S P E C I F I C A T I O N S   o f   F E - 7 0 0

FURUNO

1.	**Display**	Graphical display on 6.5" color LCD, 8 colors or 8 level monochrome, 320 X 234 pixels. Display window for 15 min, assured on all ranges. Depth, position and associated time stored every 5 s for 24 h. Play back at interval of 5 s, 1 or 2 min.
2.	**Display Modes**	Nav, History, DBS, Logbook, OS Data, etc.
3.	**Frequency**	50 and 200 kHz
4.	**Output Power**	600 W rms
5.	**Range Scale**	5, 10, 20, 40, 100, 200, 400, 800 m (May be selected for feet or fathoms)
6.	**Accuracy**	±2.5 % on any range
7.	**Minimum Range**	0.5 m (200 kHz), 2.0 m (50 kHz)
8.	**Discrimination**	5.8 mm per meter depth on 20 m range, 0.58 mm on 200 m range

9. Pulse Repetition Rate (PRR)

Depth (m)	P/L (ms)	PRR (pulses/minute)
5/10	0.25	750
20	0.25	750
40	0.38	375
100	1.00	150
200	2.00	75
400, 800	3.60	42

10. Picture Advance

Range (m)	Display window (minute)
5, 10, 20	1.8/15
40, 100	8/15
200	20
400, 800	30

11. Interface (IEC 61162-1)
Inputs: RMA, RMC, GLL, VTG, ZDA, GGA
Outputs: SDDPT, SDDBT

12. Alarms
Audio-visual alarms for shallow water, lost bottom and power failure

13. Transducer
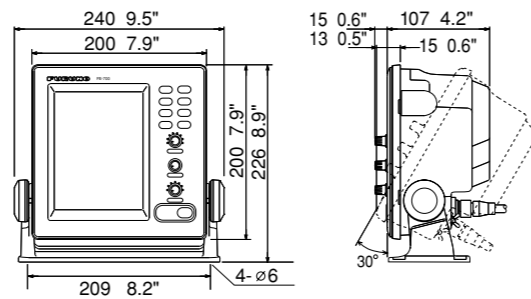Type and Beamwidth 50B-6B: 28°, 200B-8B: 5.4°

POWER SUPPLY
24 VDC, 0.8 W, 115/230 VAC

ENVIRONMENTAL
Temperature: -15°C to +55°C (IEC 60945)
Waterproofing: Display unit: IPX5 (IEC 60529) and CFR46 (USCG)
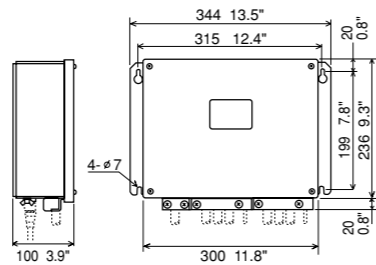Distribution box, Matching box: IPX2

EQUIPMENT LIST
Standard

1. Display Unit FE-701	1 unit
2. Distribution Box FE-702	1 unit
3. Matching Box MB-502 (50B-6B)/ MB-504 (200B-8B)	1 unit
4. Transducer with 15/40 m cable (50B-6B)/ 15 m cable (200B-8B)	1 unit
5. Transducer Tank TTF-5600 (for Xdr 50B-6B) / TTF-2000 (for Xdr 200B-8B) 20 mmT standard, 12/25 mmT optional	1 unit

Option
1. Transducer Switch Box EX-8
2. Digital Depth Indicator FE-720
3. Dimmer Controller for FE-720
4. Junction Box JIS F8821-1
5. Data Recording Software for PC 02-522-990
6. Flush Mount Kit S type (OP02-80) / F type (OP02-79)
7. Bulkhead Kit OP02-78 for display
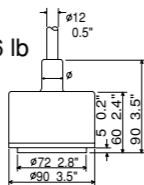8. Printer PP-505 FE

Display Unit   Weight   2.7 kg, 6.0 lb

240 9.5"
200 7.9"
209 8.2"
200 7.9"
226 8.9"
15 0.6"
13 0.5"
107 4.2"
15 0.6"
30°
4- ∅6

Distribution Box   Weight   6 kg, 13.2 lb

344 13.5"
315 12.4"
20 0.8"
199 7.8"
236 9.3"
4- ∅7
100 3.9"
300 11.8"
20 0.8"

Transducer   Transducer Tank

50B-6B
Weight
3 kg, 6.6 lb

∅12 0.5"
∅72 2.8"
∅90 3.5"

TTF-5600
Weight
20T: 18 kg, 39.7 lb
12T: 15 kg, 33.1 lb
25T: 20 kg, 44.1 lb

Max ∅34 1.3"
∅191 7.5"

200B-8B
Weight
3.6 kg, 7.9 lb

∅12 0.5"
∅22 0.9"
∅95 3.7"
∅110 4.3"
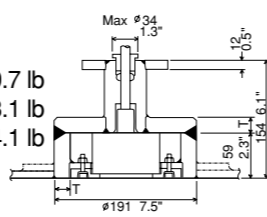
TTF-2000
Weight
20T: 20 kg, 44.1 lb
12T: 16 kg, 35.3 lb
25T: 22 kg, 48.5 lb

Max ∅34 1.3"
∅220 8.7"
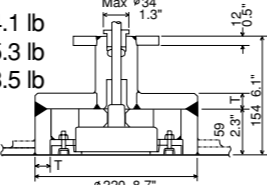
INTERCONNECTION DIAGRAM
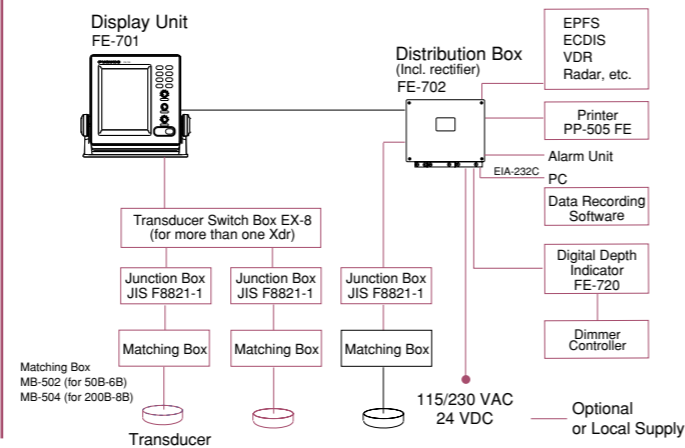
Display Unit FE-701
Distribution Box (Incl. rectifier) FE-702
EPFS ECDIS VDR Radar, etc.
Printer PP-505 FE
Alarm Unit
PC
EIA-232C
Data Recording Software
Transducer Switch Box EX-8 (for more than one Xdr)
Digital Depth Indicator FE-720
Junction Box JIS F8821-1
Dimmer Controller
Matching Box MB-502 (for 50B-6B) MB-504 (for 200B-8B)
115/230 VAC 24 VDC
Optional or Local Supply
Transducer
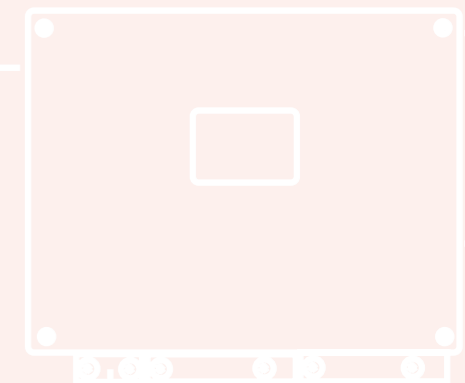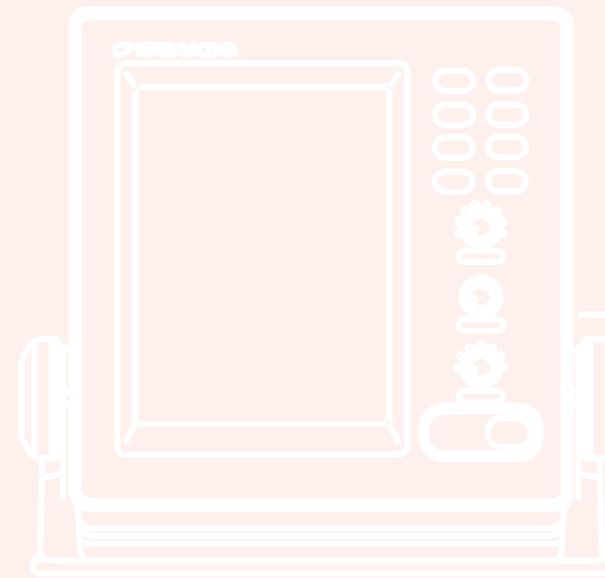
Navigational Echo Sounder

FE-700

FURUNODEEPSEA.com

- **Cost-effective; No paper, no consumables; high accuracy and high reliability**
- **6.5" color LCD display featuring a wide viewing angle and adjustable brightness**
- **Viewing window 15 min wide on any range setting with 1 min time marks**
- **Choice of system frequency - high-resolution shallow depth sounding with a 200 kHz transducer or deep water sounding with a 50 kHz transducer**
- **Various modes for experienced users with never-get-lost default position**

- **Compact display cabinet enabling installation at a conning position or any other convenient location**
- **Depth data for last 24 hours in memory to play back the past sounding information**
- **Digital interface for radar, VDR, ECDIS, and other navigational or radiocommunication equipment**
- **Meets IMO standards MSC.74(69) Annex 4**

The FE-700 is a result of 50 years of FURUNO's vast range of experience and advanced microelectronics technology fields in developing echo sounders, sonars, and underwater application equipment and systems. This echo sounder is a breakthrough over the conventional paper eating sounders; there are no consumable items.
The purpose of the echo sounder is to provide safe navigation by detecting the clearance below the ship (particularly in shallow waters) as required on the SOLAS Convention ships by the IMO standards.
The basic system consists of a display unit, a distribution box, a matching box, and a transducer.
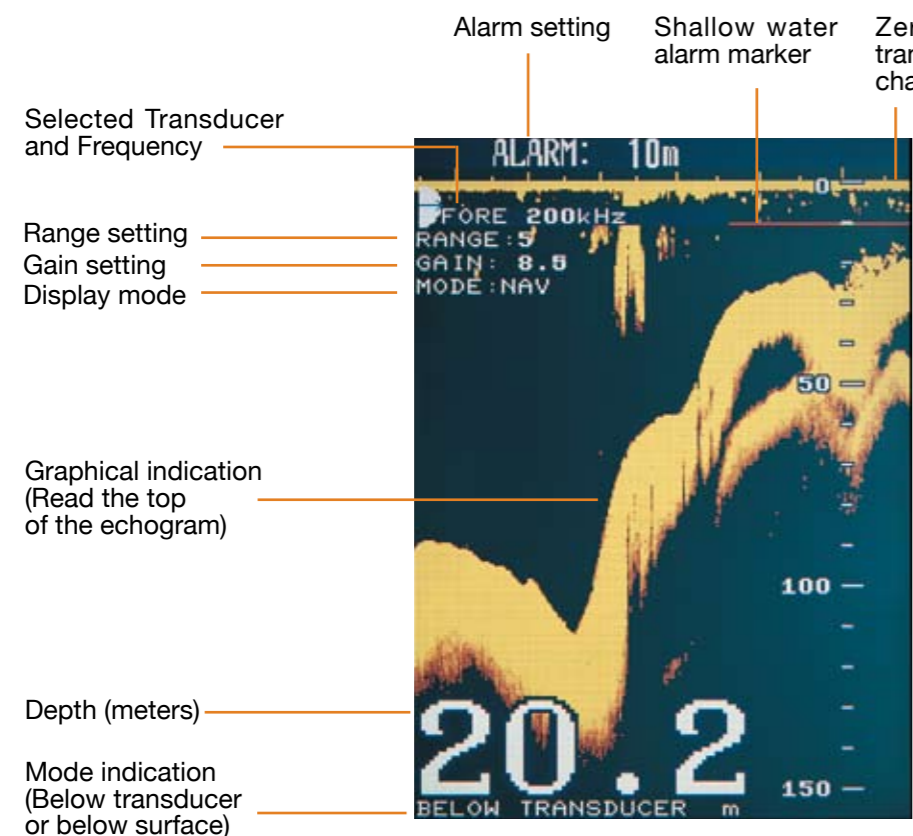
The 6.5" high-brightness TFT color LCD display offers an easy-to-read depth sounding in various modes, permitting optimum representation with respect to the environment.

Detection range is automatically varied but there is manual override to select the required scale.
The displayed record is visible for 15 min on any range and an instantaneous sounding is directly shown in large numerals in addition to the graphical display. Depths,

associated time, and position are stored for 24 h in memory. The data can be played back at any time.

Visual and audible alarms are generated when the water depth below transducer is shallower than a user-preset depth. When the seabed is lost because of the lowered detection or out of range setting, the alarm comes on. The receiver sensitivity is automatically controlled with the tracking depth; manual override is possible to improve the detection and to reduce the surface clutter.
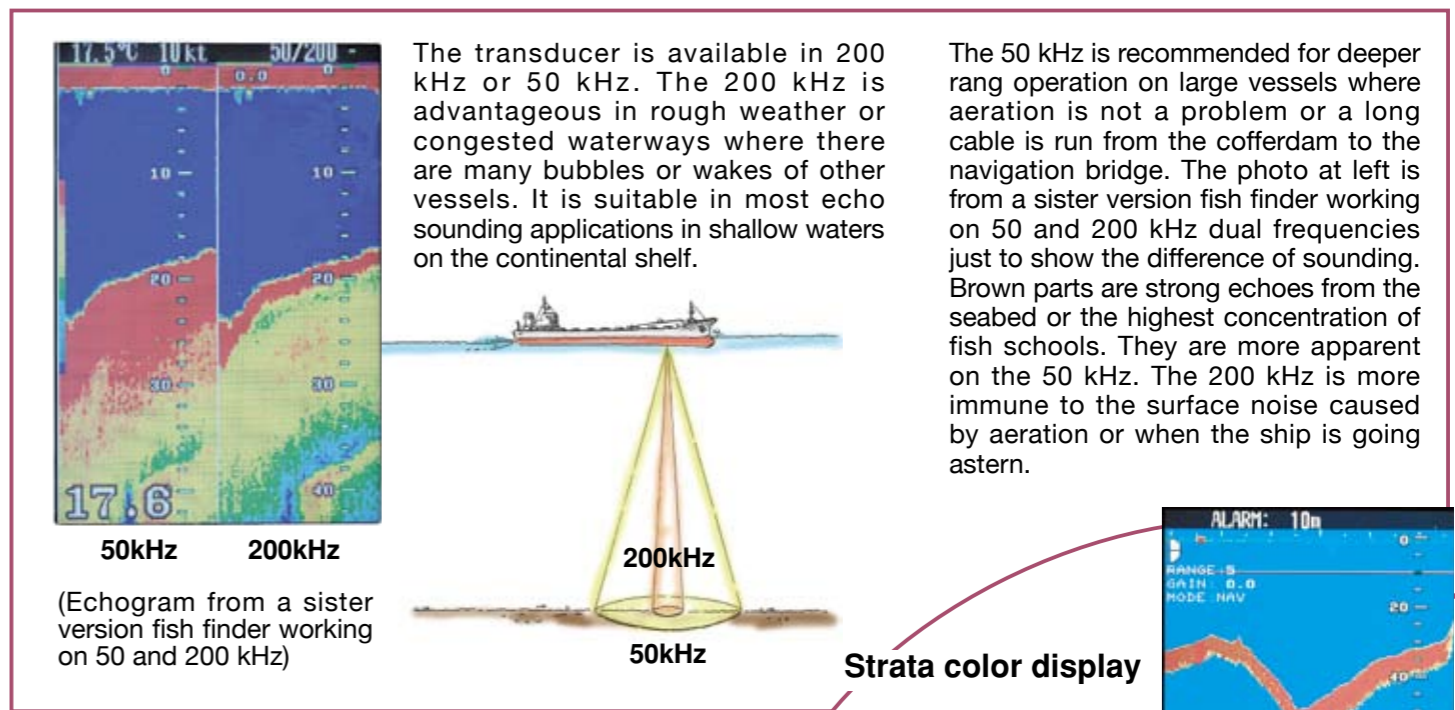
The transducer is available in 200 kHz or 50 kHz. The 200 kHz is advantageous in rough weather or congested waterways in shallow waters whereas the 50 kHz is recommended for deeper range operation. Transducer Switch Box EX-8 allows FE-700 to display echoes from two transducers of the same frequency or different frequencies. Depth data can be output in IEC 61162 format to radar, ECDIS, VDR (Voyage Data Recorder), and other radiocommunication and navigation equipment. Optional software is available to transfer the sounding data to a personal computer for print out.

Alarm setting
Shallow water alarm marker
Zero line, representing the transducer position; thickness changes with the range scale.

Selected Transducer and Frequency
Range setting
Gain setting
Display mode

Graphical indication (Read the top of the echogram)

Depth (meters)

Mode indication (Below transducer or below surface)

NAV Mode

You will never be lost in operation.

The NAV mode provides the basic function of the echo sounder as required by the IMO.
The FE-700 has various modes to meet the mariner's demands.
If you get lost in operation, just select this mode. When the echo sounder is first turned on, depths of sea are measured from the transducer in meters, the seabed appears in amber, shallow water alarm marker is set at 20 m below the transducer, and the range scale is automatically varied with depths. For next start up, the equipment works with the last settings.


50kHz 200kHz

200kHz

50kHz

(Echogram from a sister version fish finder working on 50 and 200 kHz)

The transducer is available in 200 kHz or 50 kHz. The 200 kHz is advantageous in rough weather or congested waterways where there are many bubbles or wakes of other vessels. It is suitable in most echo sounding applications in shallow waters on the continental shelf.

The 50 kHz is recommended for deeper rang operation on large vessels where aeration is not a problem or a long cable is run from the cofferdam to the navigation bridge. The photo at left is from a sister version fish finder working on 50 and 200 kHz dual frequencies just to show the difference of sounding. Brown parts are strong echoes from the seabed or the highest concentration of fish schools. They are more apparent on the 50 kHz. The 200 kHz is more immune to the surface noise caused by aeration or when the ship is going astern.

Strata color display

All underwater objects including seabed and fish schools and even noise appear in layers of different colors depending on the sonic pulse reflectivity. Brown is strongest, followed by red, orange, yellow, green, blue, dark blue - total of eight colors.

OS DATA Mode

This display mode indicates own ship position, GPS derived course and speed, time and depth in digital form. The user may select the data of particular interest to display in large characters.
The screen continues to display the sounding data in the background. Part of graphical indication is visible to the right of data window.

HISTORY Mode
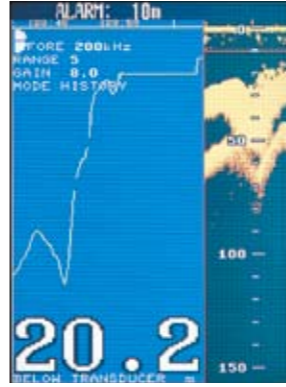
This mode provides a mix of Contour and Strata displays. The Contour display can be shifted back to the past over 24 h while the right side Strata display (layers of different colors according to reverberation strengths) shows the latest five minutes of sounding data.
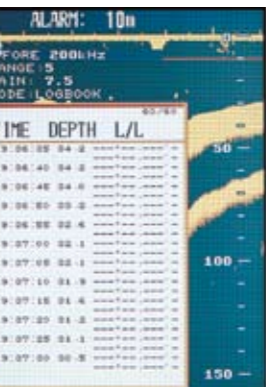
DBS Mode

Depth Below Surface mode provides a draft-adjusted depth reading and is useful in referencing to the nautical chart. The draft is adjustable with the [DRAFT] key at the DBS position of the Mode Selector. If you find any difficulty to check for the draft value, use the NAV mode, where you can find the bottom clearance under the keel.

LOGBOOK Mode

This position of Mode Selector displays the logging on depths and own ship positions with associated time. You can select the time intervals among 5 s, 1 and 2 min options on the Menu.
The log book contains 60 pages that can be scrolled up or down with [+] or [-] key. Entry to the logbook is every 5 s over 24 h.

Printer PP-505 FE

The PP-505 FE is a reliable printer to use with the FE-700.
Once connected to the FE-700, the PP-505 FE allows you to have a copy of the echogram.