

## Installation and Operation Manual

### **FD102CV**

10.2" Widescreen LCD





FD102CV

10.2" Widescreen LCD

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## General Information

This high resolution 10.2” Widescreen LCD is perfect for cabin video and graphical entertainment. Built with retrofit aircraft integration in mind, this display can switch between three video input sources using an infrared remote or the control buttons on the top of the monitor.

### Front View



### Additional Information

The FD102CV can be connected to existing video switchers and can take a composite video input from a selector interface box. Multiple input sources can be selected and displayed on the monitor.

The FD102CV is made of all metal components. DO-160 testing has been completed and is available upon request.

The LCD is protected with a .060” Lexan lens to prevent scratching of the LCD.

## Specifications

<b>Display Type</b>	10.2" Widescreen TFT Color LCD
<b>Pixel Pitch</b>	0.072 mm X 0.220 mm
<b>Screen Resolution</b>	1024x600
<b>Supported Resolution</b>	Up to 1600x1200
<b>Brightness</b>	300 cd/ m <sup>2</sup>
<b>Contrast</b>	500 : 1
<b>Display Dimension</b>	9.8" (W) x 6.32" (H) x 1.04" (D)
<b>Display Size</b>	8.70" (W) x 5.215" (H)
<b>Weight</b>	2 lbs 3 oz
<b>Power</b>	28VDC @ 0.3 Amp
<b>Operating Temperature</b>	-20°C/60°C
<b>Storage Temperature</b>	-30°C/70°C
<b>PC &amp; Video Input</b>	VGA (Analog RGB 15 pin D-sub) 2 Composite Video
<b>Video Type Supported</b>	NTSC/PAL
<b>Screen Control</b>	On Screen Display Menu
<b>Remote Control</b>	IR, included
<b>Materials</b>	Aluminum
<b>Aspect Ratio</b>	16:9
<b>DO-160 Testing</b>	Section 21, Category B

## Installation Instructions

All cabin entertainment equipment, such as the FD102CV, 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.

It is recommended that you leave approximately ¼ inch of space around the rear of the display to have circulating air.

### Power

This is a **28V DC** monitor that requires .3 Amps of power to operate. The unit turns on automatically upon power application.

## Wiring Suggestions

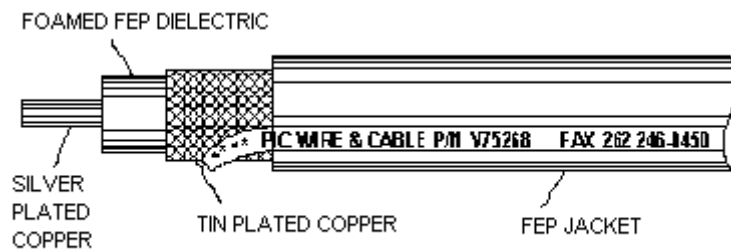
All shields should be grounded to the connector at the source, and floating at the display.

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](http://www.deerfieldlab.com), (650) 632-4090). In most cases this should be added to the video output of the source.

## VGA Wiring

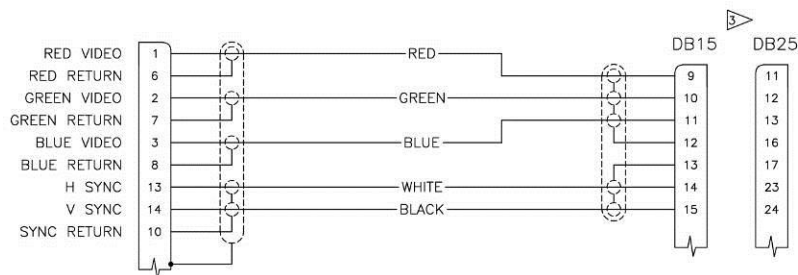
Recommended cable for VGA purpose is ECS P/N 453005. This is a single shielded cable containing 5 separate coaxial cables, color-coded to match the functions of the wires.

**NOTES:**

1. ECS 75 OHM VGA COMPOSITE (P/N 453005) CABLE SHOWN
  2. TERMINATE SHIELDS USING COAX CABLE TERMINATORS, SUCH AS RAYCHEM PART NUMBER CWT-4174-W122-5/9
- ▶ REFER TO PIN TABLE IN MANUAL FOR PRODUCT SPECIFIC CONNECTOR AND PIN OUT

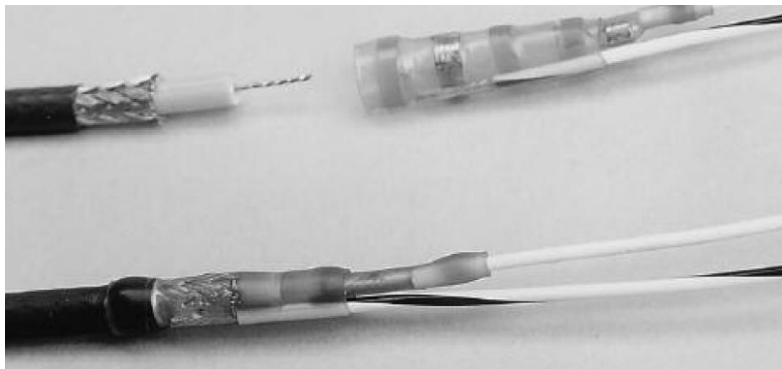
REV	DESCRIPTION	DATE	BY	APPD
O.J.	ORIGINAL ISSUE	01-05-11	DMC	RPJ
A	REVISED SHIELD TERMINATIONS	01-27-11	DMC	RPJ
B	REVISED RETURNS	11-02-11	DMC	JTD

VIDEO SOURCE



DRN	D.M.C.	01-05-11	<b>FLIGHT DISPLAY SYSTEMS</b>	
APV	R.P.J.	01-05-11	WIRE DIAGRAM, VGA MANUAL SUPPLEMENT	
TOLERANCES			DRAWING NO.	
LENGTH: +/- 0.50 INCH			MSD-137	
FINISH			SCALE	REVISION
			NONE	B
			SHEET	
			1 OF 1	

Coax cables should be terminated using solder sleeve coaxial cable terminators, Raychem P/N: CWT-4174-W122-5/9

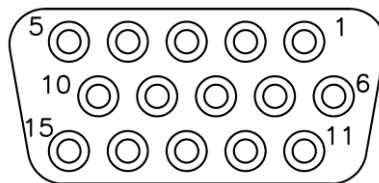


## Power/Video

### 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	28VDC Power
2	28VDC Ground
3	N/C
4	Composite Video 1 - Signal
5	Composite Video 1 - Ground
6	N/C
7	Composite Video 2 - Signal
8	Composite Video 2 - Ground
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)

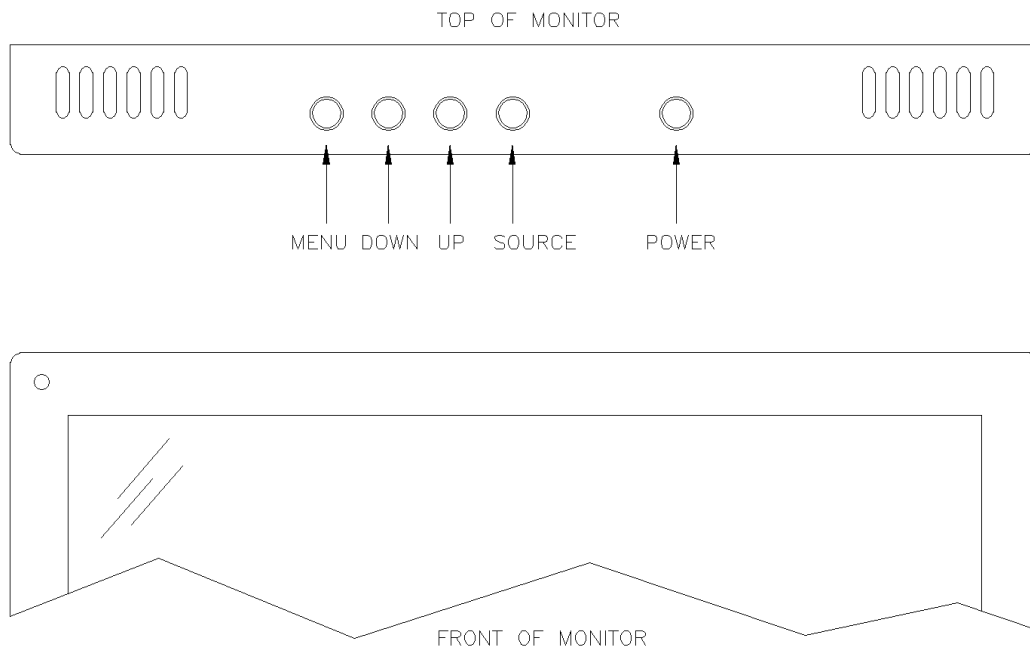


## Operation Instructions

The FD102CV 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 FD102CV using the video source select switch on the LCD monitor, or remotely throughout the cabin with the included IR remote.

### Button Controls



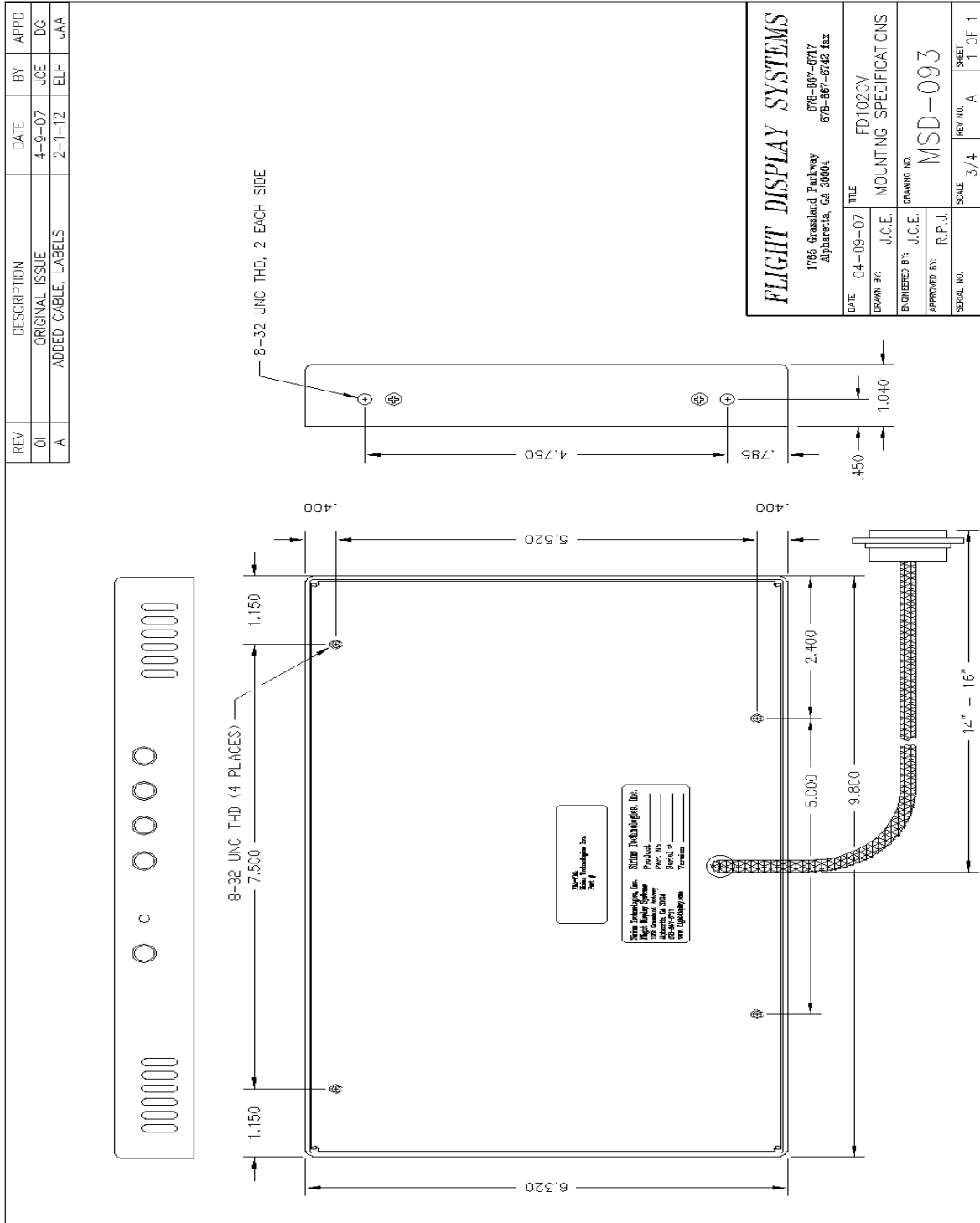
BUTTON	FUNCTION	DESCRIPTION
1	POWER	Press to turn the monitor on if currently off. Hold to turn the monitor off.
2	SOURCE	Press to switch between sources.
3	UP	Press to increase the value of a menu item.
4	DOWN	Press to decrease the value of a menu item.
5	MENU	Press to activate Menu.

## Remote Control Buttons



The remote control included with the FD102CV contains the same functionality available on the display buttons, to include power, source, menu, and directional arrows.

**Technical Drawing**



## 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.

### Intermittent or failed power:

1. Inspect connection on the monitor side.
2. Inspect the connection on the aircraft side.

3. Confirm proper rating on fuses.

**Poor/Unsteady color:**

1. Turn monitor off and back on.
2. Cycle monitor source selections and confirm the functionality of the sources.
3. Inspect connection(s) to monitor to assure that they are firmly attached and that there are no damaged pins.
4. Inspect connections to/from the video splitter to assure that they are firmly attached and that there are no damaged pins.
5. Inspect output connections on video source. (DVD, BLU, PED)
6. Adjust gain/output on splitter if applicable.
7. Adjust gain/output on video source if applicable.
8. Utilize the monitor menu to execute factory reset to default settings.

**Intermittent signal:**

1. Turn monitor off and back on.
2. Cycle monitor source selections and confirm the functionality of the sources.
3. Inspect connection(s) to the monitor.
4. Inspect connections to/from video splitter
5. Inspect output connections on video source. (DVD, BLU, PED)

**Non-operational buttons:**

1. Use the remote control to confirm the functionality of the monitor.
2. Turn the monitor off and back on.

**Picture doesn't fit screen:**

1. Use the monitor menu to change display settings to alternate setting.
2. Use the monitor menu to change display settings back to the desired setting.
3. Turn monitor off and back on.
4. Using the source selector, confirm which or if all sources are improperly displayed.
5. Utilize the monitor menu to execute factory reset to default settings.



## 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.

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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](http://www.FlightDisplay.com)

## Instructions for Continued Airworthiness

The FD102CV is designed not to require regular general maintenance.



## Warranty Information

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	01/25/2007	---	---
B	03/28/2007	2,9	Added info regarding FD102CV (28V)
C	04/11/2007	N/A 6	Fixed page numbering. Changed required amperage to 2 Amps.
D	04/09/2008	11	Updated DWG.
E	02/11/2009	2,10	Updated specs, warranty info
F	07/16/2009	2,5	Removed 12VDC info
G	10/22/2009	1,2,4,6,11	Updates: Product image, Specs, Added Coax Cable, Monitor Control Buttons with Top View, Assembly Drawing
H	02/10/2010	2	Specification revisions
I	03/22/2010	2	Added supported resolution info
J	12/14/2011	7, 13	New Format, replaced drawing, additional troubleshooting guides
K	2/1/2012	8	Revised Pinout table, Technical drawing