

Installation and Operation Manual

FD600CAM-2/FD600CAM-2 Ver 28V

Glareshield Camera





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



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.



Wiring Suggestions

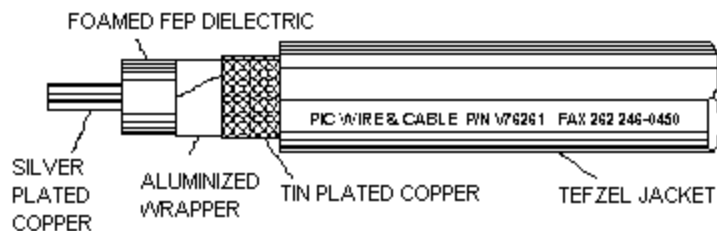
All shields should be grounded to the connector at the source, and floating at the display.

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.

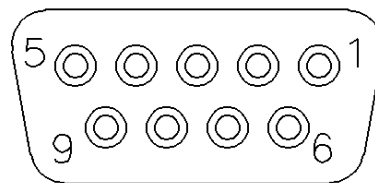
Power and Ground Wiring

22 AWG wire is recommended for Power and Ground applications.

Power/Video

Standard Density DB-9 Receptacle (supplied)

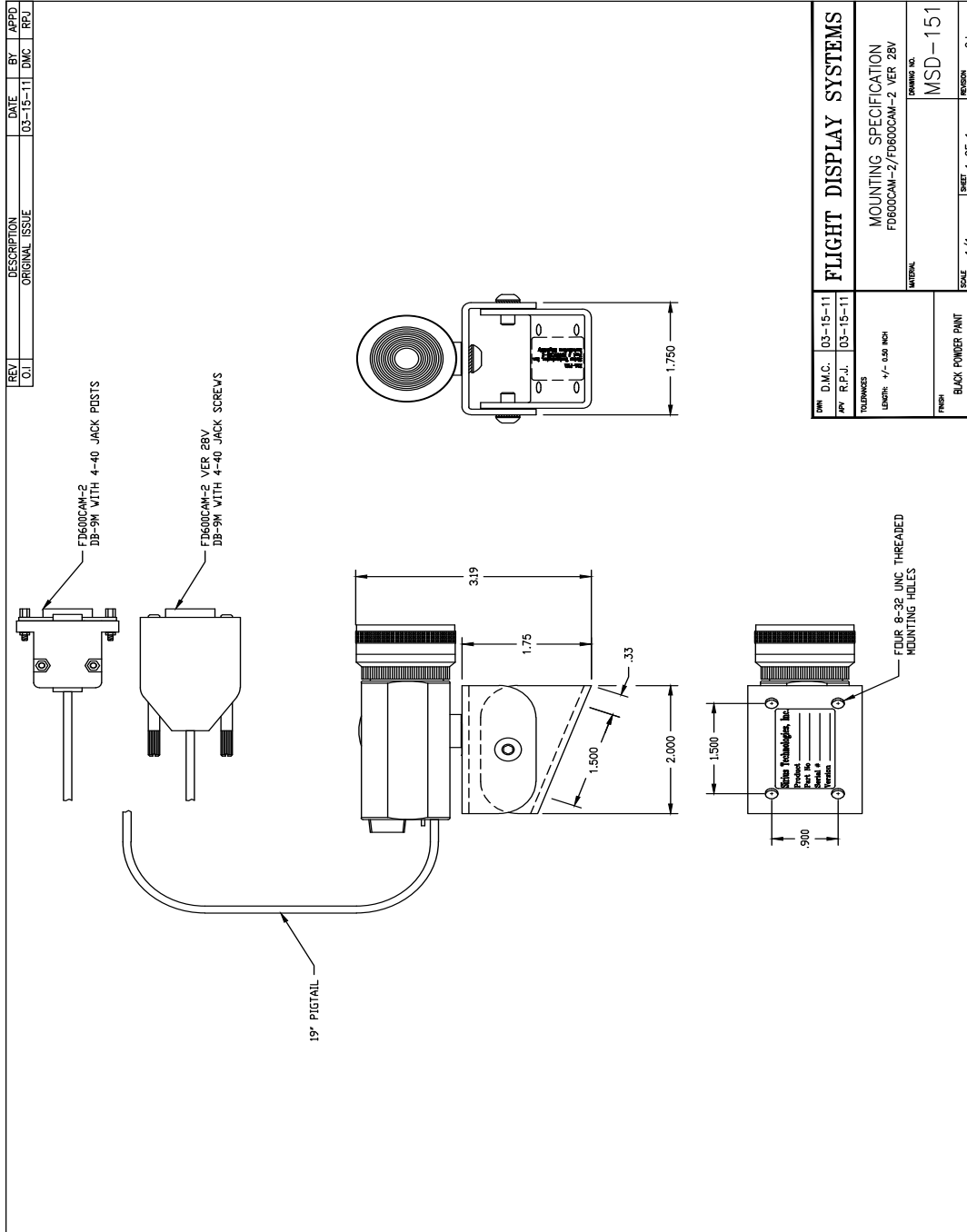
Connector	P/N: M24308/2-281 or Equivalent
Crimp Contacts	P/N: M39029/63-368 or Equivalent



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



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.

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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 FD600CAM-2 and the FD600CAM-2 Ver 28V 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	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

