Installation and Operation Manual

FD215CV-C-1

21.5” LCD Display

TECHNICAL SUPPORT
470-239-7421 or FDSAvionics.com

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General Information

The FD215CV-C-1 is a special mission monitor which has features that allow installation in a standard rack mount configuration.

Front View

Additional Information

The FD215CV-C-1 utilizes a state of the art digital video decoding chipset for the analog video input. Four video sources are activated: HD-SDI, DVI, VGA (computer graphics i.e. moving maps), and S-Video (via BNC connectors for Y and C components).

The LCD is protected with a .060” non-glare Lexan lens to prevent scratching of the LCD, and to meet stringent FAA abrasive load criteria.

The high-definition monitor also features dual USB 2.0 powered ports to allow for quick and easy access to files via thumb drive. Each port supplies up to 500ma to power external devices.

Specifications

Display Type	21.5” TFT Color LCD
Display Color	16.7 Million Colors
Screen Resolution	1920 X 1080
Brightness	300 cd/m^2
Dimensions	20.0” (W) x 14.5” (H) x 1.62” (D)
Display Size	18.82” (W) x 10.61” (H)
Weight	10 lbs. 13 oz.
Power	28V DC @ 2 Amps
Inrush Current	18Amps @ 2µS 4 Amps @ 2ms 2 Amps Continuous 0.5 Amps in standby
PC & Video Input	Analog RGB, HD-SDI, Digital (DVI-D), S-Video
Video Type Supported	VGA, NTSC
Screen Control	On Screen Display Menu
Viewing Angle	170° Horizontally 160° Vertically
Materials	Aluminum
Certifications	DO-160E, Sec 7, Cat B – Oper. Shock, Crash Safety DO-160E, Sec 8, Cat S – Standard Vibration DO-160E, Sec 4.6.1, Cat A1 DO-160F, Sec 21, Cat B

Installation Instructions

All cabin equipment, such as the FD215CV-C-1, 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 system should it become necessary.

The FD215CV-C-1 is designed to mount into a standard electronics rack using (4) 10-32 Machine screws. See installation drawing on page 14 for measurement details.

Power

This is a **28VDC** monitor that requires 2.0 Amps of power to operate. The unit turns on automatically upon power application.

Wiring Suggestions

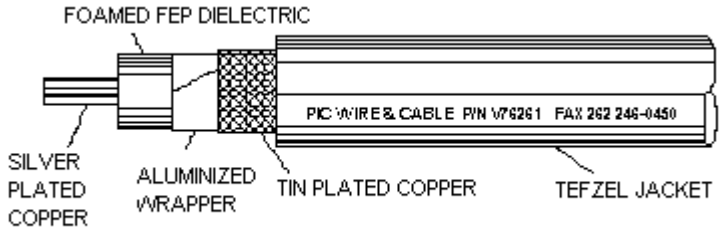
All shields should be grounded to the connector at the source, and floating at the display.

Avoid routing video wiring parallel to:

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

S-Video and Audio Wiring

Recommended cable for s-video 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).

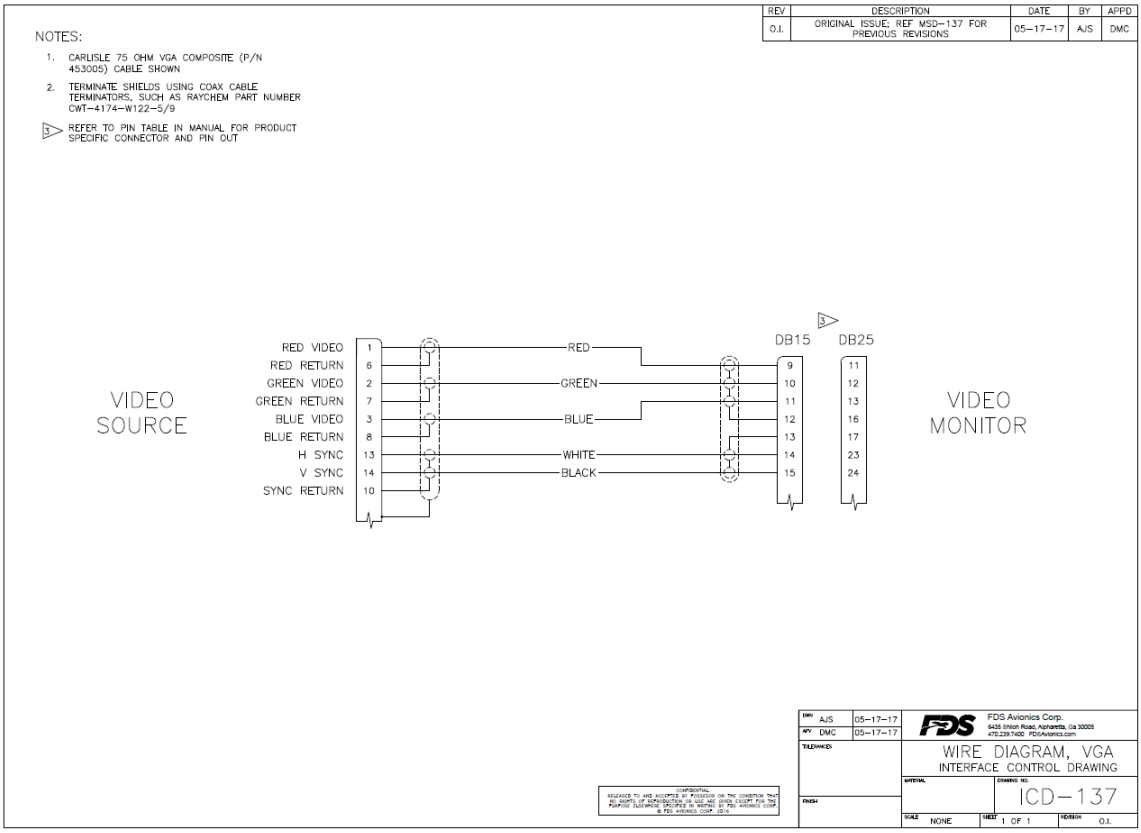


Similar aviation coaxial cable can be used from other vendors, as well.

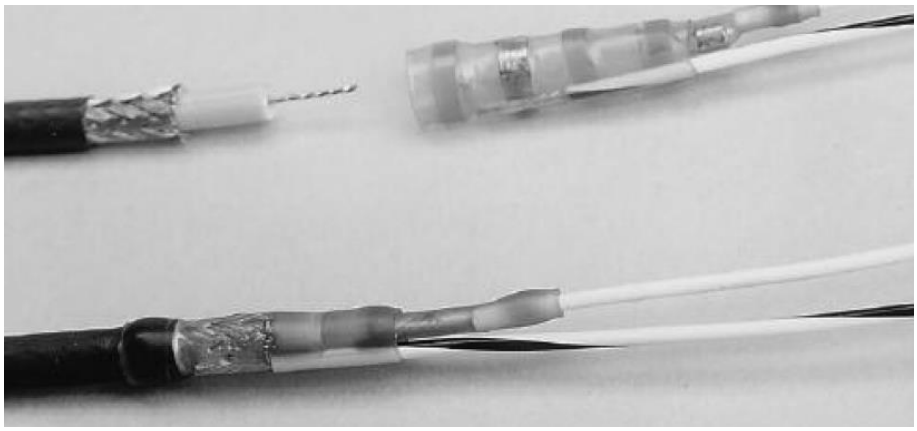
Some aircraft are prone to AC noise - we recommend adding to the composite source a 75 Ohm video isolation transformer such as Deerfield Laboratory, Inc. Part No. 162-1 (www.deerfieldlab.com, (650) 632-4090). In most cases this should be added to the video output of the source.

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

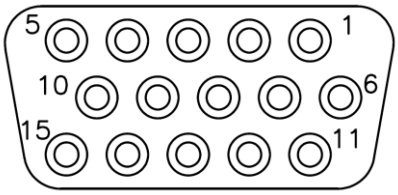
20 AWG wire is recommended for Power and Ground applications.

Rear View with Connectors

Power/Video

Pin out for VGA - High Density DB-15 Receptacle (supplied)

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

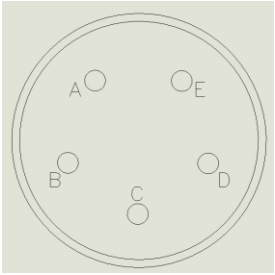


MATING FACE

PIN NUMBER	DESCRIPTION
1	Red Video
2	Green Video
3	Blue Video
4	N/C
5	N/C
6	Red Return (Ground)
7	Green Return (Ground)
8	Blue Return (Ground)
9	N/C
10	Sync Return (Ground)
11	N/C
12	DDC Data
13	Horizontal Sync
14	Vertical Sync
15	DDC Clock

Pin out for 28V PWR – D38999 connector (supplied)

Connector P/N: D38999/26FB5SA or Equivalent
Crimp Contacts P/N: M39029/56-351 or Equivalent



MATING FACE

Pin	Description
A	28VDC Power
B	28VDC Power
C	28VDC Ground
D	28VDC Ground
E	N/C

Pin out for HD-SDI Input
(Standard BNC – 75 OHM) – 31-242 (Supplied)

Pin	Description
Center	Video Signal
Shell	Video Return

Pin out for S-Video (Luminance - Y Component)
(Standard BNC – 75 OHM) – 31-242 (Supplied)

Pin	Description
Center	Y Signal
Shell	Y Return

Pin out for S-Video (Chrominance - C Component)
(Standard BNC – 75 OHM) – 31-242 (Supplied)

Pin	Description
Center	C Signal
Shell	C Return

Pin out for DVI-D

Accepts a standard DVI-D (Single Link) male connector (supplied)

View into mounted receptacle

Pin Number	Description
1	TMDS data 2-
2	TMDS data 2+
3	TMDS data 2 shield
4	N/C
5	N/C
6	DDC clock
7	DDC data
8	N/C
9	TMDS data 1-
10	TMDS data 1+
11	TMDS data 1 shield
12	N/C
13	N/C
14	+5 V
15	Ground
16	Hot plug detect
17	TMDS data 0-
18	TMDS data 0+
19	TMDS data 0 shield
20	N/C
21	N/C
22	TMDS clock shield
23	TMDS clock+
24	TMDS clock-
C1	N/C
C2	N/C
C3	N/C
C4	N/C
C5	N/C

Operation Instructions

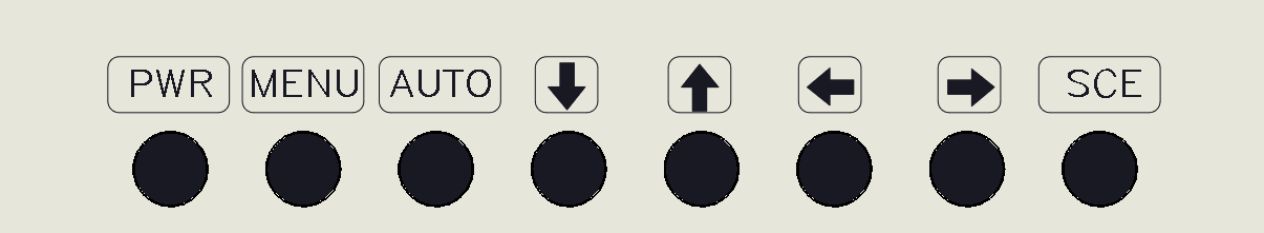
The FD215CV-C-1 is continuously on but can be de-energized by removing power from the video system. No pilot or aircrew action is necessary during flight or ground operation.

The operator will be able to change the video output from the FD215CV-C-1 using the video source select button on the display.

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.

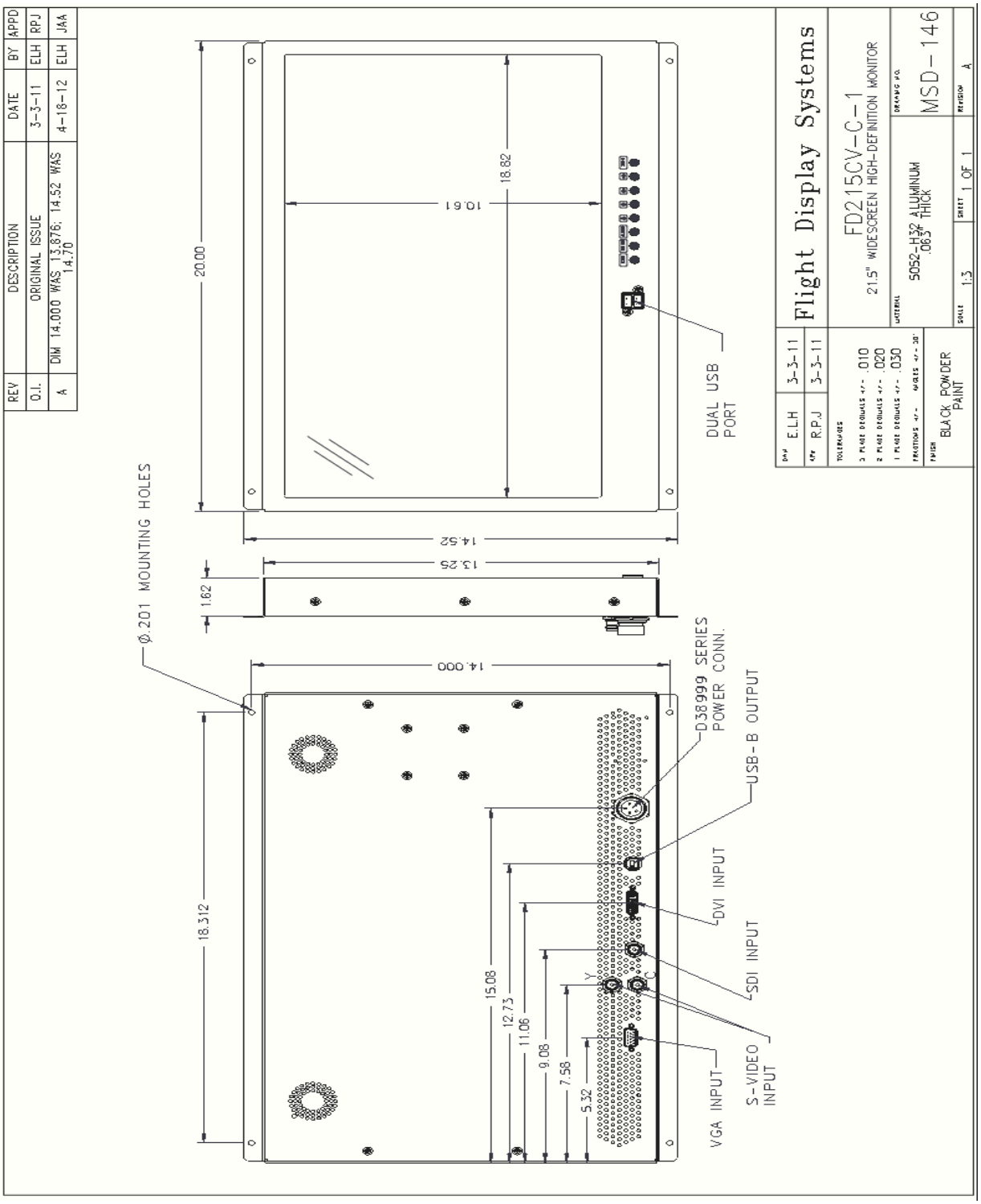
Button Controls

Located on the front of the FD215CV-C-1 are 8 buttons.



BUTTON	DESCRIPTION
PWR	Turns ON/OFF the system.
MENU	Activates the OSD menu or goes to previous menu.
AUTO	Auto-adjustment in RGB.
↓	Moves the highlight icon up to the function that user wants.
↑	Moves the highlight icon down to the function that user wants.
←	Decreases the adjustment of the selected function.
→	Increases the adjustment of the selected function.
SCE	Selects the Input Signal among analog RGB/S-Video/Composite.

Technical Drawing



Technical Support

Should you have any questions concerning this product or other FDS Avionics Corp. 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.FDSAvionics.com

Instructions for Continued Airworthiness

The FD215CV-C-1 is designed not to require regular general maintenance.

Limited Warranty

All FDS Avionics Corp. 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.

FDS Avionics Corp. 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	02/28/11		Initial Release
B	05/13/2011	6	Updated Specs, correct circular connector pinout to letters
C	04/18/12	6,14	Updated MSD, dimensions
D	11/27/2013	6,17	Updated Inrush Current Data – Power and Warranty Information
E	01/17/2014	6	Updated Inrush Current Data
F	06/26/2014	8,9	VGA Wiring Diagram and Pinout Descriptions
G	07/27/2017	ALL	Name change and Copyright Update , Updated Warranty, Removed Troubleshooting, Updated VGA wire diagram