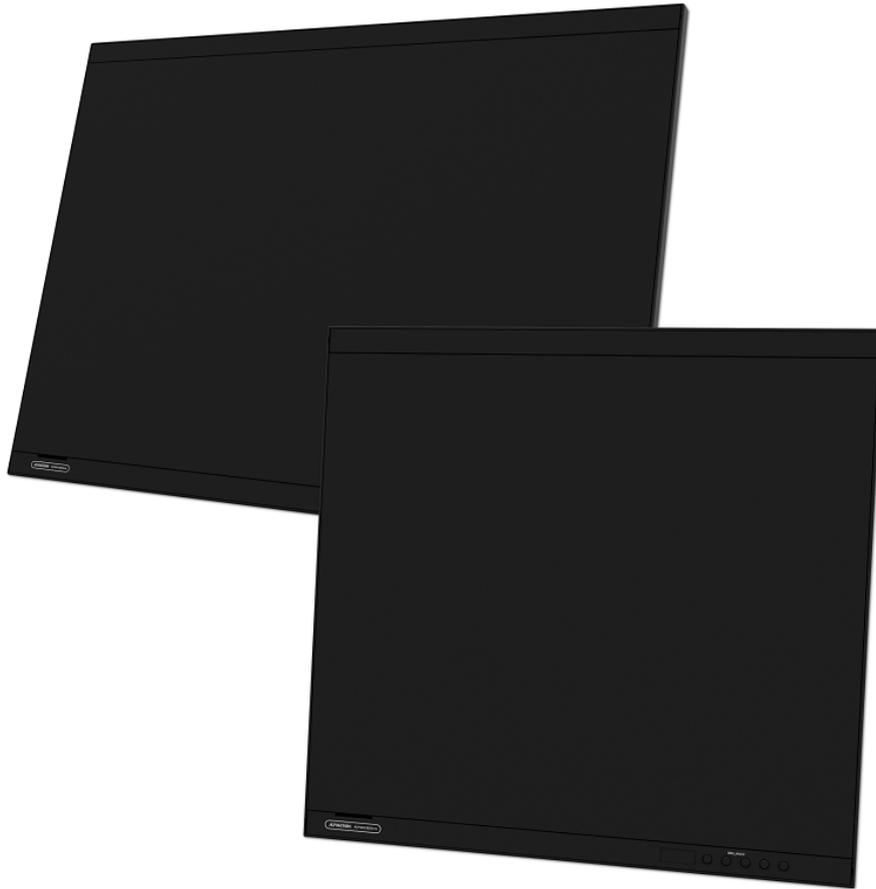




ALPHATRON |
Marine



AlphaScreen19 & 26

Color & Touch Panel Color LCD Monitors

User Manual

www.jrc.am

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I Preface

This document describes the functionality, the intended use and the most important product specifications of the AlphaScreen 19 and 26.

I.1 Revision History

Revision Nr.	Description	Date
V0.9	Preliminary	May 2016
V1.0	First release	September 2018

I.2 Points of Attention

- This product may not be covered by warranty for uses other than those described in the Setup Manual.
- Only use optional products manufactured or specified in the manual with this product.
- It takes about 30 minutes for the performance of electrical parts to stabilize. Please wait 30 minutes or more after the monitor power has been turned on, and then adjust the monitor.
- Monitors should be set to a lower brilliance to reduce changes in luminosity caused by long-term use and maintain a stable display.
- When the screen image is changed after displaying the same image for extended periods of time, an afterimage may appear. Use the screen saver or power save function to avoid displaying the same image for extended periods of time.
- Periodic cleaning is recommended to keep the monitor looking new and to prolong its operation lifetime (refer to *Cleaning* on page 4).
- The LCD panel is manufactured using high-precision technology. Although, missing pixels or lit pixels may appear on the LCD panel, this is not a malfunction. Percentage of effective dots: 99.9994% or higher.
- The backlight of the LCD panel has a fixed lifetime. When the screen becomes dark or begins to flicker, please contact Alpatron Marine BV.
- Cautions for the use of the Touch Panel.

During touchoperation, be careful of the following points. Otherwise, damage may occur to the monitor.

- Do not strongly press, scratch, or poke the panel.
- Do not touch the panel with hard objects such as ballpoint pens or metals.

Cleaning

Attention

- Chemicals such as alcohol and antiseptic solution may cause gloss variation, tarnishing, and fading of the panel, and also quality deterioration of the image.
- Never use any thinner, benzene, wax, and abrasive cleaner, which may damage the panel.
- Do not allow liquid to enter the clearance between the panel and the panel frame.

To use the monitor comfortably

- An excessively dark or bright screen may affect your eyes. Adjust the brightness of the monitor according to the environmental conditions.
- Staring at the monitor for a long time tires your eyes. Take a 10-minute rest every hour.

II Cautions

To safely install and operate this instrument, so as not to adversely affect the warranty, the WARNINGS and CAUTIONS must be adhered to.



- Caution damage.
- This symbol is used to highlight information that if not followed can result in damage to a product or equipment.



- Warning injury / death
- This symbol is used to highlight information that if not followed can result in personal injury or death.



- Damage
- Do not scratch or press on the panel with any sharp objects, as this may result in damage to the panel. Do not attempt to brush with tissues as this may scratch the panel.



- Damage
- When the monitor is cold and brought into a room or the room temperature goes up quickly, dew condensation may occur on the interior and exterior surfaces of the monitor. In that case, do not turn the monitor on. Instead wait until the dew condensation disappears, otherwise it may cause some damage to the monitor.

1 Introduction

I Features

The AlphaScreen 19 and 26 have the following features

19.0" LCD (FDS1904 / FDS1904T)
25.5" LCD (FDU2603W / FDU2603WT) Provides a display area (vertical: over 340 mm) required for radar on large ships.
Applicable to the resolution of 1280 × 1024. (FDS1904 / FDS1904T).
Applicable to the resolution of 1920 × 1200. (FDU2603W / FDU2603WT)
Panel with a wide field of view adopted. <ul style="list-style-type: none"> • Horizontal : 178°, vertical : 178°(FDS1904 / FDS1904T). • Horizontal : 176°, vertical : 176°(FDU2603W / FDU2603WT).
Dimming down to the low brightness. Dimming down to the low brightness. (You can set the brightness when "Brilliance" in the Adjustment menu is set to the lower limit value.) See <i>Setting Backlight Off Mode</i> on page 22
The buttons on the front of the monitor light up. The buttons on the front of the monitor (operation buttons) light up orange to enable the monitor to be operated in a dark environment as well. Their brightness can also be adjusted. See <i>Setting Brightness of Front Button</i> on page 19
Cooling fan replacement is possible. See <i>Replacing the Cooling Fan</i> on page 31
Built-in warning buzzer. Controlled on the system side.
Equipped with AC/DC power supplies. Both AC power input and DC power input are provided to enable installation in various environments. In addition, connecting both power inputs can provide a helpful backup if the AC power supply fails. (The AC power supply takes priority during operation when both power inputs are connected.)
HDCP (High-bandwidth Digital Content Interface).
Type approval of ship classification. This product has been approved for the following types of ship classifications: <ul style="list-style-type: none"> • NK (Nippon Kaiji Kyokai) • DNV GL (DNV GL AS) • ABS (American Bureau of Shipping) • LR (Lloyd's Register of Shipping) For the latest information on approvals for ship classifications, please refer to our website. http://www.eizoglobal.com
Testing Standards. This product complies with the IEC60945 4 th edition standard.

<p>Optical bonding for increased screen strength and visibility ^{**1} (option: FDS1904-OP / FDS1904T-OP, FDU2603W-OP / FDU2603WT-OP)</p> <p>^{**1} A technique in which a layer of resin is used to fill the gap (layer of air) between the LCD panel and clear panel/touch panel, adhering the two together.</p>
<p>(FDS1904T / FDU2603WT only)</p> <p>Touch Panel provided</p> <ul style="list-style-type: none"> • Projected capacitive technology. • Supports the Windows Touch function (multi-touch) of Windows 10 / Windows 8.1 / Windows 7.

Table 1: Features

II Alpatron Marine LCD Utility Disk

An “Alpatron Marine LCD Utility Disk” (CD-ROM) is supplied with this product. The following table shows the disk contents and the overview of the software programs.

II.1 Disk Contents and Software Overview

The disk includes adjustment software, touch panel software, and user manuals. Refer to Readme.txt file on the disk for software start-up procedures or file access procedures.

Item	Overview
Screen adjustment pattern files.	Used when adjusting the image of analog signal input manually.
Touch Panel Driver ¹	<p>Driver software for the touch panel. ²</p> <p>If the following conditions are satisfied, use the standard Windows driver.</p> <p>The PC and monitor are connected with a USB cable. The OS is Windows 8.1 or Windows 7.</p> <p>For setup details please refer to <i>Touch Panel Settings (FDS1904T / FDU2603WT)</i> on page 24</p>
TPOffset ¹	<p>Software for adjusting the sensitivity of the touch panel ²</p> <p>Use this software when touch operations are not registered or only registered after pressing hard.</p>
User’s Manual of this monitor (PDF file).	
Readme.txt file.	

¹ Used only for the FDS1904T / FDU2603WT.

² Refer to the corresponding User’s Manual on the CD-ROM for details on installation and use.

III Basic Operations and Functions



Note

- The language is set to English in the default settings. To change the language, please refer to *Setting Language* on page 19.

III.1 Basic Adjustment Menu Operations

1. Displaying Adjustment Menu

1. Press . The Adjustment menu appears.

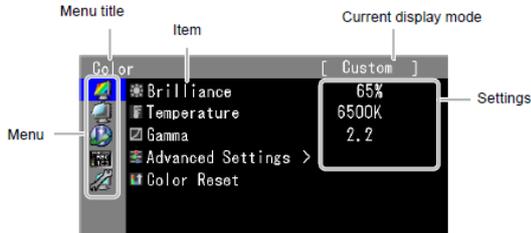


Figure 1: Adjustment Menu

2. Adjusting/Setting

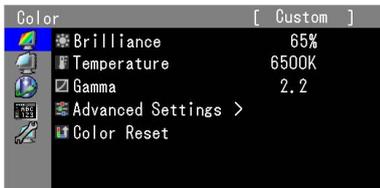


Figure 2: Choose Menu

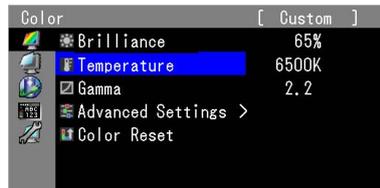


Figure 3: Choose Item

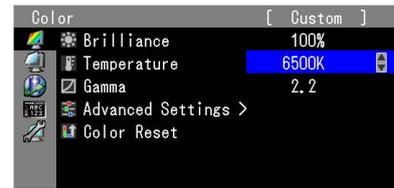


Figure 4: Adjust / Set selected item

1. Choose a menu to adjust/set with and then press .
2. Choose an item to adjust/set with and then press .
3. Adjust/set the selected item with and then press .

3. Exiting

1. Press a few times. The Adjustment menu finishes.

III.2 Showing Button Guide

Press the front buttons other than , and the button guide appears above the button.

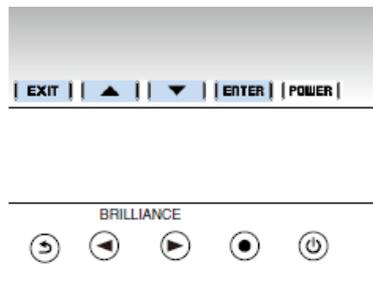


Figure 5: Button Guide



Note

- The Button Guide will continue to appear while the Adjustment menu is showing.
- The Button Guide is displayed differently depending on the selected menu or status.

III.3 Functions

The following table shows all the Adjustment menus adjustment and setting menus.

Main menu	Setting	Reference	
Color ^{*1} 	Brilliance Temperature ^{*2} Gamma ^{*2} Advanced Settings Hue ^{*2} Saturation ^{*2} Outline Enhancer Gain ^{*2} Color Reset	Adjusting Color on page 15 Return to Default Setting on page 23	
	Screen 	Screen Size Analog Adjustment Auto Adjustment Range Adjustment Clock Phase Hor. Position Ver. Position	Selecting Screen Size on page 18 Displaying Screen Correctly on page 13
Power Manager 	Power Save Indicator Eco Timer	Setting Power Saving on page 26 Setting Brightness of Front Button on page 19 Setting the Automatic Power Off Function on page 27	
	Menu Settings 	Language Menu Position	Setting Language on page 19 Changing Adjustment Menu Display Position on page 19
		Tools 	Input Input Selection Auto Sharpness Signal Info Monitor Info All Reset

Table 2:



¹ Depending on which display mode has been applied to the product, the adjustable items under "Color" may vary.

² Adjustments are not possible in the three ECDIS Standard compatible modes (Day, Dusk, Night).

 **Attention** Display Mode has three ECDIS Standard compatible modes (Day, Dusk, Night) and a mode where you can make settings of your choice (Custom). However, the Display Mode cannot be changed using the monitor. Changes can be made on the system side.

IV Warranty Conditions

Contact Alpatron Marine for warranty conditions.

2 Installation Instructions



Important Please read this User Manual and the Setup Manual (separate volume) carefully to familiarize yourself with safe and effective usage.

- Please refer to the Setup Manual for basic information ranging from monitor installation to using the monitor.

2.1 Transportation

The AlphaScreens 19 - 26 are sensitive instruments and must be handled with care when transported, or moved.

As long as the product is packed in its standard Alpatron Marine box it can be transported anywhere at any distance.

- During transport protect boxes from moisture, movement and fall.
- During transport handle boxes with care and in accordance with instructions on the box.
- During transport ambient temperature should be between range of -20 ~ 60 °C (-4 ~ 140 °F).

2.2 Unpacking and Checking

- Carefully unpack the screens, inspect for damage and notify Alpatron Marine if any damage has been noticed.

3 Operation

3.1 Adjusting Screens

3.1.1 Setting the Resolution

3.1.1.1 Display Resolution

For details on compatible resolutions, refer to “Compatible Resolutions” in the Setup Manual.

3.1.1.2 Setting Resolution

When the monitor is connected to the PC and the resolution is inferior, or when the resolution requires to be changed, follow the procedure below:

Windows 10

1. Right-click the mouse anywhere on the desktop except for icons.
2. From the displayed menu, click “DisplaySettings”.
3. On the “Customize your display” dialog box, click “Advanced displaysettings”.
4. Select a monitor, then choose a resolution from the “Resolution” pull-down menu.
5. Click the “Apply” button.
6. When a confirmation dialog box is displayed, click “Keepchanges”.

Windows 8.1 / Windows 7

1. Click the “Desktop” tile on the Start Screen to display the desktop for Windows 8.1/ Windows 8, .
2. Right-click the mouse anywhere on the desktop except for icons.
3. Click SCREEN RESOLUTION on the displayed menu.
4. Select the monitor on the SCREEN RESOLUTION dialog box.
5. Click RESOLUTION to select the desired resolution.
6. Click the OK button.
7. Click KEEP CHANGES when a confirmation dialog box is displayed, .

Windows XP

1. Right-click the mouse anywhere on the desktop except for icons.
2. Click PROPERTIES on the displayed menu.
3. Click the “Settings” tab and select desired resolution for SCREEN RESOLUTION under “Display” on the “Display Properties” dialog box displayed.
4. Click the OK button to close the dialog box.

Mac OS X

1. Select “System Preferences” from the Apple menu.
2. Click DISPLAYS for “Hardware” when the “System Preferences” dialog box is displayed.
3. Select the DISPLAY tab and select desired resolution in the RESOLUTIONS” field on the displayed dialog box. The selection will be shown immediately.
4. Close the window, when the resolution is satisfactory.

3.1.2 Displaying Screen Correctly

3.1.2.1 Digital Signal Input

When digital signals are entered, images are displayed correctly based on the preset data of the monitor.

When performing advanced adjustment, see *Adjusting Color* on page 15 and subsequent pages.

3.1.2.2 Analog Signal Input



Attention

- It takes about 30 minutes for the performance of electrical parts to stabilize. Wait 30 minutes or more after the monitor power has been turned on and then adjust the monitor.
- The self adjustment function does not work for the images under the vertical resolution of 480 or less.
- The self adjustment and auto adjustment functions work correctly when an image is fully displayed over the Windows or Macintosh display area. They do not work properly in the cases below:
 - When an image is displayed only on a part of the screen (command prompt window, for example).
 - When a black background (wallpaper, etc.) is in use.

Also, these functions will not work properly in some graphic boards.

The monitor screen adjustment is used to suppress flickering of the screen, or adjust screen position and screen size correctly according to the PC to be used.



Note

The self adjustment function works when all of the following conditions are satisfied:

When a signal is input into the monitor for the first time, or when a resolution or vertical / horizontal scan frequency not used before is set.

If the screen is not displayed correctly even after performing the self adjustment operation, adjust the screen according to the procedures on the following pages to use the monitor comfortably.

1. Prepare to use analog screen adjustment patterns.

Load the "Alphatron Marine LCD Utility Disk" to your PC, and then open the "Screen adjustment pattern files".

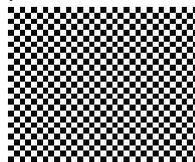


Note For details and instructions on opening the "Screen adjustment pattern files", refer to the Readme.txt file.

2. Perform the auto adjustment with the analog screen adjustment pattern displayed.

To adjust flickering, screen position, and screen size automatically

1. Display Pattern 1 in full screen on the monitor using the "Screen adjustment pattern files".



2. Choose SCREEN from the Adjustment menu and press **⊙**.
3. Choose ANALOG ADJUSTMENT from the "Screen" menu, and press **⊙**.
4. Choose AUTO ADJUSTMENT and press **⊙**.



Note The auto adjustment function works (the message "In Progress" appears) to adjust the flickering, screen position, and screen size correctly.

Note When the auto adjustment is completed, a message appears.

5. Select OK to confirm the new settings or CANCEL to restore the previous settings, and press .

Attention If the screen is not displayed correctly even after performing auto adjustment, perform the adjustments according to the procedures on the following pages. If the screen is displayed correctly, go to *Adjusting Color* on page 15.

3. Perform advanced adjustments for the following using “Analog Adjustment” of “Screen”.

Adjust the clock, phase and position, in this order.

To eliminate vertical bars

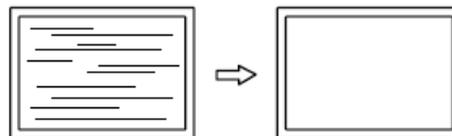
1. Choose CLOCK from the “Analog Adjustment” menu, and press .
2. Adjust the clock with or to eliminate vertical bars.
Press or slowly so as not to miss the adjustment point.
3. Press to exit the adjustment.

When blurring, flickering or bars appear on the screen after adjustment, proceed to “To remove flickering or blurring”.



To remove flickering or blurring

1. Choose PHASE from the “Analog Adjustment” menu, and press .
2. Adjust the phase with or to minimize flickering or blurring.
3. Press to exit the adjustment.



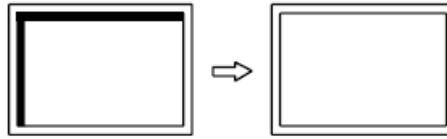
Attention Flickering or blurring may not be eliminated depending on your PC or graphics board.

To correct the screen position

Note Since the number of pixels and the pixel positions are fixed on the LCD monitor, only one position is provided to display images correctly. The position adjustment is made to shift an image to the correct position.

1. Choose HOR.POSITION or VER.POSITION from the “Analog Adjustment” menu and press .
2. Adjust the position with or .
3. Press to exit the adjustment.

When vertical bars appear on the screen after adjustment, go back to “Eliminate Vertical Bars”. (Clock → Phase → Position)



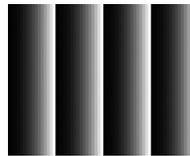
4. Close pattern 1.

4. Adjusting Color Gradation

To adjust color gradation automatically

Every color gradation (0 to 255) can be displayed by adjusting the signal output level.

1. Display Pattern 2 in full screen on the monitor using the “Screen adjustment pattern files”.



2. Choose SCREEN from the Adjustment menu, and press .
3. Choose ANALOG ADJUSTMENT from the “Screen” menu, and press .
4. Choose RANGE ADJUSTMENT from the “Analog Adjustment” menu, and press .

The color gradation is adjusted automatically.

When the auto adjustment is completed, a message appears. Select OK to confirm the new settings or CANCEL to restore the previous settings, and press .

5. Close Pattern 2.

3.1.3 Adjusting Color



Attention

- It takes about 30 minutes for the performance of electrical parts to stabilize. Please wait 30 minutes or more after the monitor power has been turned on, and then adjust the monitor.
- The same image may be seen in different colors on multiple monitors due to their monitor-specific characteristics. Make fine color adjustment visually when matching colors on multiple monitors.



Note The values shown in “%” or “K” are available only as reference.

3.1.3.1 Adjusting Brilliance (brightness)

The screen brightness is adjusted by changing the brightness of the backlight (light source from the LCD back panel).

1 to 100%	When “Backlight Off Mode” is set to OFF, see <i>Setting Backlight Off Mode</i> on page 22
0 to 100%	When “Backlight Off Mode” is set to ON, see <i>Setting Backlight Off Mode</i> on page 22

Table 3: Adjustable Range

Procedure

1. Choose COLOR from the Adjustment menu, and press .
2. Choose BRILLIANCE from COLOR, and press .
3. Use or for adjustment.
4. Press to exit.

**Note**

- The brightness can be set by directly pressing or (For the setting value, display and check COLOR.)
- When adjusting brilliance by long pressing or , adjustment terminates when the default setting is reached. Adjustment may be continued by pressing or again (When "ECDIS indicator" is ON and the monitor Display Mode is set to "Day", "Dusk", "Night".)

3.1.3.2 Adjusting Color Temperature

The color temperature can be adjusted.

The color temperature is normally used to express the hue of "White" and/or "Black" by a numerical value. The value is expressed in degrees "K" (Kelvin).

The screen becomes reddish at a low color temperature and bluish at a high color temperature, like the flame temperature. The gain preset values are set for each color temperature setting value.

Adjustable Range

Native, 4000K-10000K (specified by every 500K unit, including 9300K)

Procedure

1. Choose COLOR from the Adjustment menu, and press .
2. Choose TEMPERATURE from COLOR, and press .
3. Use or for adjustment.
4. Press to exit.

**Note**

- GAIN allows you to perform more advanced adjustment (see *Adjusting Gain* on page 17).
- If NATIVE is set, the image is displayed in the preset color of the monitor (Gain: 100% for each RGB).
- When gain is changed, the color temperature is changed to USER.

3.1.3.3 Adjusting Gamma

Gamma can be adjusted. The brightness of the monitor varies depending on the input signal, however, the variation rate is not proportional to the input signal. To keep the balance between the input signal and the brightness of the monitor is called as "Gamma correction".

Adjustable Range

1.8, 2.0, 2.2, 2.4, 2.6

Procedure

1. Choose COLOR from the Adjustment menu and press .
2. Choose GAMMA from COLOR and press .
3. Use or for adjustment.
4. Press to exit.

3.1.3.4 Adjusting Hue

This function allows you to adjust the hue.

Adjustable Range

-100 to 100

Procedure

1. Choose COLOR from the Adjustment menu and press .
2. Choose ADVANCED SETTINGS from COLOR and press .
3. Choose HUE and press .
4. Press  to exit.



Attention Using this function may make some color gradations unavailable for display.

3.1.3.5 Adjusting Color Saturation

This function allows you to adjust color saturation.

Adjustable range

-100 to 100

Procedure

1. Choose COLOR from the Adjustment menu and press .
2. Choose ADVANCED SETTINGS from COLOR and press .
3. Choose SATURATION and press .
4. Use  or  for adjustment.
5. Press  to exit.



Attention Using this function may make some color gradations unavailable for display.



Note The minimum value (-100) changes the screen to monochrome.

3.1.3.6 Enhancing Image Outline

Outline Enhancer functions to emphasize outline of the images by emphasizing the color difference between pixels composing the images. This may improve the texture of the material and its feel of the images. On the other hand, it also functions to reproduce the images smoothly by gradating its outline.

Procedure

1. Choose COLOR from the Adjustment menu and press .
2. Choose ADVANCED SETTINGS from COLOR and press .
3. Choose OUTLINE ENHANCER and press .
4. Select the display status in the range from -3 to 3 (soft to sharp) with  or  as desired.
5. Press  to exit.

3.1.3.7 Adjusting Gain

The brightness of each color component red, green, and blue is called "Gain". You can change the hue of "white" by adjusting gain.

Adjustable range

0 to 100%

Procedure

1. Choose COLOR from the Adjustment menu and press \odot .
2. Choose ADVANCED SETTINGS from COLOR and press \odot .
3. Choose GAIN and press \odot .
4. Choose the color to adjust from “Red”, “Green”, and “Blue” and then press \odot .
5. Use \leftarrow or \rightarrow for adjustment.
6. Press \odot to exit.

! **Attention** Using this function may make some color gradations unavailable for display.

☰ **Note**

- The value of gain changes with that of color temperature.
- When gain is changed, the color temperature is changed to USER.

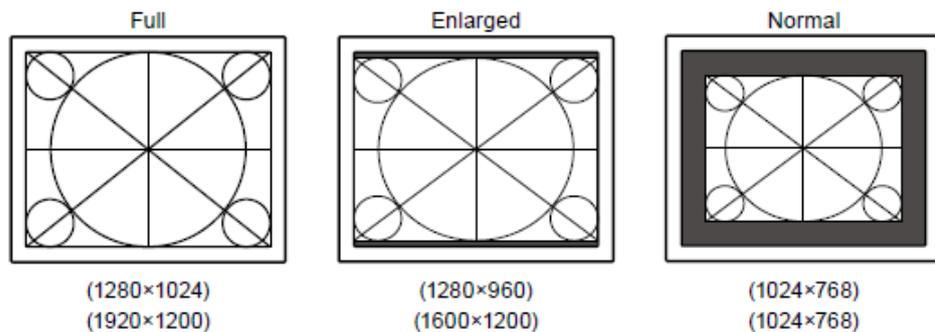
3.1.4 Selecting Screen Size

The image with the resolution, other than the recommended resolution, is displayed in full screen automatically. You can change the screen size by using the SCREEN SIZE function from SCREEN.

Setting	Function
Full	Displays an image in full screen. Images are distorted in some cases because the vertical rate is not equal to the horizontal rate.
Enlarged	Displays an image in full screen. In some cases, a blank horizontal or vertical border appears to equalize the vertical rate and the horizontal rate.
Normal	Displays images with the specified resolution.

Table 4: Screen Size

Example: Image size 1024 x 768.


Procedure

1. Choose SCREEN from the Adjustment menu and press \odot .
2. Choose AUTO SHARPNESS from TOOLS and press \odot .
3. Select FULL, ENLARGED, or NORMAL with \leftarrow or \rightarrow .
4. Press \odot to exit.

! **Attention** Selecting NORMAL may make some color gradations unavailable for display.

3.1.5 Enabling / Disabling Auto Sharpness

By enabling Auto Sharpness, outlines will be adjusted according to the displayed image, which can improve its feel and texture.

Procedure

1. Choose TOOLS from the Adjustment menu and press .
2. Choose AUTO SHARPNESS from TOOLS and press .
3. Select ON or OFF with  or .
4. Press  to exit.



Note The extent of adjustment depends on the setting value of "Outline Enhancer".

3.2 Setting Monitor

3.2.1 Setting Brightness of Front Button

The brightness of the front buttons (control button and power button) can be set.



Note They are set to light up under the following condition and are set to "4" by default.

- Power button: When the power cord is connected to the power outlet.
- Control button: When the power button is turned on.

Procedure

1. Choose POWERMANAGER from the Adjustment menu and press .
2. Choose INDICATOR from POWERMANAGER and press .
3. Set the brightness so it is in the range from 1 to 7 with Set the brightness so it is in the range from 1 to 7 with or as desired. as desired.
4. Press  to exit.

3.2.2 Setting Language

This function allows selecting a language for the Adjustment menu and messages.

Selectable languages

English, German, French, Spanish, Italian, Swedish, Japanese, Simplified Chinese, Traditional Chinese.

Procedure

1. Choose MENU SETTINGS from the Adjustment menu and press .
2. Choose LANGUAGE from MENU SETTINGS and press .
3. Select a language with  or .
4. Press  to exit.

3.2.3 Changing Adjustment Menu Display Position

The display position of the Adjustment menu can be changed.

Procedure

1. Choose MENU SETTINGS from the Adjustment menu and press .
2. Choose MENU POSITION from MENU SETTINGS and press .
3. Choose the position with  or .
4. Press  to exit.

3.2.4 Setting the Adjustment Menu Orientation

When the monitor is set to the portrait display mode, the orientation of the Adjustment Menu can be changed as well.
Default setting: Landscape.

Procedure

1. Press  for five seconds or more to turn off the monitor.
2. Holding down , press  for at least two seconds to turn on the monitor.
The “Optional Settings” menu appears.
3. Choose ORIENTATION from OPTIONAL SETTINGS and press .
4. Select LANDSCAPE or PORTRAIT with  or , and press .
5. Select FINISH with  or .
6. Press . THE OPTIONAL SETTINGS menu is closed.



Note When using the monitor screen in a portrait position, the graphics board supporting portrait display is required. When placing the monitor in a portrait position, the settings of your graphics board need to be changed. Refer to the User Manual of the graphics board for details.

3.2.5 Enabling/Disabling DDC/CI Communication

This function allows you to enable/disable the DDC/CI communication (see *Definitions*).

Procedure

1. Press  for five seconds or more to turn off the monitor.
2. Holding down , press  for at least two seconds to turn on the monitor.
The “Optional Settings” menu appears.
3. Choose DDC/CI from OPTIONAL SETTINGS and press .
4. Select ON or OFF with  or  and press .
5. Select FINISH with  or .
6. Press . THE OPTIONAL SETTINGS menu is closed.

3.2.6 Locking Buttons

This function allows you to lock the adjusted/set status to prevent changing them.

Procedure

1. Press  for five seconds or more to turn off the monitor.
2. Holding down , press  for at least two seconds to turn on the monitor.



The "Optional Settings" menu appears.

3. Choose KEY LOCK from OPTIONAL SETTINGS and press
4. Choose OFF, MENU, or ALL with or , and press .

INFO:

Settings	Buttons that can be locked
Off (Default setting)	None (All buttons are enabled)
Menu	Button
All	All buttons excluding

5. Select FINISH with or .
6. Press . THE OPTIONAL SETTINGS menu is closed.

3.2.7 Setting Backlight Off Mode

This function allows you to set the condition when BRILLIANCE is set to the lower limit value.

Setting	Function
On	When BRILLIANCE is set to the lower limit value, the backlight is turned off to darken the screen. (However, this excludes when the Adjustment menu, "Signal Error", or the Alpatron logo are displayed).
Off	Even when BRILLIANCE is set to the lower limit value, the screen is not darkened.

Procedure

1. Press \odot for five seconds or more to turn off the monitor.
2. Holding down \ominus , press \odot for at least two seconds to turn on the monitor. The "Optional Settings" menu appears.
3. Choose BACKLIGHT OFF MODE from OPTIONAL SETTINGS and press \odot .
4. Select ON or OFF with \blacktriangleleft or \blacktriangleright and press \odot .
5. Select FINISH with \blacktriangleleft or \blacktriangleright .
6. Press \odot . THE OPTIONAL SETTINGS menu is closed.

3.2.8 Turning the ECDIS Indicator ON/OFF

The ECDIS Indicator will light up when this setting is set to ON. Please use this as a guide to adjust the monitor brightness.

ECDIS Indicator	Monitor status
	The monitor brilliance is set to the ECDIS adjustment value.
	The monitor brilliance is set higher than the ECDIS adjustment value.
	The monitor brilliance is set lower than the ECDIS adjustment value.
	The ECDIS Indicator does not light up in the following cases: <ul style="list-style-type: none"> • The "ECDIS Indicator" is OFF. • It deviates significantly from the ECDIS adjustment value. • The correct code has not been entered.

⚠ Attention

- The ECDIS Indicator becomes active when the monitor display mode is set to DAY, DUSK or NIGHT.
- The Display Mode cannot be changed using the monitor. Changes can be made on the system side.

Procedure

1. Press \odot for five seconds or more to turn off the monitor.
2. Holding down \ominus , press \odot for at least two seconds to turn on the monitor.

The "Optional Settings" menu appears.

3. Choose ECDIS INDICATOR from OPTIONAL SETTINGS and press .
4. Select ON or OFF with  or  and press .
5. Select FINISH with  or .
6. Press . "The optional settings" menu is closed.

3.2.9 Return to Default Setting

There are two different Resets:

1. Color Reset for only resetting the color adjustments to the default settings.
2. All Reset for resetting all settings to the defaults.

There is also a function to reset the screen brightness to the default value.

 **Attention** After resetting, the operation cannot be undone.

 **Note** Regarding the default setting, see *FDU2603WT/FDU2603WT-OP* on page 42

3.2.9.1 Resetting the Color Adjustment Value

This function only resets the color adjustment value for the currently selected mode to the default settings.

Procedure

1. Choose COLOR from the Adjustment menu and press .
2. Choose COLOR RESET from COLOR and press .
3. Choose EXECUTE with  or .
4. Press . The color adjustments revert to the default settings.

3.2.9.2 Resetting All Adjustments To The Default Settings

This function resets all adjustments to the default settings (except the "Input" and "Optional Settings" menu).

Procedure

1. Choose TOOLS from the Adjustment menu and press .
2. Choose ALL RESET from TOOLS and press .
3. Select EXECUTE with  or .
4. Press . All settings excluding the "Input" and "Optional Settings" menu are reset to the default settings.

3.2.9.3 Resetting Brightness (Brilliance)

Reset the setting value for the screen brightness (brilliance) to the default setting.

 **Attention** Settings cannot be recovered once this function is executed.

Procedure

Press  while holding down  or  on the front of the monitor.

The setting value for the screen brightness (brilliance) is reset to the default setting.

3.3 Touch Panel Settings (FDS1904T / FDU2603WT)

This chapter explains the settings for when the FDS1904T/FDU2603WT is used in an environment that satisfies the following conditions:

- The PC and monitor are connected with a USB cable.
- The OS is Windows 8.1 / Windows 7.

Attention If using the FDS1904T/FDU2603WT in either of the following environments, see the Touch Panel Driver User's Manual (on the CD-ROM).

- The PC and monitor are connected with a USB cable and the OS being used is Windows / Windows XP.
- The PC and monitor are connected with a RS-232C cable.

3.3.1 Calibrating the Monitor

Attention

- Do not put your hands or any metal close to the screen because the screen is susceptible to the dielectric object.
- If a USER ACCOUNT CONTROL dialog box is displayed during operation, proceed according to the displayed instructions.

1. Open the Windows Control Panel.

INFO: The method for opening the Control Panel differs depending on the OS.

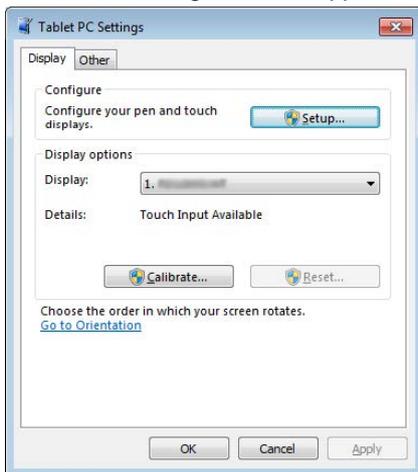
Windows 8.1

- a) Click ↓ at the bottom of the “Start” screen.
The APPS screen appears.
- b) Click CONTROL PANEL under WINDOWS SYSTEM.

INFO: Windows 7

- a) Click “Start” - “Control Panel”.

2. Click HARDWARE AND SOUND - TABLET PC SETTINGS.
“Tablet PC Settings” window appears.



3. Click SETUP in the DISPLAY tab.
A touchscreen specification screen with a white background is displayed.

Attention If using the monitor in a multiple monitor environment, specify the touchscreen according to the message displayed on screen.

4. Touch the screen with your finger.

The touched screen is recognized as a touchscreen.

5. Press ENTER on the keyboard.
The "Tablet PC Settings" window reappears.
6. Click CALIBRATE.
A calibration screen with a white background is displayed.



Attention If using the monitor in a multiple monitor environment, select the monitor for calibration from the DISPLAY pulldown menu and then click CALIBRATE.

7. Touch the calibration target (cross) for a few seconds with your finger and release.
The calibration target appears on the screen 16 times, starting from the top left to top right and then down to the bottom left to bottom right.



Note For second or subsequent calibrations, the calibration target appears 4 times.

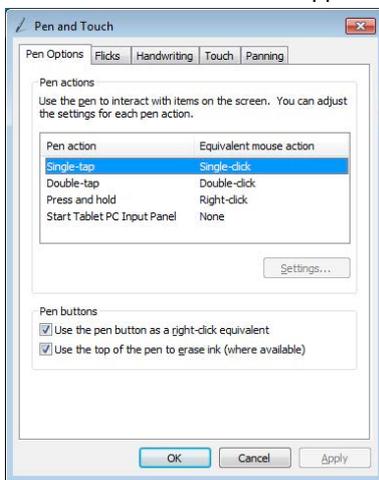
8. After completing calibration, click YES to save the calibration data.
9. Click OK to close the window.

3.3.2 Configuring Touch Panel Operation Settings

1. Open the Windows Control Panel.

INFO: The method for opening the Control Panel differs depending on the OS, see *Touch Panel Settings (FDS1904T / FDU2603WT)* on page 24.

2. Click HARDWARE AND SOUND - PEN AND TOUCH.
PEN AND TOUCH window appears.



Note Configure the touch panel operation settings in the PEN AND TOUCH window. For detailed settings, refer to the settings on each tab and Windows Help.

Configure the touch panel operation settings in the "Pen and Touch" window. For detailed settings, refer to the settings on each tab and Windows Help.

3. After completing settings, click OK to close the window.

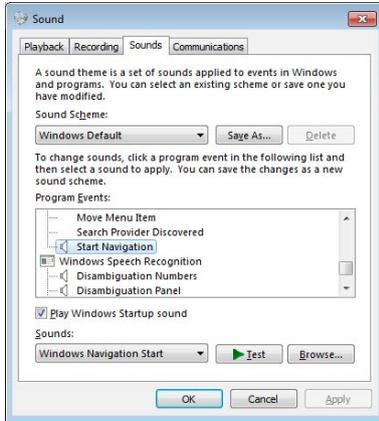
3.3.3 Setting Touch Sound

The sound output when the screen is touched can be changed or turned off.

1. Open the Windows Control Panel.

INFO: The method for opening the Control Panel differs depending on the OS. *Calibrating the Monitor* on page 24

2. Click **HARDWARE AND SOUND - SOUND - CHANGE SYSTEM SOUNDS**. **SOUND** window appears.



3. Select **START NAVIGATION** from the **PROGRAM EVENTS** list.
4. Select the sound to output when the screen is touched from the **SOUNDS** pulldown menu.

Note Select **NONE** to turn off touch sound.

5. Click **OK** to close the window.

3.4 Power Saving Functions

3.4.1 Setting Power Saving

This function allows setting the monitor into the power saving mode according to the PC status. When the monitor has shifted to the power saving mode, the images on the screen are not displayed.

Attention

- For the maximum power saving, it is recommended that the Power button be turned off.
- Five seconds before the monitor enters the power saving mode, it displays a preliminary message.

Procedure

1. Choose **POWER MANAGER** from the Adjustment menu and press .
2. Choose **POWER SAVE** from **POWERMANAGER** and press .
3. Select **ON** or **OFF** with or .
4. Press to exit.

Power Saving System

At Analog signal input:

This monitor complies with the “VESA DPM” standard.

PC		Monitor
ON		Operating
Power saving mode	STAND-BY SUSPENDED OFF	Power saving mode



At Digital signal input:

This monitor complies with the “DVI DMPM” standard.

The monitor enters the power saving mode after five seconds in connection with the PC setting.

PC		Monitor
ON		Operating
Power saving mode		Power saving mode

Exiting the power saving mode

If the monitor receives input, it automatically exits the power saving mode and returns to the normal display mode.

3.4.2 Setting the Automatic Power Off Function

This function allows specifying whether to turn on/off the monitor automatically after a specified time has elapsed in the power saving mode.

Adjustable range

Off, 0, 1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 45 min, 1, 2, 3, 4, 5 h

Procedure

1. Choose POWERMANAGER from the Adjustment menu and press **⊙**.
2. Choose ECO TIMER from POWERMANAGER and press **⊙**.
3. Select OFF or time to turn off the monitor with **⏪** or **⏩**.
4. Press **⊙** to exit.

3.5 Reference

3.5.1 Connecting Multiple PCs

The product has multiple connections to PCs and allows switching to one of the connections for display.

Attention It is assumed the touch panel monitor will be used with one computer. When the monitor is to be connected to multiple computers, connect a RS-232C cable to the computer used for touch operation (one unit only).

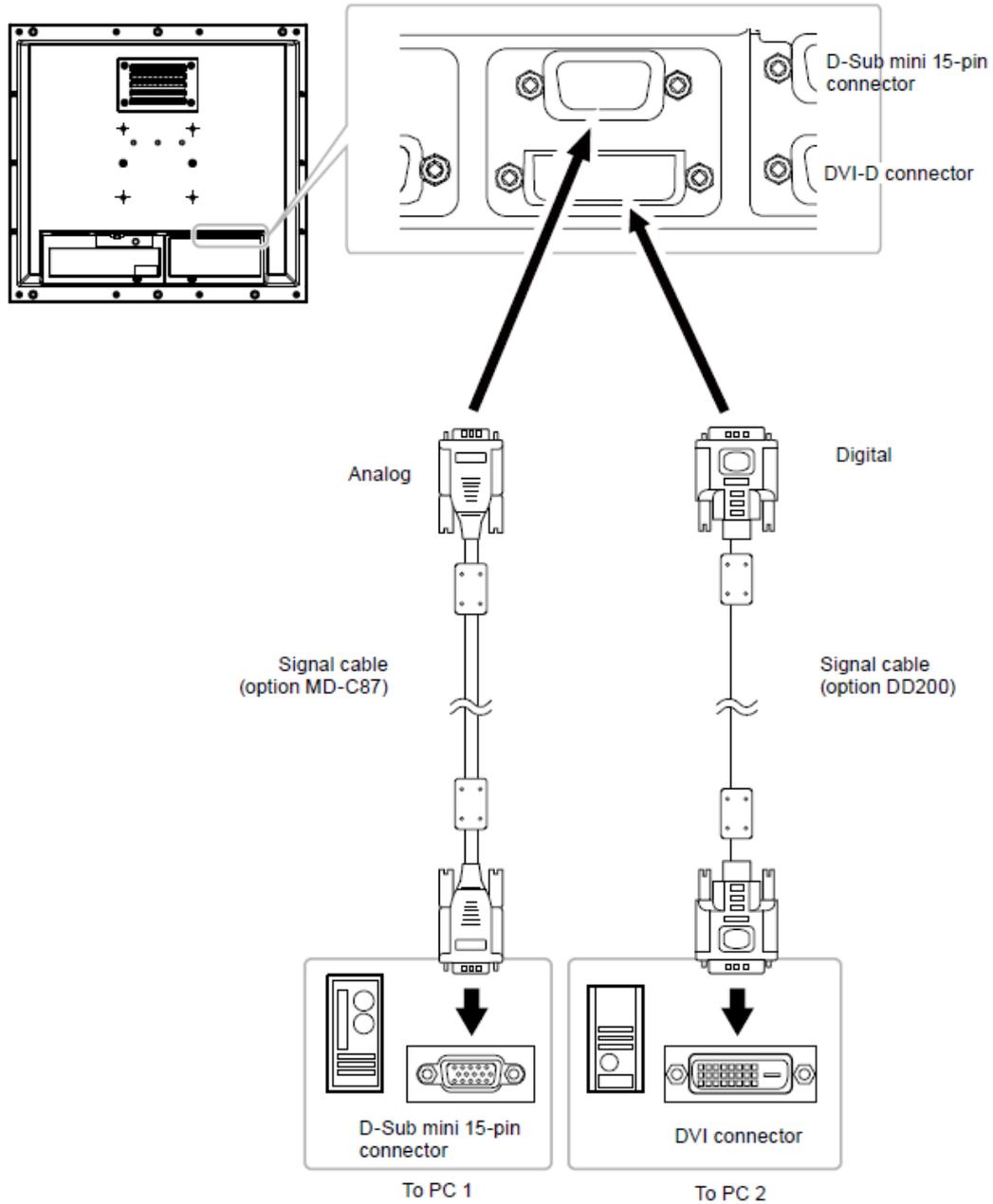


Figure 6: Connection Examples

3.5.1.1 Switching Among Input Signals

Procedure

1. Choose TOOLS from the Adjustment menu and press .
2. Choose INPUT from TOOLS and press .
3. Select D-SUB or DVI with or .
4. Press to exit.

3.5.1.2 Setting Input Signal Selection

Setting	Function
Auto	The monitor recognizes the connector through which PC signals are input. When a PC is turned off or enters the power saving mode, the monitor automatically displays another signal.
Manual	The monitor detects only the PC's signals currently displaying automatically. Select an active input signal in the Adjustment menu.

Procedure

1. Choose TOOLS from the Adjustment menu and press .
2. Choose INPUT SELECTION from TOOLS and press .
3. Select AUTO or MANUAL with or .
4. Press to exit.



Note When AUTO is selected for “Input Selection”, the monitor’s power saving function works only when all PCs are in the power saving mode.

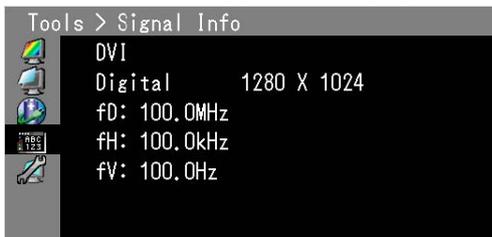
3.5.2 Displaying Monitor Information

3.5.2.1 Displaying Signal Information

This function displays the information about the current input signals displayed.

Procedure

1. Choose TOOLS from the Adjustment menu and press .
 2. Choose SIGNAL INFO from TOOLS and press .
- The SIGNAL INFO appears (example).



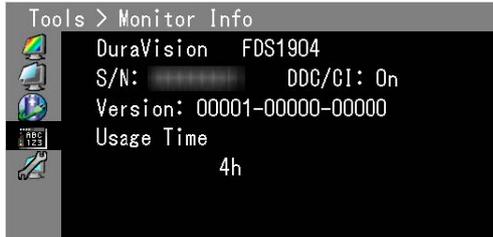
3.5.2.2 Displaying Monitor Information

This function displays the information about the monitor.

Procedure

1. Choose TOOLS from the Adjustment menu and press .
 2. Choose MONITOR INFO from TOOLS and press .
- The "Monitor Info" appears.

The product name, serial number, DDC/CI settings, firmware version and usage time are displayed. (example)



 **Attention** The usage time is not always "0" when you purchase the monitor due to factory inspection.

3.5.3 Replacing the Cooling Fan

The cooling fan in this product can be replaced according to the following procedure.

 **Attention** Be sure to follow the procedure when replacing the fan. Note that Alpatron Marine assumes no responsibility for any damages caused due to improper handling of this product.

 **Note** Contact Alpatron Marine for replacement parts.

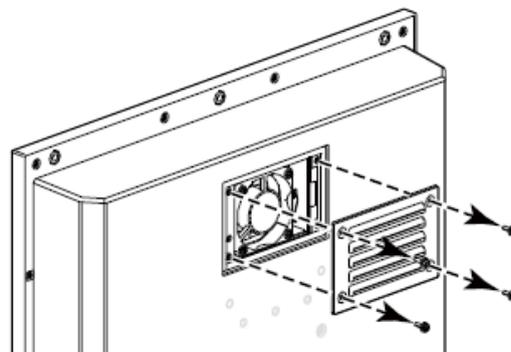
Procedure

1. Remove the monitor from its enclosure.

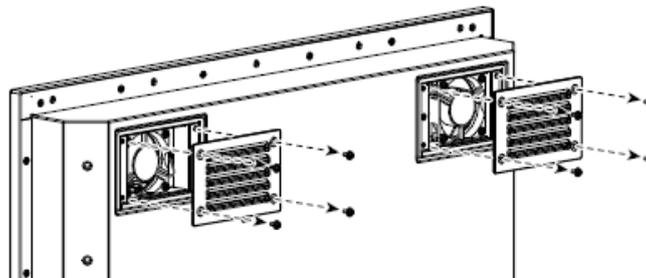
1. Remove the screws that secure the monitor to the enclosure.
2. Lay the LCD monitor on a soft cloth spread over on a stable surface with the panel surface facing down.

2. Remove the fan cover.

Remove the four screws that secure the cover.



FDS1904/FDS1904T

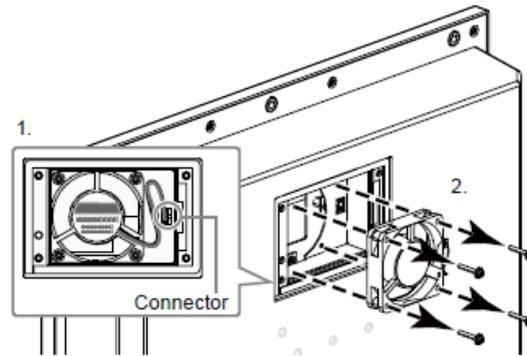


FDU2603W/FDU2603WT

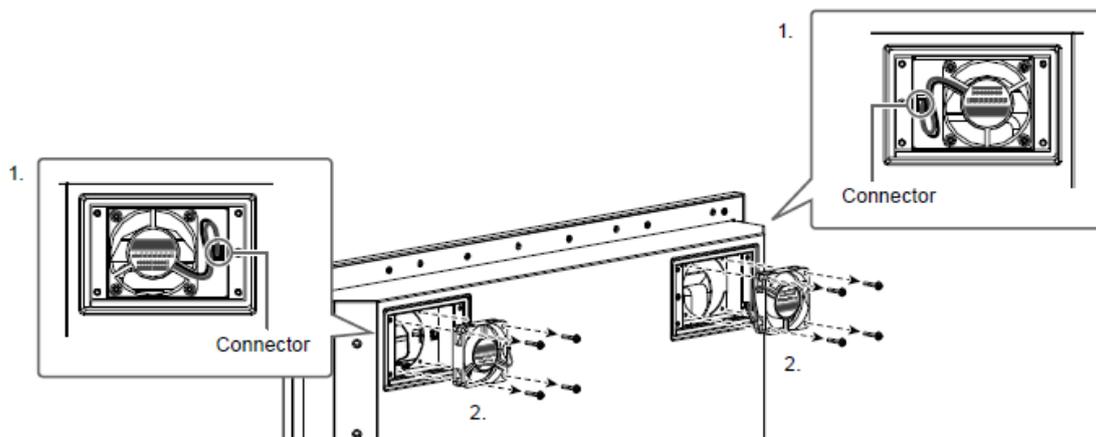
3. Remove the Fan

1. Disconnect the cables connected to the monitor.
2. Remove the four screws that secure the fan.

 **Attention** Make sure to hold the connector when removing the cable. Pulling on the cable may damage the connector.



FDS1904/FDS1904T



FDU2603W/FDU2603WT

4. Install the New Fan.

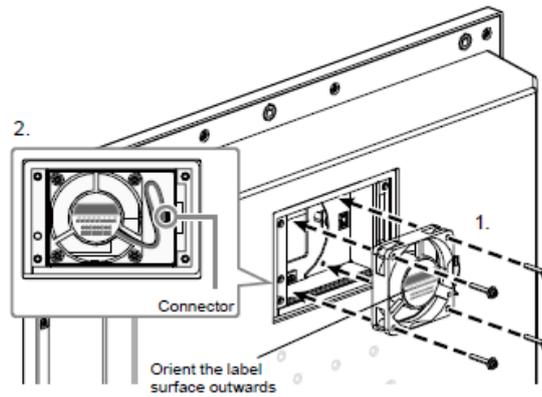
Attention

- Take care when handling the fan. Dropping or imparting physical shocks to the fan may damage it.
- Pay attention to the orientation of the fan when installing it.

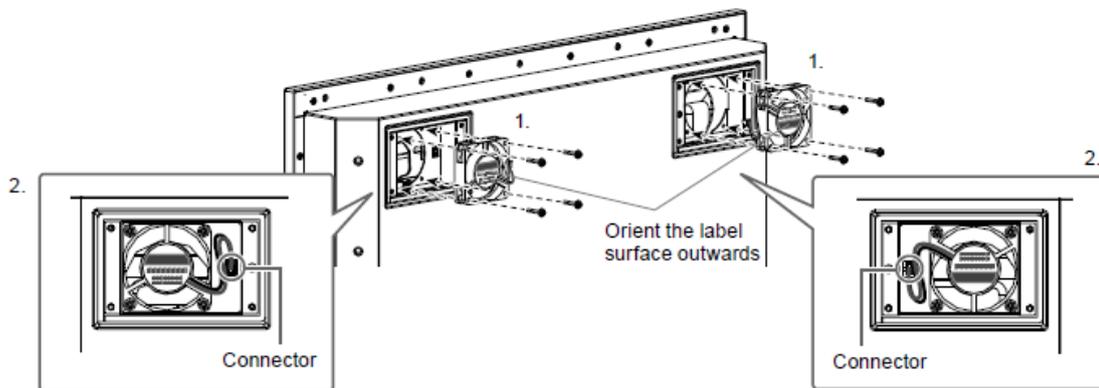
1. Fix the fan to the monitor using the screws removed in step 3 before (recommended torque: $8.0 \pm 2\text{kgf cm}$ / $0.78 \pm 0.2 \text{ Nm}$).

2. Connect the cable to the monitor.

Securely connect the connector to the monitor.



FDS1904/FDS1904T

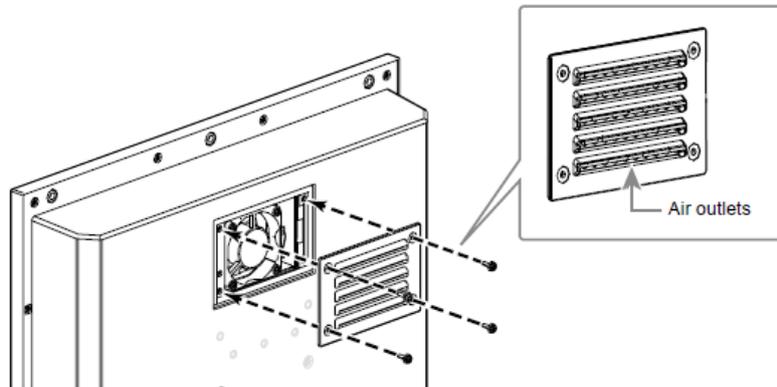


FDU2603W/FDU2603WT

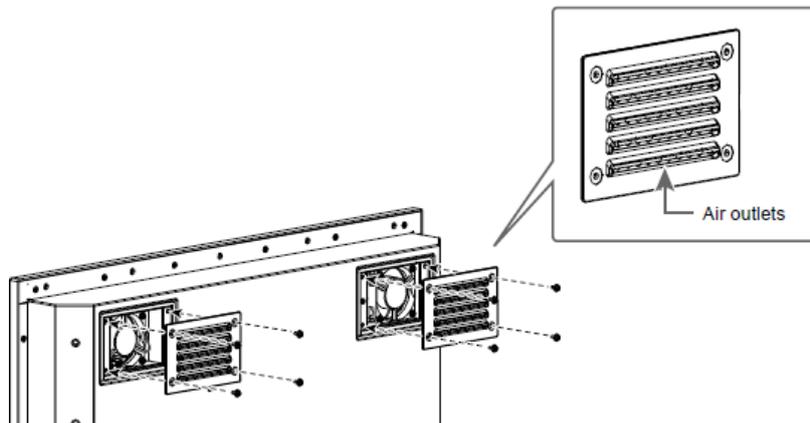
5. Install the fan cover.

Fix the cover to the monitor using the screws removed in step 2 before.

 **Attention** Orient the air outlets downwards when installing the cover.



FDS1904/FDS1904T



FDU2603W/FDU2603WT

6. Install the monitor into the enclosure.

3.5.4 Preset Timing

The following table shows factory preset analog signal timing:

Attention

- Display position may be divergent depending on the PC connected, which may require screen adjustment using Adjustment menu.
- If a signal other than those listed in the table is input, adjust the screen using the Adjustment menu. However, screen display may still be incorrect even after the adjustment.
- When interlace signals are used, the screen cannot be displayed correctly even after screen adjustment using the Adjustment menu.

FDS1904 / FDS1904T

Resolution	Frequency		
	Dot Clock: MHz	Horizontal:kHz	Vertical: Hz
640 x 480	25.18	31.47	59.94
640 x 480	31.50	37.86	72.81
640 x 480	31.50	37.50	75.00
720 x 400	28.32	31.47	70.09
800 x 600	36.00	35.16	56.25
800 x 600	40.00	37.88	60.32
800 x 600	50.00	48.08	72.19
800 x 600	49.50	46.88	75.00
1024 x 768	65.00	48.36	60.00
1024 x 768	75.00	56.48	70.07
1024 x 768	78.75	60.02	75.03
1152 x 864	108.00	67.50	75.00
1152 x 900	94.20	61.97	66.14
1152 x 900	107.50	71.86	76.20
1280 x 960	108.00	60.00	60.00
1280 x 1024	108.00	63.98	60.02
1280 x 1024	117.00	71.69	67.19
1280 x 1024	135.00	79.98	75.03

FDU2603W / FDU2603WT

Resolution	Frequency		
	Dot Clock: MHz	Horizontal:kHz	Vertical: Hz
640 x 480	25.18	31.47	59.94
640 x 480	31.50	37.86	72.81
640 x 480	31.50	37.50	75.00
720 x 400	28.32	31.47	70.09
800 x 600	36.00	35.16	56.25
800 x 600	40.00	37.88	60.32
800 x 600	50.00	48.08	72.19
800 x 600	49.50	46.88	75.00
1024 x 768	65.00	48.36	60.00
1024 x 768	75.00	56.48	70.07
1024 x 768	78.75	60.02	75.03
1152 x 864	108.00	67.50	75.00
1152 x 900	94.20	61.97	66.14
1152 x 900	107.50	71.86	76.20
1280 x 960	108.00	60.00	60.00
1280 x 1024	108.00	63.98	60.02
1280 x 1024	117.00	71.69	67.19
1280 x 1024	135.00	79.98	75.03
1600 x 1200	162.00	75.00	60.00
1600 x 1200	130.25	74.00	59.92
1680 x 1050	146.25	65.29	59.95
1920 x 1200	154.00	74.04	59.95

4 Specifications

4.1 FDS1904 / FDS1904-OP

LCD Panel	Type		VA		
	Backlight		LED		
	Size		48 cm (19.0 inch) (48.1 cm diagonal)		
	Native Resolution		1280 dots x 1024 lines		
	Display Size (H x V)		376.3 mm x 301.0 mm		
	Pixel Pitch		0.294 mm		
	Display Colors		Approx. 16.77 million colors		
	Viewing Angles (H / V, typical)		178° / 178°		
	Maximum brightness (brilliance)		FDS1904: 590 cd/m ² FDS1904-OP: 600 cd/m ²		
	Contrast ratio (typical)		2000:1		
	Response Time (typical)		20 ms (Black-white-black)		
Protective glass	Surface treatment		Anti-reflection		
	Surface hardness		5H		
Video Signals	Input Terminals		DVI-D connector x 1, D-Sub mini 15-pin x 1		
	Output terminal		D-Sub mini 15-pin x 1		
	Digital Scanning Frequency (H / V)		31 kHz - 64 kHz / 59Hz - 61Hz (720 x 400 : 69Hz - 71Hz)		
	Analog Scanning Frequency Frequency (H / V)		31 kHz - 80 kHz / 56 Hz - 76Hz		
	Dot Clock		Digital 108 MHz Analog 135 MHz		
	Synchronous signal		Separate, TTL, positive/negative Composite, TTL, positive/negative Sync on Green, 0.5Vp-p, negative		
Communication	Input Terminals		RS-232C: D-Sub 9-pin (female)		
Power	Input	AC	Rating AC 100 - 240 V (Operating: AC 85 V - 264 V), 50/60 Hz, 0.65 A - 0.3 A		
		DC	Rating DC +24 V (Operating: +30% / -10%), 2.7 A (DC 24 V)		
	Maximum Power Consumption		64 W or less		
	Power Save Mode	AC	9.0 W or less	(When there is DVI input, no USB device is connected, and "Input Selection" is set to "Manual", and when DDC/CI is OFF)	
DC		6.0 W or less			



	Standby Mode	AC	7.0 W or less	(When there is DVI input, no USB device is connected, and "Input Selection" is set to "Manual", and when DDC/CI is OFF)
		DC	5.0 W or less	
Physical Specifications	Dimensions		429 mm x 406 mm x 74.5 mm (excluding the projection)	
	Net Weight		FDS1904: Approx. 5.9kg FDS1904-OP: Approx. 6.2kg	
Operating Environmental Requirements	Temperature:		-15°C to 55°C	
	Humidity		10% to 90% R.H. (no condensation)	
Transportation/ Storage Environmental Requirements	Temperature:		-20°C to 60°C	
	Humidity		10% to 92% R.H. (no condensation)	
Viewing distance (Recommended)			1014 mm or more (*Based on IEC 62288)	
Protection structure			Front: IP65, Rear: IP22 (Landscape only)	

4.2 FDS1904T / FDS1904T-OP

LCD Panel	Type	VA
	Backlight	LED
	Size	48 cm (19.0 inch) (48.1 cm diagonal)
	Native Resolution	1280 dots x 1024 lines
	Display Size (H x V)	376.3 mm x 301.0 mm
	Pixel Pitch	0.294 mm
	Display Colors	Approx. 16.77 million colors
	Viewing Angles (H / V, typical)	178° / 178°
	Maximum brightness (brilliance)	FDS1904T: 540 cd/m ² FDS1904T-OP: 580 cd/m ²
	Contrast ratio (typical)	2000:1
	Response Time (typical)	20 ms (Black-white-black)
Touch Panel	Method	Projected capacitive technology
	Communication method	USB, RS-232C (* Cannot be used at the same time.)
	Surface treatment	Anti-reflection, Anti-fingerprint
	Surface hardness	5H
	OS	Microsoft Windows 10 (32 bit / 64 bit) Microsoft Windows 8.1 (32 bit / 64 bit) Microsoft Windows 7 Service Pack 1 (32 bit / 64 bit) Microsoft Windows XP Service Pack 3 (32 bit) (Not compatible with Mac OS)
	Number of simultaneous touch points	Up to 5 (Microsoft Windows XP only supports single point touch)
Video Signals	Input Terminals	DVI-D connector x 1, D-Sub mini 15-pin x 1
	Output terminal	D-Sub mini 15-pin x 1
	Digital Scanning Frequency (H / V)	31 kHz - 64 kHz / 59Hz - 61Hz (720 x 400 : 69Hz - 71Hz)
	Analog Scanning Frequency Frequency (H / V)	31 kHz - 80 kHz / 56 Hz - 76Hz
	Dot Clock	Digital 108 MHz Analog 135 MHz
	Synchronous signal	Separate, TTL, positive /negative Composite, TTL, positive / negative Sync on Green, 0.5Vp-p, negative

Communication	Input Terminals	RS-232C: D-Sub 9-pin (female) RS-232C: D-Sub 9-pin (male)		
USB	Port	Upstream port × 1		
	Standard	USB Specification Revision 2.0		
Power	Input	AC	Rating AC 100 - 240 V (Operating: AC 85 V - 264 V), 50/60 Hz, 0.65 A - 0.3 A	
		DC	Rating DC +24 V (Operating: +30% / -10%), 2.7 A (DC 24 V)	
	Maximum Power Consumption	64 W or less		
	Power Save Mode	AC	9.0 W or less	(When there is DVI input, no USB device is connected, and "Input Selection" is set to "Manual", and when DDC/CI is OFF)
		DC	6.0 W or less	
	Standby Mode	AC	7.0 W or less	(When there is DVI input, no USB device is connected, and "Input Selection" is set to "Manual", and when DDC/CI is OFF)
		DC	5.0 W or less	
Physical Specifications	Dimensions	429 mm × 406 mm × 74.5 mm (excluding the projection)		
	Net Weight	FDS1904T: Approx. 6.4kg FDS1904T-OP: Approx. 6.7kg		
Operating Environmental Requirements	Temperature:	-15°C to 55°C		
	Humidity	10% to 90% R.H. (no condensation)		
Transportation/ Storage Environmental Requirements	Temperature:	-20°C to 60°C		
	Humidity	10% to 92% R.H. (no condensation)		
Viewing distance (Recommended)		1014 mm or more (*Based on IEC 62288)		
Protection structure		Front: IP65, Rear: IP22 (Landscape only)		

4.3 FDU2603W/FDU2603W-OP

LCD Panel	Type		VA		
	Backlight		LED		
	Size		48 cm (19.0 inch) (48.1 cm diagonal)		
	Native Resolution		1920 dots x 1200 lines		
	Display Size (H x V)		550.0 mm x 343.8 mm		
	Pixel Pitch		0.2865 mm		
	Display Colors		Approx. 16.77 million colors		
	Viewing Angles (H / V, typical)		176° / 176°		
	Maximum brightness (brilliance)		FDU2603W: 490 cd/m2 FDU2603WT-OP: 500 cd/m2		
	Contrast ratio (typical)		1500:1		
	Response Time (typical)		20 ms (Black-white-black)		
Protective glass	Surface treatment		Anti-reflection		
	Surface hardness		5H		
Video Signals	Input Terminals		DVI-D connector x 1, D-Sub mini 15-pin x 1		
	Output terminal		D-Sub mini 15-pin x 1		
	Digital Scanning Frequency (H / V)		31 kHz - 76 kHz / 59 Hz - 61 Hz (720 x 400: 69 Hz - 71 Hz)		
	Analog Scanning Frequency Frequency (H / V)		31 kHz - 80 kHz / 56 Hz - 76Hz		
	Dot Clock		Digital 162 MHz Analog 162 MHz		
	Synchronous signal		Separate, TTL, positive / negative Composite, TTL, positive / negative Sync on Green, 0.3Vp-p, negative		
Communication	Input Terminals		RS-232C: D-Sub 9-pin (female)		
Power	Input	AC	Rating AC 100 - 240 V (Operating: AC 85 V - 264 V), 50/60 Hz, 1.2 A - 0.6 A		
		DC	Rating DC +24 V (Operating: +30% / -10%), 4.5 A (DC 24 V)		
	Maximum Power Consumption		108 W or less		
	Power Save Mode	AC	10.0 W or less	(When there is DVI input, no USB device is connected, and "Input Selection" is set to "Manual", and when DDC/CI is OFF)	
		DC	7.0 W or less		
	Standby Mode	AC	10.0 W or less	(When there is DVI input, no USB device is connected, and "Input Selection" is set to "Manual", and when DDC/CI is OFF)	
DC		70 W or less			



Physical Specifications	Dimensions	624 mm × 456 mm × 86 mm (excluding the projection)
	Net Weight	FDU2603W: Approx. 14.5 kg FDU2603W-OP: Approx. 14.9 kg
Operating Environmental Requirements	Temperature:	-15°C to 55°C
	Humidity	10% to 90% R.H. (no condensation)
Transportation/ Storage Environmental Requirements	Temperature:	-20°C to 60°C
	Humidity	10% to 90% R.H. (no condensation, wet bulb temperature ≤ 39 °C)
Viewing distance (Recommended)		988 mm or more (*Based on IEC 62288)
Protection structure		Front: IP65, Rear: IP22

4.4 FDU2603WT/FDU2603WT-OP

LCD Panel	Type	VA
	Backlight	LED
	Size	65 cm (25.5 inch) (64.8 cm diagonal)
	Native Resolution	1920 dots x 1200 lines
	Display Size (H x V)	550.0 mm x 343.8 mm
	Pixel Pitch	0.2865 mm
	Display Colors	Approx. 16.77 million colors
	Viewing Angles (H / V, typical)	176° / 176°
	Maximum brightness (brilliance)	FDS1904T: 540 cd/m2 FDU2603WT-OP: 500 cd/m2
	Contrast ratio (typical)	1500:1
	Response Time (typical)	20 ms (Black-white-black)
Touch Panel	Method	Projected capacitive technology
	Communication method	USB, RS-232C (* Cannot be used at the same time.)
	Surface treatment	Anti-reflection
	Surface hardness	5H
	OS	Microsoft Windows 10 (32 bit / 64 bit) Microsoft Windows 8.1 (32 bit / 64 bit) Microsoft Windows 7 Service Pack 1 (32 bit / 64 bit) Microsoft Windows XP Service Pack 3 (32 bit) (Not compatible with Mac OS)
	Number of simultaneous touch points	Up to 5 (Microsoft Windows XP only supports single point touch)
Video Signals	Input Terminals	DVI-D connector x 1, D-Sub mini 15-pin x 1
	Output terminal	D-Sub mini 15-pin x 1
	Digital Scanning Frequency (H / V)	31 kHz - 76 kHz / 59 Hz - 61 Hz (720 x 400 : 69 Hz - 71 Hz)
	Analog Scanning Frequency Frequency (H / V)	31 kHz - 81 kHz / 56 Hz - 76 Hz
	Dot Clock	Digital 162 MHz Analog 162 MHz
	Synchronous signal	Separate, TTL, positive/negative Composite, TTL, positive/negative Sync on Green, 0.3Vp-p, negative

Communication	Input Terminals	RS-232C: D-Sub 9-pin (female) RS-232C: D-Sub 9-pin (male)		
USB	Port	Upstream port × 1		
	Standard	USB Specification Revision 2.0		
Power	Input	AC	Rating AC 100 - 240 V (Operating: AC 85 V - 264 V), 50/60 Hz, 1.2 A - 0.6 A	
		DC	Rating DC +24 V (Operating: +30%/-10%), 4.5 A (DC 24 V)	
	Maximum Power Consumption	108 W or less		
	Power Save Mode	AC	10.0 W or less	
		DC	7.0 W or less	
	Standby Mode	AC	10.0 W or less	
		DC	7.0 W or less	
Physical Specifications	Dimensions	624 mm × 456 mm × 86 mm (excluding the projection)		
	Net Weight	FDU2603WT: Approx. 15.1 kg FDU2603WT-OP: Approx. 15.9 kg		
Operating Environmental Requirements	Temperature:	-15°C to 55°C		
	Humidity	10% to 90% R.H. (no condensation)		
Transportation/ Storage Environmental Requirements	Temperature:	-20°C to 60°C		
	Humidity	10% to 90% R.H. (no condensation, wet bulb temperature ≤ 39 °C)		
Viewing distance (Recommended)		988 mm or more (*Based on IEC 62288)		
Protection structure		Front: IP65, Rear: IP22		

Main Default Settings

Brilliance	FDS1904/FDS1904T	1-Custom: 100% (255/255) 2-Day: 65% (166/255) 3-Dusk: 56% (144/255) 4-Night: 11% (28/255)
	FDU2603W/FDU2603WT	1-Custom: 100% (255/255) 2-Day: 67% (171/255) 3-Dusk: 60% (153/255) 4-Night: 11% (27/255)
Screen Size	Enlarged	
Power Save	Off	
Power Indicator	4	
Eco Timer	Off	
Language	English	
Menu Position	Center	
Input ¹	D-SUB	
Input Selection	Auto	
Key Lock ¹	Off	
DDC/CI ¹	On	
Orientation ¹	Landscape	
Backlight Off Mode ¹	On	
ECDIS Indicator ¹²	On	

¹ These functions cannot be initialized with the "All Reset" function (see *Return to Default Setting* on page 23).

² The ECDIS Indicator becomes active when the monitor display mode is set to DAY, DUSK, or NIGHT.

4.5 Pin Assignment

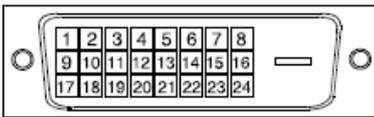
D-Sub mini 15-pin connector



Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	Red Video	6	Red Video Ground	11	Ground
2	Green Video	7	Green Video Ground	12	Data (SDA)
3	Blue Video	8	Blue Video Ground	13	H.Sync
4	Ground	9	NC	14	V.Sync
5	NC	10	Ground	15	Clock (SCL)

(NC: Not connected)

DVI-D connector

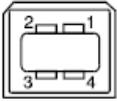


Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	T.M.D.S. Data 2-	9	T.M.D.S. Data1-	17	T.M.D.S. Data0-
2	T.M.D.S. Data 2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2/4 Shield	11	T.M.D.S. Data1/3 Shield	19	T.M.D.S. Data0/5 Shield
4	NC	12	NC	20	NC
5	NC	13	NC	21	NC
6	DDC Clock (SCL)	14	+5V Power	22	T.M.D.S. Clock shield
7	DDC Data (SDA)	15	Ground (return for +5V, Hsync and Vsync)	23	T.M.D.S. Clock+
8	Analog Vertical Sync	16	Hot Plug Detect	24	T.M.D.S. Clock-

(NC: Not connected)

USB Port

Upstream (Series B)



Pin No.	Signal	Remarks
1	VBUS	Cable power
2	-Data	Serial data
3	+Data	Serial data
4	Ground	Cable ground

RS-232C port

D-Sub 9-pin (female, for monitor control)



Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	DCD	4	DTR	7	RTS
2	RXD	5	GND	8	CTS
3	TXD	6	DSR	9	RI

⚠ Attention

- The monitor is the DCE side.
- Use a straight-through cable (male to female) to connect with the PC.

D-Sub 9-pin (male, for touch panel control)



Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	DCD	4	DTR	7	RTS
2	RXD	5	GND	8	CTS
3	TXD	6	DSR	9	RI

⚠ Attention

- The monitor is the DTE side.
- Use a crossover cable (female to female) to connect with the PC.

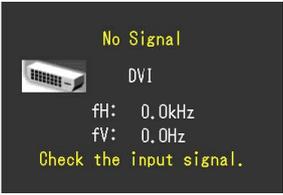
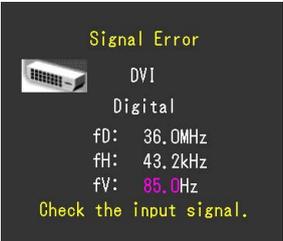
5 Maintenance

Periodic cleaning is recommended to keep the monitor looking new and to prolong its operation lifetime. See *Cleaning* on page 4

5.1 Troubleshooting

If a problem still remains after applying the suggested remedies below, contact Alpatron Marine.

5.1.1 No Picture

Problem	Possible cause and remedy
<p>1. No picture</p> <ul style="list-style-type: none"> None of the operation buttons light up. 	<ul style="list-style-type: none"> Check whether the power cord is connected properly Turn the main power switch on. Turn off the main power, and then turn it on again a few minutes later.
<ul style="list-style-type: none"> Only the  button lights up orange. 	<ul style="list-style-type: none"> Press .
<ul style="list-style-type: none"> All of the operation buttons light up orange. 	<ul style="list-style-type: none"> Adjust the brightness (brilliance) of the screen. Operate the mouse or keyboard. Check whether the PC is turned on.
<p>2. The message below appears.</p>	<p>This message appears when the signal is not input correctly even when the monitor functions properly.</p>
<ul style="list-style-type: none"> This message appears when no signal is input. (Example) 	<ul style="list-style-type: none"> The message shown left may appear, because some PCs do not output the signal soon after power-on. Check whether the PC is turned on. Check whether the signal cable is connected properly. Switch the input signal, see <i>Switching Among Input Signals</i> on page 29
<ul style="list-style-type: none"> This message shows that the input signal is out of the specified frequency range. (Such signal frequency is displayed in magenta.) (Example)  <p>fD: - Dot clock (Displayed only during digital signal input)</p> <p>fH: - Horizontal scan frequency</p> <p>fV: Vertical scan frequency</p>	<ul style="list-style-type: none"> Check whether the PC is configured to meet the resolution and vertical scan frequency requirements of the monitor. ("Compatible Resolutions" in the Setup Manual.) Reboot the PC. Select an appropriate display mode using the graphics board's utility. Refer to the User's Manual of the graphics board for details.



5.1.2 Imaging Problems (for both digital and analog)

Problem	Possible cause and remedy
1. The screen is too bright or too dark.	<ul style="list-style-type: none"> Use BRILLIANCE in the Adjustment menu to adjust it. (The LCD monitor backlight has a limited life span. When the screen becomes dark or begins to flicker, contact Alpatron Marine)
2. The screen suddenly became dark. / The “Brilliance” value in the Adjustment menu cannot be increased.	<ul style="list-style-type: none"> The monitor always monitors its internal temperature. If the internal monitor reaches a high temperature and exceeds the specified value, the monitor will automatically enter the following state to decrease the temperature. <ul style="list-style-type: none"> The “Brilliance” setting is lowered The “Brilliance” setting cannot be increased This state will return to the original when the internal temperature decreases. <p>If the internal temperature increases further even after the “Brilliance” setting is decreased, a “WARNING” message is displayed and the monitor power is automatically turned off. (Power indicator flashes green.)</p>
3. Characters are blurred.	<ul style="list-style-type: none"> Check whether the PC is configured to meet the resolution and vertical scan frequency requirements of the monitor. (“Compatible Resolutions” in the Setup Manual.) Use OUTLINE ENHANCER in the Adjustment menu to adjust it (see <i>Enhancing Image Outline</i> on page 17).
4. After images appear.	<ul style="list-style-type: none"> After images are particular to LCD monitors. Avoid displaying the same image for a long time. Use the screen saver or power saving function to avoid displaying the same image for extended periods of time.
5. Green/red/blue/white dots or defective dots remain on the screen.	<ul style="list-style-type: none"> This is due to LCD panel characteristics and is not a failure.
6. Interference patterns or pressure marks remain on the screen.	<ul style="list-style-type: none"> Leave the monitor with a white or black screen. The symptom may disappear.
7. Noise appears on the screen.	<ul style="list-style-type: none"> When entering the signals of HDCP system, the normal images may not be displayed immediately.

Problem	Possible cause and remedy
8. Cloudiness cannot be removed even after wiping the screen. / There is dew condensation on the interior side of the glass.	<ul style="list-style-type: none">• When cloudiness cannot be removed even by wiping the screen, dew condensation may have occurred on the interior side of the glass that protects the panel. In this case, turn on the monitor and display something on screen. The dew condensation will disappear after a while. Also, warming the glass using a hair dryer may make the dew condensation disappear more quickly. Dew condensation appearing like this on the interior side of the glass will not lead to product failure or degradation.

5.1.3 Imaging Problems (for analog only)

Problem	Possible cause and remedy
<p>1. Display position is incorrect.</p> 	<ul style="list-style-type: none"> • Use POSITION in the Adjustment menu to correct the image position (see <i>Analog Signal Input</i> on page 13). • If the problem persists, use the graphics board's utility if available to change the display position.
<p>2. Vertical bars appear on the screen or a part of the image is flickering.</p> 	<ul style="list-style-type: none"> • Use CLOCK in the Adjustment menu to adjust it (see <i>Analog Signal Input</i> on page 13).
<p>3. Whole screen is flickering or blurring.</p> 	<ul style="list-style-type: none"> • Use PHASE in the Adjustment menu to adjust it (see <i>Analog Signal Input</i> on page 13).

5.1.4 Other Problems

Problem	Possible cause and remedy
<p>1. The message below appears on screen.</p> 	<ul style="list-style-type: none"> • This message appears when the monitor's cooling fan is not operating correctly. Check the state of the cooling fan on the rear of the monitor.
<p>2. The Adjustment menu does not appear.</p>	<ul style="list-style-type: none"> • Check whether the operation lock function works (see <i>Locking Buttons</i> on page 20). • If the function is active, "Locked" is displayed on the screen.
<p>3. The fan is noisy.</p>	<ul style="list-style-type: none"> • This product is fitted with a cooling fan to keep the internal temperature from rising. Depending on the monitor's location the fan may be audible when operating, but this is not a defect.

5.1.5 Touch Panel Problems (for FDS1904T/FDU2603WT only)

Problem	Possible cause and remedy
1. Touch operation is disabled.	<ul style="list-style-type: none"> • Check that the monitor and PC are connected with a USB or RS-232C cable. • Turn the monitor off and on. • Check that the power cord of the monitor and PC is connected to a grounded main outlet. Failure to ground the equipment may result in malfunction. • Perform touch panel sensitivity adjustment using TPOffset.
2. Cursor position is not correct. / Cursor jumps.	<ul style="list-style-type: none"> • Connect the monitor to the PC with the cable indicated in the Setup Manual. The touch panel may not work correctly if a conversion adapter is used. • Turn the monitor off and on. • Calibrate the screen again. • Check that the power cord of the monitor and PC is connected to a grounded main outlet. Failure to ground the equipment may result in malfunction. • Perform touch panel sensitivity adjustment using TPOffset. • Changing the position or angle of the monitor may cause the cursor to jump. • Keep metals away from the panel surface. • If the touch panel is dirty, the touch panel may not operate properly. See <i>Cleaning</i> on page 4) to clean the touch panel. • The spray for preventing static electricity may influence the sensitivity of the touch panel. • Do not touch the touch panel for 5 seconds after the PC starts up, after turning on the monitor, or after connecting the cable. Touching the touch panel too soon may cause incorrect cursor positioning or disable touch operation. If this occurs, either leave the touch panel untouched for approximately 2 minutes or turn the monitor off and on again. If the problem persists, calibrate the screen again.
3. The cursor does not appear at the touched position and instead is displayed at a point-symmetric position with respect to the center of the screen.	<ul style="list-style-type: none"> • Calibrate the screen again.
4. Cursor is jittery. / Drawing lines are not straight and smooth.	<ul style="list-style-type: none"> • Check that the power cord of the monitor and PC is connected to a grounded main outlet. Failure to ground the equipment may result in malfunction. • Perform touch panel sensitivity adjustment using TPOffset. • The influence of metal may cause jittery cursor. • When multiple monitors are placed close to each other, leave space between monitors.

Problem	Possible cause and remedy
5. (If the OS being used is Windows 8.1 / Windows 7) Calibration does not work correctly.	<ul style="list-style-type: none"> Reset the touch panel to the state before calibration (by clicking “Reset” in the “Display” tab of the “Tablet PC Settings” window accessible from the Windows Control Panel) and then calibrate the touch panel again.
6. (If the OS being used is Windows 8.1 / Windows 7) No touch-sound.	<ul style="list-style-type: none"> Sound is only output through the audio output terminal of the PC. To hear touch sound, connect speakers. Sound is not output when touched positions are not assigned any functions.

 **Attention** For details on TPOffset (software for adjusting touch panel sensitivity), see the TPOffset User’s Manual (on the CD-ROM).

5.2 Recycling Information

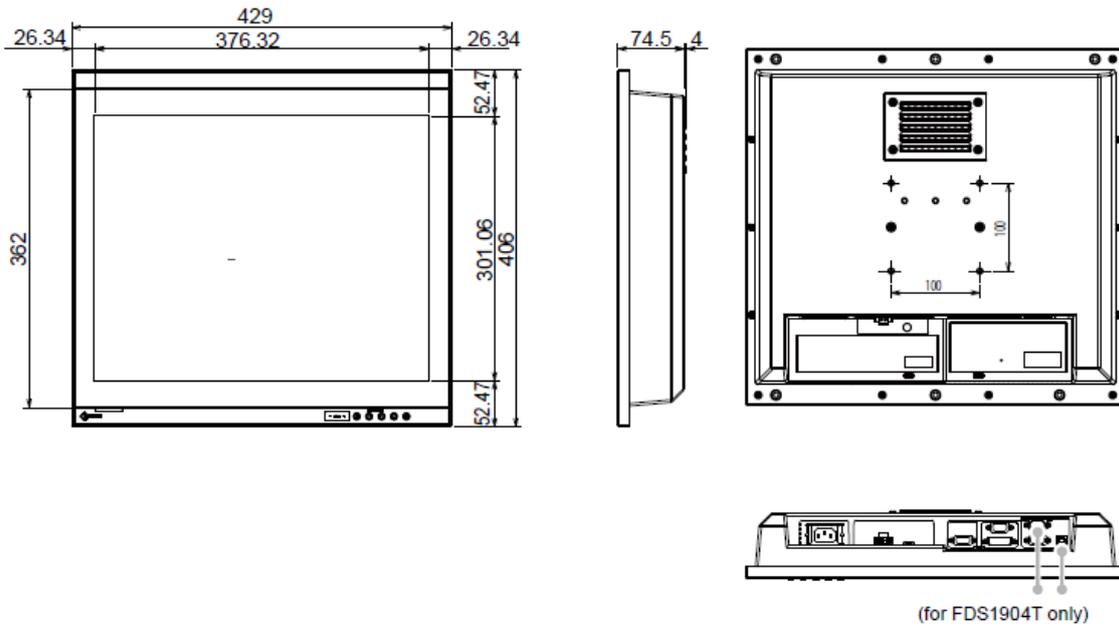
This product, when disposed of, is supposed to be collected and recycled according to the country’s legislation to reduce environmental burden. When disposing of this product, please contact a distributor or an affiliate in your country.

6 Appendices

6.1 Drawings

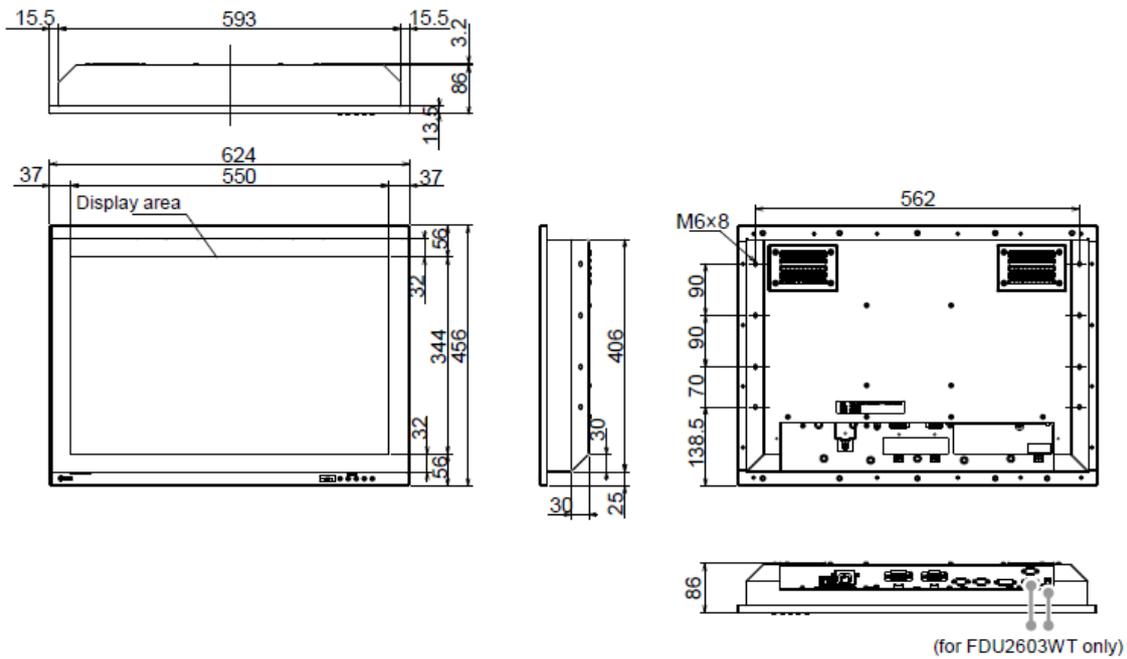
FDS1904 / FDS1904T

Unit: mm



FDU2603W / FDU2603WT

Unit: mm



6.2 Testing Standard

This product complies with the IEC60945 4th edition standard.

Equipment category: b) protected from the weather

6.3 Type Approval of Ship Classification

This product has been approved for the following types of ship classifications.

- NK (Nippon Kaiji Kyokai)
- DNV GL (DNV GL AS)
- ABS (American Bureau of Shipping)
- LR (Lloyd's Register of Shipping)

6.4 CE

For Europe, etc. (rated 200-240 Vac) Only

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Warnung

Bei dem Gerät handelt es sich um ein Klasse-A-Produkt. Bei Betrieb des Geräts in Wohnumgebungen ist gegebenenfalls durch entsprechende Maßnahmen dafür zu sorgen, dass eine Störung des Radio- und Fernsehempfangs vermieden wird.

Avertissement

Cet appareil est de classe A. Il est susceptible de créer des interférences radio dans un environnement domestique, dans ce cas l'utilisateur devra prendre les mesures appropriées.



6.5 Annex A

The Displays could be used in combination with the following MFD, Radar, and ECDIS equipment:

Device	Type	NB	Type Approval
Radar	JRC AlphaScan 5900	0168	BABT-MED000107
Radar	JRC JMR-5400	0168	BABT-MED000113
Radar	JRC JMR-7200	0168	BABT-MED-000059
ECDIS	JRC JAN-7201	0168	BABT-MED-000061

Table 5: The AlphaScreen 19 (Eizo DuraVision FDS1904)

Device	Type	NB	Type Approval
Radar	JRC AlphaScan 5900	0168	BABT-MED000107
Radar	JRC JMR-5400	0168	BABT-MED000113
Radar	JRC JMR-9200	0168	BABT-MED-000060
ECDIS	JRC JAN-9201	0168	BABT-MED-000062

Table 6: The AlphaScreen 26 (Eizo DuraVision FDU2603W)

All over the world,
close to the customer

JRC/Alphatron Marine B.V.

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