500-SERIES DIGITALLY-CONTROLLED MODULES MANUAL 1.0

JCF AUDIO, LLC.

11247 CAMARILLO ST.

NORTH HOLLYWOOD, CA 91602

WWW.JCFAUDIO.COM

contact@jcfaudio.com

500-Series Digitally-Controlled Modules

Safety Information

Do not repair, modify, service this device. Doing so can void the warranty.

JCF Audio, LLC accepts no responsibility for legal actions or for direct, incidental, or consequential damages that may result from improper installation, configuration, or use of the 500-Series DCM's.

Overview

The DCM's are a collection of modules for the 500-series format that allow for modern recallability at the surface and resolute analog processing underneath.

The units have virtualized controls with a fast multi-button/page-based interface that allows a great deal of control to be packed in in a small space. The "no-frills" graphic primitives approach allows the user access to the hard data about where the controls are set without guesswork. This type of control allows for up to 256 steps per control for both switch and potentiometer adjustments where relevant. All lower right-hand buttons enact the utility menu for the device, all of which contain access to the "Pulse out" feature. Selecting this will output a stream of data in an audio-band format that's suitable for recording and hardy enough to survive large reductions in amplitude and a reasonable amount of signal distortion without destruction of information. This approach has the advantage of timelessness and complete avoidance of personal computer politics and lineage.

Data can also be easily shared or copied between like device-types just as easily as editing audio.

In modules with wireless capability, information from multiple units can be aggregated into one leader which is a network access point. This access point has a webpage based interface with which the user can upload or download control information for all units in that particular leader/follower series. Generic OSC message controllability exists on some modules as well.

Front Panel Controls

Encoder - Continuous illuminated rotary controller for changing relevant parameters on the currently selected page. The encoder is also a push button. It will enact utility items and in some circumstances change on items on other selected pages. The encoder will change color relative to the pages of the interface.

Ut - The utility page. Contains "Pulse out" for sending module data to the outside world in addition to any number of other selections that are module-specific. Items are selected with the encoder scroll / button.

In - Switch and associated LED. Shows whether the module's internal output is attached to the module's physical output or it's input is. The module's physical input is always connected to a powered buffer for purposes of accessing recall data from the outside world. This equates to a "half" or output-only bypass rather than "true" bypass. This is significant only insomuch as signals of importance should not have the module's input hanging off it while power is not applied. An additional step has been made in that for devices that allow for jumper-configured unbalanced input operation, applying the bypass function will return the input to a differential input state for greater respect of the driving source profile.

The other 7 buttons - are device specific.

Gory Details:

For units with Wi-Fi capability, the appearance of the utility page on any leader module will have controls to turn wifi access on and off, control the throughput of different types of OSC control data, feedback about its IP address, and the total number of devices in its leader/follower set. The last device in a set will have a white square in the upper-right hand corner of its screen to denote "end of series". All devices in a networked series will have their "Pulse out" commands synchronized to output simultaneously making recording multichannel recall information a snap.

Modules without wireless capability can still synchronize their pulse outputs in-rack via pin 6 if desired.

The behavior/hardiness is very similar to LTC although uses a mark frequency of 4900Hz and space frequency of 7350Hz at a baud rate of 1225bps (AFSK). This is close enough to 1200bps modem-speak and works as standard 8N1 serial. It's worthy of note that relatively hi-fi acoustic coupling (mics and speakers) will work at this data rate as well. Kudos to whomever can speak 1200 8N1 with their mouth.

It is our hope that other manufacturers use this data framework as it's a 60 year-old underlying standard and the usage here is very to-the-point. Here is the way it is used:

————start————

1 data byte= ! - ascii value 33dec - denotes start of transmission

10 data bytes - direct (make sure to use buffer **writing** rather than **printing** to avoid ascii reinterpretations)

1 data byte= >48dec One additional byte is written directly with a value equal to the manufacturer code with the number 48dec (“0”) reserved for JCF.

————end————

This entire pattern of 12 bytes is transmitted as 8N1 twice for checksumming for a total of 24 transmitted words with an example of null data for a JCF Audio device.

0x21, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x48, 0x21, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x48

That’s all.

Just email us if you’d like a manufacturer code and would like to use the framework at this exact total byte length otherwise any pattern at any length practical anyone would like to use is also fine as long as it’s **longer than 24 transmitted bytes**. We just ask that you respect that. Other baud rates are fine too. Checksumming is recommended whatever you do.

Edge Connections

Pin 1: Chassis
Pin 2: Output +
Pin 3: n/c
Pin 4: Output -
Pin 5: Circuit Common
Pin 6: Multipurpose buss, module dependent usage
Pin 7: n/c
Pin 8: Input -
Pin 9: n/c
Pin 10: Input +
Pin 11: n/c
Pin 12: +16v
Pin 13: Circuit Common
Pin 14: -16v
Pin 15: n/c

Adheres to the 500-series framework
There are on-board extensions to the above framework but none of them are enabled for pro use.

Specifications

Shipping weight

3 lbs. 11″X 11″X 3″

Notes:

The pulse information is device-type and manufacturer specific so other many pulses can be played back into a serial string of gear and the right data will end up in the right place with about 1 second spacing. Data can also be easily shared or copied between like device-types just as easily as editing audio. Data playout collimation across multiple leader/follower sets must be done manually over time with serially connected devices.

Feature list

- No AI
- Single 500 slot design
- Snappy 8-bit UI
- No proprietary software
- < 7W consumption all modules
- Many future module types possible
- 2 Year Limited Warranty

FCC Compliance:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2)This device must accept any interference received, including interference that may cause undesired operation.

Warranty

JCF Audio 2-Year Limited Warranty

JCF Audio LLC. "JCF Audio" warrants this product to be free of defects in material and assembly for a period of two years for parts and labor from the date of original purchase. This warranty is enforceable only by the original retail purchaser and cannot be transferred or assigned without express permission of JCF Audio.

During the warranty period JCF Audio shall, at its exclusive option, either repair or replace free of charge any product that proves to be defective on inspection by JCF Audio or its authorized service representative. In all cases disputes concerning this warranty shall be resolved as prescribed by law. To obtain warranty service, the purchaser must contact JCF Audio to obtain instructions where to send the unit for service. All authorized returns must be sent to JCF Audio or an authorized JCF Audio repair facility postage prepaid, insured and properly packaged. This warranty does not cover claims for damage due to abuse, neglect, modification or attempted repair by unauthorized personnel, and is limited to failures arising during normal use that are due to defects in material or workmanship in the product.

Proof of purchase must be verified in the form of a bill of sale or some other positive proof that the product is within the warranty period upon JCF Audio's request.

JCF Audio reserves the right to update any unit returned for repair. JCF Audio reserves the right to change or improve design of the product at any time without prior notice.

Any implied warranties including implied warranties of merchantability and fitness for a particular purpose are limited in duration to the length of this limited warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

JCF Audio will not be liable for incidental, consequential, indirect or other damages resulting from the breach of any express or implied warranty, including damage to property, damage based on inconvenience, downtime, loss of personal property, and to the extent permitted by law, damages for personal injury or death.

Some states do allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

This warranty only applies to products sold in the United States of America. The terms of this warranty shall only apply within the country of sale. Without limiting the foregoing, repairs under this warranty shall be made only by a duly authorized JCF Audio service representative or by JCF Audio itself. For warranty information in other countries, please refer to the dealer or distributor.