



# NavPixel™ NPD0835



## USER MANUAL

8.4" IP-68/65 Monitors  
Sunlight Readable LED B/L LCD

(2<sup>nd</sup> Edition 7/8/2011)

All information is subject to change without notice.

| Approved by | Checked by | Prepared by |
|-------------|------------|-------------|
| Ming        | Hank       | Jack        |

## Record of Revision

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| Version and Date | Page | Old Description  | New Description   | Remark |
|------------------|------|--|---|--------|
| Sep.8 2008       | 30   |  | Preliminary Release   |        |
| May.11 2009      | 30   | Ambient light sensor<br>Potentiometer  | N/A   | Cancel |
| Aug. 25 2009     | 30   |  | Delete warning message  |        |
| July. 8 2011     | 5    | <ul style="list-style-type: none"><li>▪ IR Touch</li><li>▪ IP-68 Waterproof, Completely Sealed</li></ul> | <ul style="list-style-type: none"><li>▪ IR Touch Support (front IP65 design)</li><li>▪ AR glass support (IP68 design)</li></ul> |        |

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## Usage Notice

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### 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's guide.*

### 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.

### Cleaning the Monitor:

- Use a soft cloth moistened with mild detergent, isopropyl alcohol, or window cleaners to clean the display housing.
- Never use abrasive cleaners, waxes or solvents to clean the unit.

## 1.0 Introduction

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### 1.1 About NavPixel™ Touch Monitors

NavPixel™ NPD0835, the high-performance, rugged touch monitor, is specially engineered to survive the most demanding applications. You will soon become familiar with the quality difference in this bright sunlight readable (0.5 to 1,000 nits) monitor.

The NavPixel™NPD0835 sunlight readable monitor handles a wide-range of extreme environments making it the industry choice for mobile applications. Housed in a milled billet aluminum case, the slim-profile NavPixel™NPD0835 is light weight and watertight, with fully sealed IP68 connectors. Front-mounted controls and the touch screen make the industrial rugged monitor user-friendly. We have incorporated the latest optical engineering to achieve optimal viewability in all lighting conditions, including direct sunlight. The NavPixel™NPD0835's power efficient, low heat design results in increased reliability and longevity required for mission critical deployment.

### 1.2 Features

- 1000 Nits Sunlight Readable Touch Monitor
- Long Life, Low Power Consumption LED backlight.
- -20°C ~ 60°C Wide Temperature
- Ultra Wide Viewing Angle : (H) +65°~ -65°, (V) +60°~ -55°
- Advanced Optical Bonding (AOT) Powered by OptiBond™ Technology 
- High Shock & Vibration Resistance
- IR Touch Support (front IP65 design)
- AR glass support (IP68 design)
- 9-36 V DC Input
- Fanless Design

### 1.3 Application:

- Outdoor Display
- Gas & Oil equipment
- Marine
- Truck and Car Transportation
- Mining
- And more

## 2.0 Safety

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### General Safety Instructions

- Before operating the NavPixel™ NPD0835 Monitor, read this User Manual thoroughly
- Keep this User Manual for future use
- Verify the computer system capability (see Packaging Contents & Installation) to insure operation of the Monitor
- For expeditious installation, follow these User Manual instructions in sequence
- Adhere to all Caution and Warnings on system and as stated in this User Manual



WARNING!

#### Shock Hazards

This icon is intended to tell the User of a potential risk of electrical shock.



CAUTION!

#### Instructional

This icon is intended to tell the User of important operating and/or maintenance instructions.

- User Manual instructions for installation and operation should be followed precisely
- Adjust only those controls covered by the User Manual's operating instructions; improper adjustment of other controls voids the unit's warranty and may result in unit damage, and
- Adhere to local installation codes.

### General Unit Safety

- Always disconnect the unit from the power source before cleaning
- Do not operate the unit with a damaged cord
- Do not operate if the unit has been dropped or damaged. The unit should be inspected by our qualified Service Personnel
- Position the power cord so it is not in contact with hot surfaces
- Do not allow anything to rest on the power cord, and
- Do not place the power cord in the path of foot traffic.



WARNING!

#### General Safety Precautions

- Power cord must be connected to a properly wired and grounded power source
- Any equipment to which the unit is attached must also be connected to properly wired and grounded power sources
- Do not connect or disconnect the unit during an electrical storm
- Do not remove the unit covers ? there are no user serviceable parts in the unit
- Do not disassemble or modify the unit to avoid the possibility of electrical shock, damage to electrical components or scratching the display surface, and disassembly of the unit voids the warranty.

## Electrical

### Connecting Cables

- Disconnect the power to the computer when the Monitor is being installed, and
- Upon installation, verify the power connector is securely seated on the unit.

### Power Source

This unit may be operated from an AC (optional) or DC (standard) power source.

- Use the supplied power cable, and
- Always connect to a properly grounded power source.



#### **EMI / RFI**

This product has been engineered to meet or exceed international industry standards addressing product design and enclosure protection against EMI/RFI when installed with the factory provided cables

## Protection on Servicing

### Servicing - User

- User product servicing is limited to cleaning the unit
- Do not disassemble or modify the unit to avoid the possibility of electrical shock, damage to its electrical components or scratching the display surface, and
- Disassembly voids the warranty.

### Servicing – NavPixel™

Qualified Service Personnel may be required if the unit:

- Does not operate normally when installation instructions are followed
- Does not operate normally when operating instructions are followed
- Has been dropped or damaged, or
- Exhibits a distinct change in performance, indicating a need for service.

## Shipping

If the unit should need to be shipped to the Service Center or local dealer, the original packing material should be used to insure safety of the unit in shipping. Repack the unit as it would have originally been received from us.

## 3.0 Product Care and Maintenance

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### Product Care

This NavPixel™ Monitor has been designed to provide optimum performance and service without any required scheduled maintenance other than occasional cleaning.



Disconnect the Monitor from the power source before cleaning the Monitor, Touch Screen or unit's enclosure.



Do not use abrasive cleaners or solvent-based (flammable) cleaners on the Flat Panel or Touch Screen Display, its enclosure or any other electrical device (cables, power cord, etc)

- Do not use paper products as they may scratch the display screen, and
- Do not directly apply cleaning solutions to the display screen.

### Display Screen Cleaning

- A vinegar-based cleaner is preferred to prevent streaking and degradation of the coatings, or
- A non-abrasive glass cleaner such as a professional foam glass cleaner
- Apply the cleaning solution to a soft clean cloth, dampening slightly
- Keep a fresh side of the cleaning cloth towards the screen surface to avoid scratching it with accumulated grit, and
- To minimize the risk of abrasion to the screen, air drying is recommended.

### Touch Screen

#### Touch Screen Cleaning

- Use a special screen cleaning tissue or a solution specifically antistatic coatings. Follow the manufacturer's instructions,
- Lightly dampen a soft clean cloth with water or a general detergent solution
- Keep a fresh side of the cleaning cloth towards the screen scratching it with accumulated grit, and
- To minimize the risk of abrasion to the screen, air drying

#### Monitor Enclosure

- Clean the unit enclosure with a soft clean cloth lightly dampened purpose mild detergent solution
- To rinse, wipe down with clean water, and
- Dry with a soft clean cloth.

#### Long-term Storage

- For long-term storage, it is suggested the unit be stored in a normal indoor environment and the display glass be protected from accidental damage
- For pedestal mount units, disconnect the cable(s) and loosen the arm adjustment to a point where the ball can be removed from the arm, or
- For Flush or Panel Mount units, cover the product with a protective covering that will not scratch or transfer any dyes to the display screen.

## Maintenance



WARNING!

### Power Cord

To avoid shock and fire hazards, replaced the unit's power cord if:

- Insulation becomes damaged, or
- A loose connection is suspected.

### Other Maintenance

Only Qualified Service Personnel should perform all other maintenance except for cleaning and the power cord replacement described above.

## 4.0 Packaging Contents

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The NavPixel™NPD0835 is shipped in a box with PE foam packaging. It is recommended the installer save the box and all packaging materials in case the unit would need to be returned to the Service Center or local dealer. (Figure 1)

- One NavPixel™ NPD0835 unit
- Fully sealed IP-68 VGA connector cable
- Fully sealed IP-68 USB connector cable
- User CD with touch screen driver and user manual
- AC Power Cable (Option)
- AC Power Adapter (Option)
- 



(Figure 1)

## 5.0 Cable Connections

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### 5.1 Cables

- The NavPixel™ NPD0835 is packaged with three cables:
  - USB, VGA and DC Power, #1, #2 and #3 in Figure 2
- The AC Power Adapter is optional. (Figure 3)



(Figure 2)

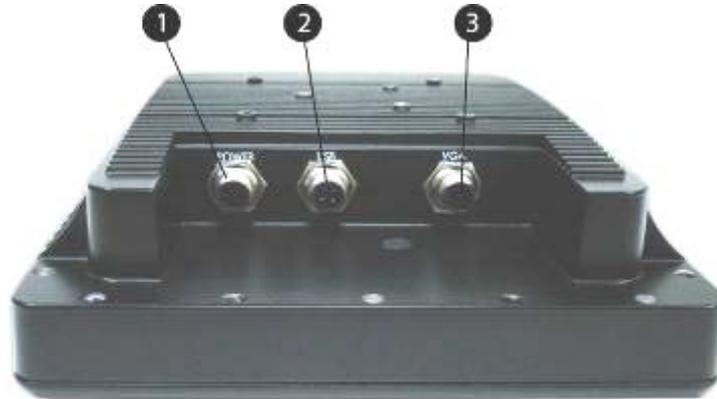


(Figure 3)

## 5.2 Connectors

Connectors are located on the bottom of the unit housing, from left to right: #1 Power, #2 USB Pass-through, and #3 VGA. (Figure 4)

Connectors are physically unique to insure the installer makes the proper connections.



(Figure 4)

### VGA Connector

- The IP68 sealed VGA Cable, 1.8 m (6 ft), is in the shipping box
- Push the cable connector into the Monitor's back panel 8-pin connector, **#3 in Figure 4**, and
- Plug the standard DB-15 (video) female connector to the computer's video source; secure.

### DC Power Connector

- The IP68 sealed DC Power Cable, 1.8m (6 ft), is in the shipping box
- Plug in the quick-connect 3-pin connector, **#1 in Figure 4**
- To disconnect, pull the outside ring on the connector away from the unit until the cable is free

### USB Pass-through Connector

- The USB Pass-through Connector is an IP68 sealed 4-pin connector
- The USB Cable is with the product accessories; it is 1.8 m (6 ft)
- Plug in the cable connector into the Monitor's back panel connector together. **#2 in Figure 4**
- To disconnect, pull the outside ring on the connector away from the unit until free.

## 6.0 Installation

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The NavPixel™ NPD0835 is designed to be mounted in two configurations: with a universal ball-and-socket mounting kit, or in a Flat Panel configuration.

### 6.1 Pedestal Mount

The NavPixel™ is designed compatible with a RAM® universal ball-and-socket system mounting kit (Figure 5). By installing the Monitor with this kit, the User can adjust the viewing angle to improve viewability in changing environments. This ball-and-socket system has proven to be successful in supporting an extreme amount of weight in high vibration and difficult-mount applications. Visit [www.ram-mount.com](http://www.ram-mount.com) installation for product mounting diagrams.



(Figure 5)



Figure 6)

There are three mounting holes in the back of the Monitor for the attachment of a ball mounting plate. Take care not to strip the screw holes or over tighten. (Figure 6)

It is recommended the remaining ball be mounted on a flat surface. Because of the various surface substrates where the Monitor is to be mounted, the installer provides the screws to mount the other ball.

- Note the location of the three mounting holes on a ball mounting plate (Figure 6)
- With three (3) M4 x 10 counter-sunk stainless screws attach mounting plate to the back of the NavPixel™ NPD0835 (Figure 5)
- Mount the second ball mounting plate on the surface where the Monitor is to be installed
- Insert each ball into the RAM arm
- Lightly tighten the arm around the balls using the T-knob on the arm (Figure 5, 6)
- Adjust the Monitor to the viewing preference, and
- Tighten the T-knob to hold the Monitor in position.

## 6.2 Panel Mount

The Panel Mount installation should be specified at the time of order; the ball-and-socket mount system will not be included in the shipping box.

For installation, there are four tapped mounting holes on the four corners of the unit's rear panel. The mounting hardware packet is included with the product accessories in the shipping box. This packet includes four (4) M4 stainless steel threaded studs, 8.6 cm (3" long), four (4) Nylock self-locking nuts and four (4) flat washers.

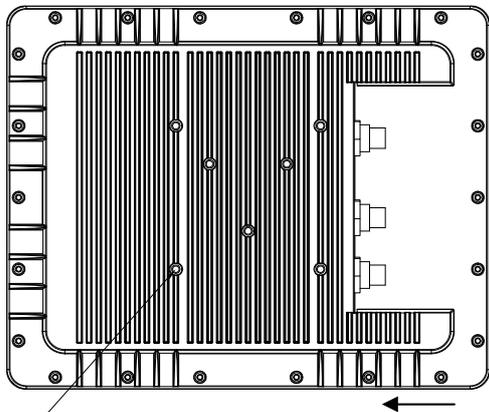
## 6.3 Installing the monitor consists of three steps:

1. Attaching the monitor using one of the mounting interfaces built into the monitor's enclosure. (See 6.3.1 Step 1)
2. Connecting the monitor to the computer and power source. (See 6.3.2 Step 2)
3. Installing the touchscreen driver software. (See 6.3.3 Step 3)

### 6.3.1 Step 1 - Mounting the Monitor

The back of the monitor includes mounting points that you can use to mount the monitor as your installation requires.

Mounting holes on the NavPixel™ NPD0835 allow the monitor to be mounted by rear mounted using VESA75 or RAM mount



← VESA(75mm\*75mm) & RAM(40mm\*35mm)  
MOUNT SCREW M4x6mm Length Limits

#### Mounting from rear:

- VESA75 (4 hole pattern). Accepts M4x0.7 up to 6mm depth.
- RAM Mount (3 hole pattern) Accepts M4x0.7 up to 6mm depth.

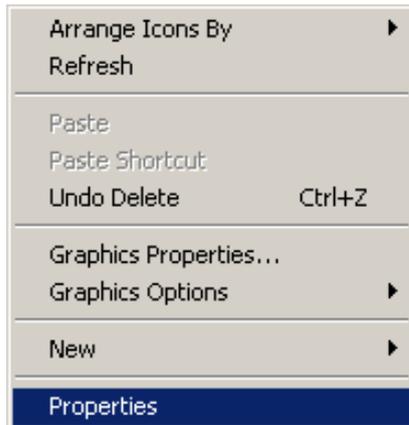
## 6.3.2 Step 2 - Connecting the Monitor

### Computer Display Properties - SVGA or XGA

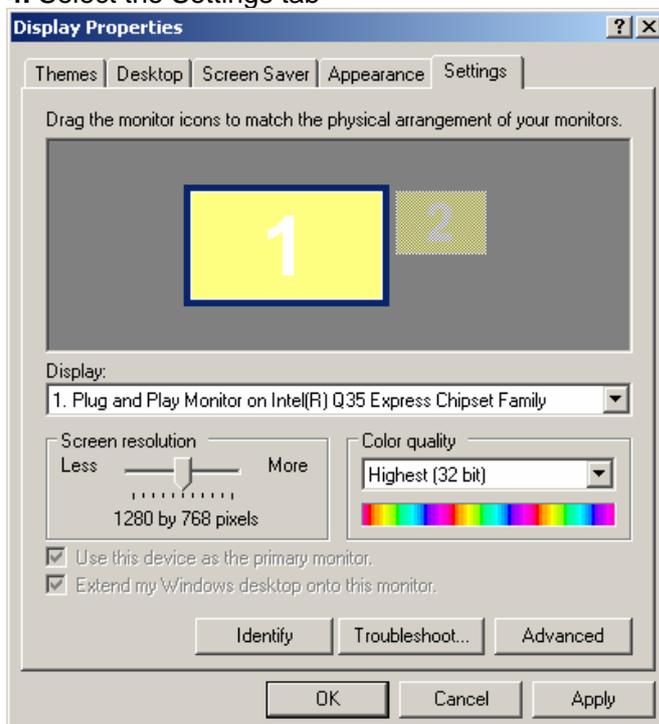
Prior to connecting the NavPixel™ NPD0835 to the computer, connect the computer to a CRT monitor to verify the computer video display properties are set to 800 x 600 (SVGA) pixels or for the 15" Monitor, 1024 x 768 (XGA) pixels.

### Setting the Display Settings

1. Right mouse click on an open area of the desktop screen to bring up the Desktop Menu



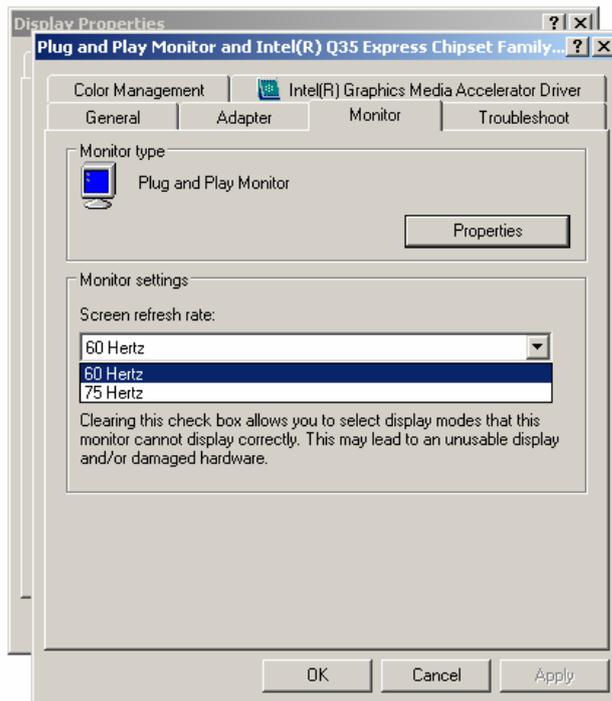
2. Left mouse click on Properties to open the Display Properties menu
3. Connect to a CRT monitor to establish the computer display properties
4. Select the Settings tab



5. Under Screen Resolution, verify or slide the bar until the Screen Resolution is at 800 x 600 pixels (SVGA) or 1024 x 768 pixels (XGA)

6. Select the Advanced button to go to the next menu to verify the Hz refresh rate

7. Select the Monitor tab



8. Under Monitor Settings, verify the Screen Refresh Rate is set at 60Hz

- If so, select the Cancel button and go to step 9
- If not, select 60Hz, and Select the Apply button

9. At the Monitor Settings dialog box, select “Yes” to accept the new desktop view Settings

10. In the Display Properties dialog box, verify the Screen Resolution is at 800 x 600 pixels (SVGA) or optional 1024 x 768 (XGA)

11. Select the Apply button

12. At the desktop screen, shutdown the Computer

13. Turn off the monitor, and Disconnect the monitor from the computer.

## Power on the Monitor

- Connect the NavPixel™ NPD0835 to the computer
- Power up the NavPixel™ NPD0835
- Power up the computer
- The Windows Operating System should automatically apply the best generic driver for this connection.

Once the monitor is mounted in place and connect it to the computer (or other video source) and the regulated DC power supply successfully. We do not supply a power supply. The monitor is intended to be powered from the watercraft's DC power system. Power to the monitor (and CPU) is hard switched from the line power that should be protected by a magnetic hydraulic circuit breaker. DO NOT connect the USB cable at this time!

**Note1:** This procedure refers to connections to and from the computer. However, depending on your particular hardware configuration, these connections may be to a dock or other device rather than directly to the computer.

**Note2:** Use an appropriately sized fuse in line to the power source. Also, to prevent the watercraft's battery from draining in standby mode, you should install a device that shuts off power to the monitor while the monitor is inactive. (An example is Lind Electronics' Vehicle Battery Voltage Shutdown Table)

|  |
|--|
| 12VDC system: 4A slow blow fuse<br>24VDC system: 2A slow blow fuse |
|--|

### 6.3.3 Step 3 - IRtouch Software Installation



**IMPORTANT** – Do not plug in the touchscreen yet! Install the driver first.

#### 1. Run IRtouch driver setup



#### 2. Accept user agreement



#### 3. Install in default location



#### 4. Click Install



#### 5. Click continue, you can trust IRtouch



#### 6. Click on Finish

Attach the NavPixel™ NPD0835 monitor to the system or install the computer to a docking station. Attach the USB cable. After the USB cable from the monitor is attached to the computer it will recognize the touchscreen for the first time.



## 7. Continue



## 8. Click Finish



9. Click the IRtouch icon located on your desktop to calibrate the touch monitor.



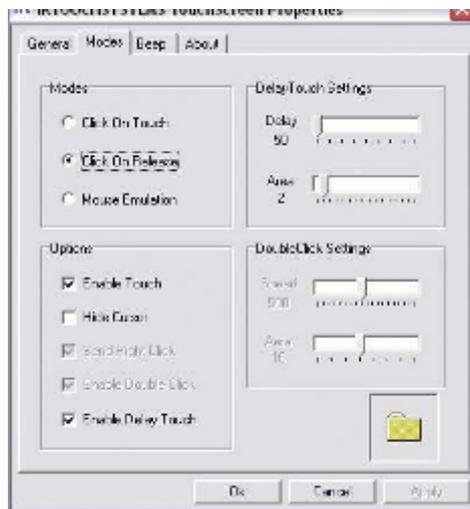
IrTouch Screen Control Panel.lnk

## 10. Click Calibrate



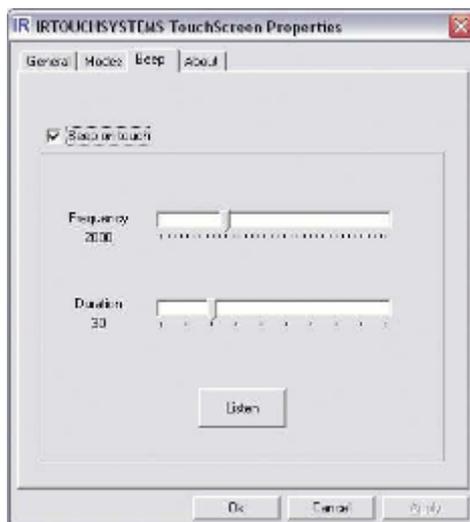
## 11. Set Modes

When used in rugged environments with software written for touchscreens, you may find it easier to use the 'click on release' radio button.



## 12. Beep

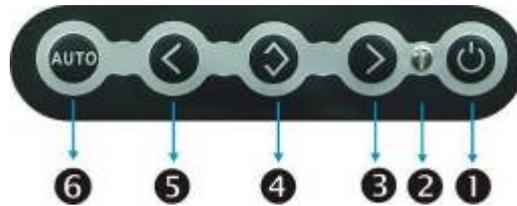
You can set the computer to beep on touch activation if needed.



## 7.0 Display Controls

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### 6.1 Membrane Control Button



❶ **POWER SWITCH:** Pushing the power switch will turn the monitor on. Pushing it again to turn the monitor off.

❷ **Power LED:** Power ON-Green / Power off-No.

❸ **Up Key >:** Increase item number or value of the selected item.

❹ **Menu Key:** Enter to the OSD adjustment menu. It also used for go back to previous menu for sub-menu, and the change data don't save to memory.

❺ **Down Key <:** Decrease item number or item value when OSD is on. When OSD is off, it is hot key for input switch between VGA, AV, and S-video.

❻ **Auto Adjust:** Pressing this button, this monitor will make auto adjustment.

### Screen Adjustment Operation Procedure

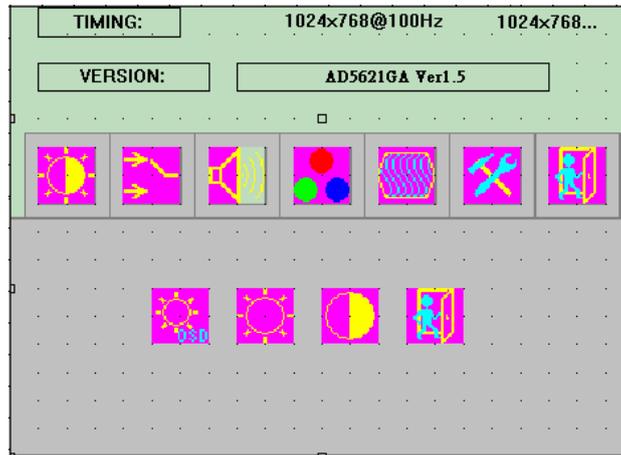
- 1. Entering the screen adjustment**  
The setting switches are normally at stand-by. Push the **Menu Key** once to display the main menu of the screen adjustment. The adjustable items will be displayed in the main menu.
- 2. Entering the settings**  
Use the **Down Key <** and **Up Key >** buttons to select the desired setting icon and push the SELECT button to enter sub-menu.
- 3. Change the settings**  
After the sub-menu appears, use the **Down Key <** and **Up Key >** buttons to change the setting values.
- 4. Save**  
After finishing the adjustment, push the SELECT button to memorize the setting.
- 5. Return & Exit the main menu**  
Exit the screen adjustment; push the "MENU" button. When no operation is done around 30 sec (default OSD timeout), it goes back to the stand-by mode and no more switching is accepted except MENU to restart the setting.

## 8.0 OSD Menu & Screen Adjustment

### Main Menu

Here are some instructions for you to use the OSD (On Screen Display). By pressing the “menu”, you will see the below picture.

Timing shows resolution, H-frequency, and V-frequency of the panel. Version shows the firmware control version. This 2 information is not changeable by user.



There are 7 sub pages inside the OSD manual, Brightness, Signal select, Sound, Color, Image, Tools, and Exit.

When you press “menu” button, you enter the “Brightness” sub page. You will see 4 selections:



**OSD Brightness:**



press “right” key



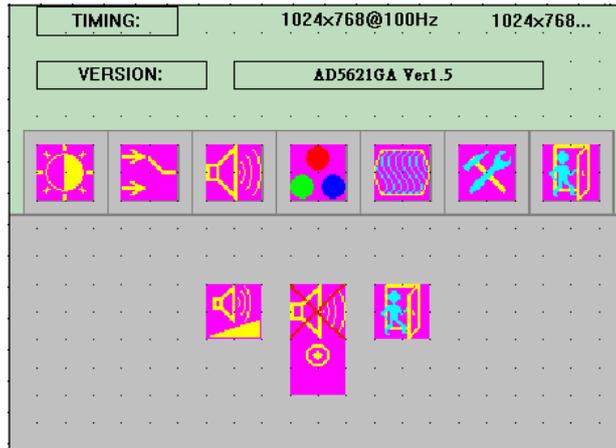
press “menu” once, you can go into adjust the brightness. Press “left” you can dim down the brightness to “0”, while press “right” you can increase the brightness to “100”.



**Contrast:** Press “menu” and “right” you can adjust the contrast from “0” to “100” by pressing the “left” and “right”.



**Exit:** You can exit this sub menu back to normal screen.



There are 3 options for “Sound” sub page.



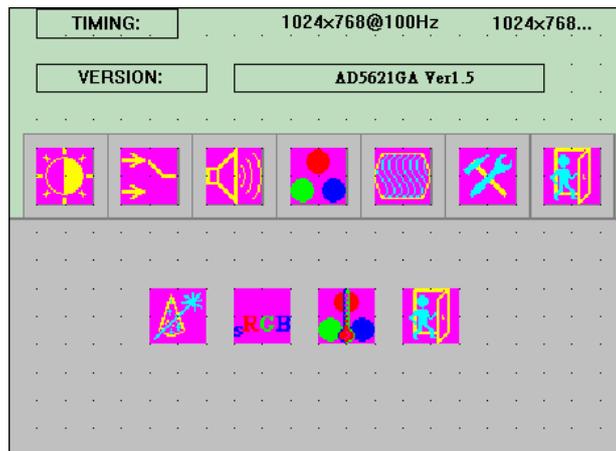
**Audio Volume:** Audio volume adjustment.



**Mute:** You can mute the speaker by pressing this option.



**Exit:** back to the normal screen.



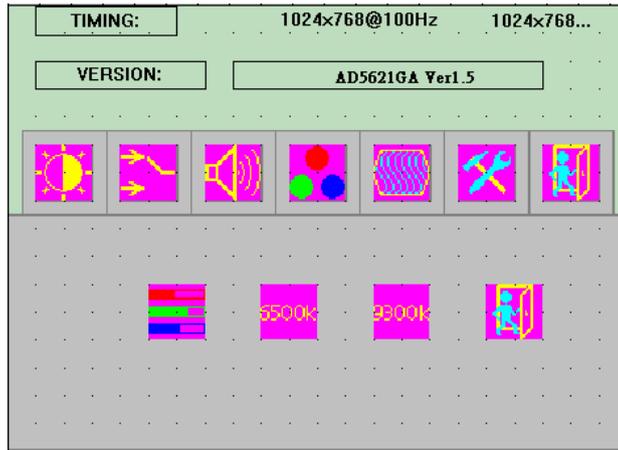
Pressing the “menu” and “right”, you can go to “Color” sub page.



**Auto Color:** by press this “Auto Color” option, you can get the optimal color performance.



**sRGB:** Windows standard color setting.



**Color Temperature:** You can have 3 options in this selection.



**Color Temperature User**



**Color Temperature\_6500K**



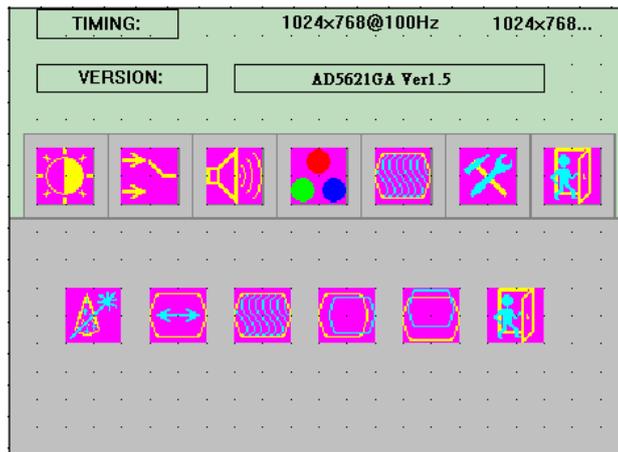
**Color Temperature\_9300K**

“user mode”, “6500K” (Warm color scheme), “9300K (Cold color scheme). Default is “user”, and inside all “R”, “G”, and “B” are set “100”



**Exit:** back to the normal screen.

Go into the “Image” page, you can see below picture.



**Auto just:** Pressing this option, the AD5621 will adjust the optimal frequency of horizontal and vertical. You will see “Auto tune....” On the screen for around 3 seconds.



**Clock:** If you are not satisfied about the Autotune result, you can adjust manually by “Clock”. The screen will be “wider” if you adjust this function.



**Phase:** If you see “double image” on characters, you can adjust “Phase” to make it perfect image.



**Hpos:** You can shift the screen horizontally by this function.

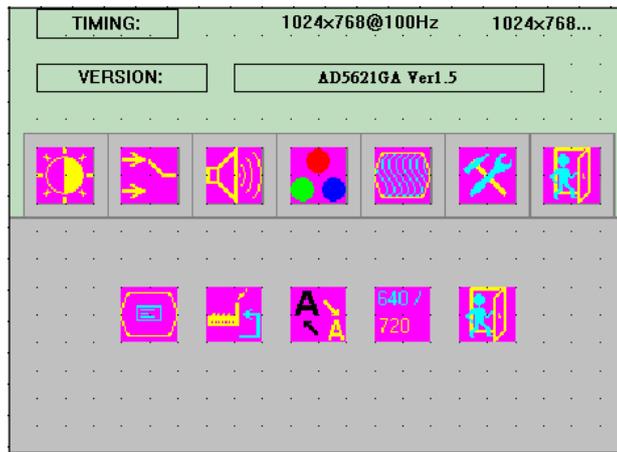


**Vpos:** You can shift the screen vertically by this function.

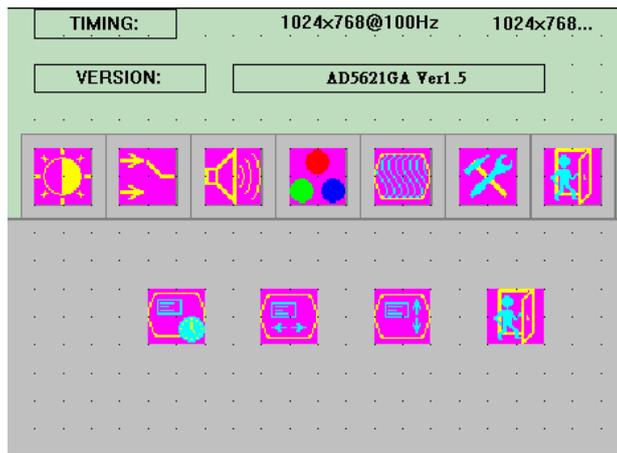


**Exit:** Back to normal screen.

On the “Tools” sub menu, you will see 5 icons.



**Osd Control:** Select this option, you will see 4 more options:



**Osd\_time:** You can selection the time of OSD from 2 sec. to 16 sec.



**Osd\_HPos:** You can move the OSD horizontally over the screen.



**Osd\_VPos:** You can move the OSD Vertically over the screen.



**Exit:** back to main menu.



**Factory\_Reset:** By pressing this, the screen will be back to the factory setting on very beginning and lost all the personal settings.



**Sharpness:** You can make the characters looks sharper.



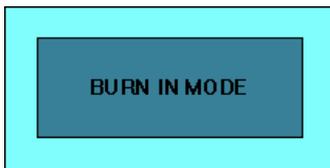
**Dos\_mode/Gxf\_mode:** Some old programs running over 640x400 and 720x400 (DOS Mode and graphics mode), you need to select this option manually.



**Exit**

Factory Burn-in mode: While your VGA cable is connected on the monitor, press “Menu” and Left “<” simultaneously, you will see “BURN IN MODE” on the center of the screen for 3 sec. Then unplug the VGA cable, the screen will show Red, Green, Blue, White, and Black in sequence automatically.

You can plug in the VGA signal cable, and re-plug the power connector to exit the burn-in mode.



OSD Lock Function: It is possible to lock all the OSD buttons to prevent unauthorized changes to occur by pressing “Menu” and “right >” buttons simultaneously. You will see the “lock” icon below on the center of the screen for 3 seconds. If any button is pushed after the lock function is initiated, the below icon will appear on the screen.'

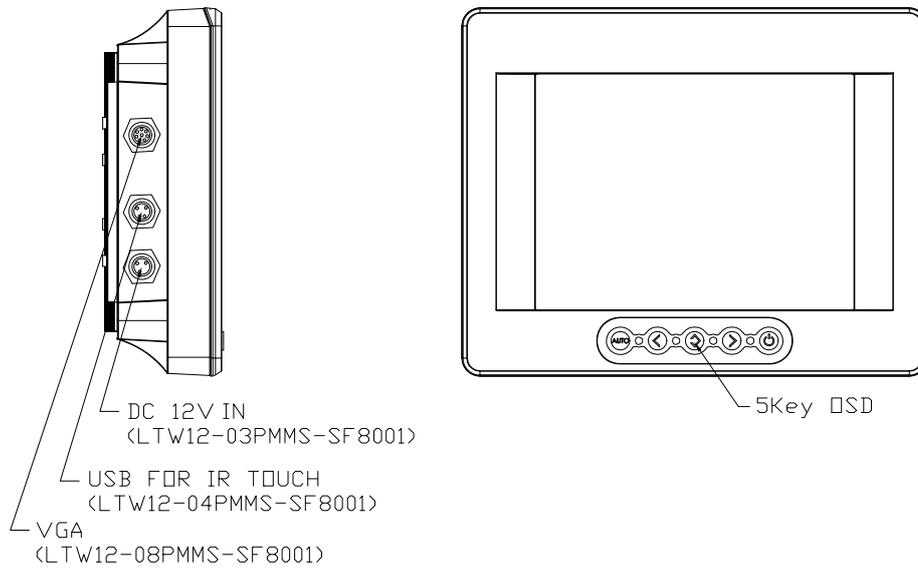


To release the OSD lock, press “Menu” and “Right >”. The below icon will appear on the center of the screen for 3 seconds. Now all OSD keys are active again.



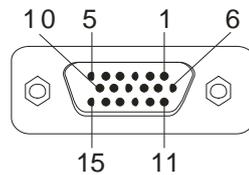
## 9.0 Video Input Pin Assignment

The following picture provides the connection outline



### Video Input Pin Assignment

This section describes the pin assignment of the LCD's video connector. It is called 15pin Mini D-sub connector.



| Pin No. | Signal Connector              |
|---------|-------------------------------|
| 1       | Red Video Signal              |
| 2       | Green Video Signal            |
| 3       | Blue Video Signal             |
| 4       | N.C.                          |
| 5       | Ground                        |
| 6       | Ground for red video signal   |
| 7       | Ground for green video signal |
| 8       | Ground for blue video signal  |
| 9       | N.C.                          |
| 10      | Ground                        |
| 11      | N.C.                          |
| 12      | DDC data                      |
| 13      | Horizontal sync signal        |
| 14      | Vertical sync signal          |
| 15      | DDC clock                     |

## 10.0 Display Timing

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### 10.1 Applicable video timing

The following table lists the better display quality modes that the LCD monitor provides. If the other video modes are input, the monitor will stop working or display unsatisfactory picture quality.

| TIMMING |                                    |
|---------|------------------------------------|
| MODE    | RESOLUTION                         |
| VGA     | 640x480@60Hz                       |
|         | 640x480@72Hz                       |
|         | 640x480@75Hz                       |
| SVGA    | 800x600@56Hz                       |
|         | 800x600@60Hz                       |
|         | 800x600@72Hz                       |
|         | 800x600@75Hz                       |
| XGA     | 1024x768@60Hz                      |
|         | 1024x768@70Hz                      |
|         | 1024x768@75Hz                      |
| SXGA    | 1280x1024@60Hz                     |
|         | 1280x1024@70Hz                     |
|         | 1280x1024@75Hz                     |
| WXGA    | 1366x768@60Hz                      |
| WSXGA+  | 1680x1050@60Hz                     |
| SXGA+   | 1400x1050@60Hz(Pixel f 101.000MHz) |
|         | 1400x1050@60Hz(Pixel f 121.750MHz) |
|         | 1400x1050@75Hz                     |
| UXGA    | 1600x1200@60Hz                     |
|         | 1600x1200@65Hz                     |
|         | 1600x1200@75Hz                     |

# 11.0 Display Outline Dimensions

Unit: mm

