

FURUNO®

FULL-CIRCLE COLOR SCANNING SONAR

Model FSV-24



The future today with FURUNO's electronics technology.

FURUNO ELECTRIC CO., LTD.

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Catalogue No. E-383

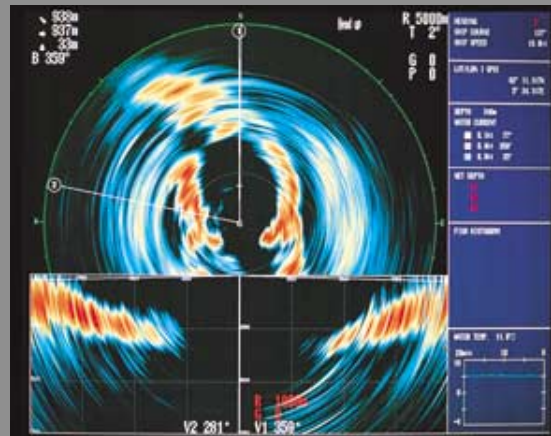
TRADE MARK REGISTERED
MARCA REGISTRADA

For Trawlers

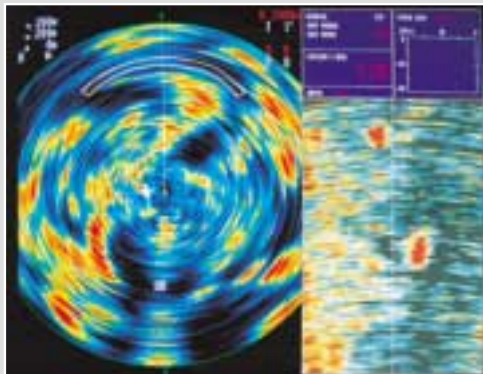


For Trawlers

These two pictures are from Full circle + Dual-Bearing Vertical Slice and Full circle + Historical modes. The historical display shows the echoes within the marker and the plotted echoes scrolls down, synchronized with ship's speed or transmission rate. This picture can be used to monitor and predict the movement of the targeted fish school. With the Dual-Bearing Vertical Slice, you can place two markers onto different fish schools to monitor the concentration of fish schools for prediction of their movement.

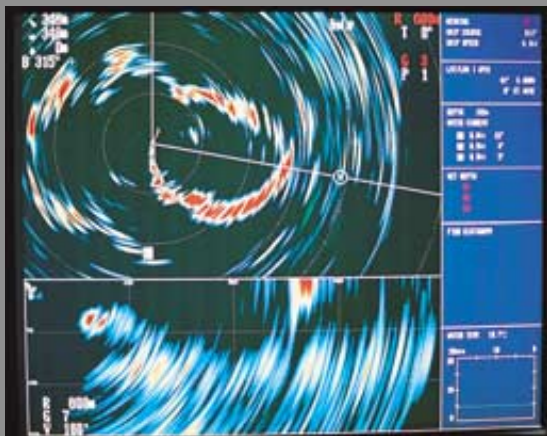


Combination of Full-circle and Dual-Bearing Vertical Slice



Combination of Full-circle and Historical presentation

For Purse seiners

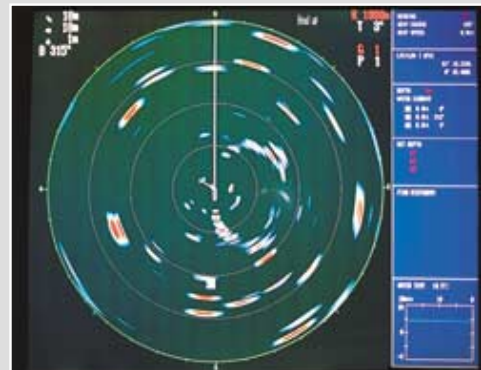


Combination of Full-circle and Vertical scan

For Purse seiners

The left screen shows Full circle + Vertical scan and the lower, Full circle. The vertical scanning picture is suitable for monitoring the concentration of the targeted fish school during the net shooting. The Full circle picture can be used to monitor the position and movement of the fish school.

Full-circle display showing net formation in relation to the target fish schools




FURUNO's highly advanced 360-degree Scanning Sonar technology supports a modern, efficient fishing operation.

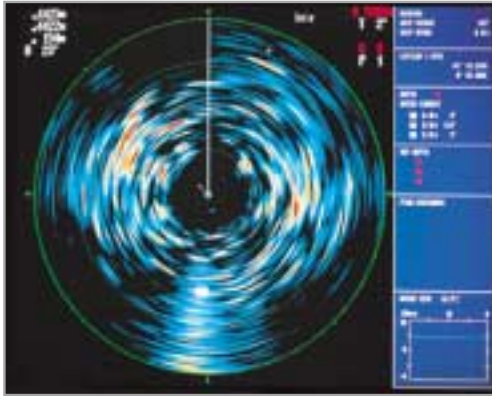
The FSV-24 is a revolutionary scanning sonar developed for use by both trawlers and purse seiners. Furuno's advanced 360-degree, multibeam sonar technology provides effective and reliable detection of fish on both short and long search ranges.

One of the FSV-24's major features is the new Dual-Bearing Vertical Slice mode. Up to two areas of particular interest may be specified by the bearing lines. Vertically scanned views along these bearing lines are shown in two display windows positioned side by side, directly beneath the full-circle, 360-degree view. The vertical distribution of the targeted fish schools can be clearly seen.



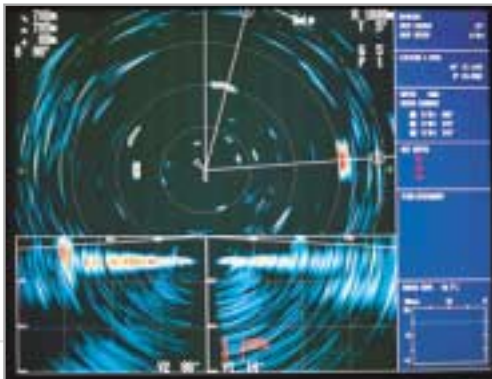
 Vertical scanning marker

- Long range detection with powerful transmitter and high-sensitivity receiver and transducer
- Short range, shallow depth detection by clutter suppressing signal processing techniques
- 21" high-resolution CRT display (standard configuration) or commercial PC monitor (BlackBox configuration)
- Various operation modes
- User defined function key and menu
- Easy evaluation of fish school concentration and distribution
- Catch prediction by estimate mark



Stabilization system

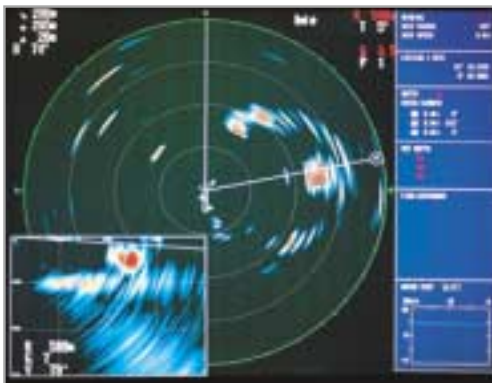
New transducer stabilization system ensures detection of fish schools with unblurred display in rough seas. It maintains the sonar beams at required bearing and tilting compensating for ship's pitching/rolling.



① Vertical scanning marker 1 ② Vertical scanning marker 2

Dual-Bearing Vertical Slice

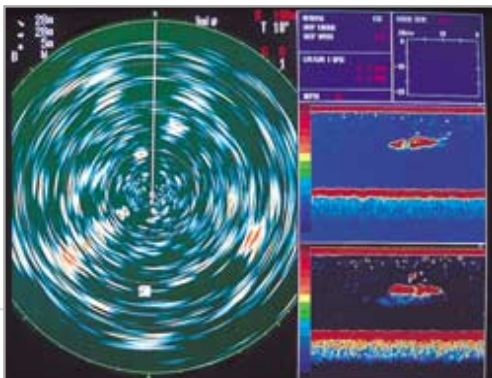
Set by using the track ball, vertically scanned views in two cursor lines can be added to the Full-Circle Scan picture. Combination of Full circle and Vertical Scan pictures offers the horizontal and vertical distribution of fish schools or concentration of particular fish schools.



Ⓢ Target lock mark

Target lock

The FSV-24 provides two different target lock modes: target echo mode and position tracking mode. In the target echo mode, fish school is manually acquired and automatically tracked, the target lock mark following the the selected fish school, and can be shown in the full-circle picture as well as the vertical scan. In the position tracking mode, the FSV-24 automatically locks to the specified position.

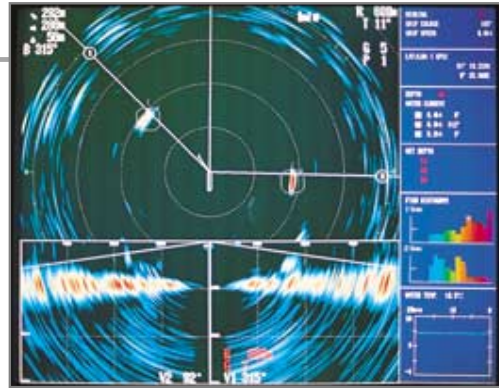


Combination of Full circle and two echo sounders

Up to two echo sounders can be connected with the FSV-24 and pictures from the echo sounder can be displayed together with the Full circle scanning pictures.

Event and estimate mark

Up to ten event marks can be entered. Range/bearing and water depth at the mark are read at the lower left corner of the screen. Two estimate marks are available on the full-circle picture. Echoes within an Estimate Mark are presented with a histogram showing the echo strengths. This graphically helps to assess the density of the targeted fish school.



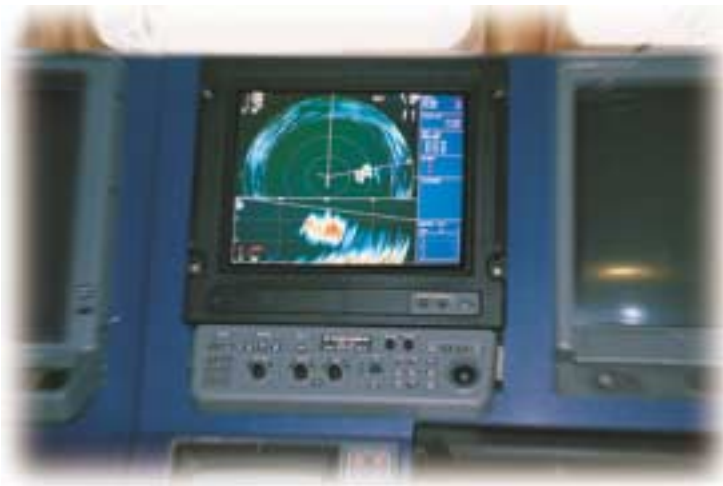
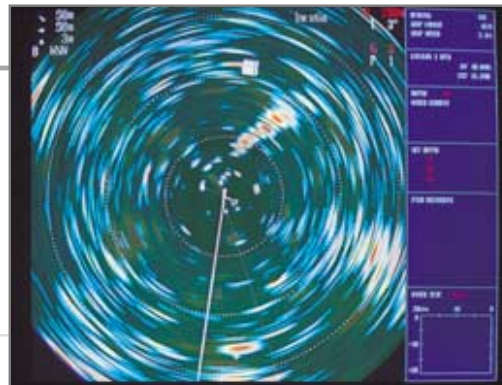
Estimate mark 1



Estimate mark 2

Four orientations

The FSV-24 displays sonar pictures in four orientations; Head-up, North-up, Course-up and True Motion. In the course-up mode, own ship always stays at the screen center. The intended course locks to the screen top to avoid smearing during course changes.



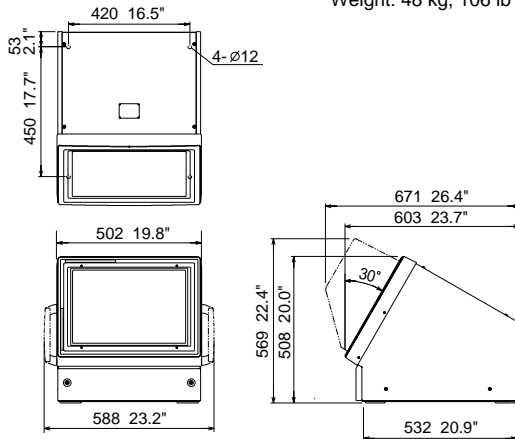
BlackBox configuration

The blackbox configuration is available with a commercial LCD monitor as a substitute for the standard 21" CRT display unit. The sonar user may select a favorite display without spoiling the standard functions of the FURUNO sonar system.



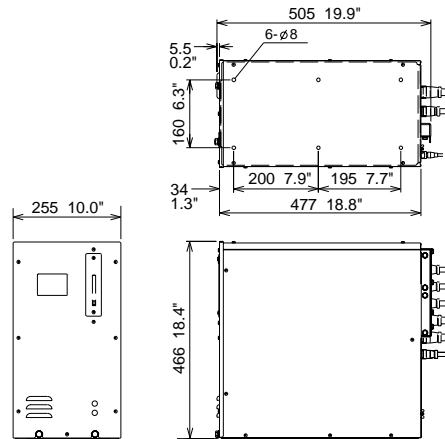
DISPLAY UNIT FSV-2400

Weight: 48 kg, 106 lb



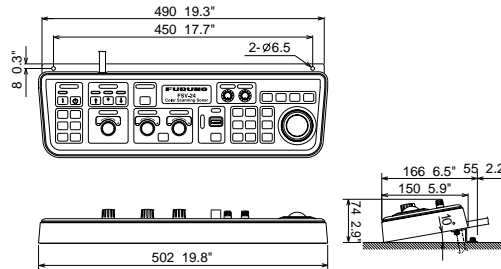
PROCESSOR UNIT FSV-2402

Weight: 24 kg, 53 lb



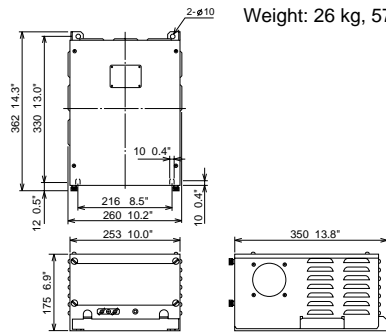
CONTROL UNIT FSV-2401

Weight: 5.2 kg, 11.5 lb



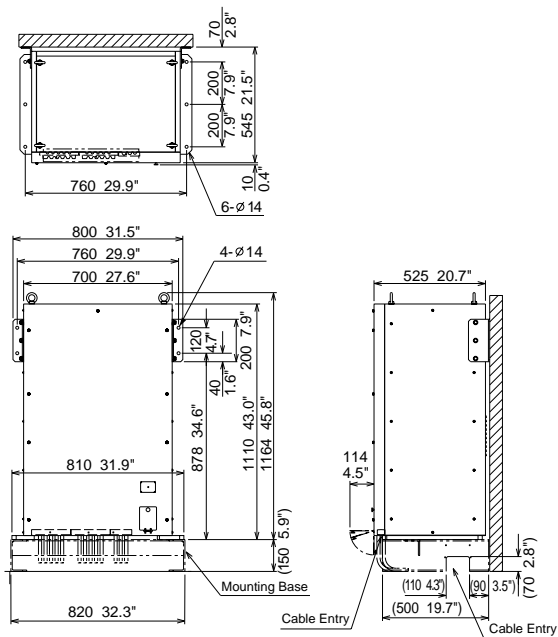
POWER SUPPLY UNIT FSV-242

Weight: 26 kg, 57 lb



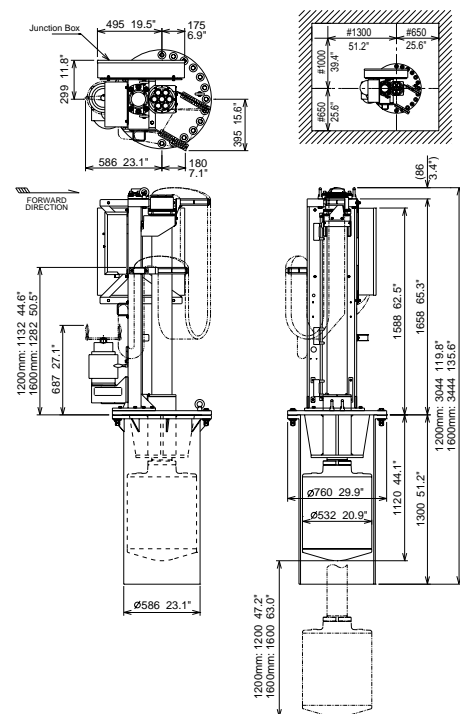
TRANSCIEIVER UNIT FSV-241

Weight: 230 kg, 507 lb



HULL UNIT FSV-243/244

Weight: 1,350 kg, 2,976 lb (1200 mm)
1,400 kg, 3,087 lb (1600 mm)



SPECIFICATIONS OF FSV-24

1. **Display**
High-resolution, 21-inch CRT
1280(H) x 1024(V) pixels
2. **Presentation Color**
Echoes in 32 colors, Marks in 4 colors
3. **Frequency**
24 kHz
4. **Presentation Modes**
Full-circle scan, Combination of Full-circle and vertical scan/
echo sounder/ historical presentation
5. **Orientation**
Head-up, Course-up*, North-up* and True Motion*
*Appropriate sensors required
6. **Range Scales** 60 - 5,000 m
7. **Pulselength** 0.5 to 100 ms (depending on range scales)
8. **Beamwidth** (at -3 dB)
TX: 360° (hor) x 10° (ver)
RX: 18° (hor) x 12° (ver)
9. **Tilt** -5° to 60° (downward) in 1° steps
10. **Hull Unit**

	FSV-243	FSV-244
Travel:	1200 mm	1600 mm
Raising Time:	22	29
Lowering Time:	21	28
Ship Speed:	18 knots	15 knots
(Raise/Lower):	(15 knots)	(12 knots)
11. **Audio Search**
30°, 60°, 90°, 180°, 330°
Audio Output: 2 W, Frequency: 1 kHz

12. Interface (NMEA 0183)

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

Output: TLL

POWER SUPPLY

Display unit: 115/230 VAC, 50/60 Hz, 1ø, (250 VA max)
Transceiver unit: 115/230 VAC, 50/60 Hz, 1ø, (2 kVA max)
Hull unit: 230 VAC, 60 Hz, 3ø, (4.5 kVA max)

EQUIPMENT LIST

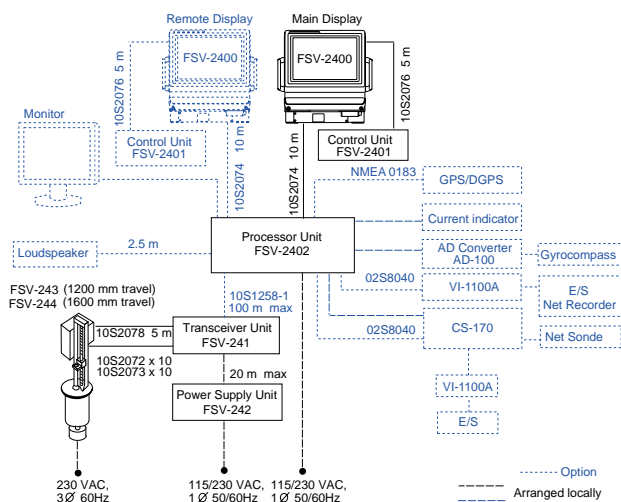
Standard

1. Display Unit FSV-2400
2. Control Unit FSV-2401
3. Processor Unit FSV-2402
4. Transceiver Unit FSV-241
5. Hull Unit (specify when ordering) FSV-243 (1200 mm travel)
FSV-244 (1600 mm travel)
6. Power Supply Unit FSV-242
7. Installation materials and spare parts

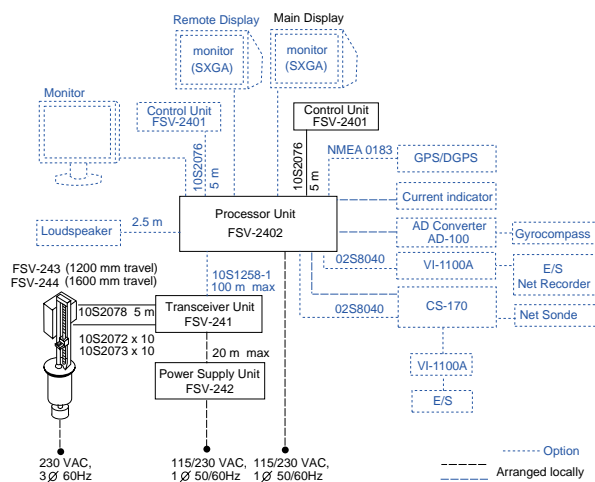
Optional

1. Remote Display Unit FSV-2400
2. Control Unit FSV-2401 (for remote display)
3. NMEA cable MJ-A6SPF0012-050/100 (5/10 m)
4. Viewing Hood FP03-06503
5. Echo Sounder Interface VI-1100A
6. Cable for VI-1100A 02S8040 (6 m)
7. Loudspeaker MX910-X01
8. Net Sonde Interface CS-170

INTERCONNECTION DIAGRAM



**Standard configuration
(with standard CRT monitor)**



**Blackbox configuration
(with custom monitor)**

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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