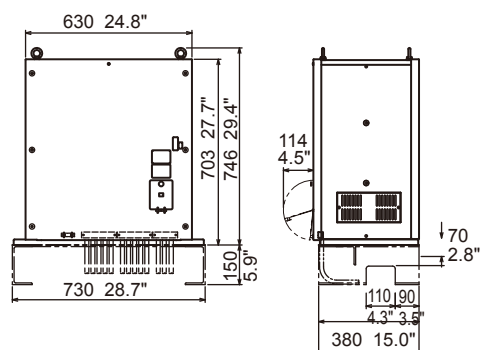
PROCESSOR UNIT

FSV-3002 29 kg, 53 lb



TRANSCIVER UNIT

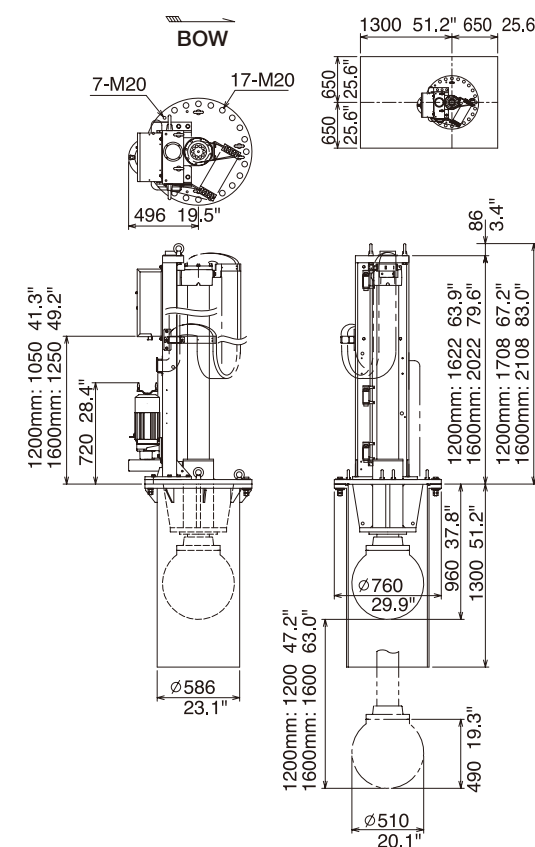
FSV-301 98 kg, 507 lb



HULL UNIT

FSV-303 (for 1200 mm travel) 1,110 kg, 2,976 lb

FSV-304 (for 1600 mm travel) 1,160 kg, 3,087 lb



SPECIFICATIONS OF FSV-30/30S

1. Presentation Colors

Echoes in 32 colors, Marks in 4 colors

2. Frequency

21 to 27 kHz

3. Presentation Modes

Full-circle scan, Combination of Full-circle and vertical scan/echo sounder/ historical presentation

4. Orientation

Head-up, Course-up*, North-up* and True Motion*

*Appropriate sensors required

5. Range Scales

FSV-30: 60 - 5,000 m
FSV-30S: 60 - 10,000 m

6. Pulselength

0.5 to 125 ms (depending on range scales)

7. Beamwidth (at -3 dB)

TX: 360° (hor) x 10° (ver)
RX: 18° (hor) x 12° (ver)

8. Tilt

-5° to 90° (downward) in 1° steps

9. Hull Unit

	FSV-303	FSV-304
Travel:	1200 mm	1600 mm
Raising Time:	22 s	29 s
Lowering Time:	21 s	28 s
Ship Speed:	18 kt	15 kt
(Raise/Lower):	(15 kt)	(12 kt)

10. Interface (NMEA 0183)

Input: CUR, DBS, DBT, DPT, GGA, GLL, GNS, HCC, HCD, HDG, HDM, HDT, MTW, MWV, RMA, RMC, VBW, VDR, VTG, VHW, ZDA

Output: TLL

11. Audio Search

Sector: 30°, 60°, 90°, 180°, 330°

Audio Output: 2 W, Frequency: 1 kHz

POWER SUPPLY

Transceiver unit: 100/115/220/230 VAC, 1ø, 50/60 Hz

Hull unit: 220 VAC, 3ø, 50/60 Hz

EQUIPMENT LIST

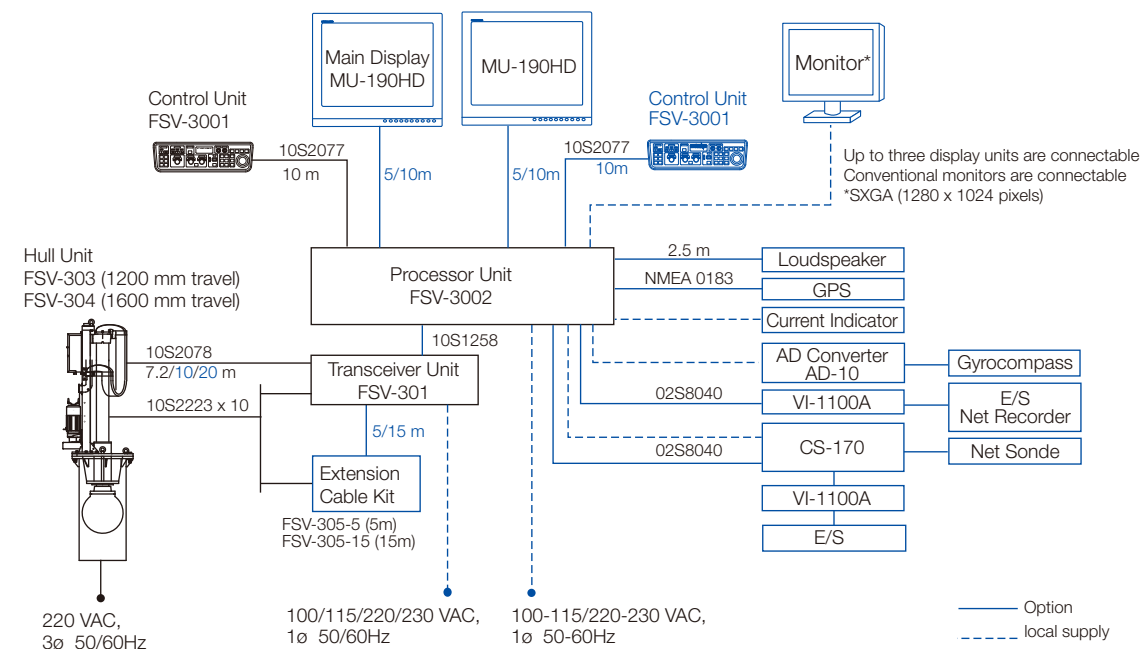
Standard

- Control Unit FSV-3001-E-10
- Processor Unit FSV-30 : FSV-3002
FSV-30S : FSV-3002S
- Transceiver Unit FSV-301
- Hull Unit (specify when ordering)
FSV-303 (1200 mm travel)
FSV-304 (1600 mm travel)
- Installation materials and spare parts

Option

- Display Unit MU-190HD
- Control Unit FSV-3001-E-10 (for remote display)
- NMEA cable MJ-A6SPF0012-050/100 (5/10 m)
- Viewing Hood FP03-06503
- Echo Sounder Interface VI-1100A
- Cable for VI-1100A 02S8040 (6 m)
- Loudspeaker SEM-21Q
- Net Sonde Interface CS-170
- Extension Cable Kit FSV-305-5/15 (15 m)
- Power Supply Unit FS-2403 for CS-120A
- Attachment Flange OP10-20 (1200m/travel)

INTERCONNECTION DIAGRAM



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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Catalogue No. E-398b



FURUNO

FULL-CIRCLE COLOR SCANNING SONAR

Models FSV-30/30S

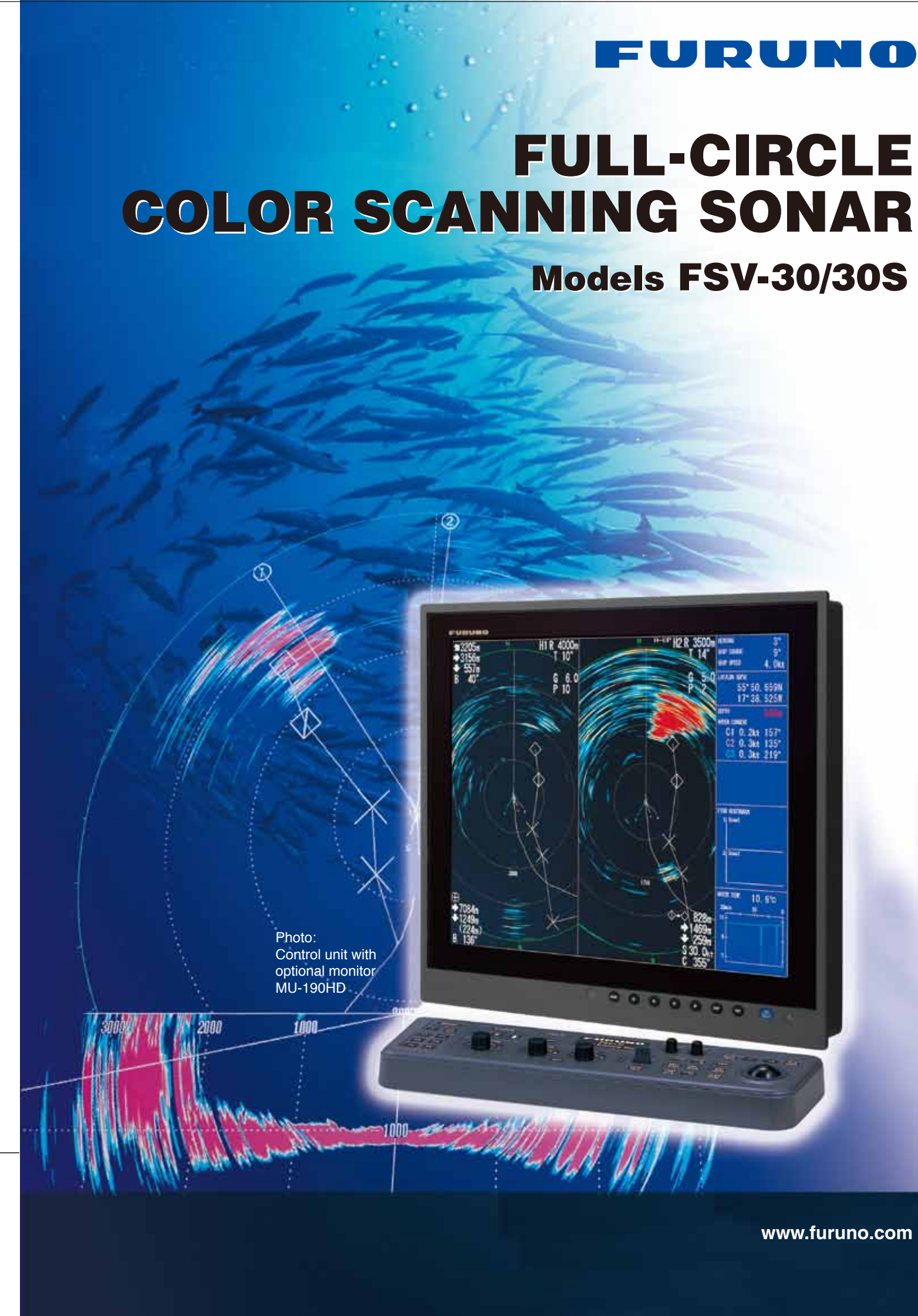


Photo:
Control unit with
optional monitor
MU-190HD

FURUNO's cutting edge technology has made possible the creation of this groundbreaking 360-degree color scanning sonar

- Powerful transmitter and high-sensitivity receiver offer long detection capabilities
- New spherical transducer allows up to 90-degree presentations in vertical planes
- Sidelobe Suppressing Technology (SST)
- Auto filter for a clear image of fish schools and the seabed by suppressing noise and unwanted signals
- FURUNO's unique beam-stabilizing system eliminates the loss of important targets due to ship's motion in rough seas
- User-defined function keys and menu for intuitive operation

- Multi-frequency system allows range menu-selection of operating frequency to reduce any interference by other sonar operating on the same frequency
- Combined display of full-circle and vertical scans for easy evaluation of density and distribution of fish schools
- New space-saving transceiver unit
- Fish histogram shows signal strength distribution of echoes within estimate mark

The FSV-30/30S are groundbreaking scanning sonar using FURUNO's revolutionary signal processing technology and hardware expertise. FURUNO's first-rate technologies bring about outstanding omni-direction searches with long-range detection all around the vessel horizontally and vertically. This means that the operator will not miss any important target echo. These features perfectly suit virtually all types of fishing vessels including trawlers and purse seiners.

A variety of presentation modes are available for efficient fishing: a single full-circle scan, a dual full-circle scan, and the combination of full-circle and single vertical scan/ dual vertical scan/ echo sounder presentation or historical presentation.

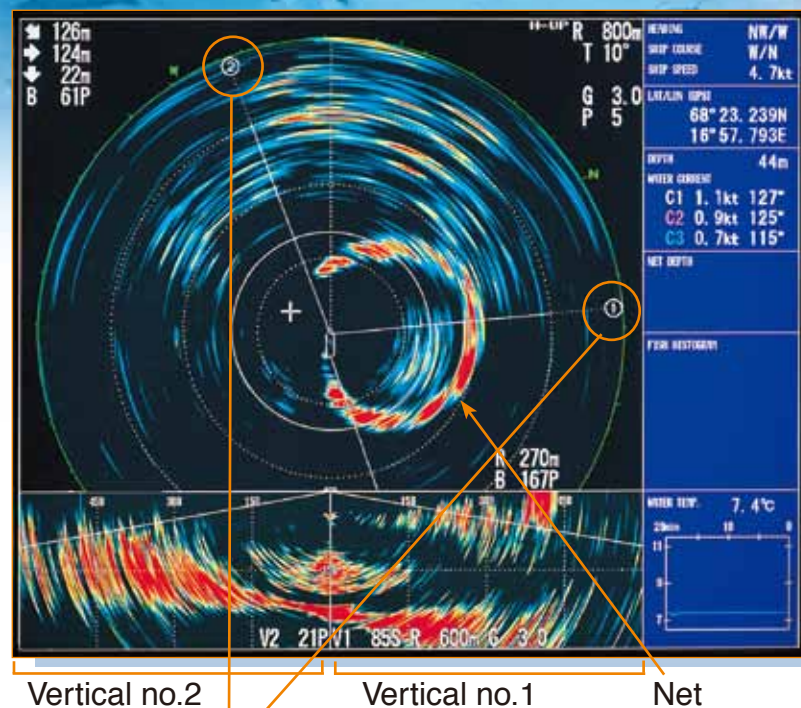
FURUNO's advanced acoustic technologies give a crystal clear presentation free from unwanted echoes. Sidelobe Suppressing Technology (SST)

eliminates mimic echoes from the sidelobe. Thus, the display clearly distinguishes between the mimic echoes and the echoes from the main beam. In addition, the stabilization system maintains the sonar beam at a desired angle with less effect of pitching and rolling. The FSV-30/30S allow the skipper to observe a stable target echo throughout the catching process of detection, net shooting and hauling.

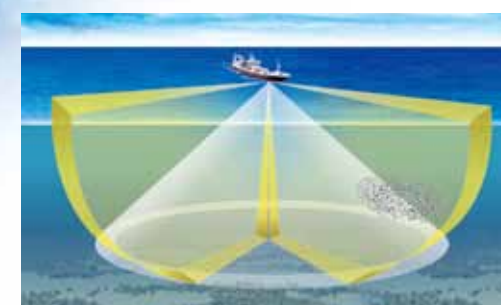
The FSV-30/30S consist of ergonomically designed control unit, a processor unit, a transceiver unit, and a revolutionary spherical transducer unit. The compact transceiver unit allows space-saving installation. A BlackBox configuration offers as an option with FURUNO or conventional LCDs.

The transducer tank is common to the CSH-20/21/23/23F for reducing time of installation.

Combination of the full-circle and vertical scan



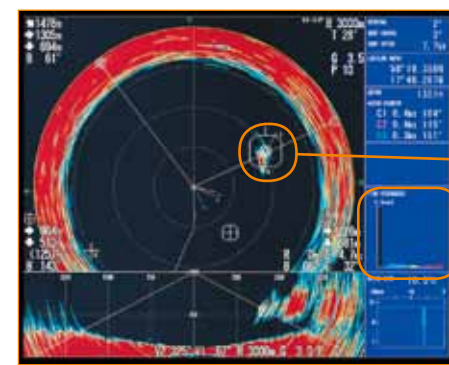
These lines and marks indicate the directions of vertical scans. On no.1, the operator can observe the position of the fish school and the distance between the fish school and the net.



The upper part of the image on the left shows a 360-degree full-circle scan. The lower part shows vertical scans. These vertical scans show two directional scan images of the selected bearings next to each other.

This combination display helps the operators determine which fishing area is more lucrative. A single vertical scan is also available, which is suitable for observing detailed distribution and concentration of a fish school.

The setting of vertical scans is simple: Just use the trackball to place the marker at desired locations on the full-circle display, and press the designated keys. This greatly simplifies the sonar operation during the busy fishing activities.

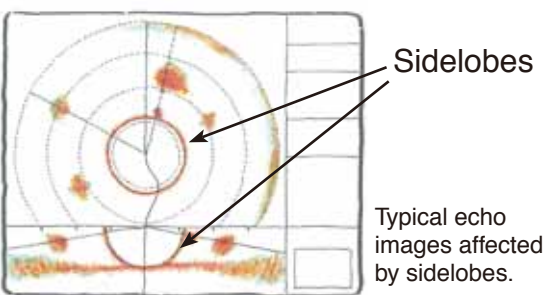


Estimate Marks

The operator can obtain an estimate of the volume of a fish school by using the estimate mark. The echo within the mark is presented with a histogram showing the echo strengths on the right side of the screen. This graphically helps to assess the concentration of the targeted fish school. Up to two marks can be placed.

Sidelobe Suppressing Technology (SST)

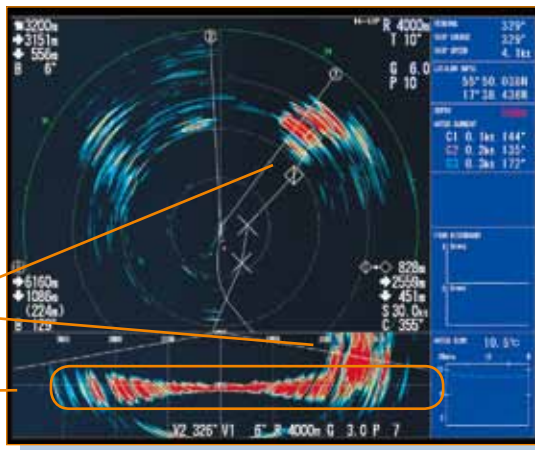
The SST reduces the influence of mimic echoes caused by the effects of sidelobes and displays the echoes of targets clearly.



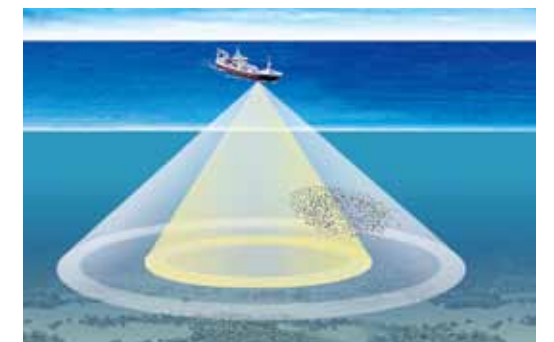
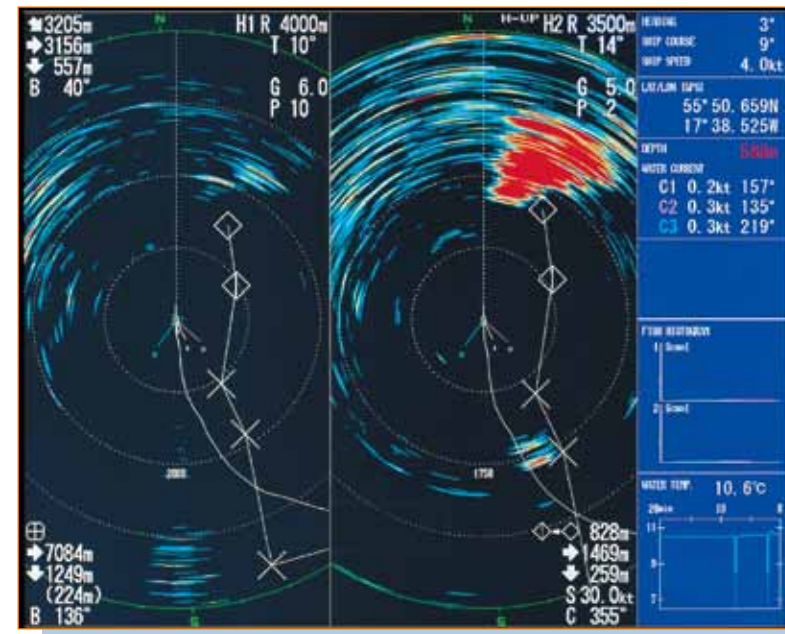
In the vertical scan display, the seabed is displayed as flat without being affected by sidelobes.

Fish school

Seabed



Dual full-circle scan

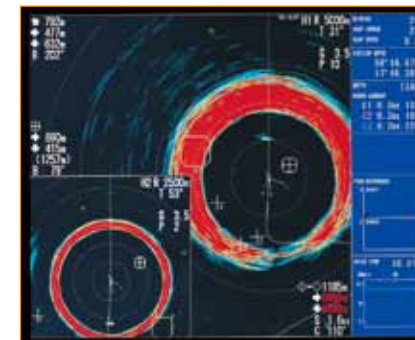


The dual full circle scan modes show simultaneously two full-circle scans at different tilt angles or range selected by the operator. The fish school shown on two images with different range scales permits skippers to conduct uninterrupted observation of the target.

The images are presented in a variety of ways including: dual-portrait, dual-landscape and inset modes. These improve the efficiency of the fishing operation.

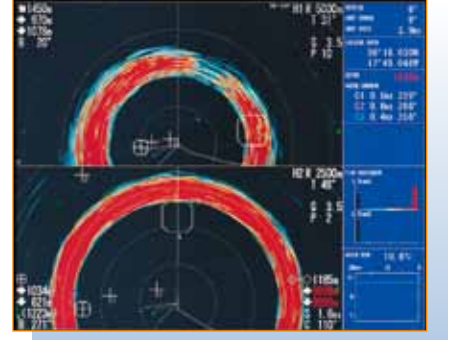
Dual portrait mode

Suitable for continuous observation of the targeted fish schools situated fore and aft of the vessel when trawling.



Dual landscape mode

Suitable for keeping the observation of the sea area in a forward direction as in purse seining.

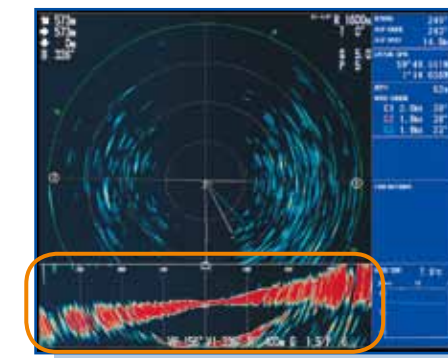


Inset mode

Effective in searching for targets with main and substitute scans at different

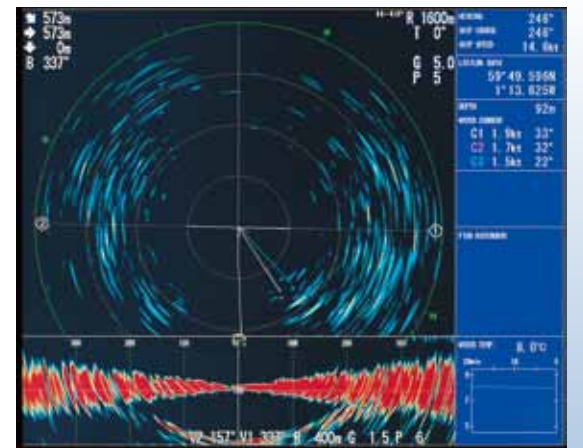
Beam Stabilization

The beam stabilization mode maintains the sonar beam at required bearing and tilt by compensating for ship's pitching and rolling. This gives an unwavering presentation of the echo images even in rough seas.



Stabilization OFF

The echo reflections in the vertical scan are listed to port due to rolling.



Stabilization ON