

FD104ARM

Installation and Operation Manual

10.4" LCD on Arm



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

Flight Display Systems
Enhancing the Flight Experience

FD104ARM

10.4" LCD on Arm

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General Information

The FD104ARM is a 10.4" LCD on Arm. It is made of two separate parts, the LCD screen (FD104CV) and the articulating arm (FD104DMT).

Built with retrofit aircraft integration in mind, this display can switch between three video input sources using the buttons on the bezel or the Infrared Remote.

The arm has both a hinge and a pivot point, and it can rotate 180° around the attach point at the base and 180° at the bottom of the center of the LCD. This mount will allow the monitor to tilt back away from the passenger up to 20°.

Front View



Information

Additional

The FD104ARM is made of all metal components. The milled aluminium arm represents the evolution of several design enhancements for an optimum removable mounting solution.

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 FD104ARM 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.

Specifications

Display Type	10.4" TFT Color LCD
Display Color	262,144 Colors
Screen Resolution	1024x768 (1280x768 supported)
Brightness	700 cd/m ²
Mount Dimensions	7" (W) x 4.7" (H) x 1.5" (D)
Display Dimensions	10.22" (W) x 8.23" (H) x 1.48" (D)
Weight	4 lbs 9.7 oz
Power	28VDC @ 1.0 Amp
Video Inputs Supported	Composite Video, S-Video
Video Types Supported	NTSC/PAL
PC Input	VGA (Analog RGB)
Screen Control	On-Screen Display Menu
Remote Control	IR, included
Mount Materials	Aluminum
Mount Type	Articulating Arm
DO-160 testing	Section 21 Category B

Installation Instructions

All cabin entertainment equipment, such as the FD104ARM, 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.

Mounting and Base Information

The FD104ARM mates with a drink rail mount (*FDBASE*). It can be ordered to mate with a wall mount (*FDBASE-W*). The connector seats deeply in the mount and is held in place by either gravity (*FDBASE*) or a locking pin (*FDBASE-W*). The secure High Density DB15 pin and connector can only be connected one direction. The mount is keyed to prevent inadvertent misalignment.



Power

This is a **28VDC** monitor that requires 1.0 Amp of power.

Video Wiring Suggestions

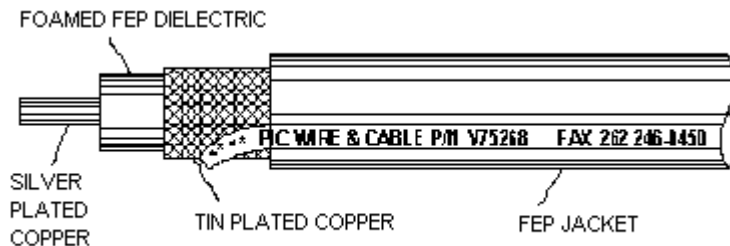
All shields should be grounded to the connector at the source, and floating at the display.

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).

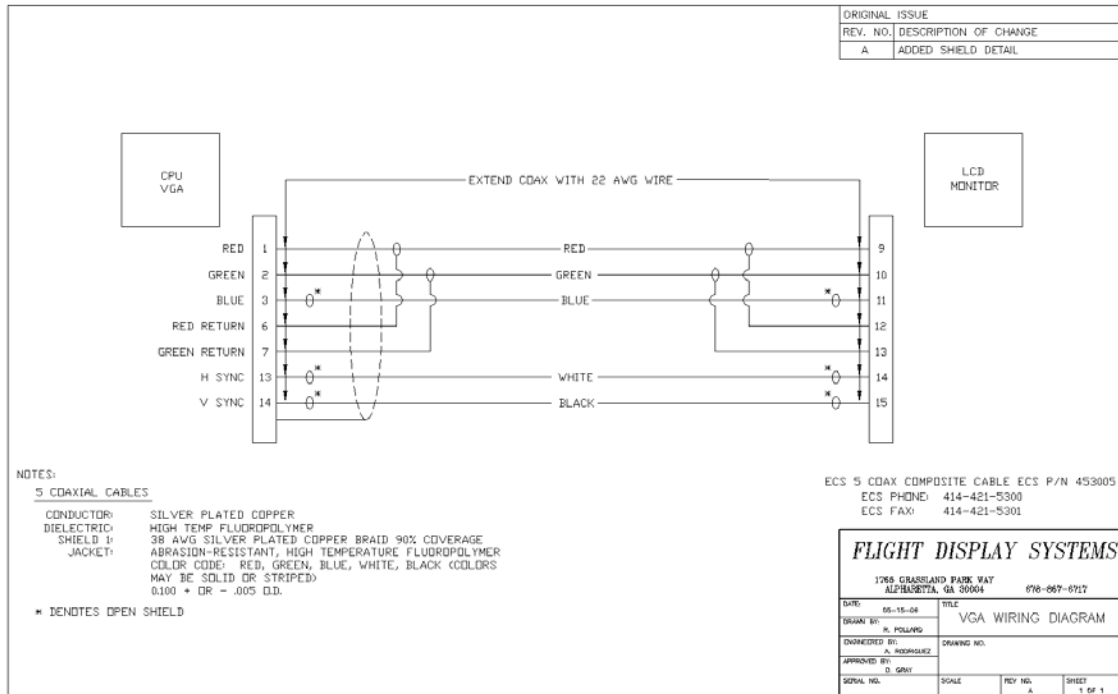


Similar aviation coaxial cable can be used from other vendors, as well.

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.



The individual wires should be extended with 6" 22awg wires using an environmental splice for the red & green wires, and Raychem caps for the blue, white, and black wires.

Power and Ground Wiring

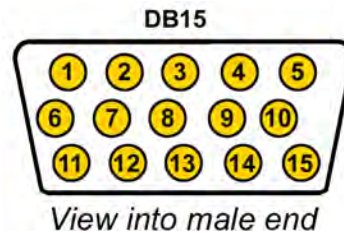
22 AWG wire is recommended for Power and Ground applications.

Pinout for High Density DB-15

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

High density, D-sub, 15 contact plug (male)	P/N 748364-1
High density, D-sub, 15 contact receptacle (female)	P/N 748565-1
HD15M pins	P/N M39029/58-360
HD15F pins	P/N M39029/57-354

Wiring Diagram



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 FD104ARM 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 FD104ARM 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.

Monitor Control Buttons

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



Operations are as follows:

BUTTON	DESCRIPTION
Power	Used to turn the unit on or off.
Select	Used to select the input signal source.
Down	Used to decrease the adjustment of a menu option.
Up	Used to increase the adjustment of a menu option.
Menu	Used to change the configuration of the picture settings (Backlight, Brightness, Contrast, Saturation, Hue, etc.)

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.

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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 FD104ARM is designed not to require regular general maintenance.

Warranty Information

Flight Display Systems warrants the FD104ARM against material or manufacturing defects for a *two-year period (effective 1/1/2009 on all equipment shipped with 2009 pricing). 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.

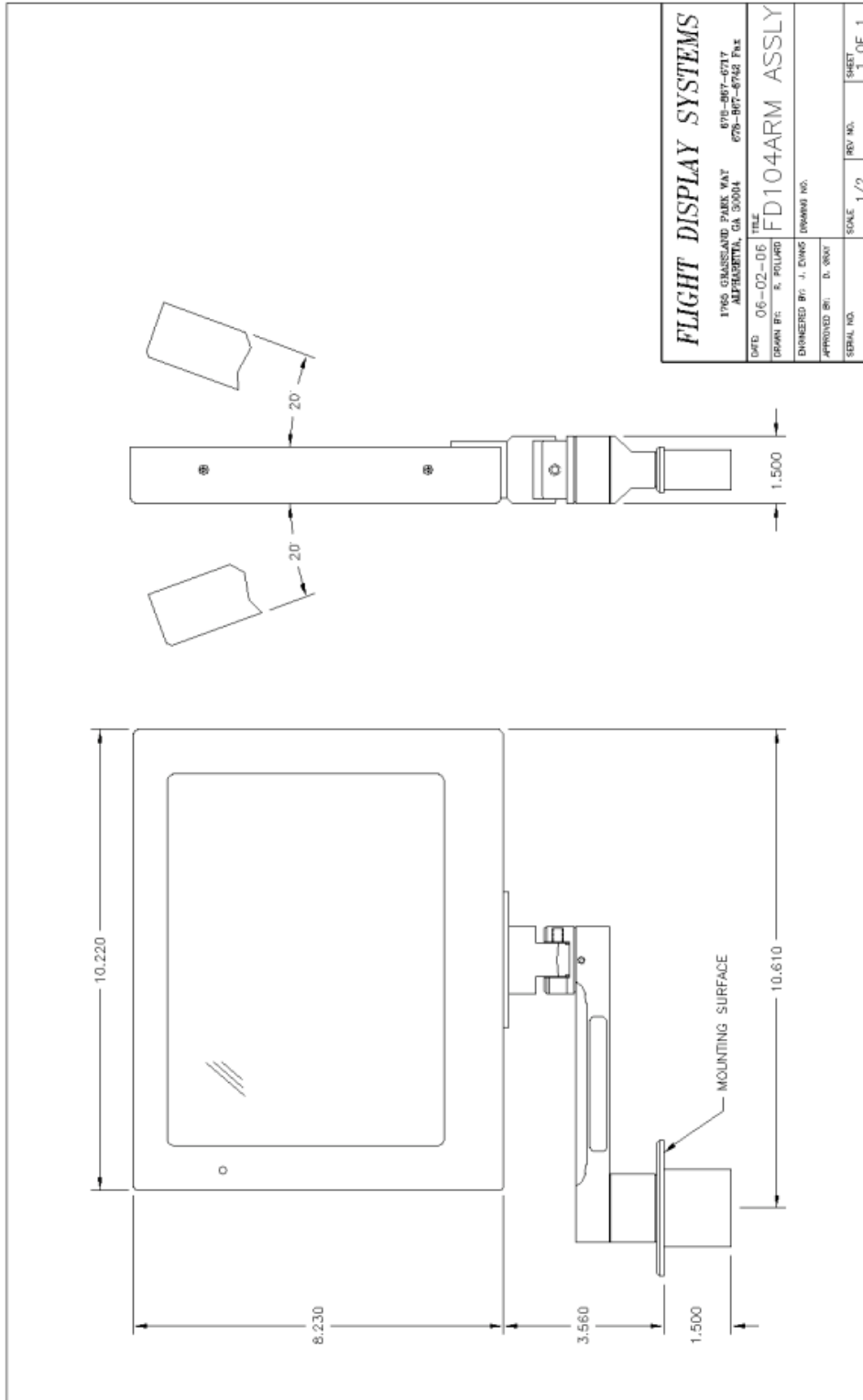
Flight Display Systems will pay Ground Shipping charges for warranted items. Charges for express shipment will be the responsibility of the sender.

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.

Assembly Drawing



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Log of Revisions

Rev	Date	Page	Description
A	01/25/2007	---	---
B	04/10/2009	2,9	Updated specifications, warranty info
C	12/11/2009	5	Revised part number