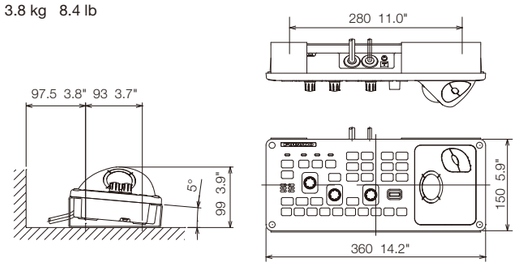
FULL-CIRCLE COLOR SCANNING SONAR

Model **FSV-85** Middle Frequency 80 kHz

FURUNO

CONTROL UNIT FSV-8501

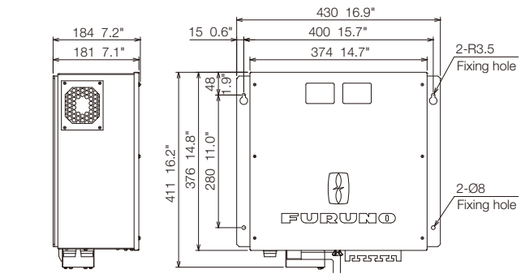
3.8 kg 8.4 lb



Dimensions for hanger type installation with fixing plate.
Please read installation manual for flush mount installation.

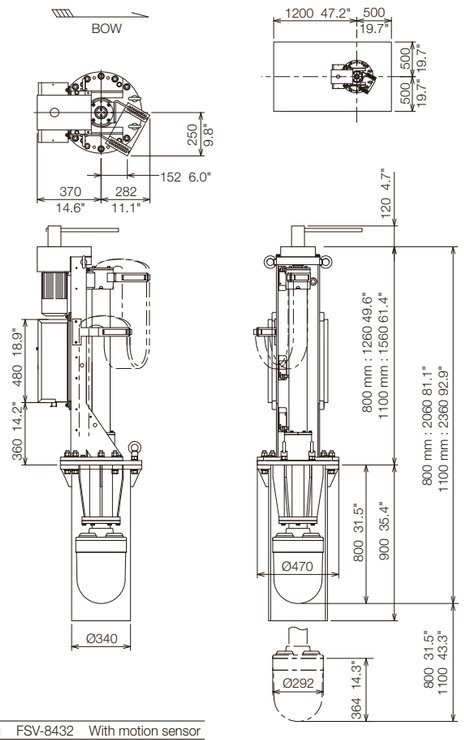
PROCESSOR UNIT FSV-8503

15 kg 33.1 lb



HULL UNIT FSV-8432/8442

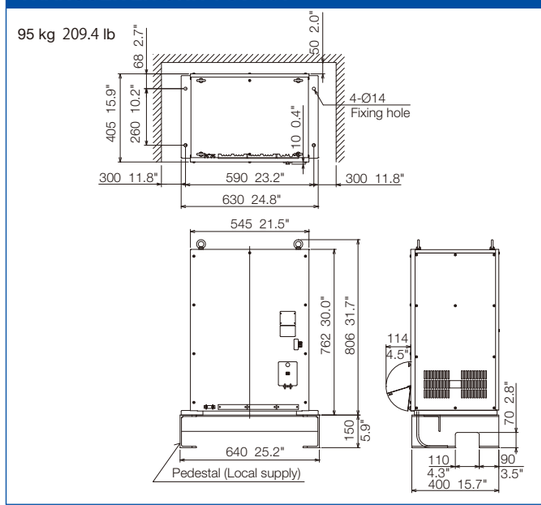
800 mm: 370 kg 815.7 lb
1100 mm: 390 kg 859.8 lb
(With tank)



800 mm	FSV-8432	With motion sensor
1100 mm	FSV-8442	With motion sensor

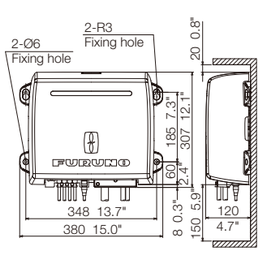
TRANSCEIVER UNIT FSV-851

95 kg 209.4 lb



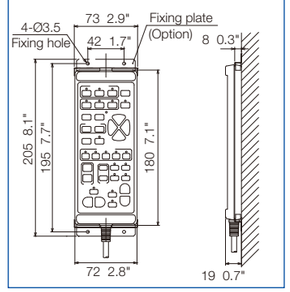
INTERFACE UNIT FSV-8502

3.4 kg 7.5 lb



REMOTE CONTROLLER FSV-854

0.68 kg 1.5 lb



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trademarks or service marks of their respective holders.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE
PLEASE READ MANUAL BEFORE USING THE UNIT

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FURUNO World Wide Warranty 2 YEARS

FURUNO

FULL-CIRCLE COLOR SCANNING SONAR

Model **FSV-35** Low Frequency 24 kHz

Model **FSV-85** Middle Frequency 80 kHz

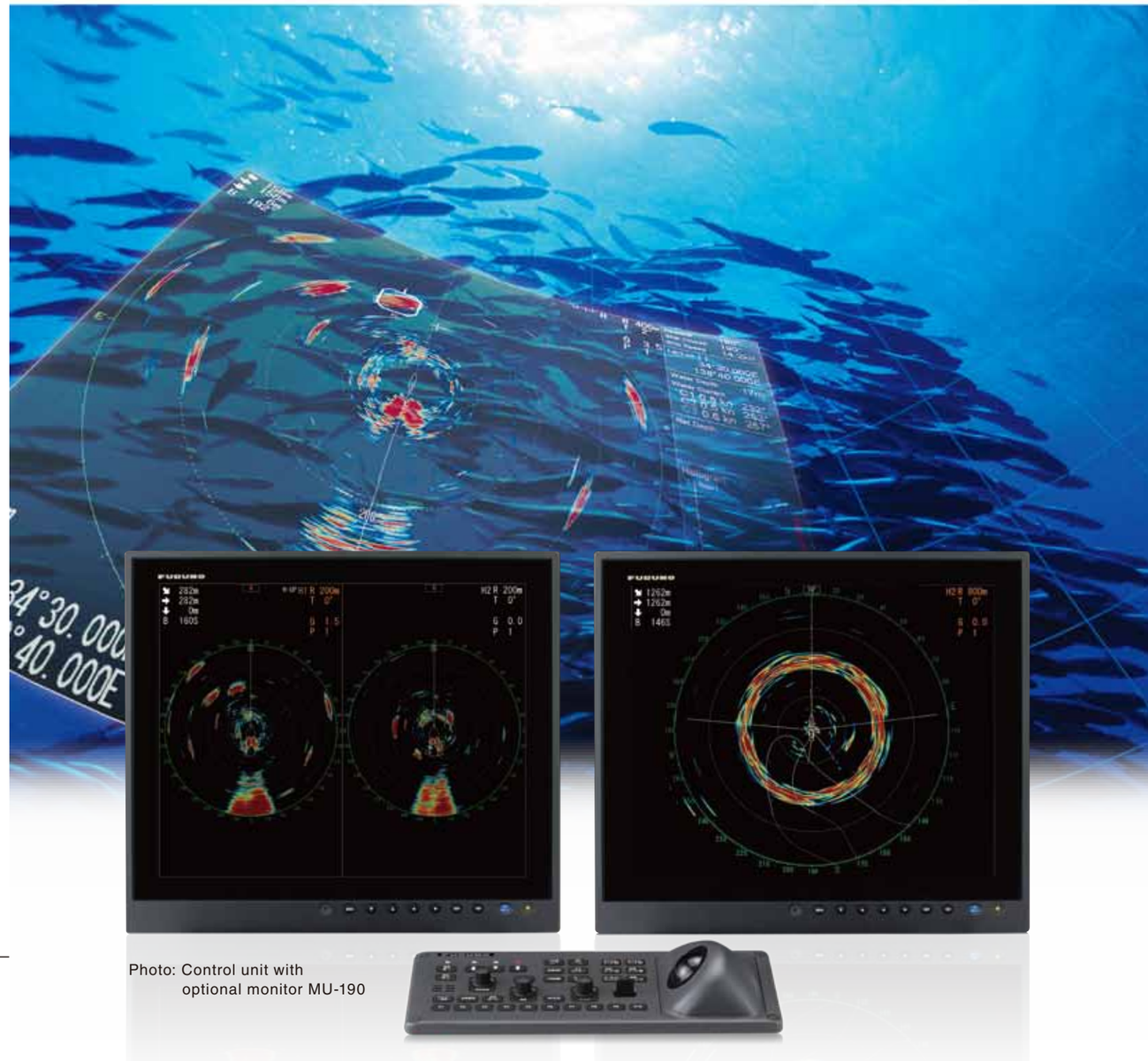


Photo: Control unit with
optional monitor MU-190

www.furuno.com

The FSV series of Furuno Scanning Sonar has long been a favorite among commercial fishermen, and the FSV-35/85 carries on that tradition. The FSV series provides reliable and consistent detection of fish and seabed conditions with revolutionary, enhanced signal processing technology.

To make operation even easier while underway, you can assign frequently used features to the FSV-35/85's dedicated Function keys. Preset modes are also provided for instant setup of the equipment according to fishing ground or target species.

Advanced Solutions Built on World-Proven Sonar Technology

Photo: Flush mount installation

Photo: Bracket type with fixing plate

FULL-CIRCLE COLOR SCANNING SONAR

Model **FSV-35**
Low Frequency 24 kHz

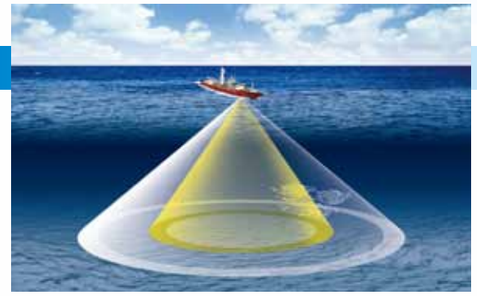
Model **FSV-85**
Middle Frequency 80 kHz

Dual Monitors For Increased Productivity

The FSV-35/85 has an ability to use a dual monitor setup to extend your sonar display across two screens. Comparing horizontal and vertical modes is easier when you have dual monitors. You can show two display modes, comparing horizontal and vertical section side by side in separate full-size windows, for example.

Horizontal Display Combinations (H2 mode)

The horizontal display mode provides a 360 degree picture around the vessel. The H2 mode shows one of four kinds of horizontal display combinations: LANDSCAPE, PORTRAIT, RIGHT INSET and LEFT INSET. The range, tilt, gain and user program are set independently, for each display.

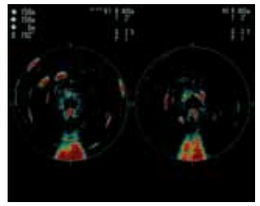


PORTRAIT

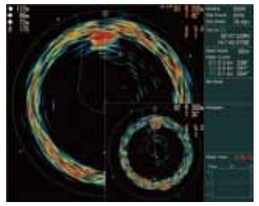
Horizontal scan 1
Range: 150 m
Tilt: 45 degrees
Gain: 5.0

Horizontal scan 2
Range: 300 m
Tilt: 20 degrees
Gain: 5.0

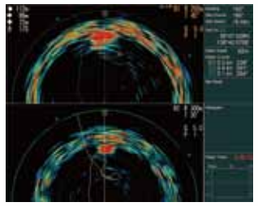
FULL SCREEN PORTRAIT



RIGHT INSET

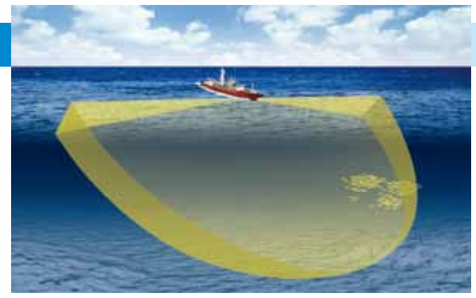


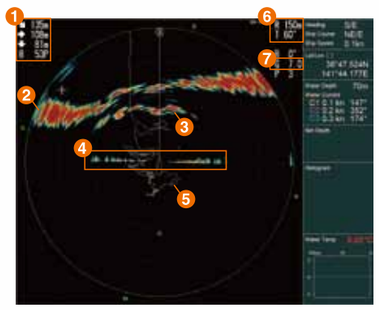
LANDSCAPE



Slant Mode Scan (For FSV-85 only)

The slant mode provides a half-circle (180 degree) picture, with own ship at the center.

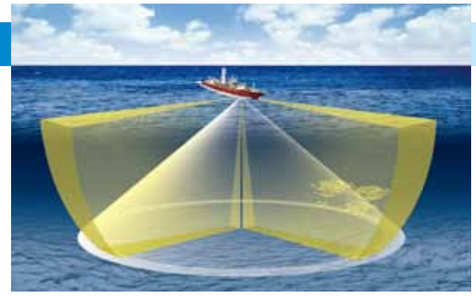


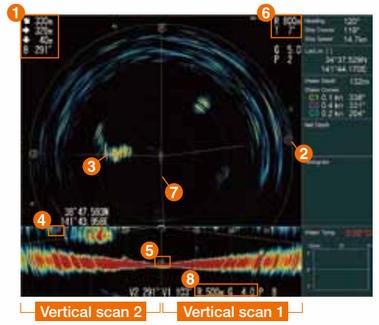


1. Direct distance, horizontal distance, water depth and bearing to the cursor
2. Seabed
3. School of fish
4. Sea surface reflection
5. Ship's track
6. Range and tilt
7. Gain

Horizontal And Vertical Display Combinations

A horizontal and two vertical scans can be displayed simultaneously. By utilizing both scans, the skipper can locate a school of fish and its distribution in horizontal and vertical perspectives at the same time.





Vertical scan 2 Vertical scan 1

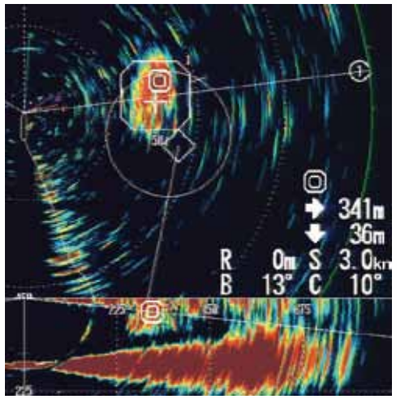
1. Direct distance, horizontal distance, water depth and bearing to the cursor
2. Bearing mark for vertical scan 1 (V1)
3. Cursor
4. Range distance of vertical scan
5. Water depth under the boat
6. Range, tilt, and display mode of Horizontal scan
7. Ship's track
8. Range and gain of vertical scan

High Resolution, Long Range Detection Capability

Combining the latest digital technology with a high-sensitivity transducer, the FSV-35/85 provides long-range detection capability and high resolution sonar imagery.

Automatic Target Lock

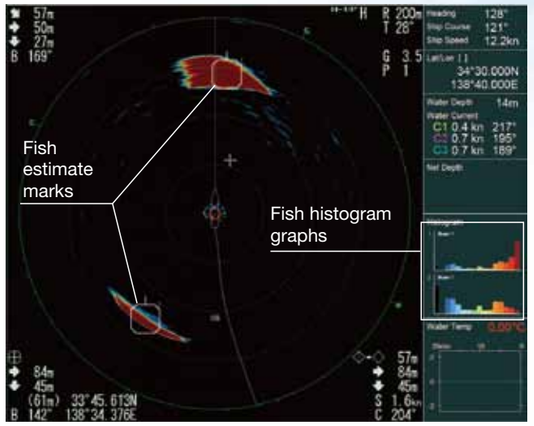
The echo target lock function automatically tracks the operator-selected fish school so you won't lose sight of it on the display. The range and tilt are automatically controlled according to the fish position.



The target's range, course, and speed are automatically estimated and shown in display.

Fish Histogram

The fish histogram shows, in graph form, signal strength distribution for the school(s) of fish marked with an estimate mark on the horizontal and echo sounder displays.



In the histogram graph at the right side of the display, the horizontal axis shows signal strength in 16 colors, and the vertical axis shows the concentration of the school of fish inside the fish estimate mark.

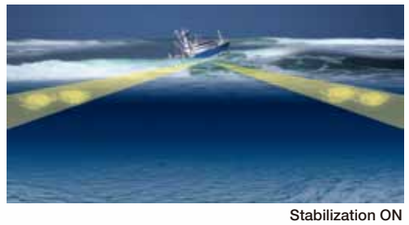
Filtering For Noise Reduction

The FSV-35/85's detecting system incorporates a digital filter responsive to the interfering noise, providing a clear view of the display at high speed (at 18 knots) without affecting the sonar.

Beam Stabilization

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

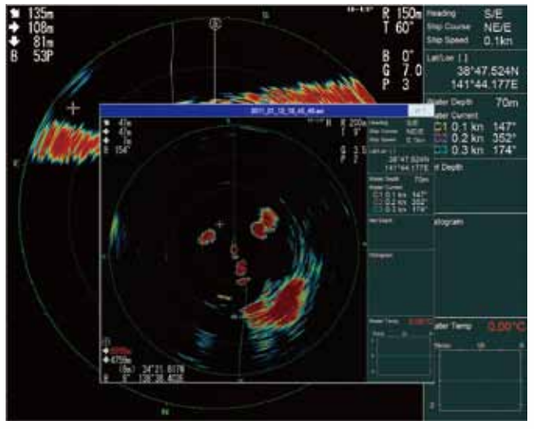
Stabilization OFF



Stabilization ON

Digital Recording Playback

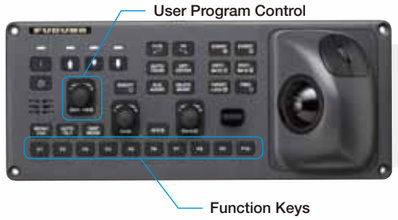
FSV-35/85 allows you to capture a screenshot of a sonar echo and GPS details to playback and observe targets.



Screenshot of sonar image shown in a pop-up window.

User-Friendly, Programmable, Intelligent Controls

The User Program Control provides for instant setup of the equipment according to fishing ground or target fish. Ten programs may be set up, and vertical and horizontal display settings may be programmed together or individually.
In addition, there are Function Keys at the bottom row of the control unit that let you assign up to 10 frequently used functions to them.



The menu setting allows you to customize the program menu you use most frequently.

Control Unit Options

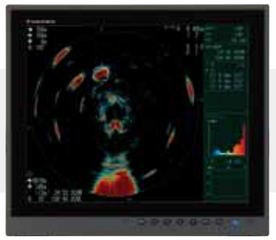
To enhance operator usability, a sub control unit and a wired remote controller are optionally available. Additionally, the FSV-35/85 also allows the operator to use a USB wireless mouse.


Sub Control Unit


Remote Controller

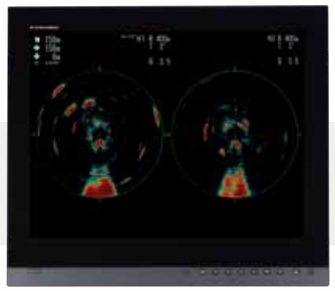
Need a bright idea? How about using FURUNO marine grade monitors in your helm?

You can select either FURUNO's lineup of marine LCDs or other third party displays.



19" Marine Display
MU-190

Resolution : 1280 x 1024 pixels (SXGA)
Brightness : Max. 450 cd/m²
Interface : Analog RGB x 1
DVI x 2
Composite Video x 1



23.1" Marine Display
MU-231

Resolution : 1600 x 1200 pixels (UXGA)
Brightness : Max. 400 cd/m²
Interface : Analog RGB x 1
DVI x 2
Composite Video x 1

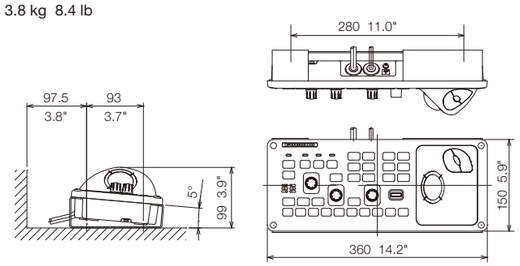
Note: When inputting SXGA, a circle may be displayed as an ellipse because the aspect ratio differs.

FULL-CIRCLE COLOR SCANNING SONAR

Model **FSV-35** Low Frequency 24 kHz

CONTROL UNIT FSV-8501

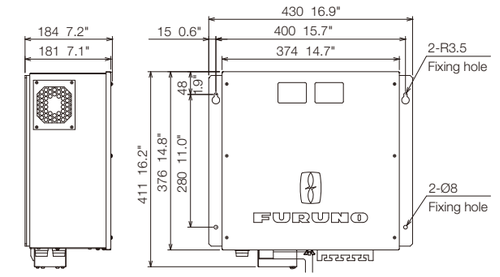
3.8 kg 8.4 lb



Dimensions for hanger type installation with fixing plate.
Please read installation manual for flush mount installation.

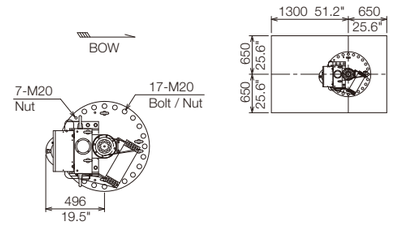
PROCESSOR UNIT FSV-3503

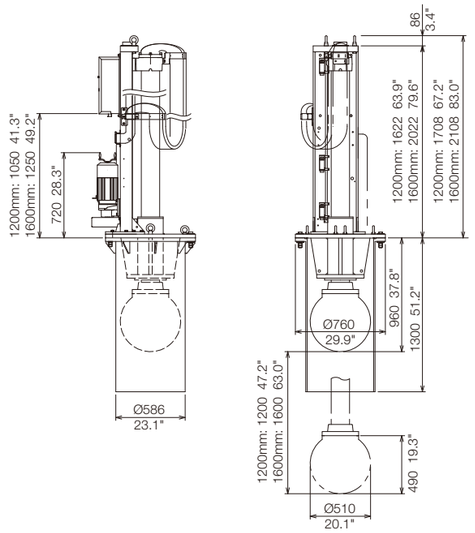
15 kg 33.1 lb



HULL UNIT FSV-303/304

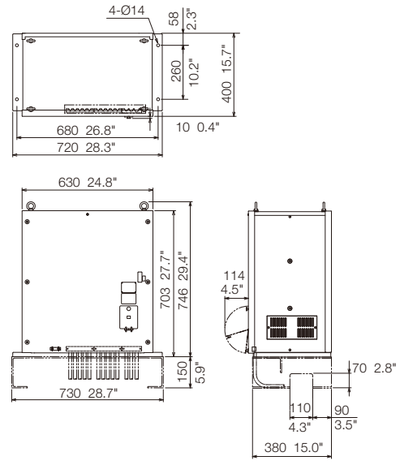
1200 mm: 880 kg 1940 lb
1600 mm: 930 kg 2050 lb
(Without tank)





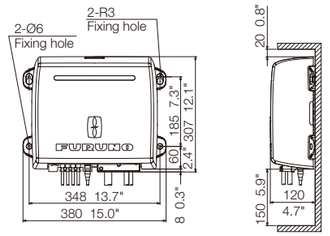
TRANSCEIVER UNIT FSV-351

98 kg 216 lb



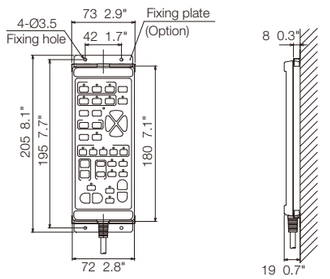
INTERFACE UNIT FSV-8502

3.4 kg 7.5 lb



REMOTE CONTROLLER FSV-854

0.68 kg 1.5 lb



FULL-CIRCLE COLOR SCANNING SONAR

Model **FSV-35** Low Frequency 24 kHz

SPECIFICATIONS

1. GENERAL

Scanning method	Full digital beam forming
Frequency	24 kHz
Range	60, 100, 150, 200, 300, 400, 500, 600, 800, 1000, 1200, 1600, 2000, 2500, 3000, 3500, 4000, 5000
Audio search	30°, 60°, 90°, 180°, 330°, selectable
Audio output	Audio terminal (requires speaker with amplifier)

2. DISPLAY UNIT*

	* Monitors not included as standard supply
Screen resolution	1280(H) x 1024(V) pixels,SXGA
Presentation colors	32 colors (sonar picture), 6 colors (marks)
Presentation modes	Horizontal, Horizontal combination, Vertical 1 combination, Vertical 2 combination
Features	Custom mode, Interference rejecter, After-glow, Noise limiter, Signal level, Auto-tilt, Automatic target tracking (target lock), Fish alarm, Over-voltage warning, Unretracted transducer warning

3. TRANSCEIVER UNIT

Transmitter	PDM half-bridge
Receiving method	Straight amplifier, full digital beam forming
H-mode beam-widthw	TX: 360° x 18°, RX: 18° x 18° (-6 dB full width)
V-mode beam-width	TX: 18° x 105°, RX: 18° x 18° (-6 dB full width)
Tilt angle	-5° to 90°
Vertical search range	0° to 90°

4. HULL UNIT

Type	FSV-303	FSV-304
Travel	1200 mm	1600 mm
Raise/Lower time	22 sec	29 sec
Allowable ship's speed (Raise/lower operation)	18 knots (15 knots)	15 knots (12 knots)

5. DATA Input/Output

Input (NMEA 0183)	CUR, DBS, DBT, DPT, GGA, GLL, GNS, HDG, HDM, HDT, MDA, MTW, MWV, RMA, RMC, VBW, VDR, VHW, VTG, VWR, VWT, ZDA
CIF input	System clock, Position, Bearing, First layer current data, Water depth, Water temperature, Sonde depth, Ship's speed/course data, Multi-layer current data, Net depth, Wind speed/direction, Sonde number
Output (NMEA 0183)	TLL

6. POWER SUPPLY

Processor unit:	12-24 VDC: 8.7 – 4.4 A (I/F unit included)
Interface unit:	48 VDC: 2.7 A or less (from Processor unit)
Transceiver unit:	100/110/115/220/230 VAC: 15 A, 1 phase, 50-60Hz
Hull unit:	220 VAC: 12 A, 3 phase, 50-60Hz

7. ENVIRONMENTAL CONDITIONS

Ambient Temperature	
Processor unit:	0°C to +45°C
Transducer:	-5°C to +35°C
Other units:	0°C to +50°C
Relative humidity:	93% at 40°C
Vibration:	IEC 60945 4 ed.
Waterproofing (IEC60529)	
Control unit:	IP22 (panel), IP20 (chassis)
Processor unit:	IP20
Interface unit:	IP20
Transceiver unit:	IPX0
Transducer:	IPX8

EQUIPMENT LIST

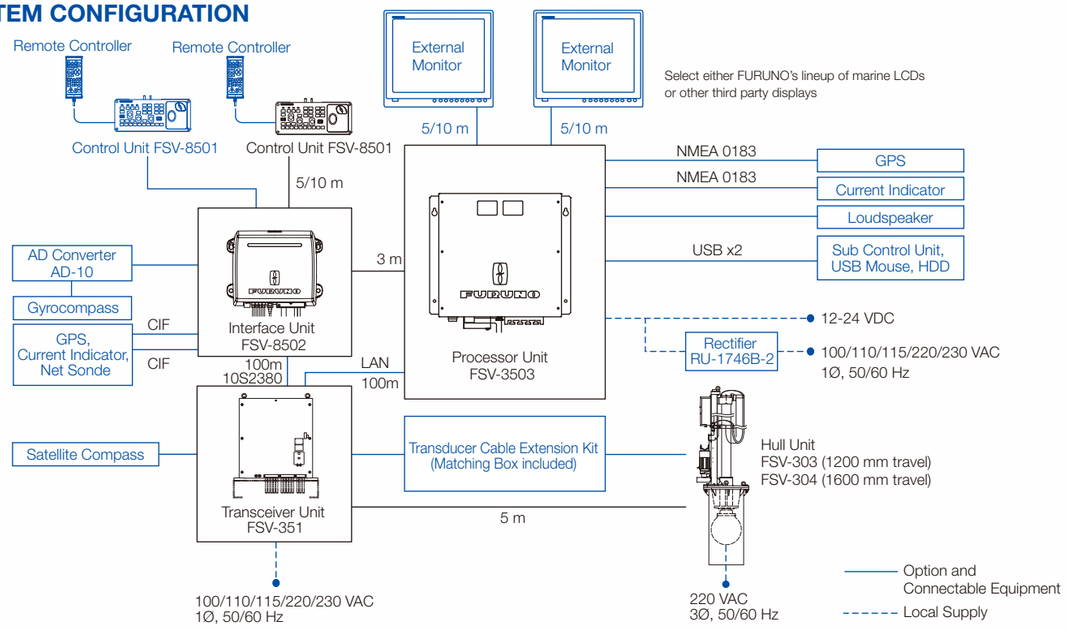
Standard

1. Control Unit (w/5 or 10 m cable) FSV-8501
2. Interface Unit FSV-8502
3. Processor Unit FSV-3503
4. Transceiver Unit FSV-351
5. Hull Unit (specify when ordering) FSV-303 or FSV-304
6. Installation materials and spare parts

Option

1. Rectifier
2. Control Unit (w/5 or 10 m cable)
3. Sub Control Unit FSV-853
4. Remote Controller FSV-854-E
5. Cable (5P, 100 m) 10S2380
6. Installation Materials (LAN cable)
7. 8-core Cable
8. Cable Assy. (6P-6P, 5/10 m)
9. Attachment Kit
10. Hull Unit Processor Extension Kit

SYSTEM CONFIGURATION



FULL-CIRCLE COLOR SCANNING SONAR

Model **FSV-85** Middle Frequency 80 kHz

SPECIFICATIONS

1. GENERAL

Scanning method	Full digital beam forming
Frequency	80 kHz
Range	60, 100, 150, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1400, 1600, 2000 m
Audio search	30°, 60°, 90°, 180°, 330°, selectable
Audio output	Audio terminal (requires speaker with amplifier)

2. DISPLAY UNIT*

	Monitors not included as standard supply
Screen resolution	1280(H) x 1024(V) pixels, SXGA
Presentation colors	32 colors (sonar picture), 6 colors (marks)
Presentation modes	Horizontal, S-scan, Horizontal combination, S-scan combination, Vertical 1 combination, Vertical 2 combination
Features	Custom mode, Interference rejecter, After-glow, Noise limiter, Signal level, Auto-tilt, Automatic target tracking (target lock), Fish alarm, Over-voltage warning, Unretracted transducer warning

3. TRANSCEIVER UNIT

Transmitter	PDM half-bridge
Receiving method	Straight amplifier, full digital beam forming
H-mode beam-width	TX: 360° x 10.7°, RX: 12.6° x 10.1° (-6 dB full width)
V-mode beam-width	TX: 12.7° x 118.2°, RX: 12.6° x 12.1°(-6 dB full width)
S-mode beam-width	TX: 206.7° x 12.1°, RX: 12.6° x 12.0°(-6 dB full width)
Tilt angle	-5° to 90° (downward)
Vertical search range	0° to 90° (downward)

4. HULL UNIT

Type	FSV-8432	FSV-8442
XDCR travel	800 mm	1100 mm
Raise/Lower time	21 sec	28 sec
Allowable ship's speed (Raise/lower operation)	18 knots (18 knots)	15 knots (15 knots)

5. DATA Input/Output

Input (NMEA 0183)	CUR, DBS, DBT, DPT, GGA, GLL, GNS, HDG, HDM, HDT, MDA, MTW, MWV, RMA, RMC, VBW, VDR, VHW, VTG, VWR, VWT, ZDA
CIF input	System clock, Position, Bearing, First layer current data, Water depth, Water temperature, Sonde depth, Ship's speed/course data, Multi-layer current data, Net depth, Wind speed/direction, Sonde number
Output (NMEA 0183)	TLL

6. POWER SUPPLY

Processor unit:	12-24 VDC: 10-5 A
Interface unit:	48 VDC: 1 A or less (from Processor unit)
Transceiver unit:	100/110/115/220/230 VAC: 15 A, 1 phase, 50/60Hz
Hull unit:	200-220 VAC: 4 A, 3 phase, 50/60Hz

7. ENVIRONMENTAL CONDITIONS

Ambient Temperature	
Processor unit:	0°C to +45°C
Transducer:	-5°C to +35°C
Other units:	0°C to +50°C
Relative humidity:	93% max. at 40°C
Vibration:	IEC 60945 4 ed.
Waterproofing (IEC 60529)	
Control unit:	IP22 (panel), IP20 (chassis)
Processor unit:	IP20
Interface unit:	IP20
Transceiver unit, others:	IPX0
Transducer:	IPX8

EQUIPMENT LIST

Standard

1. Control Unit (w/5 or 10 m cable) FSV-8501
2. Interface Unit FSV-8502
3. Processor Unit FSV-8503
4. Transceiver Unit FSV-851A
5. Hull Unit (specify when ordering) FSV-8432-T or FSV-8442-T
6. Installation materials and spare parts

Option

1. Rectifier
2. Control Unit (w/5 or 10 m cable)
3. Remote Controller FSV-854-E
4. Cable (5P, 100 m) 10S2380
5. Installation Materials (LAN cable)
6. 8-core Cable (6m)
7. Cable Assy. (6P-6P, 5/10 m)
8. Retraction Tank
9. Attachment Kit
10. Junction Box (NMEA0183)
11. Sub Control Unit

SYSTEM CONFIGURATION