

FURUNO

OPERATOR'S MANUAL

MULTI-PURPOSE LCD DISPLAY

MODEL MU-155C



FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN



(Elemental Chlorine Free)

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(YOSH) MU-155C



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* O M E 2 0 3 0 0 A 3 0 *



SAFETY INSTRUCTIONS

Safety Instructions for the Operator



WARNING



Do not open the equipment.

Only qualified personnel should work inside the equipment.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

Use the proper fuse and power cable.

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

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 place any object near the exhaust or intake vent.

Fire may result.

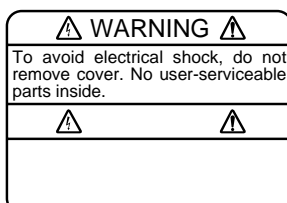


CAUTION

Do not connect/disconnect the signal cable while turning the power on.

The unit may be damaged.

A warning label is attached to the equipment. Do not remove the label. If the label is missing or damaged, contact a FURUNO agent or dealer.



Name: Warning Label (1)
Type: 86-003-1011-1
Code No.: 100-236-231

Safety Instructions for the Installer



WARNING



Do not open the cover unless totally familiar with electrical circuits and service manual.

Improper handling can result in electrical shock.

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

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

Do not install the equipment where it may get wet from rain or water splash.

Water in the equipment can result in fire, electrical shock or damage to the equipment.



CAUTION

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

	Standard compass	Steering compass
LCD Monitor MU-155C	1.55 m	1.0 m
Remote Controller RMC-200	0.3 m	0.3 m

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.

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FOREWORD

A Word to the Owner of the MU-155C

FURUNO Electric Company thanks you for purchasing the MU-155C 15" Multi-Purpose LCD Display. We are confident you will discover why the FURUNO name has become synonymous with quality and reliability.

For over 50 years 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.

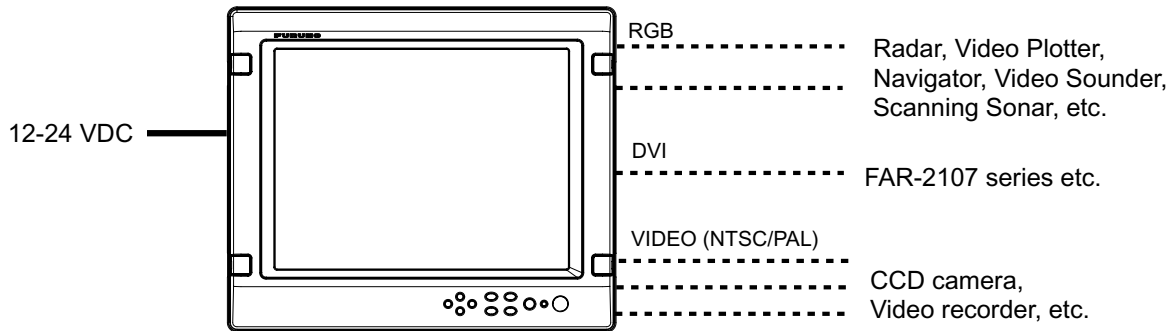
We would appreciate feedback from you, the end-user, about whether we are achieving our purposes.

Thank you for considering and purchasing FURUNO.

Features

- Main or remote display for radars, video sounders, sonars, plotter. Compatible equipment: FAR-21X7 series, MODEL1833C/1833C-BB series (NavNet), FCV-1200L/1200LM, CH-250, CH-270, CSH-5L/8L, GD/GP-280/380/680, etc.
- High resolution display of 1024 x 768dot (XGA)
- Brightness of 1,000 cd/m² (maximum) and 5 cd/m² (minimum) for comfortable viewing day and night
- Landscape orientation
- Wide viewing angle for observation by more than one person
- Picture-in-picture function

SYSTEM CONFIGURATION



Connectable equipment

Equipment	Resolution	Signal
FR-1500 MK3 series	XGA	Analog
FCV-1200L/1200LM*	VGA	Analog, via IF8000
GD/GP-280/380/680	VGA	Analog
CH-250	VGA	Analog, via IF8000
CH-270	VGA	Analog, via IF8000
CSH-5L/8L	XGA	Analog
FSV-24/24S/30/30S	SXGA	Analog
FR-21X5 series	SXGA	Analog
FAR-21X7 series	SXGA	DVI
FEA-2107	SXGA	DVI
MODEL 1833C series	VGA	Analog
MODEL 1833C-BB series	VGA	Analog

*= Not available for the portrait type.

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.

EQUIPMENT LISTS

Standard supply

Name	Type	Code No.	Qty	Remarks
Display Unit	MU-155C	-	1	w/hard cover
Remote Controller	RMC-200	000-012-629	1	
Spare Parts*	SP19-00201	001-410-490	1 set	
Installation Materials*	CP19-00200	000-012-641	1 set	
Accessories*	FP19-00801	001-410-510	1 set	

Option

Name	Type	Code No.	Qty	Remarks
Hanger	FP19-00900	001-410-540	1	w/knob, self-tapping screws
Cable Assy	3COX-2P-6C	000-146-500	1	Cable length: 5 m
		000-146-501	1	Cable length: 10 m
	DVI-D/D SINGLELINK5M	000-149-054	1	Cable length: 5 m
Remote Controller	RMC-200	000-012-629	1	

* = See packing list at the end of this manual.

1. MOUNTING

Refer to the outline drawing at the end of this manual for mounting dimensions.

Note: A glass plate covers the LCD. For this reason, handle the unit carefully.

1.1 Display Unit

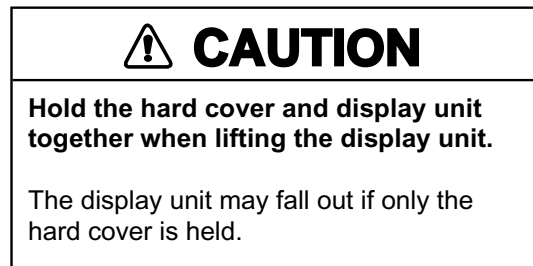
The display unit may be mounted on a desktop (optional hanger required) or flush mounted in a panel.

When selecting a mounting location, keep in mind the following points:

- Locate the unit out of direct sunlight.
- Select a location where the display can be easily viewed and the controls can be easily operated.
- Leave sufficient space around the unit for servicing and maintenance. See the outline drawing for minimum servicing space.
- The unit weighs 7.9 kg (flush mounting)/9.1 kg (desktop mounting). Be sure the mounting location is strong enough to support the weight of the unit.
- Locate the unit away from areas subject to water splash and rain.

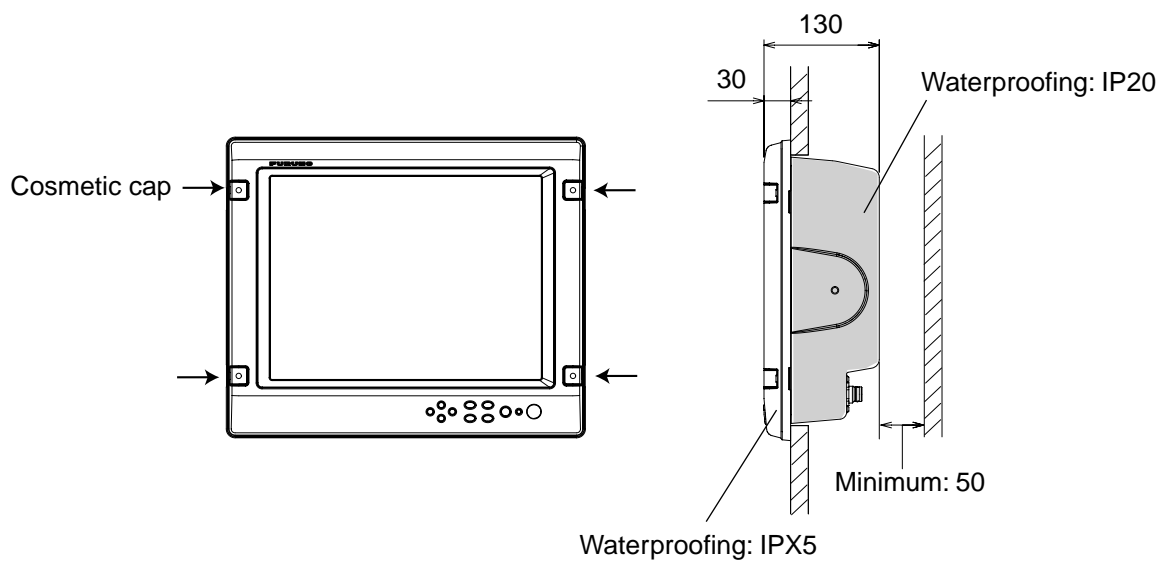
Flush mounting

See the outline drawing at the end of this manual for mounting dimensions.



1. Remove the hard cover from the unit.
2. Using the paper template supplied in the installation materials, make a cutout in the mounting location.
3. Set the display unit to the cutout, and fasten it with four self-tapping screws (5X40, supplied as accessories).

Note: Hex head bolts may also be used to fasten the display unit. However, their lengths must be 10 mm longer than the wall thickness.



Mounting dimensions

4. Attach the cosmetic caps (supplied as accessories) to the display unit at the locations shown in the drawing above.
5. Attach hard cover to protect the LCD.

Desktop mounting

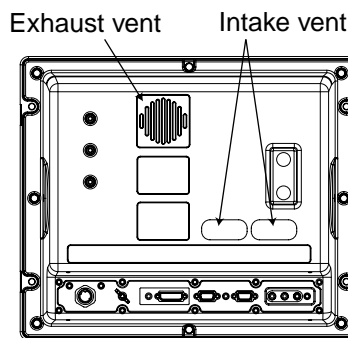
The display unit can be mounted on a desktop, using the optional hanger, Type: FP19-00900, Code No.: 001-410-540.

Contents of hanger mounting kit

Name	Type	Code No.	Qty
Hanger	FP19-00901	001-410-550	1
Knob bolt	FP03-09204	008-523-650	2
Self-tapping screw	5x20	000-802-081	4

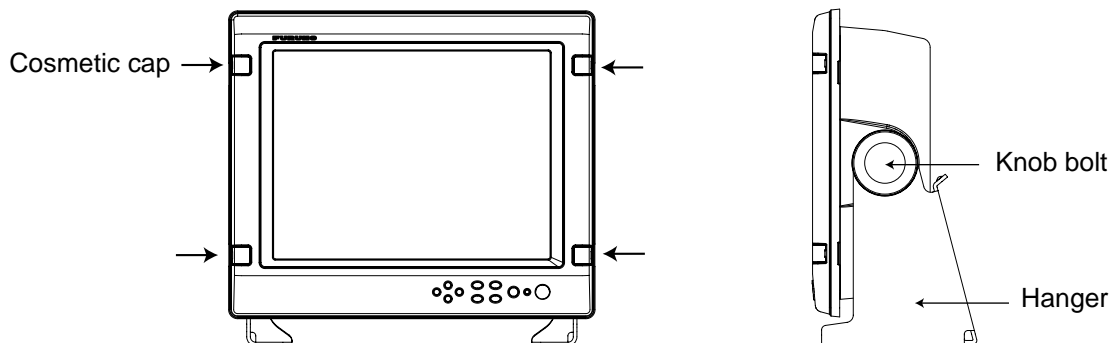
1. Fasten the hanger to the mounting location with four self-tapping screws (supplied).

Note: Do not mount the unit where the exhaust or intake vent may be obstructed.



Display unit, rear view

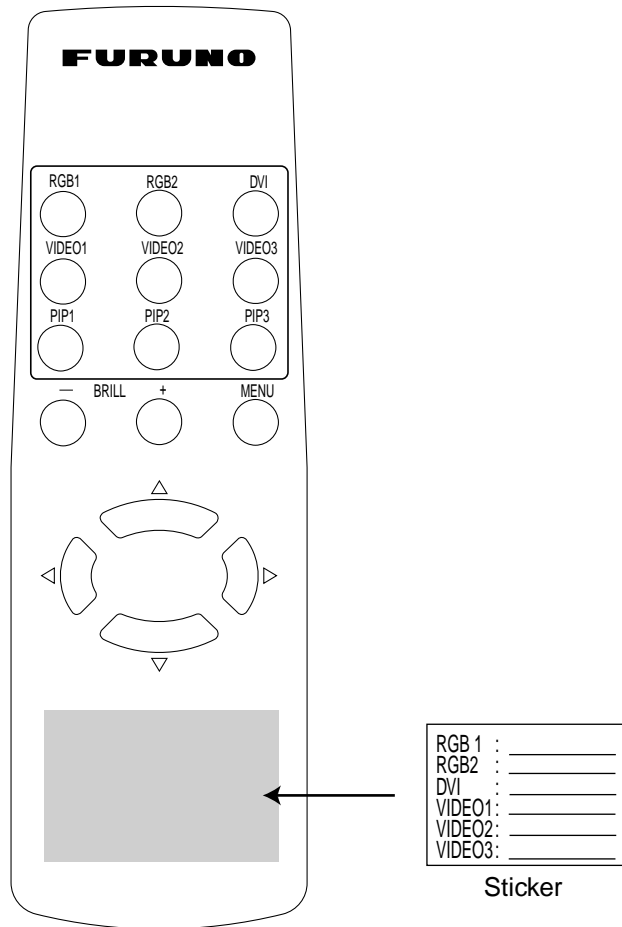
2. Screw knob bolts in unit.
3. Set unit to hanger, and then tighten knob bolts.
4. Remove the hard cover from the unit.
5. Attach the cosmetic caps (supplied as accessories) to the unit at the locations shown in the drawing below.
6. Attach hard cover to protect the LCD.



Desktop mounting

1.2 Remote Controller

Write the device name (ex. "FCV-1200L") for each "signal" key on the sticker supplied with the remote controller. Attach the sticker to the remote controller, at the location shown below.

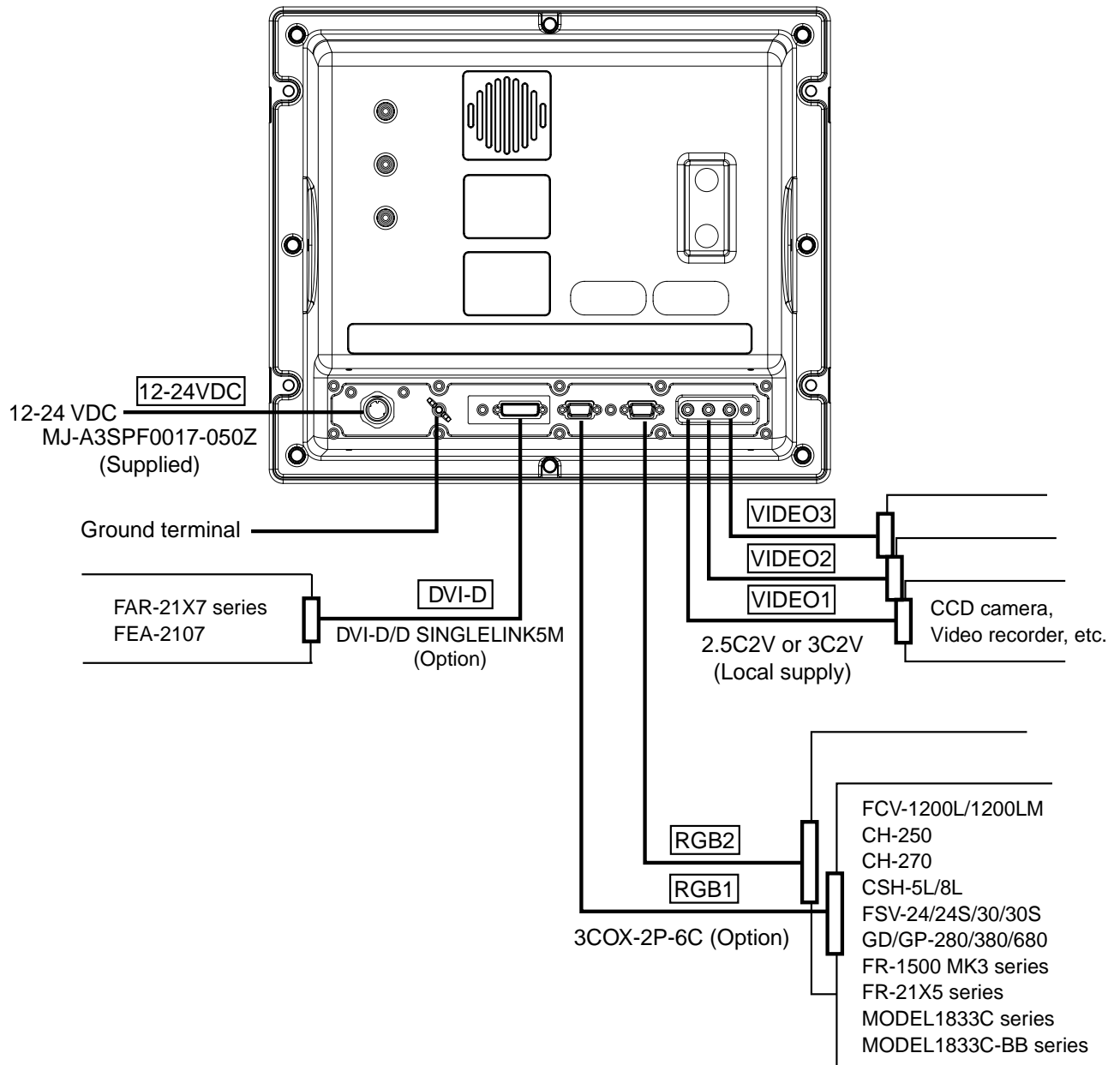


Remote controller RMC-200

 WARNING	
	Ensure battery polarity is correct.
	Wrong polarity may cause the batteries to explode.

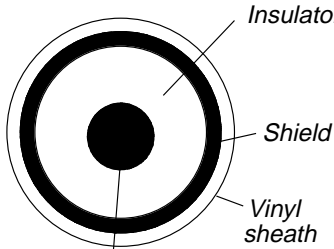
2. WIRING

Connect external equipment to the MU-155C by referring to the drawings below, the table on the next page and the interconnection diagram at the back of this manual.





Display unit, rear view

Port, cable and connectable equipment

Port Name	Used cable				Connectable Equipment
	Name	Type	Code No.	Standard/Option	
12-24 VDC	Power cable	MJ-A3SPF0017-050Z	000-138-928	Standard	Power source
DVI-D	DVI Cable	DVI-D/D SINGLELINK5M	000-149-054	Option	PC, FAR-21X7 series, FEA-2107
RGB1	Analog RGB Cable	3COX-2P-6C 5M	000-146-500	Option	FCV-1200L/1200LM, CH-250, CH-270, CSH-5L/8L, FSV-24/24S/30/30S, GD/GP-280/380/680, FR-1500 MK3 series, FR-21X5 series, Model 1833C series, Model 1833C-BB series
RGB2		3COX-2P-6C 10M	000-146-501	Option	
VIDEO1	Prepare the following cable locally. <ul style="list-style-type: none"> ▪ Connector type: RCA (metal), both ends ▪ Cable length: shorter than 10 m ▪ 2.5C2V or 3C2V (Japan Industrial Standard, or the equivalent) coaxial cable (Impedance: 75 Ω) 				
VIDEO2	<div style="text-align: center;"> <p><u>Cable 3C2V</u></p>  <p>Insulator</p> <p>Shield</p> <p>Vinyl sheath</p> <p>Conductor $S = 0.19 \text{ mm}^2$ $\varnothing = 0.5 \text{ mm}$</p> </div>				
VIDEO3					

Grounding

Fasten the ground wire (local supply) between the ground terminal on the display unit and the ship's superstructure. The length should be as short as possible.

Note: Use a "closed-type" lug () to make the ground connection at the display unit. Do not use an "open-type" lug ().

3. ADJUSTMENTS

Adjust the MU-155C according to the equipment connected. Note that you can adjust the display currently selected, at the DISP selection window. (See section 4.3.)

Note: The example screens shown in this manual may not match the screens you see on your display. The screen you see depends on your system configuration and equipment settings.

3.1 RGB/DVI Setting

RGB1 and RGB2 screens can be adjusted independently. Also, DVI screen can be adjusted similarly.

1. Press the [MENU] key to show the main menu.
The main menu is erased automatically with no operation for one minute.
2. Press the [◀] or [▶] key to select RGB1, RGB2 or DVI as appropriate.

RGB1	RGB2	DVI	VIDEO1	VIDEO2	VIDEO3	OSD	SYSTEM
H_SIZE		640					
V_SIZE		480					
PHASE		16	(1 - 32)				
CONTRAST		44	(1 - 64)				
H_POSITION		50	(1 - 99)				
V_POSITION		25	(1 - 40)				
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)				
DISP MODE		FULL	(FULL/EVEN/NORMAL)				
SHARPNESS		5	(1 - 10)				

RGB1 (RGB2) setting menu

RGB1	RGB2	DVI	VIDEO1	VIDEO2	VIDEO3	OSD	SYSTEM
CONTRAST		44	(1 - 64)				
H_POSITION		25	(1 - 50)				
V_POSITION		25	(1 - 40)				
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)				
DISP MODE		FULL	(FULL/EVEN/NORMAL)				
SHARPNESS		5	(1 - 10)				

DVI setting menu

3. Press the [▲] or [▼] key to select the item to adjust.
4. Press the [◀] or [▶] key to adjust.
5. Press the [MENU] key to close the menu.

Menu item	Function	Setting range
H_SIZE***	Adjusts the image size horizontally.	Variable depending on signal type
V_SIZE***	Adjusts the image size vertically.	
PHASE	Adjusts the characters and graphic lines.	1-32
CONTRAST	Increases or decrease contrast level.	1-64
H_POSITION	Moves the image position horizontally.	1-50 (DVI), 1-99 (RGB1, 2)
V_POSITION	Moves the image position vertically.	1-40
R_LEVEL	Adjusts red color level.	1-64
G_LEVEL	Adjusts green color level.	1-64
B_LEVEL	Adjusts blue color level.	1-64
TEMPERATURE	Adjusts color temperature.	5500K/6500K/7000K/8000K*
B STRETCH	Reduces noise on black color.	OFF, 1-10
W STRETCH	Emphasizes white color.	OFF, 1-10
DISP MODE	Selects the signal resolution. FULL: Shows the input signal on entire screen. EVEN: Shows the input signal with original size. NORMAL: Shows the input signal with same aspect ratio.	FULL/EVEN/NORMAL**
SHARPNESS	Sharpens the edge horizontally.	1-10

*: Warm color← 5500K, 6500K, 7000K, 8000K → Cold color

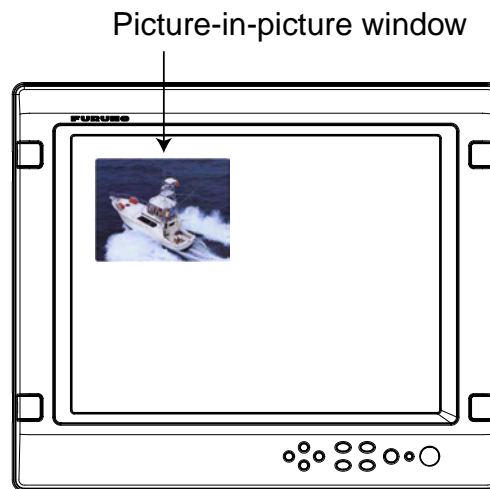
** : Select NORMAL to use the SXGA signal from a radar or scanning sonar. Note that both left and right edges may be in black. For VGA and XGA signals, FULL and NORMAL are available.

***: Adjust H_SIZE and V_SIZE properly. Otherwise, unwanted image may appear outside of the display area.

Note: When the characters are not clear, adjust PHASE and SHARPNESS.

3.2 VIDEO Setting

VIDEO1, VIDEO2 and VIDEO3 screens; that is, the picture-in-picture windows can be adjusted as below.



Picture-in-picture window

1. Press the [MENU] key to show the main menu.
2. Press [◀] or [▶] to select VIDEO1, VIDEO2 or VIDEO3 as appropriate.

RGB1	RGB2	DVI	VIDEO1	VIDEO2	VIDEO3	OSD	SYSTEM
PIP_SIZE	5		(1 - 10)				
CONTRAST	44		(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)				

VIDEO1 (2 or 3) setting menu

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

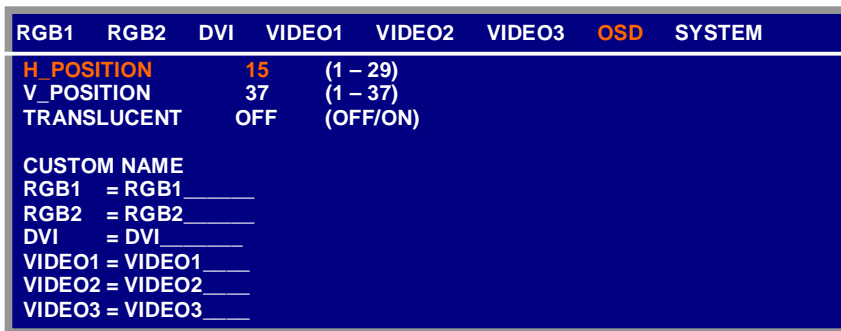
Menu item	Function	Available range
PIP_SIZE	Adjusts the size of picture-in-picture window.	1(31 mm x 23 mm) - 10 (214 mm x 160 mm)
CONTRAST	Increases or decrease contrast level.	1-64
R_LEVEL	Adjusts red color level.	1-64
G_LEVEL	Adjusts green color level.	1-64
B_LEVEL	Adjusts blue color level.	1-64
TEMPERATURE	Adjusts color temperature.	5500K/6500K/7000K/8000K
B STRETCH	Reduces noise on black color.	OFF, 1-10
W STRETCH	Emphasizes white color.	OFF, 1-10

3.3 Menu Window Setting

3.3.1 Adjusting the menu window

The menu window can be moved and translucetized on the OSD (On Screen Display) menu.

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



OSD menu

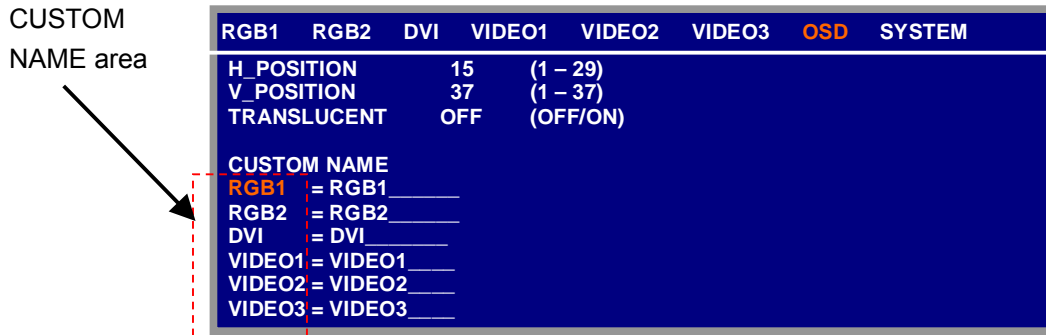
3. Press [▲] or [▼] to select the menu item you want to adjust.
4. Press [◀] or [▶] to adjust.
5. Press the [MENU] key to close the menu.

Menu item	Function	Available range
H_POSITION	Moves the menu window horizontally.	1-29 (1: left, 29: right)
V_POSITION	Moves the menu window vertically.	1-37 (1: up, 37: down)
TRANSLUCENT	Translucentizes the menu window.	OFF, ON
CUSTOM NAME	See the next section.	

3.3.2 Changing the signal name

You can change the signal name which is shown on the DISP or PIP window, described in the next chapter. It is useful to use the name of the device connected (ex. "FCV-1200L"). For detailed information about these windows, see Chapter 4.

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

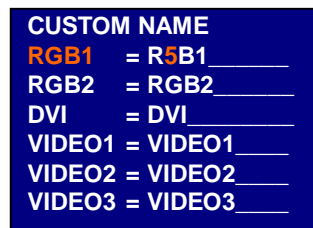


OSD menu

3. Press the [▲] or [▼] key to select the signal to change its name in CUSTOM NAME area. In the example above, RGB1 is chosen.
4. Press the [▶] key to select the character you want to change. In the example below, "G" is selected.



5. Press the [▲] or [▼] key to select appropriate alphanumeric character. In the example below, "5" is selected.

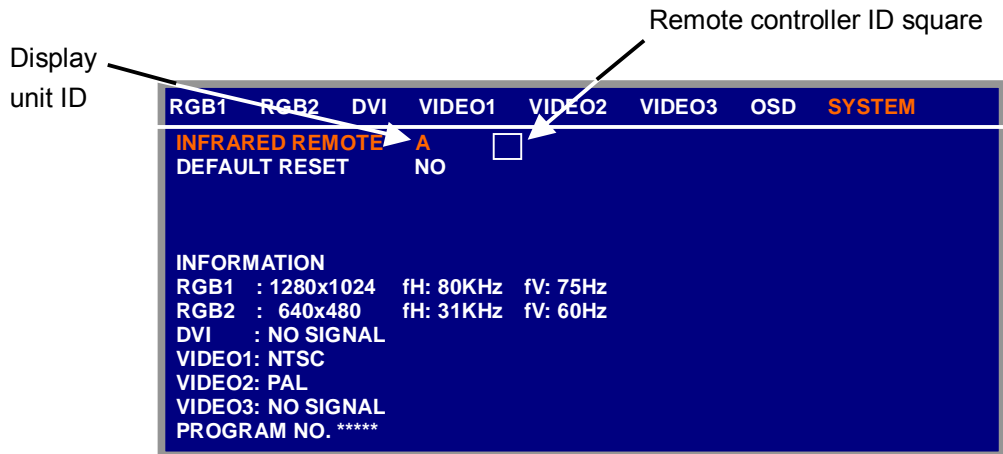


6. To change another signal name, press [◀] and then press [▲] or [▼] to select it.
7. Press the [MENU] key to close the menu.

3.4 Remote Controller Setting

A remote controller can be set to be operative with a specific display unit, in the case of multiple MU-155C display units. Set the remote controller mode desired on the SYSTEM menu as follows;

1. Press the [MENU] key to show the main menu.
2. Press the [▶] key to select SYSTEM.



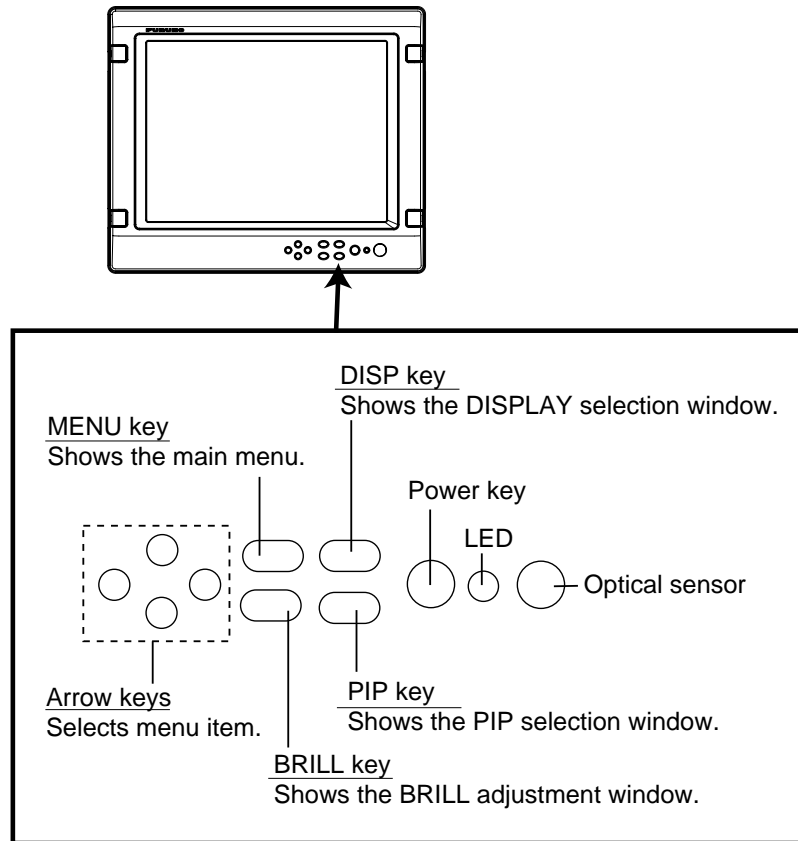
SYSTEM menu

3. Select INFRARED REMOTE.
4. Point the remote controller toward the display unit, and press any key on the remote controller. The current setting of remote controller is shown inside the remote controller setting square.
5. Press the [RGB2] and [BRILL +] keys together on the remote controller to change the remote controller ID among A, B, C and D. Your selection appears inside the square.
6. Press the [◀] or [▶] key so that the display unit ID is the same as the remote controller ID in the square.
7. Press the [MENU] key to close the menu.

4. OPERATION

4.1 Controls

Display unit



Display unit

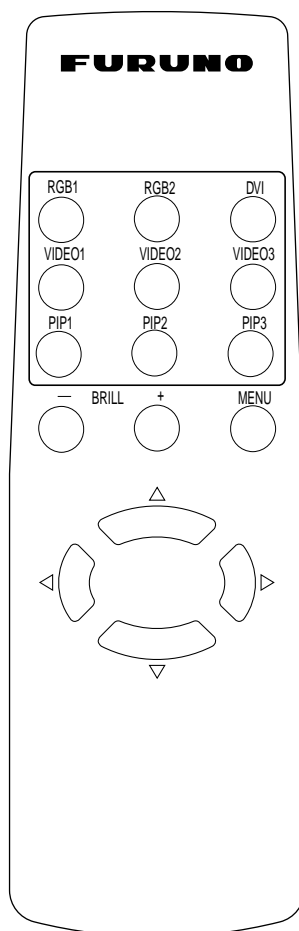
Power key: Press the power key (⏻) to turn the power on or off.

LED: The LED changes color according to signal status as below.

Green: The selected signal to be displayed is input correctly from the external device.

Orange: The selected signal to be displayed is not input from the external device for five seconds.

Remote controller



Remote controller

Key name	Function
RGB1*	Shows the RGB1 signal.
RGB2*	Shows the RGB2 signal.
DVI	Shows the DVI signal.
VIDEO1**	Shows the VIDEO1 signal on the entire screen.
VIDEO2**	Shows the VIDEO2 signal on the entire screen.
VIDEO3**	Shows the VIDEO3 signal on the entire screen.
PIP1***	Shows the VIDEO1 signal in the picture-in-picture window.
PIP2***	Shows the VIDEO2 in the picture-in-picture window.
PIP3***	Shows the VIDEO3 in the picture-in-picture window.
BRILL (+)	Increases the display brilliance.
BRILL (-)	Decreases the display brilliance.
MENU	Shows the main menu.
Arrow keys	Selects the menu items.

*: When a picture-in-picture window is shown, it remains on the RGB1 (2).

** : When the previous selection is PIP1, 2 or 3, it is erased by pressing these keys.

***: When the previous selection is VIDEO1, 2 or 3, these keys are not available.

For PIP (picture-in-picture), see “3.2 VIDEO Setting”.

4.2 Adjusting Display Brilliance

The display brilliance can be adjusted as follows.

1. Press the [BRILL] key on the display unit to show the BRILL adjustment window.



BRILL window

2. Press the [◀] or [▶] key to adjust the brilliance. (Setting range: 1 to 50)
You can also adjust brilliance by pressing the [BRILL] key.
3. Press the [▲] or [▼] key to close the window.
The window is erased when there is no operation within five seconds.

Note: Avoid excessively low brilliance to prevent display irregularities.

4.3 Choosing Source for Main Picture

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

1. Press the [DISP] key to show the DISP selection window.
Signal names can be changed. For detail, see “3.3.2 Changing the signal name”.



DISP selection window

2. Press the [▲] or [▼] key to select a signal.
You can also select the signal by pressing the [DISP] key continuously.
RGB1-2: The signal from the chosen RGB port is displayed on the entire screen.
DVI: The signal from the DVI port is displayed on the entire screen.
VIDEO1-3: The external video from the appropriate VIDEO port is displayed on the entire screen.
3. Press the [◀] or [▶] key to close the window.
The window is erased when there is no operation within five seconds.

Note: The name of the selected signal appears at the right top corner for five seconds after the DISP selection window is erased.

4.4 Choosing Source for Picture-in-Picture

Choose the source for the picture-in-picture window as follows:

Note: The size of the picture-in-picture window can be adjusted on the VIDEO1, 2 and 3 menus. For details, see section 3.2.

1. With the RGB1, RGB2 or DVI display shown, press the [PIP] key.
The PIP selection window appears. Signal names can be changed. For detail, see “3.3.2 Changing the signal name”.

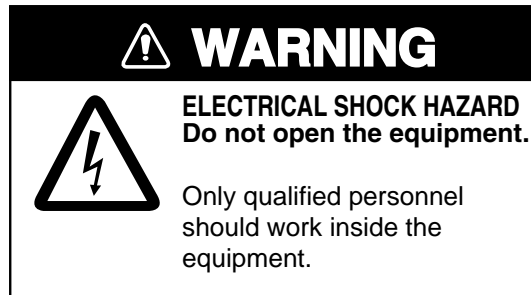


PIP window

2. Press the [▲] or [▼] key to select the VIDEO port desired.
VIDEO can be also selected by pressing the [PIP] key continuously. To turn off the picture-in-picture window, choose OFF.
3. Press the [◀] or [▶] key to close the window.

Note: The picture-in-picture window can be moved by pressing the arrow keys when a menu window is erased.

5. MAINTENANCE, TROUBLESHOOTING

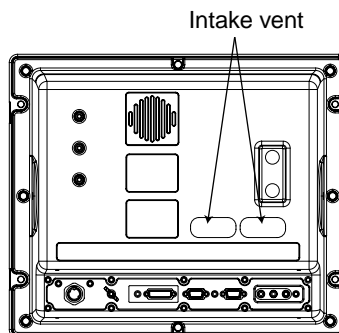


5.1 Maintenance

Routine maintenance

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

- Check that the connectors at the rear 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 and LCD 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 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.
- Clean the filter at the intake vent regularly. To remove the filter, grasp the intake vent with fingers and pull forward. Use an air blower to remove dust and dirt from the filter. If it is particularly dirty, wash it in water or mild detergent and then let it dry. When reattaching the filter, be sure it is not caught in the holes for the intake vent.



Display unit, rear view

Fuse replacement

The fuse in the power cable protects the equipment from internal fault and overcurrent. If the fuse blows, find the cause before replacing 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.

Ship's power source	Rating of fuse
12 VDC	10A
24 VDC	5A

Battery replacement

The remote controller has two AA batteries. If the distance from which the remote controller can be operated has decreased, change the battery.

Note: Replace all batteries together. Do not mix old and new batteries.

WARNING

Ensure battery polarity is correct.

Wrong polarity may cause the batteries to explode.

5.2 Troubleshooting

The table below provides troubleshooting procedures to use when no picture appears. If you cannot restore the picture, do not attempt to check inside the equipment – there are no user serviceable parts inside. Refer any work to a qualified technician.

Troubleshooting table

Reason for no picture	Remedy
Ship's battery voltage too high	Check battery voltage.
Fuse has blown.	Replace fuse.
Cable between MU-155C and external equipment has loosened.	Refasten cable.
Power cable has loosened.	Refasten cable.

You can confirm which signals are currently input in the SYSTEM menu.

RGB1
RGB2
DVI
VIDEO1
VIDEO2
VIDEO3
OSD
SYSTEM

INFRARED REMOTE A A

DEFAULT RESET NO

INFORMATION

RGB1 : 1280x1024 fH: 80KHz fV: 75Hz

RGB2 : 640x480 fH: 31KHz fV: 60Hz

DVI : NO SIGNAL

VIDEO1: NTSC

VIDEO2: PAL

VIDEO3: NO SIGNAL

PROGRAM NO. *****

SYSTEM menu

5.3 Clearing the Memory

You may want to clear the memory to start afresh with default settings. You can do this as follows:

1. Press the [MENU] key to show the main menu.
2. Press the [▶] keys to open the SYSTEM menu.
3. Select DEFAULT RESET by arrow keys.
4. Press the [▶] key to select YES.



SYSTEM menu

5. Press the [▶] key again to select “reset”.
6. Press the [MENU] key to close the menu.

SPECIFICATIONS OF MULTI-PURPOSE LCD DISPLAY MU-155C

1 GENERAL

1.1	Display	15-inch XGA color TFT-LCD, 304 x 228 mm
1.2	Brightness	1,000 cd/m ² maximum, 5 cd/m ² minimum
1.3	Resolution	1024 x 768 (XGA)
1.4	Viewing angle	85° (up/down and left/right)
1.5	Input signal	
	RGB ports	VESA (VGA, SVGA, XGA, SXGA), (0.7 Vp-p, Synchronization: TTL level)
	DVI port	VESA (VGA, SVGA, XGA, SXGA)
	VIDEO ports	NTSC/PAL

2 POWER SUPPLY

12-24 VDC: 7.0-3.0 A

3 ENVIRONMENTAL CONDITION

3.1	Ambient temperature	
	Display unit	-15°C to +55°C
	Remote controller	+5°C to +35°C
3.2	Relative humidity	93% at 40°C
3.3	Waterproofing	
	Display unit	Front panel: IPX5, Rear panel: IP20
	Remote controller	IPX0
3.4	Vibration (IEC 60945 ed.4)	<ul style="list-style-type: none">● 2 - 5 Hz and up to 13.2 Hz with an excursion of ±1 mm ±10 % (7 m/s² maximum acceleration at 13.2 Hz)● 13.2 - 100 Hz with a constant maximum acceleration of 7 m/s²

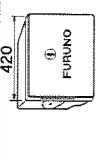
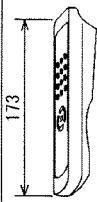
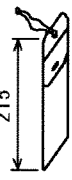
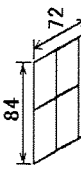
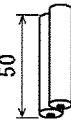



4 COATING COLOR

N3.0

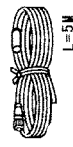
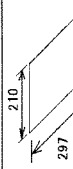
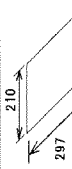
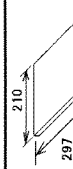
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PACKING LIST MU-1550-J/E


19AS-X-9851-1 1/1

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
LCD表示器 MULTI-PURPOSE LCD DISPLAY		MU-155C	1
		000-012-640	
リモコンセット REMOTE CONTROLLER SET RMC-200			
リモコンユニット REMOTE CONTROLLER		RMC-200	1
		000-149-069	
リモコンビニールケース VINYL CASE FOR REMOTE CONTROLLER		14-034-2075-1	1
		100-292-801	
リモコンシールマーク STICKER		19-024-1313-0	1
		100-315-270	
BATT (MN) SIZE AA BATTERY		R6PKRCP-2	1
		000-142-527	
予備品 SPARE PARTS			
予備品 SPARE PARTS		SP19-00201	1
		001-410-490	
付属品 ACCESSORIES			
付属品 ACCESSORIES		FP19-00801	1
		001-410-510	
工事材料 INSTALLATION MATERIALS			
工事材料 INSTALLATION MATERIALS		CP19-00201	1
		001-410-500	

1.コード番号末尾の[**]は、選択品の代表型式/コードを表します。
CODE NUMBER ENDED BY "**" INDICATES THE NUMBER OF TYPICAL MATERIAL.

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
その他工材 OTHER INSTALLATION MATERIALS			
ケーブル組品MJ CABLE ASSY.		MJ-A3SPF0017-050Z	1
		000-138-928	
図書 DOCUMENT			
ヒューズ変更のお願い NOTICE FOR FUSE REPLACEMENT		C22-00402-*	1
		000-149-702	
型紙 TEMPLATE		C22-00401-*	1
		000-149-701	
取扱説明書(和) OPERATOR'S MANUAL		OMJ-20300-*	1
		000-149-699 **	

FURUNO

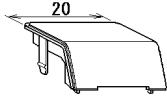
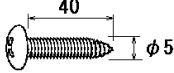
		CODE NO.	001-410-500	19AS-X-9401 -0	
		TYPE	CP19-00201	1/1	
工事材料表 INSTALLATION MATERIALS					
番号 NO.	名称 NAME	略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 Q'TY	用途/備考 REMARKS
1	ヒューズ*ハリマ-ク FUSE LABEL		03-153-1312-0	1	
			CODE NO.		

19AS-X-9401

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

FURUNO

CODE NO.	001-410-510-00	19AS-X-9501 -3
TYPE	FP19-00801	1/1

付属品表					
ACCESSORIES					
番号 NO.	名称 NAME	略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 Q'TY	用途/備考 REMARKS
1	ハ [°] 衤加 [°] -(15) COSMETIC CAP		19-024-2241-0	4	
			CODE NO. 100-317-180-00		
2	+トラス [°] ッピ [°] ンネジ [°] 1ｼ [°] SELF-TAPPING SCREW		5X40 SUS304	4	
			CODE NO. 000-162-611-10 000-150-749-00		

型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

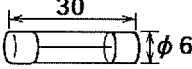
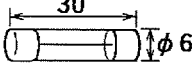
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19AS-X-9501

FURUNO ELECTRIC CO., LTD

FURUNO

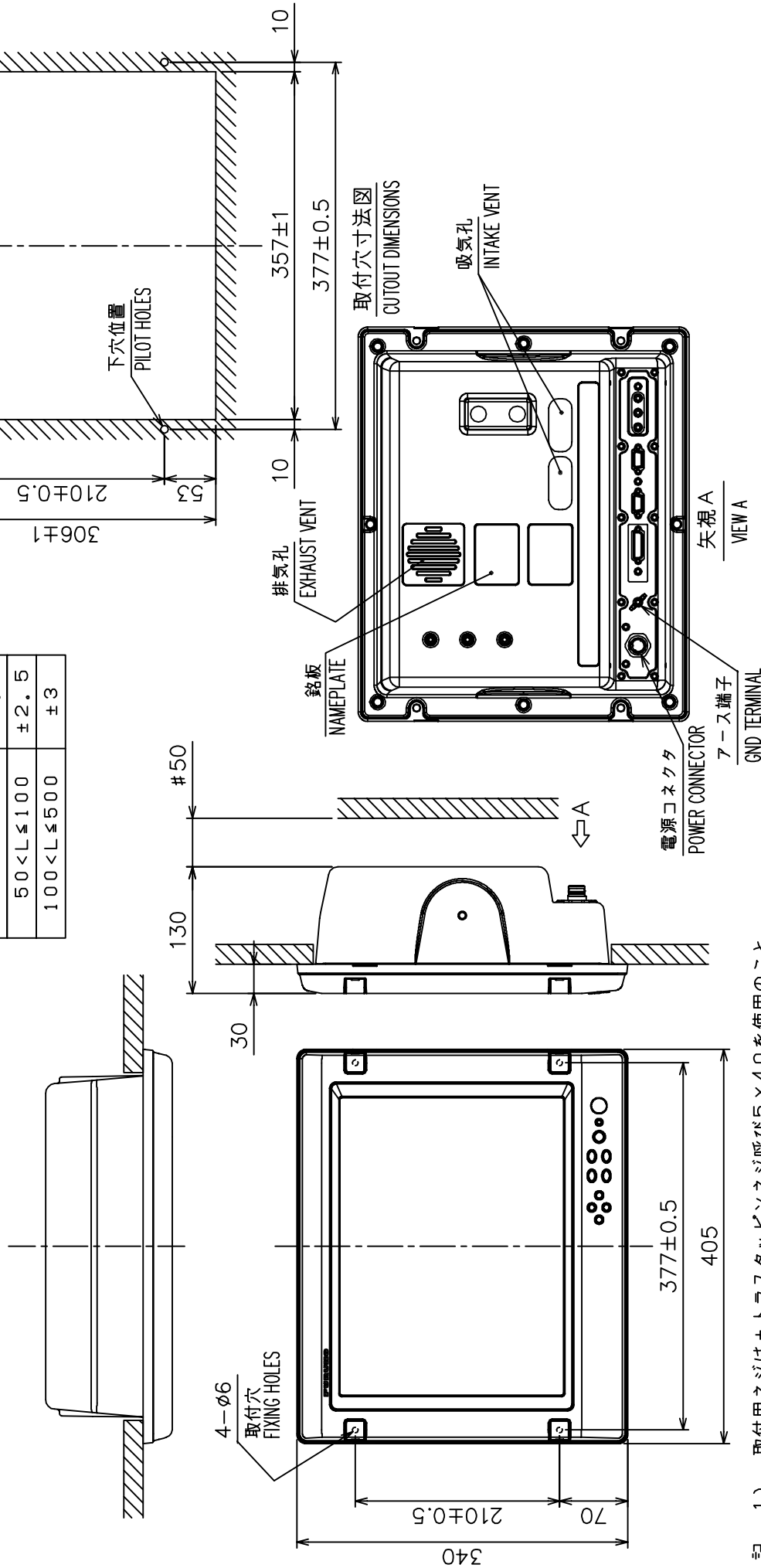
CODE NO.	001-410-490	19AS-X-9301 -0 1/1
TYPE	SP19-00201	BOX NO. P

SHIP NO.	SPARE PARTS LIST FOR		U S E			SETS PER VESSEL	
ITEM NO.	NAME OF PART	OUTLINE	DWG. NO. OR TYPE NO.	QUANTITY			REMARKS/CODE NO.
				WORKING		SPARE	
				PER SET	PER VES		
1	ヒューズ FUSE		FGBO-A 5A AC125V			3	000-549-064
2	ヒューズ FUSE		FGBO 10A AC125V			3	000-549-065
MFR'S NAME	FURUNO ELECTRIC CO., LTD.		DWG NO.	19AS-X-9301		1/1	

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

表 1 TABLE 1

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

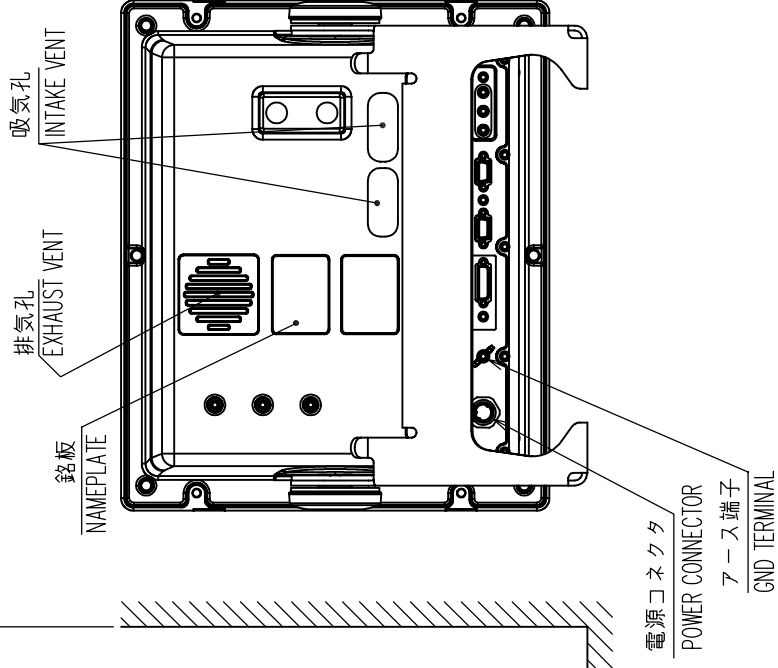
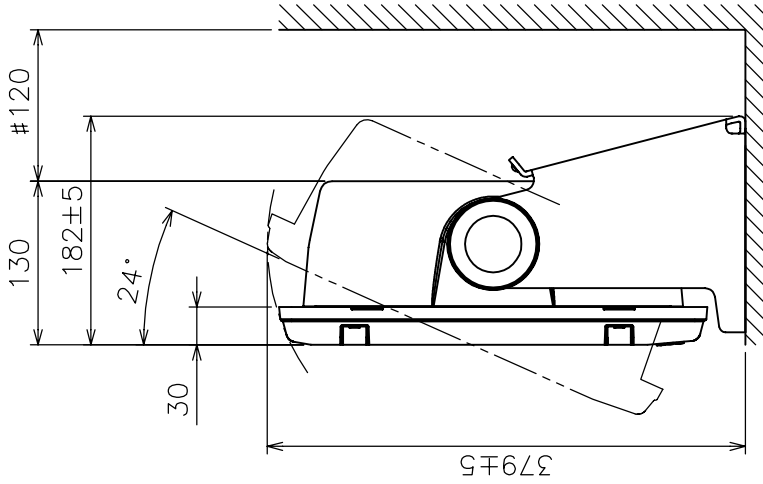
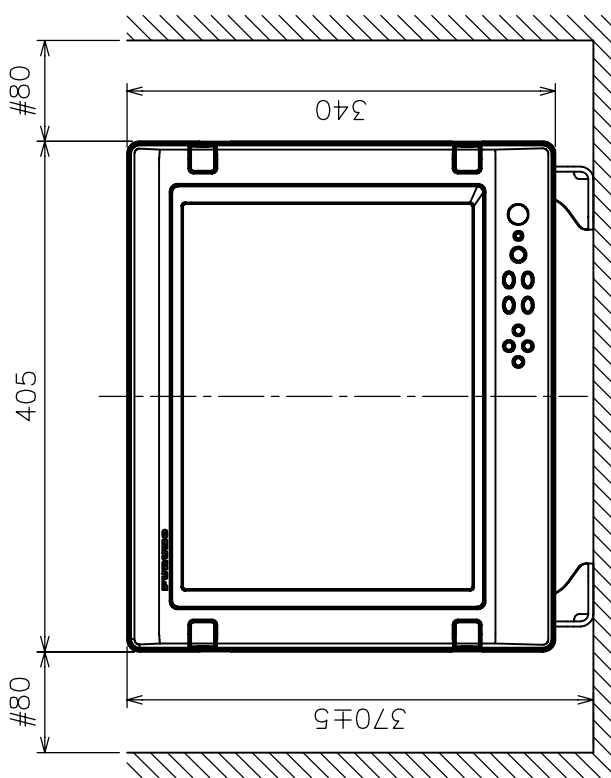
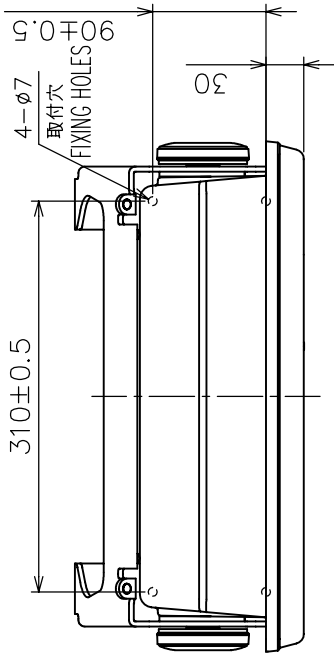


- 注記 1) 取付用ネジは+トラスタツピンネジ呼び5×4.0を使用のこと。
 2) #印寸法は最小サービス空間寸法とする。
 3) 指定外の寸法公差は表1による。
- NOTE 1. USE SELF-TAPPING SCREWS 5X4.0 FOR FIXING THE UNIT.
 2. #: MINIMUM SERVICE CLEARANCE.
 3. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.

DRAWN	JUN. 10, '04 E. MIYOSHI	TITLE	MU-155C
CHECKED	TAKAHASHI, T	名称	15型カラー-LCD表示器 (埋込装備)
APPROVED	Y. Hatai	外寸図	
SCALE	1/6	NAME	MULTI-PURPOSE LCD DISPLAY (FLASH MOUNT)
DRWG No.	C2030-G01-B	19-024-200G-4	OUTLINE DRAWING

表 1 TABLE 1

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



- 注 記
- 1) 取付用ネジは＋トラスチックピンネジ呼び5×2.0を使用のこと。
 - 2) # 印寸法は最小サービス空間寸法とする。
 - 3) 指定外の寸法公差は表 1 による。
- NOTE
1. USE SELF-TAPPING SCREWS 5X2.0 FOR FIXING THE UNIT.
 2. #: MINIMUM SERVICE CLEARANCE.
 3. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.

DRAWN	Apr.19.04 E. MIYOSHI	TITLE	MU-155C
CHECKED	TAKAHASHI. T	名称	15型カラーLCD表示器 (卓上装備)
APPROVED	Y. Hatai	外寸図	
SCALE	1/6 MASS 9.1 ±10% kg	NAME	MULTI-PURPOSE LCD DISPLAY (TABLETOP MOUNT)
DWG No.	C2030-G02-A	19-024-210C-2	OUTLINE DRAWING

4

3

2

15型カラーLCD表示器
MULTI-PURPOSE LCD DISPLAY

ECHO SOUNDER
SONAR
RADAR
PLOTTER

魚群探知機
ソナー
レーダー
プロッター

*3
RGB1
1>:RED
2>:GREEN
3>:BLUE
4>:NC
5>:GND
6>:GND
7>:GND
8>:GND
9>:NC
10>:GND
11>:NC
12>:NC
13>:HSYNC_N
14>:VSYNC_N
15>:NC

*2
300X-2P-6C
5m/10m, φ8.5

*3

RGB2
RED<1
GREEN<2
BLUE<3
NC<4
GND<5
GND<6
GND<7
GND<8
NC<9
GND<10
NC<11
NC<12
HSYNC_N<13
VSYNC_N<14
NC<15

ECHO SOUNDER
SONAR
RADAR
PLOTTER

魚群探知機
ソナー
レーダー
プロッター

*3

DVI-D
RX2-<1
RX2+<2
RX2_SHIELD<3
RX4-<4
RX4+<5
DDC_SDA<6
DDC_SDA<7
RX1-<9
RX1+<10
RX1_SHIELD<11
RX3-<12
RX3+<13
DDC_+5V<14
DDC_GND<15
HPD<16
RX0-<17
RX0+<18
RX0_SHIELD<19
RX5-<20
RX5+<21
RX0_SHIELD<22
RX0+<23
RX0-<24

*2
DVI-D/D_SINGLE LINK5M
5m, φ7.1

レーダー
RADAR

VIDEO1
VIN1
GND

*4
ビデオカメラ CCD CAMERA
ビデオデッキ VIDEO RECORDER
コボシット映像信号ケーブル
COMPOSITE VIDEO SIGNAL CABLE
MAX. 10m

VIDEO2
VIN2
GND

*4
ビデオカメラ CCD CAMERA
ビデオデッキ VIDEO RECORDER
コボシット映像信号ケーブル
COMPOSITE VIDEO SIGNAL CABLE
MAX. 10m

VIDEO3
VIN3
GND

*4
ビデオカメラ CCD CAMERA
ビデオデッキ VIDEO RECORDER
コボシット映像信号ケーブル
COMPOSITE VIDEO SIGNAL CABLE
MAX. 10m

12-24VDC
DC.P
DC.N
SHIELD

FUSE 10A (12V)
5A (24V)
MJ-A3SPF0017-050Z
5m, φ10

12-24 VDC

1V-8SQ
*5

注記

- *1) ユーザー手配。
- *2) オプション。
- *3) 工場にて取付済み。
- *4) RCAメタルコネクタ、2.5C2Vか3C2Vケーブル推奨。
- *5) 造船所手配。

NOTE

- *1. USER SUPPLY.
- *2. OPTION.
- *3. FITTED AT FACTORY.
- *4. RECOMMENDED CONNECTOR AND CABLE: RCA METAL CONNECTOR AND CABLE 2.5C2V, 3C2V OR EQUIVALENT.
- *5. SHIPYARD SUPPLY.

DRAWN —App. Z1_04_K.MIYAZAWA	TITLE 名称	MU-155C
CHECKED TAKAHASHI, T		15型カラーLCD表示器
APPROVED Y. Hatai	相互結線図	
DWG. No. C2030-C01-A	NAME MULTI-PURPOSE LCD DISPLAY	INTERCONNECTION DIAGRAM
		19-024-5100-0

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