BRIDGE COMMAND
BY GREEN MARINE

MULTI-TOUCH SERIES 50 DISPLAY

USER MANUAL

BC-MT-1950 & BC-MT-2450

(1st Edition 10/16/2014)

RECORD OF REVISION

Version and Date	Page	Old Description	New Description	Remark
October 16, 2014	all	Preliminary	Release	

TABLE OF CONTENT

WARNING

Potential Ignition Source

This product is NOT approved for use in hazardous/flammable areas, e.g. engine rooms.

WARNING

Product Installation

This equiptment must be installed and operated in accordance with Green Marine's instructions provided. Failure to do so could result in poor product performance, personal injury, and/or damage to your boat.

WARNING

Navigation Aid

When this product is used within a navigation system, it is only an AID to navigation. The accuracy of this product can be affected by many factors, including equipment failure or defects, environmental conditions, and improper use. It is the user's responsibility to exercise common prudence and navigational judgements. Always check your position against all available aids to navigation for the safety of your boat and crew.

WARNING

Electrical Safety

Make sure you have set the boat's power supply to OFF before you start installing this product.

IMPORTANT INFORMATION

EMC conformance

All Bridge Command displays and accessories are designed to the best industry standards for use in the marine environment. The design and manufacture of Bridge Command displays and accessories conform to the appropriate ElectroMagnetic Compatibility (EMC) standards, but correct installation is required to ensure that performance is not compromised.

Waste Electrical and Electronic Equipment Directive

The Waste Electrical and Electronic Equipment (WEEE) Directive requires the recycling of waste electrical and electronic equipment. While the WEEE Directive does not apply to some of Bridge Command's products, we support its policy and ask you to be aware of how to dispose of our products.
The crossed out garbage bin symbol, illustrated above, and found on our products signifies that this product should not be disposed of in general waste or landfill facilities. Please contact the marine electronics dealer you purchased this product from, or Green Marine Monitor's customer support for information on product disposal.

Restriction of the use of certain Hazardous Substances

Bridge Command displays use components that comply with the requirements of the restriction of the use of certain Hazardous Substances (RoHS) Directive 2002/95/ EC.

Warranty Registration

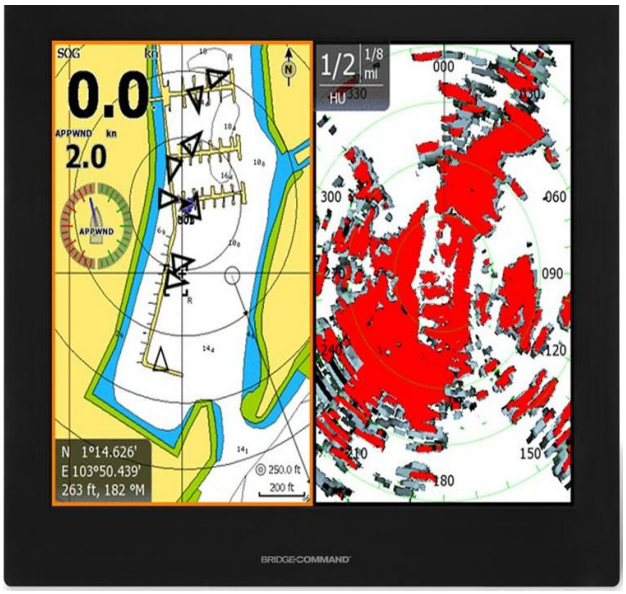
Gree Marine Monitors automatically registers and tracks the warranty of all our products. No further registration is required of our customers.

Packing List

Before installation, please ensure the following items have been shipped:

- 1 x Bridge Command Multi-Touch Series 50 Display
- 4 x Mounting bracket lugs and 4 stainless steel threaded studs
- 1 x Power Cable
- 1 x VGA Cable
- 1 x Printed Flush Mount Template
- 1 x Printed User Manual

If any of these items should be missing or damaged, please contact your dealer or sales representative immediately.



1.0 INTRODUCTION

About Bridge Command Multi-Touch Series 50 Displays
Bridge Command MT Series 50 displays are equipped with optically bonded AR glass and are specifically engineered to survive the most demanding applications. You will soon become familiar with the quality difference in this bright, sunlight readable (0 to 1,000 nits) display.

Bridge Command MT Series 50 displays are designed to be used as part of an integrated marine navigation system or within an entertainment system. The displays, available in 19 inch and 24 inch wide, are suitable for use on the flybridge or in the pilot house and are IP-65 waterproof when panel mounted.

Bridge Command MT Series 50 displays handle a wide-range of extreme environments making them the industry choice for recreational and commercial marine applications. Housed in a milled billet aluminum case, these displays are light weight and are designed with a very slim case profile.

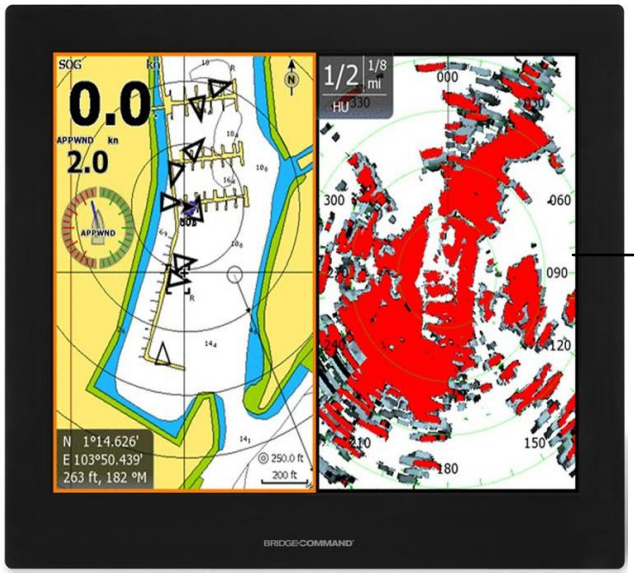
We have incorporated the latest optical engineering to achieve optimal viewability in all lighting conditions, including direct sunlight. The MT Series 50 power efficient, low heat design results in increased reliability and longevity required for mission critical deployment.

This manual contains important information on the installation, operation and maintenance of your Bridge Command MT Series 50 marine display(s).

2.0 CONTROL AND FEATURES

Your Bridge Command Multi-Touch Series 50 display has the following features:

Front View



Back View

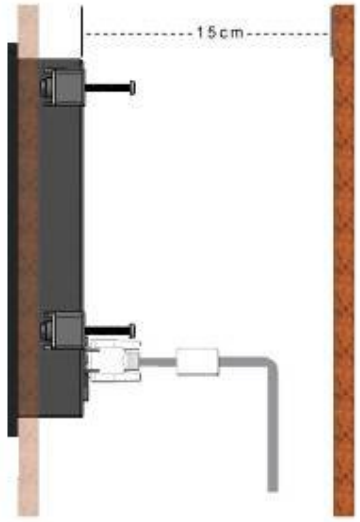
3.0 INSTALLATION

It is important that your new display is installed and operated in accordance with the instructions provided in this manual. Failure to do so could result in poor product performance and may invalidate your warranty.

When planning the installation the following points must be considered:

- If temperatures exceed the normal temperature operating range, the display could overheat and begin to blackout due to the limitations of TFT LCD technology.
- In order to minimize the chances of a malfunction, the following precautions should be taken during installation:
    - The display should be installed in an area where there is proper and adequate ventilation (min. 6 inches / 15cm clearance) . If it is possible to cool the area behind the display, it will significantly reduce the risk of a malfunction.
    - The display should be mounted at an angle to the sun. We do not recommend mounting the display in a flat plane, which increases the surface area exposed to the sun and leads to increased heat absorption.

IMPORTANT: Your Multi-Touch Series 50 display is only waterproof from the front. To maintain watertight integrity, the display must be flush mounted ensuring that the rear casing is enclosed in a watertight enclosure.



Multi-Touch Series 50 displays are designed to be mounted in two configurations:

VESA75 / VESA100 MOUNT

The Bridge Command MT Series 50 displays are compatible with VESA75 and VESA100 mounts. By installing the display with a compatable VESA mount the user can change the displays angle to improve viewability. Before the display is mounted, power and signal source should be connected and the display should be held at approximate mounting location to check viewing angle for satisfactory picture quality.

Mounting holes built into the back surface of the displays allow them to be mounted using VESA75 or VESA100 compatible mounts.

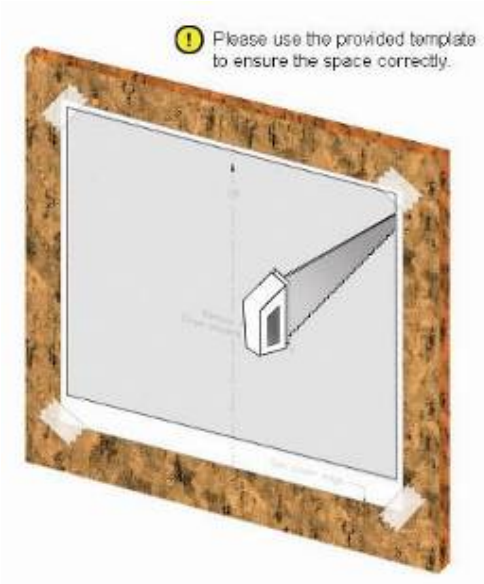
PANEL (Flush) MOUNT

For installation, there are four tapped mounting slots on both sides of the monitor and on the top and bottom. The mounting hardware packet is included with the product accessories in the shipping box. This packet includes four (4) stainless steel brackets and four (4) mounting screws. (8 each for the 24 inch model)

The MT Series 50 display can be installed using the mounting brackets (supplied) in the vertical or horizontal keyways. Make sure that both brackets are installed in the same orientation.

Preparing the installation site

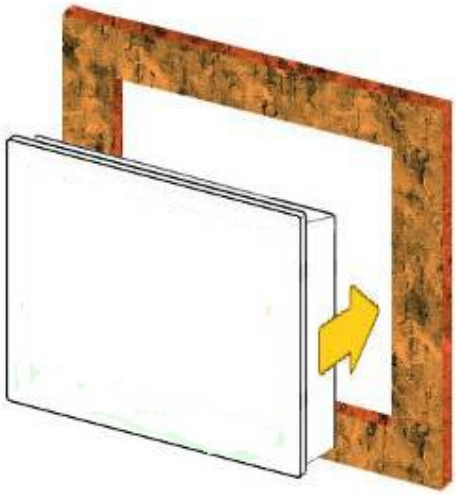
1. Select an installation site that has sufficient space behind it for cable connections and ventilation.
2. Tape the supplied flush mount template in the required position.
3. Using a jigsaw, carefully remove the shaded portion of the template.
4. Using a suitable file, smooth the edges of the opening.



Installing the display

1. Carefully insert the display into the opening so the gasket on the backside of the bezel edge lays flat against the front edge of the cut out.

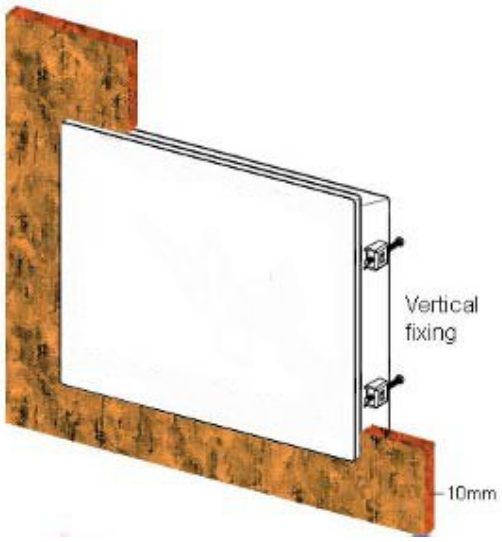
IMPORTANT**:** The gasket must lay flat against the cut out edge to ensure watertight integrity.



2. Place the mounting bracket lugs into the keyways and move them to the rear, securing the bracket to the display.

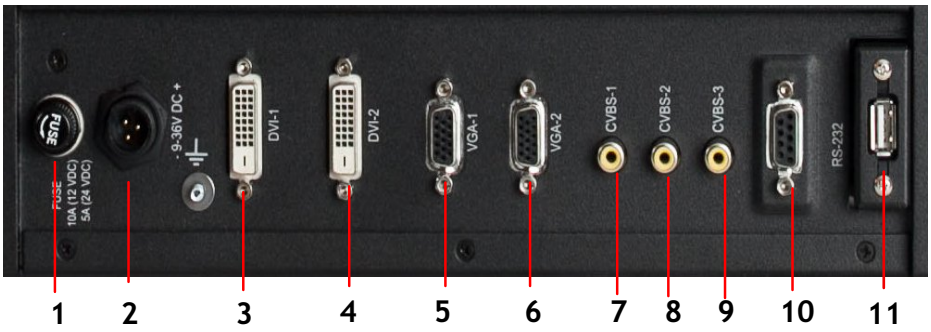
3. Using a suitable screwdriver, tighten the mounting bracket screws to secure the display in position and compress the gasket.

NOTE: Do not over tighten the mounting screws or gasket can deform and loose waterproof integrity.



4. Connect all cables as required - see “Rear connections” below.

Rear connections



The rear connectors are:

1. FUSE
2. Power Input
3. DVI-1 Input
4. DVI-2 Input
5. VGA-1 Input
6. VGA-2 Input
7. CVBS-1 Input (Composite Video)
8. CVBS-2 Input (Composite Video)
9. CVBS-3 Input (Composite Video)
10. RS232 Input (for controller)
11. USB Input (for touch control)

Planning the installation

Before you install your display, the following points should be considered:
• Power requirements.
• Display location and mounting options.

Power requirements
Your MT Series 50 display is designed to run on a boat’s DC power system rated at 12 V or 24 V and is equipped for a 9~36V DC wide range of power input.

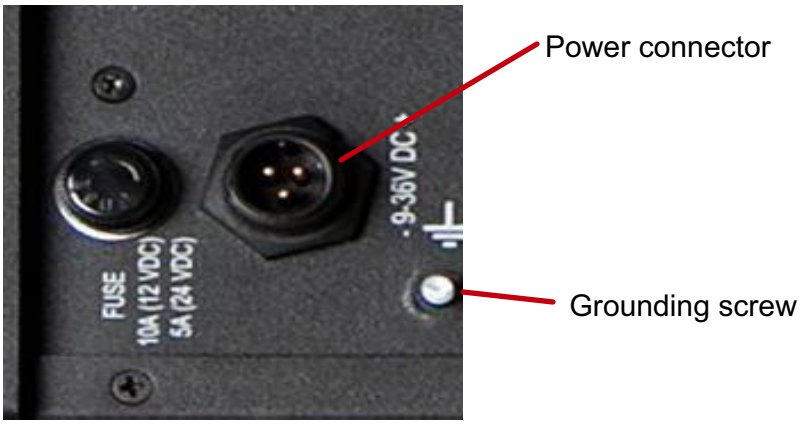
The DC power system should be either:
• Negative grounded, with the negative battery terminal connected to the boat’s ground,
• Floating, with neither battery terminal connected to the boat’s ground.

Grounding the display
It is important that an effective radio frequency (RF) ground is connected to the display. You can ground the display by connecting a ground wire to the grounding screw on the back of the display, located near the power connector on the display end, and the nearest ground point of the boat's RF ground system on the other end.

Display location and mounting options
Your display can be mounted using the flush mounting clamps supplied. Green Marine recommends that you power up and test the display prior to installation.

When planning the display location, the following points should be considered to ensure safe, comfortable, and reliable operation:

Power connections
The power connection to the display should be made at either the output of the battery isolator switch, or at a DC power distribution panel. Green Marine recommends that power is fed directly to the display via its own dedicated cable system and MUST be protected by a thermal circuit breaker or fuse fitted close to the power connection. If you do not have a thermal circuit breaker or fuse in your power circuit, you MUST fit an in-line breaker or fuse to the positive (red) lead of the power cable.

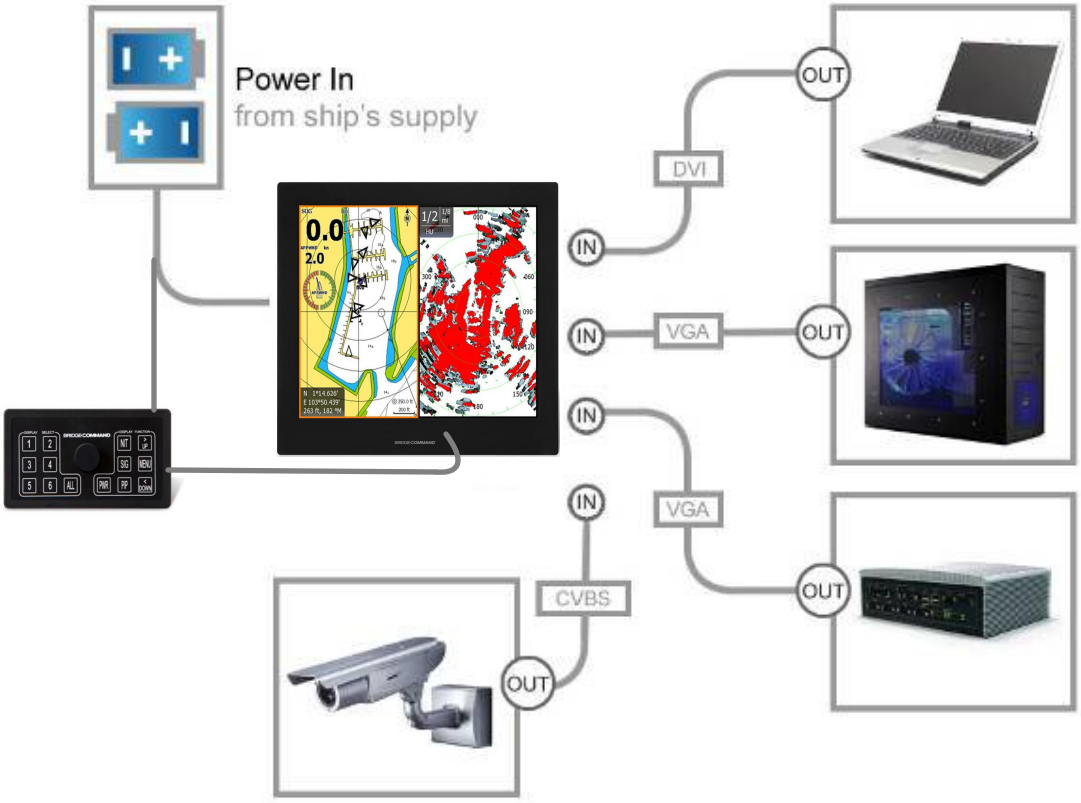


• **Installation angle**- the MT Series 50 display should be mounted at an angle. Mounting it in a flat plane is not recommended due to increased heat absorption.

• **Viewing angle** - this LCD has been chosen to give the very best performance, including viewing angle. However, the contrast and colors seen on all LCD displays vary slightly with viewing angle. Before the display is mounted, power and signal source should be connected and the display should be held at approximate mounting location to check viewing angle for satisfactory picture quality.

• **Environment** - to prevent overheating, do not restrict airflow at the rear of the display. If the space behind the display is air conditioned or cooled by a fan, it will help in keeping the displays temperature down when mounted in direct sunlight.
FAILURE TO ADEQUATELY VENTILATE THE UNIT COULD INVALIDATE YOUR WARRANTY.
The display should be protected from physical damage and excessive vibration. Although the display is waterproof from the front when installed correctly, it is good practice to mount it in a protected area away from prolonged and direct exposure to rain and salt spray. DO NOT mount the monitor near a heat source.

Typical Installation Diagram



Remarks: The real installation diagram above is only for reference and will differ for different kinds of applications.

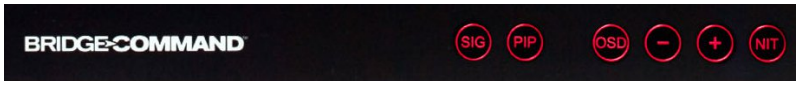
4.0 OSD AND FUNCTION OPERATIONS

Introduction

The Bridge Command Multi-Touch Series 50 displays have concealed control buttons on the front glass.

When the Bridge Command logo is touched the control buttons appear for operator use.
After 4 seconds of inactivity the control buttons will conceal again.

Using the Display Control Buttons



POWER Button

The Bridge Command logo acts as the power button. To power the display ON, press and hold the logo for 4 seconds. Repeat this step to power the display off. When the display is ON touching the logo (do not hold) will light the control buttons for operator use.

NIGHT MODE Button 

When the NIGHT MODE button is touched, the display will dim directly to 0.5 nits. Touching the button a second time will dim the display to black. The button can now be used to toggle back and forth between .5 nit and black for night viewing. Touching the PLUS or MINUS buttons will return the display to full brightness. (NOTE: If a controller is used to operate the displays then the PLUS and MINUS buttons on the display are disabled for brightness control and the PLUS and MINUS buttons on the controller must be used.)

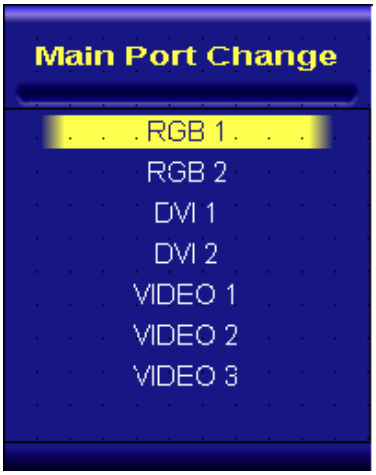
Any modified or changed parameter setting will be automatically saved if you power off or Exit the NIGHT MODE.

MINUS  **PLUS**  **Buttons**

The MINUS and PLUS buttons are "hot keyed" to control display brightness. Touch and hold the MINUS button to decrease display brightness. Touch and hold the PLUS button to increase display brightness. When another control function has been selected (SIG, PIP, or OSD) the MINUS and PLUS buttons are used to move the cursor. The MINUS button moves the hightlight cursor "Down". The PLUS button moves the highlight cursor "Up". (NOTE: If a controller is used to operate the displays, then the PLUS and MINUS buttons on the display are disabled for brightness control and the PLUS and MINUS buttons on the controller must be used.)

SIGNAL INPUT Button 

When the SIGNAL INPUT button is touched, the screen below will pop up on the display:



The MINUS button may now be used to move the highlight cursor "Down" and the PLUS button may be used to move the highlight cursor "Up". If no buttons are touched for 5 seconds the INPUT screen will close and the display will show the signal selected.

Any modified or changed parameter setting will be automatically saved if you power off.

PIP Button 

When the PIP button is touched, one of the screens below the graph will pop up on the display:

1. Default main screen shows at RGB1 & RGB2→ Press “PIP” button →Figure 1
2. Default main screen stays at DVI1 & DVI2→ Press “PIP” button→ Figure 2
3. Default main screen stays at VIDEO 1→ Press “PIP” button→ Figure 3_1
4. Default main screen stays at VIDEO 2→ Press “PIP” button→ Figure 3_2
5. Default main screen stays at VIDEO 3→ Press “PIP” button→ Figure 3_3

PIP Function Supporting Table								
Sub / Main	RGB 1	RGB 2	DVI 1	DVI 2	VIDEO 1	VIDEO 2	VIDEO 3	
RGB 1			OK	OK	OK	OK	OK	Figure 1
RGB 2			OK	OK	OK	OK	OK	Figure 1
DVI 1	OK	OK			OK	OK	OK	Figure 2
DVI 2	OK	OK			OK	OK	OK	Figure 2
VIDEO 1	OK	OK	OK	OK		OK	OK	Figure 3_1
VIDEO 2	OK	OK	OK	OK	OK		OK	Figure 3_2
VIDEO 3	OK	OK	OK	OK	OK	OK		Figure 3_3

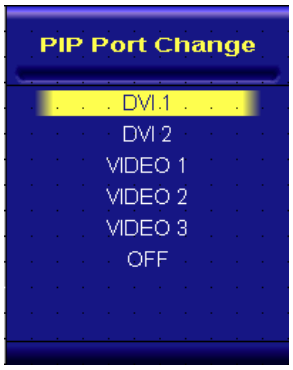


Figure 1

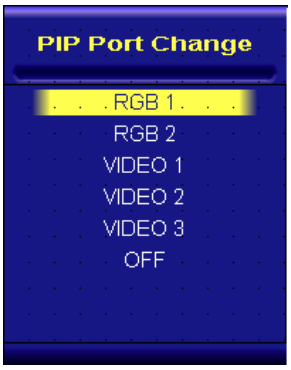


Figure 2

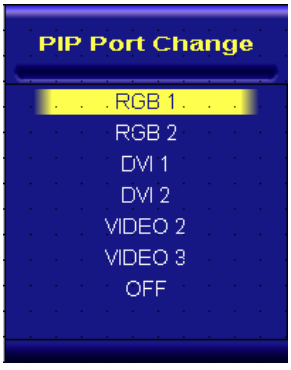


Figure 3_1

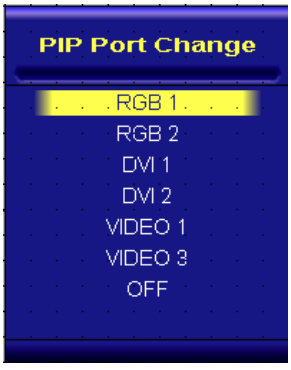


Figure 3_2

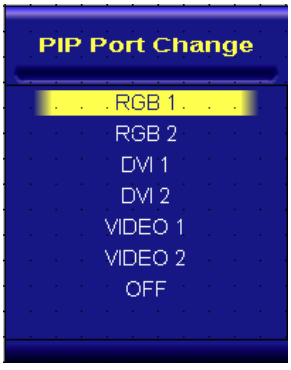


Figure 3_3

The MINUS button may now be used to move the highlight cursor “Down” and the PLUS button may be used to move the highlight cursor “Up”. If no buttons are touched for 5 seconds the INPUT screen will close and the display will show the signal selected.

Any modified or changed parameter setting will be automatically saved if you power off.

PIP (1-10) Picture Size

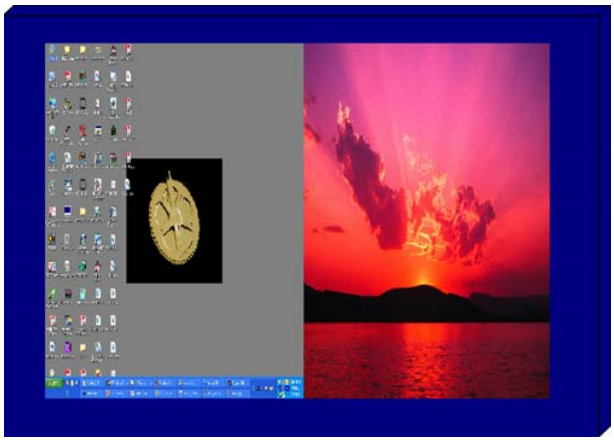
Operator may choose PIP size scaling from 1~10 times and PAP1 (4:3 aspect ratio) or PAP2 (side by side for half full screen). For re-sizing the screen, see PIP sub menu setting screen (page 24)

PIP Picture Placement

Operator my choose to place the PIP screen anywhere in the main display window. For placement of the screen, see PIP sub menu setting screen (page 24)

PAP1 (4:3 aspect ratio window) Picture

PAP2 (Side by side full screen window) Picture



OSD Button 

When the MENU button is touched, the OSD main menu screen will appear as below:

The MINUS button may now be used to move the highlight cursor “Down” and the PLUS button may be used to move the highlight cursor “Up”.

The OSD button may be used to move the cursor into the next selection field. (right or left)

If no buttons are touched for 30 seconds, the menu OSD screen will close automatically. The operator may also move the cursor to “EXIT” and then press the OSD button.

Any modified or changed parameter setting will be automatically saved if you power off.

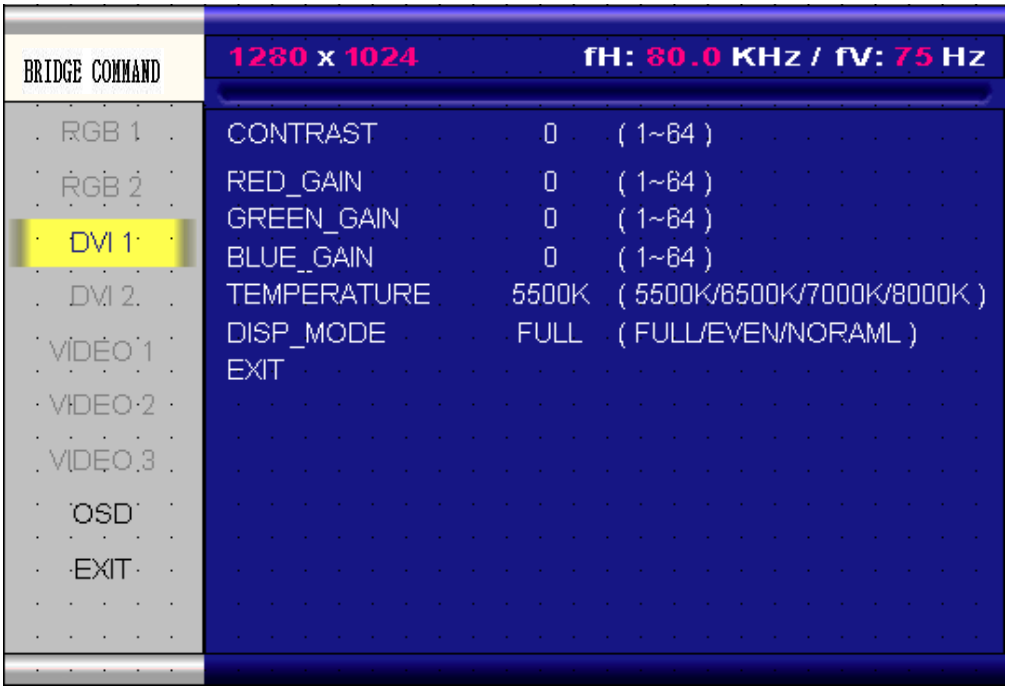
RGB Setting Item Description:

- PHASE——— Horizontal Sampling Phase Adjustment。
- CONTRAST——— Contrast Adjustment。
- H_POSITION—— Horizontal Screen Adjustment。
- V_POSITION—— Vertical Screen Adjustment。
- R_LEVEL——— Red Color level Adjustment。
- G_LEVEL——— Green Color level Adjustment。
- B_LEVEL——— Blue Color level Adjustment。
- TEMPERATURE——— Color Temperature Adjustment。
- DISP MODE———

  FULL——— Full Screen。

  EVEN——— Half Screen。

  NORMAL—— Keep normal aspect ratio。
- AUTO ADJUST——— Auto adjustment。
- EXIT——— Quit from current setting。



DVI Setting Item Description:

- CONTRAST———Contrast Adjustment。
- R_LEVEL——— Red Color level Adjustment。
- G_LEVEL——— Green Color level Adjustment。
- B_LEVEL——— Blue Color level Adjustment。
- TEMPERATURE——— Color Temperature Adjustment。
- DISP MODE———

  FULL——— Full Screen。

  EVEN——— Half Screen。

  NORMAL—— Keep normal aspect ratio。
- EXIT——— Quit from current setting。

VIDEO 1, 2 & 3 setting screen:

VIDEO Setting Item Description:

- CONTRAST——— Contrast Adjustment。
- SHARPNESS——— Horizontal edge sharpness
- HUE——— Color Adjustment
- R_LEVEL——— Red Color level Adjustment。
- G_LEVEL——— Green Color level Adjustment。
- B_LEVEL——— Blue Color level Adjustment。
- TEMPERATURE——— Color Temperature Adjustment。
- EXIT——— Quit from current setting。

PIP Sub-menu setting screen:

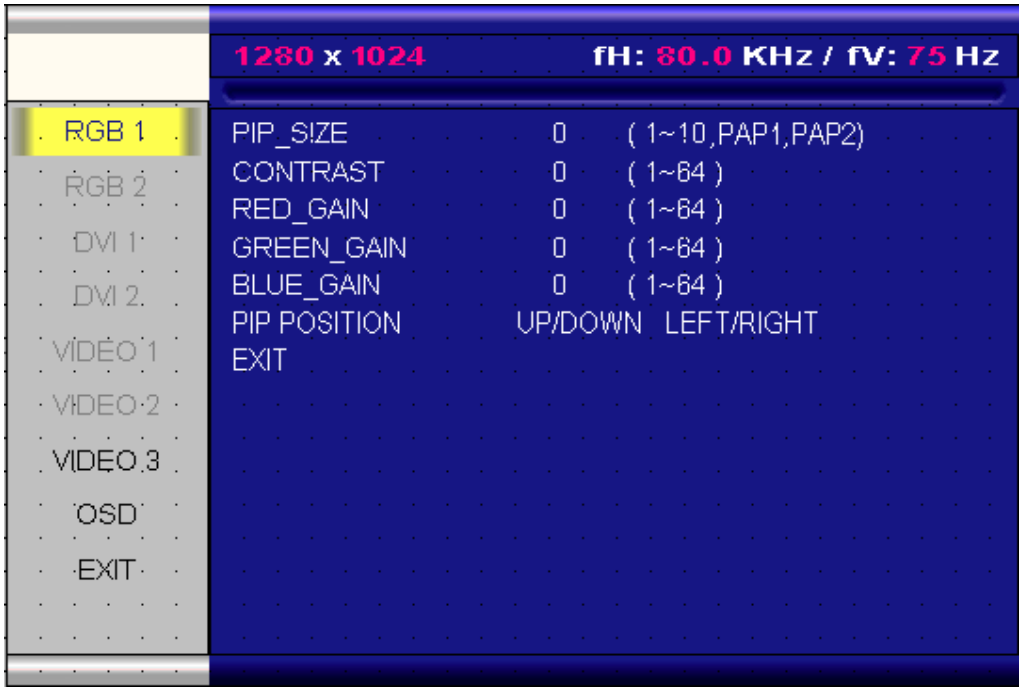
PIP (1-10) Picture Size

To change PIP size, touch OSD and then move the cursor to the signal input for the PIP screen. Touch the OSD button to move the cursor (right) to highlight “PIP_SIZE”. Touch the OSD button to move the cursor (right) to highlight screen size. Touch MINUS or PLUS buttons to change size.

PIP Picture Placement

To change PIP placement, touch OSD and then move the cursor to the signal input for the PIP screen. Touch the OSD button to move the cursor (right) then the MINUS button to move cursor (down) to highlight “PIP_POSITION”. Touch the OSD button to move the cursor (right) to highlight “UP/DOWN”. Touch MINUS and PLUS button to move the screen.

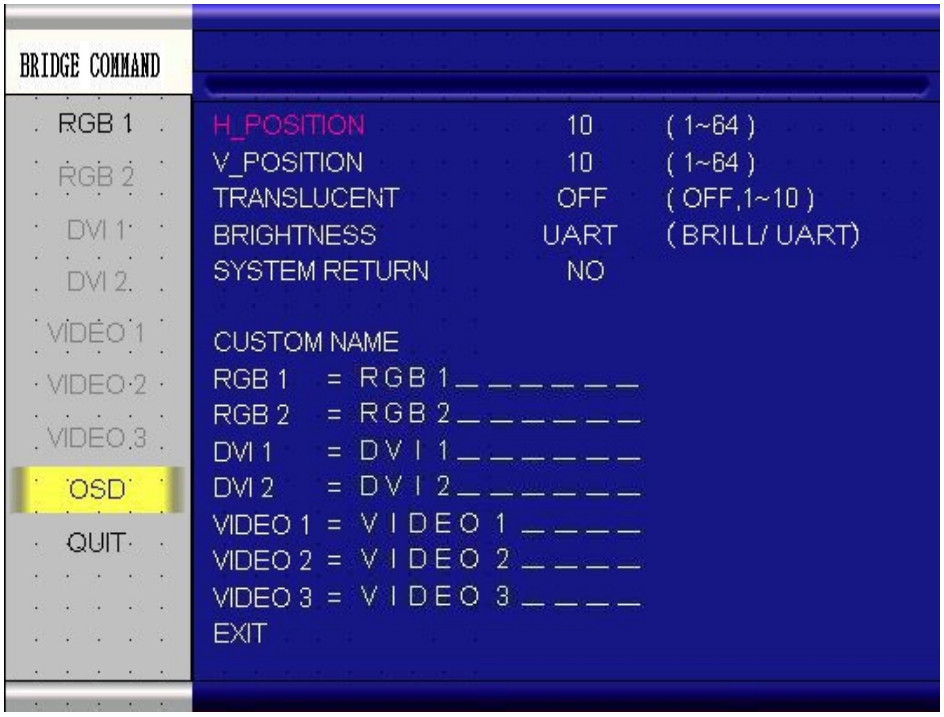
Touch the OSD button to move the cursor (right) to highlight “LEFT/RIGHT”. Touch MINUS and PLUS button to move the screen.



PIP Setting Item Description:

- PIP_SIZE——— Picture in Picture Screen Size Adjustment。
- CONTRAST——— Contrast Adjustment。
- R_LEVEL——— Red Color level Adjustment。
- G_LEVEL——— Green Color level Adjustment。
- B_LEVEL——— Blue Color level Adjustment。
- PIP_POSITION——— PIP position on display screen
- EXIT——— Quit from current setting。

OSD Setting Main Screen:



OSD Setting Item Description:

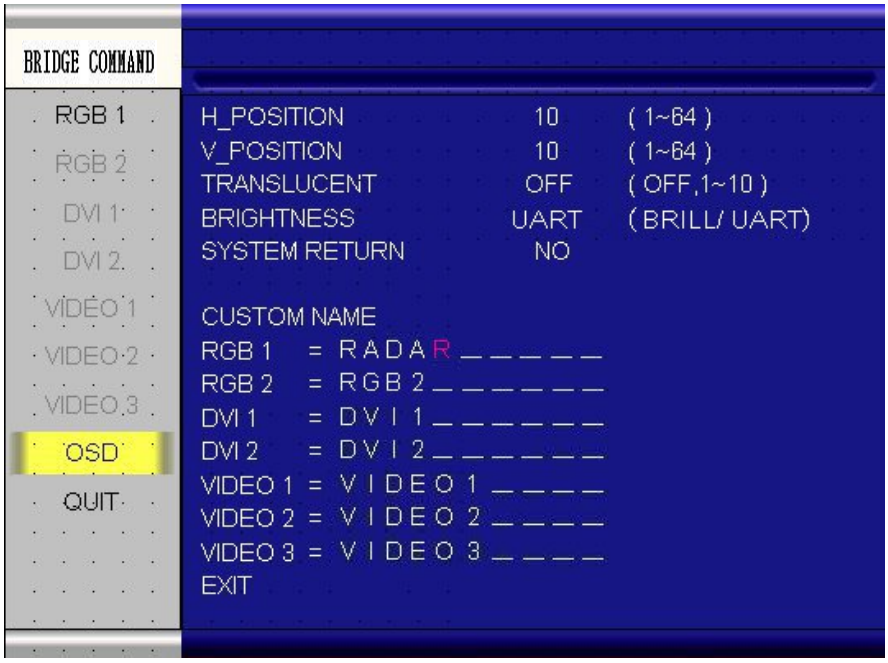
- H_POSITION—— Horizontal Screen Adjustment。
- V_POSITION—— Vertical Screen Adjustment。
- TRANSLUCENT——— Screen background color can be adjusted as transparent as you want (total 10 scales)。
- BRIGHTNESS——— Selection - Leave on UART which is controller setting 。
- SYSTEM RETURN——— Restore all parameter setting to factory default value。
- EXIT——— Quit from current setting。

Programmable OSD Signal Input Source Name setting screen:

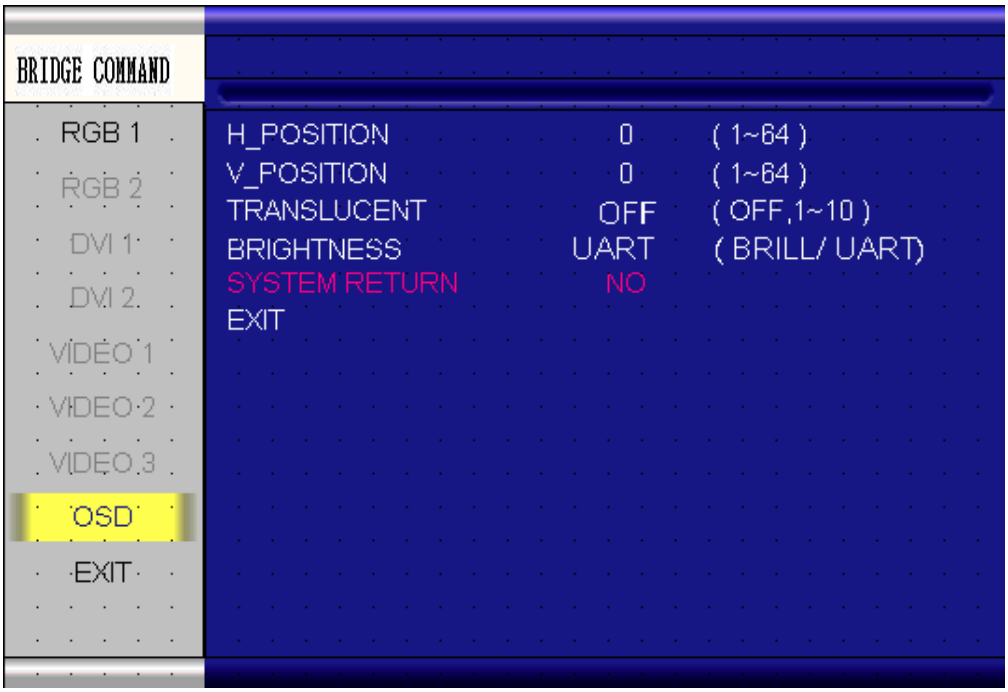
1. Touch the MINUS or PLUS buttons to move to the desired input name.

2. Press the OSD button to rename “RGB1” to any desired source input name. Example: Sonar, Radar…etc). Touch the MINUS or PLUS buttons to select from (A~Z, 0~9, “.”, “-“) characters. When correct character is selected, touch the OSD button to move to the next character step by step.

3. This is the picture of renaming RGB1 channel to “RADAR”

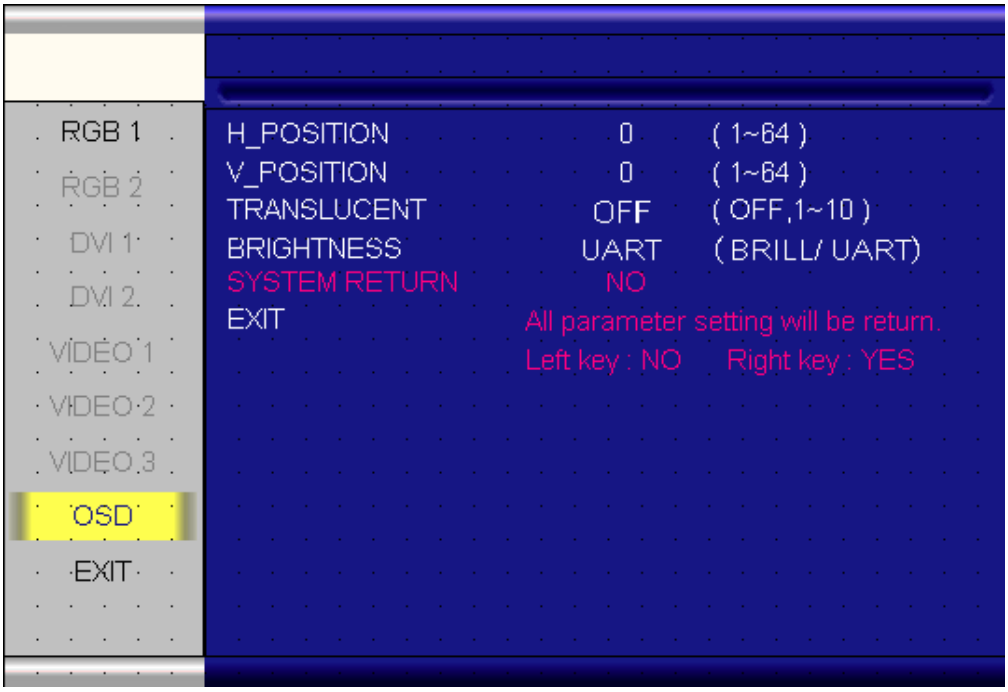


SYSTEM RETURN setting screen:



Operator may choose “SYSTEM RETURN” selection item on the OSD Screen to restore all of the parameter settings to factory default value. When you touch the PLUS button, the parameter will show “YES” and confirm it.

WARNING: Using the “System Restore” function will erase all signal input names.



5.0 TECHNICAL SPECIFICATION

BC-MT-1950

LCD Display	
Backlight	*19 inch LED Backlight*
Active Display Area	376.32x301.06 mm
Brightness	1000 cd/m2 *
Resolution	1280x1024 (SXGA)
Contrast Ratio	2000:1
Pixel Pitch (mm)	0.294(H)x0.294(V)
Viewing Angle	89° (H), 89°(V)
Display Color	16.7 Million
Response Time	Tr: 28ms
Inputs	VGAx2, DVI x2, Composite x3, RS232x1, USBx1
Picture In Picture	3 Stages (quarter, split, and wide screen)
Mechanical	
IP Rating	Facial waterproof to IP65 standards when console mounted.
Construction	Rugged Aluminum Alloy Chassis
Mounting	Panel (Flush) mount, VESA mount
Dimension	444.3(w)x386(H)x56.7(D) mm 17.5(w)15.2(H)x2.2(D) inches
Power	
Voltage	Operates on 12V and 24V systems
Power Consumption	48W / 2A (24V)
Environmental	
Operating Temperature	-10°C~50°C (14°F~122°F)
Non-Operating Temperature	-20°C~70°C (-20°F~158°F)
Certification	Designed to meet FCC Class A, Designed to meet EN60945

* The brightness is measured under the 25°C ambient temperature.
Due to panel material's deviation, different panel suppliers will set different specific variance range to optical characteristics. The factors of time used, Lamp current, ambient temperature will influence the optical measurements.

BC-MT-2450

LCD Display	
Backlight	24 inch wide LED Backlight
Active Display Area	531.4 x 298.9mm
Brightness	1000 cd/m2 *
Resolution	1920x1080 (FHD)
Contrast Ratio	5000:1
Pixel Pitch (mm)	0.276 (H) x 0.276(V)
Viewing Angle	89° (H), 89° (V)
Display Color	16.7 Million
Response Time	Tr: 25ms
Inputs	VGAx2, DVIx2, Composite x3, RS232x1, USBx1
Picture in Picture	3 stages (quater, split, and wide screen)
Mechanical	
IP Rating	Facial waterproof to IP65 standards when console mounted.
Construction	Rugged Aluminum Alloy Chassis
Mounting	Panel (Flush) mount, VESA mount
Dimension	576(w)x386(H)x53.1(D) mm 22.7(w)x15.2(H)x2(D) inches
Power	
Voltage	Operates on 12V and 24V systems
Power Consumption	48W / 2A (12V)
Environmental	
Operating Temperature	-10°C~50°C (14°F~122°F)
Non-Operating Temperature	-20°C~60°C (-4°F~158°F)
Certification	Designed to meet FCC Class A, Designed to meet EN60945

* The brightness is measured under the 25°C ambient temperature.
Due to panel material's deviation, different panel suppliers will set different specific variance range to optical characteristics. The factors of time used, Lamp current, ambient temperature will influence the optical measurements.

6.0 MAINTENAINCE AND TROUBLESHOOTING

Precautions

To maximize the life and safe use of your unit, always be sure to follow the warnings, precautions and maintenance recommendations in this user manual.

In a Watercraft or Vehicle:

- The monitor should be visible to the driver only if it is used for navigation, or system control. Care should be taken to ensure distraction does not occur.
- Review all applicable federal, state and local laws and regulations to make sure the monitor is used properly and safely.
- Avoid using the monitor for extended times while the charging system is not running, or the monitor could drain the watercraft's battery.

Maintenance

High Voltage

The display unit contains high voltages.

01. To reduce the risk of electric shock, do not remove the cover or back. There are no user-serviceable parts inside.
02. Make sure you turn off and unplug the display before installing devices.

Cleaning the display

Cleaning Glass

DO NOT use acid, ammonia based or abrasive products. Use only soft cloth moistened with isopropyl alcohol to clean glass.

Cleaning the metal case

1. Use a soft cloth moistened with mild detergent, isopropyl alcohol, or window cleaners to clean the metal display housing

2. If necessary use isopropyl alcohol or a mild detergent to remove grease marks and fingerprints.

3. Never use abrasive cleaners, waxes or solvents to clean the unit or powder coat finish could be damaged

Disconnecting the power supply

To disconnect the display from the boat's power supply either;
• Isolate the power cable from the main supply, or,
• Remove the power connector from the rear of the monitor.
The power button on the front of the monitor changes the operating mode; it does not provide complete protection in an emergency

Troubleshooting

All MT Series 50 displays are, prior to packing and shipping, subjected to comprehensive test and quality assurance programs. However, if this unit should develop a fault, please refer to the following table to identify the most likely cause and the corrective action required to restore normal operation. If you still have a problem after referring to the table below, contact the marine electronics dealer from who you purchased the product, or contact Green Marine Monitors at (724) 392-4092.

Common problems and their solutions

Problem	Solution
The display is very dim or dark	Adjust the display as described in “Image adjustment on ” Section 5 OSD Menu.
The display shows the message ‘No Input’	Check that the video source i.e. display, camera, DVD etc. is powered and that the cables are correctly connected.
You have pressed the power button, but the display does not function.	1. Make sure that the power cable is well connected and that all connections are tight and free from corrosion. 2. Check the system fuse.