

FD151CV-LP

Installation and Operation Manual

15.1" Low Profile LCD



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

Flight Display Systems
Enhancing the Flight Experience

FD151CV-LP

15.1" Low Profile LCD

© 2006 Flight Display Systems. All Rights Reserved.

Flight Display Systems

1765 Grassland Parkway

Alpharetta, GA 30004

678-867-6717 Phone

678-867-6742 Fax

sales@flightdisplay.com

www.flightdisplay.com

For the most current copy of all product manuals, please visit our website at

www.flightdisplay.com

Table of Contents

General Information

Front View 1

Additional Information 1

Specifications..... 2

Installation Instructions

Power 2

Video Wiring Suggestions 3

S-Video/Composite and Audio Wiring..... 3

VGA Wiring 4

Power and Ground Wiring 5

Pinout for High Density DB-15 6

Wiring Diagram..... 6

Operation Instructions

Button Controls 7

Remote Control..... 8

Troubleshooting

Video Noise..... 9

VGA Shadowing..... 9

Snow or Sweeping Lines 9

No power to Monitor, or No video Input 9

Color Distortion 10

Remote Control Inoperable..... 10

Technical Support

Instructions for Continued Airworthiness

Warranty Information 11

Assembly Drawing 12

Index

Log of Revisions 15

General Information

The FD151CV-LP is a 15.1" Low Profile LCD which has features that allow installation in the smallest of mounting areas with the minimum of interface equipment. Built with retrofit aircraft integration in mind, this display can switch between three video input sources using an infrared remote.

Front View



Additional Information

The FD151CV-LP utilizes a state of the art digital video decoding chipset for the analog video input. The video sources in order of picture quality are VGA (computer graphics like moving maps), and Composite Video (DVD, camera or VCR). Both NTSC and PAL formats are auto-detected.

The FD151CV-LP can also be connected to existing video switchers and just take a composite video input from a selector interface box. In this case multiple input sources can be selected and displayed on the monitor. You would only use the IR remote to set up the screen during installation.

The FD151CV-LP is made of all metal components. DO-160D testing has been completed and is available upon request.

The LCD is protected with a .060" Lexan lens. The purpose of this lens is to prevent scratching of the LCD.

Specifications

| | |
|----------------------|------------------------------------|
| Display Type | 15" TFT Color LCD |
| Display Color | 16.7 Million Colors |
| Pixel Pitch | 0.3 mm x 0.3 mm |
| Screen Resolution | VGA 1024 x 768 |
| Brightness | 400 cd/m ² |
| Dimensions | 14.14" (W) x 11.95" (H) x 1.1" (D) |
| Display Size | 11.89" (W) x 8.91" (H) |
| Weight | 5 lbs 14 oz |
| Power | 28VDC @ 1.5 AMPS |
| PC & Video Input | One High Density DB-15 Connector |
| Video Type Supported | VGA, Composite NTSC/PAL |
| Screen control | On Screen Display Menu |
| Remote Control | IR |
| Materials | Aluminum |
| DO-160E testing | Section 21 Category B |

Installation Instructions

All cabin entertainment equipment, such as the FD151CV-LP, 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.

For mounting specifications refer to drawing at the back of the manual.
(NOTE: Removing the front cover does not void the warranty.)

Power

This is a **28VDC** monitor that requires 1.5 Amps (42 Watts) of power to operate. The unit turns on automatically upon power application.

Video Wiring Suggestions

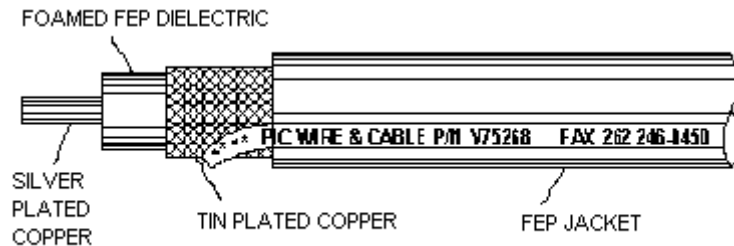
All shields should be grounded to the connector at the source, and floating at the display.

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 V75268. 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).

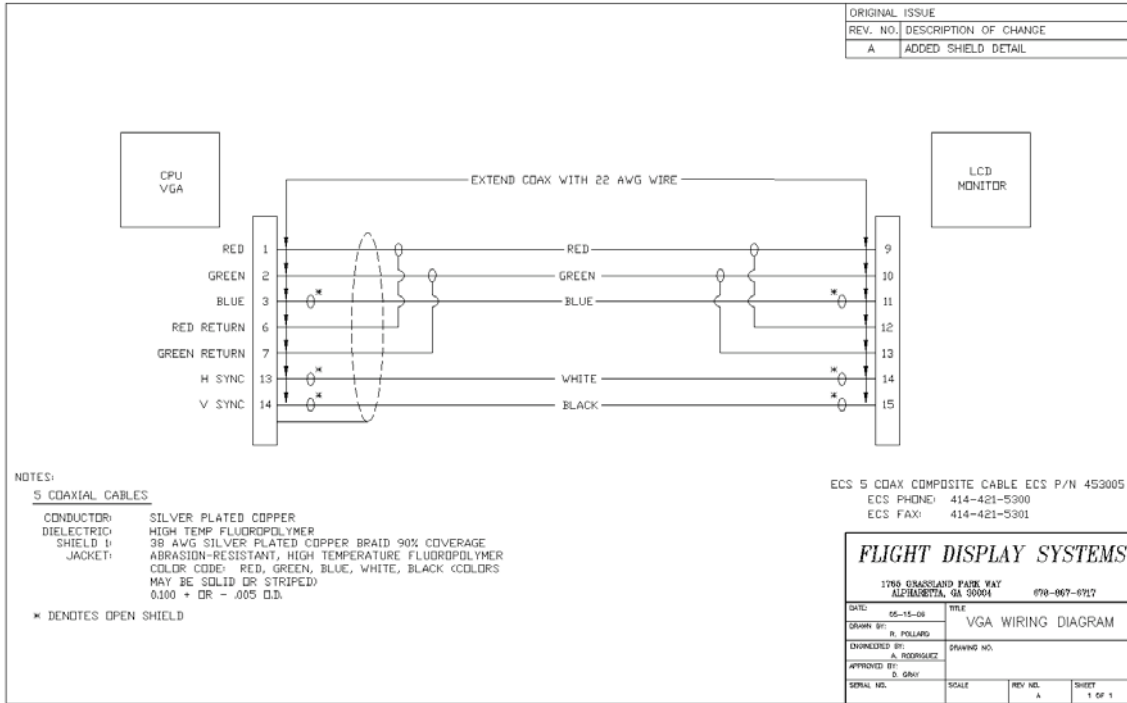


Similar aviation coaxial cable can be used from other vendors, as well.

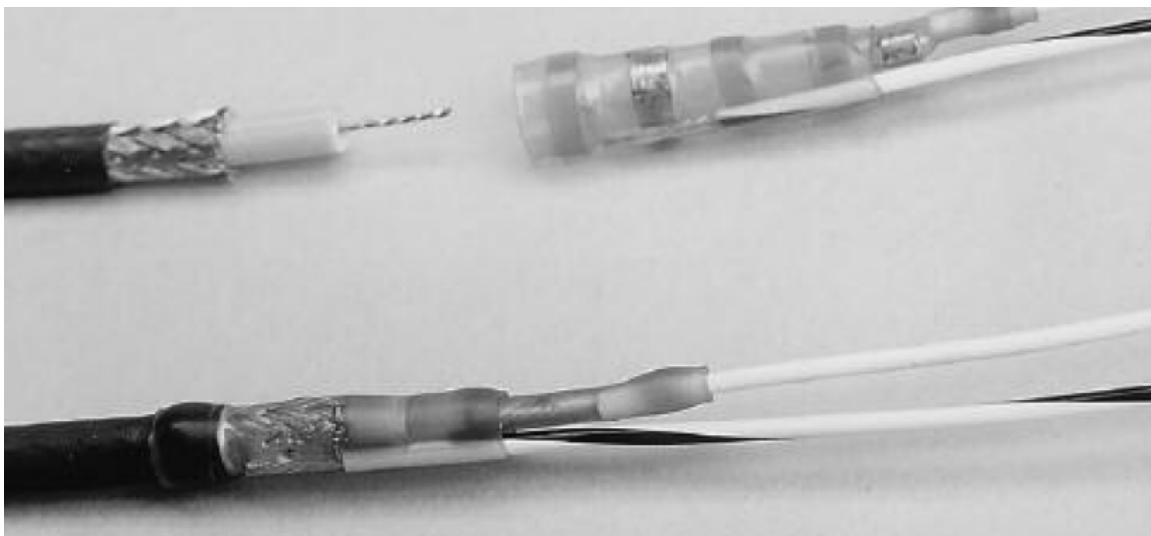
Some aircraft are prone to AC noise - we recommend adding to the composite source a 75Ohm video isolation transformer such as Deerfield Laboratory, Inc. Part No. 162-1 (www.deerfieldlab.com, (650) 632-4090). In most cases this should be added to the video output of the source.

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.



Power and Ground Wiring

This is a 28VDC monitor that requires 1.5 amps 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. 1.5 Amps of current on .81 Ohms will drop 1.22 Volts.

| 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.

Pinout for High Density DB-15

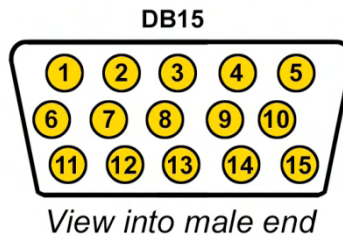
There is one High Density DB-15 on the rear of the display, which connects Power, Composite Video #1, Composite Video #2 and VGA connections.

Part Numbers for DB-15 connectors, manufactured by Tyco or Amp.

High density, D-sub, 15 contact receptacle (female) P/N 748565-1

HD15F pins P/N M39029/57-354

Wiring Diagram



| Pin Number | Description |
|------------|--|
| 1 | 28VDC Power |
| 2 | 28VDC Ground |
| 3 | Composite Video 1 - Signal |
| 4 | Composite Video 1 - Shield |
| 5 | Composite Video 2 - Signal |
| 6 | Composite Video 2 - Shield |
| 7 | N/C |
| 8 | N/C |
| 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 FD151CV-LP 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 FD151CV-LP using the video source select button on the display, 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 on the bottom of the FD151CV-LP are 5 buttons.



From right to left (fan inwards), the functions are as follows:

| BUTTON | DESCRIPTION |
|--------|---|
| POWER | Pressing will turn the monitor ON or OFF from Standby mode. |
| SOURCE | Select video source with the following order: Composite 1, Composite 2 and RGB (PC). |
| UP | Press while in menu- Adjust selection UP. Press out of menu - Brightness (Use up or down to change.) |
| DOWN | Press while in menu- Adjust selection DOWN. Press out of menu – Contrast (Use up or down to change.) |
| MENU | Opens the menu, changes between selections. |

Remote Control



The remote control included with the FD151CV-LP contains the same functionality available on the display buttons, to include power, source, menu, and directional arrows.

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.

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 FD151CV-LP is designed not to require regular general maintenance.

Warranty Information

Flight Display Systems warrants the FD151CV-LP against material or manufacturing defects for a period of one year from the date of installation.

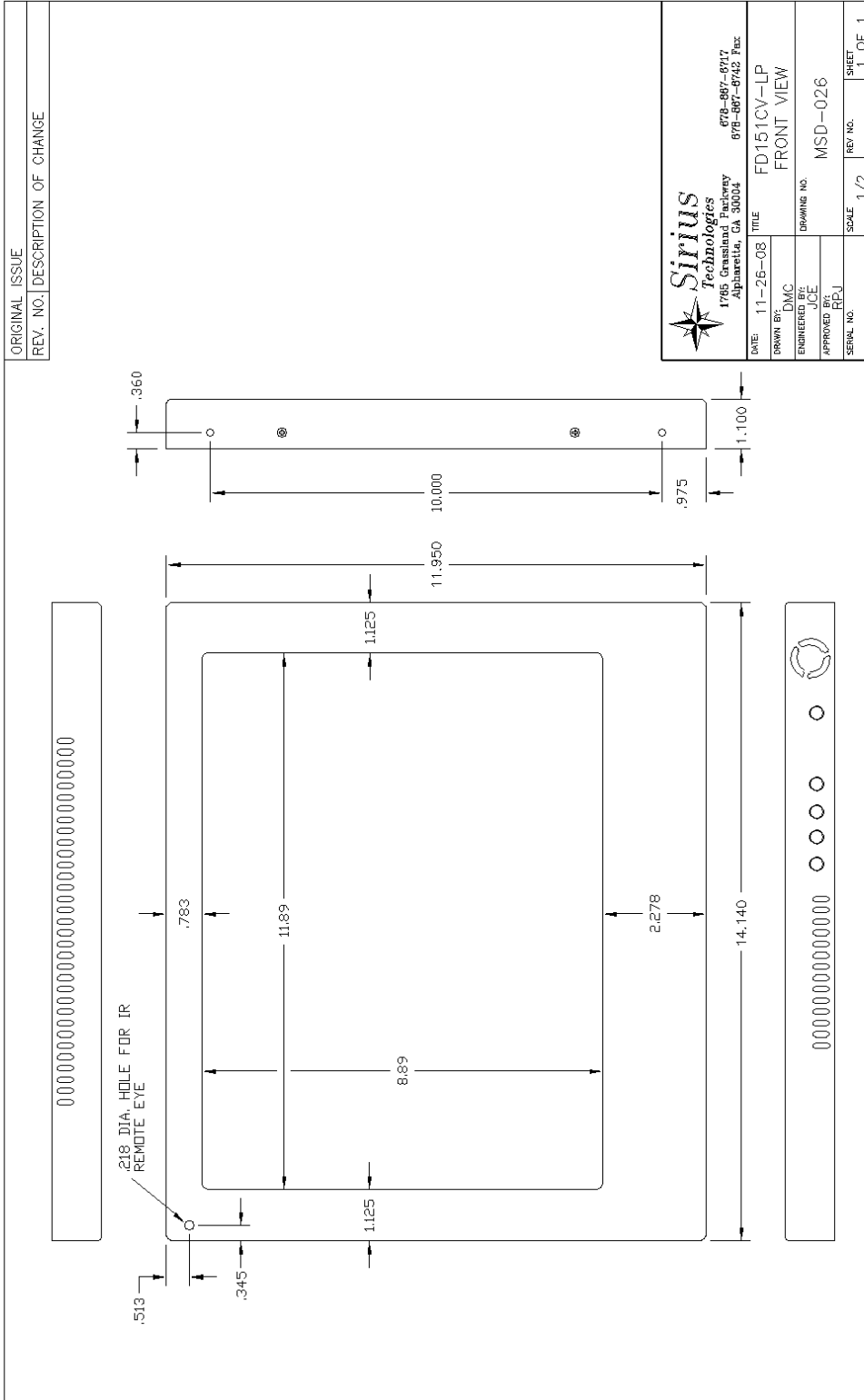
If product support is required, please call our Technical Support team at 678-867-6717 to obtain assistance. If the return of the unit to the factory is required, an RMA number will be issued at that time. Flight Display Systems will, upon receipt of the failed hardware, remanufacture or replace the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



Index

| | | | |
|-------------------------------|------|------------------------|-------|
| Button Controls | 7 | Shadowing | 9 |
| Coaxial Cable..... | 3 | Shields | 3, 9 |
| Color Distortion | 10 | Support..... | 9, 10 |
| Continued Airworthiness | 10 | VGA | 4 |
| DB-15 | 6 | Warranty | 11 |
| DO-160E | 1, 2 | Weight | 2 |
| Flammability..... | 3 | Wiring..... | 3 |
| Lexan..... | 1 | Diagram..... | 5 |
| Noise | 9 | Power and Ground | 5 |
| Power..... | 2, 9 | Wiring Diagram | 6 |
| Remote Control | 8 | | |

Log of Revisions

| Rev | Date | Page | Description |
|-----|------------|------|---|
| A | 01/25/2007 | --- | --- |
| B | 05/21/2007 | 7 | Added remote control information. |
| C | 03/05/2008 | 6 | Changed button order. |
| D | 11/26/2008 | --- | Updated VGA, Power & Ground, Pinout and Assembly drawings |