 <p>Flight Display Systems <i>Enhancing the Flight Experience</i></p>	<p>Document Number: MAN – FD600CAM-2/FD600CAM-2 Ver 28V</p>	<p>Rev: D</p>	<p>Revision Date: 03/16/2011 Page 1 of 12</p>
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FD600CAM-2/FD600CAM-2 Ver 28V

Installation and Operation Manual

Glareshield Camera



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

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FD600CAM-2/FD600CAM-2 Ver 28V

Glareshield Camera

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General Information


The FD600CAM-2 and the FD600CAM-2 Ver 28V are Glareshield Cameras. This small color camera, when mounted in the cockpit, will provide passengers with an opportunity to observe taxi, take-off, and landing, adding a whole new dimension to the In-Flight Entertainment experience!

Front View



Specifications

Video System	NTSC or PAL
Video Output	1Vp-p, 75 Ohms
Camera Sensor	1/3" Color CCD
Camera Lens	4.0mm & 8.00mm (included)
Camera Shutter Speed	F 1.2
Picture Element	811H x 508V NTSC (795H x 596V PAL)
Horizontal Resolution	480 Lines
Scanning System	2:1 Interlace
Signal to Noise Ratio	>48 dB
Minimum Illumination	.05 Lux
Dimensions, Camera	1.35" (W) x 1.35" (H) x 2.92" (D)
Dimensions, Mount	2.0" (W) x 1.75" (H) x 1.75" (D)
Weight	6 oz
Power	FD600CAM-2 - 12VDC @ 90 mA FD600CAM-2 Ver 28V - 28VDC @ 45 mA
Operating Temperature	14°F to 140°F

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Installation Instructions

All cabin entertainment equipment, such as the FD600CAM-2 and the FD600CAM-2 Ver 28V, 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.

Mounting from the cockpit headliner is suggested. Excessive sunlight will make the video image hard to see. Mounting inside the cockpit and out of direct sunlight will provide a “visor” to the camera lens.

Remember to set the camera pointing down at an approximately 60° angle, as this will optimize the picture for takeoff and landings. When looking at the image while on the ground have the horizon 2/3 of the way up the video screen in the cabin.

Power

The FD600CAM-2 is a 12VDC camera that requires 90mA power and can operate at 9 - 15VDC. The FD600CAM-2 Ver 28V is a 28VDC camera that requires 45mA power and can operate at 15 - 29VDC.

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Wiring Suggestions

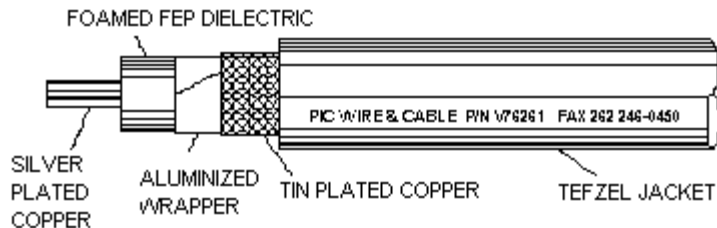
All shields should be grounded to the connector at the source, and floating at the display.

Avoid routing video wiring parallel to:

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

Composite 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 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.

Power and Ground Wiring

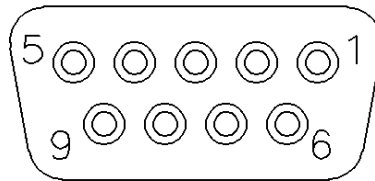
22 AWG wire is recommended for Power and Ground applications.

Power/Video

Standard Density DB-9 Receptacle (supplied)

Connector
Crimp Contacts

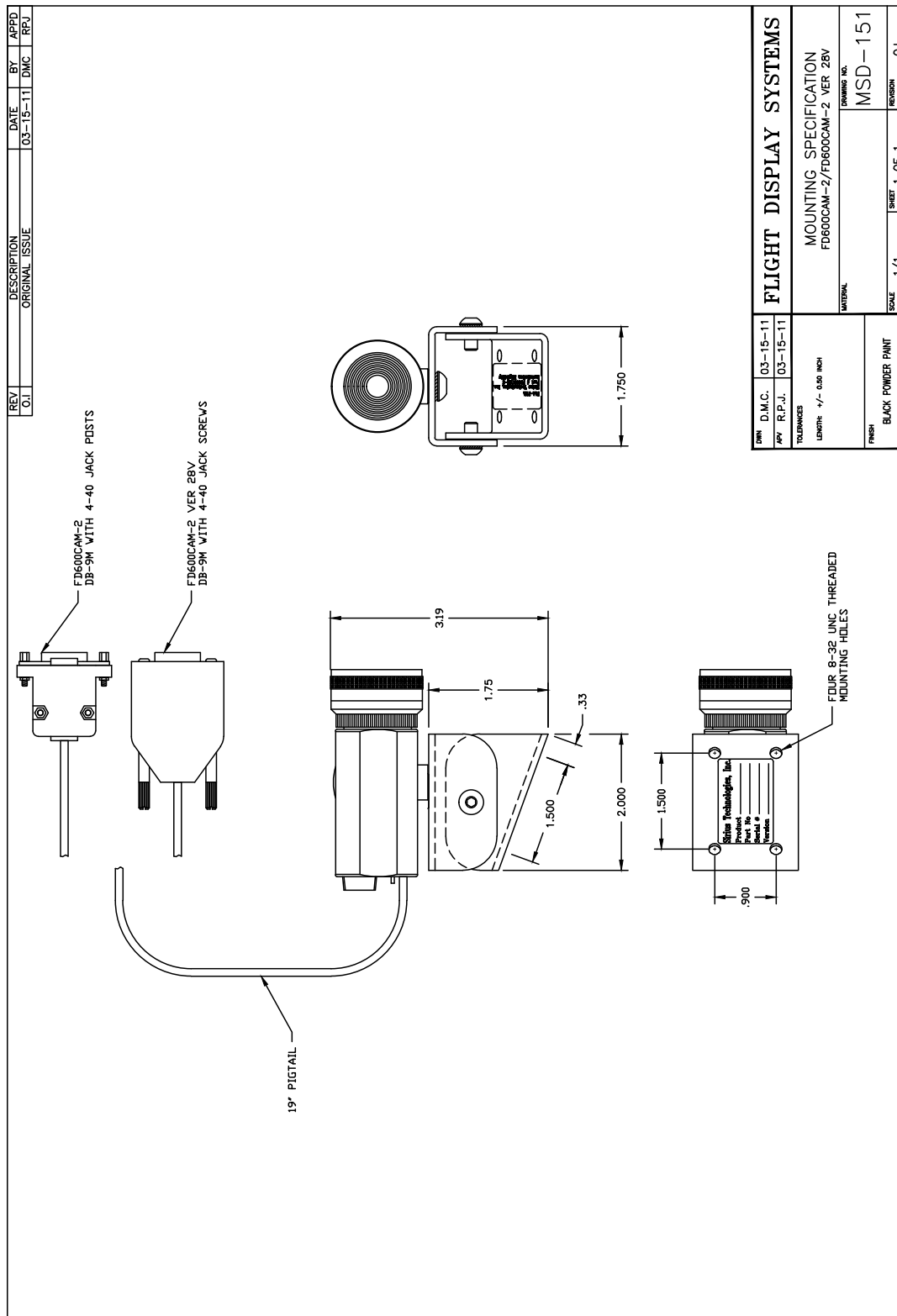
P/N: M24308/2-281 or Equivalent
P/N: M39029/63-368 or Equivalent




MATING FACE

Pin Number	FD600CAM-2 Description	FD600CAM-2 Ver 28V Description
1	12VDC Power	28VDC Power
2	12VDC Ground	28VDC Ground
3	N/C	N/C
4	Composite Video - Shield	Composite Video - Shield
5	Composite Video - Signal	Composite Video - Signal
6	N/C	N/C
7	N/C	N/C
8	N/C	N/C
9	N/C	N/C

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 FD600CAM-2 and the FD600CAM-2 Ver 28V is designed not to require regular general maintenance.

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Warranty Information

Flight Display Systems warrants the FD600CAM-2 and the FD600CAM-2 Ver 28V 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	03/08/2007		Initial Release
B	09/05/08	1	Updated camera lens specs, added operating temperature to spec list
C	04/14/2009	1,6	Updated specifications, warranty info
D	03/16/2011		Added FD600CAM-2 Ver 28V, new Composite Wiring info, new Pinout info, new Technical Drawing