

Installation and Operation Manual

FDCCM1-MM-L & FDCCM1-MM-R

MULTI-MENU CABIN CONTROL MODULE - WITH AUDIO
(LEFT & RIGHT)





FDCCM1-MM-L & FDCCM1-MM-R

Multi-Menu Cabin Control Module - With Audio

(Left & Right)

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General Information

The FDCCM1-MM-L & FDCCM1-MM-R are user interfaces that operate and interact with Flight Display Systems' Cabin Management System (CMS). The units include an OLED push button display, headphone jack, menu advance button and volume control. These switches can operate the vast majority of equipment available on the CMS and are customizable to each client's specific CMS configuration.

Front View



FDCCM1-MM-L Front View



FDCCM1-MM-R Front View

Functionality:

FDCCM1-MM-L and FDCCM1-MM-R modules are smart switches. These switches may control things such as reading lights, table lights, window shades, or more high level devices such as selecting entertainment audio and video for that one seat. The unit is highly configurable and will allow for complete control of designated equipment for an aircraft.

Icons shown on the display or firmware are custom programmable by Flight Display Systems at the request of the client. OLED displays have a wide viewing angle, high brightness, low power consumption and low heat, with a 64K color palette.

Hardware:

The FDCCM1-MM-L and FDCCM1-MM-R consists of a single 128 x 96 pixel, 64K color OLED displays with a mechanical momentary switch mounted under the display to let the entire display act as a push button. There is one CAN, one RS-485 computer interface, and two high side switches which will be under computer control. The high side switch has a 2 amp source output.

Switch actions can be configured to support a myriad of behaviours: High side switches can be enabled or disabled. A button can enable, disable, toggle, or pulse the high side switches. A held button press can trigger distinct switch commands from a button press. A timed output can be on a scale of hours (with 1 minute resolution), on a scale of minutes (with 1 second resolution), or fractions of a second. Outputs can also be in CAN/485 messages and are fully programmable.

The terminology “high side driver” is used to describe a driver which has a 28 volt output. The high side driver can be a continuous or momentary 28 volts when the driver is active. Typically, devices such as lights use high side drivers. The “digital input” of the accessory interface node is an input which requires between 18V and 36V DC power to activate the input, and between 0V and 3V DC power to make the input inactive (voltages between the range of 3V and 18V are not a sufficient change to activate or deactivate the input). One type of digital input could be from a water level sensor, which may have a DC signal to activate the input. The firmware would read the input signal and display the correct indication on the control module.

The FDCCM1-MM-L & FDCCM1-MM-R have local volume control. The volume control has 32 steps. It is controlled by volume up/down buttons on the bezel. It may be configured to power-up in its last position or at a pre-determined level. Like all other items in the system, it may be controlled by any other device on the bus that has the appropriate permissions.

Electrical connections to the unit are established via a 14-pin Harwin connector exiting the bottom of the control module. The connector contains pins for power, power return (ground), and CAN bus. It also has data input pins which read the status of external equipment and control output pins that take control of external equipment. External equipment may include lights, seat heaters, window shades, etc.



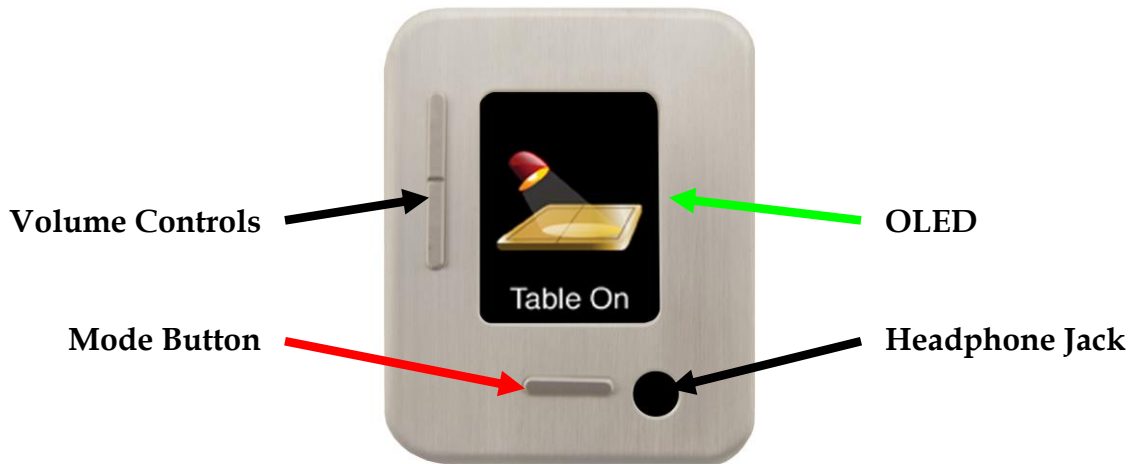
Specifications

FDCCM1-MM-L & FDCCM1-MM-R	
Dimensions	1.91" (W) x 2.28" (H) 1.82" (D)
Power (Steady State)	28VDC @ less than .03 Amp
Operating Temperature	0-50° C (32-122° F)
Weight	0 lb 2.8 oz
Connectors	Harwin 14 Pin
Display Type	1.27" OLED
Display Color	64 Thousand Colors
Pixel Pitch	.067 mm x .201 mm
Screen Resolution	128 x 96
Brightness	100 cd/m ²
Display Size	1.01" (W) x .76" (H)
Control Interfaces	CAN, RS-485
DO-160 Testing Completed	RTCA/DO-160G/Section 21, Cat B



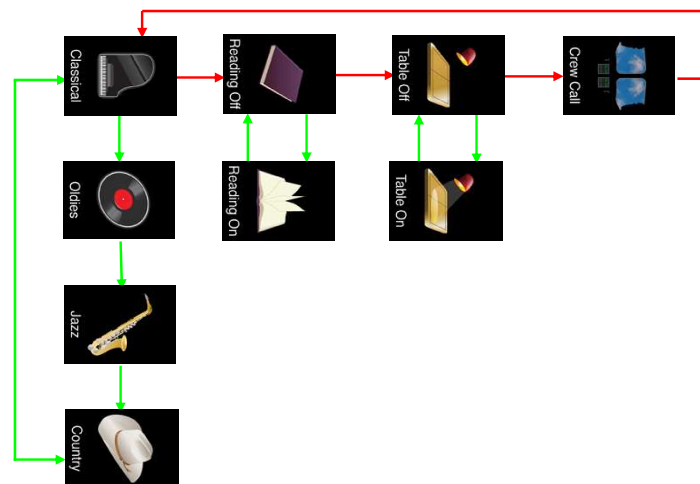
Operating Instructions

The FDCCM1-MM-L & FDCCM1-MM-R units include a Feather Touch OLED Push Button Display, Mode Button, Headphone Jack, and Volume Controls.



FDCCM1-MM-R User Interface

The Mode Button cycles between the different selectable menu options installed on the unit. After the user finds a desired menu option selection, the user can click the Feather-Touch OLED button to change the option setting. For example, the Mode Button cycles through options like Reading Light, Video Source, Crew Call, etc. any of these options can be changed by clicking the OLED Button, as shown below:



Example FDCCM1-MM-R Menu Tree

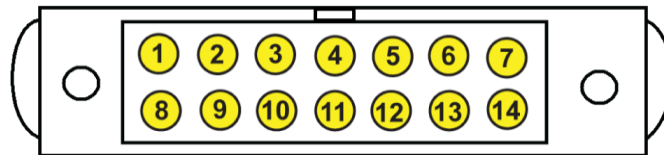
Power/Video

Pin out for 14 Pin Connector

The Harwin 14 pin female connector and crimps are supplied with the units shipping material. Listed below are replacement part numbers for a supply source:

Connector	P/N	M80-4591498
Crimp Contacts	P/N	M80-2530045

HARWIN 14 PIN



MATING SIDE - FEMALE CONNECTOR

Pin Number	Description
1	Power Return
2	High Side Driver 1
3	CAN High
4	5 Volts Power Out
5	RS-485 A
6	Power Return
7	Audio Right Signal Input
8	High Side Driver 2
9	28 Volts In
10	CAN Low
11	Digital Input 1
12	RS-485 B
13	Audio Signal Return
14	Audio Left Signal Input



Installation Instructions

The FDCCM1-MM-L & FDCCM1-MM-R should be installed on a non-essential 28V DC power bus and have a dedicated circuit breaker. It is necessary that a switch be installed in the cockpit so that the pilot can de-energize the system should it become necessary.

Mounting Instructions

The FDCCM1-MM-L & FDCCM1-MM-R can be mounted two ways, see Technical Drawing for mounting locations and instructions.

Power and Ground Wiring

This is a **28V DC** product that requires **less than .03 Amps** of power.

The rated current of the equipment and associated voltage drop should be taken into consideration when selecting wire gauge. The following example is based on an install with a 28VDC power system and a total of 50 feet of wire between the circuit breaker, monitor and ground.

Example: 16 AWG wire has 4.81 Ohms per 1000 feet, this equates to .241 Ohms for 50 feet. 4 Amps of current on .241 Ohms will drop .96 Volts.

Resistance of Wire Type M22759/16-^{**} (^{**} = Gauge)	
Gauge (AWG)	OHMS/1000'
24	26.20
22	16.20
20	9.88
16	4.81
12	2.02
10	1.26
8	.701

It is the installer's responsibility to understand the product's requirements to install the product in compliance with industry standards and safety.





Audio Wiring Suggestions

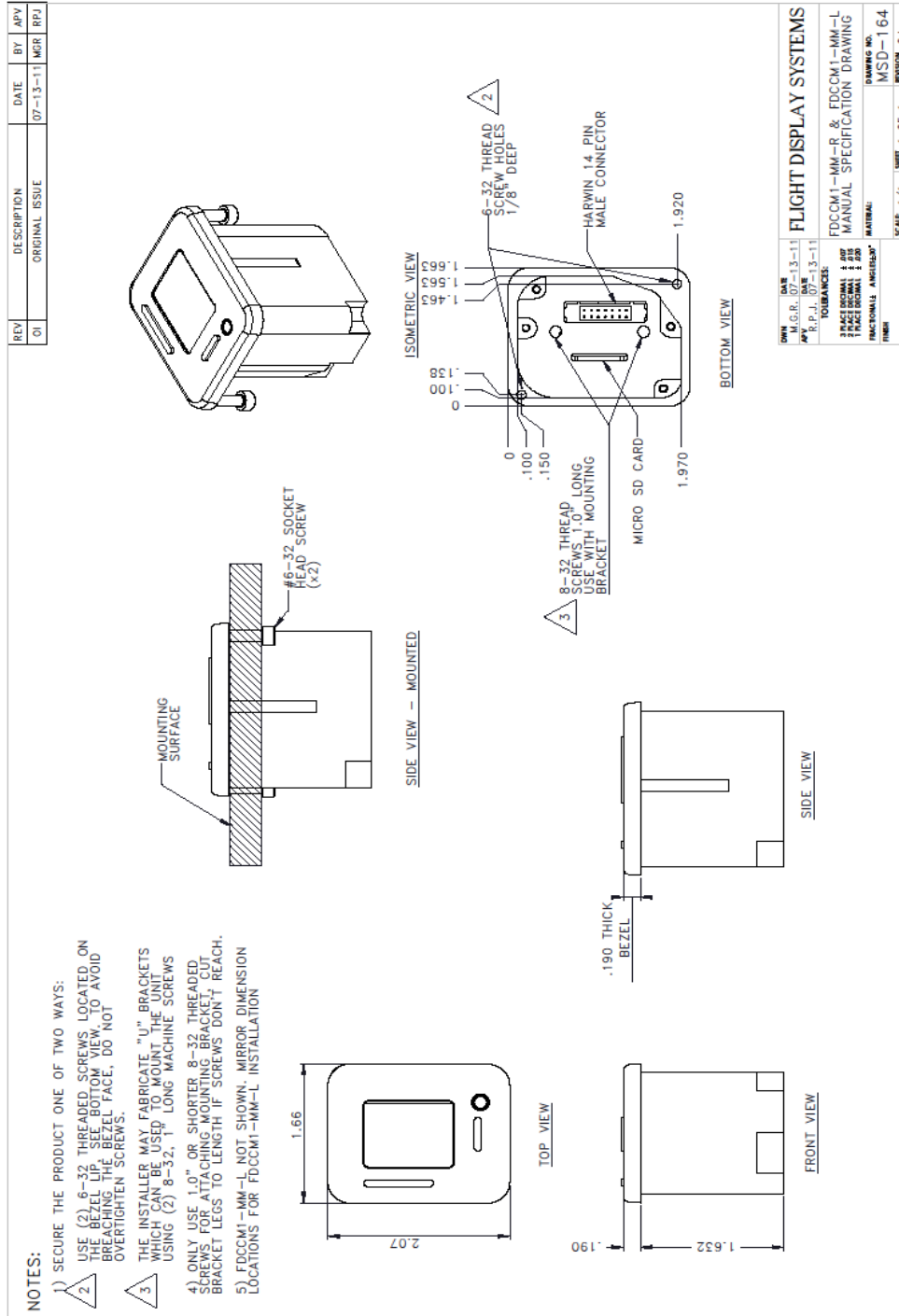
All shields should be grounded to the connector at the source, and floating at the unit.

Avoid routing audio wiring parallel to:

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



Technical Drawing





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 FDCCM1-MM-L & FDCCM1-MM-R is designed to not 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	07/13/2011		Initial Release
B	10/21/2011		Replaced product photography, warranty update
C	05/16/2012		Updated the pinout
D	07/03/2012		Changed warranty statement, format update
E	8/10/2012		Updated mounting instructions and DO-160 information
F	01/31/2013	All	Reversed the order of R and L to L and R to better clarify the pictures in the manual. This change was made through the document wherever referenced.
G	12/22/2014	Cover, 2, 12, 13	Cover Changes – removed PMA reference, new address, warranty information changes.

