

Installation and Operation Manual

FD200CPU-7 Ver M1

Solid State CPU





Table of Contents

Introduction	3
System Description.....	3
Specifications.....	4
Available Options.....	4
Installations	5
Connectors	5
J1 - Dual USB Connector.....	5
J2 - DB-09 Male Connector.....	6
J3 - DB-15 Female Connector	7
J4 - DB-15 Male Connector.....	8
Power Requirements	9
Mounting.....	9
Video Wiring.....	9
S-Video/Composite Wiring	10
VGA Wiring.....	10-11
Installation Drawing	12
Technical Support.....	13
Instructions for Continued Airworthiness	13
Limited Warranty	14
Log of Revisions	15



Introduction

I Purpose

This manual provides specifications and instructions required for the proper installation and operation of the FD200CPU-7 Ver M1 manufactured by FDS Avionics.

II General Information

For general information on the FD200CPU-7 Ver M1, please contact our sales team (sales@FDSAvionics.com). You can also find more information, manuals, and spec sheets on our website. www.FDSAvionics.com

III Technical Assistance

For technical information, or advanced troubleshooting, please contact the FDS Avionics support staff at 470-239-7421.

System Description

The FD200CPU-7 Ver M1 is a solid-state CPU designed to provide customers with a robust and reliable platform with minimum size, weight, and power requirements. The FD200CPU-7 Ver M1 can be configured for a variety of applications using its rich I/O: RS232, RS422, RS485, USB, Digital Inputs, Digital Outputs, Ethernet, and ARINC 429.

FDS Avionics has taken advantage of the latest computer technology, and designed the FD200CPU-7 Ver M1 to be one of the smallest and lightest mission computers system available in the aviation industry. The FD200CPU-7 Ver M1 uses a solid-state flash memory hard drive that holds the Microsoft Windows Embedded Standard 7 operating system and any custom software needed for the units integration. Flash memory and solid state circuit boards allow the FD200CPU-7 Ver M1 to operate smoothly at extreme temperatures, and increases tolerance for vibration and shock.



Specifications

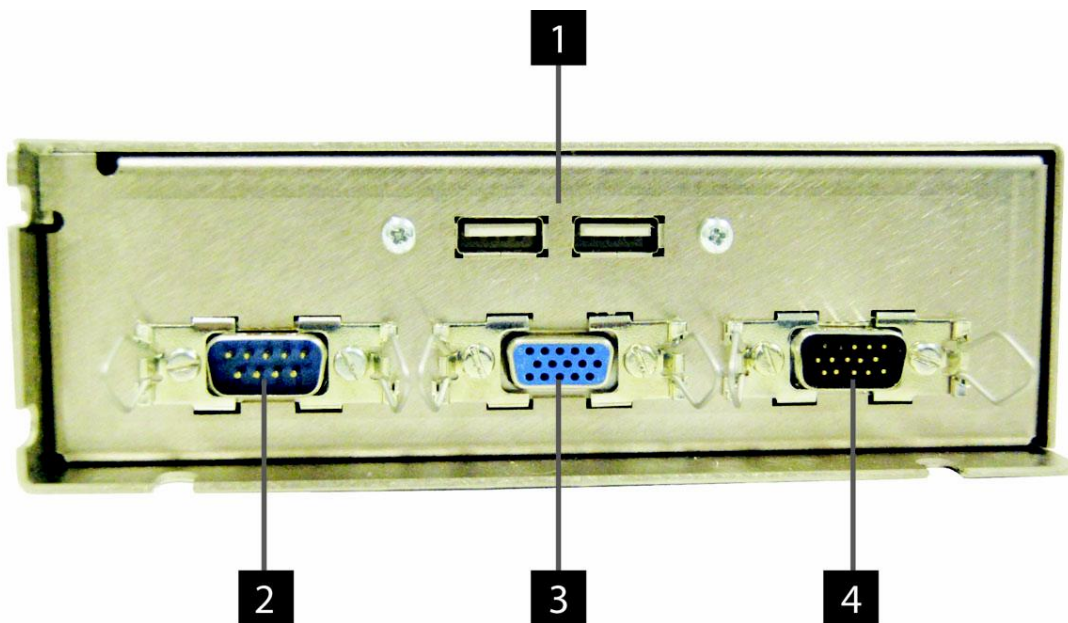
Processor	Intel Atom Processor, D510 Dual Core @ 1.66 GHz
Memory	2 GB of DDR2 @ 667 MHz
Storage	Industrial CompactFlash Solid State Hard Drive up to 32 GB
Graphics	Intel Gen3.5+ GFX Embedded Graphics (DirectX 9 Capable)
Video Outputs	VGA Video Output up to 2048x1536
Operating System	Windows Embedded Standard 7 with available EWF (Enhanced Write Filter) Hard Disk Drive Overlay Protection
Standard I/O	RS232 x (2), USB 2.0 x (2)
Dimensions	11" (W) x 2" (H) x 6.25" (D)
Weight	2 lbs. 2 oz.
Power Requirement	24V – 28V @ 2 AMPS
Mounting	Horizontal or Vertical

Available Options*

- Gigabit Ethernet Port
- ARINC 429 Interface
- NTSC/Composite Video Output
- RS422 or RS485 Interface
- 2.5" SATA Solid State Disk
- Windows XP Embedded or Windows XP Professional
- Digital Inputs and Digital Outputs

*Contact FDS Avionics for additional information on custom configurations.

Installation



Connectors

The FD200CPU-7 Ver M1 Moving Map computer has 4 connectors.

J1 – Dual USB Connectors

These are standard USB 2.0 connectors used for configuration, user input, and external devices. It is recommended that these ports be easily accessible. If the CPU must be mounted behind cabinets or under floor panels, a USB extension cable can be used to extend the connector to a more accessible location, preferably near a monitor.

J2 - Data Input

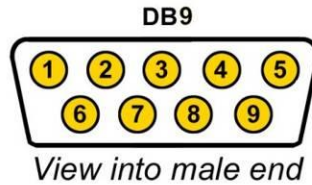
Pin out for DB-09 Male Connector

In the standard FD200CPU-7 Ver M1, J2 is a standard RS232 serial port. By default, it is configured as COM1.

Part numbers for DB-9 connectors, manufactured by Amp:

D-sub, 9 contact receptacle (female)
9F pins

P/N 747905-2
P/N 205439-1



Pin Number	Description
1	DCD
2	Data In/RX
3	Data Out/TX
4	DTR
5	Ground
6	DSR
7	RTS
8	CTS
9	Ring Indicator

J3 - VGA Video Output

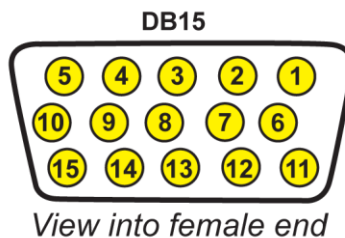
Pinout for DB-15 Female Connector(VGA)

This is a standard VGA output connector. This is the same connector you would find on a desktop computer, and will work with standard computer monitors for troubleshooting.

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

**High density, D-sub, 15 contact plug (male)
 HD15M pins**

**P/N 748364-1
 P/N M39029/58-360**



Pin Number	Description
1	Red Signal
2	Green Signal
3	Blue Signal
4	N/C
5	N/C
6	Red Return
7	Green Return
8	N/C
9	N/C
10	N/C
11	N/C
12	N/C
13	Horizontal Sync
14	Vertical Sync
15	N/C

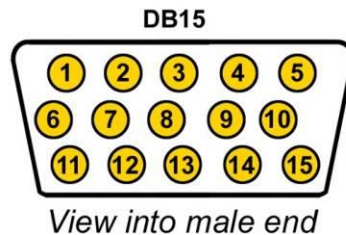
J4 - Power/Video

Pinout for DB-15 Male Connector

This connector will be used for power/ground, NTSC/PAL output (with option only), ARINC 429 Input (with option only), RS232 input, and other communications/IO based on the required configuration. N/C designates a contact that is not in use in the default configuration. Examples of possibilities include additional RS232 ports, Ethernet, RS422/485 port, digital inputs/outputs, etc.

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

High density, D-sub, 15 contact receptacle (female) P/N 748565-1
HD15F pins P/N M39029/57-354



Pin Number	Description
1	Power 28V
2	Ground
3	BI_DA+ (802.3ab - White/Orange)
4	BI_DA- (802.3ab - Orange)
5	BI_DB+ (802.3ab - White/Green)
6	BI_DC+ (802.3ab - Blue)
7	BI_DC- (802.3ab - White/Blue)
8	BI_DB- (802.3ab - Green)
9	BI_DD+ (802.3ab - White/Brown)
10	BI_DD- (802.3ab - Brown)
11	Composite + (<i>NTSC/Pal Option Only</i>)
12	Composite - (<i>NTSC/Pal Option Only</i>)
13	N/C
14	232 RX/Signal
15	232 Ground

Power Requirements

1. The FD200CPU-7 Ver M1 requires a 24V-28V DC input. It is recommended that the power run through an independent circuit breaker rated at 3-5 amps.
2. The IFE system should not be powered through the avionics power bus, or any other essential power bus. 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. IFE equipment should not be powered on until all other equipment in the aircraft has powered up and stabilized.
3. 22 AWG wire is required for the power connection and installing a ferrite core within 6 inches of the J4 connector is recommended.

Mounting

1. The FD200CPU-7 Ver M1 can be mounted in a vertical or horizontal position and secured with #8 machine screws. **DO NOT MOUNT THE UNIT UPSIDE DOWN.** It must be mounted inside the pressure vessel of the aircraft. The unit needs to have at least 2 inches of clearance from the top and sides to allow adequate air flow. Incorrect mounting can cause overheating, irregular shutdowns, and serious damage to the FD200CPU-7 Ver M1.
2. Sometimes the layout of the aircraft requires mounting the FD200CPU-7 Ver M1 behind cabinetry, under floor panels, or other inaccessible places. If this is the case, adding USB extension cables are highly recommended. The cables can be purchased at most electronics stores. The extension cables should be run from the FD200CPU-7 Ver M1, to a location in the cabin that is easily accessible and close to a monitor.

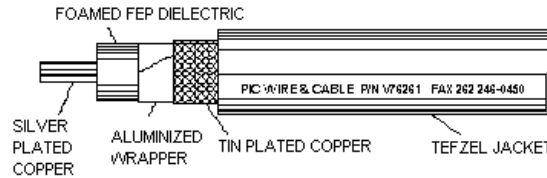
Video Wiring

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 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).

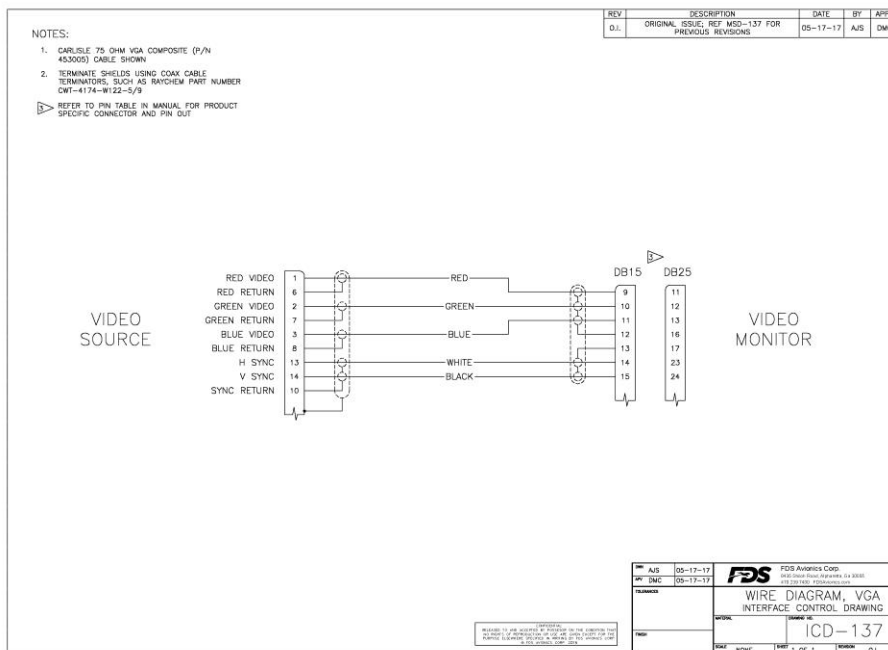


Similar aviation coaxial cable can be used from other vendors, as well.

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.

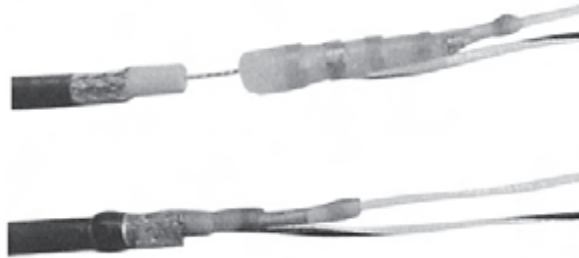
VGA Wiring

Recommended cable for VGA purpose is CARLISLE 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.

Raychem Coax Solder Sleeve

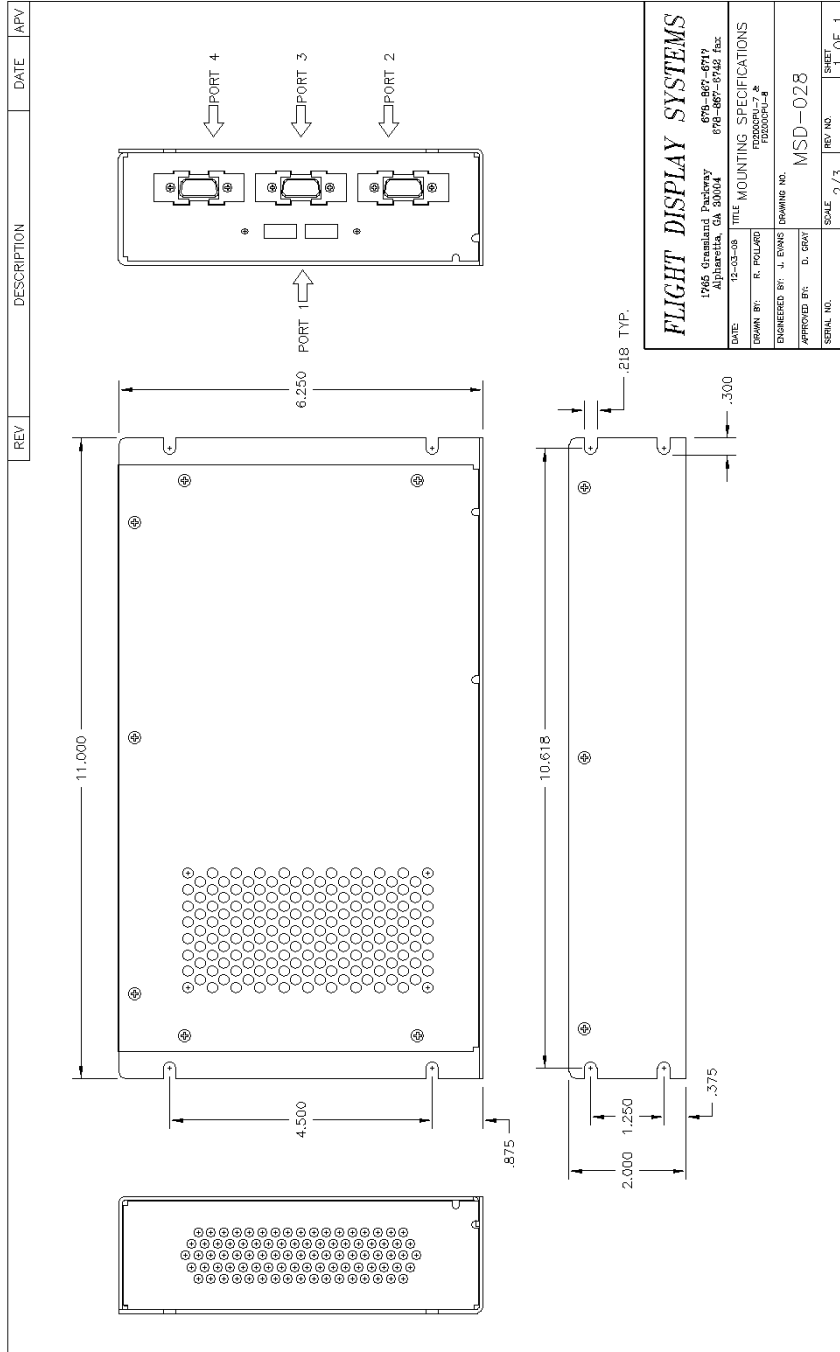


Part Number – D181-1222-90/9

These solder sleeves should be used with the ECS wire. If you are experiencing breakage, this is the best solution.



Installation 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.

FDS Avionics Corp.
6435 Shiloh Road
Alpharetta, GA 30005
Phone: 470-239-7400
Fax: 470-239-7439
Email: sales@FDSAvionics.com

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 FD200CPU-7 Ver M1 is a Moving Map 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
O.I.	04/12/2011	---	Original Issue
A	08/16/2011	10	Changed Pinout of P4 - Ethernet
B	07/26/2017	ALL	Name change and Copyright Update , Updated Warranty, Removed Troubleshooting, Updated VGA wire diagram, Added Technical Support information

