



## Marine Bridge System Displays

# USER MANUAL

Version: 1.5

R10L210-MR		10.4-inch Marine Bridge Display
R12L600-MR		12.1-inch Marine Bridge Display
R12L600-MRxxHB	12.1-inch High Brightness	Marine Bridge Display
R15L600-MR		15.0-inch Marine Bridge Display
R15L600-MRxxHB	15.0-inch High Brightness	Marine Bridge Display
R17L500-MR		17.0-inch Marine Bridge Display
R19L300-MR		19.0-inch Marine Bridge Display
R20L100-MR		20.1-inch Marine Bridge Display
R23L100-MR		24-inch Marine Bridge Display
W24L100-MR		24.0-inch Marine Bridge Display
W24L100-MRxxHB	24.0-inch High Brightness	Marine Bridge Display

## REVISION HISTORY

REVISION	AUTHOR	DATE	DESCRIPTION
1.00	Wayne Lin	April 27, 2007	First version release
1.10	Wayne Lin	Sep. 10, 2007	Add certificate serial number label.
1.20	Ethan Wang	May 13, 2010	Add simply trouble shooting guide and point out DNV approved mounting method.
1.30	Austin Chang	Oct 5, 2015	Revise the OSD menu navigation
1.40	Austin Chang	Dec 21, 2017	Revise the Remote control set/get command
1.50	Jonathan Chi	Nov 22, 2018	Revised Model Names and display size options. Added HB options

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## IMPORTANT SAFETY INSTRUCTIONS

Please read these instructions carefully before using the product and save 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.




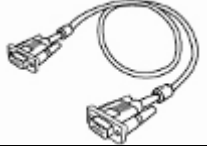
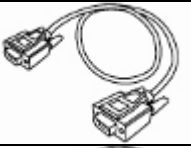





If the product exhibits a distinct change in performance, indicating a need for service.

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## Packaging List



This product is shipped with the items list below. Please make sure that all are in your package.

Item	Description	Note
	1 x User Manual.	
	1 x CD for Touchscreen Driver Tools.	
	1 x DVI Cable. DVI-D 24pin Male to 24pin Male: 1.5m.	10.4 inch above
	1 x Std VGA Cable. D-SUB 15pin Male to 15pin Male: 1.8m	
	2 x RS232 Std Serial Cable. D-SUB 9pin Male to 9pin Female: 2m	1pcs for Touch use 1pcs for 10.4 inch above display remote control use.
	1 x S-Video Cable. MD 4pin Male to 4pin Male: 1.8m	
	1 x Composite Cable. Std RCA 3.2mm connector: 1.8m	
	4 x M6 x 30 black screw bolt with M6 nut. <b>Notice: Only be used to screw the display into a console.</b> If you prefer your own bolts, please make sure to use M6 and 30mm in length.	10.4 inch above display use.
	4 x M4 x 30 black screw bolt with M6 nut. <b>Notice: Only be used to screw the display into a console.</b> If you prefer your own bolts, please make sure to use M4 and 30mm in length.	8.4 inch display use
	M4 x 15 black screw bolt. <b>Notice: Only be used to screw the display into a console from the rear side.</b> If you prefer your own bolts, please make sure to use M4 and 30mm in length.	10 pcs for 8.4", 10.4" 12.1"; 12 pcs for 15"; 16 pcs for 17", 19", 20.1", and 18 pcs 24" display use.

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## Optional Accessories

Item	Description	Note
 A small icon of a user manual with the text "USER MANUAL" and a small image of a display unit on the cover.	1 x Transflective LCD User Guide.	Optional with Transflective LCD panel.
 A small icon of a standard power cord with a two-pronged plug and a three-pronged plug, labeled "Standard Power Cord".	1 x Standard Power Cord. Euro / U.S. Std type, 1.8m	Optional AC version of display use default.



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## CHAPTER 1

### General Information

# MARINE SERIES SOLUTION







## Chapter 1 General Information

The Marine Bridge System Displays are an extraordinary display design with sunlight readable high quality panel, dimming brightness, ease of use OSD front panel control, IP65 proof, multi-scan video function, high quality touchscreen, wide voltage range power input acceptable, and anti-corrosion protection. Born to the demands of maritime applications such as navigation, ship automation and surveillance.

**All product designs follow IEC-60945 Maritime Navigation and Radio-communication Equipment and Systems requirements.**

### 1.1 Features about the Marine Bridge System Display

Here are features of Marine Bridge System Displays:



#### Full-range durable displays

The Marine Bridge System Displays use high quality branding TFT LCD displays with high resolution and wide temperature range panels. From 8.4 inch to 24 inch, we offer a wide range choice fulfilling any demand in Marine market.

#### Hyper Dimming

Our displays use hyper dimming technology that can control backlight brightness linearly from nearly 0% to 100% by a dimming knob. In the night vision it's very suitable for marine applications.

#### Sunlight Readable (Optional)

Our extraordinary transfective film technology enhances visibility for Marine outdoor or bright ambience environment. (Outdoor readability please take reference to **Appendix E**)

#### Anti-corrosion IP Proof (Optional)

The Marine displays design with panel (flush) mount IP65 aluminum housing with powder coating design (IP54 rear) achieve the anti-corrosion proof in harsh conditions.

#### Wide Voltage Input Range Power Input

For marine and transportation power source characteristic, our displays use wide voltage range from 8 to 36V input acceptable. AC power input is also optional for several models from 12 inch to 24 inch.

For 12.1 inch to 24 inch display, the AC power source is also available for option.

#### Touchscreen / Anti-reflection Protection Glass

We develop highly compatible mechanical design for each type. Customers can choose high quality SAW touchscreen, 5 wire resistive touchscreen, or even anti-reflection protection glass for option.

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## Multi-scan Function

The display can accept multi-video inputs as DVI, VGA, S-Video or Composite for example. From 10.4 inch to 24 inch displays, our outstanding scaling board design also support PIP (picture in picture) function for special marine applications.

## IP65 OSD Front Panel Design

With IP65 water-dust front bezel proof, the Marine Bridge System Displays use easy to use front panel OSD control. It's very convenience and intelligent design for all maritime users.

## Anti-Shock and Vibration

Enhanced shock and vibration resistance.

## Customize your marine products

Base on our well-experience modulized competence, we can do very flexible and tailor-made design fulfilling any of customer's solution. For different panel characteristics, mechanical design, and electronic component, we can make it for you.

## Approved Marine Displays

Winmate Marine Bridge System Display design are all followed **IEC-60945 Maritime Navigation and Radio-communication Equipment and Systems requirements.**

The Marine Bridge System Display series consists wide range sizes from 8.4 inches to 24 inches. By testing for usability in a ship's wheelhouse during different ambient light conditions. All these models can fulfill most of the demands in maritime applications especially for navigation, ship automation and maritime surveillance.

## About this Manual

The user manual introduces basic information about the product, electrical, mechanical and input / output signal specifications. All specification are subject to change without prior notice due to manufacturing reasons. Check in the "Revision History" in front page of this manual for any update reference.

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## 1.2 Basic Construction of Marine Bridge System Display

The state of the art modularized technology can integrate all marine display components flexibly.

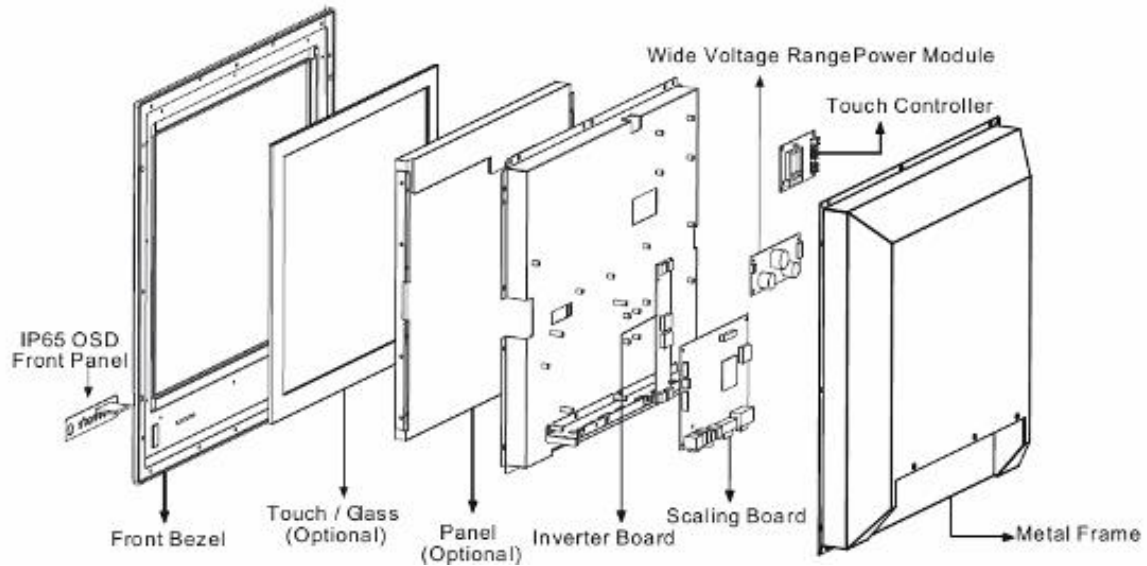


Figure 1.1 Basic Construction

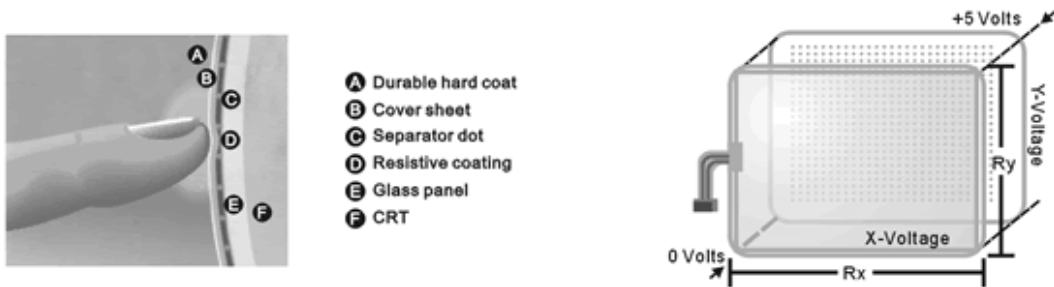


## 1.3 Touch Screen Solution (Optional)

### 1.3.1 Five-Wire Resistive Touch screen (Optional 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.



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](http://www.elotouch.com)

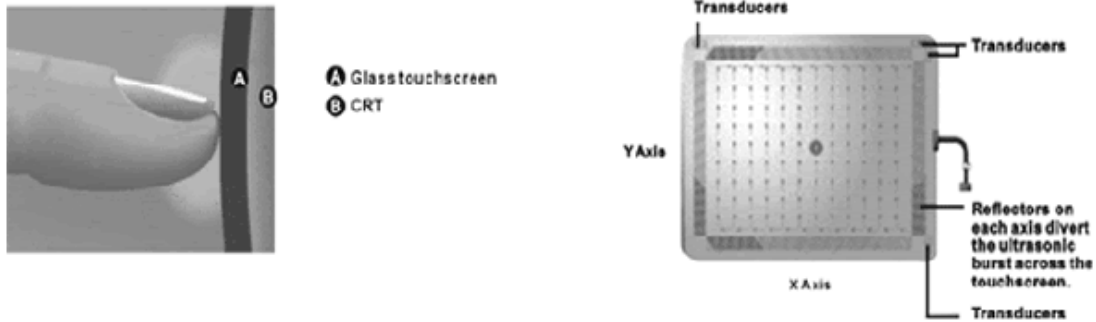
# MARINE SERIES SOLUTION



## 1.3.2 SecureTouch Surface Wave Touch screen (Optional 2)

### Introduction to SAW Touch screen

The surface wave is the optical standard of touch. Its pure glass construction provides superior optical performance and makes it the most scratch-resistant technology available. It's nearly impossible to physically "wear out" this touchscreen.



The touch have a glass overlay with transmitting and receiving piezoelectric transducers for both the X and Y axes. The touchscreen controller sends a five-megahertz electrical signal to the transmitting transducer, which converts the signal into ultrasonic waves within the glass. These waves are directed across the front surface of the touchscreen by an array of reflectors. Reflectors on the opposite side gather and direct the waves to the receiving transducer, which reconverts them into an electrical signal—a digital map of the touchscreen surface.

When you touch the screen, you absorb a portion of the wave traveling across it. The received signal is then compared to the stored digital map, the change recognized, and a coordinate calculated. This process happens independently for both the X and Y axes. By measuring the amount of the signal that is absorbed, a Z-axis is also determined. The digitized coordinates are transmitted to the computer for processing.

### Brief Specifications

Subject	Details
Input Method	Finger or gloved hand (cloth, leather, or rubber) activation
Positional Accuracy	Standard deviation of error is less than 0.080 in. (2 mm)
Resolution	Touchpoint density is based on controller resolution of 4096 x 4096, plus 255 levels corresponding to touch pressure
Touch Activation Force	Typically 2 to 3 ounces (55 to 85 grams)
Light Transmission	Up to 90% per ASTM D1003-92

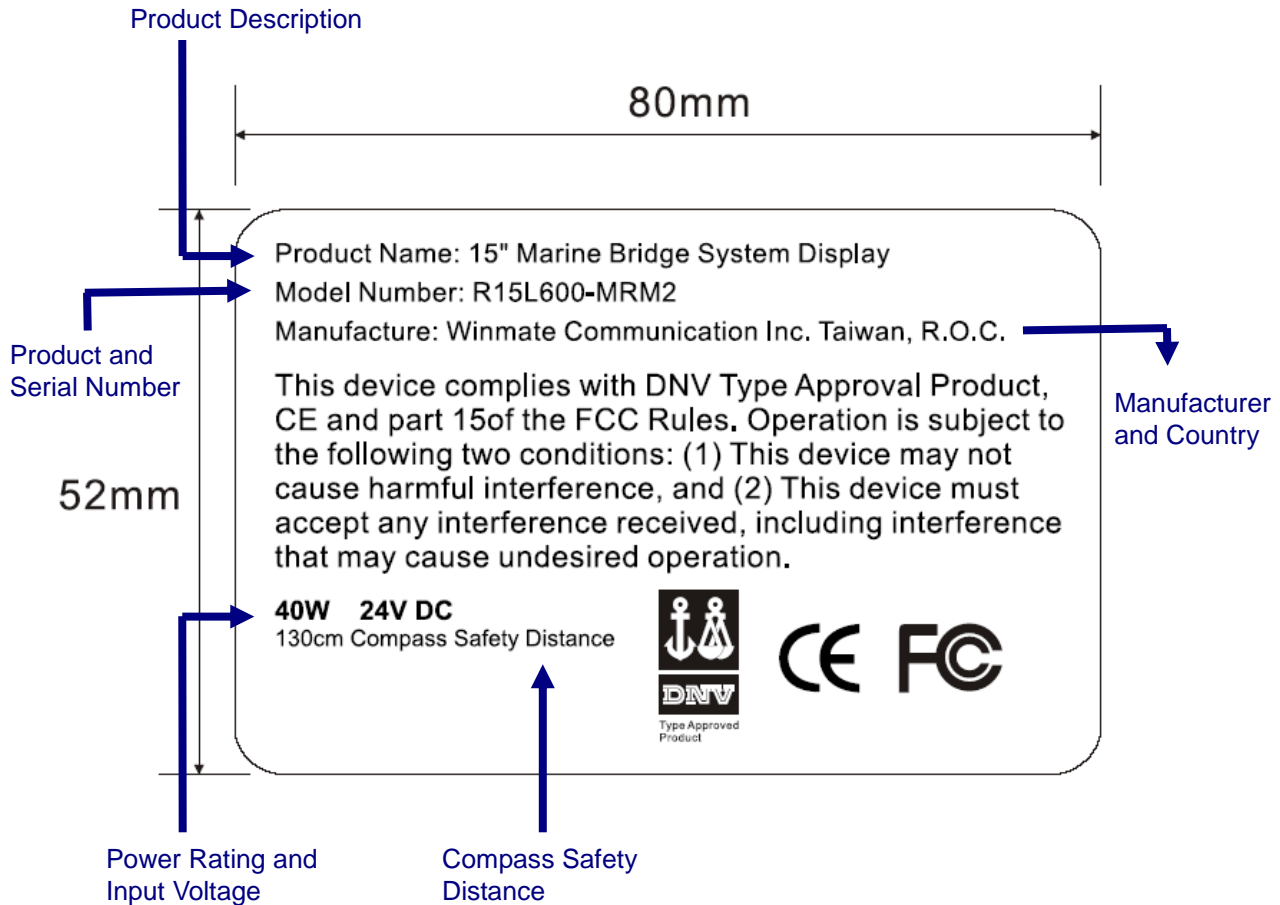
Update touchscreen driver or new information. Go to [www.elotouch.com](http://www.elotouch.com)

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## 1.4 Certificate Serial Number Label

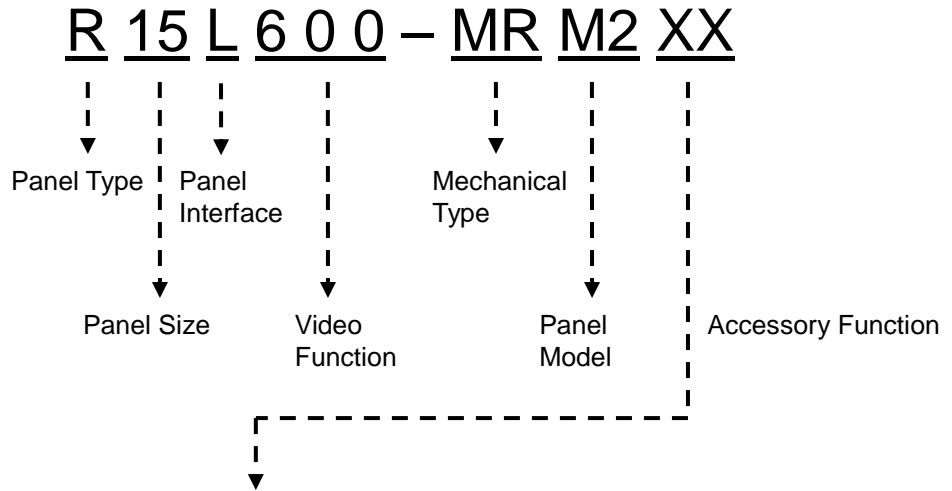
The certificate label and serial number for Marine products are described as below.



# MARINE SERIES SOLUTION



Model Serial Number (For Marine Display)



Additional Function	Description
ITR	IT touch w/ RS-232
ITU	IT touch w/ USB
ATR	AT touch w/ RS-232
ATU	AT touch w/ USB
TR	Transflective Panel
AR	Anti-Reflection Glass
GS	Protection Glass
WT	Wide Temperature
HB	High Brightness



## CHAPTER 2

### Installation





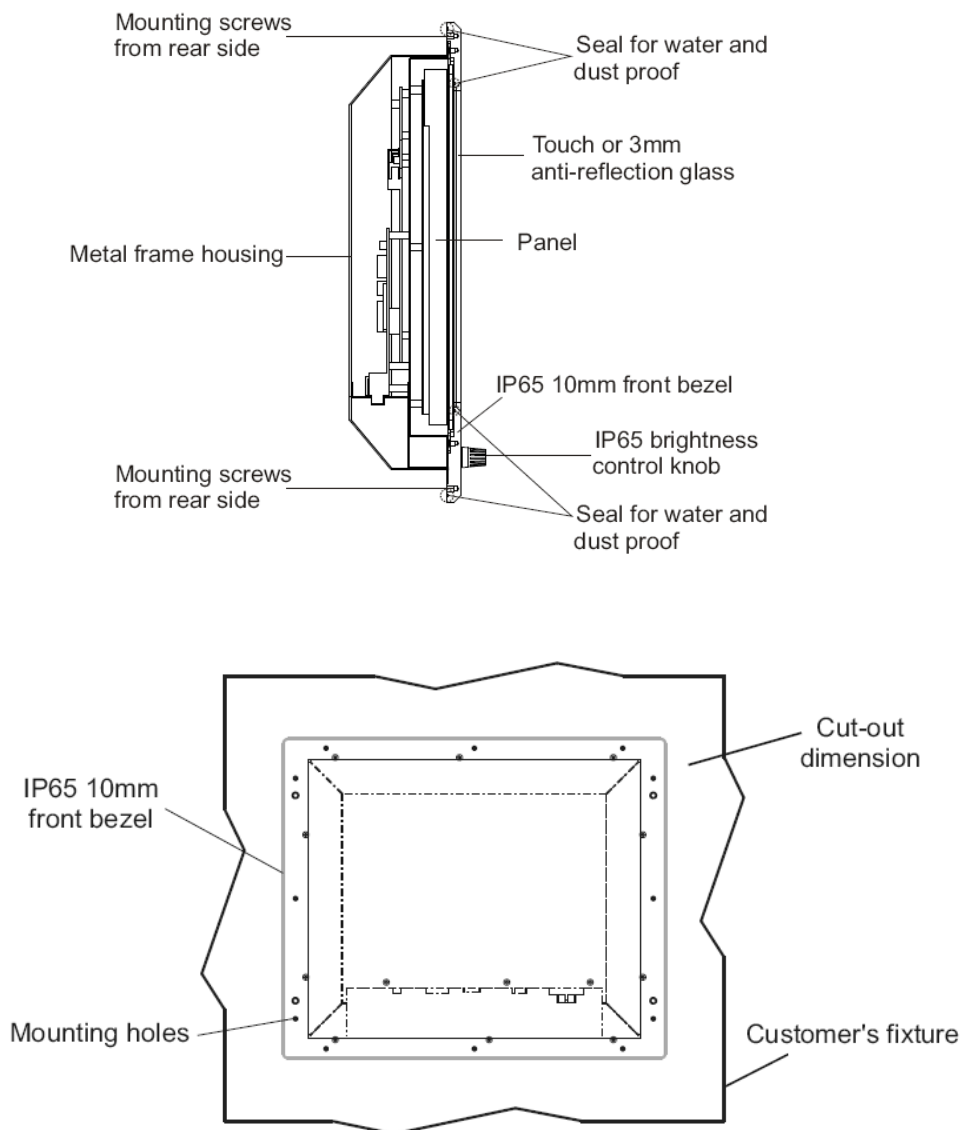


## Chapter 2 Installation

### 2.1 General installation

The Marine Bridge System Display can be applied for several different installation methods. Including panel (flush) mounting, bracket mounting, ceiling / wall mounting...etc. For panel (flush) mounting is normally for a ship's wheelhouse use, it's easy to follow few steps to fix the display product in customer's fixture.

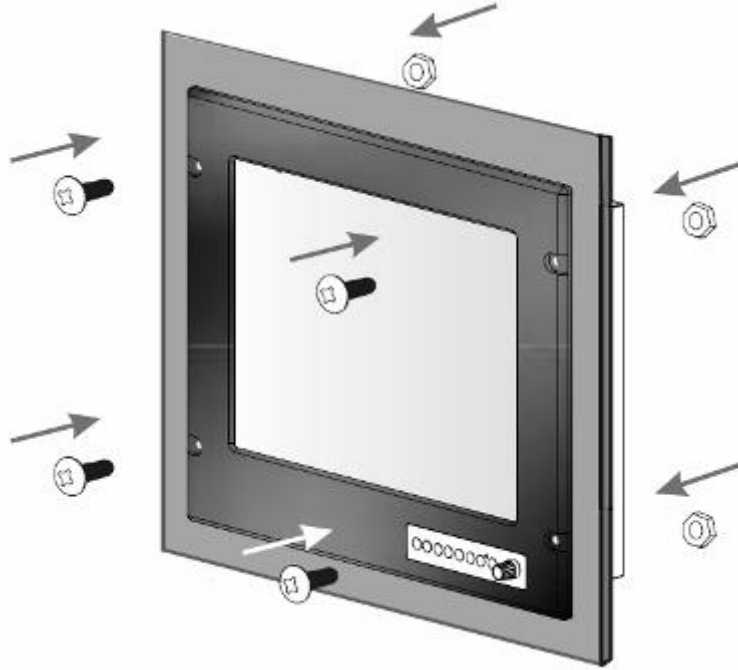
Check the mechanical and mounting concept as below first. The fixture cut-out dimension and mounting holes based on drawing.



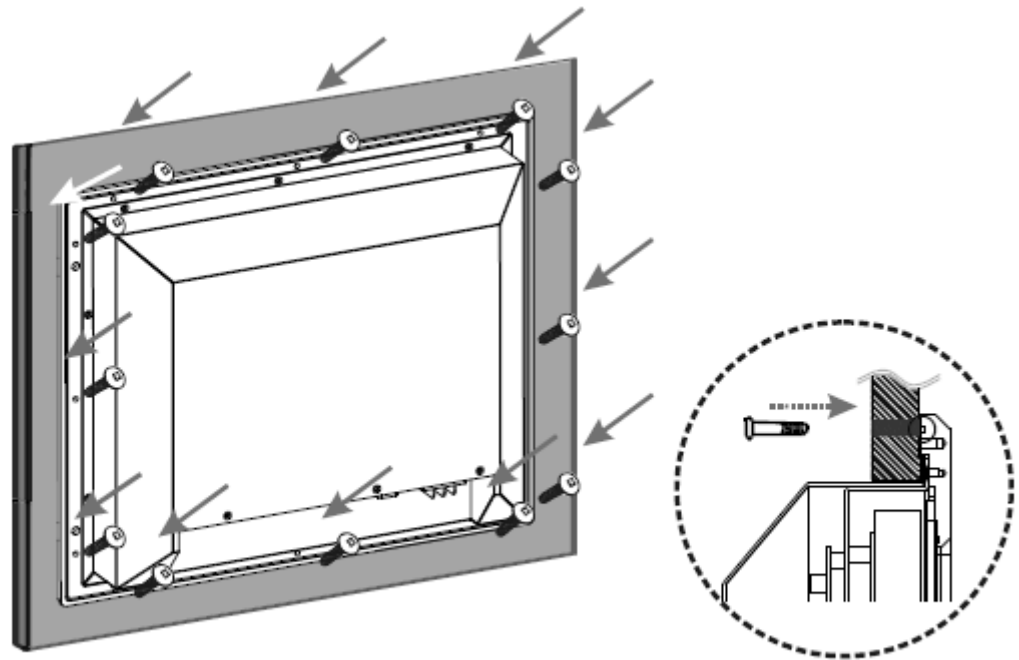
# MARINE SERIES SOLUTION



**Step1.** Put the marine product on the fixture (console) from the front, and screw by four M6 x 30 mm black bolts with nuts.



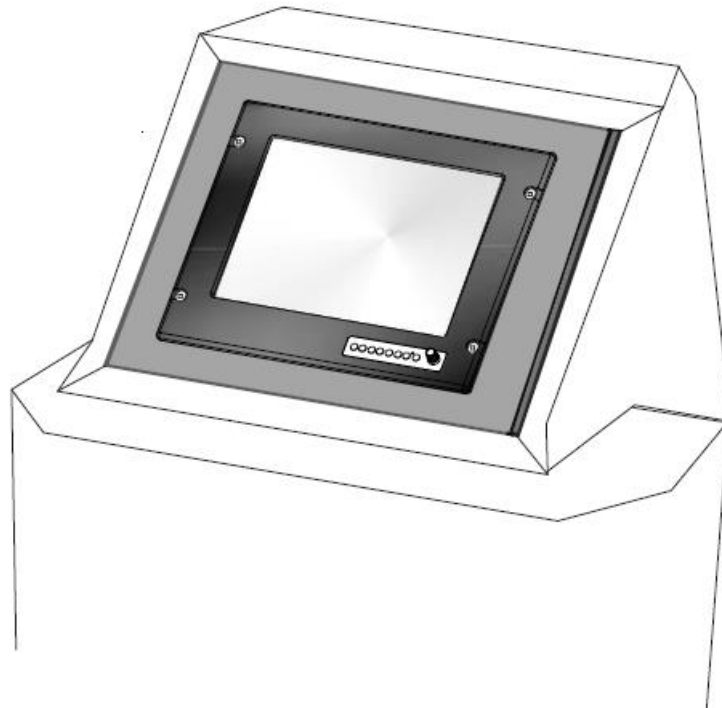
**Step2.** Use M4x 15mm bolts to drill through the fixture into the mounting holes on the rear side of IP65 front bezel. (The quantity of mounting screws based on drawing)



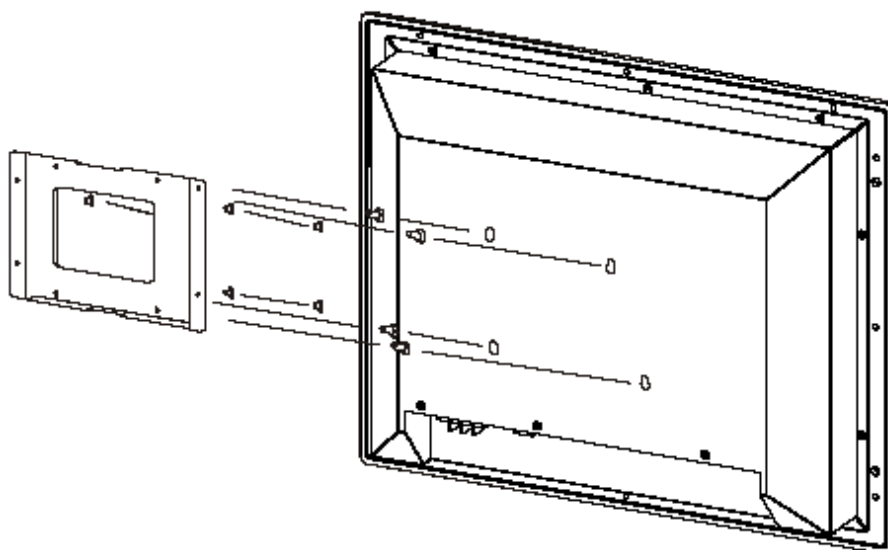
# MARINE SERIES SOLUTION



**Step3.** Check the finished mounting concept.



\*\* Please Note: VESA and wall mount with mounting kit by special request.





## 2.2 Installation Notice

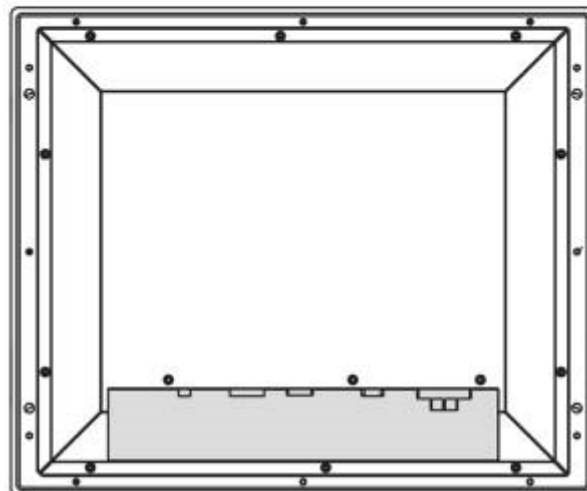
### 2.2.1 Brightness Control Knob Precaution

The dimming brightness control knob may be damaged by wrong placement. Please make sure the right way to protect the knob.



### 2.2.2 Cable Connection Precaution

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





# CHAPTER 3

## Operation the LCD Display





## Chapter 3 Operation of the LCD Display

### 3.1 Input / Output Signals Overview

The Marine Bridge System Display design with versatile video input / output functions. The default signal for 10.4 inch to 24 inch displays can use VGA, DVI, S-Video and Composite. These displays can also support PIP (picture in picture) multi-scan function fulfilling the maritime multi-function demand. (For 8.4 inch, the default signal functions are VGA, S-Video and Composite)

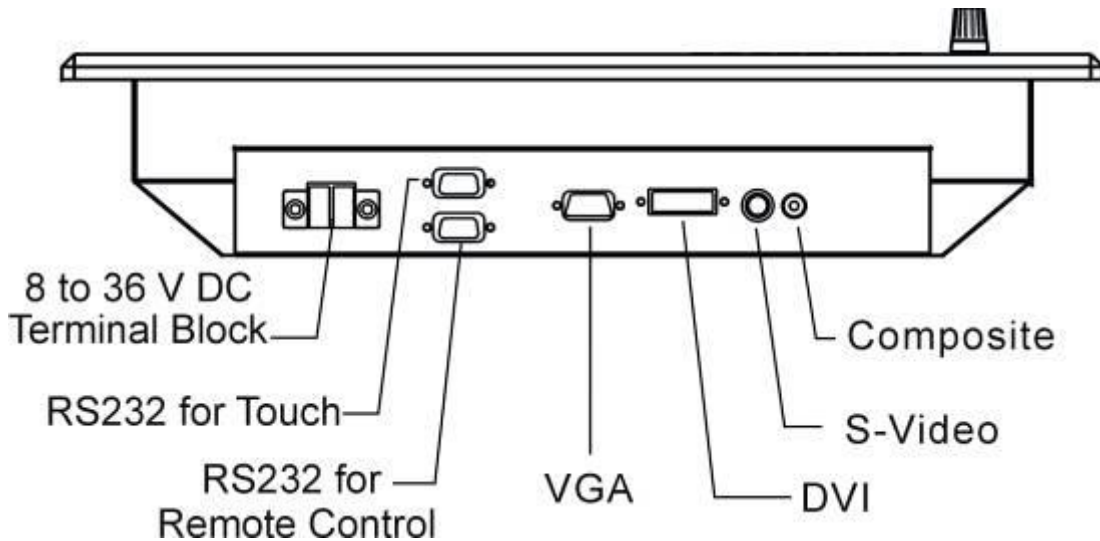


Figure 3.1 Input / Output Signals

\*\*Please Note: Some connectors are optional depends on the product model.

#### Power input (DC Version / AC Version)

Default DC terminal block power source input compact design meets the maritime application. The terminal block is to be secured that the cable to screw terminal.

AC Std 90V to 265V power input is also available for AC version option, use standard power cord 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 connect to the monitor to control the touchscreen. Be make sure the appropriate touch driver is installed.

The other function for remote control should be depends on your own application software to build-in RS232 command code. The function makes it easy to control the LCD monitor in your own PC via RS232 port connection.

#### VGA port connection

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

#### DVI port connection

Plug the 24pin (Male) DVI signal cable to the DVI connector in the rear of the PC system, and plug the other end to the TFT LCD display. Fasten cable connectors with screws.

# MARINE SERIES SOLUTION



## **S-Video connection**

Plug standard S-Video(SVHS) cable into the mini 4 way din plug. Use PIP (picture in picture) function to switch source when multi video signals are activated and choose from OSD menu.

\* Note: The S-Video function must be activate by OSD menu selection.

## **Composite connection**

Connect composite video signal cable into the RCA jack input. Use PIP (picture in picture) function to switch source when multi video signals are activated and choose from OSD menu.

\* Note: The Composite function must be activate by OSD menu selection.

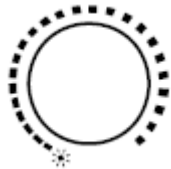


## 3.2 OSD User Controls

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



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

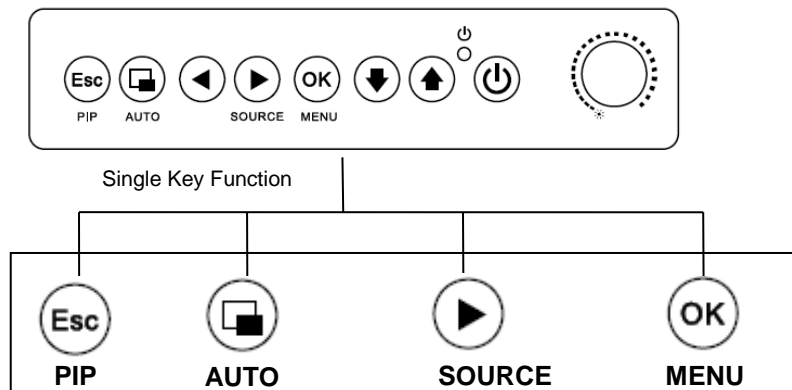
Press the Power On/Off button to switch the TFT LCD display power.



### 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.





# MARINE SERIES SOLUTION



## 3.3 OSD Hot Keys (Auto)


Function	Hot Key
Main source	Press “▶” to select the main source
Volume	Press “◀” to the volume bar, and press “◀” “▶” to adjust the volume
Auto adjustment	Press “AUTO” to perform auto adjustment

## 3.4 OSD Menu Navigation



OSD menu

### 3.4.1 Display

OSD icon	Sub menu	Settings	Note
	<b>BRIGHTNESS</b>	slider bar	
	Adjusts the overall image and background brightness. Press “◀” or “▶” to adjust.		
	<b>CONTRAST</b>	slider bar	
	Adjusts the image brightness in relationship to the background. Press “◀” or “▶” to adjust.		
	<b>SHARPNESS</b>	slider bar	
	Adjusts the crispness of the image. Press “◀” or “▶” to adjust.		
	<b>ADC BRIGHTNESS</b> *VGA CHANNEL ONLY	slider bar	
	Adjusts the ADC brightness. Press “◀” or “▶” to adjust.		
	<b>COLOR TEMPERATURE</b>	USER/6500K/9300K	
	Adjusts the color temperature of the entire screen. A low color temperature will make the screen reddish. A high color temperature will make the screen bluish.		
<b>COLOR CONTROL</b>	R slider bar		
	G slider bar		

# MARINE SERIES SOLUTION

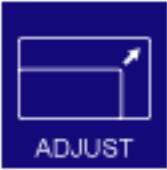



	<b>B slider bar</b>	
	<b>Y slider bar</b>	
	<b>M slider bar</b>	
	<b>C slider bar</b>	
Adjusts the levels of the Red, Green, Blue, Yellow, magenta, and cyan. Press “◀” or “▶” to adjust.		
<b>GAMMA SELECTION</b>	<b>@NATIVE</b>	
	<b>@1.8</b>	
	<b>@2.2</b>	
Select a display gamma value for best picture quality.		
<b>SCHEME</b>	<b>USER</b>	
	<b>GAME</b>	
	<b>SPORT</b>	
	<b>VIVID</b>	
	<b>CINEMA</b>	
Select scheme for different default setting combination.		
<b>DISPLAY RESET</b>	<b>YES/NO</b>	
Resets the following settings within the DISPLAY menu back to factory setting:		

# MARINE SERIES SOLUTION




## 3.4.2 Adjust

	<b>AUTO SETUP</b> *VGA CHANNEL ONLY	<b>PRESS YES TO AUTO SETUP</b>	
	Automatically adjusts screen size, H position, V position, Clock, Clock Phase		
	<b>AUTO ADJUSTMENT</b> *VGA CHANNEL ONLY	<b>ON/OFF</b>	
	H Position, V Position and Clock Phase are adjusted automatically upon power on.		
	<b>H POSITION</b> *VGA CHANNEL ONLY	<b>slider bar</b>	
	Controls the horizontal position of the image within the Display area of the LCD. Press + to move right. Press - to move left.		
	<b>V POSITION</b> *VGA CHANNEL ONLY	<b>slider bar</b>	
	Controls the vertical position of the image within the Display area of the LCD. Press + to move up. Press - to move down.		
	<b>CLOCK</b> *VGA CHANNEL ONLY	<b>slider bar</b>	
	Press + to expand the width of the image on the right of the screen. Press - to narrow the width of the image on the left.		
	<b>PHASE</b> *VGA CHANNEL ONLY	<b>slider bar</b>	
	Adjusts the visual "noise" on the image.		
	<b>WHITE BALANCE</b> *VGA CHANNEL ONLY	<b>YES/OFF</b>	
	Perform the white balance		
	<b>SCALING</b>	<b>@ ASPECT</b>	
		<b>@ OFF</b>	
		<b>@ FULL</b>	
Adjust the image scaling setting			
	<b>ADJUST RESET</b>	<b>YES/NO</b>	
Resets the following settings within the ADJUST menu back to factory setting:			


# MARINE SERIES SOLUTION



## 3.4.3 Audio

	<b>VOLUME</b>	slider bar	
	<b>Audio Input</b>	slider bar	
	<b>MUTE</b>	ON/OFF	
	<b>AUDIO RESET</b>	YES/NO	
	Resets "AUDIO" settings back to factory settings.		

## 3.4.4 PIP (Picture in picture)

	<b>PIP SOURCE</b>	<b>VGA</b>	
		<b>DVI</b>	
		<b>Composite</b>	
		<b>S-Video</b>	
	<b>PIP MODE</b>	<b>@OFF</b>	
		<b>@LARGE PIP</b>	
		<b>@SMALL PIP</b>	
		<b>@SIDE BY SIDE ASPECT</b>	
		<b>@SIDE BY SIDE FULL</b>	
	Selects the size of the sub-picture used in Picture-in-Picture (PIP) mode.		
	<b>PIP POSITION</b>	slider bar	
		slider bar	
	Determines where the PIP appears on the screen.		
	<b>PIP RESET</b>	YES/NO	
	Resets the following settings within the PIP menu back to factory setting		

### \*PIP mode selection guide

X: not support V : support mode

Main \ Sub	Composite Video	S-Video	VGA	DVI
Composite Video	X	X	V	V
S-Video	X	X	V	V
VGA	V	V	X	V
DVI	V	V	V	X


# MARINE SERIES SOLUTION



## 3.4.5 OSD settings

	<b>OSD TURN OFF</b>	slider bar	
	Turns off the OSD after a period of inactivity. The preset choices are 0-60 seconds.		
	<b>OSD POSITION</b>	H - slider bar	
		V - slider bar	
	Determines the location where the OSD appears on the screen.		
	<b>OSD TRANSPARENCY</b>	@OFF	
		@TYPE1	
		@TYPE2	
	set the transparency level of OSD		
	<b>OSD Rotated</b>	@OFF	
		@90	
		@270	
	Set to rotate the OSD menu		
	<b>MONITOR INFORMATION</b>	Version	
		Panel Resolution	
Main Resolution			
PIP Resolution			
Show BIOS version & resolution info.			
<b>OSD RESET</b>	YES/NO		
Resets the following settings within the OSD menu back to factory setting			

## 3.4.6 Advanced settings

	<b>CHANNEL SELECT</b>	VGA	
		DVI	
		HDMI	
		DP	
	Select the input signal source		
	<b>FLIP</b>	@OFF	
		@H-FLIP	
		@V-FLIP	
		@HV-FLIP	
	Adjust the flip settings		
	<b>BRIGHTNESS MIN</b>	Slide bar	
	<b>ADVANCED RESET</b>	YES/NO	
	Resets the following settings within the ADVANCED menu back to factory setting		
	<b>FACTORY RESET</b>	YES/NO	
	Resets OSD options back to factory settings EXCEPT FOR: CHANGE SECURITY PASSWORD and SECURITY PASSWORD.		



## Appendix





## Appendix A: 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.



## Appendix B: 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 solution 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.

If you are unable to correct the fault by using this chart, stop using your monitor and contact your distributor or dealer for further assistance.



# MARINE SERIES SOLUTION



## Appendix C: Supported Modes

### D-Sub / DVI

No.	Resolution	Frequency (Hz)	Note	No.	Resolution	Frequency (Hz)	Note
1	640x350	70	IBM	21	1024x768	85	VESA
2	640x350	85	VESA	22	1280x768	60	
3	640x400	56		23	1280x960	60	VESA
4	640x400	70	IBM	24	1280x960	85	VESA
7	640x480	75	VESA	25	1280x1024	60	VESA
8	640x480	80	VESA	26	1280x1024	60	HP
9	720x350	70	IBM	27	1280x1024	67	IBM
10	720x400	70	IBM	28	1280x1024	70	NCD
11	720x400	85	VESA	29	1280x1024	72	HP
12	800x600	56	VESA	30	1280x1024	75	VESA
13	800x600	60	VESA	31	1280x1024	85	VESA
14	800x600	72	VESA	32	1600x1200	60	VESA
15	800x600	75	VESA	33	1920x1200	60	CVT RB
16	800x600	85	VESA	34	1366x768	60	VESA
17	1024x768	60	VESA	35	1920x1080	60	VESA
18	1024x768	70	VESA	36	2560x1440 (DVI dual link only)	60	VESA
19	1024x768	72	IBM	37	2560x1600 (DVI dual link only)	60	VESA
20	1024x768	75	VESA				

### Composite Video Input; Y/C Video input (S-Video)

Video Format	Resolution	Frequency	Country Support
NTSC-M	525X60	3.58MHZ	U.S., Japan, may others
PAL	625X50	4.43MHZ	China, Europe, may others

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

# MARINE SERIES SOLUTION



## Appendix D: RS-232 Command Code(Optional)

Name	Length	Value	Comment
Message	variable		
Checksum	1	2's complement of sum of Length and Message	byte chksum = 0; for ( i = 0; i < buffer_size; ++i ) chksum += buff[i]; chksum = ~chksum + 1;

### RS232 setting:

Baud Rate = 115200, Data Bits=8, Parity = None, Stop Bits=1

Function	Length	Command	ID	index	Value	checksum
Auto	0x05	0x40		0x01		
Recall	0x05	0x40		0x02		
White Balance	0x05	0x40		0x03		
Main Input Source	0x05	0x40		0x04	0=VGA, 1=DVI, 2=CVBS, 3=S-Video	
Pip Input Source	0x05	0x40		0x05	0=VGA, 1=DVI, 2=CVBS, 3=S-Video	
Contrast	0x05	0x40		0x11	0x00-0x64	
InterBright	0x05	0x40		0x14	0x00-0x64	
PIP	0x05	0x40		0x20	0=Off, 1=PIP, 2=PoP, 3=side by side aspect, 4=side by side full	
PIP Size	0x05	0x40		0x21	1=Small, 2=Middle, 3=Large	
Scaling	0x05	0x40		0x22	0=Off, 1=COSTOM, 2=Aspect	
Camma	0x05	0x40		0x31	0=Off, 1=1.8, 2=2.2	
Color Temp	0x05	0x40		0x32	0=user, 1=6500K, 2=9300K	
Color-R	0x05	0x40		0x33	0x00-0xFF	
Color-G	0x05	0x40		0x34	0x00-0xFF	
Color-B	0x05	0x40		0x35	0x00-0xFF	
Volume	0x05	0x40		0x50	0x00-0x1F	
Mute	0x05	0x40		0x54	0=Mute On, 1=Mute OFF	

### Reply Value :

ACK	3	C	F1	Transmission PASS
NSP	3	D	F0	Transmission FAILED
NCK	3	B	F2	Not support

Format : Length, Command, ID, index, Value, Checksum

Example : 0x06, 0x40, ID, 0x00, 0x01, Checksum => Power Off system.

### RS232 Getting to check

Name	Length	Value	Comment
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# MARINE SERIES SOLUTION



Message	variable		
Checksum	1	2's complement of sum of Length and Message	byte chksum = 0; for ( l = 0; l < buffer_size; ++l ) chksum += buf[l]; chksum = ~chksum + 1;

Command(Tx)					Acknowledgement(Rx)					
function	Length	Command	ID	index	checksum	Length	ID	index	Value	checksum
Main Input Source	0x04	0x30		0x04		0x04		0x04	0=VGA, 1=DVI, 2=CVBS, 3=S-Video	
Pip Input Source	0x04	0x30		0x05		0x04		0x05	0=VGA, 1=DVI, 2=CVBS, 3=S-Video	
Contrast	0x04	0x30		0x11		0x04		0x11	0x00-0x64	
InterBright	0x04	0x30		0x14		0x04		0x14	0x00-0x64	
PIP	0x04	0x30		0x20		0x04		0x20	0=Off,1=PIP, 2=PoP, 3=side by side aspect, 4=side by side full	
PIP Size	0x04	0x30		0x21		0x04		0x21	1=Small,2=Middle,3=Large	
Scaling	0x04	0x30		0x22		0x04		0x22	0=1:1,1=FILL,2=Aspect	

Camma	0x04	0x30		0x31		0x04		0x31	0=Off,1=1.8,2=2.2	
Color Temp	0x04	0x30		0x32		0x04		0x32	0=user,1=6500K,2=9300K	
Color-R	0x04	0x30		0x33		0x04		0x33	0x00-0xFF	
Color-G	0x04	0x30		0x34		0x04		0x34	0x00-0xFF	
Color-B	0x04	0x30		0x35		0x04		0x35	0x00-0xFF	
Volume	0x04	0x30		0x50		0x04		0x50	0x00-0x1F	
Mute	0x04	0x30		0x54		0x04		0x54	0=Mute On,1=Mute OFF	

### Reply Value :

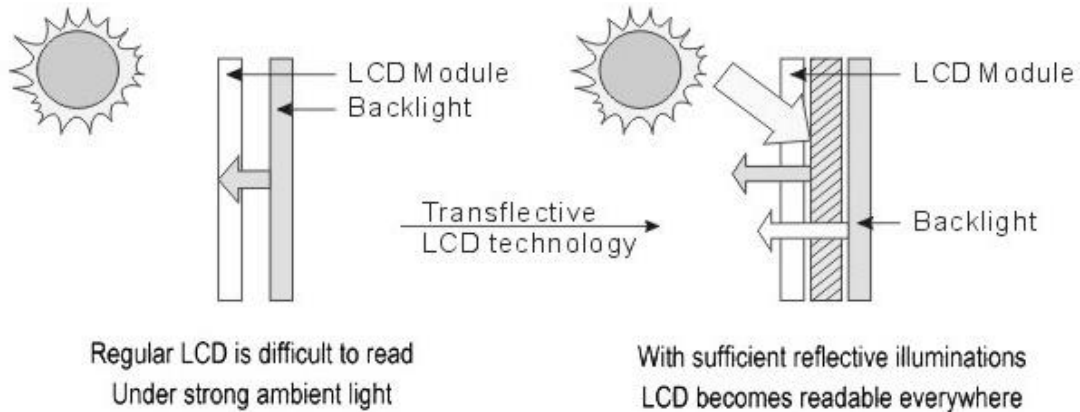
ACK	3 C F1	Transmission PASS
NSP	3 D F0	Transmission FAILED
NCK	3 B F2	Not support

**Format :** Length, Command, ID, index, Checksum / Length, ID, Index, Value, Checksum



## Appendix E: Sunlight Readable (Transflective) Outdoor Readability (Optional)

Transflective LCD technology can be applied to certain selected regular TFT LCD 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 lighting conditions including direct sunlight.



The following table shows the outdoor readability for the Marine Bridge System Display models.

### Outdoor Readability

Model Number	R08T200-MRT1TR	R10L100-MRM2TR	R15T600-MRA1TR	R17L500-MRA2TR	R19L300-MRA1TR	R20L100-MRA2TR
Ambient light(nit)	10,000	10,000	10,000	10,000	10,000	10,000
	30,000	30,000	30,000	30,000	30,000	30,000
	80,000	80,000	80,000	80,000	80,000	80,000
Brightness gain (nit)	432.7	437.5	680	490	500	312.5
	620	670	870	630	630	456
	1,180	1,150	1,320	900	830	680
Reflectance(net)(%)	1.20%	1.20%	1%	0.83%	0.50%	0.70%
	1.15%	1.15%	0.98%	0.70%	0.65%	0.68%
	1.16%	1.10%	0.90%	0.45%	0.40%	0.45%