17" LCD DISPLAY

SlimLine
Model Number
1700

ROSEN AVIATION

ROSEN AVIATION

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1700 TECHNICAL MANUAL

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Compliant to DO-160D

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Introduction and Display Overview

Welcome to the *1700 Technical Manual* for the 17" SlimLine LCD Display. This manual provides an overview of display details including:

- Pinouts
- Installation
- Operation
- Troubleshooting
- Specifications

The 1700 model includes the following features:

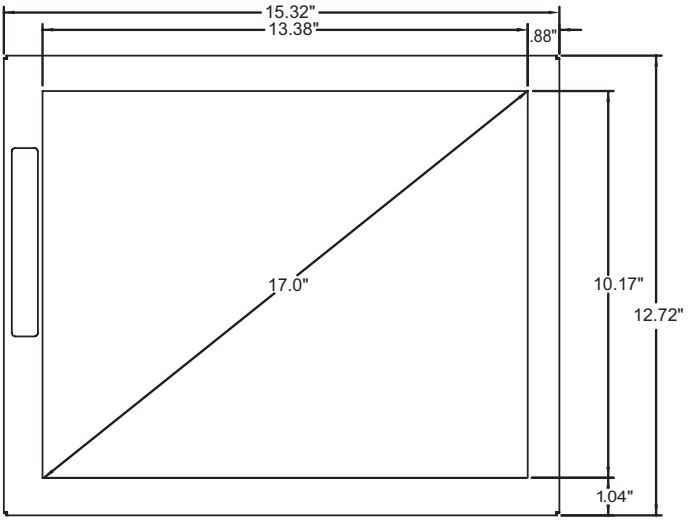
- 17" Diagonal Viewing Area
- NTSC/PAL/SECAM/RS-170 (Composite video)
- Analog RGB (Computer video)
- 1280 x 1024 Screen Resolution (SXGA)
- On Screen Display (OSD) functions
- Status LED
- Configurable Picture in Picture (PIP)
- 28 Volt Operation
- Front Switch Panel
- DO160D Compliant

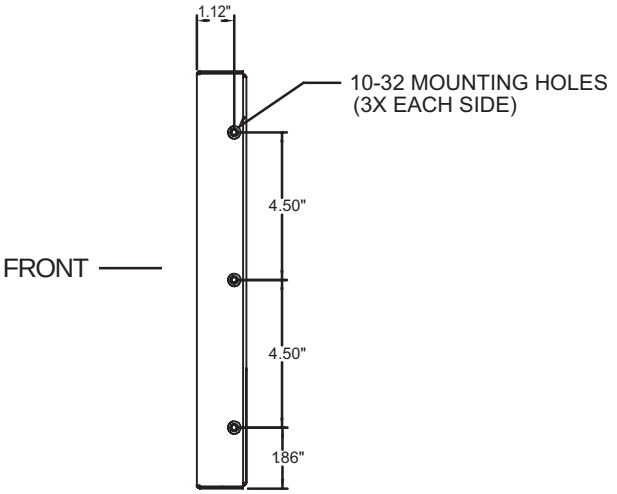
The 1700 model accommodates the following optional controllers (Available separately):

- IR Remote Codes Available
- External 7-button controller

Display Diagram

Outline Dimensions (inches)





Pinouts

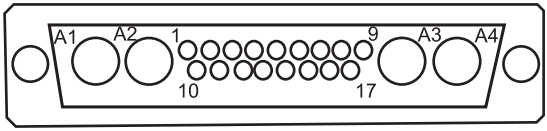
Main Interface Signal

The input connector on this monitor is a 21W4 Male Combo D-subminiature with 17 size 20 contacts (standard density D-sub) and four Size 8 coaxial contacts, mounting in a size 4 D-subminiature shell.

Recommended mating connector: ITT Cannon:

P/N DCA21WA4SA197FO.

Note: Backshell of main connector is chassis ground.



MATING CONNECTOR LOADING VIEW

Warning!

Do Not Plug or Unplug Monitor Connector While Power is Applied

Pin	Display Signal
1	28V Return
2	+28 VDC
3	IR +5VDC
4	IR Signal
5	Reserved
6	RGB/Video Select Switch
7	Power On/Off Status (output)
8	H-Sync
9	V-Sync
10	28V Return
11	+28VDC
12	IR GND
13	Computer Sync GND

Pinouts cont:

Pin	Display Signal
14	Reserved
15	Digital GND (RGB video select return)
16	Digital GND
17	Digital GND
A1	Signal Red
A1	Shield Red Return
A2	Signal Green
A2	Shield Green Return
A3	Signal Blue
A3	Shield Blue Return
A4	Signal Composite Video
A4	Shield Composite Video Return

Description of Operation

+28V, 28V Return	Input	Aircraft power supply
IR +5V, IR GND	Output	Power for optional External IR receiver
IR Signal	Input	IR receiver signal input
RGB/Video Select Switch	Input	TTL level input. Used to select which input (RGB or Composite) is displayed. Method of selection set by DIP switches. Refer to “Dip Switch Option Selection” on page 9”.
Status Output	Output	TTL level output indicates monitor is powered on when logic High (Max. current draw is 10 milliamps)
H-Sync, V-Sync	Input	RGB graphics input, TTL level
Computer Sync GND	Input	Reference ground for RGB sync
Digital GND, pins 15, 16, 17	Input	Common digital ground connection, connected to Computer sync GND
A1 Signal/Shield	Input	Red graphics input, 1 Vpp, 75 ohm
A2 Signal/Shield	Input	Green graphics input, 1 Vpp, 75 ohm
A3 Signal/Shield	Input	Blue graphics input, 1 Vpp, 75 ohm
A4 Signal/Shield	Input	Composite video input, 1 Vpp, 75 ohm

External Control Interface (0300-402)

The external VIP control interface is a 9-pin standard density D-subminiature male connector. Each function can be activated by a momentary connection to ground.

Pin	Control Signal
1	Power On/Off
2	Source Select
3	N/C
4	Up
5	Down
6	Menu/Select
7	Left
8	Right
9	Ground (Switch Common)

Dip Switch Option Selection

Using DIP switches located near the input connectors. Operation is as follows:

SW1	SW2	SW3	SW4	Function
On	Off	-	-	Constant Ground Switching See pg 10 for description
Off	On	-	-	Momentary Ground Switching See pg 10 for description
On	On	-	-	Autodetect. See pg 10 for description
Off	Off	-	-	Manual Mode See pg 11 for description
-	-	Off	-	Monitor defaults to Off See pg 11 for description
-	-	On	-	Monitor defaults to On See pg 11 for description
-	-	-	On	Front Switch Panel Enabled
-	-	-	Off	Front Switch Panel Disabled

Dip Switch Option Selection (cont)

The monitor may be configured to several options through setting of Dip switches located near the input connectors. The Dip switch settings are detected when 28 volts is applied and each time the power button is pressed to turn on the monitor.

Auto-Detect

This mode will automatically switch to the RGB input whenever an RGB signal is connected to the monitor by detecting the presence of the H-Sync signal (pin 8 of the 21WA4 combo connector). If no RGB signal is detected it will automatically switch to the Composite Video input, whether a video signal is present or not. The Source button located on the front panel membrane switch and optional external switch controller will be locked out.

Constant Ground

This mode uses a SPST (single pole single throw) external rocker switch connected between ground and RGB/Video Select (pin 6 of the 21WA4 combo connector). When the RGB/Video Select pin is connected to ground the monitor will switch to the RGB input, whether an RGB signal is present or not. When the RGB/Video Select pin is not connected to ground the monitor will switch to the Composite Video input, whether a video signal is present or not. The Source button located on the front panel membrane switch and optional external switch controller will be locked out.

Momentary Ground

This mode uses a SPST external momentary switch between ground and the RGB/Video Select (pin 6 of the 21WA4 combo connector). Each time the switch is pressed the monitor will switch back and forth between the RGB and Composite Video input, whether a signal is present or not. The Source button located on the front panel membrane switch and optional external switch controller can also be used to switch back and forth between the RGB and Composite Video inputs.

Manual Mode

This mode will not switch between RGB and Composite Video through the Auto-Detect, Constant Ground or Momentary Ground options. The Source button located on the front panel membrane switch and optional external switch controller can be used to switch back and forth between the RGB and Composite Video inputs.

Automatic Power-Up

SW3 On: The monitor will come on as soon as 28 volts power is applied.

SW3 Off: The monitor stays off when 28 volts power is applied. The power button on the front panel membrane switch or the optional external switch controller must be pressed to turn on the monitor.

Membrane Switch Enable

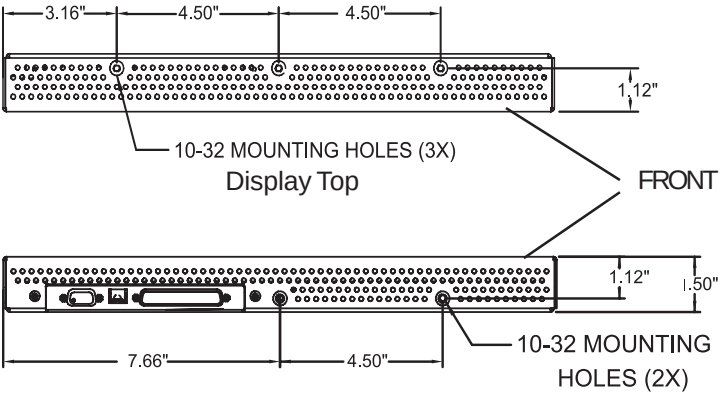
SW4 On: Front panel membrane switch is enabled.

SW4 Off: Front panel membrane switch is disabled.

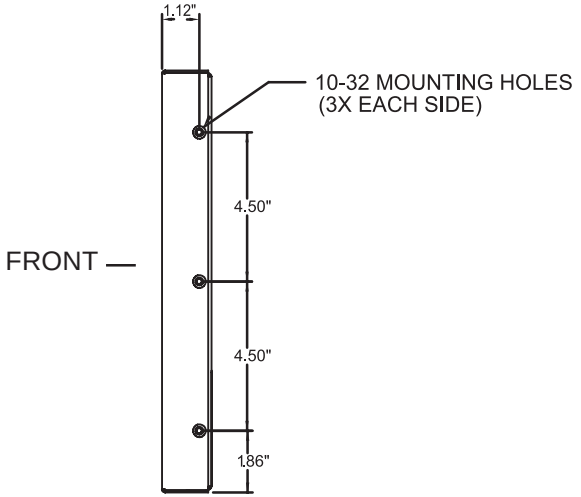
Installation Guidelines

The monitor can be mounted from any combination of two sides.

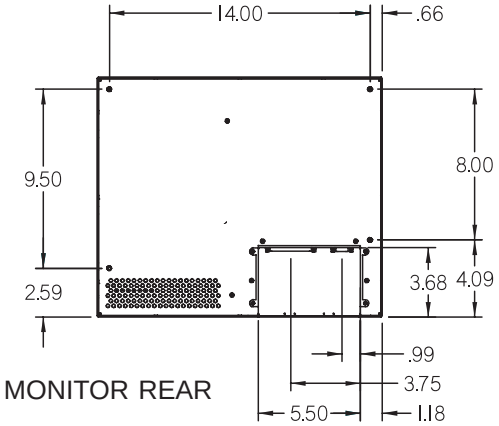
(Dimensions in inches)



Display Bottom



Display Sides



Warning!	Maximum screw depth:
!	Top .75 inches
	Bottom .75 inches
	Sides .75 inches
	Rear .50 inches

Cooling and Ventilation

The monitor is cooled by the flow of air, or natural convection. Special care must be taken with the installation to provide a proper environment for air flow.

- Monitor vents: The unit is designed with vent openings on the top, bottom, and rear surfaces. The entire top vent, and either the entire bottom or entire rear vent must be unobstructed for a minimum of one inch (1"). The vents must also be ducted to free air.
- Ducting: The installation must provide for an inlet duct (at bottom or rear), and an exhaust duct at the top. Each of these ducts must have a minimum of four (4) square inches of cross-sectional area.

Note: Display backlight will shut down if the internal temperature reaches 140 ° F

Note: Each mounting hole includes a 10-32 screw. To install the monitor, remove only the screws that will be used to install the monitor. Do not remove the 4-40 flathead screws.

Note: Application requires listed connector backshell (Positronics D37000GVL-1023.0) due to space constraints and 21WA4 combo connector.

Operation

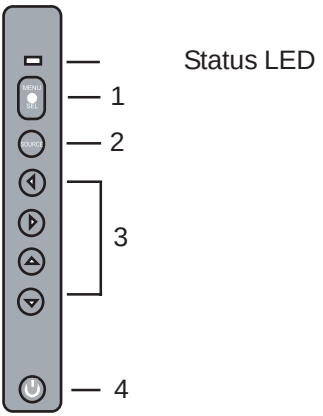
Power Status LED

The front switch panel includes a power status LED.

LED Status	Description
Green	Display is On
Red	Display is in Standby mode

Front Switch Panel Features

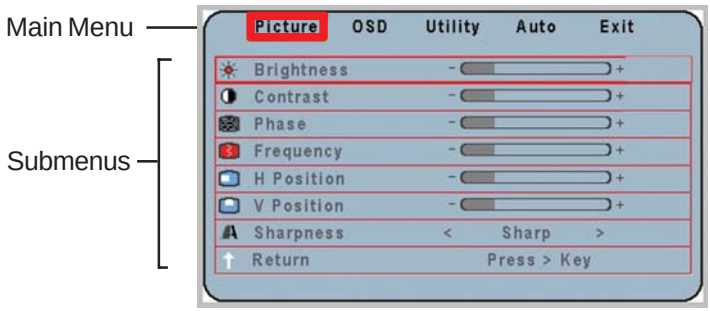
To operate the 17" LCD monitor, use the front switch panel buttons shown below. (External controller or IR remote control options available separately.)



1	Menu/ Sel	Press to view the OSD Main menu and to select the highlighted main menu option.
2	Source	Press to toggle the video source between Analog RGB and Composite video. **Note**: Only functions when DIP switch is set to Momentary Ground or Manual mode.
3	▼ ▲ ▶ ◀	Press to select a menu option, or to increase or decrease a value.
4	Power	Press to power the monitor on or off.

On Screen Display (OSD) Main Menu

The On Screen Display (OSD) provides a set of menus that enable you to adjust or view monitor features. Main menu selections lead to submenus with additional choices. Press the menu button on the switch panel to see the main menu.



To switch to different main menus (osd, utility, auto) use the ◂ ▸ buttons on the switch panel.

To highlight a submenu use the ▾ button on the switch panel. When submenus are highlighted use the ◂ ▸ buttons to adjust up or down.

To return to the main menu highlight return in submenu and use the ▸ button on the switch panel.

To exit main menu use ▸ button until exit is highlighted and then press the menu button.

Note: It takes 5 seconds for changes to be stored into memory

Picture Submenu

Menu Option	Description
Brightness	Picture Brightness
Contrast	Picture Contrast
Phase	Removes Noise in RGB Mode.
Frequency	Adjusts the picture width in RGB Mode
H Position	Horizontal Position Adjustment
V Position	Vertical Position Adjustment
Sharpness	Picture Sharpness
Return	Retuns You to Main Menu

Note: Phase, Frequency, H Position, and V Position only appear in RGB Mode.

OSD Submenu

Menu Option	Description
H Position	OSD Horizontal Position
V Position	OSD Vertical Position
OSD Time Out	Time in which OSD turns off if left alone
Return	Returns You to Main Menu

Utility Submenu

Menu Option	Description
Freeze Frame	Freezes Picture Frame
Reset	Factory Reset to Default Settings
Color Temperature	Color Adjustment in RGB Mode Only
Information	Monitor Info
Return	Returns You to Main Menu

Auto Submenu

Menu Option	Description
Auto	Automatically adjusts image size in RGB mode

Exit Submenu

Menu Option	Description
Exit	Exits OSD

Hot Keys

Hot keys are a quick way of adjusting brightness, contrast, PIP, and the scaling modes.To activate the hot keys simply use the ▲ ▼ buttons on the switch panel to cycle through these modes.

Scaling mode: The scaling mode will adjust the picture depending on the type of formatted DVD disc you are using.

Note: If picture looks stretched adjust scaling mode

Picture in Picture: The small screen in the upper left hand corner will display composite video when in RGB mode.

Troubleshooting

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

Note*:* 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 Solutions**
No Video	• Verify that the video source is on and has a tape or DVD installed. • Verify that a signal is reaching the monitor using an oscilloscope or another monitor. • Verify that the monitor is turned on. (LED is green.) • Verify that the pinout is correct. • Verify that the video input (Analog RGB/ Composite) and video standard (NTSC/PAL/ SECAM) match your application.
Screen is Black	• Verify that the monitor is receiving power. • Verify that the pinout is correct. • Verify that the video source is on and has a tape or DVD installed. • Verify all connections.
Screen is Blue	• Verify that a signal is reaching the monitor using an oscilloscope or another monitor. • Verify that the pinout is correct. • Verify that the video source is on and has a tape or DVD installed.
Color is Out of Adjustment	• Refer to the Main menu features on page 15.

Problem	Possible Solutions
Image Flickers	• Verify that the signal cable is secure. • Verify that the vertical frame frequency is 75 Hz or less. If using the monitor with a PC in Windows, change the Display Control Panel to 60 Hz to achieve the best performance.
Image is Distorted	• Verify pinouts. • Verify that a signal is reaching the monitor using an oscilloscope or another monitor. • Examine the monitor for pinched or damaged cables.

Cleaning Display

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

Technical Support

For technical support or to order parts, contact
Rosen Aviation Displays at: 888-668-4955
or visit us at: www.rosenaviation.com

Specifications

LCD Performance	
Screen Resolution (pixels)	1280 w x 1024 h
Display Viewing Area	337.9 x 270.3mm (13.30 x 10.64 inches)
Viewing Angle	
Horizontal	±80º min, ±85º Typical
Vertical	±80º min, ±85º Typical
Contrast Ratio	400:1 min, 500:1 Typical
Backlight Lamp Life (hours)	50,000
Screen Brightness	200 cd/m^2 min, 250 Typical
Mechanical Packaging	
Weight	7.9 lbs ± 5%
Power Requirements	28VDC 40W max.
Video Performance	
Video Standards	NTSC, PAL, SECAM, RS-170
Graphics Standards	VGA, SVGA, XGA, SXGA (75 Hz max)
Video input	1V peak-to-peak, 75 Ohms
Operating Temperature	0ºC - 50ºC
Warranty	2yr

17" Monitor DO-160D Test Matrix

Section	Description	Category
4	Temp & Alt	A1
5	Temp Variation	C
6	Humidity	A
7	Op Shock & Crash Safety	B
8	Vibration	SB
9	Explosion Proofness	X
10	Waterproofness	X
11	Fluids Susceptibility	X
12	Sand & Dust	X
13	Fungus Resistance	X
14	Salt Spray	X
15	Magnetic Effect	Z
16	Power Input	AB
17	Voltage Spike	B
18	AF Cond Suscept – Pwr	Z
19	Induced Signal Suscept	Z
20	RF Suscept (Cond&Rad)	TT
21	Emission of RF Energy	B
22	Lightning Induced Trans	X
23	Lightning Direct Effects	X
24	Icing	X
25	Electrostatic Discharge	A

Note X = Not Required.

Disclaimer

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