

8.4" LCD  
DISPLAY

SlimLine  
Model Number

8403

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AVIATION

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8403 TECHNICAL  
MANUAL

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## **Introduction and Display Overview**

Welcome to the *8403 Technical Manual* for the 8.4" SlimLine IV display. This manual provides information for the following:

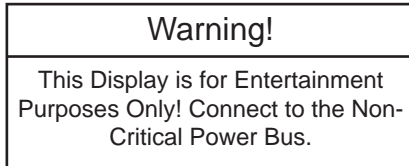
- Pinouts and Installation
- Operation
- Technician Mode
- Troubleshooting
- Specifications

The 8403 base model includes the following features:

- Two Year Warranty
- 8.4" Diagonal Screen
- 450 NIT Brightness
- 8.6" (W) x 7.22" (H) x 1.38" (D)
- Brightness, Contrast, Color, and Tint Adjustments
- NTSC/PAL/SECAM/RS170 (B&W) Video Standards
- 640 x 480 Screen Resolution (VGA )
- On Screen Display (OSD) Functions
- Status LED
- 28 Volt DC Power Operation
- Front Panel Menu Operation

## Pinouts and Installation Guidelines

### Pinouts

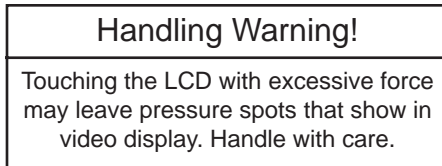


To obtain pinout information, download our engineering *Outline & Installation* drawing from [www.rosenaviation.com](http://www.rosenaviation.com).

Once you access the home page, click on **Support & Documentation**, and then click on **Technical Drawings & Pinouts**. Search options include searching by model number or browsing by category.

Pinout descriptions are provided to assist in the wiring process. Pay close attention to the pinout information while completing wiring connections.

### Installation Guidelines



To obtain product dimensions and/or rotation information, download our engineering *Outline & Installation* drawing from [www.rosenaviation.com](http://www.rosenaviation.com).

Once you access the home page, click on **Support & Documentation**, and then click on **Technical Drawings & Pinouts**. Search options include searching by model number or browsing by category.

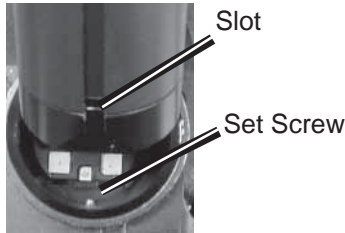
Drawings are provided to assist in the installation process. Pay close attention to dimensions and rotations when considering installation requirements.

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## Operation

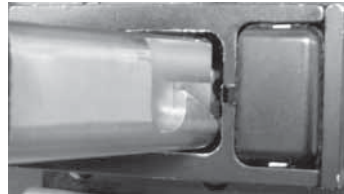
Ensure that when plugging the arm into the base receptacle, the set screw in the base follows the arm's keyed slot and the connection is not forced.

Round Style Plug-In:



Rectangular Style Plug-In:

Ensure that when plugging the arm into the base receptacle, the arm's slot faces toward the release button (as shown) and the connection is not forced.



Use the buttons on your 8.4" display to control screen setup and choose between video source options.

Buttons and screen options are defined in this section on page 6.

## Installing/Removing SlimLine Arm Assemblies

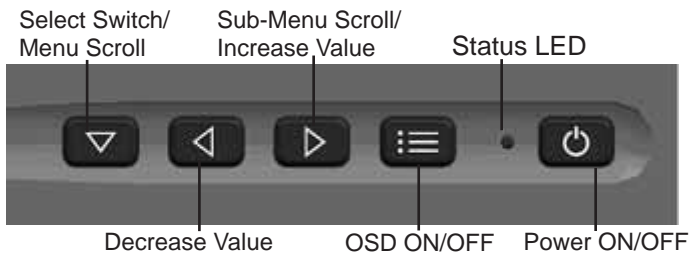
To install or remove a SlimLine arm assembly, press in the arm button all the way.


To release a SlimLine locking arm feature so that it rotates, press in the arm button only half way.





## 8.4" Display Button Functions


Display buttons are shown and defined below.





 **Select Switch/Menu Scroll:** Press this button to switch between video source options, or to scroll down when viewing On Screen Display (OSD) menu options. Use the Advanced menu to adjust Select switch timing for changing sources.

 **Decrease Value:** Press this button during normal operation to decrease backlight intensity. When using the OSD, press this button to decrease an OSD menu's range value or press this button to return to the previous menu when using a submenu.

 **Sub-Menu Scroll/Increase Value:** Press this button during normal operation to increase backlight intensity. When using the OSD, press this button to scroll to an OSD sub-menu when available, or use it to increase an OSD menu's range value.

 **OSD ON/OFF:** Press this button to display the OSD Main menu. Pressing the button again will remove the OSD menu from the screen.

 **Status LED:** The Status LED shows red when the display is in standby mode, green when the display is active, and amber when the Select Switch is pressed.

 **Power ON/OFF:** Press this button to turn the display ON or OFF.

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## On Screen Display (OSD) Main Menu

The On Screen Display (OSD) provides a set of menus that enable users to adjust or view screen setup features. Some Main menu selections lead to sub-menus with additional setup options. Press the OSD ON/OFF button to view the Main menu. Main menu options are described below, and then available sub-menus are listed in the tables that follow.

### Main Menu Options      Description

|                                     |   |
|-------------------------------------|---|
| Brightness (default 11 bars)        | Use display buttons to increase or decrease these options' range values |
| Contrast (default 9 bars)           |   |
| Color (default 12 bars)             |   |
| Tint (default 7 bars)               |   |
| Sharpness (default 6 bars)          |   |
| Backlight Dimming (default 17 bars) |   |
| Advanced Menu                       | Use display buttons to access the Advanced menu's sub-menu              |

### Advanced Menu Options

### Description

|                                |   |
|--------------------------------|---|
| OSD Time-Out (default 15 bars) | Use display buttons to adjust the range of time that elapses before a menu will time-out  |
| Power Up (default auto-on)     | Use display buttons to select Auto-on, Auto-off, or Restore. Choose Auto-on to have the display turn ON when power is applied. Choose Auto-off to have the display go into Standby mode when power is supplied. Choose Restore to have the display return to its last power-ON status if power is interrupted |
| RGB Auto Detect                | This Option is not available with this Display  |
| Restore Defaults               | Select this option to restore factory default settings  |
| Video Formats                  | Scroll to this selection's sub-menu to view video format options (shown on the next page)   |

continued...

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| <b>Advanced Menu<br/>Options Continued</b> | <b>Description</b>   |
|--|--|
| Select Switch                              | Scroll to this selection's sub-menu to adjust the time delay when pressing the Select switch to change video sources |
| Monitor Info                               | Scroll to this selection's sub-menu to view monitor information (see next page)                                      |
| Back                                       | Select this option to return to the Advanced menu  |

| <b>Video Formats<br/>Sub-Menu Options</b>          | <b>Description</b>   |
|--|--|
| NTSC/PAL/SECAM<br>(default)<br>or<br>NTSC/PAL Only | Use display buttons to select between the two choices of auto detection. The Display will automatically detect and switch to the input video standard* |
| Back   | Select this option to return to the Advanced menu  |

| <b>Select Switch<br/>Sub-Menu Options</b> | <b>Description</b>   |
|---|--|
| Relay Active Time                         | Use Relay Active Time to set the (default 9 bars) time delay experienced when pressing the Select switch to change video sources |
| Repeat Delay<br>(default 5 bars)          | Adjust Repeat Delay to set the time delay experienced when pressing and holding the Select switch to change video sources        |
| Back                                      | Select this option to return to the Advanced menu  |

\*If the image is black and white when switching from SECAM to PAL video standard, press the Select switch

continued...

| <b>Monitor Info</b>     |   |
|-------------------------|---|
| <b>Sub-Menu Options</b> | <b>Description</b>  |
| Hours                   | This option displays the hour and minutes of the display's life   |
| SW Rev                  | This option displays the current software revision  |
| Power Cycles            | This option displays the number of times power has been cycled  |
| Source                  | This option displays the current selected video standard (NTSC/PAL/SECAM)                                       |
| Temperature Menu        | Scroll to this selection's sub-menu to view monitor temperature information (shown on next page)                |
| Signal Level            | This option will show Low, Good, or High. If the signal shows Low or High, adjust the video level at the source |
| Back                    | Select this option to return to the Advanced menu   |

continued...

| Temperature Sub-Menu Options | Description  |
|------------------------------|--|
| Current Temperature          | This option displays the most recent temperature reading within the display. Temperature readings update approximately every 30 seconds  |
| Avg Temp                     | This option displays the average of approximately the last eight current temperatures  |
| Max Temp                     | This option displays the highest temperature ever recorded within the display  |
| Min Temp                     | This option displays the lowest temperature ever recorded within the display   |
| Over Temp                    | This option displays the number of over-temperature shut downs that have occurred.<br>*A safety feature shuts down the monitor if it reaches or exceeds 140 degrees Fahrenheit     |
| Under Temp                   | This option displays the number of under-temperature shut downs that have occurred.<br>*A safety feature shuts down the monitor if it reaches or drops below 32 degrees Fahrenheit |
| Back                         | Select this option to return to the Monitor Info sub-menu  |

\*If an Over Temp or Under Temp shut down occurs, Temp Shutdown is shown on the OSD for approximately 30 seconds, and then the display shuts off until the temperature reaches acceptable temperature limits. The display will then automatically turn back on.

## Technician Mode

Technician mode provides the ability to customize and restrict access to the Main menu for specified options. This section describes how to enter, enable and disable options, and exit Technician mode.

### Entering Technician Mode

Complete the following list to enter Technician mode:

- 1 Apply 28V to the display and wait until the status LED turns green (if the display is in auto-off, press the power ON/OFF button).
- 2 Once the status LED turns green, press the power button to turn it off.
- 3 Press and hold the power button down for 10 seconds before releasing it (more than 10 seconds is OK).
- 4 Press the OSD ON/OFF button and confirm that the word **On** or **Off** is shown to the left of each menu option in the Main menu. This verifies that the display is in Technician mode.

Main menu options when starting Technician mode:

**On Brightness**  
**On Contrast**  
**On Color**  
**On Tint**  
**On Sharpness**  
**On Backlight**  
**Off Advanced >>**

### Enabling/Disabling Individual Menu Items

Use the display buttons per normal operation to navigate through menu options. Adjust the menu options as desired and then enable or disable the option for users as desired.

Disable a menu option as follows:

- 1 Highlight the desired menu option.
- 2 Press and hold the Select switch in for 5 seconds.
- 3 Release the Select switch; the next option becomes highlighted and the word OFF appears next to the disabled menu option.

## **Enabling/Disabling Individual Menu Items Continued...**

Enable a menu option as follows:

- 1 Highlight the desired menu option.
- 2 Press and hold the Select switch in for 5 seconds.
- 3 Release the Select switch; the next option becomes highlighted and the word ON appears next to the enabled menu option.

When the monitor is returned to normal mode, any items which were disabled in technician mode will no longer be available in the main menu. It is possible to disable all Main menu items; in this case there will be no user accessible functions in the Main menu.

**Note:** the Increase and Decrease Value buttons will not work to adjust menu options disabled in Technician mode.

Below is an example of how adjustments in Technician mode affect the appearance and options within the normal Main menu.

### **Technician Mode** **Main Menu:**

**On** Brightness  
**On** Contrast  
**On** Color  
**Off** Tint  
**Off** Sharpness  
**Off** Backlight  
**Off** Advanced

### **Normal Mode** **Main Menu Options:**

Brightness  
Contrast  
Color

## **Exiting Technician Mode**

To exit the Technician mode, simply turn the power off and on again either with the power button or through the 28V supply.

## Troubleshooting

If the monitor does not function properly, refer to the following troubleshooting table for symptoms and possible solutions before contacting Rosen field support.

### Notes:

- Always use an oscilloscope to verify the video signal
- Always use a multimeter to verify voltages
- Check actual results against the requirements described in this manual

| PROBLEM            | POSSIBLE SOLUTION   |
|--------------------|---|
| No power           | <p>Verify that the pinout is correct . Push and hold the power switch for about one second.</p> <p>Verify Monitor is fully inserted into base receptacle.</p>   |
| No video on screen | <p>Verify that the pinout is correct.</p> <p>Verify that the video source is on and has a tape or DVD installed.</p> <p>Verify video signal at monitor end, Use an oscilloscope or another monitor.</p> |
| Screen is black    | <p>Verify that the monitor is getting power (green LED on) and the pinout is correct.</p> <p>Verify that the video source is on and has a tape or DVD installed.</p> <p>Verify all connections</p>      |
| Screen is blue     | <p>Verify signal at monitor end, Use an oscilloscope or another monitor.</p> <p>Verify that the pinout is correct.</p> <p>Verify that the video source is on and has a tape or DVD installed.</p>       |

| <b>PROBLEM</b>  | <b>POSSIBLE SOLUTION</b>  |
|---|---|
| Red LED is on   | Monitor is connected to 28 volts but is either switched off or is not receiving a video signal (Standby mode)<br><br>An over temp or under temp occurred (see pages 9 and 10)                           |
| Image is distorted  | Verify that the pinout is correct.<br><br>Use the OSD Monitor Info sub-menu to verify that a signal is present and not too high or low (see page 9)<br><br>Examine system for pinched or damaged cables |
| Image is black and white when switching between SECAM and PAL | If the image is black and white when switching from SECAM to PAL video standard, press the Select switch  |
| Select Switch will not change video sources                   | The Select switch timing needs to be adjusted. Use the Advanced menu to access the Select Switch sub-menu options and adjust the timing as necessary  |

## Technical Support

For field support or to order parts, contact Rosen Aviation Displays at: 1-888-668-4955

or visit us at: [www.rosenaviation.com](http://www.rosenaviation.com)

## Cleaning Display

The LCD should be cleaned with a lens grade tissue for cleaning optical surfaces and isopropyl alcohol.

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## Specifications

### LCD Performance

|  |                                   |
|--|-----------------------------------|
| Screen Resolution (pixels)               | 640 w x 480 h                     |
| Display Viewing Area                     | 6.73 x 5.05 in                    |
| Viewing Angle ( At contrast ratio 10:1 ) |                                   |
| Horizontal                               | ±55°                              |
| Vertical                                 | +40° up -70° down                 |
| Contrast Ratio                           | 500:1 (Typical)                   |
| Backlight Lamp Life                      | 50,000 hours continuous operation |
| Screen Brightness                        | 450 cd/m <sup>2</sup> (Typical)   |

### Mechanical Packaging

|                  |                           |
|------------------|---------------------------|
| Arm Mount Weight | (See Appropriate Drawing) |
| Bulkhead Weight  | 2.9 lbs ±5%               |

|                    |                       |
|--------------------|-----------------------|
| Power Requirements | 28V DC 350 mA Nominal |
|--------------------|-----------------------|

### Video Performance

|                 |                                   |
|-----------------|-----------------------------------|
| Video Standards | NTSC, PAL, SECAM,<br>RS-170 (B&W) |
|-----------------|-----------------------------------|

|             |                          |
|-------------|--------------------------|
| Video input | 1V Peak-to-Peak, 75 Ohms |
|-------------|--------------------------|

|                       |   |
|-----------------------|---|
| Operating Temperature | 0°C - 50°C Free Air Installation<br>0°C - 40°C Insulated Installation |
|-----------------------|---|

|          |        |
|----------|--------|
| Warranty | 2 year |
|----------|--------|

### DO-160D Testing

This display is compliant with and has been tested to applicable DO-160D standards. For specific information contact a Rosen Customer Service Representative at 1.888.668.4955.

## **Disclaimer**

All information, including illustrations, is believed to be reliable. Users and/or installers, however, should independently evaluate the suitability of each product for their application. Rosen makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use or installation. Rosen's only obligations are those in the Rosen Standard Terms and Conditions of Sales for this product, and in no case will Rosen be liable for any incidental, indirect or consequential damages arising from the sale, resale, use or misuse of the product. Specifications are subject to change without notice. Rosen reserves the right to make changes - without notification to buyer - to materials or processing that do not affect compliance with any applicable specifications.