







FURUNO ELECTRIC CO., LTD.

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Pub. No. OME-23740-H1

(TASU) FCV-620/585

: NOV. 2005 : JAN. 28, 2014



FURUNO П F CTRIC 00 1 LTD.



$3 \square$ SOUNDER

FURUNO ELECTRIC CO., LTD.

www.furuno.com

IMPORTANT NOTICES

General

- This manual has been authored with simplified grammar, to meet the needs of international users.
- The operator of this equipment must read and follow the descriptions in this manual. Wrong operation or maintenance can cancel the warranty or cause injury.
- Do not copy any part of this manual without written permission from FURUNO.
- If this manual is lost or worn, contact your dealer about replacement.
- The contents of this manual and equipment specifications can change without notice.
- The example screens (or illustrations) shown in this manual can be different from the screens you see on your display. The screens you see depend on your system configuration and equipment settings.
- Save this manual for future reference.
- Any modification of the equipment (including software) by persons not authorized by FURUNO will cancel the warranty.
- All brand and product names are trademarks, registered trademarks or service marks of their respective holders.

How to discard this product

Discard this product according to local regulations for the disposal of industrial waste. For disposal in the USA, see the homepage of the Electronics Industries Alliance (http://www.eiae.org/) for the correct method of disposal.

How to discard a used battery

Some FURUNO products have a battery(ies). To see if your product has a battery, see the chapter on Maintenance. Follow the instructions below if a battery is used. Tape the + and - terminals of battery before disposal to prevent fire, heat generation caused by short circuit.

In the European Union

The crossed-out trash can symbol indicates that all types of batteries must not be discarded in standard trash, or at a trash site. Take the used batteries to a battery collection site according to your national legislation and the Batteries Directive 2006/66/EU.

In the USA

The Mobius loop symbol (three chasing arrows) indicates that Ni-Cd and lead-acid rechargeable batteries must be recycled. Take the used batteries to a battery collection site according to local laws.





In the other countries

There are no international standards for the battery recycle symbol. The number of symbols can increase when the other countries make their own recycle symbols in the future.

▲ SAFETY INSTRUCTIONS

Safety Instructions for the Operator

Do no turn on the equipment with the Do not open the equipment. transducer out of water. There are no user-serviceable parts The transducer may be damaged. inside. Do not disassemble or modify the The picture is not refreshed when picture advancement is stopped. equipment. Maneuvering the vessel in this condition Fire, electrical shock or serious injury may result in a dangerous situation. can result. Use the proper gain setting. Immediately turn off the power at the switchboard if the equipment is Incorrect gain may produce wrong depth emitting smoke or fire. indication, possibly resulting in a dangerous situation. Continued use of the equipment can cause fire or electrical shock. Contact a The data presented by this equipment FURUNO agent for service. is intended as a source of navigation information. Do not maneuver the vessel based on the depth indication alone. The prudent navigator never relies exclusively on any one source of navi-Grounding may result. gation information, for safety of vessel Use the proper fuse. and crew. Fuse rating is shown on the equipment. NOTICE Use of a wrong fuse can result in damage to the equipment. A warning label is attached to the equipment. Do not remove the label. – About the TFT LCD If the label is missing or damaged, The TFT LCD is constructed using the contact a FURUNO agent or dealer latest LCD techniques, and displays about replacement.

 Matrix
 Matrix
 Name:

 To avoid electrical shock, do not remove cover. No user-serviceable parts inside.
 Warning Label (1)

 Matrix
 Matrix
 Type: 86-003-1011-1

 Code No.: 100-236-231
 Code No.: 100-236-231

99.99% of its pixels. The remaining 0.01%

this is not an indication of malfunction.

of the pixels may drop out or blink, however

Safety Instructions for the Installer

Turn off the power at the switchboard before beginning the installation.

Fire or electrical shock can result if the power is left on.

Be sure no water leaks in at the transducer or sensor mounting location.

Water leakage can sink the vessel. Also confirm that the transducer and sensor will not loosen by ship's vibration. The installer of the equipment is solely responsible for the proper installation of the equipment. FURUNO will assume no responsibility for any damage associated with improper installation.

Use the specified power cable.

Use of other power cable may result in fire.

Do not install the equipment where air bubbles and noise are present.

Performance will be affected.

The following are guidelines for handling of the transducer cable.

- Keep fuels and oils away from the cable.
- Locate it in a safe place.
- Do no paint the cable.

The sheath of the cable is made of chloroprene rubber (or polychloride vinyl). For this reason do not paint the cable.

Do not turn on the equipment with the transducer out of water.

The transducer may be damaged.

Observe the following compass safe distances to prevent interference to a magnetic compass:

Display unit	Standard compass	Steering compass
FCV-620	0.3 m	0.3 m
FCV-585	0.5 m	0.3 m

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A Word to FCV-620/585 Owners

Congratulations on your choice of the FURUNO FCV-620/585 Color LCD Sounder. We are confident you will see why the FURUNO name has become synonymous with quality and reliability.

Since 1948, FURUNO Electric Company has enjoyed an enviable reputation for innovative and dependable marine electronics equipment. This dedication to excellence is furthered by our extensive global network of agents and dealers.

This equipment is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless operated and maintained properly. Please carefully read and follow the recommended procedures for operation and maintenance.

We would appreciate hearing from you, the end user, about whether we are achieving our purposes.

Thank you for considering and purchasing FURUNO equipment.

Features

The FURUNO FCV-620/585 is a dual frequency (50 kHz and 200 kHz) Color LCD Sounder. Comprised of a display unit and a transducer, the FCV-620 displays underwater conditions on a 5.6-inch color LCD and the FCV-585 on an 8.4-inch color LCD.

The main features of the FCV-620/585 are

- Bright color LCD gives excellent readability even in broad daylight.
- Waterproof construction permits installation on open bridge.
- Automatic function being available on detecting fish school and bottom at both shallow and deep depth permits best display.
- User-programmable nav data displays provide analog and digital nav data.
- Alarms: Bottom, Fish (bottom lock and normal), Speed, Water Temperature and Arrival. (Speed, arrival and water temperature alarms require appropriate sensor.)
- White line feature helps discriminate fish lying near the bottom.
- Destination waypoint feature provides range, bearing, and time-to-go to destination waypoint (up to 20 waypoints).

SYSTEM CONFIGURATION

FCV-620





525ST-MSD, 525ST-PWD

(50B-6, 50B-6B, 200B-5S, 50/200-1T)

EQUIPMENT LISTS

Standard supply for FCV-620

Name	ame Type Code No.		Qty	Remarks	
Display Unit	CV-620	-	1	With hard cover	
	520-5PSD	000-015-204		Thru-hull mount	
Transducer	520-5MSD	000-015-212		Thru-hull mount	
	525-5PWD	000-146-966	1	Transom mount	
Triducer (transducer	525ST-MSD	000-015-263		Thru-hull mount	
plus spd/temp sensor)	525ST-PWD	000-015-261		Transom mount	
Installation Materials (CP02-07900)	Cable assy. (1Self-tapping sc	pc., KON-004-02M rew (4 pcs., 5x25 \$	l, 000-156 SUS304,	6-405, for power and data) 000-162-610-10)	
Accessories (FP02-05501)	 Flush mounting sponge (1 pc., 02-154-1601-0, 100-329-460) Wing nut (4 pcs., M4 SUS304, 000-863-331) Flat washer (4 pcs., M4 SUS304, 000-864-126) Spring washer (4 pcs., M4 SUS304, 000-864-256) Threaded rod (4 pcs., M4x50 SUS304, 000-162-679-10) MJ cable cap (1 pc., 02-154-1221-1, 100-329-441) Filter cleaner (1 pc., 02-155-1082-1, 100-332-651-10) 				
Spare Parts (SP02-05001)	Fuse (2 pcs., FGE	30-A 125V 2A, 000)-155-849	9-10)	
Template	C22-00502	000-156-349-1X	1	For flush mounting	
Template	022-00302	000-169-612-1X	I	1 of hush mounting	
Operator's Guide	MI G-23740	000-156-373-1X	1		
	MEO 20140	000-169-611-1X	I		
Operator's Manual	OME-23740	000-156-346-1X	1		
	OWE-20740	000-169-608-1X	I		

Standard supply for FCV-585

Name	Туре	Code No.	Qty	Remarks
Display Unit	CV-585	-	1	With hard cover
	520-5PSD	000-015-204		Thru-hull mount
Transducer	520-5MSD	000-015-212		Thru-hull mount
	525-5PWD 000-146-966		1	Transom mount
Triducer (transducer	525ST-MSD	000-015-263		Thru-hull mount
plus spd/temp sensor	525ST-PWD	000-015-261		Transom mount

Name	Type Code No.		Qty	Remarks			
Installation Materials (CP02-07900)	 Cable assy. (1 pc., KON-004-02M, 000-156-405, for power and data) Self-tapping screw (4 pcs., 5x25 SUS304, 000-162-610-10) 						
Accessories (FP02-05601)	 Flush mounting sponge (1 pc., 02-155-1081-1, 100-330-851-10) Wing nut (4 pcs., M4 SUS304, 000-863-331) Flat washer (4 pcs., M4 SUS304, 000-864-126) Spring washer (4 pcs., M4 SUS304, 000-864-256) Threaded rod (4 pcs., M4x50 SUS304, 000-162-679-10) MJ cable cap (1 pc., 02-154-1221-1, 100-329-441) Filter cleaner (1 pc., 02-155-1082-1, 100-332-651-10) 						
Spare Parts (SP02-05001)	Fuse (2 pcs., FGBO-A 125V 2A, 000-155-849-10)						
Tomplato	C22 00504	000-158-577-1X	1	For fluch mounting			
Template	022-00304	000-169-613-1X	I	i or nush mounting			
Operator's Guide	MLC 22740	000-156-373-1X	1				
Operator s Guide	MEG-23740	000-169-611-1X	I				
Operator's Manual	OME 23740	000-156-346-1X	1				
Operator 5 Manual	OWL-23740	000-169-608-1X	I				

Optional equipment for FCV-620/585

Name	Туре	Code No.	Qty	Rema	rks	
Conversion Cable	02S4147	000-141-082	1	For water temp and spd/temp	For water temperature and spd/temp sensors	
Water Temperature &	ST-02MSB	000-137-986	1	4 Thrus hault targe		
Speed Sensor	ST-02PSB	000-137-987	1			
	T-02MTB	000-040-026		Transom mount, w/8 cable 1 Thru-hull mount		
Water Temperature	T-02MSB	000-040-040	1			
	T-03MSB	000-040-027		Thru-hull mount, w/8 m cable		
Inner Hull Kit S	22S0191	000-802-598	1			
Matching Box	MB-1100	000-041-353	1	For connec- tion to 1 kW transducer		
Transducer	50B-6	000-015-042		10 m, 1 kW	For FCV-	
	50B-6B	000-015-043	1	15 m, 1 kW	585	
Tansuucei	200B-5S	000-015-029	1	10 m, 1 kW		
	50/200-1T	000-015-170		10 m, 1 kW		

OPERATION

1.1 **Control Description**



Display unit for FCV-620

Note: The FCV-620 and FCV-585 share the same features. For sake of brevity, this manual uses "FCV-620".

No.	Control	Function
1	MENU/ESC	 Opens/closes menu. Escapes from current operation.
2	▲▼ ◀► (TrackPad)	 Moves cursor on the menu. Adjusts settings. Moves VRM (Variable Range Marker) by using ▲ or ▼ except for nav mode.
3	ENTER	Saves settings.
4	RANGE	Opens display range setting window.
5	MARK	Records the position of an important echo as waypoint. (Outputs latitude and longitude position to a plotter.)
6	FUNC	Opens user defined window.
7	GAIN	 Push: Opens automatic gain setting window. Rotating: Manually adjusts gain (with automatic gain adjustment off).
8	MODE	Selects display mode.
9	்/BRILL	 Turns power on/off. Opens display contrast/brilliance setting window. (The FCV-585 does not have the contrast function.)

How to remove the hard cover

Place fingers below cover, pull cover forward and lift it.

When removing the display unit

To keep out dust from connectors:

- Cover transducer cable's connector with MJ cable cap (supplied).
- Cover two connectors on display unit with their caps.
- Cover power cable's connector with its cap.



1.2 Power On/Off

1. Press the ⁽⁾/**BRILL** key to turn on the power.

The unit beeps, the startup screen appears, and then the equipment checks the ROM and RAM for proper operation. After the completion of the equipment check, the lastused display appears.



Startup screen

 To turn off the power, press the ⁽¹⁾/BRILL key more than three seconds. The time remaining until power is turned off is counted down on the screen.

Note1: If "ROM/RAM check error!" appears, try to press any key except the \bigcirc /**BRILL** key to start operation. However, the equipment may not work properly. Contact your dealer.

Note2: The first time you turn on the power (or any time the power is applied after a memory reset), the installation menu appears. See the figure below.

When this occurs, press the **MENU/ESC** key twice to close the menu.



Installation menu

1.3 Adjusting Display Contrast and Brilliance

 Press the ⁽⁾/**BRILL** key momentarily to show the contrast/brilliance adjustment window. (The FCV-585 does not have the contrast function.)



Contrast/brilliance adjustment window

 To adjust brilliance, press the ⁽¹⁾/**BRILL** key. Continual pressing changes the brilliance continuously (0→1→...→9→8→...→0→ 1→...). "0" is the dimmest and "9" is the brightest.

After selecting "Brill" by using \blacktriangle or \blacktriangledown , you may also use \blacktriangleleft or \blacktriangleright to adjust brilliance.

- To adjust contrast, after selecting "Contrast" by using ▲ or ▼, use ◀ or ▶ (only for FCV-620). "0" is the lowest and "9" is the highest.
- 4. Press the **ENTER** key to save the setting and close the window.

Note: When the power is reapplied after turning off the equipment with minimum brilliance, minimum brilliance will be set after the equipment goes through its initial start up. (The start up screen appears with the maximum brilliance.) Adjust the brilliance as necessary.

1.4 Choosing a Display Mode

1. Rotate the **MODE** knob to open the mode setting window, which is displayed for five seconds.

IL	MODE		
╟	NAV1 🚽 🚽	Nav data mode 1	
	LF-ZOOM ┥	Low frequency zoom mod	e*
	LF-DEEP	Low frequency mode (50 l	k)
$\ $	DUAL 🗕 🗌	- Dual frequency mode	
	HF-SHALLOW	 High frequency mode (200) k)
	HF-ZOOM 🔫	High frequency zoom mod	de**
IL	NAV2 🗕	— Nav data mode 2	
*:	The indication B/L-LF, B/Z-	n at the top on the screen is F or M/Z-LF.	
**	: The indicatio	n at the top on the screen is	
	B/L-HF, B/Z-	HF or M/Z-HF.	
	B/L: Bottom	ock, LF: Low frequency,	
	B/Z: Bottom	zoom, HF: High frequency,	
	M/Z: Marker	700m	

 Rotate the MODE knob again to choose the display mode desired. The screen you chose appears soon thereafter.

Single frequency display Low frequency (50 kHz)

The sounder uses ultrasonic signals to detect bottom conditions. The lower the frequency of the signal, the wider the detection area. Therefore, the 50 kHz frequency is useful for general detection and judging bottom condition.

High frequency (200 kHz)

The higher the frequency of the ultrasonic signal, the better the resolution. For this reason the 200 kHz frequency is ideal for detailed observation of fish schools.



Frequency and coverage area



Single frequency display

Dual frequency display

The 50 kHz picture appears on the left; the 200 kHz picture on the right. This display is useful for comparing the same picture with two different frequencies.



Dual frequency display

Frequency	Beam width	Resolu- tion	Detectable range	Bottom tail
50 kHz	Wide	Low	Deep	Long
200 kHz	Narrow	High	Shallow	Short

Zoom display (50/200 kHz)

Zoom mode expands chosen area of the single frequency picture. Three modes are available: bottom lock, bottom zoom and marker zoom. The default mode is bottom lock. To change a mode, see page 17.

Bottom lock display

The bottom lock display provides a normal picture on the right half of the screen and a 10-30 feet (default: 15 feet) wide layer in contact with the bottom is expanded onto the left half of the screen. This mode is useful for detecting bottom fish.



Bottom lock display

Note1: To adjust the range of the zoom display, go to the Range menu (see page 20).

Note2: To turn on or off the Zoom Marker, go to the Display menu (see page 18).

Bottom zoom display

This mode expands bottom and bottom fish on the left-half window. This mode is useful for determining bottom contour. When the bottom depth increases, the display automatically shifts to keep the bottom echo at the lower part of the screen.



Bottom zoom display

Marker zoom display

This mode expands chosen area of the normal picture to full vertical size of the screen on the left-half window. You may specify the portion to expand by operating the VRM (Variable Range Marker), which you can shift with \blacktriangle or \blacktriangledown . The area between the VRM and zoom marker is expanded. This mode is useful for determining the size of fish in the middle water.



Marker zoom display

Nav data displays

The nav data displays appear on the left of the screen. Data other than depth requires appropriate sensor.

Two nav data displays are available, Nav Data 1 or Nav Data 2, and you may choose which to

use on the Display menu. The default settings are as follows.

Nav Data 1: Two-data display (SPEED (STW), WIND)

Nav Data 2: Four-data display (DEPTH, TEMPERATURE, TRIP METER, ODOMETER)

You can display between two and four items in a nav data display and choose the item and order to display them. For details, see section 1.19.



Nav Data 1 display



Nav Data 2 display

Sample Nav Data displays (Default setting)

1.5 Choosing Range

The basic range may be chosen in Auto or Manual mode.

1. Press the **RANGE** key to open the range setting window.



Range setting window

Use ◄ or ► to choose Auto or Manual.
 Auto: The range changes automatically to display the bottom echo on the screen. The range shifting functions are inoperative in Auto mode. "R:A" is shown at the top left corner on the screen.

Manual: The range may be chosen from the eight ranges. "R:M" is shown at the top left corner on the screen.

If you choose Auto go to step 4. For manual go to the next step.

3. For Manual, use ▲ or ▼ to choose the range.

Default ranges

Lloit			E	Basic	Ranç	ge		
Unit	1	2	3	4	5	6	7	8
m	5	10	20	40	80	150	200	300
ft	15	30	60	120	200	400	600	1000
fa	3	5	10	20	40	80	100	150
pb	3	5	10	20	50	100	150	200
HR*	4	8	15	30	50	100	150	200

*: Japanese unit of depth measurement

Note: Basic ranges may be preset as desired. For further details, see page 20.

4. Press the ENTER key.

Note: The range mode indication, which appears at the top-left corner, may be turned on or off with Header Info on the Display menu. For details, see page 19.

1.6 Adjusting Gain

The gain may be adjusted automatically (Fishing or Cruising) or manually.

Fishing and Cruising

The gain (or receiver sensitivity) is adjusted automatically for Fishing and Cruising mode so that the bottom is displayed as reddish brown. Gain offset lets you override automatic gain adjustment.

1. Press the **GAIN** knob to open the Auto Gain setting window.



Auto Gain setting window

2. Press the **GAIN** knob again to choose Fishing or Cruising.

You may also use \blacktriangle or \blacktriangledown to choose the mode.

Fishing: This mode clearly displays weaker echoes and is for searching fish schools. "G:AF" is shown at the top left corner on the screen.

Cruising: This mode clearly displays stronger echoes (for example, bottom), suppresses weak echoes and is for general cruising.

"G:AC" is shown at the top left corner on the screen.

Off: For manual adjustment

Adjusting gain offset proceed, if not go to step 4.

3. If you need, adjust the gain offset with ◀ or
♦ (setting range: -5 to +5).

Pressing \blacktriangleleft lowers the gain, \blacktriangleright raises the gain.

4. Press the ENTER key.

Manual gain adjustment

The **GAIN** knob adjusts the sensitivity of the receiver. Generally, use a higher gain setting for greater depths and a lower setting for shallower waters.

Use the proper gain setting.

Incorrect gain may produce wrong depth indication, possibly resulting in a dangerous situation.



Gain too high

Gain proper Gain too low

Examples of proper and improper gain

- 1. Press the **GAIN** knob to open the Auto Gain setting window.
- Press the GAIN knob again to choose Off. "G:M" appears at the top left corner on the screen.
- 3. Press the ENTER key.
- 4. Rotate the **GAIN** knob to adjust the gain. The setting range is 0.0 to 10.

Adjust so that a slight amount of noise remains on the screen.

The setting gain is shown at the top of the screen as G (Gain) + XX (setting value).

1.7 Measuring Depth

The VRM (Variable Range Marker) functions to measure the depth to fish schools, etc.

- Use ▲ or ▼ to place the VRM on the object to measure depth.
- 2. Read the VRM depth just above the VRM.



How to measure depth with the VRM

1.8 Menu Operating Procedure

The FCV-620/585 have five menus: Sounder, Display, Alarm, Data, and System. Below is the basic menu operating procedure.

1. Press the **MENU/ESC** key to open the menu.

Cursor	Currently selected menu	
(yellow)		
Menu	Sou	nder
Sounder Display Alarm Data ►System Menu window Menu item window	Pic. Advance Zoom Mode Shift Bottom Zone Interference Color Erase Clutter White Line White Marker TVG Smoothing TX Power TX Rate Transducer*	: 1/1 : Bottom Lock : Oft : Auto : 0% : 0% : 0% : Medium : On : Auto : 10 : 600W
only	▲ / ▼ / ◀ / ► [ENTER] [MENU]	: Select : Enter : Back

Menu

 Use ▲ or ▼ to choose the menu or sub menu desired.

The cursor (yellow) shows current selection. The items in the right window change with menu selected.

3. Press the ENTER key.

The cursor (yellow) shifts to the menu item window (right) and the current selection on

the menu window (left) is displayed to gray. You may also use ► to move the cursor.

 Use ▲ or ▼ to choose the menu item desired and press the ENTER key. The selected setting box or window appears.



Setting box

Off

On

Setting window

- 5. Use \blacktriangle or \blacktriangledown to choose an option.
- Press the ENTER key to save the setting. The setting box or window disappears. To escape without changing setting press the MENU/ESC key instead of the ENTER key.
- 7. To choose another menu press the **MENU**/ **ESC** key.

The cursor (yellow) moves to the menu window. You may also use ◀ to move the cursor.

8. Press the **MENU/ESC** key to close the menu.

1.9 Shifting Range

The basic range may be shifted up or down in the Manual mode as follows:



Range and display shift concept

Note: This function is inoperative when Auto mode is selected on the range setting window.

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Sounder and press the ENTER key.
- Use ▲ or ▼ to choose Shift and press the ENTER key.



Shift setting window

 Use ▲ or ▼ to choose the amount of shift desired and press the ENTER key. The step for the amount of shift depends on setting range on the Range sub menu of the System menu.

Unit: ft		Unit:	m
Range	Step	Range	Step
7 - 10	2	2 - 5	1
11 - 20	5	6 - 10	2
21 - 50	10	11 - 20	5
60 - 100	20	21 - 50	10
110 - 250	50	60 - 100	20
260 - 500	100	110 - 250	50
550 - 1000	200	260 - 500	100
1100 - 2500	500	550 - 800	200
Unit:	Unit: fa Unit: p		b
Range	Step	Range	Step
2 - 5	1	2 - 5	1
6 - 10	2	6 - 10	2
11 - 20	5	11 - 20	5
21 -50	10	21 - 50	10
60 - 100	20	60 - 100	20
110 - 250	50	110 - 250	50
260 - 400	100	260 - 450	100

5. Press the **MENU/ESC** key twice to close the window.

Note: The echo may be lost if the amount of shift is greater than actual depth.

1.10 Choosing Picture Advance Speed

The picture advance speed determines how quickly the vertical scan lines run across the screen. When choosing a picture advance speed, keep in mind that a fast advance speed will expand the size of the fish school horizontally on the screen and a slow advance speed will contract it. A fast advance speed is useful for observing the rugged bottom minutely. A slow advance speed is useful for observing the smooth bottom.



Picture and picture advance speed

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Sounder and press the ENTER key.

So	under	
Pic. Advance	: 1/1	
Zoom Mode	: Bottom Lock	
Shift	: Oft	
Bottom Zone		
Interference	: Auto	
Color Erase	: 0%	
Clutter	: 0%	
White Line	: 0%	
White Marker		
TVG	: Medium	
Smoothing	: On	
TX Power	: Auto	
TX Rate	: 10	
Transducer*	: 600W	*: FCV-585
▲ / ▼ / ◀ / ► [ENTER] [MENU]	: Select : Enter : Back	only

Sounder menu

3. Use ▲ or ▼ to choose Pic. Advance and press the **ENTER** key.



Pic. Advance setting window

 Use ▲ or ▼ to choose picture advance speed desired and press the ENTER key. 1/16 is the slowest speed and 4/1 is the fastest speed. 1/16 means one scan line is produced every 16 transmissions. Current picture advance is displayed at the top-right corner of the screen.



The picture is not refreshed when picture advancement is stopped.

Maneuvering the vessel in this condition may result in a dangerous situation.

5. Press the **MENU/ESC** key twice to close the window.

1.11 Suppressing Interference

Interference from other acoustic equipment operating nearby or other electronic equipment on your boat may show itself on the display as shown in the figure below. Follow the procedure below to suppress interference.



Interference from other sounder

Electrical interference

Interference

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Sounder and press the ENTER key.
- 3. Use ▲ or ▼ to choose Interference and press the ENTER key.



Interference setting window

Use ▲ or ▼ to choose the degree of suppression desired and press the ENTER key.
 Off: Turn off interference rejector.

Low, Medium, High: High provides the greatest degree of suppression and Low is the smallest.

Auto: Interference is suppressed automatically.

Note: Turn off the interference rejector when no interference exists, so as not to miss echoes from small fish.

5. Press the **MENU/ESC** key twice to close the window.

1.12 Suppressing Low Level Noise

Low intensity "speckles" may appear over most of screen. This is mainly due to sediment in the water or noise. These can be suppressed by adjusting Clutter on the menu.



Clutter appearance

Note: Clutter cannot be adjusted when Fishing or Cruising is selected on the Auto Gain setting window.

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Sounder and press the ENTER key.

Use ▲ or ▼ to choose Clutter and press the ENTER key.



Clutter setting window

- Use ▲ or ▼ to choose the degree of suppression desired and press the ENTER key. The setting range is 0 to 100 % in intervals of ten. The larger the setting value, the greater the degree of suppression.
- 5. Press the **MENU/ESC** key twice to close the window.

1.13 Erasing Weak Echoes

Sediment in the water or reflections from plankton may be painted on the display in low intensity tones.



Appearance of weak echoes

These weak echoes may be erased by using the "Color Erase". This function erases weaker echoes sequentially to show only strong echoes and clear up the picture.

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Sounder and press the ENTER key.
- 3. Use ▲ or ▼ to choose Color Erase and press the ENTER key.



Color Erase setting window

- Use ▲ or ▼ to choose the color to erase and press the ENTER key. The setting range is 0 to 50 % in intervals of five. The larger the setting value, the greater the degree of erasion.
- 5. Press the **MENU/ESC** key twice to close the window.

1.14 A-Scope Display

This display shows echoes at each transmission with amplitudes and tone proportional to their intensities, on the right of the screen. It is useful for estimating the kind of fish school and bottom composition.

Note: In the dual frequency display, the A-Scope display is only available with the high frequency display.

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Display and press the ENTER key.

Menu	Display	
Sounder Display Alarm Data ▶ System	A-Scope Depth Size Zoom Marker Temp Graph Window Size Battery Color Bar Palette Colors Header Info Nav Data1 Nav Data2 Fish Info Fish Symbols	: Off : Small : Off : Off : Off : On : White : 64 : On : 日 : 日 : 0ff : Off
	▲ / ▼ / ◀ / ► [ENTER] [MENU]	: Select : Enter : Back

Display menu

3. Use ▲ or ▼ to choose A-Scope and press the ENTER key.



A-Scope setting box

Use ▲ or ▼ to choose the A-Scope presentation type desired and press the ENTER key.

Normal: Display shows echoes at each transmission with amplitudes and tone proportional to their intensities.

Peak: "Normal" A-Scope display plus peakhold amplitude picture for last five seconds in dots.

5. Press the **MENU/ESC** key twice to close the window.



A-Scope display

Note: To turn off the A-Scope display, choose Off at step 4 and then press the **ENTER** key.

1.15 Fish Information

You can turn the fish symbol indication (Solid or Striped) on or off. Also, you can show or hide the fish size and the depth value. For details about the Fish Symbols, see the information which follows the procedures in this section.

Note: The fish size found by this sounder is intended for reference purposes; it is not an accurate measurement of fish length.

Fish Symbols

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Display and press the ENTER key.
- 3. Use ▲ or ▼ to choose Fish Symbols and press the **ENTER** key.



Fish Symbols setting box

 Use ▲ or ▼ to choose Off, Solid or Striped as appropriate and press the ENTER key. The symbol size depends on the fish size.

Fish size	Solid	Striped
Large fish symbol (more than 50 cm, or more than 20 inches)	C	A
Small fish symbol (10 to 49 cm, or 4 to 19 inches)	Ŭ	X

Note: To hide the fish symbol, choose Off at step 4 and press the **ENTER** key.

5. Press the **MENU/ESC** key twice to close the window.

Fish Info

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Display and press the ENTER key.
- 3. Use ▲ or ▼ to choose Fish Info and press the ENTER key.



Fish Info setting box

 Use ▲ or ▼ to choose Off, Fish Size or Depth as appropriate and press the ENTER key. Fish size or depth is displayed in red.



Fish symbols with fish info figure

Note: You can show the fish info figure alone (without fish symbol) by turning off Fish Symbols on the Display menu.

5. Press the **MENU/ESC** key twice to close the window.

Consideration for fish information

- The 600 W transducers which offer size calculation are 520-5PSD, 520-5MSD, 525-5PWD, 525STID-MSD and 525STID-PWD.
- For 1 kW transducer, the integrated type 50/200-1T is recommended to display the fish symbol and the fish size. When using both 50B-6 and 200B-5S, they should be installed in close proximity to each other.
- Echo intensity depends on fish specie. When the fish size differs between the indicated value and the fish caught, you can compensate it on the Calib menu (see section 2.6).
- When Fish Symbols or Fish Info are enabled, 50 kHz and 200 kHz beams are transmitted alternately even if a single frequency mode is in use.
- Fish within the zero line area are not measured.
- To reduce error, the detection area should be approx. 6 to 330 feet from the surface.
- With the inside-hull transducer, signal attenuation is different between 50 kHz and 200 kHz. Therefore, a fish may not be detected or the fish size indicated may be smaller than actual size.
- In case of a fish school, echoes overlap one another, so the margin of error will be greater.
- The fish symbol indication is off when the bottom is not displayed on the screen.

1.16 Alarms

The FCV-620/585 have six conditions which generate both audio and visual alarms: bottom alarm, normal fish alarm, bottom lock fish alarm, water temperature alarm, speed alarm and arrival alarm. (The water temperature, speed and arrival alarms require appropriate sensors.) To silence the buzzer press any key.

Bottom alarm: The bottom alarm alerts you when the bottom displayed in red or reddish brown echo is within the alarm range set. To activate the bottom alarm the depth must be displayed.

Fish (normal) alarm: The fish (normal) alarm tells you when an echo above a certain strength (selectable) are within the preset alarm range. See page 13 for alarm level setting.

Fish (bottom lock) alarm: The fish (bottom lock) alarm sounds when fish are within a certain distance from the bottom. Note that the bottom lock display must be turned on to use this alarm.

Water temperature alarm: The water temperature alarm alerts you when the water temperature is within (inside alarm) the alarm range set or under/over (outside alarm) the range set.

Speed alarm: The speed alarm alerts you when the speed is within (inside alarm) or under/over (outside alarm) the preset speed.

Arrival alarm: The "Inside" arrival alarm alerts you when you approach to the destination waypoint by the distance set. Alternatively, the "Outside" arrival alarm alerts when you go away from the preset range from a certain position.

Activating an alarm

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Alarm and press the ENTER key.



Alarm menu

- 3. Use ▲ or ▼ to choose an alarm desired and press the ENTER key.



Alarm options

Use ▲ or ▼ to choose alarm type:
 Off: Alarm off
 On: Alarm on

Inside: Alarm generated when speed, water temperature or arrival distance is within the range set.

Outside: Alarm generated when speed, water temperature or arrival distance is outside the range set.

- 5. Press the **ENTER** key. For Arrival Alarm, go to step 8.
- Use ▼ to choose From and press the ENTER key.



Depth setting window



Temperature, Speed setting box

Use ▲ or ▼ to set starting depth, temperature or speed as appropriate and press the ENTER key. For Bottom and Fish (Normal), the starting depth is the range from the transducer, and for Fish (B/L), from the bottom.



- 8. Use ▼ to choose Span (or Radius for Arrival) and press the **ENTER** key.
- Use ▲ or ▼ to set the range of depth, temperature, speed or distance as appropriate. To shorten the alarm range marker use ▼, and to lengthen use ▲.
- 10.For the bottom alarm, temperature alarm, speed alarm or arrival alarm, press the **ENTER** key to finish, and then go to step 13. For a fish alarm, press the **ENTER** key and go to step 11.

11.Use ▼ to choose Fish Level and press the **ENTER** key.



Fish Level setting box

 12.Use ▲ or ▼ to choose the echo strength level which will trigger a fish alarm and press the ENTER key.
 Weak: Light-blue or stronger echoes

Medium: Yellow or stronger echoes Strong: Red and reddish brown echoes

13.Press the **MENU/ESC** key twice to close the window.

Note1: To disable an alarm, choose Off at step 4 in the above procedure.

Note2: The audio and visual alarms are released against the last-violated alarm when multiple alarms are active.

1.17 FUNC Key

The **FUNC** key provides for instant display of a user-defined options window chosen with FUNC Key on the Key menu. Nine items are available: Pic. Advance (default), Shift, Interference, Clutter, Color Erase, White Line, White Marker, WPT List and Bottom Zone. For details about registration, see section 2.3. Use the **FUNC** key as follows.

- Press the **FUNC** key to open the setting window registered; for example, Pic. Advance setting window.
- 2. Use **FUNC** key, ▲ or ▼ to adjust the setting and press the **ENTER** key.

1.18 Waypoints

Waypoints may be used to:

- Record the position of an important echo as waypoint. 20 points may be registered.
- Output a waypoint position to a plotter to mark position on its screen.
- Find range, bearing and time-to-go to a location (waypoint).

Note: Requires latitude and longitude position from a navigator.

1.18.1 Registering a waypoint

Registering a waypoint on the screen

1. Press the **MARK** key.

The cursor appears along with waypoint entry instructions. To enter a waypoint to the current own ship's position, go to step 3.

Depth and temperature of cursor position



Cursor

Note: If there is no position data the message "No position data!" appears. Check the navigator.

2. Press the **TrackPad** to set the cursor where desired.

Picture advancement is stopped until step 3 is completed, and the instruction window is integrated into the data box.

3. Press the **MARK** or **ENTER** key to register the position set at step 2.

A red vertical line appears on the position set at step 2. The waypoint is named automatically with the next sequential waypoint number. If you want to change waypoint name, go to step 4. Otherwise, go to step 6.

New Waypoint	
Name	: 01
Lat	: 34°22.796'N
Lon	: 136°07.264'E
Erase	?
▲ / ▼	: Select
[ENTEF	R]: Enter
MENU	: Quit

Waypoint setting window

Note1: When TLL or FURUNO-TLL is selected at TLL Output on the NMEA menu of the System menu, the latitude and longitude position at the cursor position is output to the navigator.

Note2: If you attempt to enter 21st waypoint, the message "Already entered 20 waypoints. No more waypoint can be entered." appears. In this case, erase an unwanted waypoint to enable entry. See paragraph 1.18.3 for details.

4. Press the **ENTER** key to to open the waypoint name entry box.



Waypoint name entry box

- 5. Enter the waypoint name (Max. 8 characters).
 - a) Use \blacktriangle or \blacktriangledown to set character. When pressing \bigstar , character order is $0 \rightarrow 1 \rightarrow ...$ $\rightarrow 9 \rightarrow - \rightarrow A \rightarrow ... \rightarrow Z \rightarrow _ \rightarrow 0 \rightarrow$ When pressing \blacktriangledown , character order is reverse.
 - b) Use ▶ to shift cursor.
 - c) Repeat step a) and b) to set the name desired and press the **ENTER** key.
- 6. Press the **MENU/ESC** key to close the window.

Registering a waypoint by L/L

- 1. Press the **MENU/ESC** key to open the menu.
- 2. Use ▲ or ▼ to choose Data and press the ENTER key.

Data	a	*: Go to WPT
Go to WPT* WPT List* Data Box 1 Data Box 2 Bearing Wind Spd/Dir Trip Source Temp Source Speed Source Trip Reset Odo Reset	: Off : Off : Off : True : True : Own : Own : Own	and WPT List are inoperative when no latitude and longitude position is input to the 12-24 VDC/ NMEA port.
▲ / ▼ / ◀ / ► : S [ENTER] : E [MENU] : B	elect nter ack	

Data menu

3. Use ▲ or ▼ to choose WPT List and press the ENTER key.



WPT List window

 Use ▲ or ▼ to choose an empty waypoint and press the ENTER key. The Waypoint setting window appears. Lat

and Lon indicate the current position.

5. Use ▲ or ▼ to choose item desired and press the ENTER key.

The character setting box is shown.



For L/L

For waypoint name

02

- 6. Enter latitude and longitude, similar to how you entered the waypoint name.
- 7. Press the **MENU/ESC** key four times to close the window.

1.18.2 Editing a registered waypoint

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Data and press the ENTER key.
- 3. Use ▲ or ▼ to choose WPT List and press the ENTER key.
- Use ▲ or ▼ to choose a waypoint to be edited and press the ENTER key. The Edit Waypoint window is shown.
- 5. Use ▲ or ▼ to choose item desired and press the ENTER key.
- 6. Edit latitude and longitude, similar to how you entered the waypoint name.
- 7. Press the **MENU/ESC** key four times to close the window.

1.18.3 Erasing waypoint

To erase a waypoint do the following:

- 1. Do steps 1 through 4 in 1.18.2.
- 2. Use ▼ to choose the Erase? and press the ENTER key.
- Use ▲ to choose Yes and press the ENTER key.
- 4. Press the **MENU/ESC** key three times to close the window.

1.18.4 Setting destination waypoint

Set a destination waypoint to find range, bearing and time-to-go to that point. Range, bearing and time-to-go (to the waypoint) are shown on the nav data display. See next section for details.

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose Data and press the ENTER key.
- 3. Use ▲ or ▼ to choose Go to WPT and press the ENTER key.
- 4. Use ▲ or ▼ to choose a destination waypoint and press the ENTER key.
- 5. Press the **MENU/ESC** key twice to close the window.

1.19 Setting Up Nav Data Displays

The user may arrange the nav data displays as desired.

1.19.1 Nav data displays

1. Rotate the **MODE** knob to choose NAV1 or NAV2.



Nav Data setting window

Note: The setting window disappears if there is no operation for about ten seconds. In this case press the **TrackPad** to re-display the window.

- 2. Use ▲ or ▼ to choose a data display window desired.
- Use ◀ or ▶ to choose item to display. Items displayable depend on the screen division.

(1)		(6)
(1)	(3)	(7)
(2)	(4)	(8)
(2)	(5)	(9)
Two-data	Three-data	Four-data
display	display	display

Items displayable in (1) - (3): speed (STW)*, wind speed and direction*, destination waypoint data*, compass*, heading*, depth, position, course, range and bearing, trip meter, odometer, water temperature, air pressure, time-to-go to destination waypoint, XTE*, speed (SOG)* Items displayable in (4) - (9): depth, position, speed (SOG), speed (STW), course, range and bearing, trip meter, odometer, water temperature, heading, wind speed, wind direction, air pressure, time-to-go to destination waypoint, XTE

- * = Graphic display
- 4. Press the ENTER key.

Note: Applicable data must be input to the 12-24 VDC/NMEA port in order to display the data mentioned in the table below.

Necessary data	Item
Longitude/latitude position	Position, waypoint data, course, range and bearing, time-to- go to destination, XTE
Bearing	Compass, heading
Wind speed, wind direction, air pressure	Wind speed, wind direction, air pressure





Graphic displays



Note: When data is lost 30 sec., the display shows "- -" at the location where data is lost.

1.19.2 Screen division

- 1. Press the **MENU/ESC** key to open the menu.
- 2. Use ▲ or ▼ to choose Display and press the ENTER key.
- 3. Use ▲ or ▼ to choose Nav Data 1 or Nav Data 2 and press the ENTER key.



Nav Data setting box

- 4. Use ▲ or ▼ to choose screen division desired and press the ENTER key.
- 5. Press the **MENU/ESC** key twice to close the window.

1.20 Menu Items

This section describes menu items not previously mentioned. For the System menu, see chapter 2.

Sounder menu

Sou	under	
Pic. Advance Zoom Mode Shift Bottom Zone Interference Color Erase Clutter White Line White Line White Marker TVG Smoothing TX Power TX Rate Transducer*	: 1/1 : Bottom Lock : Oft : Auto : 0% : 0% : 0% : Medium : On : Auto : 10 : 600W	*: FCV-585
▲ / ▼ / ◀ / ► [ENTER] [MENU]	: Select : Enter : Back	only (see section 4.10.)

Sounder menu

Zoom Mode: Choose the zoom display to show among bottom lock, bottom zoom and marker zoom when "zoom" is chosen with the MODE knob. For details, see page 3 and 4.

Bottom Zone: Set the area where to display the bottom echo when selecting Auto mode on the **RANGE** key.

1. Choose Bottom Zone in the Sounder menu and press the **ENTER** key.



Bottom Zone setting window

- Use ◀ or ► to choose the border desired (Above or Below).
- 3. Use ▲ or ▼ to move upper or lower border and press the ENTER key.

White Line: Displays the leading edge of the bottom echo in white. This is useful for discriminating bottom fish from bottom. The setting range is 0 to 50 % in intervals of five. The larger the numeric, the wider the white line width.

White Marker: Displays the chosen echo color in white.

1. Choose White Marker in the Sounder menu and press the **ENTER** key.



White Marker setting window

2. Use ▲ or ▼ to choose color desired and press the ENTER key.

For example, move the arrow to the top of the color bar to display the bottom in white. The echo color chosen on the color bar is changed to white. That color is also white on the color bar.

To turn off the white marker, choose Off at step 2.

TVG: The fish schools of the same size are displayed in different color between in deep water and in shallow water because of the feature of the ultrasonic waves. TVG compensates for propagation attenuation of the ultrasonic waves. It does this by equalizing echo presentation so that fish schools of the same size appear in the same density in both shallow and deep waters. The gain is adjusted automatically depending on the depth. The gain is low at short distance and getting back with increasing distance. High provides the greatest degree of gain reduction

against short range echoes. Note that this function is operative when manual is selected on the **GAIN** knob.

Smoothing: Smoothes echo presentation when enabled. Adjust the setting when echoes appear "spotty".

TX Power: Interference may appear on the screen when an echo sounder having the same frequency as your own is being operated in the vicinity of your vessel. In this case, lower your TX power and contact the vessel to request them to reduce their TX power. The higher the numeric the greater the TX power. The "Auto" setting automatically adjusts TX power with depth. Note that this function is only operative when Fish Info and Fish Symbols in the Display menu are off. When Fish Info and Fish Symbols are on, the TX power mode is "Auto".

TX Rate: Changes pulse repetition rate. Normally, the highest rate (10) is used. When in shallow waters second reflection echoes may appear between surface and actual bottom echo. In this case, lower the TX rate level. The choice "S" means the ship's speed dependent mode, where the TX rate changes automatically with ship's speed. (Requires ship's speed input.)

Display menu

Display	
A-Scope Depth Size Zoom Marker Temp Graph Window Size Battery Color Bar Palette Colors Header Info Nav Data1 Nav Data2 Fish Info	: Off : Small : Off : Off : Off : On : White : 64 : On : 🔲 : Off
Fish Symbols	: Off
▲ / ▼ / ◀ / ► [ENTER] [MENU]	: Select : Enter : Back

Display menu

Depth Size: Choose the font size of the depth indication (Small, Medium or Large).

Zoom Marker: Turn the zoom marker on or off (on the single frequency display) when the

bottom lock display, the bottom zoom display or the marker zoom display is selected.

Temp Graph: Turn the water temperature graph on or off. The temperature scale range is 16° (°F) in "Narrow", 32° (°F) in "Wide". Requires water temperature data.



Temperature graph

Window Size: Adjust the display area of the dual frequency mode or zoom mode. Note that this function is inoperative with single frequency, nav data mode or A-Scope display.

1. Choose Window Size in the Display menu and press the **ENTER** key.



Window size setting window

2. Use ◀ or ► to move the dividing line and press the ENTER key.

Battery: Turn the battery voltage indication (appears at the top right corner on the screen) on or off. When on it replaces the picture advance speed indication.

Color Bar: Turn the color bar on or off.

Palette: Change the background color of the screen in five colors: white, blue, black, gray and night.

Colors: Choose the number of colors to use: 8, 16 or 64.

Header Info: Turn the data area indication (appears at the top on the screen) on or off.

Data area

<u>Data menu</u>

This menu mainly sets up how to display data input by external equipment.

Da	ta
Go to WPT	: Off
WPT List	
Data Box 1	: Off
Data Box 2	: Off
Bearing	: True
Wind Spd/Dir	: True
Trip Source	: Own
Temp Source	: Own
Speed Source	: Own
Trip Reset	
Odo Reset	
▲ / ▼ / ◀ / ► : S [ENTER] : E [MENU] : E	Select Enter Back

Data menu

Data Box 1, 2: Data for speed (SOG), speed (STW), depth, range, bearing, position, wind, heading, course, barom press, water temperature, time to go, trip meter, odometer or XTE can be displayed on the left top of the screen. Appropriate sensor is required to display data other than depth.

15.5 kt 82.6°

Data box

Bearing: Ship's course and heading may be displayed in true or magnetic bearing. Magnetic bearing is true bearing plus (or minus) earth's magnetic deviation. Requires bearing data.

Wind Spd/Dir: Choose the wind speed and direction reference from true and apparent. Requires wind sensor.

Apparent: The direction (in relation to ship's heading) and speed of the wind as it appears to those on board, relative to the speed and

direction of the boat; combination of the true wind and the boat's movement.

True: The speed and direction (in relation to ship's heading) of the wind felt or measured when stationary.

Trip Source: Choose speed source for the trip distance indication: Off, Own (speed sensor connected to the FCV-620/585) or NMEA (speed data from external equipment).

Temp Source: Choose source of water temperature input; Off, Own (temperature sensor connected to the FCV-620/585) or NMEA (speed data from external equipment).

Speed Source: Choose source of speed input; Off, Own (speed sensor connected to the FCV-620/585) or NMEA (speed data from external equipment).

Trip Reset: Choose Yes to reset the trip distance to zero. Beeps are generated while the trip distance is being reset.

Odo Reset: Choose Yes to reset the odometer to zero. Beeps are generated while the odometer is being reset.

2. SYSTEM MENU

2.1 Displaying System Sub Menu

The System menu mainly consists of items which once set do not require frequent adjustment. This menu has nine sub menus. To display each sub menu, do the followings.

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose System. The list of sub menus appears below System.



2.2 Range Menu



Range menu

Range 1 - Range 8: Set range of each of the eight ranges (selectable range: 7 to 2,500 ft).

Note that all default ranges are restored whenever the depth unit is changed. Therefore, change the depth unit before changing the preset ranges.

Zoom Range: Choose the range to zoom in the bottom zoom and marker zoom modes. You may choose a range between 7 and 2,500 feet.

B/L Range: Choose the expansion width for the bottom lock display from 10 to 30 feet.

2.3 Key Menu



Key menu

FUNC Key: Register the item for instant display of a user-defined options window. Nine items are available: Pic Advance (default), Shift, Interference, Clutter, Color Erase, White Line, White Marker, WPT List and Bottom Zone.

You may program the **FUNC** key to display the options window of your choice.

- 1. Long-press the **FUNC** key to open the FUNC Key setting window.
- Use ▲ or ▼ to choose function item desired and press the ENTER key.

Key Beep: Turn key beep on or off.

2.4 Lang Menu



Lang menu

Language: The system language is available in English, several European languages and

Japanese. To change language, select language desired and press the **ENTER** key.

2.5 Units Menu

Ur	nits
Depth	: ft
Temp	:°F
Fish Size	: inch
Speed	: kt
Wind	: kt
Distance	: nm
▲ / ▼ / ◀ / [ENTER] [MENU]	 Select Enter Back

Units menu

Depth: Choose unit of depth measurement from m, ft, fa, pb or HR (Japanese).

Temp: Choose unit of temperature measurement from °C or °F. Temperature data is required.

Fish Size: Choose unit of fish size measurement from inch or cm.

Speed: Choose unit of speed measurement from kt, km/h or mph. Speed data is required.

Wind: Choose unit of wind speed measurement from kt, km/h, mph or m/s. Wind speed data is required.

Distance: Choose unit of distance measurement from nm, km or sm.

2.6 Calib Menu

Calibrat	ion
Draft	: + 0.0 ft
Gain ADJ 200	:+0
Gain ADJ 50	:+0
Temp	: + 0.0 °F
Speed (STW)	: + 0%
Fish Size	:+ 0%
Water Type	: Salt
Zero Line	
Rejection	: On
Area	: 4.5ft
▲ / ▼ / ◀ / ► [ENTER] [MENU]	: Select : Enter : Back

Calib menu

Draft: The default depth display shows the distance from the transducer. If you would

rather show the distance from the sea surface, set your ship's draft (setting range: -15.0 to +50.0 ft).

Gain ADJ 200, Gain ADJ 50: If the gain is too high or too low, or the gain for the low and high frequencies appears unbalanced, you can compensate it (setting range: -20 to +20).

Temp: If the water temperature indication has error, you can correct it here. For example, if the water temperature indication is 2° higher than actual water temperature, enter -2. The setting range is -20.0 to +20.0 °F.

Speed (STW): If the speed indication has error, you can correct it here. For example, if the speed indication is 10 % lower than actual speed, enter +10. The setting range is -50 to +50 %.

Fish Size: Compensate for wrongful indication of fish size (setting range: -80 to +100 %).

Compensation size	Setting value
Double	+100 %
1.5	+50 %
1/2	-50 %
1/3	-65 %
1/4	-75 %
1/5	-80 %

Water Type: Choose the water type with which to use the FCV-620/585, from Salt or Fresh. Choose correct water type to get accurate depth data.

Zero Line Rejection: Turn the zero line (transmission line) on or off. When turned on, the transmission line disappears, which allows you to better watch fish echoes near the surface. The length of the transmission line changes with transducer used and installation characteristics. If the width of the transmission line is 4.5 ft (default value) or more, set the transmission line width with Zero Line Area, as below.

Zero Line Area: This feature adjusts the transmission line so that the transmission line disappears when the menu item Zero Line Rejection is turned on. The effective range is 4.5 to 9.8 ft. For a long tail, increase the value. If the transmission line does not disappear, lower the Tx power.

2.7 Demo Menu

Demons	strate
Demonstrate	: Off
▲ / ▼ / ◀ / ► [ENTER] [MENU]	: Select : Enter : Back

Demo menu

Demonstrate: The demonstration mode provides, without connection of the transducer, simulated operation of the equipment, using internally generated echoes. All controls are operative. The message "DEMO" appears at the bottom right corner on the screen when the demonstrate mode is active.

Off: Turn demo mode off.

Demo1: Shallow depth demonstration

Demo2: Deep depth demonstration

3.

MAINTENANCE, TROUBLE-SHOOTING

ELECTRICAL SHOCK HAZARD Do not open the equipment.

Only qualified personnel should work inside the equipment.

IMPORTANT

Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts.

Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

3.1 Maintenance

Regular maintenance is essential for good performance. Checking the items listed in the table below monthly will help keep your equipment in good shape for years to come.

ltem	Action
Transducer cable	Check cable for damage.
Power cable, transducer cable plug	Check that they are tightly fastened. Refasten if nec- essary.
Display unit ground	Check for corrosion. Clean if necessary.
Power supply voltage	Check voltage. If out of rating correct problem.

<u>Checking</u>

3.2 Cleaning the Display Unit

Dust or dirt may be removed from the cabinet with a soft cloth. Water-diluted mild detergent may be used if desired. DO NOT use chemical cleaners to clean the display unit; they may remove paint and markings. Wipe the LCD carefully to prevent scratching, using tissue paper and an LCD cleaner. To remove dirt or salt deposits, use an LCD cleaner, wiping slowly with tissue paper so as to dissolve the dirt or salt. Change paper frequently so the salt or dirt will not scratch the LCD. Do not use solvents such as thinner, acetone or benzene for cleaning. Also, do not use degreaser or antifog solution, as they can strip the coating from the LCD.

3.3 Transducer Maintenance

Marine life on the transducer face will result in a gradual decrease in sensitivity. Check the transducer face for cleanliness each time the boat is dry-docked. Carefully remove any marine life with a piece of wood or fine-grade sandpaper.

3.4 Replacing the Fuse

The fuses (Type: FGBO-A 125V 2A, Code No.: 000-155-849-10) in the power cable protect the system from reverse polarity of the power supply and equipment fault. If a fuse blows, find the cause before replacing it. Using the wrong fuse will damage the unit and void the warranty.

Use the proper fuse.

Fuse rating is shown on the cable. Use of a wrong fuse can result in fire and damage the equipment.

3.5 Battery Voltage Alert

A battery icon appears when the battery voltage is too high or too low.

Battery icon and meaning

lcon	Meaning
- •	Voltage is lower than 10 VDC. If the voltage goes below 9 V, the equipment is automatically turned off.
	Voltage is higher than 32 VDC. If the voltage goes higher than 33 V, the equipment is automatically turned off.

3.6 Troubleshooting

The table below provides basic troubleshooting procedures which the user may follow to restore normal operation.

Troubleshooting table

lf		then check
neither echo nor	•	battery voltage.
fixed range scale	•	fuse.
appears	•	power supply.
	•	power cable.
no echo appears	٠	if display advance
but the fixed range scale appears		speed is not set to "Stop."
	•	transducer plug.
	•	transducer cable.
echo appears but no zero line	•	if range shifting is set to "0."
	•	if zero line rejection is off.
sensitivity is low	•	gain setting.
	•	if air bubbles or marine
		life is not clinging to
		the transducer face.
	•	if sediments are not
		present in the water.
	•	if the bottom is too soft to return an echo.
there is extreme	•	if the transducer is too
interference or		close to the engine.
noise	•	if the unit is properly
		grounded.
	•	if other echo sounders
		of the same frequency
		as own are being oper-
		ated nearby.
the speed/water	•	sensor plug.
readout is unreal-		
istic or not present		
the position	•	the connection
readout is unreal-		between sounder and
istic or not present		navigator.
	•	navigator.

3.7 Diagnostics

If you feel your unit is not working properly, conduct the diagnostic test to find the problem. If you cannot restore normal operation, contact your dealer for advice.

- 1. Press the **MENU/ESC** key to open the menu.
- 2. Use ▲ or ▼ to choose Tests under System and press the ENTER key.

Tests	
Test LCD Test	
▲ / ▼ / ◀ / ► [ENTER] [MENU]	: Select : Enter : Back



Use ▲ or ▼ to choose Test and press the ENTER key.



*: FCV-620: 0252346-XX.XX FCV-585: 0252347-XX.XX



The ROM, SDRAM and NMEA port are checked, with the results shown as OK or NG (No Good). For any NG, request service. (A special connector is required to test the NMEA port. Nothing appears if no connector is connected.)

 The ovals and circles at the right side of the test display are for checking the controls.
 Checking key and TrackPad: Press each key and the arrows on the TrackPad one by one. A control's corresponding onscreen oval "lights" in red if the control is normal. **Checking GAIN knob**: Rotate the knob. The indication goes higher with clockwise rotation; lower with counterclockwise rotation. Press the knob. The knob corresponding on-screen circle "lights" in red if the knob is normal.

Checking MODE knob: Rotate the knob, and corresponding on-screen circle "lights" in red and white alternately.

- 5. To return to the Tests menu, press the **MENU/ESC** key three times.
- 6. Press the **MENU/ESC** key twice to close the window.

3.8 Test Pattern

This feature tests for proper display of LCD.

Note: To review the seven tone screen easily, set contrast (FCV-620 only) and brilliance to maximum before starting the test.

- 1. Press the **MENU/ESC** key to open the menu.
- 2. Use ▲ or ▼ to choose Tests under System and press the ENTER key.
- 3. Use ▲ or ▼ to choose LCD Test and press the ENTER key.
- 4. Press any key except **MENU/ESC** key to start the test.

The entire screen changes as below with each press of any key except **MENU/ESC** key. After crosshatch screen, the Tests menu appears.



5. Press the **MENU/ESC** key twice to close the window.

3.9 Memory Clear

The memory can be cleared to start afresh with default menu settings except for language setting.

- 1. Press the **MENU/ESC** key to open the menu.
- 2. Use ▲ or ▼ to choose Reset under System and press the ENTER key.



Reset menu

3. Confirm Factory Reset is selected and press the **ENTER** key.



Reset setting box

Use ▲ to choose Yes and press the ENTER key.

After the memory is cleared, the unit beeps and the installation menu appears (see page 2).

5. Press the **MENU/ESC** key twice to close the window.

4. INSTALLATION

4.1 Display Unit

Mounting considerations

The display unit can be installed on a tabletop or flush mounted in a panel. When choosing a location keep the following in mind:

- The temperature and humidity should be moderate and stable.
- Locate the unit away from exhaust pipes and vents.
- The mounting location should be well ventilated.
- Mount the unit where shock and vibration are minimal.
- For maintenance and checking purposes, leave sufficient space at the sides and rear of the unit and leave slack in cables.
- A magnetic compass will be affected if the display unit is placed too close to it.
 Observe the following compass safe distances to prevent disturbance to the magnetic compass:

Standard compass

FCV-620: 0.3 m, FCV-585: 0.5 m <u>Steering compass</u> FCV-620: 0.3 m, FCV-585: 0.3 m

Tabletop mounting

1. Remove the tape from the bottom of the bracket assembly.



Bottom of the bracket

- 2. Fix the bracket assembly to a tabletop with four self-tapping screws (5x25, supplied).
- 3. Loosely screw knob into the bracket assembly.
- 4. Set the display unit to the bracket assembly.
- 5. Adjust the angle of the display unit and then tighten the knob to fix the display unit.

Note: When loosening the knob to adjust the angle of the display, do not decline the unit 90-degree backward. The cable connector may be damaged if it contacts the bracket.

6. Attach the hard cover to the display unit.

Flush mounting in a panel

Note: It is recommended to set up a dedicated breaker when flush mounting the unit, since it will be difficult to disconnect cables.

- 1. Using the paper template (supplied), make a cutout in the mounting location.
- 2. Loosen four washer head screws on the rear of the display unit to remove the bracket cover and the cover sponge (FCV-585 only).



How to remove the bracket cover

- 3. Set the flush mounting sponge (supplied) to the display unit.
- 4. Screw four threaded rods (M4x50, supplied) to the display unit.
- 5. Set the display unit to the cutout.
- 6. Fasten the display unit from behind with four sets of flat washer, spring washer and wing nut (supplied).

4.2 Thru-hull Mount Transducer

Transducer mounting location

The thru-hull mount transducer (520-5PSD, 520-5MSD) provides the best performance of all, since the transducer protrudes from the hull and the effect of air bubbles and turbulence near the hull skin is reduced. When the boat has a keel, the transducer should be at least 30 cm away from it. Typical thru-hull mountings are shown in the figure on the next page.

The performance of this sounder is directly related to the mounting location of the transducer, especially for high-speed cruising. The installation should be planned in advance, keeping the standard cable length (8 m) and the following factors in mind:

- Air bubbles and turbulence caused by movement of the boat seriously degrade the sounding capability of the transducer. The transducer should, therefore, be located in a position where water flow is the smoothest. Noise from the propellers also adversely affects performance and the transducer should not be mounted nearby. The lifting strakes are notorious for creating acoustic noise, and these must be avoided by keeping the transducer inboard of them.
- The transducer must always remain submerged, even when the boat is rolling, pitching or up on a plane at high speed.
- A practical choice would be somewhere between 1/3 and 1/2 of the boat's length from the stern. For planing hulls, a practical location is generally rather far astern, so that the transducer is always in water regardless of the planing attitude.



Thru-hull mount transducer mounting dimensions (millimeters)

Acceptable transducer mounting locations

DEEP-V HULL



- Position 1/2 to 1/3 of the hull from stern.
- 15 to 30 cm off center line (inside first lifting strakes.)

HIGH SPEED-V HULL



- Within the wetted bottom area
- Deadrise angle within 15°

Suitable transducer mounting locations

Typical thru-hull mount transducer installations





Procedure for installing the thru-hull mount transducer

- 1. With the boat hauled out of the water, mark the location chosen for mounting the transducer on the bottom of the hull.
- 2. If the hull is not level within 15° in any direction, fairing blocks made out of teak should be used between the transducer and hull, both inside and outside, to keep the transducer face parallel with the water line. Fabricate the fairing block as shown below and make the entire surface as smooth as possible to provide an undisturbed flow of water around the transducer. The fairing block should be smaller than the transducer itself to provide a channel to divert turbulent water around the sides of the transducer rather than over its face.



Construction of fairing block

- 3. Drill a hole just large enough to pass the threaded stuffing tube of the transducer through the hull, making sure it is drilled vertically.
- Apply a sufficient amount of high quality caulking compound to the top surface of the transducer, around the threads of the stuffing tube and inside the mounting hole (and fairing blocks if used) to ensure watertight mounting.
- 5. Mount the transducer and fairing blocks and tighten the locking nuts. Be sure that the transducer is properly oriented and its working face is parallel to the waterline.

Note: Do not over-stress the stuffing tube and locking nuts through excessive tightening, since the wood block will swell when the boat is placed in the water. It is suggested that the nut be tightened lightly at installation and retightened several days after the boat has been launched.

Transducer preparation

Before putting the boat in water, wipe the face of the transducer thoroughly with a detergent liquid soap. This will lessen the time necessary for the transducer to have good contact with the water. Otherwise the time required for complete "saturation" will be lengthened and performance will be reduced.

DO NOT paint the transducer. Performance will be affected.

4.3 Transom Mount Transducer

The transom mount transducer is very commonly employed, usually on relatively small I/ O or outboard boats. Do not use this method on an inboard motor boat because turbulence is created by the propeller ahead of the transducer.

DO NOT overtighten screws. They may be damaged.

525-5PWD

Choose the installation method depending on the rise angle of the hull.





Installing the 525-5PWD

A suitable mounting location is at least 50 cm away from the engine and where the water flow is smooth.

- 1. Drill four pilot holes for self-tapping screw (5x20) in the mounting location.
- 2. Attach the transducer to the mounting location with self-tapping screws.
- Adjust the transducer position so the transducer faces right to the bottom. If necessary, to improve water flow and minimize air bubbles staying on the transducer face, incline the transducer about 5° at the rear. This may require a certain amount of experimentation for fine tuning at high cruising speeds.
- 4. Fill the gap between the wedge front of the transducer and transom with epoxy material to eliminate any air spaces.



Transom mount transducer, mounting flush with hull





4.4 Inside-hull Transducer

The thru-hull mount transducer (520-5PSD, 520-5MSD) may also be installed inside the hull, following the procedure below.

Necessary tools

You will need the following tools:

- Sandpaper (#100)
- Silicone sealant
- Silicone grease

Remarks on installation

- Turn off the engine and anchor the boat while installing the equipment.
- Install the transducer in the engine room.
- Except for installing the transducer to the bottom of hull, do not turn on its power so it may be damaged.

Choosing the mounting location

- The mounting location should be where the hull is of single-hull thickness and is void of air or flotation materials other than solid fiberglass between the transducer face and the water.
- The mounting location is between 15 to 50 cm from the centerline of the hull.
- Do not place the transducer over hull struts or ribs which run under the hull.
- Avoid a location where the rising angle of the hull exceeds 15°, to minimize the effect of the boat's rolling.
- You will finalize the mounting location through some trial and error. The procedure for this is shown later.



Inside-hull transducer mounting location

Attaching the transducer

- Clean the transducer face to remove any foreign material. Lightly roughen the transducer face with #100 sandpaper. Also, roughen the inside of the hull where the transducer is to be mounted.
- 2. Clean the transducer face again to remove scourings.
- 3. Warm the silicone sealant to 40°C before usage to soften it. Coat the transducer face and mounting location with silicone sealant.



Coating transducer face with silicone sealant

4. Press the transducer firmly down on the hull and gently twist it back and forth to remove any air which may be trapped in the silicone sealant.



Checking the installation

- 1. Connect the battery to the display unit.
- 2. Turn on the display unit.
- 3. Rotate the **MODE** knob to choose single frequency (**LF:** 50 kHz or **HF:** 200 kHz).
- 4. Press the **GAIN** knob to open the Auto Gain setting window.
- 5. Press the **GAIN** knob to choose Off and press the **ENTER** key.
- 6. Rotate the GAIN knob to set the gain to "5".
- 7. Press the **RANGE** key to open the Range setting window.
- 8. Use ► to choose Manual.
- 9. Press the **RANGE** key continuously to set the range to 10 meters (feet) and press the **ENTER** key.
- 10.If the bottom is displayed in reddish brown and the depth indication appears, the mounting location is suitable. Go to "Final preparation."
- 11.If the bottom is not displayed in reddish brown, the mounting location may be unsuitable. Do the following:
 - a)Press the **()/BRILL** key to turn off the power.

- b)Gently dismount the transducer with a knife or a piece of wood.
- c)Reattach the transducer elsewhere as shown in "Attaching the transducer."
- d)Check the installation again.

Final preparation

Support the transducer with a piece of wood to keep it in place while it is drying. Let the transducer dry 24-72 hours.

4.5 Triducer

DO NOT overtighten screws. They may be damaged.

525ST-MSD

The triducer 525ST-MSD is designed for thruhull mounting. For how to install this triducer see paragraph 4.2.



Triducer 525ST-MSD

525ST-PWD

The transom mount triducer with integral release bracket 525ST-PWD is manufactured by AIRMAR Co. These instructions are also included with the sensor.

Pre-test for speed and temperature

Connect the sensor to the instrument and spin the paddlewheel. Check for a speed reading and the approximate air temperature. If there is no reading, return the sensor to your place of purchase.

Tools and materials needed

Scissors Masking tape Safety goggles Dust mask Electric drill Drill bit for: Bracket holes: 4mm, #23, or 9/64" Fiberglass hull: chamfer bit (preferred), 6mm. or 1/4" Transom hole: 19mm or 3/4" (optional) Cable clamp holes: 3mm or 1/8" Screwdrivers Straight edge Marine sealant Pencil Zip-ties Water-based antifouling paint (mandatory in salt water).

Mounting location

To ensure the best performance, the sensor must be submerged in aeration-free and turbulence-free water. Mount the sensor close to the centerline of the boat. On slower heavier displacement hulls, positioning it farther from the centerline is acceptable.

Allow adequate space above the bracket for it to release and rotate the sensor upward.



Height required at mounting location

Note 1: Do not mount the sensor in an area of turbulence or bubbles: near water intake or discharge openings; behind strakes, struts, fittings, or hull irregularities; behind eroding paint (an indication of turbulence).

Note 2: Avoid mounting the sensor where the boat may be supported during trailering, launching, hauling, and storage.

Note 3: For single drive boat, mount on the starboard side at least 75 mm (3") beyond the swing radius of the propeller.



Mounting location on single drive boat

Note 4: For twin drive boat, mount between the drives.

Installation of bracket

- 1. Cut out the installation template (enclosed with transducer) along the dotted line.
- 2. At the selected location, position the template, so the arrow at the bottom is aligned with the bottom edge of the transom. Being sure the template is parallel to the waterline, tape it in place.





Warning: Always wear safety goggles and a dust mask.

 Using a 4 mm, #23, or 9/64" bit, drill three holes 22 mm (7/8") deep at the locations indicated. To prevent drilling too deeply, wrap masking tape around the bit 22 mm (7/8") from the point.

Fiberglass hull: Minimize surface cracking by chamfering the gelcoat. If a chamfer bit or countersink bit is not available, start drilling with a 6mm or 1/4" bit to a depth of 1 mm (1/16").

 If you know your transom angle, the bracket is designed for a standard 13° transom angle.

 $11^{\circ}\text{-}18^{\circ}$ angle: No shim is required. Skip to step 3 in "Adjusting".

Other angles: The shim is required. Skip to step 2 of "Adjusting".

If you do not know the transom angle, temporarily attach the bracket and sensor to the transom to determine if the plastic shim is needed.

 Using the three #10 x 1-1/4" self-tapping screws, temporarily screw the bracket to the hull. DO NOT tighten the screws completely at this time. Follow the step 1-4 in "Attaching the sensor to the bracket", before proceeding with "Adjusting".

<u>Adjusting</u>

 Using a straight edge, sight the underside of the sensor relative to the underside of the hull. The stern of the sensor should be 1-3 mm (1/16-1/8") below the bow of the sensor or parallel to the bottom of the hull.

Note: Do not position the bow of the sensor lower than the stern because aeration will occur.

To adjust the sensor's angle relative to the hull, use the tapered plastic shim provided. If the bracket has been temporarily fastened to the transom, remove it. Key the shim in place on the back of the bracket.
 2°-10° transom angle (stepped transom and jet boats): Position the shim with the tapered end down.

19°-22° transom angle (small aluminum and fiberglass boats): Position the shim with the tapered end up.



Sensor position and transom angle

- If the bracket has been temporarily fastened to the transom, remove it. Apply a marine sealant to the threads of the three #10 x 1-1/4" self tapping screws to prevent water seeping into the transom. Screw the bracket to the hull. Do not tighten the screws completely at this time.
- 4. Repeat step 1 to ensure that the angle of the sensor is correct.

Note: Do not position the sensor farther into the water than necessary to avoid increasing drag, spray, and water noise and reducing boat speed.

 Using the vertical adjustment space on the bracket slots, slide the sensor up or down to provide a projection of 3 mm (1/8"). Tighten the screws.



Vertical adjustment and cable routing

Attaching the sensor to the bracket

1. If the retaining cover near the top of the bracket is closed, open it by depressing the latch and rotating the cover downward.



Attaching the sensor to the bracket

- 2. Insert the sensor's pivot arms into the slots near the top of the bracket.
- 3. Maintain pressure until the pivot arms click into place.
- 4. Rotate the sensor downward until the bottom snaps into the bracket.
- 5. Close the retaining cover to prevent the accidental release of the sensor when the boat is underway.

Cable routing

Route the sensor cable over the transom, through a drain hole, or thorough a new hole drilled in the transom above the waterline.

Never cut the cable or remote the connector; this will void the warranty. Always wear safety goggles and a dust mask.

- If a hole must be drilled, choose a location well above the waterline. Check for obstructions such as trim tabs, pumps, or wiring inside the hull. Mark the location with a pencil. Drill a hole through the transom using a 19 mm or 3/4" bit (to accommodate the connector).
- 2. Route the cable over or through the transom.
- 3. On the outside of the hull secure the cable against the transom using the cable clamps. Position a cable clamp 50 mm (2") above the bracket and mark the mounting hole with a pencil.
- 4. Position the second cable clamp halfway between the first clamp and the cable hole. Mark this mounting hole.
- 5. If a hole has been drilled in the transom, open the appropriate slot in the transom cable cover. Position the cover over the cable where it enters the hull. Mark the two mounting holes.
- At each of the marked locations, use a 3 mm or 1/8" bit to drill a hole 10 mm (3/8") deep. The prevent drilling too deeply, wrap masking tape around the bit 10 mm (3/8") from the point.
- 7. Apply marine sealant to the threads of the #6 x 1/2" self-tapping screw to prevent water from seeping into the transom. If you have drilled a hole through the transom, apply marine sealant to the space around the cable where it passes through the transom.

- 8. Position the two cable clamps and fasten them in place. If used, push the cable cover over the cable and screw it in place.
- 9. Route the cable to the instrument being careful not to tear the cable jacket when passing it though the bulkhead(s) and other parts of the boat. To reduce electrical interference, separate the sensor cable from other electrical wiring and "noise" sources. Coil any excess cable and secure it in place with zip-ties to prevent damage.

4.6 Optional Water Temperature/Speed Sensor

Water temperature/speed sensor ST-02MSB and ST-02PSB, which are designed for thruhull mounting, are optionally available. Install them as shown below.

Mounting considerations

Choose a suitable mounting location considering the following:

- Choose a place free from vibration.
- Choose a mid-boat flat position. The sensor does not have to be installed perfectly perpendicular. The sensor must not be damaged in dry-docking operation.
- Choose a place apart from equipment generating heat.
- Choose a place in the forward direction viewing from the drain hole, to allow for circulation of cooling water.
- 1. Dry-dock the boat.
- 2. Make a hole of approx. 51 mm diameter in the mounting location.
- 3. Unfasten locknut and remove the sensor section.
- 4. Apply high-grade sealant to the flange of the sensor.
- 5. Pass the sensor casing through the hole.
- 6. Face the notch on the sensor toward boat's bow and tighten the flange.
- 7. Set the sensor section to the sensor casing and tighten the locknut.
- 8. Launch the boat and check for water leakage around the sensor.



Water temperature/speed sensor ST-02MSB, ST-02PSB

4.7 Optional Water Temperature Sensor

Transom mount water temperature sensor T-02MTB

- Fix the cable at a convenient location on the transom with the cable clamp.
- When the cable is led through the transom board, make a hole of approx. 17 mm in diameter to pass the connector. After passing the cable, seal the hole with a sealing compound.



How to mount transom mount water temperature sensor T-02MTB

Thru-hull mount water temperature sensor T-02MSB, T-03MSB

- Select a suitable mounting location considering the following points:
- Select a mid boat flat position. The sensor does not have to be installed perfectly perpendicular; however, the location should not be such that the transducer may be damaged when the boat is dry-docked.
- Locate away from equipment which gives off heat.
- Locate away from drain pipes.
- Select a location where vibration is minimal.

Procedure for mounting T-02MSB

- 1. Drill a hole of 21 mm in diameter in the mounting location.
- 2. Pass the sensor cable through the hole.
- 3. Pass gasket, washer and locknut onto cable in that order.
- Coat the sensor flange with high quality sealant and then fasten the sensor with the locknut. (Torque: max. 59N · m)
- 5. Launch the boat to check for water leakage around the sensor.



Mounting T-02MSB

Procedure for mounting T-03MSB

- 1. Drill a hole of 25 mm in diameter in the mounting location.
- 2. Coat holder guide with high quality sealant, and pass gasket, washer and locknut onto holder guide in that order and then tighten the locknut.

- 3. Set the sensor holder to the holder guide from inside the boat and then tighten the locknut.
- 4. Launch the boat to check for water leakage around the sensor.



Mounting T-03MSB

4.8 Wiring

Connect the power/data cable assy KON-004-02M (2 m, supplied) to the 12-24 VDC/ NMEA port, and the transducer cable to the XDR port. Refer to the interconnection diagram to connect cables. Leave slack in cables to facilitate checking and maintenance.

Note1: Attach the MJ cable cap (supplied) to the transducer cable to protect the connector when the display unit is removed.

Note2: Cut unused cores and tape them.

Note3: Connector of cable edge breaks easily. Be careful when connecting or disconnecting the connector.

Note4: The fuse holder contains a spring which fixes the fuse. To prevent detachment of the spring, which would cause loss of power, tie the line as shown on the next page.



How to fix fuse holders

Establishing the ground

The ground wire (1.25 sq or more, local supply) should be as short as possible. The signal line ground is isolated from the chassis ground, however the power line is not insulated. Therefore, when connecting eternal equipment having positive ground, do not ground the signal line to the chassis. If excessive noise shows on the screen, the ground may be inadequate. In this case, attach a steel plate measuring 20 cm by 30 cm on the outside of the hull to provide a ground point. Connect the ground wire there. Use a "closed" type lug (_____) to make the connection at the display unit. Do not use an "open" type lug (_____).

Optional equipment

Power connector

The power supply port is commonly used for connection of external equipment such as a GPS receiver or wind indicator. Refer to the interconnection diagram to connect cables.

Connector		Color	Remarks
1	TD-A	WHT	IEC61162-1/
2	TD-B	BLU	NMEA0183
3	RD-A	YEL	IEC61162-1/
4	RD-B	GRN	NMEA0183
5	TEMP-IN	BRN	Temperature
6	TEMP-IN-0V	ORG	analog input
7	DC-P-IN (+)	RED	Power input
8	DC-M-IN (-)	BLK	12-24 VDC
9	NC	-	
10	SHIELD	-	



Pin assignment (front view)

Water temp/speed sensor

Connect the optional water temp/speed sensor to the XDR port with the optional conversion cable (Type 02S4147) as shown below.



Connection of conversion cable 02S4147

Optional transducer

The optional matching box (Type: MB-1100, Code No.: 000-041-353) is required to connect the optional transducers 50B-6, 50B-6B, 200B-5S, 50/200-1T.



Matching box MB-1100, cover removed

Matching box MB-1100

Part	Туре	Code No.	Qty
Matching Box*	MB-1100	000-041-000	1
Crimp-on Lug	FV1.25-3, red	000-538-113	6
Cord Lock**	NC-1	000-516-650	1

*: With 10P connector cable

**: For connecting two transducers

Fabricating the transducer cable

Fabricate the transducer cable as below and connect it to the matching box.





How to fabricate the transducer cable

4.9 IEC 61162-1 Data Sentences

The table below shows the data sentences which can be input to and output from the FCV-620/585. The transmission speed for both input and output is 4,800 bps. Data is transducer cableoutput at two-second intervals.

Sentence	Meaning
BWC	Bearing and distance to waypoint.
GGA	Global positioning system (GPS) fix data.
GLL	Geographic position - latitude/lon- gitude.
HDG	Heading, deviation and variation.
HDT	Heading, true.
MDA	Atmospheric pressure.
MTW	Water temperature.

Input data sentences

Input data sentences (con't)

MWV	Wind speed and angle.
RMA	Recommended minimum specific LORAN-C data.
RMB	Recommended minimum naviga- tion information.
RMC	Recommended minimum specific GPS/TRANSIT data.
VHW	Water speed and heading.
VTG	Course over ground and ground speed.
XTE	Cross track error.

Order of priority

Latitude/Longitude: GGA>RMC>RMA>GLL Course (true): VTG>RMC>RMA Course (magnetic): VTG Ground speed: VTG>RMC>RMA Water speed: VHW Distance to waypoint: BWC>RMB Bearing to waypoint (true): BWC>RMB Bearing to waypoint (magnetic): BWC Heading (true): HDT>VHW Heading (magnetic): HDG>VHW Cross track error: XTE>RMB Atmospheric pressure: MDA Water temperature: MTW Wind speed and angle (true/apparent): MWV

Output data sentences

Sentence	Meaning
DBT (Ver. 1.5)	Depth below transducer
DPT (Ver. 2.0, Ver. 3.0)	Depth
MTW*	Water temperature
VHW*	Water speed and heading
TLL*	Target position, output by MARK key.

*= Available with connection of optional sensors/navaid

4.10 Adjustments after Installation

<u>NMEA</u>

- 1. Press the **MENU/ESC** key to open the menu.
- Use ▲ or ▼ to choose NMEA under System menu and press the ENTER key.

NM	1EA
NMEA0183	: Ver 2.0
NMEA Port	: In/Out
NMEA Output	: Off
WAAS Setup	: Off
TLL Output	: TLL
Port Monitor	
▲ / ▼ / ◀ / ► : [ENTER] : [MENU] :	Select Enter Back

NMEA menu

NMEA0183

Choose NMEA0183 version of nav equipment connected to "12-24 VDC/NMEA" port among Ver 1.5, Ver 2.0 or Ver 3.0.

NMEA Port

The NMEA terminals in the "12-24 VDC/ NMEA" port can function as input ports or input/output port. Change the setting to "In/In" when connecting GP-310B/320B and a wind sensor.

When connecting the GP-320B and a wind sensor, first turn on "WAAS Setup" and then select "In/In" as the NMEA Port setting.

In/Out: Input and Output (default setting) **In/In:** Input only (Available with connection of the GP-310B/320B and a wind sensor.)

NMEA Output

Set the output data sentences (see the left-table).

Off: Outputs the "output data sentences" of FCV-620/585 only.

On: Outputs the "output data sentences" of FCV-620/585 and sentences which are input from other equipment.

WAAS Setup

Choose how to use the WAAS signal when connecting with a WAAS receiver, for example GP-320B. The message types (WAAS-00 to WAAS-27) are used as WAAS correction. Choose WAAS-00 to enable WAAS. **Note:** This function is available only when In/ Out is selected at NMEA Port.

TLL Output

Output the position specified by **MARK** key to the plotter connected.

Off: Does not output latitude/longitude. TLL: Outputs latitude/longitude. FURUNO-TLL: Outputs latitude/longitude, depth and water temperature. Required FURUNO-TLL enabled device.

Port Monitor

Port Monitor provides information for the data sentences input to the 12-24 VDC/NMEA port.



Press the **ENTER** key to display the latest data sentence information. To display this information on the Port 2 screen when two sensors are connected, set NMEA Port on the NMEA menu to In/In.

Transducer (FCV-585 only)

Choose transducer type among 600 W, 1 kW and 50/200-1T on the Sounder menu.



Transducer setting box

600 W: For 600 W transducer **50/200-1T:** For 1 kW transducer (50B-6, 50B-6B, 200B-5S or 50/200-1T)

1 kW: For 1 kW transducer other than those mentioned above

MENU TREE

		Bold: Default
MENU key	Sounder	– Pic. Advance (4/1, 2/1, 1/1 , 1/2, 1/4, 1/8, 1/16, Stop)
	F	- Zoom Mode (<i>Bottom Lock</i> , Bottom Zoom, Marker Zoom)
		- Shift (0 - 2500 ft, 0 ft)
		- Bottom Zone
	Γ	- Interference (Off, Low, Medium, High, <i>Auto</i>)
	Γ	- Color Erase (0 - 50 %, 0 %)
	Γ	- Clutter (0 - 100 %, 0 %)
		- White Line (0 - 50 %, 0 %)
		- White Marker
		- NG (LOW, Medium , High) - Smoothing (Off. On)
		- TX Power (Auto 10 - 100 %)
		- TX Rate (1 - 10 S)
	L	- Transducer* (600 W 1 kW 50/200-1T) * FCV-585 only
-	· Display —	- A-Scope (<i>Off</i> , Normal, Peak)
	-	 Depth Size (Small, Medium, <i>Large</i>)
	F	[–] Zoom Marker (<i>Off</i> , On)
	F	 Temp Graph (<i>Off</i>, Narrow, Wide)
	F	- Window Size
		Battery (Off , On)
		Color Bar (Off, On)
	Γ	- Palette (<i>White</i> , Blue, Black, Gray, Night)
	Γ	- Colors (8, 16, 64)
		- Header Into (Off, On)
		New Date $2(\Box \Box \Box)$
		- Nav Dalaz (\Box , \boxminus , \blacksquare)
		- Fish Symbols (Off. Solid. Striped)
		rish Symbols (On, Solid, Stilped)
_	Alarm —	- Bottom (Off , On)
		– From (0 - 2500 ft, 0 ft)
	-	- Span (1 - 2500 ft, <i>10 ft</i>)
	-	- Fish (Normal) (<i>Off</i> , On)
	-	- From (0 - 2500 ft, 0 ft)
	-	- Span (1 - 2500 ft, 10 ft)
		– Fish (B/L) (<i>Off</i> , On)
		– From (0.0 - 30.0 ft, 0.0 ft)
	F	− Span (0.1 - 30.0 ft, <i>1.0 ft</i>)
	F	- Fish Level (Weak, <i>Medium</i> , Strong)
	F	- Temperature (<i>Off</i> , Inside, Outside)
	F	- From (20.0 - 110.0 °F, 65.0 ° F)
	F	- Span (U.1 - 30.0 °F, 1.0 °F)
	Г	- Speed (\mathcal{O} <i>I</i> , Inside, Outside)
		- FIOH (U.U - 99.U KI, U.U KI) - Span (1.0. 50.0 kt 1.0 kt)
		- Arrival (Off Inside, Outside)
		- Radius (0.01 - 99.99 nm 0.01 nm)
(1)		



SPECIFICATIONS OF ECHO SOUNDER FCV-620/585

1. GENERAL

1.1	TX frequency	50 kHz and 200 kHz
1.2	Transmit method	Single or dual frequency transmitting
1.3	Output power	
	FCV-620	600 W
	FCV-585	600 W or 1 kW selectable
1.4	TX rate	Max. 3,000 pulse/min
1.5	Pulse-length	0.04 to 3.0 ms
1.6	Sensitivity	10 dBμV

2. DISPLAY UNIT

2.1	Display system	
	FCV-620	5.6-inch color LCD, 84.7 mm (W) x 113.3 mm (H), 234 x 320 dots
	FCV-585	8.4-inch color LCD, 128 mm (W) x 171 mm (H), 480 x 640 dots
2.2	Display mode	Single frequency (high or low freq.), Dual frequency,
		Zoom (high or low freq.), Nav data 1/2, A-Scope

2.3 Expansion mode

2.4 Basic range

Linit				Basic	range				Sotting range
Unit	1	2	3	4	5	6	7	8	Setting range
m	5	10	20	40	80	150	200	300	2 to 800
ft	15	30	60	120	200	400	600	1,000	7 to 2,500
fa	3	5	10	20	40	80	100	150	2 to 400
pb	3	5	10	20	50	100	150	200	2 to 450
HR*	4	8	15	30	50	100	150	200	2 to 500

Bottom lock, Bottom zoom, Marker zoom

*: Japanese unit of depth measurement

2.5	Range shift	0 to 800 m, 0 to 2,500 ft, 0 to 400 fa, 0 to 450 pb, 0 to 500 HR
2.6	Zoom range	Bottom lock expansion: 3 to 10 m, 10 to 30 ft
		Bottom and marker zoom: 2 to 800 m, 7 to 2,500 ft
2.7	Display advance speed	8 steps (Lines/TX; 4/1, 2/1, 1/1, 1/2, 1/4, 1/8, 1/16, Freeze)
2.8	Function settings	Picture advance, Shift, Interference, Clutter, Color erase,
		White Line, White marker, WPT List, Bottom zone
2.9	Display color	Echo color: 8, 16 or 64 colors according to echo intensity
		Background color: White, blue, black, gray or night

3. INTERFACE

3.1	Input data sentences	IEC61162-1 (NMEA0183 Ver 1.5/2.0/3.0)
	<u>Data</u>	Sentence (priority)
	Latitude/Longitude:	GGA>RMC>RMA>GLL
	Course (true):	VTG>RMC>RMA
	Course (magnetic):	VTG



	Ground speed:	VTG>RMC>RMA
	Water speed:	VHW
	Distance to waypoint:	BWC>RMB
	Bearing to waypoint (true	e): BWC>RMB
	Bearing to waypoint (ma	ignetic): BWC
	Heading (true):	HDT>VHW
	Heading (magnetic):	HDG>VHW
	Cross track error:	XTE>RMB
	Atmospheric pressure:	MDA
	Water temperature:	MTW
	Wind speed and angle (true/apparent): MWV
3.2	Output data sentences	IEC61162-1 (NMEA0183 Ver 1.5/2.0/3.0), interval: 2 s
		DBT, DPT, MTW*, VHW*, TLL* by key operation
		*: External data required

4. POWER SUPPLY

4.1	FCV-620	12-24 VDC: 0.8-0.4 A
4.2	FCV-585	12-24 VDC: 1.0-0.5 A

5. ENVIRONMENTAL CONDITION

- 5.1 Ambient temperature -15 °C to +50 °C
- 5.2 Relative humidity 93 % or less at +40 °C
- 5.3 Degree of protection IP55
- 5.4 Vibration IEC 60945 Ed.4

6. UNIT COLOR

6.1 Display unit Chassis: N2.5, Bracket: N1.75 (fixed)











FURUNO ELECTRIC CO., LTD.



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FURUNO Worldwide Warranty for Pleasure Boats (Except North America)

This warranty is valid for products manufactured by Furuno Electric Co. (hereafter FURUNO) and installed on a pleasure boat. Any web based purchases that are imported into other countries by anyone other than a FURUNO certified dealer may not comply with local standards. FURUNO strongly recommends against importing these products from international websites as the imported product may not work correctly and may interfere with other electronic devices. The imported product may also be in breach of the local laws and mandated technical requirements. Products imported into other countries as described previously shall not be eligible for local warranty service.

For products purchased outside of your country please contact the national distributor of Furuno products in the country where purchased.

This warranty is in addition to the customer's statutory legal rights.

1. Terms and Conditions of Warranty

FURUNO guarantees that each new FURUNO product is the result of quality materials and workmanship. The warranty is valid for a period of 2 years (24 months) from the date of the invoice, or the date of commissioning of the product by the installing certified dealer.

2. FURUNO Standard Warranty

The FURUNO standard warranty covers spare parts and labour costs associated with a warranty claim, provided that the product is returned to a FURUNO national distributor by prepaid carrier.

The FURUNO standard warranty includes:

- Repair at a FURUNO national distributor
- All spare parts for the repair
- Cost for economical shipment to customer

3. FURUNO Onboard Warranty

If the product was installed/commissioned and registered by a certified FURUNO dealer, the customer has the right to the onboard warranty.

The FURUNO onboard warranty includes

- Free shipping of the necessary parts
- Labour: Normal working hours only
- Travel time: Up to a maximum of two (2) hours
- Travel distance: Up to a maximum of one hundred and sixty (160) KM by car for the complete journey

4. Warranty Registration

For the Standard Warranty - presentation of product with serial number (8 digits serial number, 1234-5678) is sufficient. Otherwise, the invoice with serial number, name and stamp of the dealer and date of purchase is shown.

For the Onboard Warranty your FURUNO certified dealer will take care of all registrations.

5. Warranty Claims

For the Standard Warranty - simply send the defective product together with the invoice to a FURUNO national distributor. For the Onboard Warranty – contact a FURUNO national distributor or a certified dealer. Give the product's serial number and describe the problem as accurately as possible.

Warranty repairs carried out by companies/persons other than a FURUNO national distributor or a certified dealer is not covered by this warranty.

6. Warranty Limitations

When a claim is made, FURUNO has a right to choose whether to repair the product or replace it.

The FURUNO warranty is only valid if the product was correctly installed and used. Therefore, it is necessary for the customer to comply with the instructions in the handbook. Problems which result from not complying with the instruction manual are not covered by the warranty.

FURUNO is not liable for any damage caused to the vessel by using a FURUNO product.

The following are excluded from this warranty:

- a. Second-hand product
- b. Underwater unit such as transducer and hull unit
- c. Routine maintenance, alignment and calibration services.
- d. Replacement of consumable parts such as fuses, lamps, recording papers, drive belts, cables, protective covers and batteries.
- d. Magnetron and MIC with more than 1000 transmitting hours or older than 12 months, whichever comes first.
- e. Costs associated with the replacement of a transducer (e.g. Crane, docking or diver etc.).
- f. Sea trial, test and evaluation or other demonstrations.
- g. Products repaired or altered by anyone other than the FURUNO national distributor or an authorized dealer.
- h. Products on which the serial number is altered, defaced or removed.
- i. Problems resulting from an accident, negligence, misuse, improper installation, vandalism or water penetration.
- j. Damage resulting from a force majeure or other natural catastrophe or calamity.
- k. Damage from shipping or transit.
- I. Software updates, except when deemed necessary and warrantable by FURUNO.
- m. Overtime, extra labour outside of normal hours such as weekend/holiday, and travel costs above the 160 KM allowance
- n. Operator familiarization and orientation.

FURUNO Electric Company, March 1, 2011

FURUNO Warranty for North America

FURUNO U.S.A., Limited Warranty provides a twenty-four (24) months LABOR and twenty-four (24) months PARTS warranty on products from the date of installation or purchase by the original owner. Products or components that are represented as being waterproof are guaranteed to be waterproof only for, and within the limits, of the warranty period stated above. The warranty start date may not exceed eighteen (18) months from the original date of purchase by dealer from Furuno USA and applies to new equipment installed and operated in accordance with Furuno USA's published instructions.

Magnetrons and Microwave devices will be warranted for a period of 12 months from date of original equipment installation.

Furuno U.S.A., Inc. warrants each new product to be of sound material and workmanship and through its authorized dealer will exchange any parts proven to be defective in material or workmanship under normal use at no charge for a period of 24 months from the date of installation or purchase.

Furuno U.S.A., Inc., through an authorized Furuno dealer will provide labor at no cost to replace defective parts, exclusive of routine maintenance or normal adjustments, for a period of 24 months from installation date provided the work is done by Furuno U.S.A., Inc. or an AUTHORIZED Furuno dealer during normal shop hours and within a radius of 50 miles of the shop location.

A suitable proof of purchase showing date of purchase, or installation certification must be available to Furuno U.S.A., Inc., or its authorized dealer at the time of request for warranty service.

This warranty is valid for installation of products manufactured by Furuno Electric Co. (hereafter FURUNO). Any purchases from brick and mortar or web-based resellers that are imported into other countries by anyone other than a FURUNO certified dealer, agent or subsidiary may not comply with local standards. FURUNO strongly recommends against importing these products from international websites or other resellers, as the imported product may not work correctly and may interfere with other electronic devices. The imported product may also be in breach of the local laws and mandated technical requirements. Products imported into other countries, as described previously, shall not be eligible for local warranty service.

For products purchased outside of your country please contact the national distributor of Furuno products in the country where purchased.

WARRANTY REGISTRATION AND INFORMATION

To register your product for warranty, as well as see the complete warranty guidelines and limitations, please visit <u>www.furunousa.com</u> and click on "Support". In order to expedite repairs, warranty service on Furuno equipment is provided through its authorized dealer network. If this is not possible or practical, please contact Furuno U.S.A., Inc. to arrange warranty service.

FURUNO U.S.A., INC. Attention: Service Coordinator 4400 N.W. Pacific Rim Boulevard Camas, WA 98607-9408 Telephone: (360) 834-9300 FAX: (360) 834-9400

Furuno U.S.A., Inc. is proud to supply you with the highest quality in Marine Electronics. We know you had several choices when making your selection of equipment, and from everyone at Furuno we thank you. Furuno takes great pride in customer service.



FURUNO ELECTRIC CO., LTD.

9-52 Ashihara-Cho, Nishinomiya City, 662-8580, Hyogo, Japan Tel: +81 798-65-2111 Fax: +81 798-65-4200

			Pub NO. DOC-850
	EC Declara	tion of Conformity	· CF
We	FURUNO ELEC	TRIC CO., LTD.	~ ~
		(Manufacturer)	
9-52 Ashi	hara-Cho. Nishinomiva Ci	tv. 662-8580. Hvogo. Japan	
		(Address)	
declare un	nder our sole responsibility	/ that the product	
Color vid	leo sounder Type FCV-62 and Spee	20 consisting of Display unit FCV-	620, Transducer 520-5PSD
		(Model name, serial number)	
to which thi document(s	is declaration relates is in c s)	conformity with the following stanc	lard(s) or other normative
EN 60945:	1997-01 (IEC 60945 Third	d edition: 1996-11) – Clauses 9.2, 10.6, 10.7, 10	9.3, 10.2, 10.3, 10.4, 10.5, 0.8 and 10.9
IEC 60945	Fourth edition: 2002-08 -	Clauses 9.2, 9.3, 10.3, 10.4, 10.5	, 10.6, 10.7, 10.8 and 10.9
	(title and/or number and da	te of issue of the standard(s) or other normative	document(s))
For assess	ment, see		
• EMC Te Co., Ltd.	st Report FLI 12-05-044 c	f 19 October 2005 prepared by F	Furuno Labotech Internationa
This declara the laws of	ation is issued according to the Member States relatin	o the Council Directive of 3 May 1 ng to electromagnetic compatibility	989 on the approximation of (89/336/EEC).
		On behalf of Furuno Electr	ic Co., Ltd.
		A for	AM
		tonote	and the second
Nishinomiy October 20	a City, Japan), 2005	Hiroaki Komatsu Manager, International Rules and Re	gulations

FURUNO ELECTRIC CO., LTD. 9-52 Ashihara-cho, Nishinomiya, 662-8580, Japan Tel: +81 (798) 65-2111 Fax: +81 (798) 65-4200 www.furuno.co.jp Publication No. DOCQA0227 **EC Declaration of Conformity** We FURUNO ELECTRIC CO., LTD. (Manufacturer) 9-52 Ashihara-Cho, Nishinomiya City, 662-8580, Hyogo, Japan (Address) declare under our sole responsibility that the product COLOR LCD SOUNDER FCV-585 (Model name, type number) to which this declaration relates is in conformity with the following standard(s) or other normative document(s) IEC 60945: Ed.4.0: 2002, clauses 9.2,9.3,10.3,10.4,10.5,10.8 and 10.9 IEC 60945: Ed.3.0: 1996, clauses 10.2 and 10.3 (title and/or number and date of issue of the standard(s) or other normative document(s)) For assessment, see EMC Test Report FLI 12-05-053, November 14, 2005 prepared by Furuno Labotech International Co., Ltd. This declaration is issued according to the Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC. On behalf of Furuno Electric Co., Ltd. Takahiko Kusuda Nishinomiya City, Japan Manager, ØMS Secretariat May 20, 2011 Quality Assurance Department

(Place and date of issue)

(name and signature or equivalent marking of authorized person)