



cadac

PRODUCT INFORMATION January 05

M 16

M16 Remote Controlled Microphone Amplifier

- 16 classic Cadac high quality microphone amplifiers in a 3U 19" rack
- Ideal mic amp upgrade for all consoles, workstations and recording equipment
- Integral three-way active split per amplifier channel plus a combined MADI output
- Multiple remote control options

The M16 builds on Cadac's 30+ years' history at the forefront of high-end professional audio development, encompassing the sound of the classic Cadac microphone amplifier in a compact, 19" 3U rack multi-channel format. It is equally suitable for live, broadcast, recording, as well as general applications, and has been engineered to deliver exceptional fidelity and reliability.

The M16 in Detail

Microphone:

Each of the 16 microphone amplifiers provide the following facilities:

- Adjustable gain from 10dB to 60dB in 5dB steps
- 20dB Pad
- 48V phantom power
- Signal reverse
- High Pass Filter, 60Hz @ 12dB/octave
- Signal level indication

All control functions for each of the 16 mic channels are easily accessed from the front panel or via the dedicated RM16 Remote Microphone Amp. Controller.

Additional remote control options include:

- The Cadac D16 Digital Mix Matrix,
- Cadac's Sound Automation Manager (SAM)
- Cadac's dedicated M16 software control package (not yet implemented).

Cadac's SAM automation software allows seamless cue-based integration with any automated Cadac console and the D16 Digital Mix Matrix.

Active Splits:

Each amplifier channel output has an integral 3-way balanced active splitter. This effectively negates the need and expense of additional splitters, which require additional real estate.



One output is presented on XLR-3, with an additional two complete sets of Channels 1-16 on two 37-way "D" type connectors. All outputs provide signal level compensation whereby if one leg is shorted to ground, the other leg doubles its amplitude to compensate.

Digital:

An optical MADI output, providing selectable 48kHz and 96kHz sample rates, is provided as standard, allowing interoperation with both digital consoles and workstations. The M16 also conforms to both 56ch MADI and 64ch Extended MADI protocols. (AES10 - 2003)

System Configuration:

The M16 has been designed to be used in a multi-channel configuration and as such, up to 32 x M16 units can easily be controlled within any one system using an RS-485 communications backbone. This provides full control of up to 512 microphone channel functions. Provision is also made to bus link the PFL Bus through all of the M16s in the system, enabling SOLO of all available

microphone channels from a single M16's PFL headphone socket.

Unlike many other remote controlled systems, a total of 4 x RM16 optional Remote Controllers can also be integrated into a single networked system, providing M16 control from multiple locations. This configuration additionally offers the ability to simultaneously view up to 64 channels of metering if all the Controllers are co-located.

High-End Performance:

In keeping with Cadac's philosophy of providing optimum audio fidelity, the M16 provides:

- generous headroom throughout the whole system
- extended bandwidth
- flat frequency response
- and both distortion and phase shift are very low, even when operating at high gain.

All input and output circuits are carefully hand-tuned by Cadac's skilled engineers for maximum performance, providing optimal Common Mode Rejection, whilst the output drivers are hand-tuned to provide optimum balanced performance enabling the M16 to drive over long cable runs - in excess of 500 metres. The complete M16 system is designed to exceed current international EMC directives (with immunity from receiving or transmitting radio frequency or conducted interference).

RM16 Remote Controller

A unique feature of the M16 is that a total of 4 x RM16 remote control units can be connected into one system, enabling up to 64 channels to be metered simultaneously, or providing remote control units at various positions within a venue.

The M16/RM16 control protocol is based on the RS-485 standard, enabling remote control distances in excess of 500m when using the recommended communications cable.

M16 Technical Specification

Note: 0dBu = 0.775v rms without reference to impedance. Unless otherwise stated, all specifications given below apply to the frequency range 20Hz to 20kHz. All noise measurements are rms, and made with a DIN audio band filter (-3dB points at 22Hz and 22kHz) in circuit.

MICROPHONE INPUT

Input Impedance	1k Ω (electronically balanced)
Maximum input level (10dB gain with PAD out)	+21dBu
Maximum input level (20dB gain with PAD in)	+21dBu
CMRR	better than 100dB (10Hz - 20kHz)
Signal to Noise:	-97dBu at 10dB gain, -67dBu at 60dB gain
Dynamic Range:	120dB
Frequency Response:	
(10dB Gain, 200 ohm source)	10Hz to 100kHz, +/-0dB.
Gain Range:	10dB to 60dB in 5dB steps

Equivalent Input Noise with 200 ohms source impedance (DIN bandwidth)	
Measured with gain at 60dB	-127dB
Measured with gain at 10dB	-107dB

Total Harmonic Distortion	
Gain set at +10dB	0.003% (1KHz)
Crosstalk:	
(10dB gain, input level 0dBu)	-80dB at 10kHz
Phantom Power	+48VDC, 14mA (per channel)

HIGH PASS FILTER

-3dB Frequency	60Hz
Slope	-12dB per octave

ANALOGUE OUTPUT

All outputs are electronically balanced.

Impedance:	33 ohm in series with 1000uF (balanced)
Nominal Load Impedance:	600 ohms
Nominal Output Level:	0 dBu
Max. Output Level:	+22.5dBu in to 600 Ω
Output Balance:	better than 70dB (10Hz - 20kHz)



DIGITAL OUTPUT

Protocol:	MADI (Multi-channel Audio Digital Interface)
Format:	Compliant to AES-10-2003
Sample rate:	
Operational modes	56 channel at 48kHz (+/-12.5 % varispeed) 28 channel at 96kHz (+/-12.5 % varispeed) 64 channel at 48kHz 32 channel at 96kHz
Synchronisation:	Word clock (selectable Internal/External) Duty cycle 50% (TTL Level), Termination BNC, 75 Ω impedance

CONNECTORS

Analogue Inputs:	16 x XLR-3F (pin 2 hot)
Analogue Outputs:	Split 1: 16 x XLR-3M Split 2: 37 way Dsub Split 3: 37 way Dsub
PFL In:	1/4" TRS Jack (balanced)
PFL Out:	1/4" TRS Jack (balanced)
MADI Output:	SC Duplex
Remote In:	XLR-3F, RS-485
Remote Out:	XLR-3M, RS-485
Computer Interface:	USB Type B downstream.

GENERAL

Power Requirements	90 - 250VAC 50/60Hz
Power Consumption	110VA
Operating Temperature	0° to 40° C.
Dimensions in mm (WxHxD)	3RU x 420mm (inc. projections)
Unit Weight	8kG (18lbs)
Average Shipping Weight	12kG (26lbs)

Accessories	Operation manual, USB cable.
Options	RM-16 Remote Control Unit

EMC

Complies with:	EN55103-1: Emissions. EN55103-2: Immunity
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CADAC ELECTRONICS Plc
One New Street
Luton
Bedfordshire LU1 5DX England
Telephone: +44 (0)1582 404 202
Facsimile: +44 (0)1582 412 799

Email: info@cadac-sound.com
Web site: www.cadac-sound.com