User Guide
Marine Rugged Display Computer

10.4" DNVMR10ID3S-M2-5RT
12" DNVMR12ID3S-M2-5RT
15" DNVMR15ID3S-M2-5RT
17" DNVMR17ID3S-M1-5RT
19" DNVMRW19ID3S-A2-5RT
24" DNVMRW24ID3S-A1-5RT

American Industrial Systems, Inc.

http://www.aispro.com

The test results show that this device meets FCC rules. Those limits are set to protect residential areas from harmful emissions from the devices. This device will produce, use and radiate radio frequency energy. In addition, failure to follow the user manual in order to install or use this device might produce harmful interference with radio communication. Foregoing this information does not guarantee that this type of harmful interference will not occur in some special instances. The interference caused by this device to radio or television signals may be verified by turning the device on and off. Any changes or modifications to this TFT LCD would void the user's authority to operate this device.

Important Recycle Instruction:

Lamp(s) inside this product contains mercury. This product may contain other electronic waste that can be hazardous if not disposed of properly. Recycle or dispose in accordance with local, state, or federal Laws. For more information, contact the Electronic Industries Alliance at WWW.EIAE.ORG. For lamp specific disposal information check WWW.LAMPRECYCLE.ORG

Table of Contents

1.0 Introduction

This user manual is designed for American Industrial Systems, Inc. Marine Rugged Display Computer. Included is a comprehensive overview of the Marine Rugged Display Computer systems designed by American Industrial Systems.

2.0 Important Safety Instructions

This chapter also includes information on approval and interference inhibition of your unit. Please abide by the warnings and instructions on the unit and in the manual. Please read these instructions carefully before using the product and save it for later reference.

◈ Follow all warnings and instructions marked on the product.
◈ Unplug this product from the wall outlet before cleaning. Clean the product with a damp soft cloth. Do not use liquid or aerosol cleaners as it may cause permanent damage to the screen.
◈ Do not use this product near water.
◈ Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
◈ This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
◈ This product is equipped with a 3-wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. (For AC version only) Do not defeat the purpose of the grounding-type plug.
◈ Do not allow anything to rest on the power cord.
◈ Do not locate this product where persons will walk on the cord.
◈ Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock.
◈ Never spill liquid of any kind on the product.
◈ Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks and will void the warranty. Refer all servicing to qualified service personnel.
◈ Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    ◊ When the power cord or plug is damaged or frayed. If liquid has been spilled into the product.
    ◊ If the product has been exposed to rain or water.
    ◊ If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
    ◊ If the product has been dropped or the cabinet has been damaged.
    ◊ If the product exhibits a distinct change in performance, indicating a need for service.

The Marine Rugged Display Computer, Display system was built and tested by American Industrial Systems, Inc. in accordance to prescribed safety conditions, and in a safe condition.
In order to retain this condition and maintain safe operation, the users must abide by the instructions and warnings

◈ The electrical installations in the room must not violate the requirements of the local (country-specific) regulations.
◈ The unit must be used in accordance with these instructions.
◈ Pay close attention that there are no cables, especially power cables, in areas where ambulatory traffic may interfere.
◈ Only use the power cord supplied with the package. Don't use injured or damaged power cords.

2.1 Suggestions for DC power connection

The DC power source should be able to be switched off and on via an isolating switch. The unit is only completely disconnected from the DC main power source, when the DC power cord is disconnected either from the power source or the unit. Therefore, the DC power cord and its connectors must always remain within reach.

2.2 Suggestions for AC power connection via external AC/DC adapter

The main power cable of the optional external AC/DC adapter serves as disconnecting device. For this reason the outlet of the AC power source must be located near the device and be within reach.

◈ Never place the unit under direct sunlight, near heat sources or in a humid place. Make sure the unit has proper ventilation.
◈ All plugs on the connection cables must be screwed or locked to the housing.
◈ The Marine Rugged Display Computer, designed to be used in upright position with the I/O interfaces downwards.
◈ The unit generates heat under natural operation therefore it should be properly ventilated. Never cover up the air intake and exhaust openings of the unit. Do not impede the fins of the heat sink.
◈ Repairs may only be operated by specialists or technicians qualified and authorized by American Industrial Systems, Inc.
◈ Maintenance or repair on the open unit may only be operated by specialists or technicians qualified and authorized by American Industrial Systems, Inc. who are familiar with the related hazards.
◈ When accessing the internal components, users must switch off the unit and disconnect it from the power source.
◈ Only original accessories (or suggested optional parts) approved and supplied by American Industrial Systems, Inc. can be used.
◈ Assumption of safe operation is no longer possible:
    - If the unit has obvious damage or
    - If the unit no longer functions accordingly.
    Under such cases the unit must be shut down and secured against any unintended operation.

2.3 Electrostatic Discharge (ESD)

A sudden discharge of electrostatic electricity can damage electrostatic-sensitive devices or circuit. Adequate packaging and grounding techniques are essential fundamentals to avoid damage. The following precautions should be always taken:

1. Deliver printed circuit boards in electrostatic-safe containers such as cartons, boxes or anti-static bags.
2. Keep electrostatic-sensitive parts in their containers until they reach an electrostatic-free station.
3. Follow adequate grounding when sensitive PCB's, components, or assemblies are in close vicinity of the unit.
4. Store electrostatic-sensitive PCB's in a protective packaging such as insulating foam.

2.4 Grounding Methods

Protect against electrostatic damage of the unit by taking the following preventative measures:

1. Cover workstations with approved anti-electrostatic material.

2. In order to guarantee that the operator is grounded, provide a wrist strap connected to the working bench.
3. Properly ground tools and equipment.
4. For extra protection use anti-electrostatic mats, heel straps, or air ionizers.
5. Handle electrostatic-sensitive components, PCB's, and assemblies with care nearby the case or the edge of the board.
6. Prevent contact with pins, leads, or circuitry.
7. Switch off power and input signals before plugging and removing connectors or testing equipment.
8. Keep the work area free from non-conductive materials such as ordinary plastic assembly aids and Styrofoam.
9. Use field service tools with conductivity, such as screwdrivers, pliers, and vacuum cleaners.
10. Always put drives, PCB's, and the like with the component-side down on the working bench.

2.5 FCC Statement

This equipment has been tested and found to comply with the requisites for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection from harmful interference when the equipment is operated in commercial environments. This equipment generates, uses, and radiates radio frequency energy, and if it is not installed and used in accordance with the instruction manual it may cause harmful interference to radiofrequency communications. Operation of this equipment in residential areas may cause harmful interference in which case the operator will be required to correct the interference at his or her own expense.

2.6 Electromagnetic Capability

The Marine Rugged Display Computer has been designed for industrial use. The most recent version of the EMC guidelines (EMC Directive 2004/108/EC) are applied. If the users modify and/or add to the equipment (e.g. installation of add-on cards), then the prerequisites for the CE conformity declaration (safety requirements) may no longer be applicable.

2.7 Important LCD Information

CAUTION		
Read manual prior to installing the product. The operation of products depends on you reading and following the information in this manual. Re-check your work prior to operating the product.		
EVENT	EFFECT	PREVENTION
	Sunlight shines directly will cause the panel damage.	You should avoid placing the product under direct sunlight.
	If the product is close to the wet ground such as grassplot, the moisture between panel and glass will make the product malfunction.	You should avoid placing the product in wet environment.

3.0 Packaging List

Item	Description	Note
	1 User Manual	
	1 CD for Touchscreen Drivers & Tools	
	1 Standard VGA Cable. **D-SUB 15pin Male to 15pin Male: 1.8m**	
	1 Power Cord	

4.0 Product Description

4.1 General Information

AIS naval rugged display systems and marine panel computers with rugged touch screen interface, comply with marine equipment standards IEC 60945, DNV 2.4, and IACS-E10 (international standard for maritime navigation and radio communications equipment and systems), needed to withstand harsh maritime environment requiring low EMI or long-term vibration resilience for use in the Combat Information Center (CIC) on board surface ships, combat ships, submarines or military vessels. These marine panel computers are specifically designed to fully operate under harsh maritime conditions; and suitable for bridge control display, navigation, monitoring and ship automation applications. AIS naval rugged display systems are DNV certified for a range of extreme conditions including temperature, humidity, vibration, EMC compatibility and enclosures; with environmental ratings for enclosures based on NEMA 4, 4X, IP65 ratings for degree of protection against falling dirt, rain, windblown dust, splashing water, hose-directed water, and corrosion. These navy PC computers also offer a range of industrial features such as optional optical bonding, wide view angles, and full range dimming. The touchscreen panel is fully integrated with the computer to reduce system integration costs and minimize required footprint. Full support is provided for wide range of panel resolutions in order to meet specific requirements of many different marine applications. AIS professional high quality design provides marine users with reliable, cost-efficient, and ready to run solutions. AIS COTS rugged marine display computers are offered in screen sizes 10.4", 12.1", 15", 17", 19" and 24".

4.2 Features

❖ Maritime Environment Standard: Tested to DNV standard methodology for a range of extreme conditions including temperature, humidity, vibration, EMC compatibility and enclosures.
❖ IEC60945: Tested to IEC60945 standard methodology for maritime navigation and radio communication equipment and systems, including radio and navigational equipment used onboard.
❖ IACS-E10: Tested to IACS-E10 standard procedure for electronically controlled equipment and instrumentation, as well as marine display monitors.
❖ Full-Range Durable Displays
   o High quality branding TFT LCD displays with high resolution and wide temperature range panels.
❖ Hyper Dimming
   o Our displays use hyper dimming technology that can control backlight brightness linearly from nearly 0% to 100% by a dimming knob
❖ Touchscreen/Anti-reflection Protection Glass
❖ IP65 OSD (On Screen Display) Front Panel Design
❖ Anti-shock and Vibration

5.0 Basic Construction
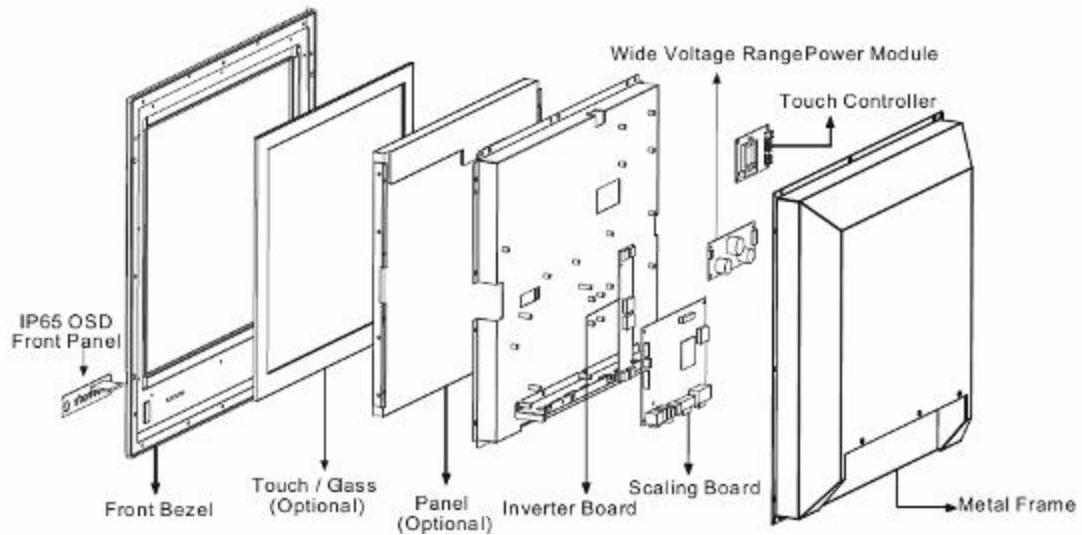
The state of the art modulated technology can integrate all marine display components flexibly.

6.0 Touch Screen Solution

6.1 Introduction to Five-Wire Resistive Touch Screen

The five-wire resistive touchscreens use a glass panel with a uniform resistive coating. A thick polyester coversheet is tightly suspended over the top of the glass, separated by small, transparent insulating dots. The coversheet has a hard, durable coating on the outer side and a conductive coating on the inner side.

- Ⓐ Durable hard coat
- Ⓑ Cover sheet
- Ⓒ Separator dot
- Ⓓ Resistive coating
- Ⓔ Glass panel
- Ⓕ CRT

When the screen is touched, the conductive coating makes electrical contact with the coating on the glass. The voltages produced are the analog representation of the position touched. The controller digitizes these voltages and transmits them to the computer for processing. The five-wire technology utilizes the bottom substrate for both X and Y-axis measurements. The flexible coversheet acts only as a voltage-measuring probe. This means the touchscreen will continue working properly even with non-uniformity in the cover sheet's conductive coating. The result is an accurate, durable and reliable touchscreen that offers drift free operation. The touchscreens are sealed against contamination and moisture. The coversheet is sealed to the glass substrate with an industrial grade caulk. This prevents wicking of fluid between the coversheet and glass. Also, the touchscreens are not air vented, thereby preventing fluid ingress through an air vent.

Brief Specifications:

Subject	Details
Input Method	Finger, gloved hand, or stylus activation
Positional Accuracy	Standard deviation error is less than 0.080 (2 mm)
Resolution	Touchpoint density is based on controller resolution of 4096 x 4096
Touch Activation Force	Typically less than 4 ounces (113 grams)
Light Transmission	HL products: 80% +/–5% at 550 nm wavelength Enhanced products: 60% +/–5% at 550 nm wavelength

Update touchscreen driver or new information. Go to www.elotouch.com

7.0 Installation

7.1 General Installation

The Marine Rugged Display Computer can be applied to several different installation methods. These include, but not limited to: panel (flush) mounting, bracket mounting, ceiling / wall mounting etc. Panel (flush) mounting is normally used for a ship's wheelhouse use, it's easy to follow the following few steps to fix the display product in the customer's fixture.

Check the mechanical and mounting concepts below first. The fixture cut-out dimension and mounting holes are based on the drawing.
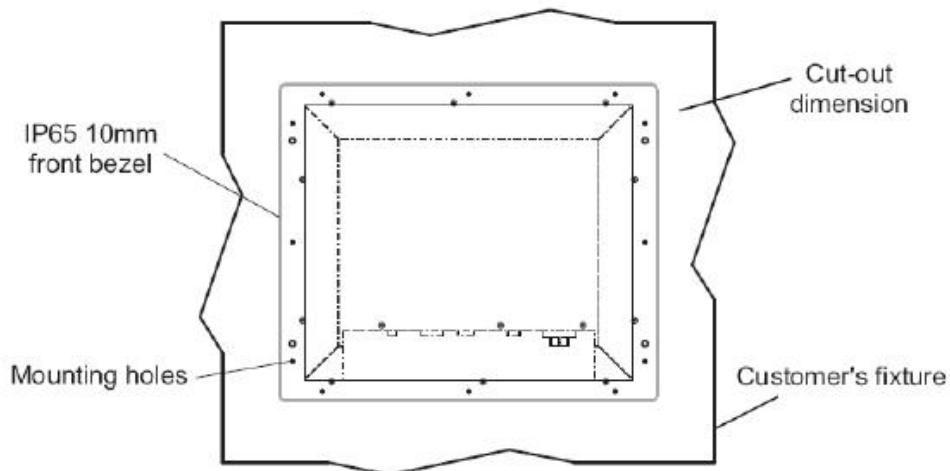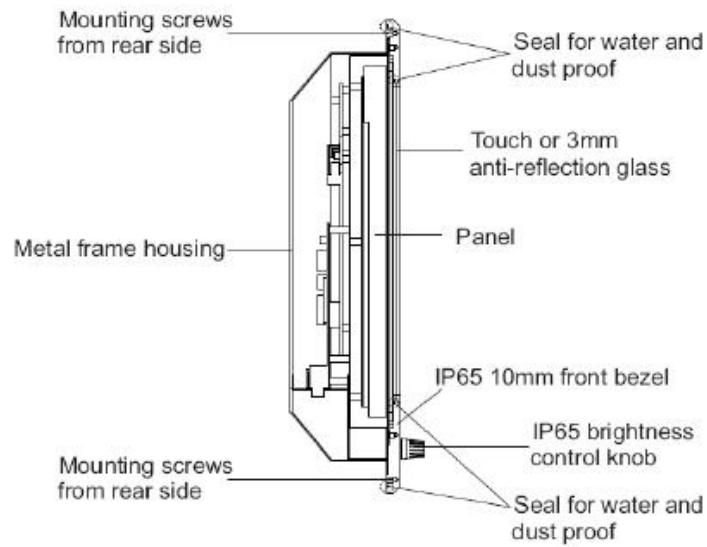
Step 1. Put the marine product on the fixture (console) from the front, and screw in the four M6 x 30 mm black bolts with nuts.
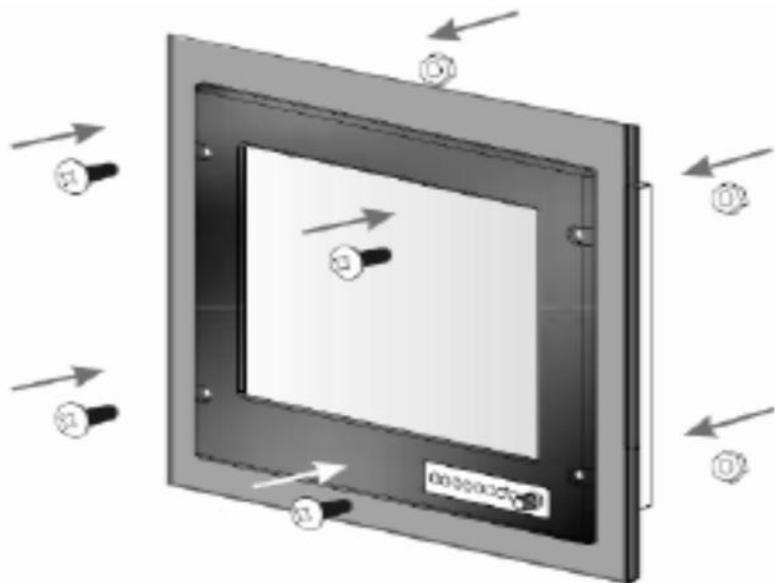
Step 2. Use M4x 15mm bolts to drill through the fixture into the mounting holes on the rear side of the IP65 front bezel. (The quantity of mounting screws is based the size of your specific monitor) .
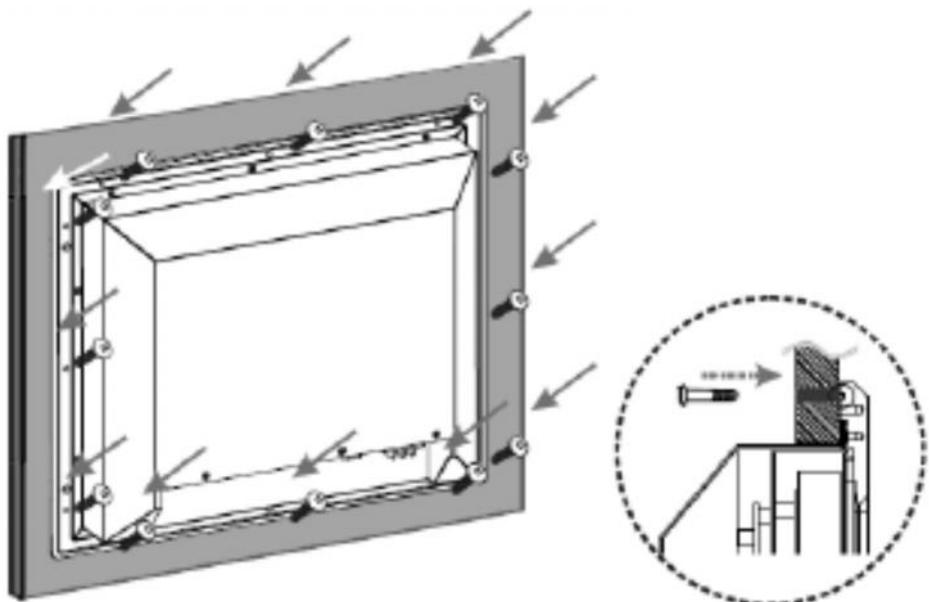
Step 3. Check the finished mounting concept. (DNV certification approved)
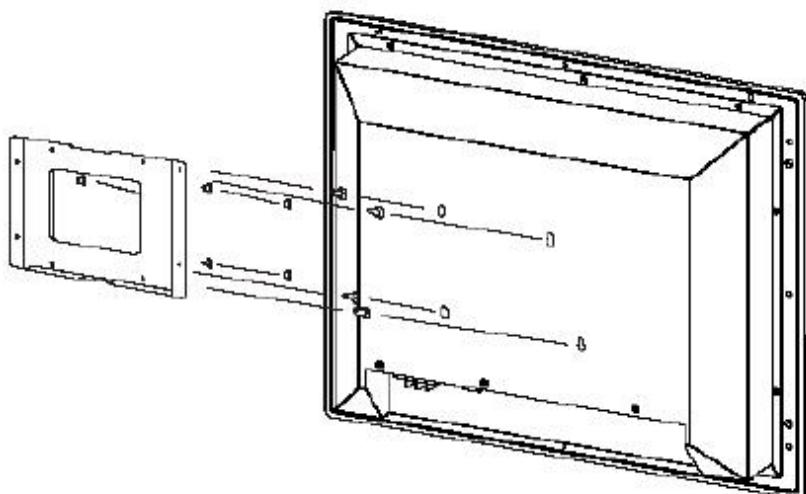
** Please Note: The VESA and wall mount with the mounting kit is available by special request.

7.2 VESA Wall Mount Installation

This monitor conforms to the VESA Flat Panel Mounting Physical Mounting Interface standard which defines a physical mounting interface for flat panel monitors. It also corresponds with the standards of flat panel monitor mounting devices, such as walls and table arms. The VESA mounting interface is located on the back of your monitor.

To mount the monitor on an UL-listed certified swing arm or other mounting fixture, follow the instructions included with the mounting fixture to be used.
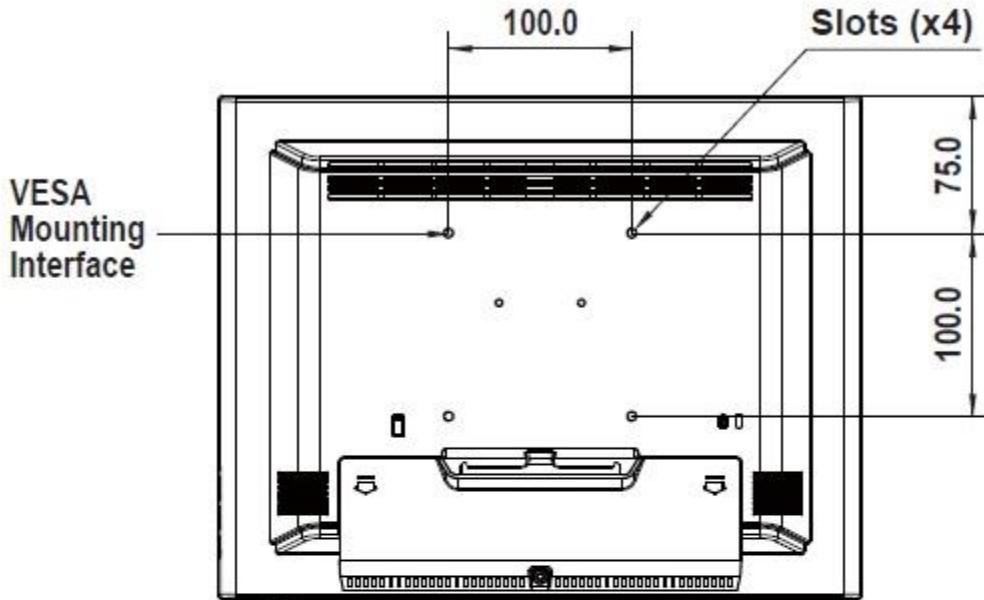
⚠ **Warning!**

Please select the proper screws!

The distance between the back cover surface and the bottom of the screw hole is 11 mm. Please use four M4 screws diameter with proper length to mount your monitor.

Please note: the mounting stand must be able to support at least 11 lbs (5Kg).

7.3 Important Installation Precautions

7.3.1 Brightness Control Knob Precaution

The dimming brightness control knob may be damaged by incorrect placement. Please make sure to correctly install the monitor in order to protect the knob.

7.3.2 Cable Connection Precaution

Make sure to use qualified shielded signal cables to connect the Marine products. These cables include the RGB, DVI, RS232, LAN, and USB cables, and should be connected as marked below. For DC power connection, please make sure the power cable is tightly connected by the two screws of the terminal block.
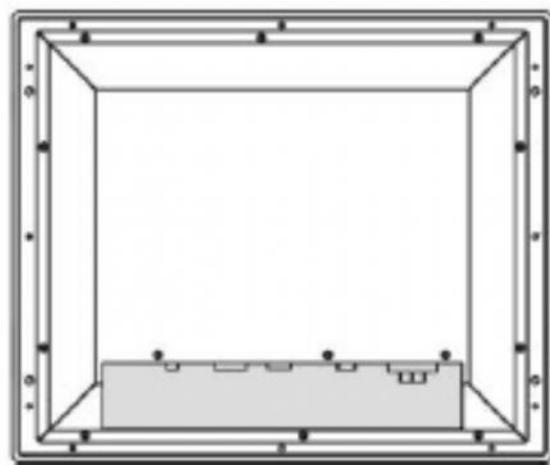
8.0 LCD Display Operation

8.1 Input/output Signals Overview

The Marine Rugged Display Computer is designed with versatile video input / output functions. 10.4 inch to 24 inch displays can use VGA, DVI, S-Video and Composite inputs. These displays can also support PIP (picture in picture) multi-scan function fulfilling the maritime multi-function demand.

1. RS232
2. 9~36V DC Terminal Block
3. RJ45
4. VGA
5. USB2.0
6. RS232/422/485
7. GND
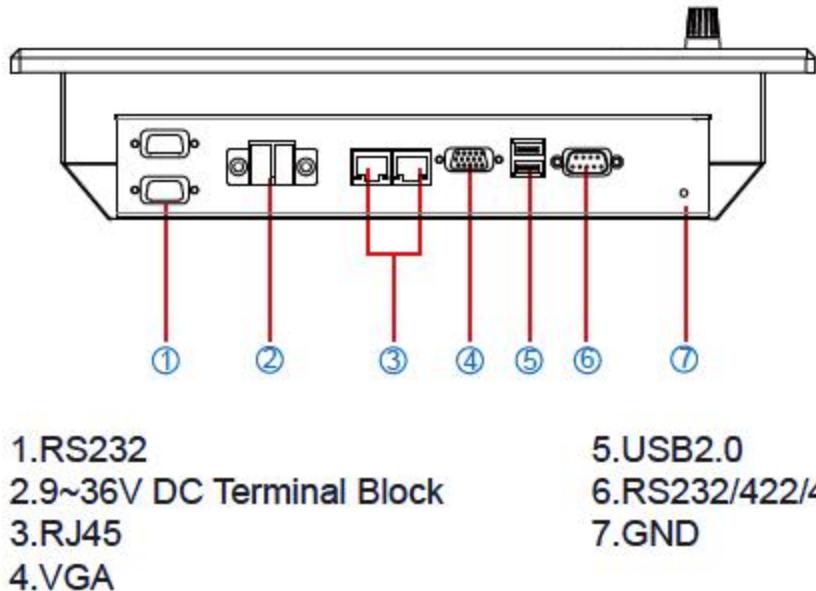
**Please Note: Some connectors are optional depending on the customer's demands.

Power input (DC Version / AC Version)

Default DC terminal block power source input's compact design meets the maritime industry requisites. The terminal block is to be secured so that the cable does not disconnect from the terminal.

AC Standard 90V to 265V power input is also available for AC version options. Use standard power cords to connect to the AC power inlet.

RS232 serial port for touch and remote control connection

Connect Standard D-SUB 9pin connector from your system to the monitor to control the touchscreen. Be sure the appropriate touch driver is installed.

The other function for the remote control should depend on your own application software built into the RS232 command code. This function makes it easy to control the LCD monitor through own PC via RS232 port connection.

VGA port connection

Use the D-SUB 15-pin (Male) VGA signal cable to the VGA connector at the rear of the PC system, and plug the other end to the TFT LCD display. Fasten the cable connectors with screws.

8.2 OSD User Controls

The compact OSD in the front of the display is a user-friendly interface used to toggle between different display functions as well as a dimming VR knob. The on-screen display (OSD) contains several functions that will let the user adjust or set up the display to their preferred setting. It also supplies special Hot Keys such as clicking two keys together for easy image flipping and auto color balance adjustment.

Figure 3.2 OSD User Controls

The Dimming Knob
The TFT LCD display support hyper dimming function to adjust brightness from nearly 0% to 100% via a easy to use VR knob.

Power On/ Off
Press the Power On/Off button to switch the TFT LCD display power.

Display Status LED indicator
When the TFT LCD display are normally operated, the LED indicator turns to green light. And the LED turns to red light when the TFT LCD display going to sleep.

Refer to the OSD Single Key Function as below and understand how to use the display functions step by step.
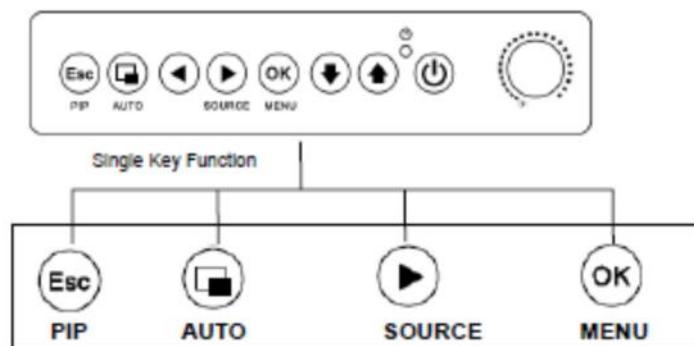
8.2.1 PIP (Picture in Picture) Controls

When the OSD Menu is disabled, it cycles through the available PIP display modes. Repeated keystrokes will change the size of the PIP display to side-by-side (PAP) display, and then back to normal display.

When OSD Menu is enabled, press" (Esc) " to return to the previous menu level.

(Esc) also closes the OSD if pressed at the Menu level.

8.2.2 Auto Adjustment Function Controls

When OSD Menu and PIP is disabled, press" " to perform the screen Auto Adjustment.

When PIP is enabled, it switches the image in the Main Display to the PIP Display and vice versa by

pressing again. When image side-by-side (PAP mode) is active, the SWAP key exchanges the left and right displays.

8.2.3 Source Function Controls

When the OSD Menu is disabled, press " " to cycle through the available input sources for the Main Display.

When the OSD Menu is enabled, it moves to the right when navigating through the Menu and Sub Menu .
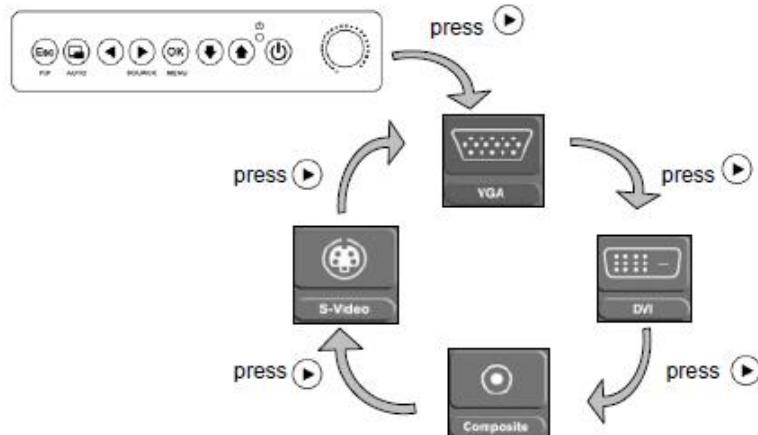
8.2.4 OSD Menu Functions

After powering on, press" OK " to enter the OSD Menu.

The OSD Menu
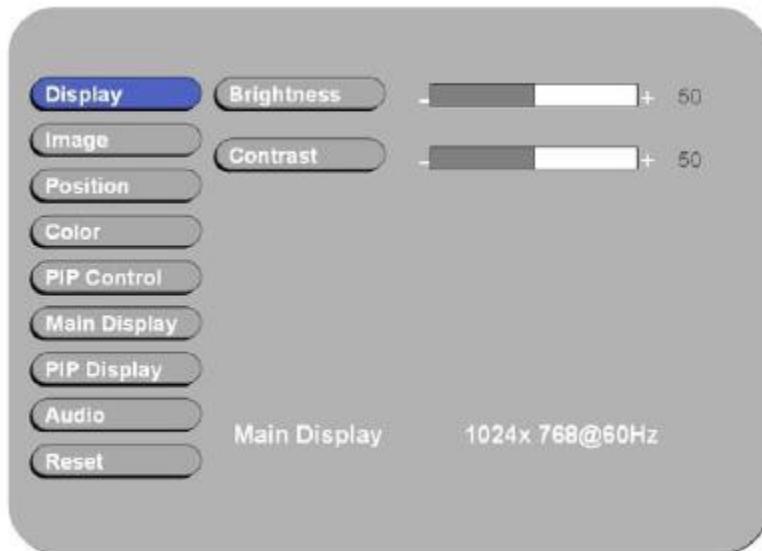
There are 9 functions in the OSD Menu for selection. Each function can be easily selected by using the navigation keys as follows:

1. Press " (Up) and " (Down) to select each function.

2. Press " OK " to enter the sub menu, and press " Esc " to exit.

3. Press " (Up) and " (Down) to select the sub-function.

4. When enter to each sub-function, press " (Left) and " (Right) to decrease / increase the bar value.

8.2.4.1 Display Item Menu
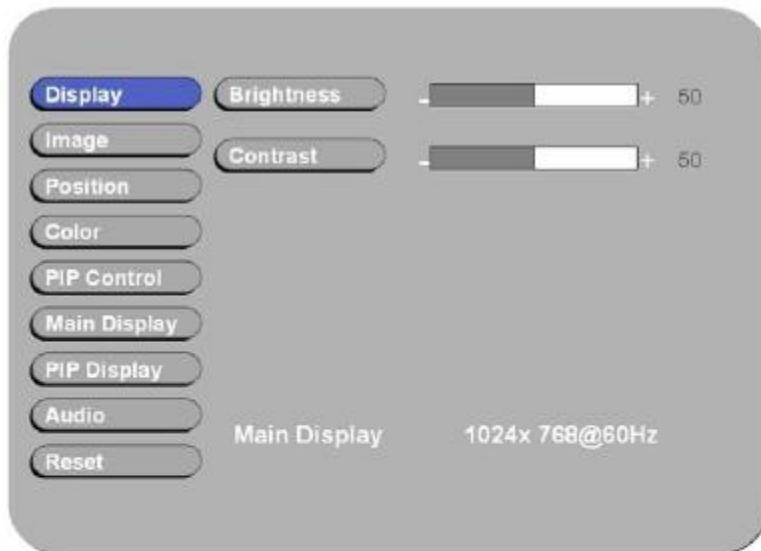
Display Item Menu		
Menu	**Input Source**	**Description and Usage**
Brightness	VGA DVI	Adjust brightness only used in brightness knob. Adjustment is no response here.
Contrast	Composite S-Video	Press "◀" / "▶" to adjust contrast.

8.2.4.2 Image Item Menu
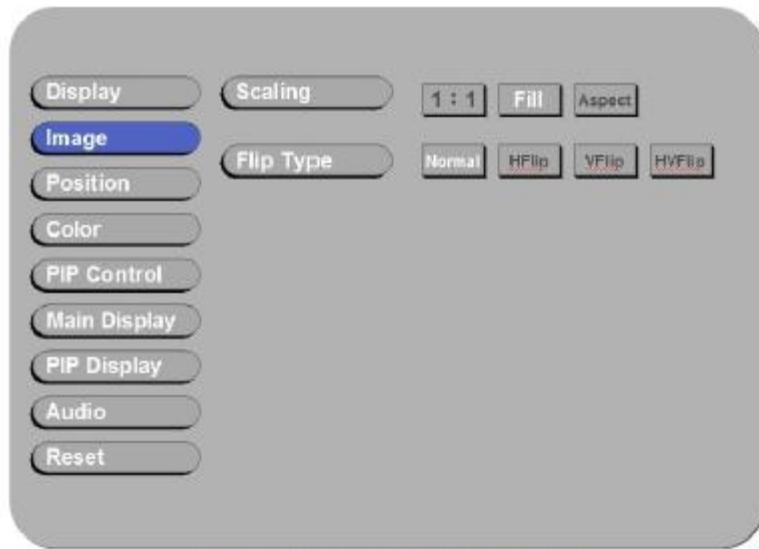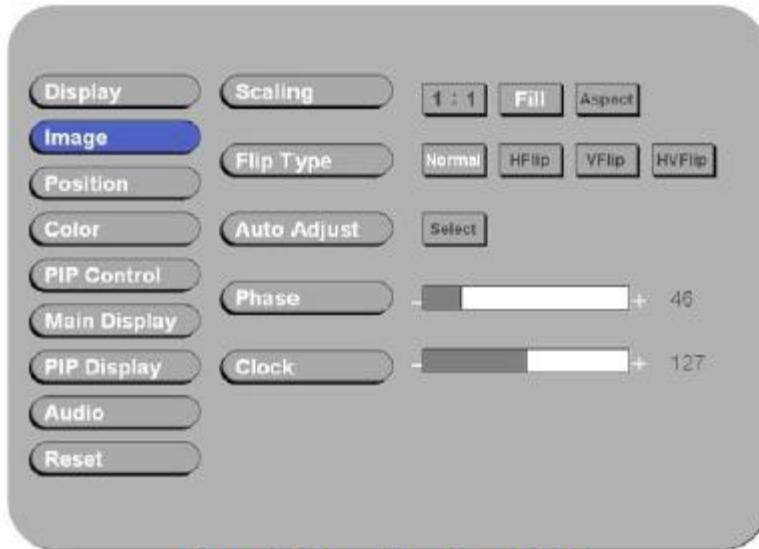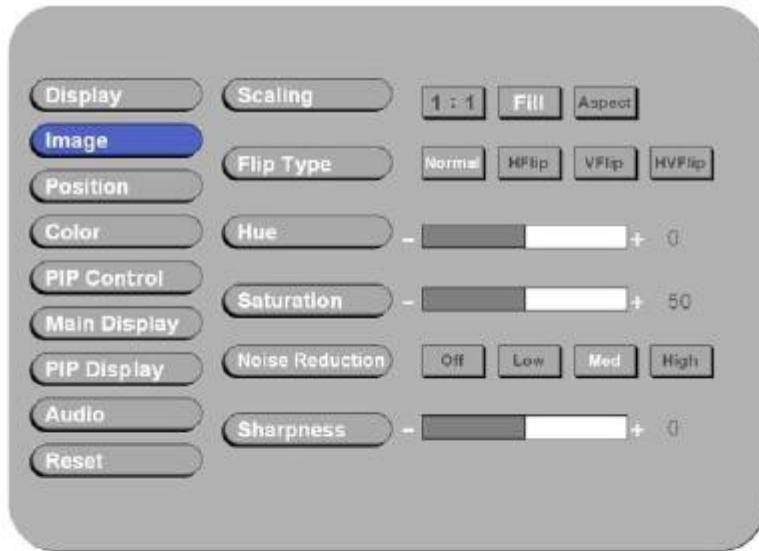
Image Item Menu		
Menu	**Input Source**	**Description and Usage**
Scaling**	VGA DVI Composite S-Video	Change the scaling mode by using the "◄" / "►" buttons to select **1:1, Fill or aspect**. Press "(OK)" to activate the selected Scaling mode.
Flip Type		Using "◄" / "►" and "(OK)" to select the display flip for **Normal, HFlip, VFlip, or HVFlip** mode.
Auto-Adjust**	VGA Only	Initiate this to have the monitor logic to choose the best settings for the current input signal.
Phase		Adjust **Phase** to optimize the display quality by using "◄" / "►" to change the value.
Clock		Select **Clock** to adjust the horizontal screen size by using "◄" / "►" to change the value.
Hue	Composite and S-Video Only	Press "◄" / "►" to select **Hue** to obtain the desired color settings.
Saturation		Press "◄" / "►" "" to select **Saturation** to adjust the optimal color degree level.
Noise Reduction		Using "◄" / "►" and "(OK)" to select the **Noise Reduction** for Off, Low, Mid, and High mode.
Sharpness		The **Sharpness** of the image may be optimized by using "◄" / "►" to change the value of the slider bar.

**Please Note in Scaling:

o   In 1:1 mode, the input image is centered on the screen. In Fill mode, the input image is stretched / compressed to fill the available display area.
o   In Aspect mode, the input image is stretched / compressed by the same horizontal and vertical factor.

** Please Note in Auto-Adjust:

o   The only button available is "SELECT". Note this may change the values of Phase and Clock, and there is no 'undo' feature.

8.2.4.3 Position Item Menu
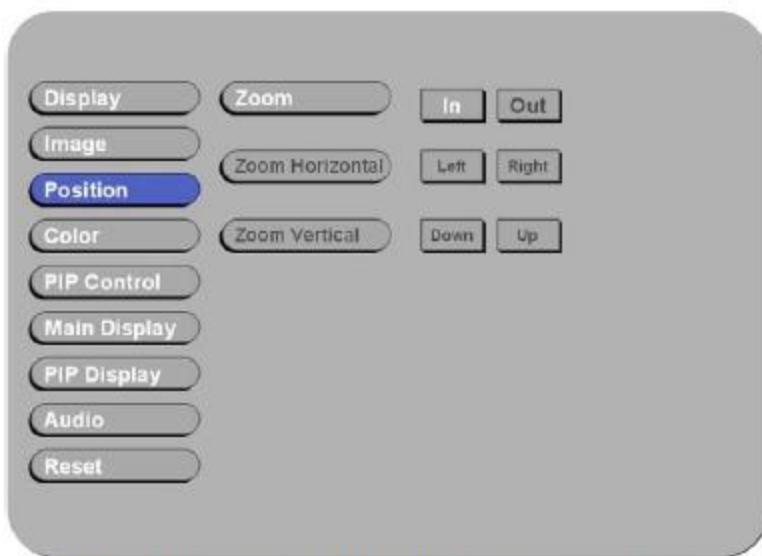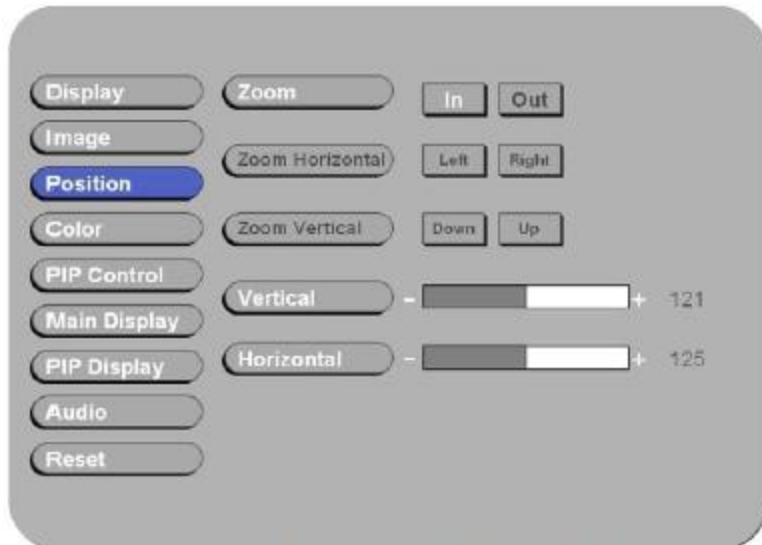
Position Item Menu

Menu	Input Source	Description and Usage
Zoom	VGA DVI Composite S-Video	Change the current Zoom setting only to the Main Display, using "◀" / "▶" to select either **In** or **Out**. Zoom is at a temporary setting and will be lost at power down.
Zoom Horizontal		**Zoom Horizontal** is unavailable until the user performs a **Zoom In** action. Using "◀" / "▶" to select either Left or Right to change the current Horizontal Pan setting. Pan settings will be lost at power down.
Zoom Vertical		**Zoom Vertical** is unavailable until the user performs a **Zoom In** action. Using "◀" / "▶" to select either Up or Down to change the current Vertical Pan setting and. Pan settings will be lost at power down.
Vertical	VGA	Move the screen up or down by using "◀" / "▶" to change the vertical position value.
Horizontal		Move the screen left or right by using "◀" / "▶" to change the horizontal position value.

8.2.4.4 Color Item Menu

Color Item Menu

Menu	Input Source	Description and Usage
Temperature	VGA DVI Composite S-Video	To configure color temperature, use "◀" / "▶" to change the value to **User Preset, 6500K,** or **9300 K** to set a color temperature to suit your own preference. When User Preset is selected, the values of the Red, Green, and Blue sliders below are used to determine color settings.
R		Press "◀" / "▶" to adjust the **Red** color to obtain the desired color settings.
G		Press "◀" / "▶" to adjust the **Green** color to obtain the desired color settings.
B		Press "◀" / "▶" to adjust the **Blue** color to obtain the desired color settings.
Internal Brightness		Press "◀" / "▶" to adjust the **Red** color to obtain the desired color settings.
White Balance	VGA Only	When in "VGA" mode, press "Select" to adjust **White Balance** for the display setting.

8.2.4.5 PIP Control Item Menu

PIP Control Item Menu		
Menu	**Input Source**	**Description and Usage**
Mode	VGA DVI Composite S-Video	Use "◄" / "►" to change the Mode value to be **Off**, **Single**, or **PAP****. In Off mode, the Main display fills the entire screen. In **Single** mode, a PIP display floats over the screen. In PAP mode, the screen is divided into two side-by-side display areas.
Size		PIP Size can be altered only when **Single PIP** mode is selected. To configure the PIP display size, use "◄" / "►" to change the value to **Small**, **Medium** or **Large**.
Vertical**		Both vertical and horizontal PIP position can be altered only when Single PIP mode is selected. Configure the PIP Vertical and Horizontal Position, by using "◄" / "►" to change the value using the slider bar.
Horizontal		

** Please Note in PAP mode:

When selecting "PAP" mode, the display area is divided into two parts. The left window displays the Main output, while the right window displays the PIP output. Each window is half the size of the total display area. Each input is scaled down to fit the window.

** Please Note in PIP mode:

The PIP screen can assume any position on the screen. This can be achieved by adjusting both Horizontal and Vertical positions.

8.2.4.6 Main Display Item Menu
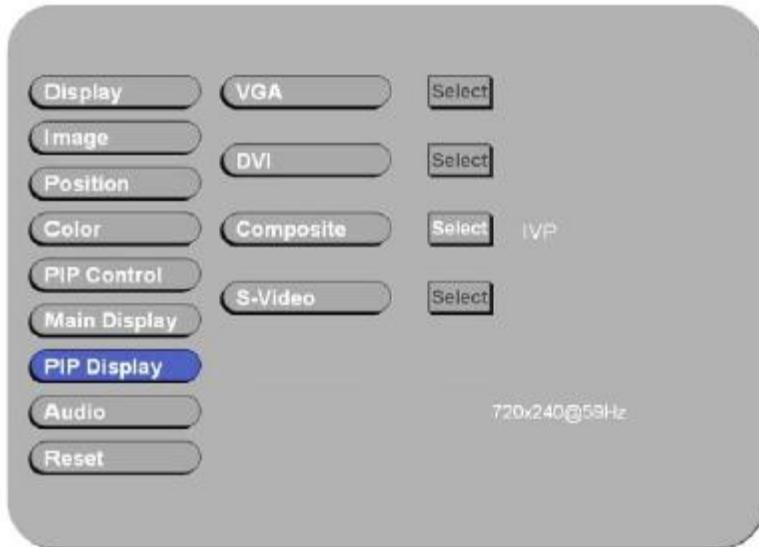
Press "   " and "   " to select the Main Display source, including VGA, DVI,

Composite, and S-Video mode.

Press "   " to select.

8.2.4.7 PIP Display Item Menu

Press " ⬆ " and " ⬇ " to select the PIP display source, including VGA, DVI,

Composite, and S-Video mode.

Press " OK " to select.

8.2.4.8 Audio Item Menu
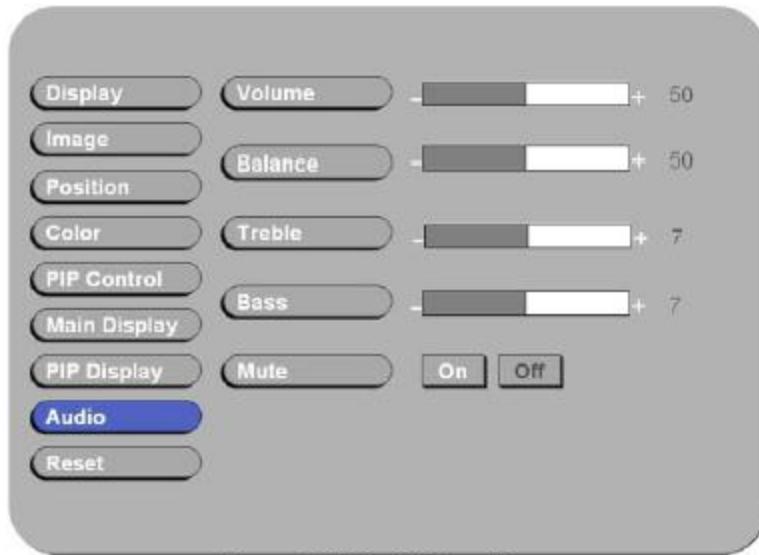
Audio Item Menu		
Menu	**Input Source**	**Description and Usage**
Volume		To adjust the volume, use "◀" / "▶" to change the value of the slider bar to increase or decrease the volume.
Balance	VGA DVI Composite S-Video	To configure the audio balance, either left or right, use "◀" / "▶" to change the value of the slider bar to change the value.
Treble		Increase or decrease the audio treble by using "◀" / "▶" to change the value.
Bass		To configure the bass, use "◀" / "▶" to change the bass value.
Mute		To turn mute off/on, select either On/Off for Mute. By default, mute is set to No, or turned off.

8.2.4.9 Reset Item Menu
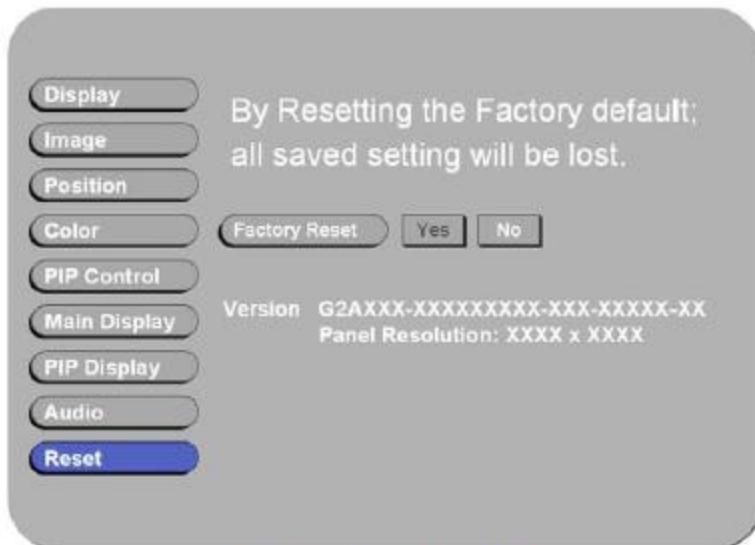
Factory Reset Item Menu		
Menu	**Input Source**	**Description and Usage**
Factory Reset	VGA DVI Composite S-Video	To reset all settings to factory defaults, open the **Factory Reset** Item. Use "◄" / "►" to select the **"Yes"** option, and press "OK". WARNING: All user adjustments will be lost. Press **"EXIT"** (Esc) to return to the Main Menu without making changes.

8.3 Simple Troubleshooting Guide

1. What if the display has no power after you push the power button?
   a. Make sure your power resource is working and your power cord is securely connected into the plug-in.
   b. If you have a power switch, please check to make sure the switch is in the on position.
   c. Check all sources of power to make sure that they are properly installed and connected to allow for proper electricity flow.
2. What if there are strange lines on my LCD monitor when I shut down the PC?
   a. You can use the auto-adjust function to adjust the horizontal/vertical phase and pixel frequency in order to solve this kind of problem.
3. What if my LCD monitor screen keeps blinking?
   a. Please check you're VGA or DVI connector to make sure the connector is connected well.
   b. You may also check your pins of the connector ensure that none are bent or missing.
4. Warning Signals:
   a. If you see warning messages on your LCD screen, this means that the LCD display cannot receive a clean signal from the computer graphics card. Below are three kinds of Warning Signals. Please check the cable connections or contact your local dealer or our service center for more information.
      1. No Signal
         a. This message means that the LCD display has been powered on but it cannot receive any signal from the computer graphics card. Check all the power switches, power cables, and VGA/DVI signal cables.
      2. Going to Sleep
         b. The LCD display is under the power saving mode. The LCD display will enter power saving mode when experiencing a sudden signal disconnecting problem. The monitor can be activated by pressing any keyboard, triggering the mouse or touching the screen.
      3. Out of Range
         c. This message means that the signal of the computer graphic card is not compatible with the LCD display. When the signal is not included in the "Video Modes" list we have listed in section 9.3 of this manual, the LCD monitor will display this message.

For more information, please go to the website http://www.aispro.com and contact technical support to help resolve your issue. We will be happy to help.

9.0 Appendix

9.1 Cleaning the Monitor

1. Make sure the monitor is turned off.

2. Never spray or pour any liquid directly on the screen or case.

3. Wipe the screen with a clean, soft, lint-free cloth. This removes dust and other particles.

4. The display area is highly prone to scratching. Do not use Ketone type material (ex. Acetone), Ethyl Alcohol, Toluene, Ethyl Acid or Methyl Chloride to clear the panel. It may permanently damage the panel and void the warranty.

5. If it is still not clean enough, apply a small amount of non-ammonia, non-alcohol based glass cleaner onto a clean, soft, lint-free cloth, and wipe the screen.

6. Don't use water or oil directly on the monitor. If droplets are allowed to drop on the monitor permanent staining or discoloration may occur.

9.2 Disclaimer and Troubleshooting

Disclaimer

We do not recommend using any ammonia or alcohol-based cleaners on the monitor screen or case. Some chemical cleaners have been reported to damage the screen and/or case of the monitor. Seller will not be liable for damage resulting from the use of any ammonia or alcohol-based cleaner.

Troubleshooting

If your monitor fails to operate correctly, consult the following chart for possible solutions before calling for repairs:

Condition	Check Point
The picture does not appear	Check if the signal cable is firmly seated in the socket. Check if the Power is ON at the computer Check if the brightness control is at the appropriate position, not at the minimum.
The screen is not synchronized	Check if the signal cable is firmly seated in the socket. Check if the output level matches the input level of your computer. Make sure the signal timings of the computer system are within the specification of the monitor. If your computer was working with a CRT monitor, you should check the current signal timing and turn off your computer before you connect the VGA Cable to this monitor.
The position of the screen is not in the center	Adjust the H-position, and V-position, or Perform the Auto adjustment.
The screen is too bright (too dark).	Check if the brightness or contrast control is at the appropriate position, not at the Maximum (Minimum).
The screen is shaking or waving	Perform the Auto adjustment.. Moving all objects which emit a magnetic field such as motor or transformer, away from the monitor. Check if the specific voltage is applied. Check if the signal timing of the computer system is within the specification of monitor.

For more information, please go to the website http://www.aispro.com and contact technical support to help resolve your issue. You can also e-mail support at support@aispro.com. We will be happy to help.

9.3 Supported Modes

Graphics

No.	Resolution	Frequency (Hz)	Note
1	640x350	70	IBM
2	640x400	70	IBM
3	640x480	60	VESA
4	640x480	72	VESA
5	640x480	75	VESA
6	720x400	70	IBM
7	800x600	56	VESA
8	800x600	60	VESA
9	800x600	72	VESA
10	800x600	75	VESA
11	1024x768	60	VESA
12	1024x768	70	VESA
13	1024x768	75	VESA
14	1280x768	60	
15	1152x864	75	
16	1280x960	60	VESA
17	1280x1024	60	VESA
18	1280x1024	60	HP
19	1280x1024	70	NCD
20	1280x1024	72	HP
21	1280x1024	75	VESA
22	1600x1200	60	VESA
23	1920x1200	60	VESA
24	1360x768	60	

Video

No.		
1	NTSC / 480I / 525I	720 x 240 x 60I
2	PAL / 576I /625I	720 x 288 x 50I
3	480P	720 x 480 x 60P
4	(HDTV) 720P	1280 x 720 x 50P
5	(HDTV) 720P	1280 x 720 x 60P
6	(HDTV) 1080I	1920 x 1080 x 50I
7	(HDTV) 1080P	1920 x 1080 x 60I

Not all modes will be supported, due to different panel brands

9.4 RS-232 Command Codes (Optional)

01	DOWN	0x04, 0x12, 0x02, 0xE8, 0x00
02	UP	0x04, 0x12, 0x03, 0xE7, 0x00
03	LEFT	0x04, 0x12, 0x05, 0xE5, 0x00
04	RIGHT	0x04, 0x12, 0x06, 0xE4, 0x00
05	ENTER	0x04, 0x12, 0x07, 0xE3, 0x00
06	EXIT	0x04, 0x12, 0x08, 0xE2, 0x00
07	SWAP	0x04, 0x12, 0x0A, 0xE0, 0x00
08	SOURCE	0x04, 0x12, 0x0E, 0xDC, 0x00
09	POWER	0x04, 0x12, 0x0F, 0xDB, 0x00
10	AUTO ADJUST	0x04, 0x12, 0x11, 0xD9, 0x00
11	ASPECT	0x04, 0x12, 0x14, 0xD6, 0x00
12	MENU	0x04, 0x12, 0x15, 0xD5, 0x00
13	PIP	0x04, 0x12, 0x16, 0xD4, 0x00
14	VolDown	0x04, 0x12, 0x19, 0xD1, 0x00
15	VolUp	0x04, 0x12, 0x1A, 0xD0, 0x00
16	RESET	0x04, 0x12, 0x23, 0xC7, 0x00
17	AUTO COLOR	0x04, 0x12, 0x29, 0xC1, 0x00
18	FLIP	0x04, 0x12, 0x2C, 0xBE, 0x00
19	MUTE	0x04, 0x12, 0x2D, 0xBD, 0x00
20	ACK	0x03, 0x0C, 0xF1

Description: ex. DOWN   0x04, 0x12, 0x02, 0xE8,
Function par1, par2, par3, par4
Function: DOWN down key
Par1:   0x04 length (cannot be modified by user)
Par2:   0x12 inquiry code (cannot be modified by user)
Par3:   0x02 command code (can be modified by user)
Par4:   0xE8 check sum (cannot be modified by user)

9.5 Sunlight Readable (Transflective) Outdoor Readability (Optional)

Transflective LCD technology can be applied to certain selected regular TFT LCDs to introduce the LCD with a reflective function. With the imposed reflective function, the modified LCD can reflect the ambient light passing the LCD cell and utilize the reflected light beams as its illumination. The stronger the ambient light is, the brighter the LCD will appear. As a result, the modified LCD is viewable under some lighting conditions including, but not limited to, direct sunlight.
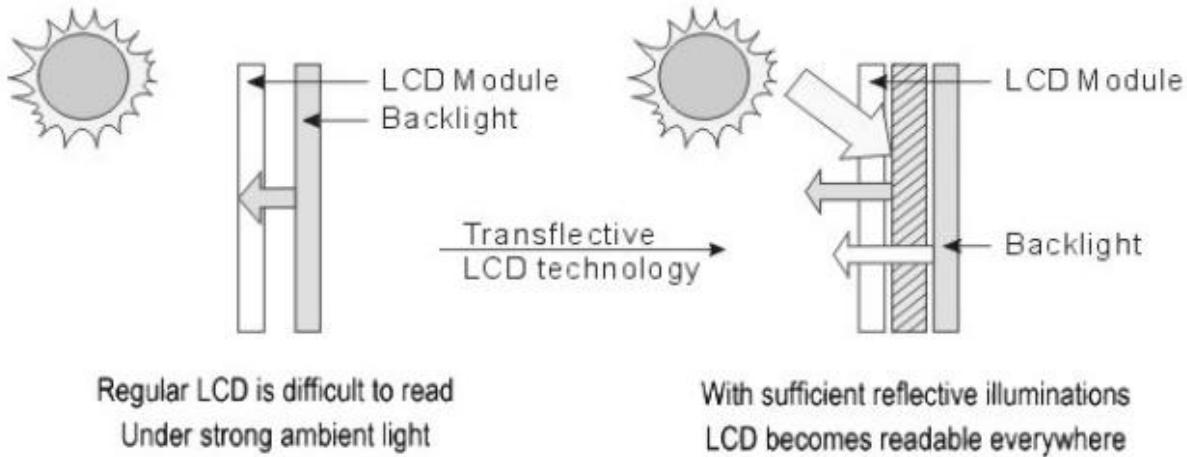
The following table shows the outdoor readability for the Marine Rugged Display models.

Outdoor Readability:

Screen Size	10.4"	15"	19"	23"	24"
Ambient Light (nit)	10,000 30,000 80,000	10,000 30,000 80,000	10,000 30,000 80,000	10,000 30,000 80,000	10,000 30,000 80,000
Brightness Gain (nit)	437.5 670 1,150	680 870 1,320	490 630 900	500 630 830	312.5 456 680
Reflectance (net) (%)	1.20% 1.15% 1.10%	1% 0.98% 0.90%	0.83% 0.70% 0.45%	0.50% 0.65% 0.40%	0.70% 0.68% 0.45%

9.4 Touch Screen Driver Installation

The monitor is available with USB connection. The Linux kernel 2.6.x (32 bit & 64 bit) touch driver is located on the enclosed CD-ROM. HID for Windows® 7, VISTA , XP, 2000, ME, 98.

Please Note:

The system requires 15 seconds for Windows® 7 to install/uninstall the touch drivers. Do not turn power on/off or plug/unplug the USB cable.

Driver Install Instructions:

If you are using a PC running driver Linux kernel 2.6.x (32 bit & 64 bit), follow the instructions below:

1. Power on the PC.
2. Be sure the USB cable is connected from the PC to the LCD display.
3. Open the CD-ROM.
4. Follow the step-by-step instructions as shown on the pop-up windows.

If you are using a PC running Windows® XP Embedded, follow the instructions below:

Express:

1. Power on the computer.
2. Make sure that the USB cable is connected to the computer.
3. Be sure that your EWF is disabled. If your EWF is enabled, please disable the EWF by using the EWF Manager command.
4. Once the EWF is disabled click on the XP driver on the CD-ROM and follow the step-by-step instructions as shown on the pop-up windows.

Custom:

1. Power on the computer.
2. Make sure that the USB cable is connected to the computer.
3. Follow the step-by-step instructions found in the folder file on the CD-ROM.

If you are using a PC running Windows® CE, follow the instructions below:

1. Power on the computer.
2. Make sure that the USB cable is connected to the computer.
3. Using Platform Builder, build an image file by following the step-by-step instructions found in the folder file on the CD-ROM.

If you are using a PC running Linux or Apple® Mac OS, follow the instructions below:

1. Power on the computer.
2. Make sure that the USB cable is connected to the computer.
3. Follow the step-by-step instructions found in the folder file on the CD-ROM.

9.5 RMA (Return Material Authorization) Service

Before returning any goods, please:

1. Contact American Industrial Systems, inc. Technical Support and request for an RMA number (Return Material Authorization).
2. Describe the behavior or reason of unit failure in order to return. Any returns for credit are subject to a restocking fee.
3. Upon confirmation of a hardware failure or valid cause for return, AIS will provide a Return Merchandise Authorization (RMA).
4. Make sure to receive an RMA number from AIS before returning any merchandise. Clearly write or mark this number on the outside of the package you are returning. Any returns without an authorization will be refused and returned to you by the shipper.
5. When returning goods, include the name and telephone number of a person whom we can contact for further explanations if necessary. Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question:
6. Ensure that the unit is properly packed in the original box. A product packaging manual will be included with the replacement Panel or can be emailed to you in advance. Please refer to it for the necessary instructions on how to appropriately package the panel computer being returned. Failure to do so may result in the panel shifting during transit -which may result in physical damage. Physical damage from improper packaging will void your system warranty.
7. Ship the panel back to the address provided on the RMA documentation, via an insured, pre-paid carrier.
8. Return unit must be received to address provided within 30 days, or invoice for full amount will be issued.