

FURUNO

OPERATOR'S MANUAL

Marine Display

Model **MU-152HD**

- ・ 機器の修理・使用方法等に関するお問い合わせは、お買い上げの販売店・代理店、最寄りの当社支店・営業所あてへお願いします。

FURUNO ELECTRIC CO., LTD.
古野電気株式会社

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(TEHI) MU-152HD

・ FURUNO Authorized Distributor/Dealer お問い合わせは

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00019975310

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 instructions in this manual. Wrong operation or maintenance can void 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 the 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 void the warranty.
- The following concern acts as our importer in Europe, as defined in DECISION No 768/2008/EC.
 - Name: FURUNO EUROPE B.V.
 - Address: Siriusstraat 86, 5015 BT, Tilburg, The Netherlands
- The following concern acts as our importer in UK, as defined in SI 2016/1025 as amended SI 2019/470.
 - Name: FURUNO (UK) LTD.
 - Address: West Building Penner Road Havant Hampshire PO9 1QY, U.K.
- All brand, product names, trademarks, registered trademarks, and service marks belong to their respective holders.

How to discard this product

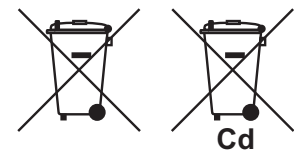
Discard this product according to local regulations for the disposal of industrial waste. For disposal in the USA, see the homepage of the Electronics Industries Alliance (<http://www.eiae.org/>) for the correct method of disposal.

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. If a battery is used, tape the + and - terminals of the battery before disposal to prevent fire, heat generation caused by short circuit.

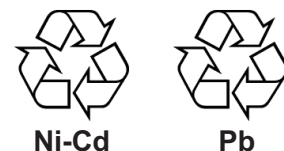
In the European Union

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




Read these safety instructions before you operate the equipment.




 WARNING	Indicates a condition that can cause death or serious injury if not avoided.
 CAUTION	Indicates a condition that can cause minor or moderate injury if not avoided.

 Warning, Caution	 Prohibitive Action	 Mandatory Action
--	--	---




Safety Instructions for the Operator




 WARNING	
	Immediately turn off the power at the switchboard if water leaks into the equipment or something is dropped into the equipment. Continued use of the equipment can cause fire or electrical shock. Contact a FURUNO agent for service.
	Immediately turn off the power at the switchboard if the equipment is emitting smoke or fire. Continued use of the equipment can cause fire or electrical shock. Contact a FURUNO agent for service.
	Do not disassemble or modify the equipment. Fire, electrical shock or serious injury can result.
	Turn off the power immediately if you feel the equipment is behaving abnormally. Turn off the power at the switchboard if the equipment becomes abnormally warm or is emitting odd noises. Contact a FURUNO dealer or agent for advice.

 WARNING	
	Use the proper fuse. Fuse rating is shown on the power cable. Use of a wrong fuse can result in damage to the equipment.
	Do not place any object near the exhaust or intake vent. Fire may result.

 CAUTION	
	Do not connect/disconnect the signal cable while turning the power on. The unit may be damaged.
	Handle the LCD monitor with care. The face of the LCD monitor is made of glass. Injury may result if the glass breaks.

Safety Instructions for the Installer

 WARNING	
	<p>Turn off the power at the switchboard before beginning the installation.</p> <p>Fire or electrical shock can result if the power is left on.</p>
	<p>Do not install the equipment where it may get wet from rain or water splash.</p> <p>Water in the equipment can result in fire, electrical shock or damage to the equipment.</p>

 CAUTION		
	<p>Observe the following compass safe distances to prevent interference to a magnetic compass:</p>	
	Standard compass	Steering compass
MU-152HD	0.60 m	0.35 m
	<p>When lifting the display unit, hold it together with the hard cover.</p> <p>Grasping by the hard cover alone may allow the display unit to fall, resulting in possible bodily injury or damage to the equipment.</p>	

About the TFT LCD

The TFT LCD is constructed using the latest LCD techniques, and displays 99.99% of its pixels. The remaining 0.01% of the pixels may drop out or blink, however this is not an indication of malfunction.

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FOREWORD

A Word to the Owner of the MU-152HD

FURUNO Electric Company thanks you for purchasing the MU-152HD 15" Marine Display. We are confident you will discover why the FURUNO name has become synonymous with quality and reliability.

Since 1948, FURUNO Electric Company has enjoyed an enviable reputation for quality and reliability throughout the world. This dedication to excellence is furthered by our extensive global network of agents and dealers.

Your equipment is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless properly installed and maintained. Please carefully read and follow the operation, installation and maintenance procedures set forth in this manual.

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

Thank you for considering and purchasing FURUNO.

Features

The main features of the MU-152HD are as shown below.

- Selectable screen from RGB (1 line), DVI-D (1 line), HDMI (1 line) or Composite (1 line).
- Main or remote display for radars, video sounders, sonars, plotter. For the connectable equipments, see "Connectable equipment" on page vi.
- High resolution display of 1024 x 768 (XGA)
- Brightness of 1000 cd/m² (maximum) and 0.3 cd/m² or less (minimum) for comfortable viewing day and night.
- Picture-in-picture function
- Power on/off automatically through the DVI/HDMI signal.

Program Number

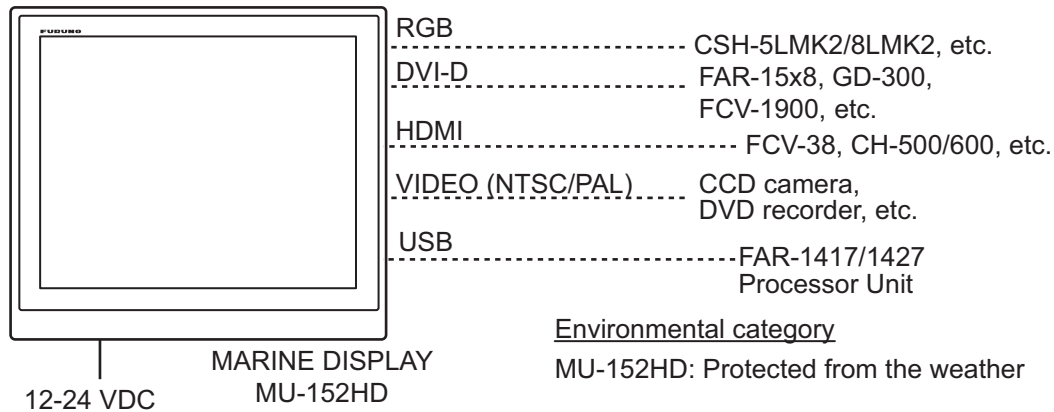
Program Name	Version	Date of Modification
Main	1.xx	Jan. 2023

xx: minor change

CE/UKCA declaration

With regards to CE/UKCA declarations, please refer to our website (www.furuno.com), for further information on RoHS conformity declarations.

SYSTEM CONFIGURATION



Connectable equipment

Equipment	Resolution	Signal
CSH-5L/8LMK2	XGA	RGB
CH-500/600	XGA	HDMI
FCV-38	XGA/SXGA	HDMI
FCV-2100	XGA/SXGA	DVI
FCV-1900	XGA/SXGA	DVI
CI-38/68/88 BB	VGA	RGB
GD-300	XGA	DVI
GD-700	XGA/SXGA	DVI
FAR-14x7	XGA/SXGA	DVI
FAR-15X3/15X8	XGA	DVI
FAR-2xx8	SXGA	DVI
FSV-25/25S MARK-2	SXGA	DVI
FSV-75	SXGA	HDMI

Note 1: This equipment is used as a display for a Non-SOLAS radar or ECDIS.

Note 2: Landscape orientation only.

Note 3: When inputting SXGA, a circle may be displayed as an ellipse because the aspect ratio differs. See "DISP MODE*" on page 19. Also, it may be difficult to read small characters.

EQUIPMENT LISTS

Standard supply

Name	Type	Code No.	Qty	Remarks
Marine Display	MU-152HD-A	–	1	w/ Hard cover
Spare Parts	SP26-01001	001-621-760	1 set	
Cable Assy.	MJ-A3SPF0017A-050ZC	000-175-421-10	1	
Flush Mount Fixture 15	CP26-02601	001-621-770	1 set	
Installation Materials	CP26-02602	001-621-780	1 set	

Optional supply

Name	Type	Code No.	Qty	Remarks
Cable Assembly	3COX-2P-6C 5M	001-077-230-10	1	Cable length: 5 m (15 pin D-sub connector at both ends)
	3COX-2P-6C 10M	001-077-220-10	1	Cable length: 10 m (15 pin D-sub connector at both ends)
	DVI-D/D S-LINK 5M	001-132-960-10	1	Cable length: 5 m (with DVI-D connector at both ends)
	DVI-D/D S-LINK 10M	001-133-980-10	1	Cable length: 10 m (with DVI-D connector at both ends)
Bracket Assembly	JE07002-B003	001-634-610	1 set	
Hood Assembly	JE07002-B005	001-634-630	1 set	
Front Fixed Flush Mount Kit	JE07002-B022	001-634-650	1 set	
LCD Retrofit Kit	JE07002-B020	001-634-670	1 set	
Rear Fixed Flush Mount Kit	JE07002-B024	001-641-210	1 set	

1. MOUNTING, WIRING

1.1 Preparation

Mounting type

The display unit can be installed in the following methods. See the outline drawing at the back of this manual for mounting dimensions.

- Flush mounting, fixed at rear (standard)
- Flush mounting, fixed at front (option)
- Flush mounting, fixed at rear, with hood (option)
- Desktop mounting (option)
- Flush mounting a series side by side, fixed at rear

Note: The face of the LCD monitor is made of glass. Handle it with care.



Mounting location

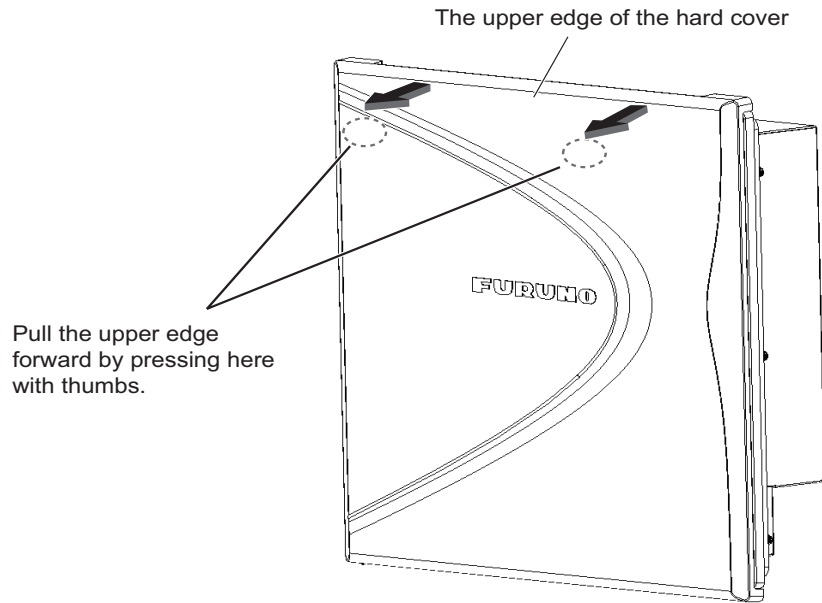
When selecting a mounting location, remember the following points:

- Make sure the mounting location is strong enough to support the weight of the unit.
- Locate the unit away from direct sunlight. An LCD may black out if it is exposed to direct sunlight for a long time.
- Select a location where the display can be easily viewed and the controls can be easily operated.
- Leave enough space around the unit for service and maintenance. See the outline drawing at the back of this manual for minimum service clearance.
- Locate the unit away from areas subject to water splash and rain.
- Observe the compass safe distances (see page iii) to prevent interference to a magnetic compass.

How to remove/attach the hard cover

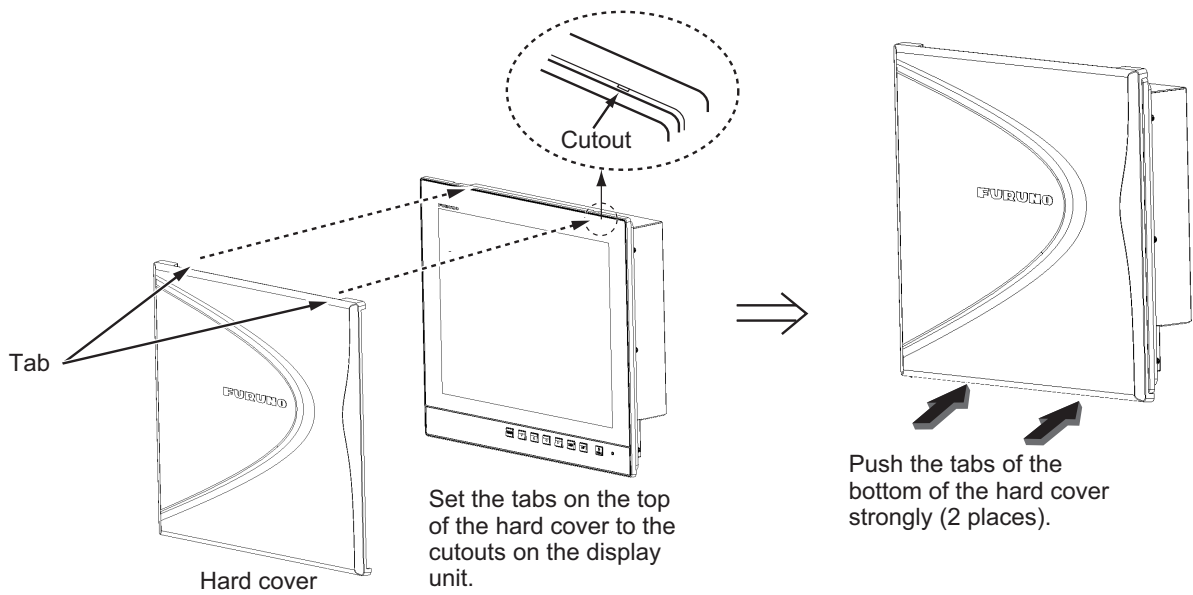
Before you install this display unit, remove the hard cover as follows.

 CAUTION	
	When lifting the display unit, hold it together with the hard cover.
Grasping by the hard cover alone may allow the display unit to fall, resulting in possible bodily injury or damage to the equipment.	



How to remove the hard cover

To attach the hard cover, follow the illustration in the figure below.



How to attach the hard cover

Cable connecting

Before you install the display unit, connect all the cables. See the interconnection diagram at the back of this manual.

1. MOUNTING, WIRING

1.2 Flush Mounting, Fixed at Rear

This is the standard installation method.

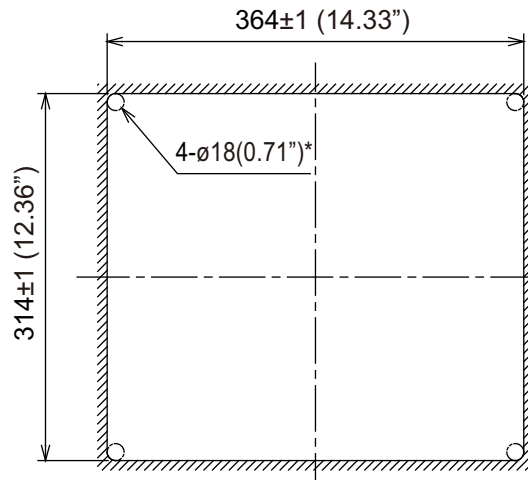
Flush Mount Fixture 15 CP26-02601 (code no. 001-621-770)

Name	Type	Code No.	Qty	Remarks
IM List	JE07002-Y533	000-199-746-10	1	
Mount metal 15	JE07002-Y528	000-199-988-10	2	
Butterfly bolt	JE82001-0013	000-199-986-10	6	
Butterfly nut	JE82001-0014	000-199-987-10	6	
Protector for screw	26-005-2125-0	100-354-800-10	6	
Washer head screw	J6-SW3N4-10200	000-199-677-10	12	
Attachment 15	JE07002-Y527	000-199-683-10	2	

Installation Materials CP26-02602 (code no. 001-621-780)

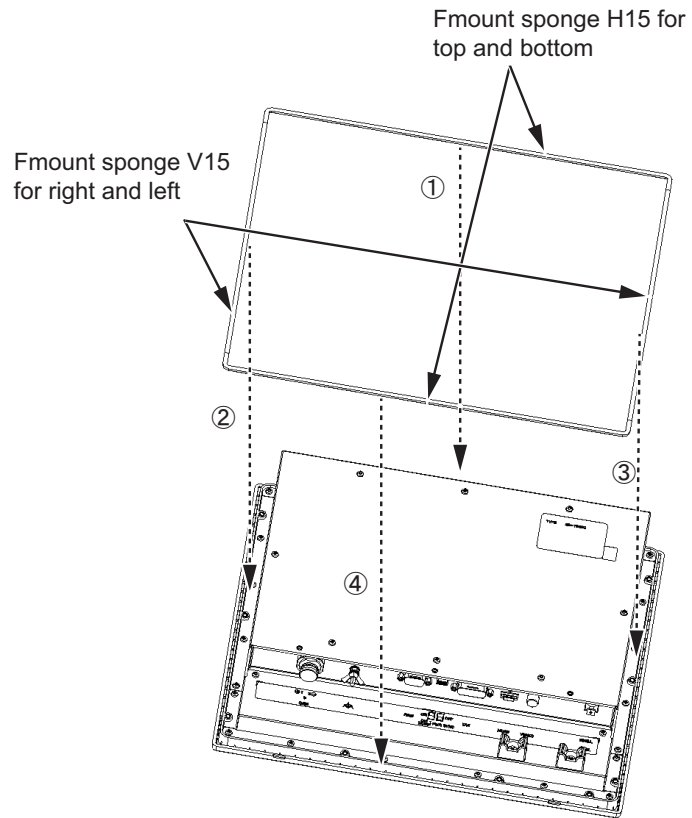
Name	Type	Code No.	Qty	Remarks
IM List	JE07002-Y946	000-199-747-10	1	
Fmount sponge H15	JE07002-Y543	000-199-684-10	2	
Fmount sponge V15	JE07002-Y544	2		

1. Make a cutout in the mounting location with the "Flush mounting template" (included).

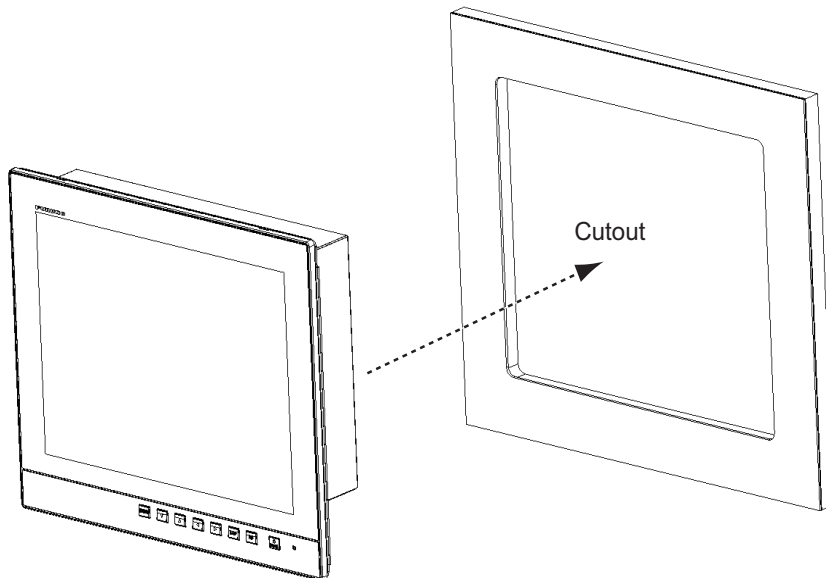


*: The drill bit with a diameter of 18 mm or less can also be used.

2. Attach the flush mounting sponges H15 and V15 in the order shown in the figure below.

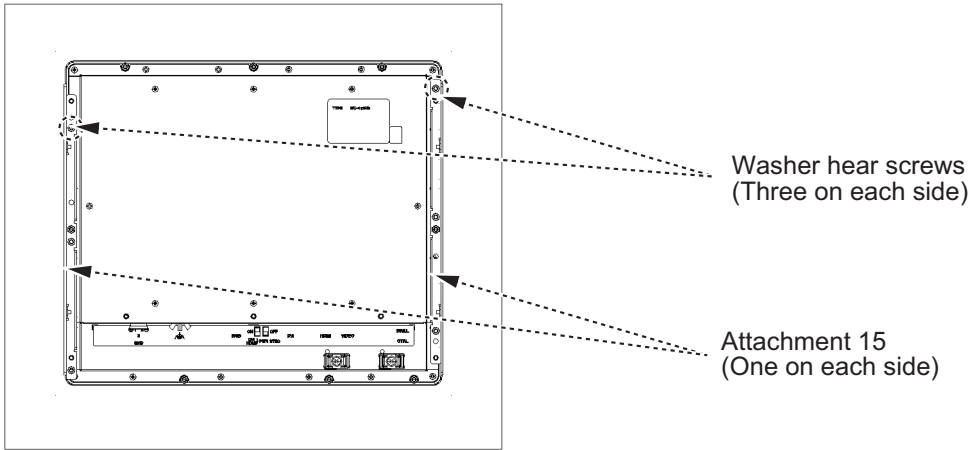


3. Connect all cables at the back of the display unit. See section 1.7.
4. Set the display unit to the cutout.

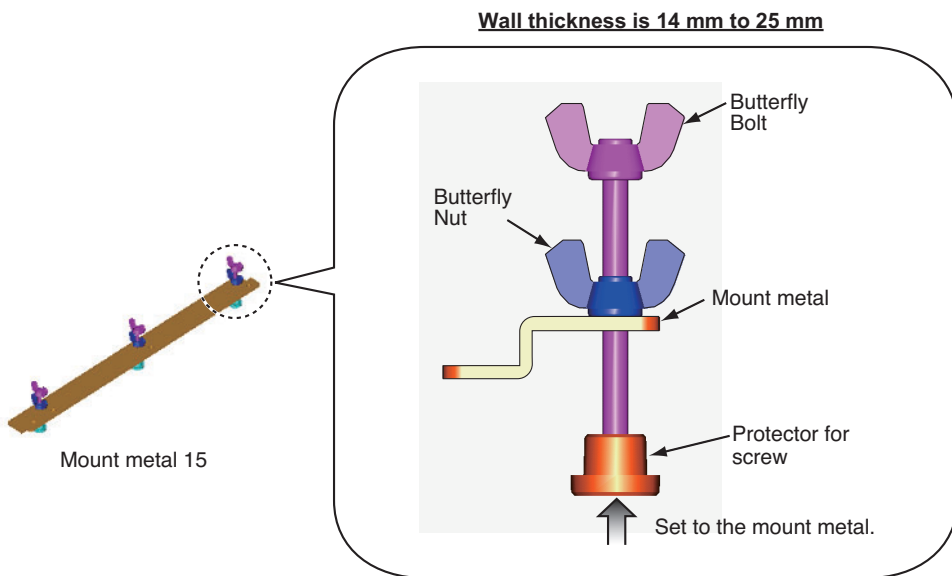
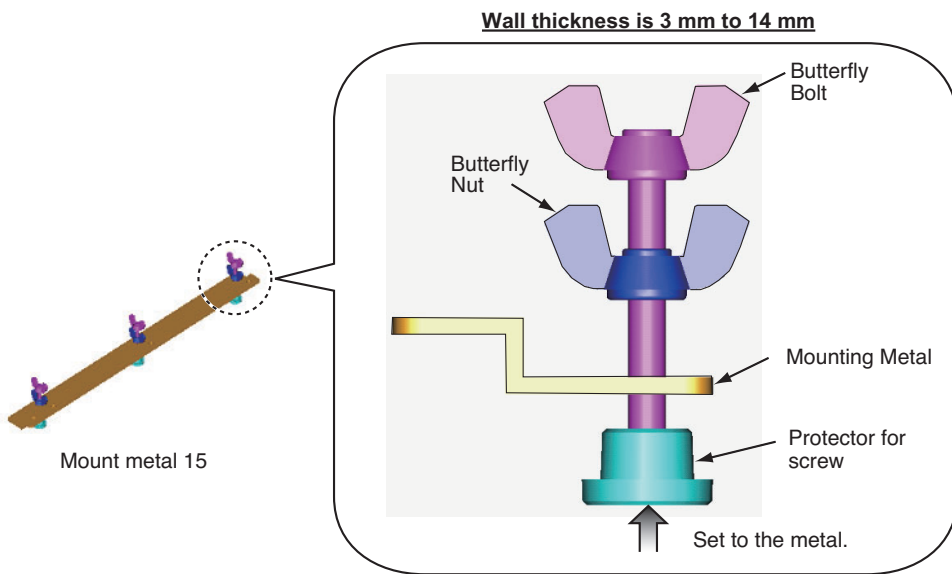


1. MOUNTING, WIRING

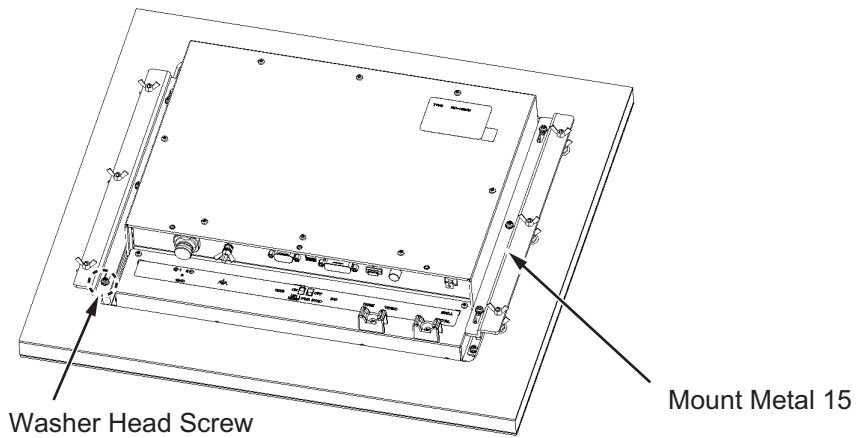
5. Attach the attachment 15 to the left and right sides of the back of the display unit with the supplied washer head screws.



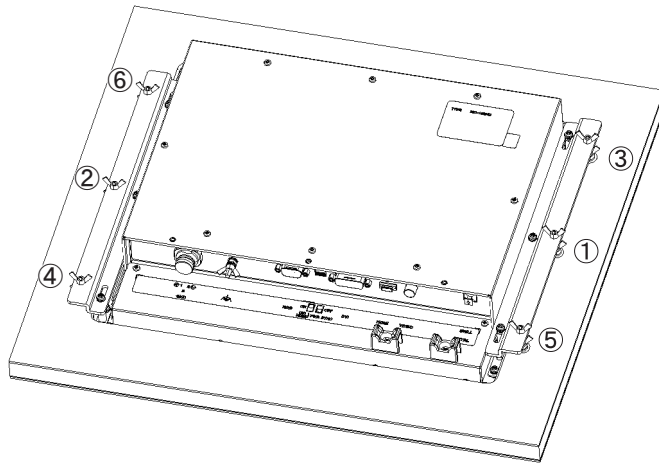
6. Screw the butterfly bolts and the butterfly nuts of the mount metal 15 so that the protector moves to the mount metal.



7. Fasten the mount metal 15 to the right and left sides of the rear of the display unit with the washer head screws (6 places).

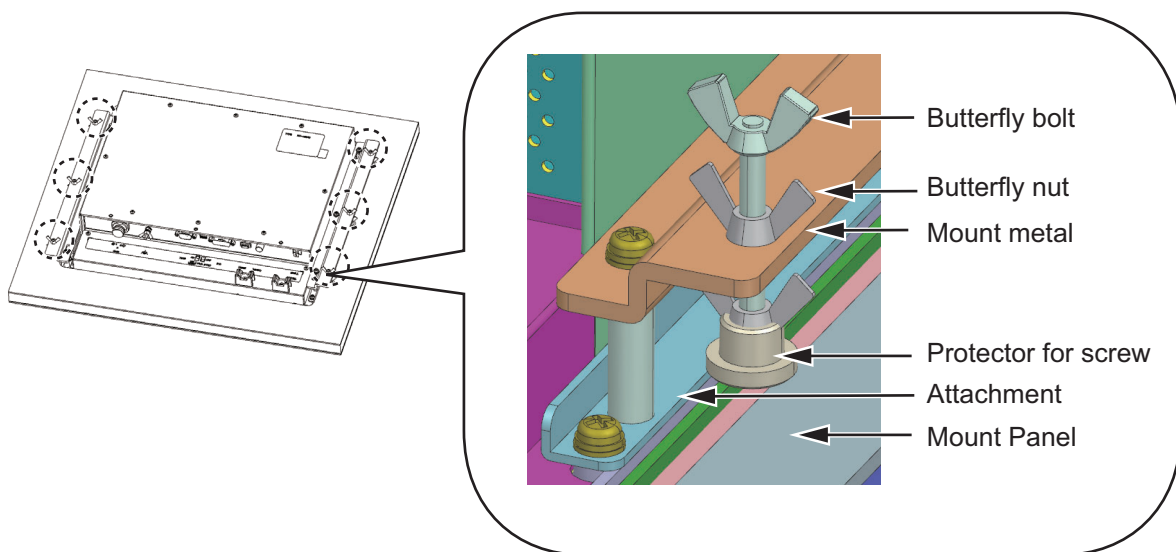


8. Loosely fasten the butterfly bolts, in the order of the number shown in the figure below so that the protectors touch the mounting panel.



9. Fasten the butterfly bolts tightly, in the order shown in step 7.

10. Fasten the butterfly nuts tightly.



1. MOUNTING, WIRING

1.3 Flush Mounting, Fixed at Front

If there is not enough space to fix the display unit from the rear, you can fix it from the front with the optional Front Fixed Flush Mount Kit JE07002-B022 (code no. 001-634-650). The LCD Retrofit Kit JE07002-B020 (code no. 001-634-670) can also be used.

Front Fixed Flush Mount Kit JE07002-B022 (code no. 001-634-650)

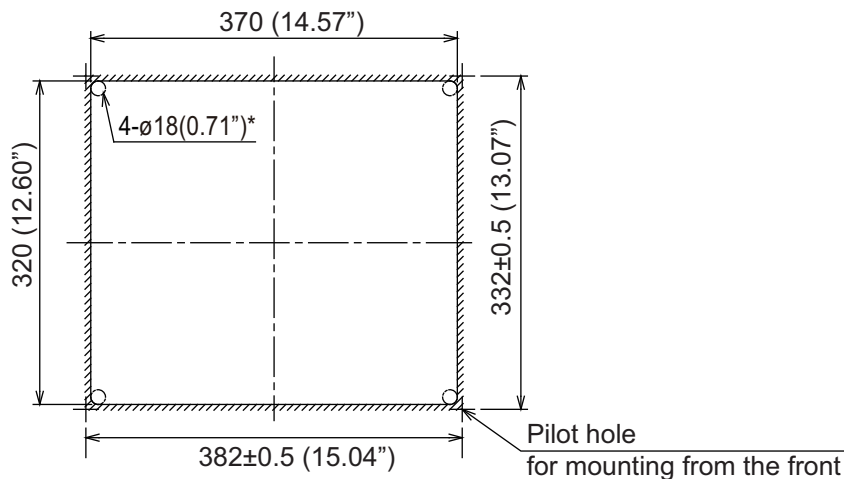
Name	Type	Code No.	Qty	Remarks
Fmount panel 15 assembly	JE07002-Y533	000-199-706-10	1	
Self tapping screw	JE82001-0015	000-199-688-10	4	
Washer head screw	J6-SW3N4-10200	000-199-677-10	8	
Fmount sponge H15	JE07002-Y543	000-199-684-10	2	
Fmount sponge V15	JE07002-Y544	000-199-685-10	2	
Flush Mounting Template	C42-00909-x	000-172-636-1x	1	x denotes minor modifications.

LCD Retrofit Kit JE07002-B020 (code no. 001-634-670)

Name	Type	Code No.	Qty	Remarks
Spacer	JE07002-Y580	000-199-707-10	8	
Self tapping screw	JE82001-0015	000-199-688-10	4	
Washer head screw	J6-SW3N4-10200	000-199-677-10	8	
Fmount sponge H15	JE07002-Y543	000-199-684-10	2	
Fmount sponge V15	JE07002-Y544	000-199-685-10	2	
Flush Mounting Template	C42-00909-x	000-172-636-1x	1	x denotes minor modifications.

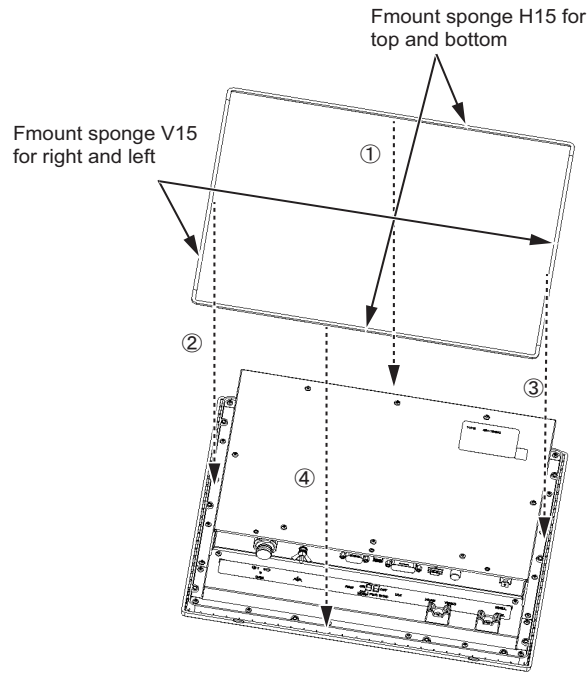
Fixing with Front Fixed Flush Mount Kit JE07002-B022

1. Make a cutout in the mounting location with the flush mounting template (included).

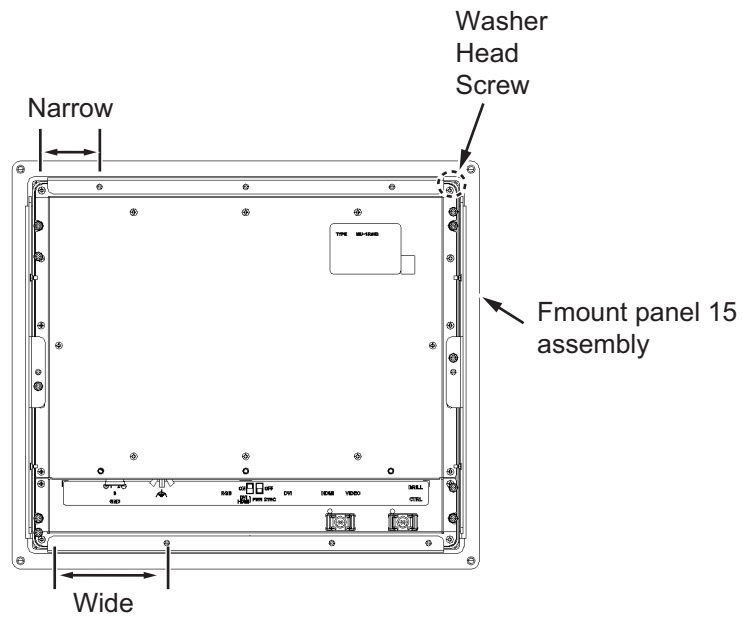


*: The drill bit with a diameter of 18 mm or less can also be used.

2. Attach the flush mounting sponges H15 and V15 in the order shown in the figure below.



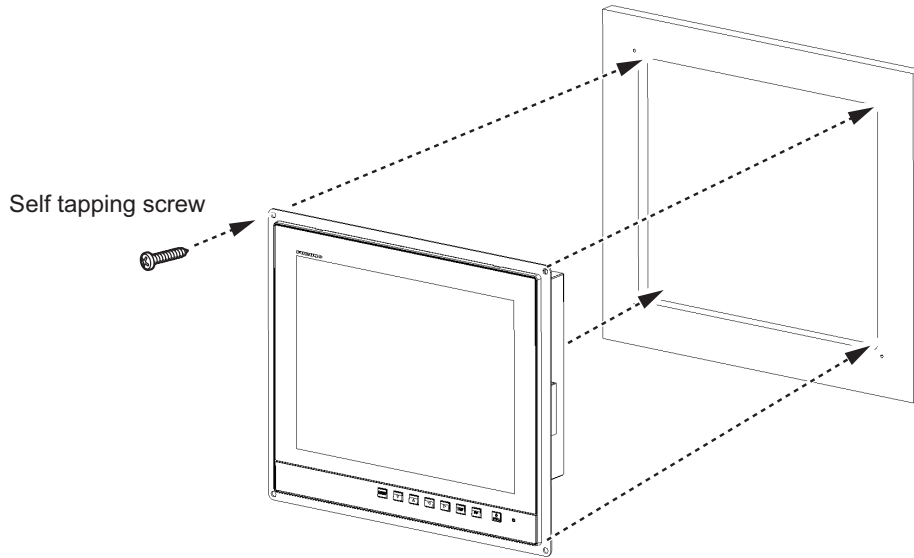
3. Attach the flush mounting panel (15) to the display unit from the rear with the washer head screws (M4×10, 8 places, torque: 1.2 N•m). Do not confuse the top and bottom of the panel and check that screw holes on the panel and unit match.



4. Connect all cables at the back of the display unit. See section 1.7.
5. Set the display unit assembly prepared at the section 3 to the cutout for the mounting location.

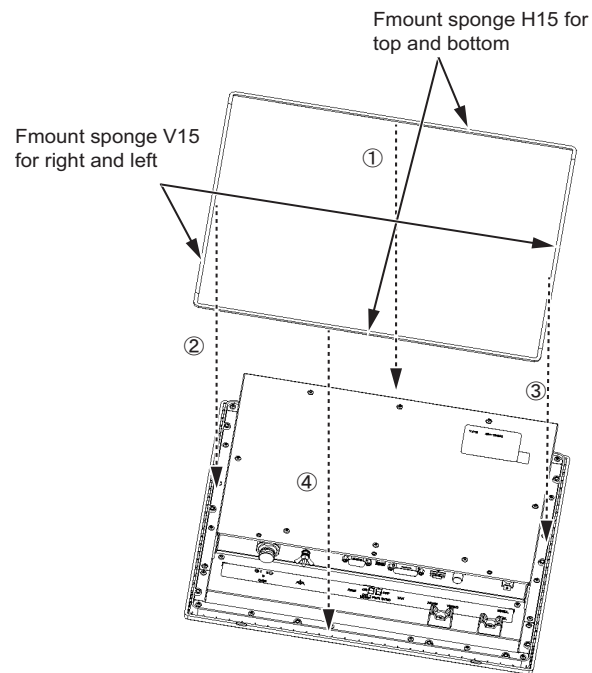
1. MOUNTING, WIRING

6. Fix the display unit to the cutout with the self tapping screws (4 places).

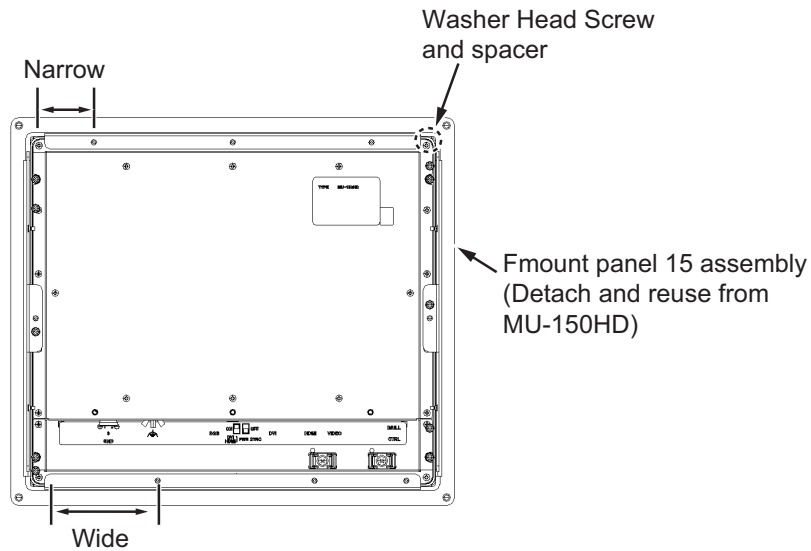


Fixing with LCD Retrofit Kit JE07002-B020

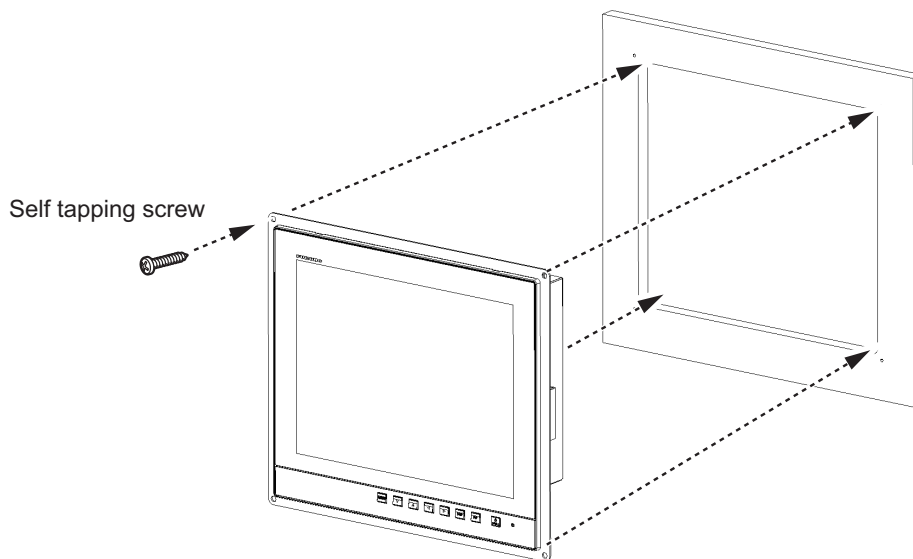
1. Attach the flush mounting sponges H15 and V15 in the order shown in the figure below.



- Attach the flush mounting panel (15) to the display unit from the rear with the spacers and washer head screws (M4×10, 8 places, torque: 1.2 N•m). Do not confuse the top and bottom of the panel and check that screw holes on the panel and unit match.



- Connect all cables at the back of the display unit. See section 1.7.
- Set the display unit assembly prepared at the step 3 to the cutout for the mounting location.
- Fix the display unit to the cutout with the self tapping screws (4 places).



1.4 Flush Mounting, Fixed at Rear, with Hood

You can attach a hood when flush mounting the unit from the rear, using the hood assembly JE07002-B005 (option).

Note: When the hood is installed, the hard cover cannot be used.

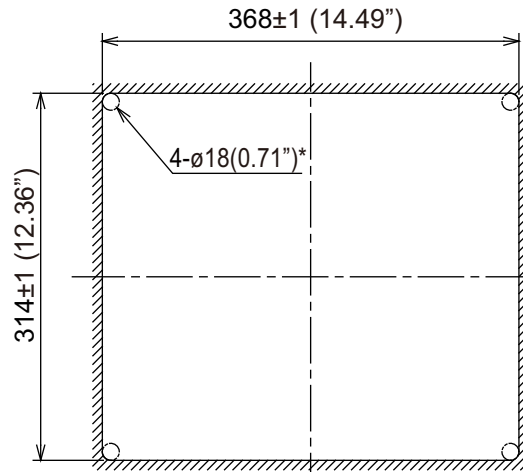
Hood Assembly JE07002-B005 (Code: 001-634-630)

Name	Type	Code No.	Qty
Hood (15) Assembly	JE07002-B006	001-080-950-00	1
F-Mount Hood Gasket 15	JE07002-Y563	000-199-701-10	1
Hood Gasket Bottom 15	JE07002-Y570	000-199-702-10	1

1. MOUNTING, WIRING

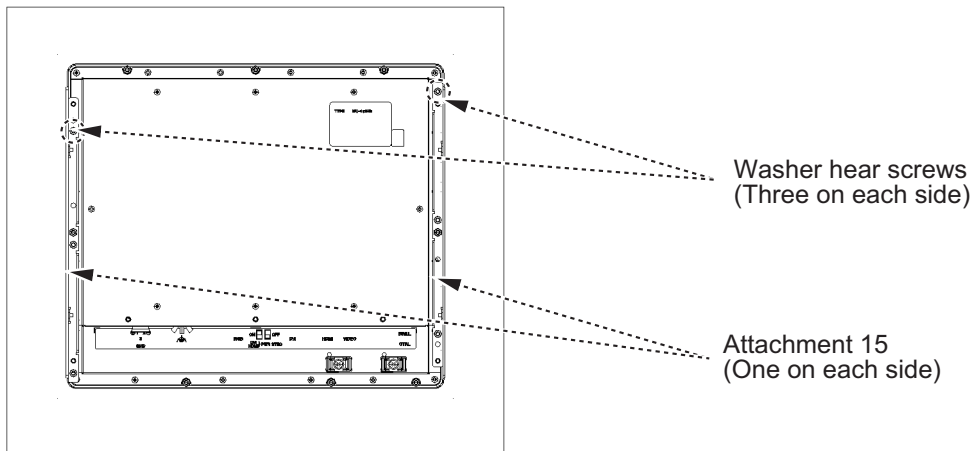
Name	Type	Code No.	Qty
F-Mount Hood Gasket Side 15	JE07002-Y571	000-199-703-10	2
Hood Fixing Plate 15	JE07002-Y572	000-199-704-10	2
Knob M4	JE07002-Y562	000-199-692-10	4
Flat Head Screw	J6-SSA3-06200	000-199-693-10	6
Flush Mounting Template	C42-00908	000-172-635-10	1

1. Make a cutout in the mounting location with the flush mounting template (included).

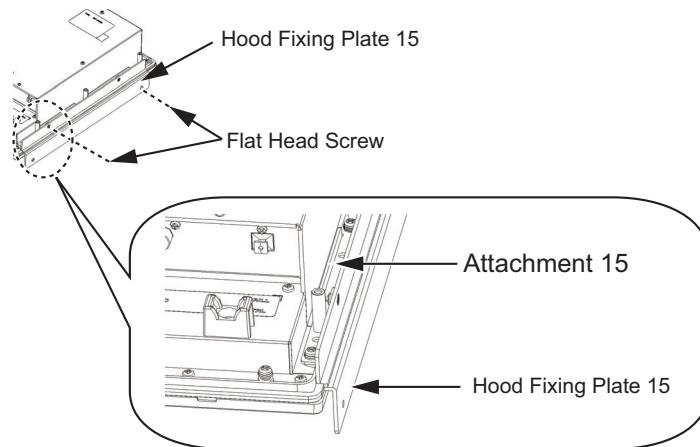


*: The drill bit with a diameter of 18 mm or less can also be used.

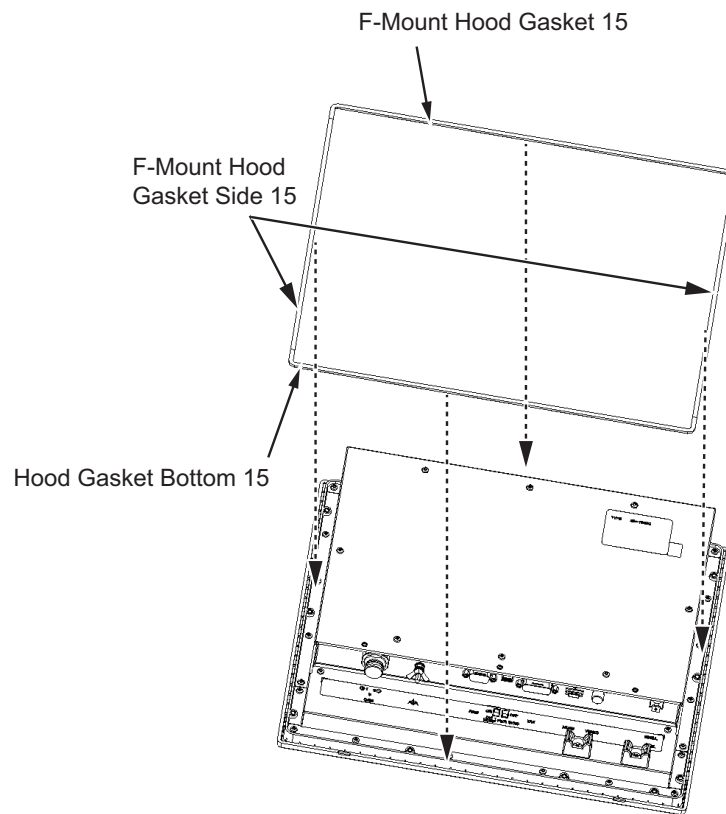
2. Attach the attachment 15 to the left and right sides of the back of the display unit with the supplied washer head screws.



3. Fix the hood fixing plates to the right and left of the display unit with the flat head screws (M3×8, 6 places, torque: 0.6 N•m).



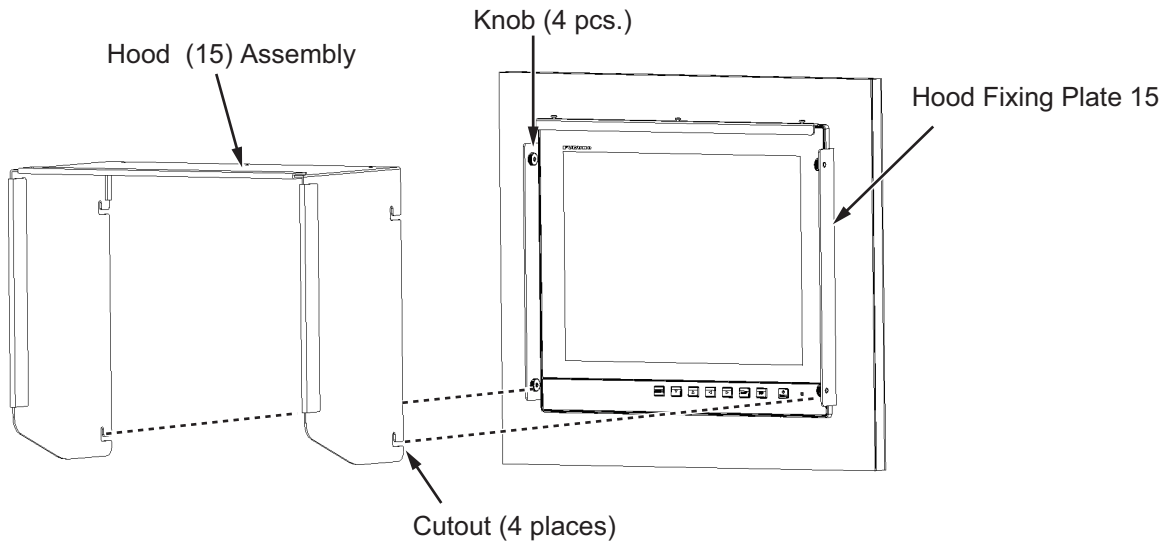
4. Attach the “F-Mount Hood Gasket 15” to the top brim, the “Hood Gasket Bottom 15” to the bottom brim, and then attach the “F-Mount Hood Gasket Side 15” to the right and left sides of the display unit from the rear side as shown the figure below.



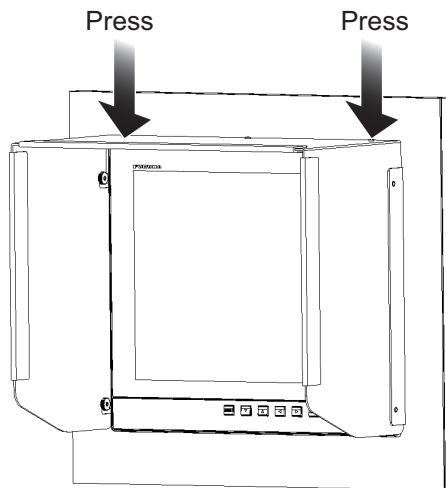
5. Follow step 3 to step 10 in section 1.2 to fix the display unit to the mounting location.
6. Loosely fix the knobs (4 pcs.) to the hood fixing plate.

1. MOUNTING, WIRING

7. Slide the cutouts of the hood assembly to the knobs.



8. Press the top of the hood to fit the knobs in the cutouts.



9. Fix the hood assembly with the knobs tightly (4 places).

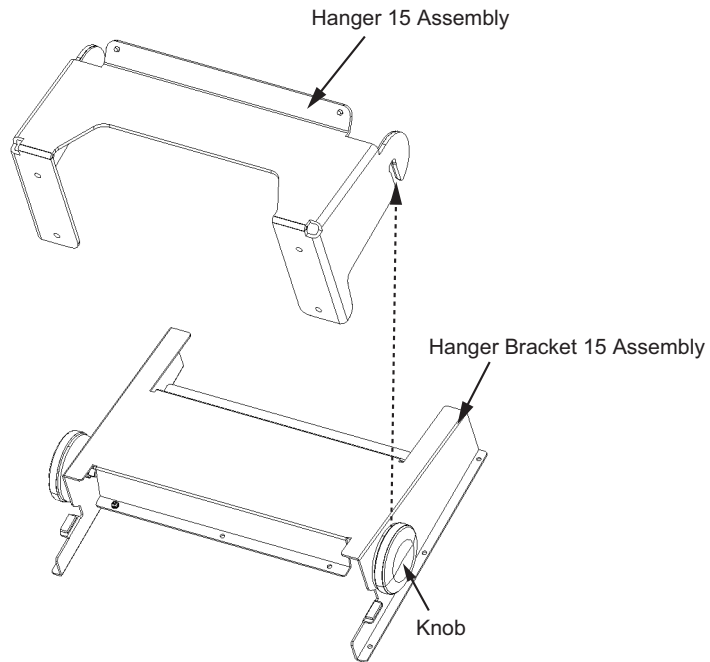
1.5 Desktop Mounting

You can fix the display unit to a desktop, using the optional bracket assembly JE07002-B003.

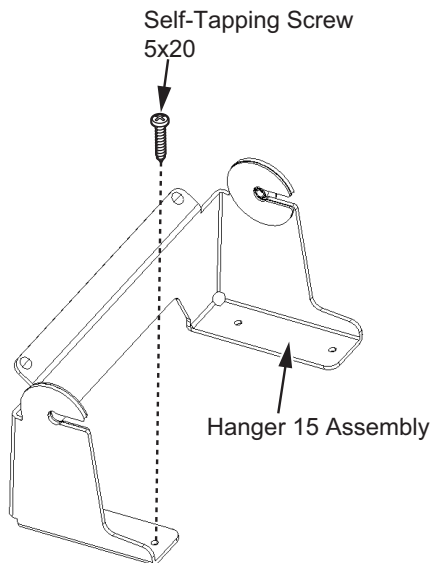
Bracket Assembly JE07002-B003 (Code: 001-634-610)

Name	Type	Code No.	Qty
Hanger Bracket 15 Assembly	JE07002-C510	000-199-700-10	1
Hanger 15 Assembly	JE07002-C511	000-199-699-10	1
Self-Tapping Screw	JE82001-0015	000-199-688-10	4
Washer Head Screw	J6-SW3N4-10200	000-199-677-10	9

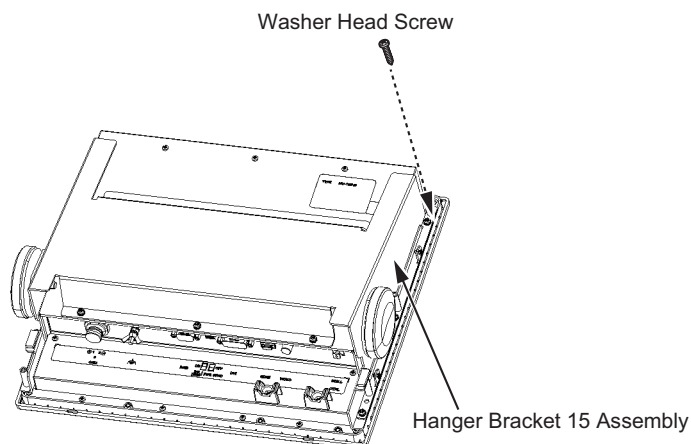
1. Loosen the knobs of the hanger 15 assembly to separate the hanger bracket 15 assembly from the hanger.



2. Set the hanger 15 assembly to the mounting location with four self tapping screws.

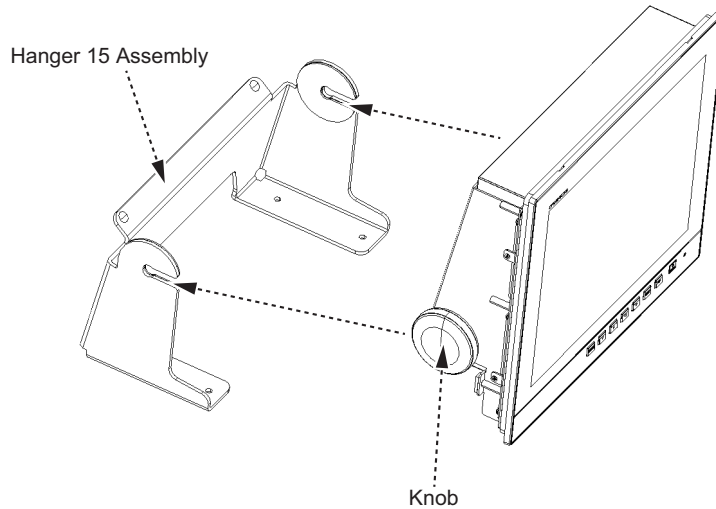


3. Attach the hanger bracket 15 assembly to the rear of the display unit with the washer head screws (9 places, torque: 1.2 N•m).



1. MOUNTING, WIRING

4. Connect all cables at the back of the display unit. See section 1.7.
5. Loosen the knobs of the bracket support and set them in the notches on the hanger 15 assembly.

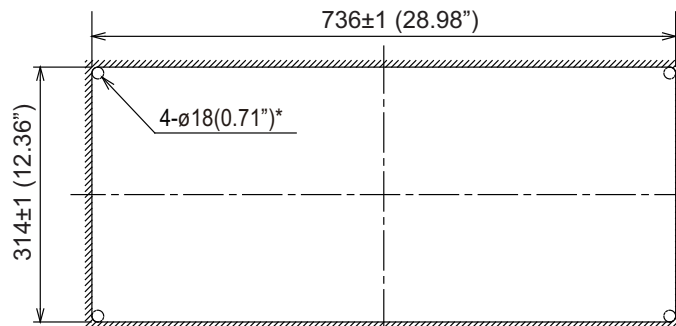


6. Adjust the angle of the display unit and fix the knobs tightly.

1.6 Flush Mounting a Series Side by Side

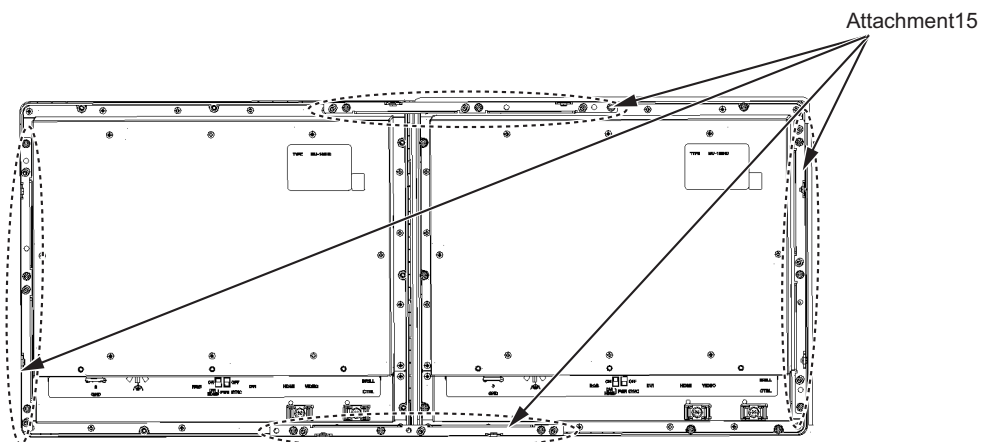
You can flush mount two display units side by side.

1. Make a cutout in the mounting location as shown below.

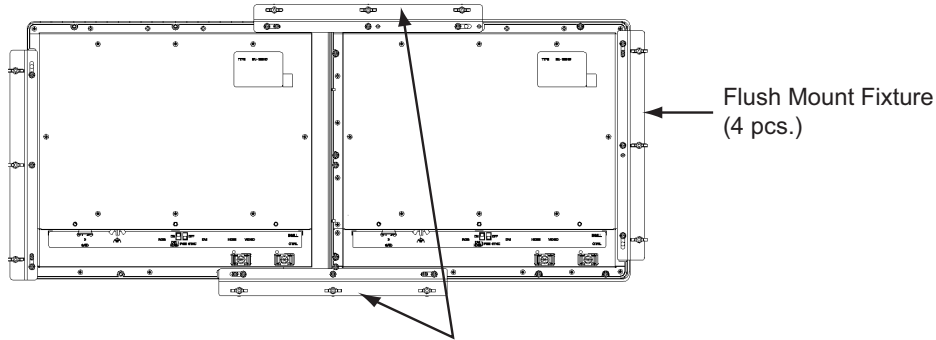


*: The drill bit with a diameter of 18 mm or less can also be used.

2. Follow step 2 to step 5 in section 1.2 to set the two display units in the mounting location.
Note: Attach the attachment 15 to the top, bottom, left, and right as shown in the figure below.



- Attach the flush mount fixtures with the washer head screws to join the two display units.



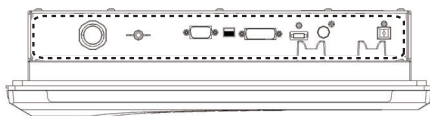
Join the display units with the flush mount fixtures.

- Fasten the two display units tightly. See step 7 to step 9 in section 1.2.

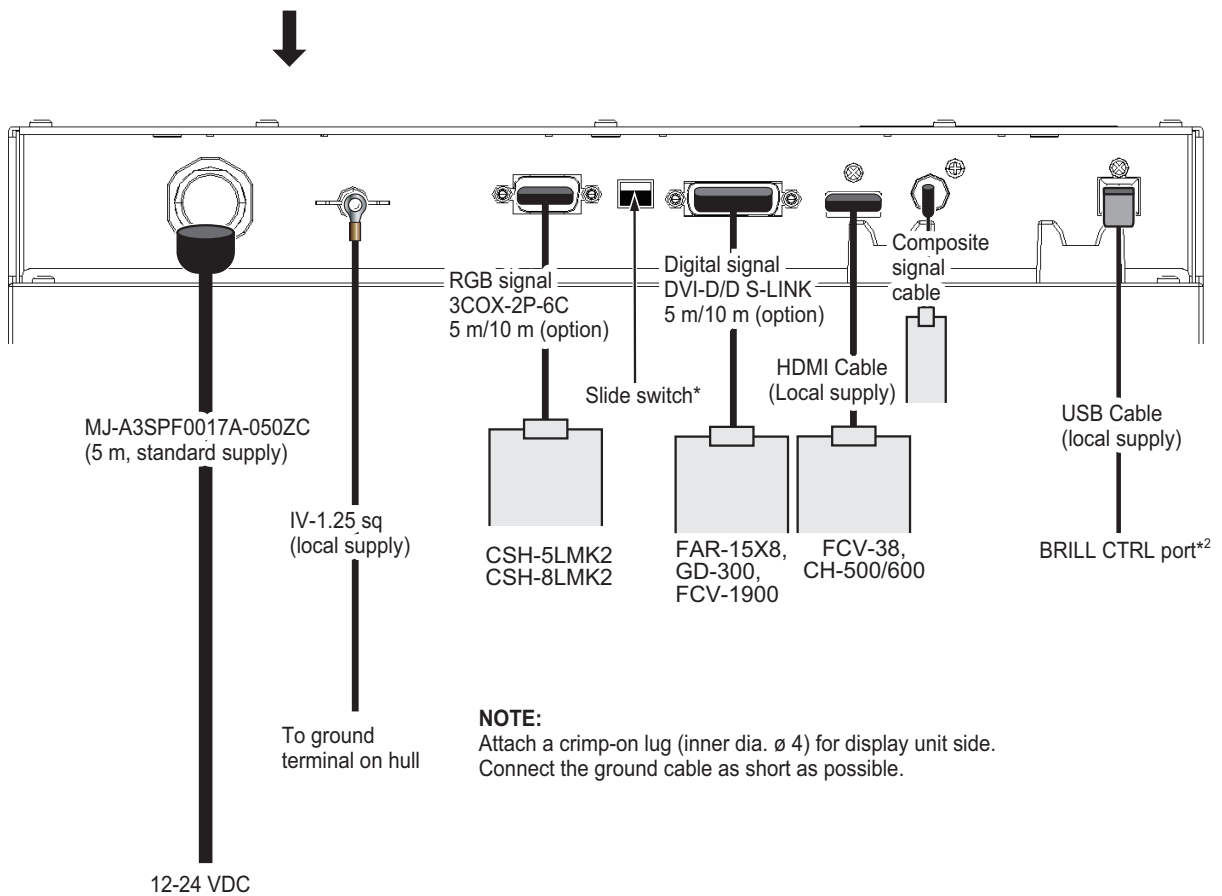
1.7 Wiring

Refer to figure below and the interconnection diagram at the back of this manual to connect cables.

Connector



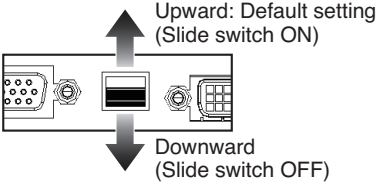
The bottom of the rear of the display unit



1. MOUNTING, WIRING

*1: Slide switch

Referring to below table to set the slide switch according to your vessel's configuration.

Slide Switch	Inputs	Connected devices	
ON (Factory default)	Digital input (DVI, HDMI)	<ul style="list-style-type: none">• Radar• Plotter• Fish finder	
OFF	Analog input (RGB)	<ul style="list-style-type: none">• Scanning sonar• Current indicator	

Note: Turn the slide switch off when you connect equipment to both the DVI, HDMI and RGB ports.

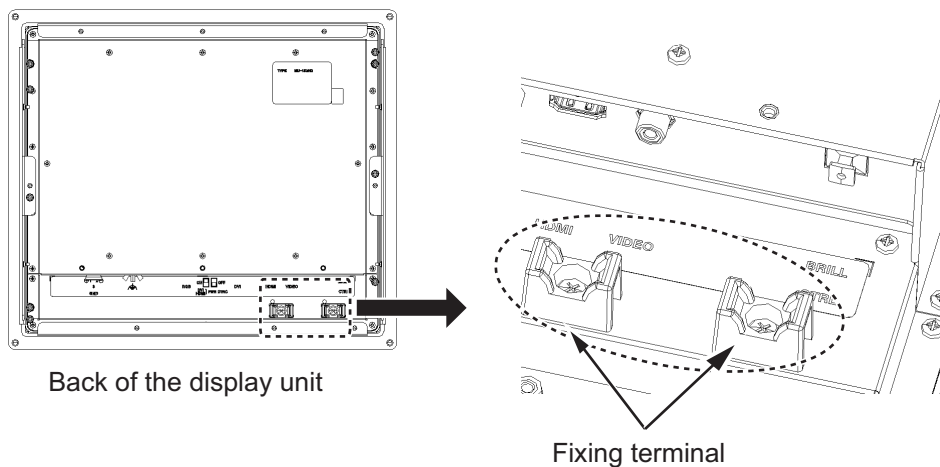
*2: BRILL CTRL port

Remove the sticker from the BRILL CTRL port, then connect the USB cable.

How to fix the composite signal cable

Fix the cables for the composite signal at the fixing terminal with the cable tie, to prevent a loose connection.

1. Pass the cable tie (supplied) through the side of the fixing terminal.
2. Set the cable in the cable tie and pull the tie.
3. Cut off the excess cable tie with nippers.



2. ADJUSTMENTS

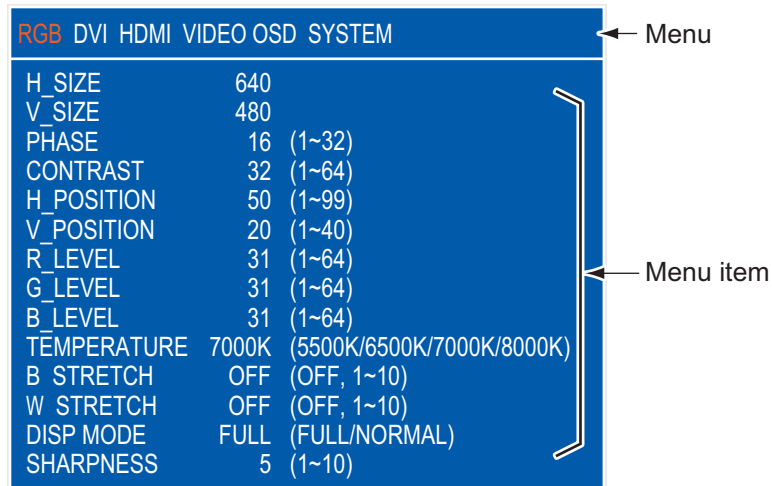
Adjust the MU-152HD according to the equipment connected.

2.1 RGB/DVI/HDMI Setting

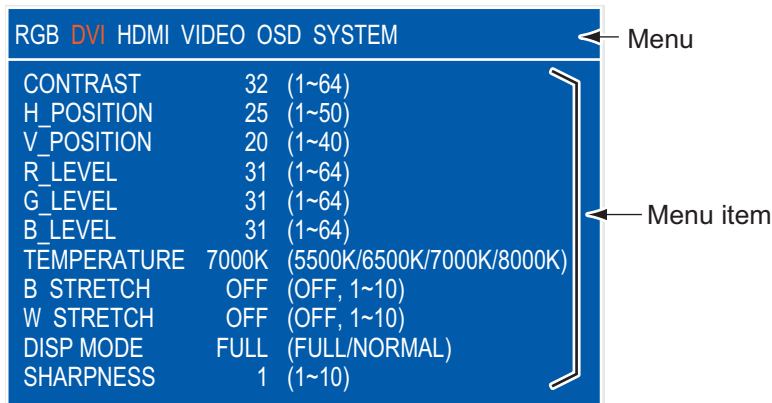
You can adjust the screen from the [RGB], [DVI] and [HDMI] ports separately. Turn on external equipment and adjust the display unit as follows.

1. Select the signal to adjust at the DISP selection window. See section 3.4.
 - 1) Press the **DISP** key.
 - 2) Press the **DISP** key again to select [RGB], [DVI] or [HDMI].
2. Press the **MENU** key to show the menu.
The main menu closes automatically when there is no operation for one minute.
3. Press the ◀ or ▶ key to select [RGB], [DVI] or [HDMI].
The current setting (the cursor) is shown in orange. The menu items depend on the selected menu.

Note: The menus in grey are not available because of no signal.



RGB setting menu



DVI setting menu (HDMI setting menu is also same as)

4. Press the ▲ or ▼ key to select the menu item to adjust.

2. ADJUSTMENTS

5. Press the ◀ or ▶ key to adjust the setting.
6. Press the **MENU** key to close the menu.

RGB/DVI/HDMI menu descriptions

Menu item	Function	Setting
H_SIZE	Adjusts the image size horizontally. Horizontal size: ◀ (narrow), ▶ (wide)	Depending on input signal
V_SIZE	Adjusts the image size vertically. Vertical size: ◀ (narrow), ▶ (wide)	
PHASE**	Adjusts the sample timing so that the flicker disappears and the text is clear.	1 to 32
CONTRAST	Increases or decreases the contrast level. ◀ (darken), ▶ (brighten)	1 to 64
H_POSITION	Moves the image position horizontally. ◀ (leftward), ▶ (rightward)	1 to 99 (RGB), 1 to 50 (DVI, HDMI)
V_POSITION	Moves the image position vertically. ◀ (upward), ▶ (downward)	1 to 40
R_LEVEL	Adjusts the red color level. ◀ (weaken), ▶ (strengthen)	1 to 64
G_LEVEL	Adjusts the green color level. ◀ (weaken), ▶ (strengthen)	1 to 64
B_LEVEL	Adjusts the blue color level. ◀ (weaken), ▶ (strengthen)	1 to 64
TEMPERATURE	Adjusts the color temperature. 5500K (the most reddish), 8000K (the most bluish)	5500K, 6500K, 7000K, 8000K
B STRETCH	Emphasizes the black color. [OFF] (standard), ◀ (weaken), ▶ (strengthen)	OFF, 1 to 10
W STRETCH	Emphasizes the white color. [OFF] (standard), ◀ (weaken), ▶ (strengthen)	OFF, 1 to 10
DISP MODE*	Selects the displaying method. [FULL]: Shows the input signal on entire screen. [NORMAL]: Shows the input signal with original aspect ratio.	FULL, NORMAL
SHARPNESS**	Sharpens the edge horizontally. ◀ (soften characters and lines), ▶ (sharpens characters and lines)	1 to 10

*: When inputting SXGA, a circle may be displayed as an ellipse because the aspect ratio differs. In this case, select [NORMAL] from the [DISP MODE] menu item on the [RGB], [DVI], or [HDMI] menus. The right and left on the screen are left blank, but this is normal.

** : If the characters are not clear, adjust [PHASE] and [SHARPNESS].

2.2 Video Composite Signal Setting

You can adjust the VIDEO signal from the VIDEO port. The VIDEO signal is also displayed in the PIP window.

1. Select the signal to adjust at the DISP selection window.
2. Press the **MENU** key to show the menu.
3. Press the ◀ or ▶ key to select [VIDEO].

RGB	DVI	HDMI	VIDEO	OSD	SYSTEM
PIP_SIZE			5	(1~10)	
CONTRAST			32	(1~64)	
R_LEVEL			31	(1~64)	
G_LEVEL			31	(1~64)	
B_LEVEL			31	(1~64)	
TEMPERATURE			7000K	(5500K/6500K/7000K/8000K)	
B STRETCH			OFF	(OFF, 1~10)	
W STRETCH			OFF	(OFF, 1~10)	

[VIDEO] setting menu

4. Press the ▲ or ▼ key to select the menu item to set.
5. Press the ◀ or ▶ key to adjust the setting.
6. Press the **MENU** key to close the menu.

VIDEO menu descriptions

Menu item	Function	Setting
PIP_SIZE	Adjusts the size of picture-in-picture window. Note: This setting is available when the PIP window is displayed.	1 (47 mm x 31 mm) to 10 (235 mm x 160 mm)
CONTRAST	Increases or decreases the contrast level.	1 to 64
R_LEVEL	Adjusts the red color level.	1 to 64
G_LEVEL	Adjusts the green color level.	1 to 64
B_LEVEL	Adjusts the blue color level.	1 to 64
TEMPERATURE	Adjusts the color temperature.	5500K, 6500K, 7000K, 8000K
B STRETCH	Emphasizes the black color.	OFF, 1 to 10
W STRETCH	Emphasizes the white color.	OFF, 1 to 10

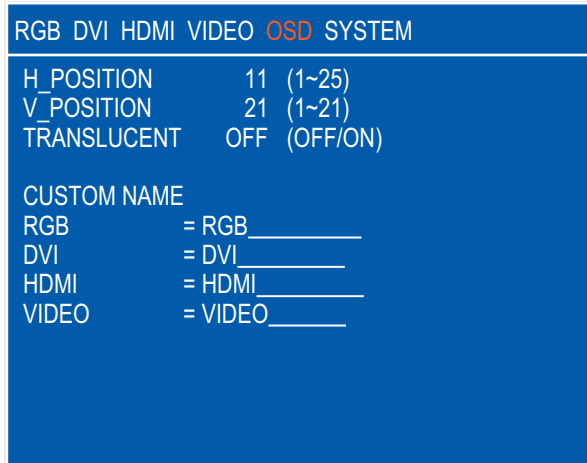
(Refer to "RGB/DVI /HDMI menu descriptions" on page 19.)

2.3 The Menu Window Setting

2.3.1 How to adjust the menu window

You can adjust the position and transparency of the menu window on the [OSD] (On Screen Display) menu.

1. Press the **MENU** key to show the menu.
2. Press the ◀ or ▶ key to select [OSD].



OSD menu

3. Press the ▲ or ▼ key to select the menu item to set.
4. Press the ◀ or ▶ key to adjust the setting.
5. Press the **MENU** key to close the menu.

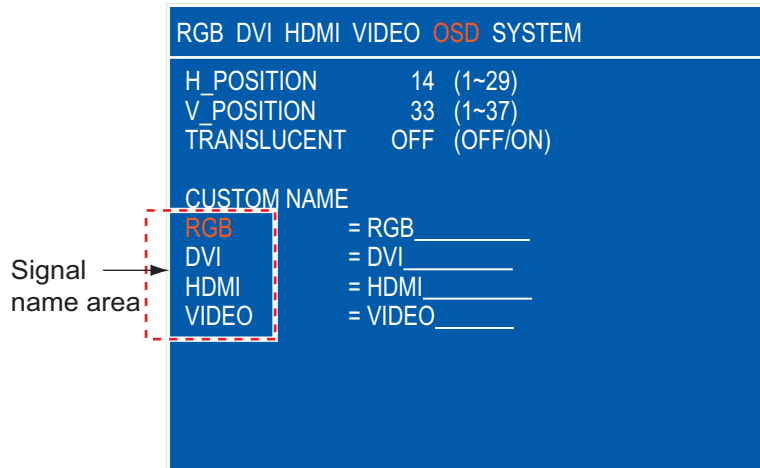
OSD menu description

Menu item	Function	Setting
H_POSITION	Moves the menu window horizontally. ◀ (leftward), ▶ (rightward)	1 to 25
V_POSITION	Moves the menu window vertically. ◀ (upward), ▶ (downward)	1 to 21
TRANSLUCENT	Adjusts the transparency of the background color on the menu window. [OFF]: Blue, [ON]: Translucent Note: Alpha blending technology is used for transparency effects.	OFF, ON
CUSTOM NAME	See paragraph 2.3.2.	

2.3.2 How to change the signal name

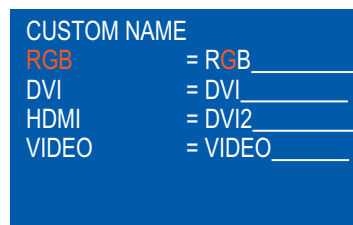
You can change the signal name (“RGB”, “DVI”, “HDMI” or “VIDEO”) to a name (ex. the equipment name) which is easy to understand. The changed name is shown in the DISP selection window, PIP selection window and the indication shown at the upper right of the screen. See section 3.4 and section 3.5.

1. Press the **MENU** key to show the main menu.
2. Press the ◀ or ▶ key to select [OSD].



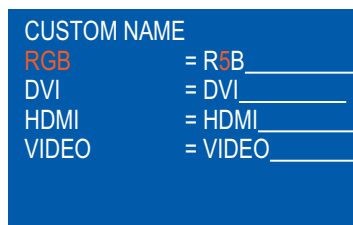
Signal name area

3. Press the ▲ or ▼ key to select the signal to change its name, in the signal name area. In the example above, RGB is selected.
4. Press the ▶ key to select the character to change. In the example below, “G” of RGB is selected.



5. Press the ▲ or ▼ key to select appropriate alphanumeric character. In the example below, “5” is selected.

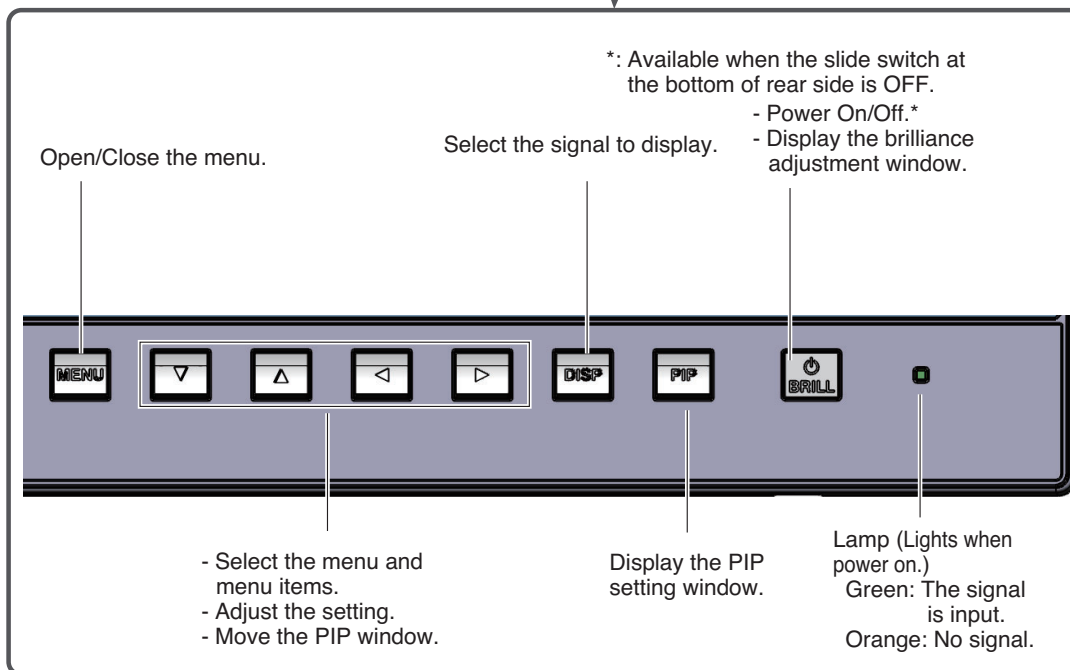
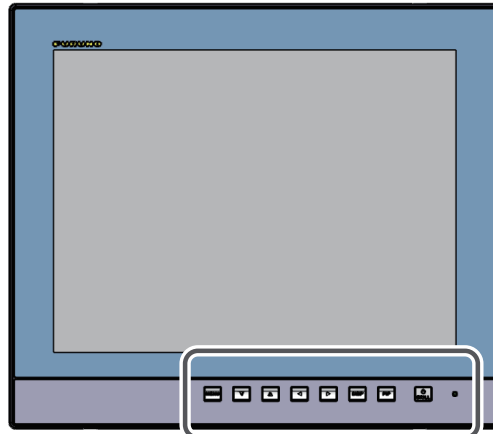
You can set up to ten characters. “A to Z”, “0 to 9”, “-”, “.”, “ ” (space) are available.



6. To change another signal name, press the ◀ key several times to return the cursor to the signal name area. Repeat steps 3 to 5.
7. Press the **MENU** key to close the menu.

3. OPERATION

3.1 Controls



3.2 How to Turn the Power On/Off

This section shows how to turn on/off the display unit and the key lock function.

3.2.1 Turn on/off the power

How to turn on/off the power depends on the setting of the slide switch. The slide switch is set when the display unit is installed. See section 1.7.

Note 1: When you restart the display unit, wait at least three seconds before powering the unit.

Note 2: The screen refreshes slower in low ambient temperature.



Slide switch “ON”

The external equipment connected to the DVI/HDMI port can power on/off the display unit.

Note 1: You can not turn on the power with the /BRILL key on MU-152HD.

Note 2: If equipment is connected to both DVI and HDMI ports, turn off the power of the connected equipments to turn off the display unit.


Slide switch “OFF”

1. Press the /BRILL key to turn on the display unit.
2. Press and hold the /BRILL key for three seconds to turn off the display unit. While you hold the key, the display shown right appears.



SHUT DOWN
This monitor will shut down in three seconds.

3.2.2 Lock the operation

You can lock the display unit to prevent operation. Any key (except the /BRILL key) will be inoperative.

1. While pressing and holding down the **PIP** key, turn on the display unit. Press and hold the **PIP** key for more than five seconds.
Note: When the slide switch is “ON”, turn on the connected external equipment while pressing the **PIP** key to turn on the display unit.
2. To cancel the lock, turn off the display unit and then turn it on while pressing and holding down the **PIP** key. Press and hold the **PIP** key more than five seconds.

3.3 How to Adjust the Display Brilliance

You can adjust the display brilliance as follows:

1. Press the /BRILL key momentarily to show the BRILL adjustment window.

The window shown right disappears if there is no operation for five seconds.



3. OPERATION

2. Press the ◀ or ▶ key to adjust the brilliance (available range: 1 to 50, default: 50).

You can also adjust the brilliance by pressing the ⏻/BRILL key repeatedly.

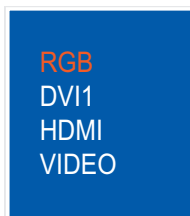
Note 1: If the display unit is turned off with the brilliance set to minimum, the screen may not be visible depending on lighting conditions. In this case, press the ⏻/BRILL key repeatedly to raise the brilliance.

Note 2: When the display unit is used with a FAR-15x3/15x8 series radar, you can adjust the brilliance from the FAR-15x3/15x8 series. (See paragraph 3.6.1.)

3.4 How to Select the Source for Main Picture

Select the signal to display on the entire screen as follows:

1. Press the **DISP** key to show the DISP selection window.
The signal names are shown in the window as you customized at paragraph 2.3.2.
This window disappears if there is no operation for five seconds.

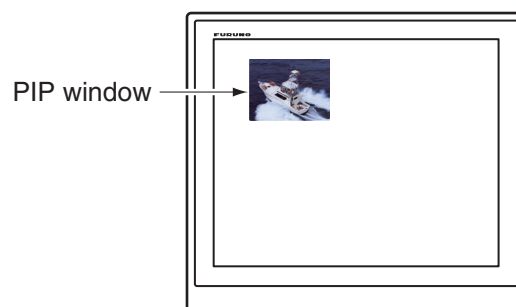


DISP selection window (Default setting)

2. Press the ▲ or ▼ key to select a signal.
You can also select the signal by pressing the **DISP** key continuously.
[RGB]: The signal from the RGB port is displayed.
[DVI]: The signal from the DVI port is displayed.
[HDMI]: The signal from the HDMI port is displayed.
[VIDEO]: The external video from the VIDEO port is displayed.
3. Press the ◀ or ▶ key to close the window.
The name of the selected signal appears at the right top corner for five seconds after the DISP selection window disappears. If there is no signal, "NO SIGNAL" appears.

3.5 How to Select the Source for the PIP Window

Select the source for the PIP (picture-in-picture) window as follows. The PIP window is available on the RGB, DVI and HDMI displays.



1. With the RGB, DVI or HDMI display shown, press the **PIP** key to show the PIP window. To hide the PIP window, press the **PIP** key again.
2. You can move the PIP window by pressing the arrow keys when the menu is closed.

Note: You can adjust the size of the PIP window on the [VIDEO] menus. See section 2.2.

3.6 SYSTEM Menu

You can set the brilliance control and clear the memory from the [SYSTEM] menu. Also, you can check the signal status and the program number on the [SYSTEM] menu.

3.6.1 How to adjust the brilliance from the external equipment

When a FAR-15x3/15x8 series radar is connected to the [DVI] port, you can adjust the brilliance of the display unit from the FAR-15x3/15x8.

1. Press the **MENU** key to show the main menu.
2. Press the **▶** key to select [SYSTEM].
3. Press the **▲** or **▼** key to select [EXT BRILL CTRL].
4. Press the **◀** or **▶** key to set the desired input item.
 [OFF]: You can not adjust the brilliance from the external equipment.
 [DVI]: When the DVI is displayed, the brilliance signal from DVI port controls this display's brilliance. The **☺/BRILL** key is available for the screen other than the DVI.
 [USB]: Adjust the brightness from luminance signal-compatible devices connected to the BRILL CTRL port (the **☺/BRILL** key is disabled on all screens).
5. Press the **MENU** key to close the menu.

3.6.2 FISH FINDER Mode

Flickering of the fishfinder display can be adjusted.

1. Press the **MENU** key to show the main menu.
2. Press the **▶** key to select [SYSTEM].
3. Press the **▲** or **▼** key to select [FISH FINDER MODE].
4. Press the **◀** or **▶** key to set the desired input item.
 [OFF]: Flickering adjustment disabled.
 [Mode1] to [Mode5]: Flickering adjustment possible.
5. Press the **MENU** key to close the menu.

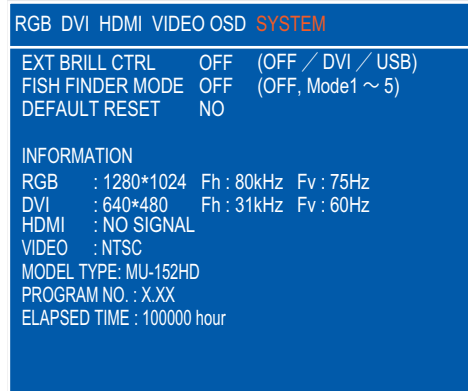
3. OPERATION

3.6.3 How to clear the memory

You can clear the memory to restore the default settings.

1. Press the **MENU** key to show the main menu.
2. Press the **▶** key to select [SYSTEM].
3. Press the **▲** or **▼** key to select [DEFAULT RESET].
4. Press the **▶** key.

The display is changed to "YES" from "NO".



RGB	DVI	HDMI	VIDEO	OSD	SYSTEM
EXT BRILL CTRL	OFF	(OFF / DVI / USB)			
FISH FINDER MODE	OFF	(OFF, Mode1 ~ 5)			
DEFAULT RESET	NO				
INFORMATION					
RGB	: 1280*1024	Fh : 80kHz	Fv : 75Hz		
DVI	: 640*480	Fh : 31kHz	Fv : 60Hz		
HDMI	: NO SIGNAL				
VIDEO	: NTSC				
MODEL TYPE:	MU-152HD				
PROGRAM NO. :	X.XX				
ELAPSED TIME :	100000 hour				

Note: To cancel, press the **◀** key. The display is changed to "NO" from "YES".

5. Press the **▶** key to select "reset".

4. MAINTENANCE, TROUBLESHOOTING

NOTICE

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

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

4.1 Maintenance

Routine maintenance

Regular maintenance is important for good performance. Check the following on a regular basis to keep the equipment in good condition.

- Check that the connectors at the bottom of the display unit are tightly fastened.
- Check the ground wire and ground terminal for rust. Clean if necessary. Confirm that the ground wire is tightly fastened.
- Remove dust and dirt from the display unit with a dry, soft cloth. Do not use chemical cleaners to clean any part of the display unit. They can remove paint and markings.
- Wipe the LCD carefully to prevent scratching, using LCD cleaning cloth (supplied as accessory). 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.

Fuse replacement

The fuse in the fuse holder on the power cable protects the equipment from internal fault. If the fuse blows, find the cause before you replace it. If the fuse blows again after replacement, request service.



WARNING

Use the proper fuse.

Use of a wrong fuse can cause fire or damage to the equipment.

Name	Type	Code Number
Fuse	FGBO-A 125V 5A PBF	000-199-681-10

LCD replacement

The life of the LCD is approximately 40,000 hours. The actual number of hours depends on ambient temperature and humidity. When the brilliance cannot be raised sufficiently, replace the LCD.



Fan replacement

The life of the fan is approximately 90,000 hours. The actual number of hours depends on ambient temperature. When the fan rotation is abnormal, the message "REPLACE FAN" is shown. Turn off the power and contact your dealer to request replacement of the fan.

4.2 Troubleshooting

See the following table to find the possible causes and the actions to restore normal operation. If repair of the equipment is necessary, report the result of the troubleshooting to the service technician.

Troubleshooting

Case	Remedy
You can not turn on the power.	<ul style="list-style-type: none"> • Check the setting for the slide switch. See section 1.7. • Check the battery voltage with a multimeter. • Check the fuse on the power cable. • Fasten the power cable tightly.
You can not turn off the power.	<ul style="list-style-type: none"> • Press and hold the /BRILL key for eight seconds. • When the slide switch is set to ON, turn off the external equipment connected.
No picture	<ul style="list-style-type: none"> • Fasten the cables tightly. • Check the input signal. See section 3.6.
You can not operate any key except the  /BRILL key.	Cancel the key lock function. See paragraph 3.2.2.

APPX. 1 ABBREVIATIONS

	Abbreviation	Meaning
A	APR	Application Program
	AUTO	Automatic
B	B	Black
	BRILL	Brilliance
C	CCD	Charge-Coupled Device
	CH	Type of FURUNO searchlight sonar
	CI	Type of FURUNO current indicator
	CSH	Type of FURUNO color scanning sonar
	CTRL	Control
D	DISP	Display
	DVD	Digital Versatile Disc
	DVI	Digital Visual Interface
E	EXT	External
F	FAR	Type of FURUNO radar
	FCV	Type of FURUNO fish finder
	Fh	Horizontal Frequency
	FSV	Type of FURUNO color scanning sonar
	Fv	Vertical Frequency
G	GD	Type of FURUNO color video plotter
H	H	Horizontal
L	LCD	Liquid Crystal Display
	LED	Light-Emitting Diode
N	NO.	Number
	NTSC	National Television System Committee
O	OSD	On-Screen Display
P	PAL	Phase Alternating Line
	PC	Personal Computer
	PIP	Picture-in-Picture
Q	Qty	Quantity
R	RGB	Red/Green/Blue
S	SW	Switch
	SXGA	Super Extended Graphics Array (1280×1024)
U	USB	Universal Serial Bus
V	V	Vertical
	VGA	Video Graphics Array (640×480)
W	W	White
X	XGA	Extended Graphics Array (1024×768)

Units of measurement

Abbreviation	Meaning	Abbreviation	Meaning
A	Ampere(s)	mm	Millimeter(s)
Hz	Hertz(es)	pc.	Piece
K	Kelvin	pcs.	Pieces
kHz	Kilohertz(es)	V	Volt(s)
m	Meter(s)		

**SPECIFICATIONS OF MARINE DISPLAY
MU-152HD****1 GENERAL**

1.1	Screen size	15-inch color LCD, 304.1 x 228.1 mm
1.2	Resolution	1024 x 768 (XGA)
1.3	Pixel pitch	0.297 mm (horizon/vertical)
1.4	Brightness	1,000 cd/m
1.5	View angle	160° (up/down, left/right 80° or more)
1.6	Visible distance	1.02 m
1.7	Interface (input)	
	RGB analog	1 port, non-interlace, Video signal: 0.7 Vp-p, Sync. signal: TTL level
	DVI-D	1 port, DVI-standard, VESA DDC2B
	HDMI	1 port, DVI-standard, VESA DDC2B
	Composite signal	1 port, NTSC/PAL, Video signal: 0.7 Vp-p
	USB	1 port, USB1.1, 12 Mbps (for dimmer control)

3 POWER SUPPLY

12-24 VDC (10.8-31.2 V): 2.5-1.3 A

4 ENVIRONMENTAL CONDITIONS

4.1	Ambient temperature	-15°C to +55°C
4.2	Relative humidity	93% or less at +40°C
4.3	Degree of protection	IP56 (front panel), IP22 (rear panel)
4.4	Vibration	IEC 60945 Ed.4

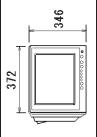


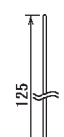



5 UNIT COLOR

N1.0

PACKING LIST
MU-152HD

26A0-X-9854 -0 1/1

A-1

NAME	UNIT	OUTLINE	DESCRIPTION/CODE No.	QTY
ユニット か-LED表示器 MARINE DISPLAY			MJ-152HD 000-039-633-00	1
予備品 予備品 SPARE PARTS			SP26-01101 001-621-760-00	1
工事材料 ケーブル(細品)MJ CABLE ASSEMBLY			MJ-A3SPF0017A-050ZC 000-178-421-11	1
図書 ケーブル CABLE TIE			JE07002-Y917 000-199-676-10	3
フィルムカバー LCD CLEANING CLOTH			19-028-3125-7 100-360-677-10	1
スライドSW設定 SLIDE SWITCH SETTING GUIDE			C42-02112- 000-199-761-1*	1
取扱説明書(和/英) OPERATOR'S MANUAL (JP/EN)			OMC-45200- 000-199-752-1*	1



00003672300

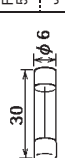
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

C4520-Z02-A



00162176000

FURUNO

SHIP NO.	NAME OF PART	OUTLINE	DWG. NO. OR TYPE NO.	U S E			REMARKS/CODE NO.
				WORKING	QUANTITY PER SET	SPARE PARTS PER VESSEL	
	1 1 FUSE		FG80-A 125V 5A PBF JE56 000-5103	1	0	3	000-199-681-10
							000-199-681-10
MFR'S NAME	FURUNO ELECTRIC CO., LTD.		DWG. NO.	C4520-P01-B		1/1	

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

A-2

CODE NO.

TYPE

U S E

REMARKS/CODE NO.

SHIP NO.

NAME OF PART

OUTLINE

DWG. NO. OR TYPE NO.

QUANTITY

WORKING

PER SET

SPARE PARTS

PER VESSEL

REMARKS/CODE NO.

SHIP NO.

NAME OF PART

OUTLINE

DWG. NO. OR TYPE NO.

QUANTITY

WORKING

PER SET

SPARE PARTS

PER VESSEL

REMARKS/CODE NO.

SHIP NO.

NAME OF PART

OUTLINE

DWG. NO. OR TYPE NO.

QUANTITY

WORKING

PER SET

SPARE PARTS

PER VESSEL

REMARKS/CODE NO.

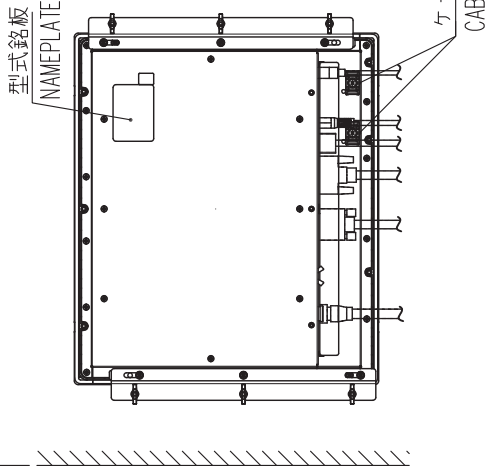
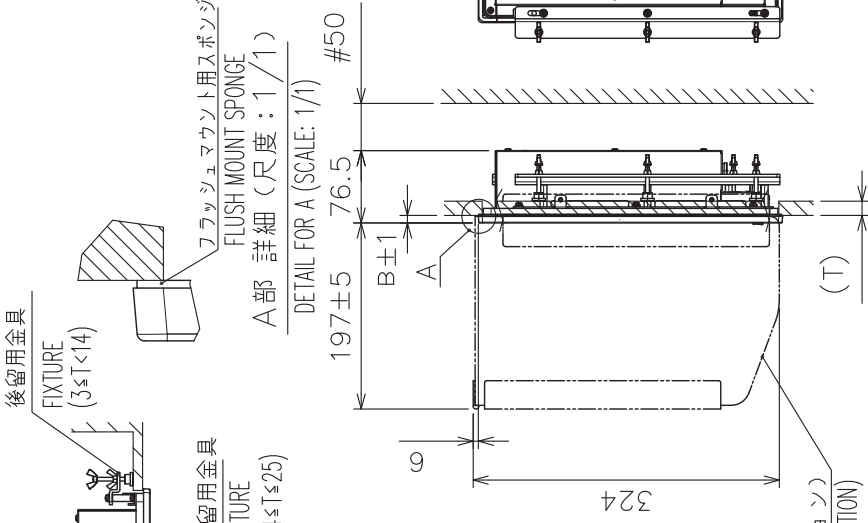
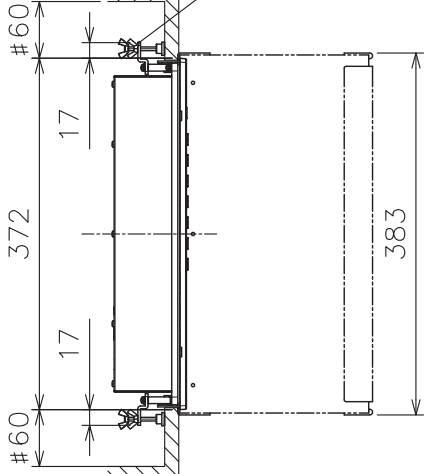
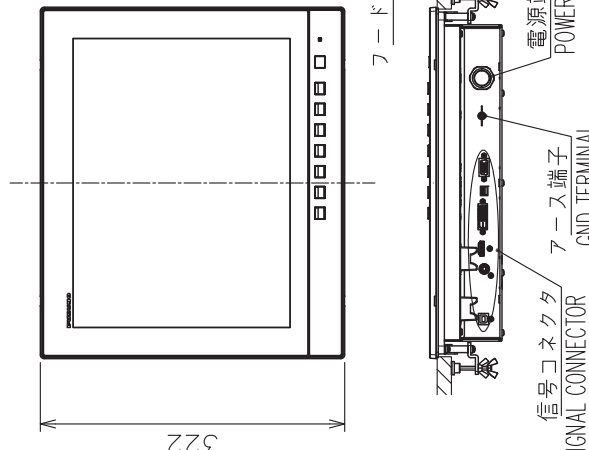


表 2 TABLE 2

フード HOOD	B (mm)	D (mm)
なし NO	8	364
あり YES	10	368

表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	± 1.5
$50 < L \leq 100$	± 2.5
$100 < L \leq 500$	± 3



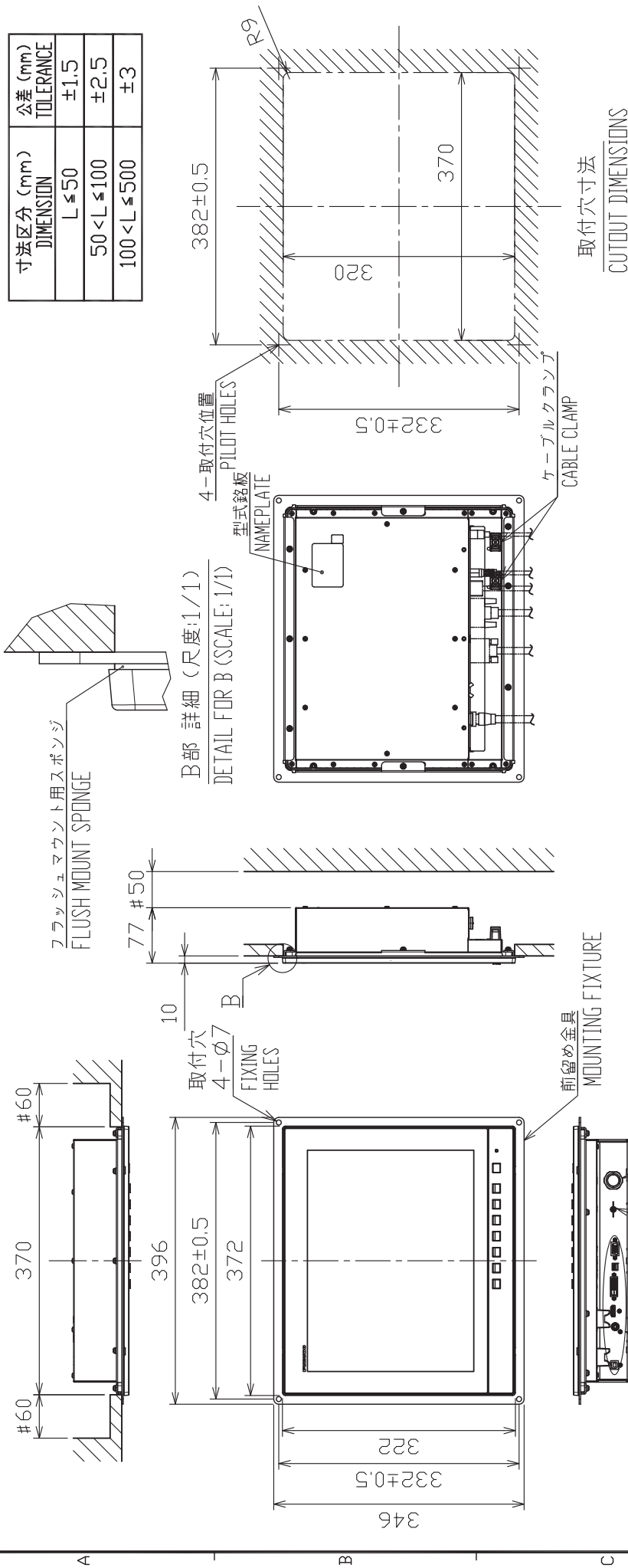
NOTE
 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
 2. # : MINIMUM SERVICE CLEARANCE.
 3. BULKHEAD THICKNESS (T) : $3 \leq T \leq 25$.
 4. SEE THE TABLE 2 FOR DIMENSIONS B AND D.

- 注 記
- 1) 指定外の寸法公差は表 1 による。
 - 2) # 印寸法は最小サービス空間寸法とする。
 - 3) 壁の厚さ (T) は最小3、最大25とする。
 - 4) B、D の各寸法は表 2 による。

DRAWN	28/Oct/2022	T.YAMASAKI	TITLE	MU-152HD
CHECKED	28/Oct/2022	H.MAKI	名称	カラーLCD表示器 (埋込装備 S)
APPROVED	11/Nov/2022	H.MAKI	外寸図	
SCALE	1/8	質量 4.8 kg	NAME	MARINE DISPLAY (FLUSH MOUNT S)
DWG.No.	C4520-G01-A	質量はケーブル・オプションを含まず。 MASS DOES NOT INCLUDE CABLE, OPTIONS.	REF.No.	OUTLINE DRAWING
				26-011-100G-3

表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3



注 記

- 1) 指定外の寸法公差は表 1 による。
- 2) # 印寸法は最小サービスクリアランスとする。
- 3) 取付はトラスタップピンネジ呼び径5×20を使用のこと。
- 4) オプションのフード装着は不可。

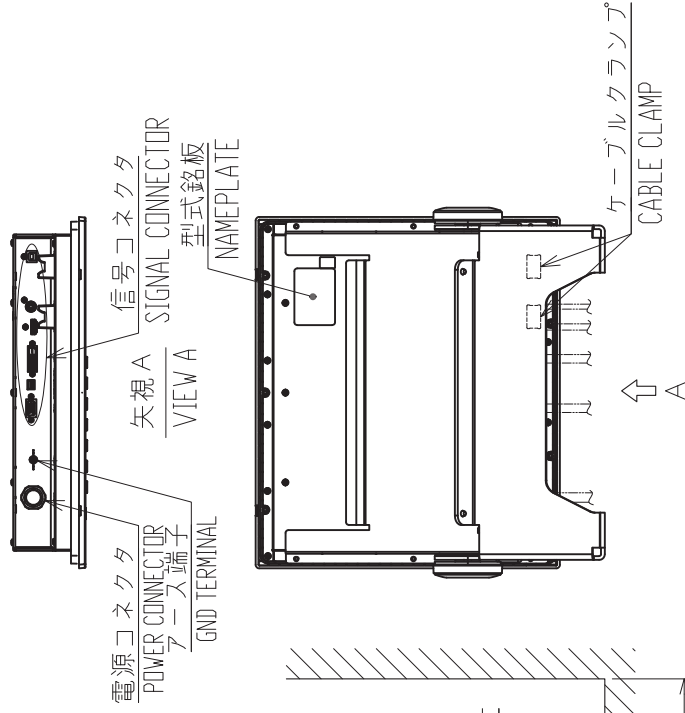
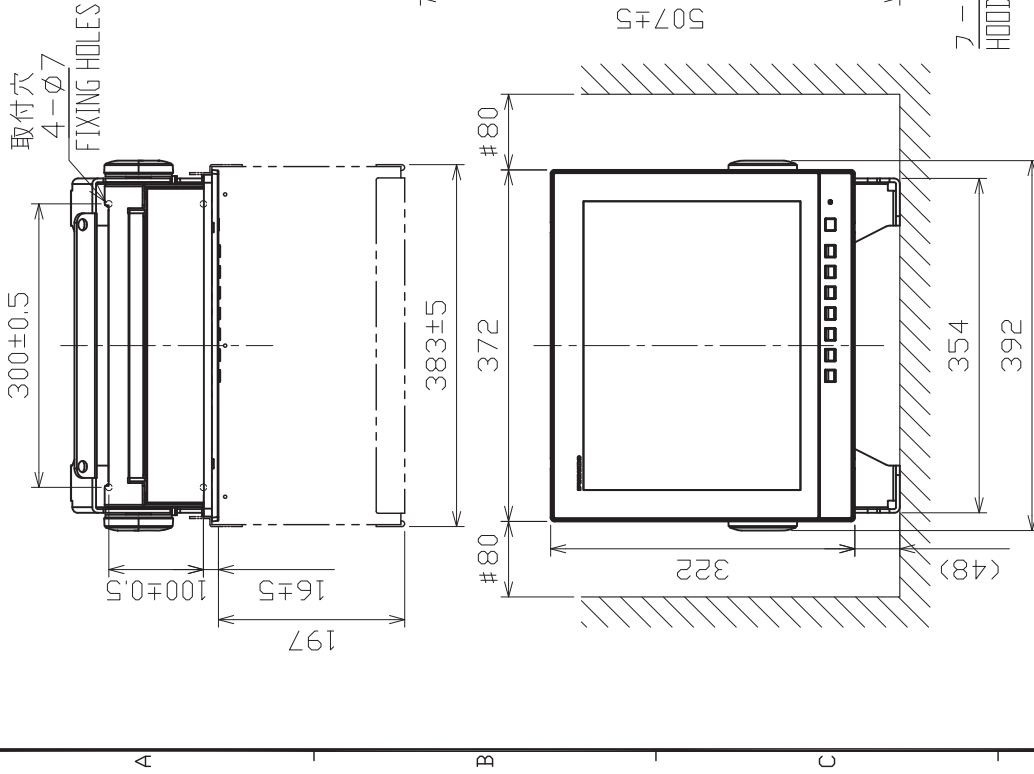
NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. # MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS Ø5x20 FOR FIXING THE UNIT.
4. OPTIONAL HOOD IS NOT AVAILABLE.

DRAWN	28/Oct/2022	I.YAMASAKI	TITLE	MU-152HD
CHECKED	28/Oct/2022	H.MAKI	名称	カラーLCD表示器 (埋込装備F)
APPROVED	11/Nov/2022	H.MAKI	外寸図	
SCALE	1/8	質量 4.5 kg ±0% 質量はケーブルを含みません。 MASS DOES NOT INCLUDE CABLE.	NAME	MARINE DISPLAY (FLUSH MOUNT F)
DWG.No.	C4520-G03-A	REF.No.	26-011-120G-2	OUTLINE DRAWING

表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3



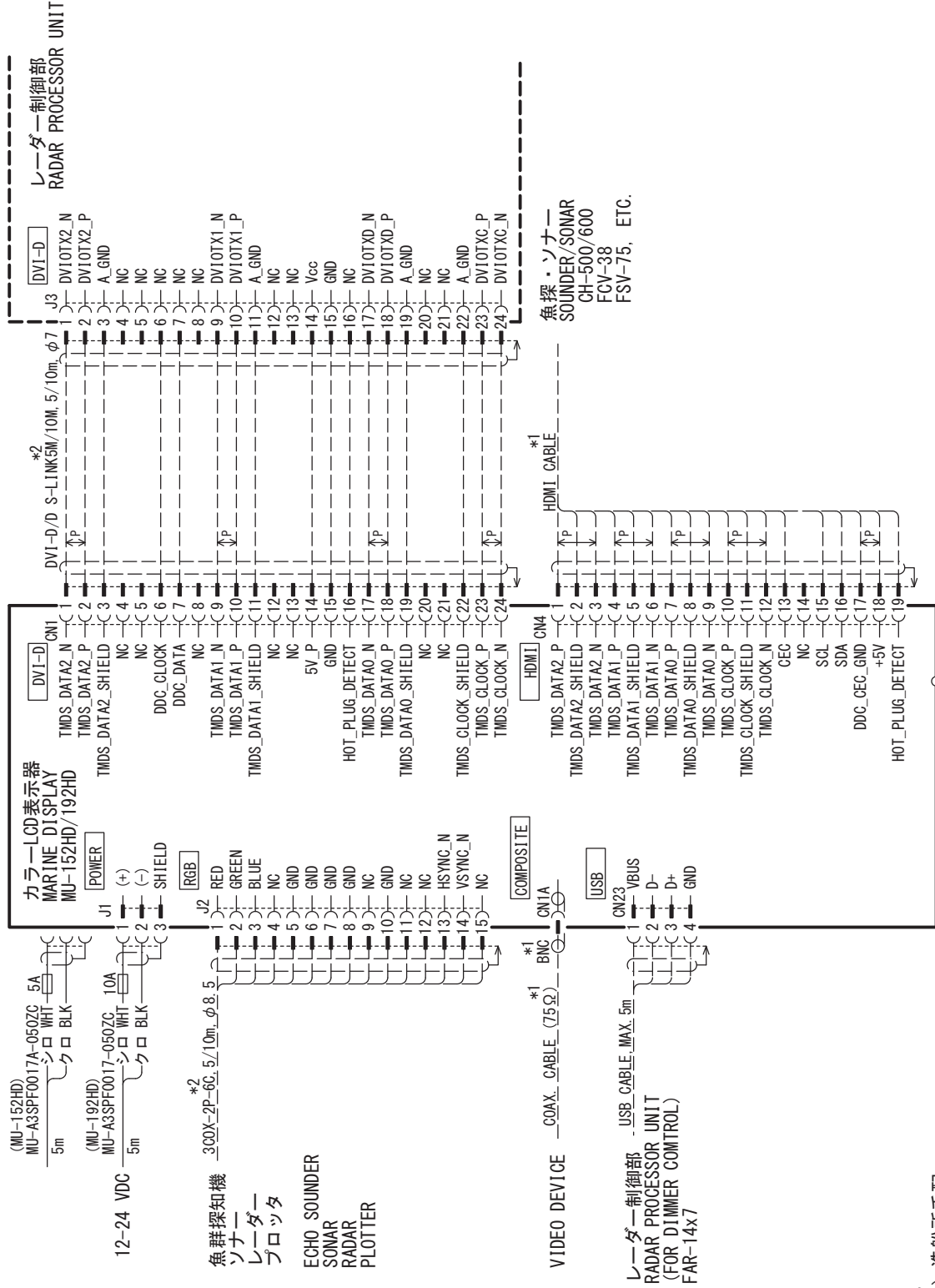
注 記

- 1) 指定外の寸法公差は表 1 による。
- 2) # 印寸法は最小サービスクリアランスとする。
- 3) 取付用ネジはトラスタツピンネジ呼び径 5 × 2.0 を使用のこと。

NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. # MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS $\phi 5 \times 2.0$ FOR FIXING THE UNIT.

DRAWN	24/Jan/2023	I.YAMASAKI	TITLE	MU-152HD
CHECKED	24/Jan/2023	H.MAKI	名称	カラーLCD表示器 (卓上装備)
APPROVED	25/Jan/2023	H.MAKI	外寸図	
SCALE	1/8	質量 6.9 ±0.07 kg	NAME	MARINE DISPLAY (TABLETOP MOUNT)
DWG.No.	C4520-002-B	質量はケーブル・オプションを含みません。 MASS DOES NOT INCLUDE CABLE, OPTIONS.	REF.No.	26-011-110G-2
				OUTLINE DRAWING



注記
 * 1) 造船所手配。
 * 2) オプション。

NOTE
 * 1: SHIPYARD SUPPLY.
 * 2: OPTION.

DRAWN	28/Oct/2022 T. YAMASAKI	TITLE	MU-152HD/192HD
CHECKED	28/Oct/2022 H. MAKI	名称	カラーLCD表示器
APPROVED	11/Nov/2022 H. MAKI	相互結線図	
SCALE	1/MASS kg	NAME	MARINE DISPLAY
DWG No.	C4521-C01-A	REF. No.	

INTERCONNECTION DIAGRAM

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.
- e. Magnetron and MIC with more than 1000 transmitting hours or older than 12 months, whichever comes first.
- f. Costs associated with the replacement of a transducer (e.g. Crane, docking or diver etc.).
- g. Sea trial, test and evaluation or other demonstrations.
- h. Products repaired or altered by anyone other than the FURUNO national distributor or an authorized dealer.
- i. Products on which the serial number is altered, defaced or removed.
- j. Problems resulting from an accident, negligence, misuse, improper installation, vandalism or water penetration.
- k. Damage resulting from a force majeure or other natural catastrophe or calamity.
- l. Damage from shipping or transit.
- m. Software updates, except when deemed necessary and warrantable by FURUNO.
- n. Overtime, extra labour outside of normal hours such as weekend/holiday, and travel costs above the 160 KM allowance
- o. 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 www.furunousa.com 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.



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

MARINE DISPLAY MU-152HD

(Model name, type number)

to which this declaration relates conforms to the following standard(s) or other normative document(s)

EU

EMC Directive 2014/30/EU

IEC 60945 Ed.4.0: 2002

For assessment, see

- Test report
Labotech International Co., Ltd.
LIC 12-22-138, 8 Sep 2022

UK

SI 2016 No.1091 EMC Regulations 2016 as amended

EN 60945: 2002

For assessment, see

- Test report
Labotech International Co., Ltd.
LIC 12-22-138, 8 Sep 2022

(title and/or number and date of issue of the standard(s) or other normative document(s))

On behalf of Furuno Electric Co., Ltd.

Nishinomiya City, Japan
28 October 2022

(Place and date of issue)

Akihiko Kanechika
Department General Manager
Quality Assurance Department

(name and signature or equivalent marking of authorized person)