


FD104CV

Installation and Operation Manual

10.4" LCD



TECHNICAL SUPPORT
678-867-6717, or
www.FlightDisplay.com

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FD104CV

10.4" LCD

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General Information

The FD104CV is a 10.4" LCD. Built with retrofit aircraft integration in mind, this display can switch between three video input sources using buttons on the bezel or the infrared Remote.

Front View




Additional Information

The FD104CV is made of all metal components. The LCD is protected with a .060" Lexan lens. The purpose of this lens is to prevent scratching and reduce glare.

The 10.4" LCD utilizes a state of the art digital video decoding chipset for the analog video input. The three video sources in order of picture quality are VGA (Computer Video, such as a Moving Map), S-Video (High-quality DVD), and Composite Video (DVD, Camera, or VCR). Both NTSC and PAL formats are auto-detected.

The FD104CV can also be connected to existing video switchers and can take a composite video input from a selector interface box. In this case, multiple input sources can be selected and displayed on the monitor.

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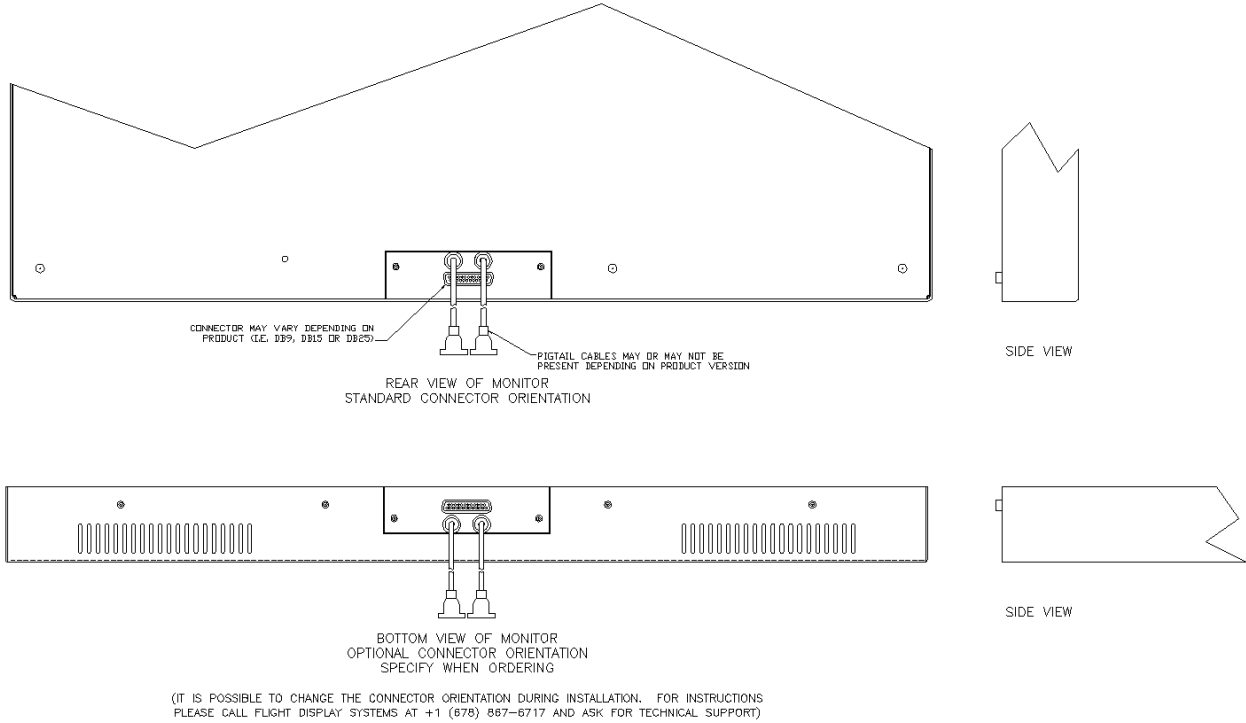
Specifications

Display Type	10.4" TFT Color LCD
Display Color	262,144 Colors
Screen Resolution	1024x768 (1280x768 supported)
Brightness	700 cd/m ²
Display Dimensions	8.24" (W) x 6.2" (H)
Weight	3 lbs 8 oz
Power	28V DC @ 1.0A
Video Inputs Supported	S-Video, Composite Video
Video Types Supported	NTSC/PAL
Screen Control	On Screen Display Menu
Mount Materials	Aluminum
DO-160 Testing	Section 21, Category B
Remote Control	IR, included

Installation Instructions

All cabin entertainment equipment, such as the FD104CV, should be installed on a non-essential bus and have a dedicated circuit breaker. It is a requirement that a switch be installed in the cockpit so that the pilot can de-energize the entertainment system should it become necessary.

Rear Connector Orientation – The rear connector of this monitor can be mounted horizontally (connector perpendicular to rear of monitor) or vertically (connector perpendicular to bottom of monitor) in order to give you the most convenient mounting options. By default, this monitor's connector ships in the rear/horizontal position. Flight Display Systems will ship the unit with the optional bottom/vertical mounting connector configuration if specified at the time of order; contact your local sales representative for assistance. It is possible to change the connector orientation at the time of installation. For instructions on how to change the connector orientation please call Flight Display Systems at +1 (678) 867-6717 and ask for Technical Support.



Power

This is a **28V DC** monitor that requires 1.0 Amps (28 watts) of power.

Wiring Suggestions

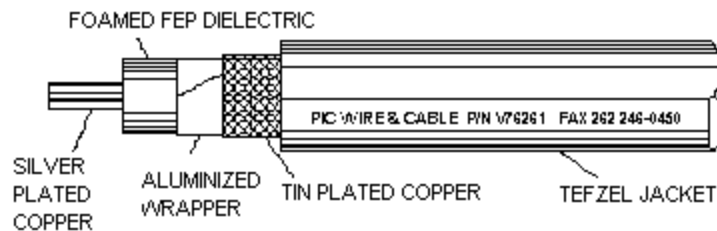
All shields should be grounded to the connector at the source, and floating at the display.

Avoid routing video wiring parallel to:

- AC wiring
- Strobe wiring
- DC motor supply cables
- Inverter cabling
- Or any other potential noise source.

S-Video/Composite and Audio Wiring

Recommended cable for s-video/composite and audio purposes is PIC 75 Ohm Coax, P/N V76261. This is a lightweight, flexible, and low signal loss cable which meets FAA flammability requirements of FAR 23.1359(d), FAR 25.853(a) and FAR 25.869(a)(4).

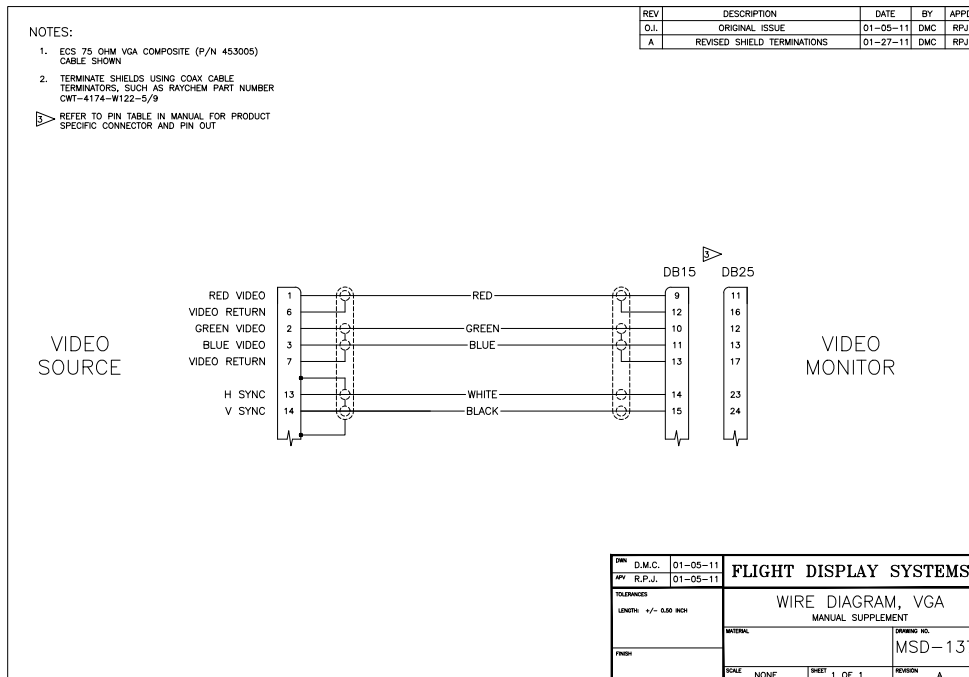


Similar aviation coaxial cable can be used from other vendors, as well.

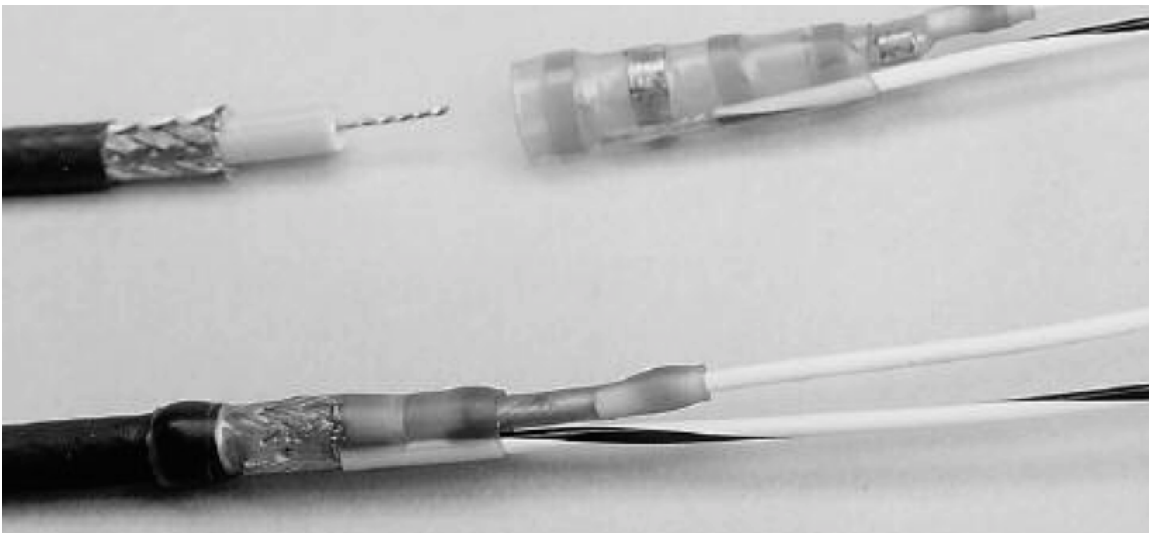
Some aircraft are prone to AC noise - we recommend adding to the composite source a 75 Ohm video isolation transformer such as Deerfield Laboratory, Inc. Part No. 162-1 (www.deerfieldlab.com, (650) 632-4090). In most cases this should be added to the video output of the source


VGA Wiring

Recommended cable for VGA purpose is ECS P/N 453005. This is a single shielded cable containing 5 separate coaxial cables, color-coded to match the functions of the wires.



We recommend coax cables be terminated using solder sleeve coaxial cable terminators such as Raychem Part Number CWT-4174-W122-5/9.



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Power and Ground Wiring

This is a 28VDC monitor that requires 1 amp of power to operate. To operate properly this monitor requires an input voltage of 18-29VDC.

The rated current of the equipment and associated voltage drop should be taken into consideration when selecting wire gauge. The following example is based on an install with a 28VDC power system and a total of 50 feet of wire between the circuit breaker, monitor and ground.

Example: 22awg wire has 16.2 Ohms per 1000 feet, this equates to .81 Ohms for 50 feet. 1 Amp of current on .81 Ohms will drop .81Volts.

Resistance of Wire Type M22759/16-** (** = Gauge)	
Gauge (AWG)	OHMS/1000'
24	26.20
22	16.20
20	9.88
16	4.81
12	2.02
10	1.26
8	.701

Also, use short heavy gauge wire and a clean tight connection for ground.

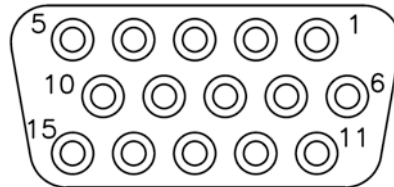
It is the installer's responsibility to understand the product's requirements to install the product in compliance with industry standards and safety.

Power/Video

Pin out for P1 (High Density DB-15 Receptacle)
 (Connector supplied with contacts and hood)

Connector
 Crimp Contacts

P/N: M24308/2-286 or Equivalent
 P/N: M39029/57-354 or Equivalent



MATING FACE

Pin Number	Description
1	28VDC Power
2	28VDC Ground
3	Composite Video - Signal
4	Composite Video - Shield
5	S-Video Y - Signal
6	S-Video Y - Shield
7	S-Video C - Signal
8	S-Video C - Shield
9	Red Video (Pin 1 on Standard VGA)
10	Green Video (Pin 2 on Standard VGA)
11	Blue Video (Pin 3 on Standard VGA)
12	Red Ground (Pin 6 on Standard VGA)
13	Green Ground (Pin 7 on Standard VGA)
14	Horizontal Sync (Pin 13 on Standard VGA)
15	Vertical Sync (Pin 14 on Standard VGA)

Operation Instructions

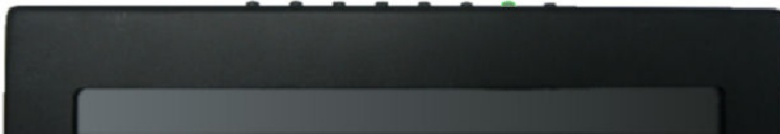
The FD104CV is continuously on but can be de-energized by removing power from the entertainment system. No pilot or aircrew action is necessary during flight or ground operation.

The passengers will be able to change the video output from the FD104CV using the video source select switch on the LCD monitor, or remotely throughout the cabin with the included IR remote. Point the IR remote at the top of the LCD to make changes.

When applying 28VDC power, the display will turn on and look for a valid input on the last known source. If no input is found, the display will go to standby mode. Pressing the Select button will select new video input.

Button Controls

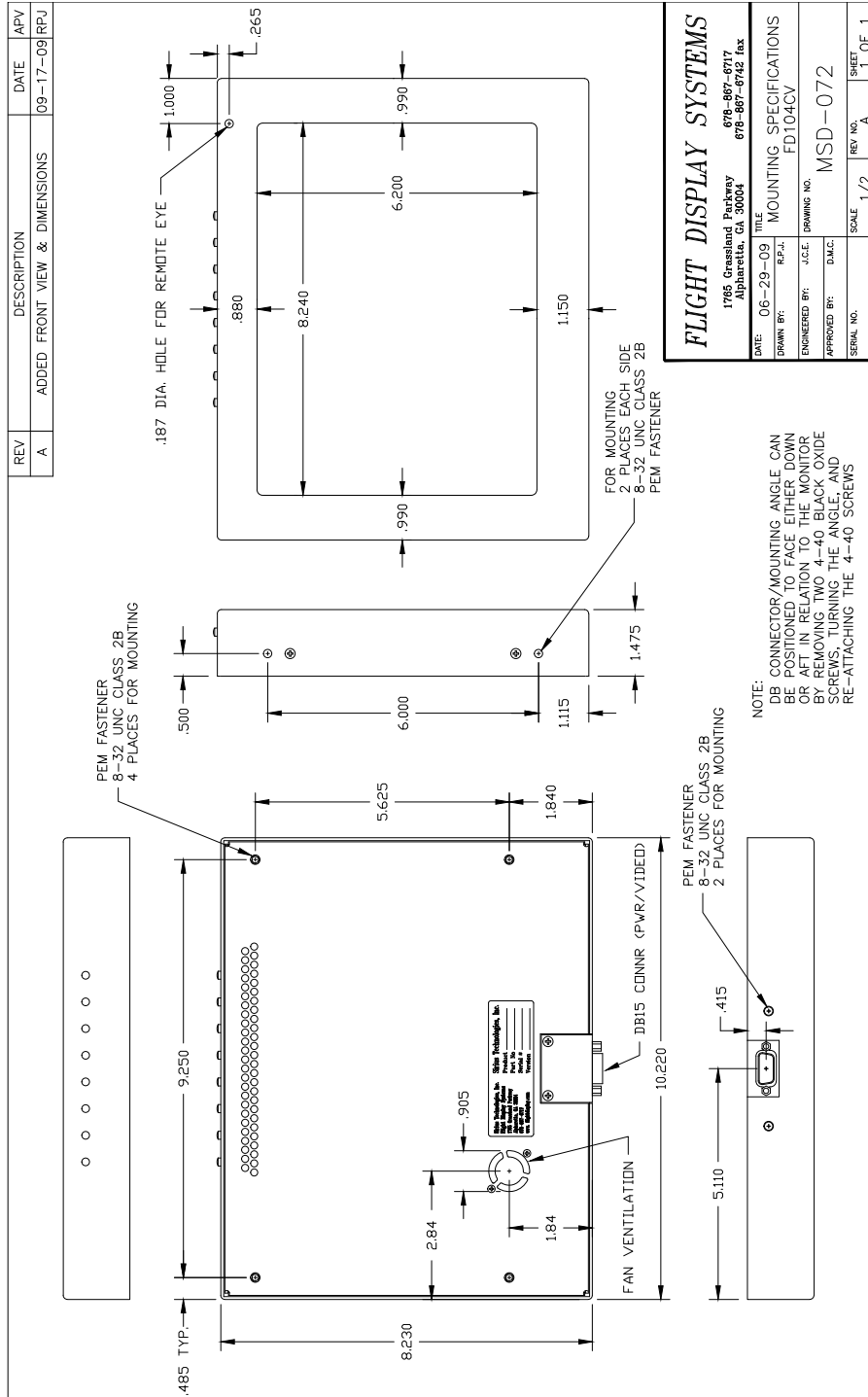
Located at the top of the FD104CV LCD are seven buttons.




Operations are as follows (from Right to Left):

BUTTON	DESCRIPTION
POWER (LED)	Used to turn the unit on or off.
RIGHT	Used to move through the menu options.
LEFT	Used to move through the menu options.
UP	Used to increase the adjustment of a menu option.
DOWN	Used to decrease the adjustment of a menu option.
SOURCE	Used to select the input source.
MENU	Used to change the configuration of the picture settings (Backlight, Brightness, Contrast, Saturation, Hue, etc.)

Technical Drawing



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Troubleshooting

Video Noise

Check for an incorrect ground in the installation wiring. See specific examples of video noise below, or visit <http://flightdisplay.com/Grounding.pdf>

VGA Shadowing

Most of shadowing problems are due to shielding on the wire. Locate the point where all of the shields are connected. Cut away the shields, one at a time, while viewing the display on the screen to observe which shield is causing the noise. Cutting away one shield at a time will allow you to focus and isolate the video noise issue.

- Twisted pair wiring is prone to video noise. ECS VGA Wire (Detailed under “Video Wiring Suggestions”) is recommended.

Snow or Sweeping Lines

Lines that slowly sweep up and down are a result of AC noise. This AC noise can be generated by a power cart on the aircraft. Take the power cart off of the aircraft. Be careful of inverter wiring, which can also cause noise. Stand off the wires, if necessary.

If snow or sweeping lines persist, it is possible that the ground is at an incorrect point in the aircraft. Try moving the ground to another location.

No power to Monitor, or No video Input


- Verify correct wiring. Check the base receptacle connectors for possibly damaged pins.
- Check that the video source is:
 1. Powered on,
 2. In Play mode, and
 3. Displaying video.

Color Distortion

- Adjust brightness and contrast settings using the buttons on the monitor.

Remote Control Inoperable

- Confirm that the infrared eye on the LCD screen is visible.
- Replace battery in remote control.

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Technical Support


Should you have any questions concerning this product or other Flight Display Systems products, please contact our Product Support representatives at (678) 867-6717.

Flight Display Systems
1765 Grassland Parkway
Alpharetta, GA 30004
Phone: 678-867-6717
Fax: 678-867-6742
Email: sales@flightdisplay.com

For further product information, technical data and sample wiring diagrams, please click on the **Dealers** section of our web site at www.flightdisplay.com

Instructions for Continued Airworthiness

The FD104CV is designed not to require regular general maintenance.

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Warranty Information

Flight Display Systems warrants the FD104CV against material or manufacturing defects for a two-year period. Effective 1/1/2009, all equipment sold after 1/1/2009 will have a 2-year warranty. Warranty begins on date of installation. *The warranty registration card must be returned upon installation in order to validate the two-year warranty. Any warranty registration not returned during this time period will default to the date of purchase as the warranty start date.


If product support is required, please call our Technical Support team at 678-867-6717 to obtain assistance. If the return of the unit to the factory is required, an RMA number will be issued at that time. Flight Display Systems will, upon receipt of the failed hardware, remanufacture or replace the unit at our discretion.

Flight Display Systems will pay Ground Shipping charges for warranted items. Charges for express shipment will be the responsibility of the sender.

This warranty is not transferable. Any implied warranties expire at the expiration date of this warranty. We shall not be liable for incidental or consequential damages.

This warranty does not cover a defect or failure that has resulted from improper or unreasonable installation, use or maintenance, as determined by Flight Display Systems. This warranty is void if there is any attempt to disassemble or open this product without factory authorization.

Any labor charges associated with the removal of product or related troubleshooting by a firm other than Flight Display Systems or its designee will not be covered.

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Log of Revisions

Rev	Date	Page	Description
A	01/25/2007		Initial Release
B	08/15/2007	6	Corrected button functions
C	03/30/2009	2,9	Updated Specifications, Warranty Info
D	12/11/2009	5	Revised Product Number
E	01/27/2011	5	Added Rear Connector Orientation, revised technical drawing, Format Change