

Installation and Operation Manual

FD70CV-M

7" Widescreen LCD





FD70CV-M

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Table of Contents

General Information	4
Front View.....	4
Specifications	5
Installation Instructions	5
Power	6
Video Wiring Suggestions	6
S-Video/Composite & Audio Wiring.....	6
VGA Wiring.....	7
HDMI.....	7
Power & Ground Wiring.....	8
Power/Video	8
Operations Instructions	9
Monitor Button Controls.....	9
Technical Drawing	10
Troubleshooting	11
Technical Support	12
Instructions for Continued Airworthiness	12
Warranty	13
Log of Revisions	14



General Information

The FD70CV-M is the latest version of our popular 7" Widescreen LCD. The all metal case is designed for installation in light jets, turboprops and piston aircraft. This unit is ideal in situations where bulkhead space forward and aft is very limited. This unit is a full function 7-inch LCD housed in a metal case that will fit on most aircraft. The metal case makes it easy to mount directly to the bulkhead or build the units into the cabinet wall. Mounting holes are easily accessible on both sides of the unit.

Front View



Specifications

Display Type	7" TFT Color LCD
Supported Resolutions	640x480 ~ 1024x768
Display Brightness	450 cd/ m ²
Contrast Ratio	500:1
Dimensions	6.80" (W) x 4.75" (H) x 1.20" (D)
LCD Dimension	6.00" (W) x 3.60" (H)
Weight	1 lb 5 oz
Viewing Angle	140°/120°
Power	12VDC @ .6 Amps 28VDC @ .3 Amps
Operating Temperature	0-50° C (32-122° F)
PC Video Input	VGA (Analog RGB 15 pin D-sub)
Standard Video Input	2 Composite Video
Video Type Supported	NTSC, PAL
Screen Control	On-Screen Display Menu
Remote Control	IR, included
Materials	Aluminum
DO-160 Testing	Section 21, Category B

Installation Instructions

All cabin entertainment equipment, such as the FD70CV-M, 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.

The order in which you proceed is up to the installation center. We suggest that you first look at the mounting plate prior to installing the LCD to make sure you have the proper room and conditions in the aircraft to mount the display to the wall or bulkhead. Once it has been determined that you have sufficient room and mounting locations for the FD70CV-M, then it would be appropriate to start mounting the base to the frame. The unit can be mounted to the bulkhead with fasteners which are located on the rear cover, or installer can use "L" brackets and attach to the sides (2 located on each side of the display), from back or sides using the 8-32 fastener. Length of the screw **must not exceed .250"** to the inside of the screw. Screw length is dependent upon thickness of the "L" brackets. **NOTE: Care should be taken to ensure the unit is not installed in an area with poor ventilation, or in an area with excessive heat.**

Power

This is a **12-28VDC** monitor that requires 0.3 Amps (@28V) to 0.6 Amps (@12V) of power to operate.

Video Wiring Suggestions

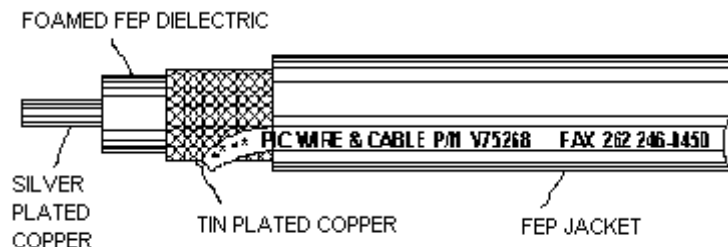
All shields should be grounded to the connector at the source, and floating at the display.

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).

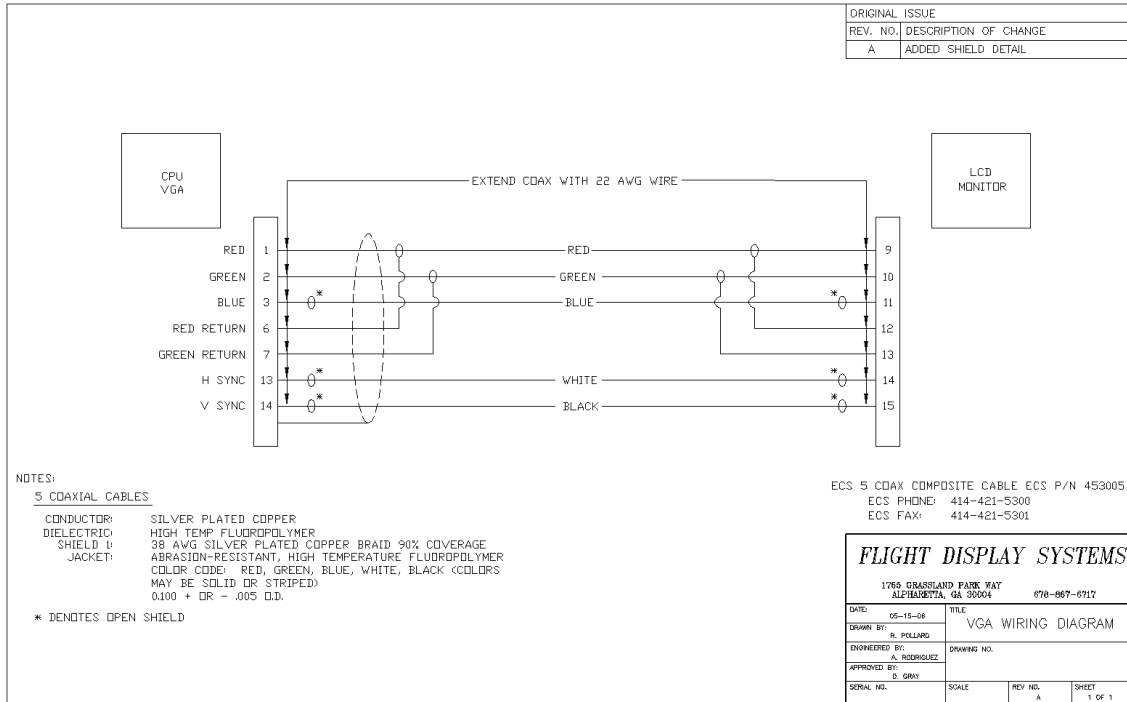


Similar aviation coaxial cable can be used from other vendors, as well.

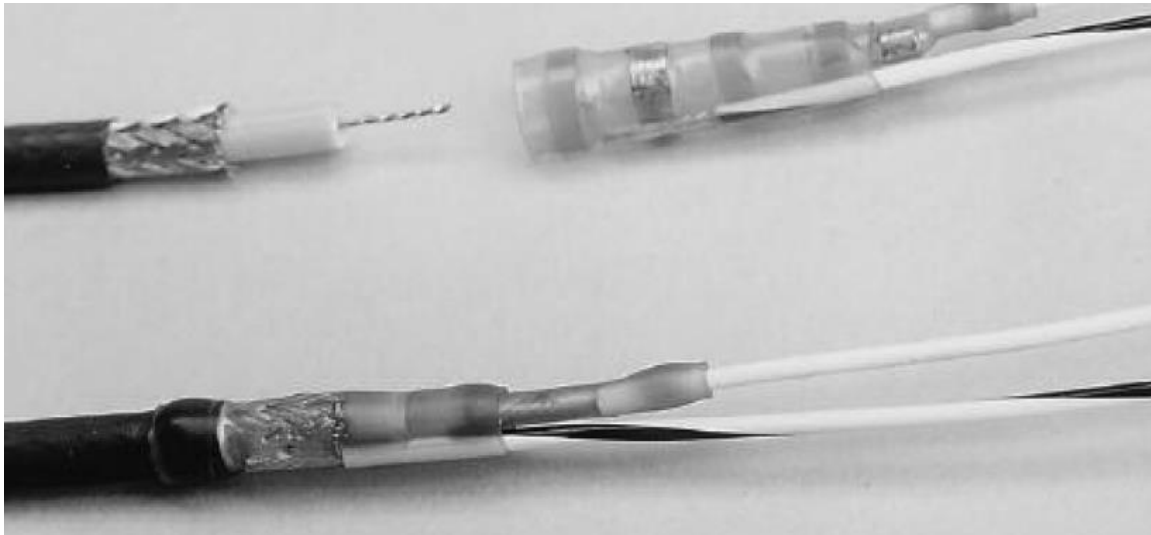
Some aircraft are prone to AC noise - we recommend adding to the composite source a 75Ohm video isolation transformer such as Deerfield Laboratory, Inc. Part No. 162-1 (www.deerfieldlab.com, (650) 632-4090). In most cases this should be added to the video output of the source.

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

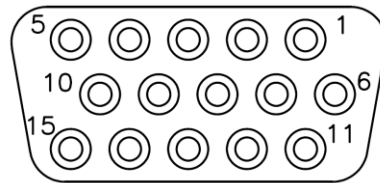
22 AWG wire is recommended for Power and Ground applications.

Power/Video

Pin out for P1 (High Density DB-15 Receptacle)

Connector
Crimp Contacts

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



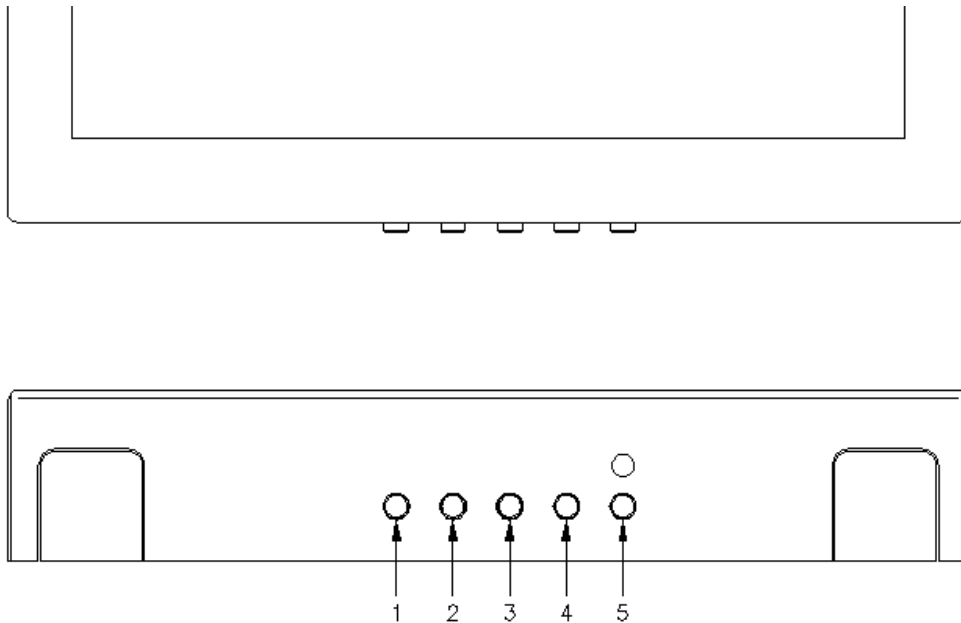
MATING FACE

Pin Number	Description
1	12-28VDC Power
2	12-28VDC Ground
3	N/C
4	Composite Video 1 - Signal
5	Composite Video 1 - Shield
6	N/C
7	Composite Video 2 - Signal
8	Composite Video 2 - 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

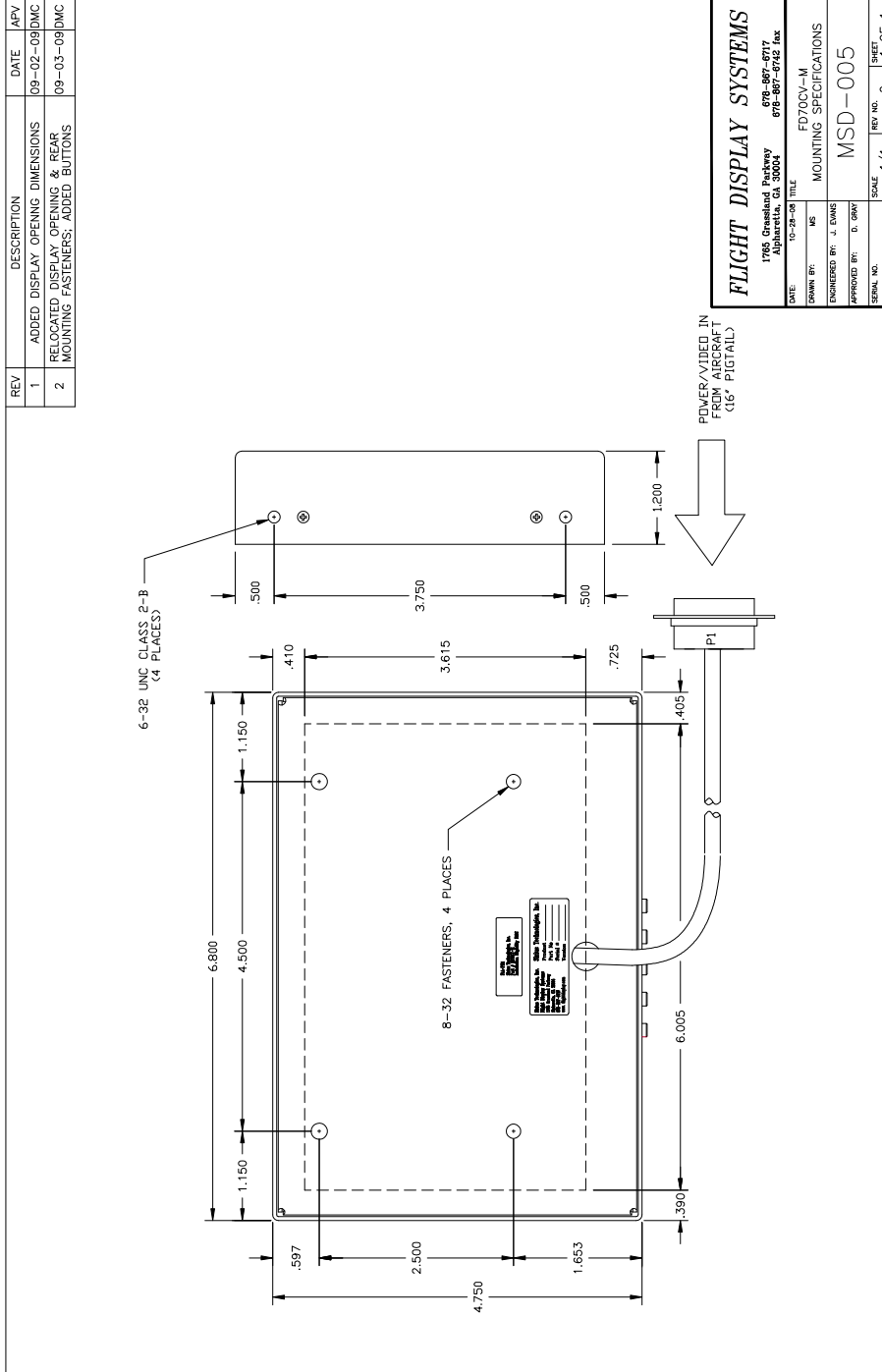
The FD70CV-M is continuously on but can be de-energized by removing power from the entertainment system. No pilot or aircrew action is necessary during flight or ground operation. Passengers can change the video output from the FD70CV-M using the video source select switch on the LCD monitor, or remotely throughout the cabin with the included IR remote.

Monitor Control Buttons



BUTTON	FUNCTION	DESCRIPTION
1	POWER	Press to turn the monitor on if currently off. Hold to turn the monitor off.
2	SOURCE	Press to switch between sources.
3	UP	Press to increase the value of a menu item.
4	DOWN	Press to decrease the value of a menu item.
5	MENU	Press to activate Menu.

Technical Drawing



FLIGHT DISPLAY SYSTEMS
 1766 Grassland Parkway
 Alpharetta, GA 30004
 678-867-6717
 678-867-6742 fax

DATE: 10-28-08 TITLE: FD70CV-M
 DRAWN BY: MS MOUNTING SPECIFICATIONS
 ENGINEERED BY: J. DAVIS
 APPROVED BY: D. DEMPY
 SERIAL NO. MSD-005
 SCALE: 1/1 REV NO. 2 SHEET 1 OF 1

Troubleshooting

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 (470) 239-7421.

Flight Display Systems

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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 FD70CV-M is designed not to require regular general maintenance.



Limited Warranty

All Flight Display Systems (FDS) products are warranted to be free from material or manufacturing defects for a period of 24 months from the date of shipment for General Aviation customers or 12 months from the date of shipment for Government/Special Mission customers. Any material or repair workmanship for in warranty repair service will be specifically warranted for 90 days or the remainder of the original warranty period, whichever is longer. If the original warranty period has expired, the 90 day repair warranty is limited to the material and workmanship specific to the repair activity completed.

The following conditions are exclusions to warranty coverage:

1. Labor costs associated with installation, removal or reinstallation of any product.
2. Damage to or malfunction caused by any unauthorized alteration made to the product.
3. Resolving signal quality issues caused by externally generated noise introduced by aircraft electrical systems or other components connected to any FDS product.
4. Any malfunction caused by improper installation or connection to aircraft wiring, industry standard cabin management/ inflight entertainment systems, or third party commercial equipment not specifically identified as compatible with FDS products.
5. Any malfunction caused by installation that does not conform to precautions associated with operating environments listed in the operating manual or consistent with industry best practices such as; high temperature, adequate ventilation, high humidity, high dust, or power surges.
6. Cosmetic damage or damage to internal components caused by installation or removal, failure to follow installation or operating instructions, or any neglect or misuse of the product.
7. Any product that is returned for service with a broken tamper evident seal, indicating tampering or improper handling of the product by an unauthorized person. Violation of product tamper evident seals or modification of factory installed serial and PMA labels voids any warranty, either expressed or implied.

The FDS technical support team is available to provide distance troubleshooting support during business hours (8:00am to 5:00pm EST) Monday through Friday at (470) 239-7421.

Many repair requests can be resolved through distance support and may not require return of merchandise to the factory. If a product must be returned to the factory for repair, an RMA number will be issued as directed by the technical support team and communicated by the repair coordinator.

Upon request by the customer, FDS may send a service technician onsite to repair any non-PMA products. The travel expenses incurred to include transportation, lodging and meals along with the technician's hourly rate shall be payable by the customer in accordance with FDS' applicable rates and procedures.

Flight Display Systems will, upon receipt of returned merchandise, remanufacture or replace the unit at our discretion and return the product by Ground Return Shipping. Express return shipment will be the responsibility of the sender.

This warranty is not transferable.

Any implied warranties expire at the express limited warranty expiration date. FDS shall not be held liable for any indirect, special, punitive, incidental or consequential damages.

Some states do not allow limitation on the length of an implied warranty. In such states, the exclusions or limitations of this limited warranty may not apply.



Log of Revisions

Rev	Date	Page	Description
A	09/05/2007		Initial Release
B	02/06/2008	5	Corrected DB part numbers
C	12/02/2008		Updated specs, DB-15 pin wiring, assembly drawing
D	01/29/2009	2,9	Updated specifications, warranty info
E	09/15/2009	2,3,5,6,10	Updated specs, power, pinout & button info, assembly drawing
F	12/15/2010	5	Corrected screw size, Format change
G	06/27/2011	5	Added Operating Temp. info
H	06/19/2012		Warranty and format update

