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D16 DIGITAL
MIX MATRIX

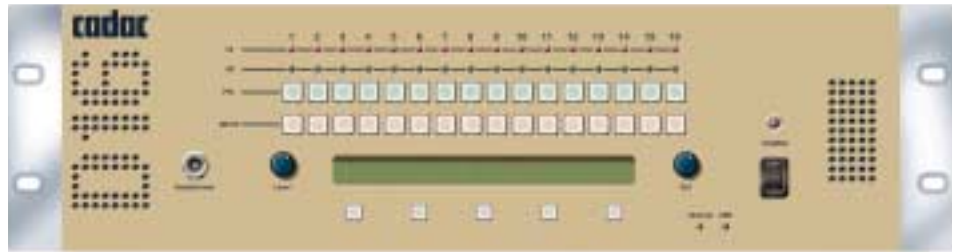


D16 DIGITAL

The D16 Digital Mix Matrix is a powerful and reliable digital audio processing engine that delivers the hallmark Cadac audio quality in a compact 19" rack unit.

The D16 provides a fully featured 16x16 variable gain audio matrix designed for operation either as a standalone audio processor (for smaller scale performances, fixed installations and high quality broadcast/recording applications), or as an expansion mixer for use with any audio console.

- High quality, fully featured 16 x 16 variable gain Audio Matrix
- Hallmark Cadac audio quality
- 96kHz 24-bit sampling and SHARC DSP processing with proprietary Cadac mix, EQ and dynamics algorithms
- Full local and remote control, via front panel, and/or Cadac's Sound Automation Manager (SAM) software, running under Windows ® OS
- Standalone operation or expansion mixer for any audio console



A CADAC J-TYPE IN A 19" RACK

The D16 is a cost-effective quality solution, designed to maintain and replicate the performance that engineers have come to expect from Cadac analogue consoles – but in the digital domain. In effect, the D16 provides

the performance expected from a J-Type – in a portable rack-mounted package. It incorporates a 6-band equaliser, including 4-bands of fully parametric EQ, modelled on the acclaimed J-Type Live Production Console.

FULLY FEATURED DYNAMICS

Fully featured dynamics processing is provided as standard on all channels, including Gate, Compressor and Limiter functions. The D16's dynamics algorithms have been specially developed to provide the operator with powerful dynamics tools, whether the application is for live sound, fixed installation, broadcast or recording.

The D16 can provide a high degree of automation for those operating non-automated mixing consoles, simply by connecting the D16 to the channel insert points. In this way, multiple D16s can be controlled on a cue-by-cue basis via SAM, providing recallable EQ and dynamics functions, as well as the provision of an extra 16 sends.

COMPREHENSIVELY SPECIFIED FOR STANDALONE OR INTEGRATED OPERATION

The D16 is equipped with 16 line level analogue inputs and outputs with high quality converters, working with 24-bit samples at a sample rate of 96kHz. Each channel provides 4-band parametric EQ, high and low pass filters, compression and gating dynamics control, plus adjustable level routing to the 16 mix outputs. These can be sourced Pre EQ, Post EQ or Post Fader.

As an input expansion mixer, the D16 can provide additional input channels for any console without the need to occupy valuable floor space, since the D16 chassis is rack-mountable and only 3U in height. In addition to providing a quality solution for additional input channels, the D16 is equally suited to providing extra output bussing when connected to the master section of a console. If, for example, there is a requirement for expanding the

output matrix of a console, then the D16 can provide a very versatile solution, with the added ability of being able to recall all routing, gain and EQ settings on a cue-by-cue basis (under SAM operation).

In addition to providing dedicated XLR3s on all 16 inputs and outputs, the D16 is also equipped with a 37-way "D" type socket. This permits direct connection into other Cadac consoles by utilising the console's audio bus expansion connectors. This multi-channel audio connection may also be cabled to bus to other consoles or systems.

The ability to interface directly to the companion Cadac M16 (16-channel remote controlled microphone amplifier) is also provided – an ideal combination for both stand-alone applications and the provision of small footprint - high quality fully automated sub-mixers.

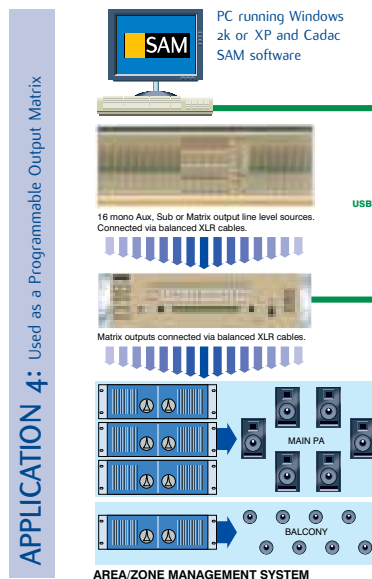
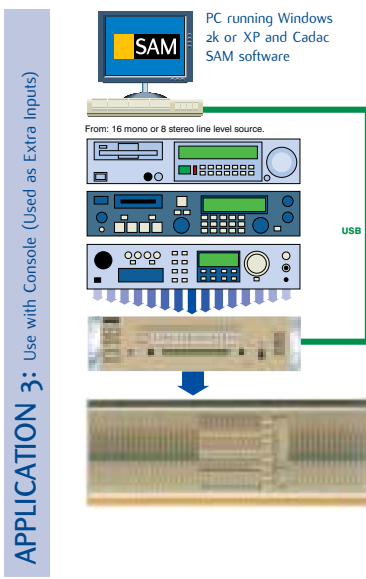
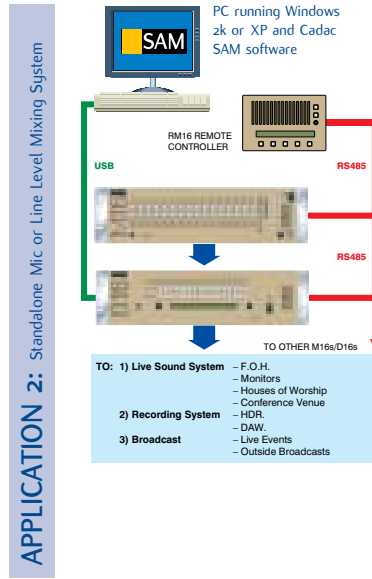
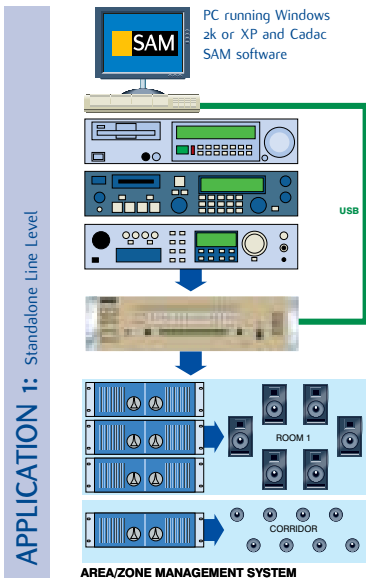


MIX MATRIX

FLEXIBLE CONTROL

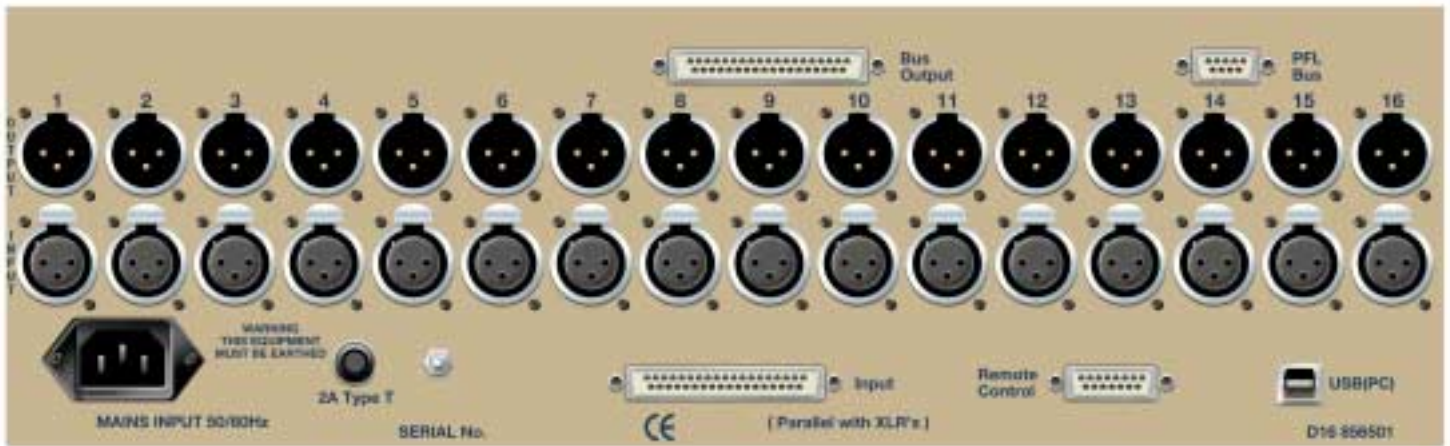
The D16 can be controlled either locally via menu keys and an LCD screen on the D16's front panel, or via the industry standard Cadac Sound Automation Manager (SAM) software. Cadac's R&D team has worked closely with operators and sound designers to develop the D16 concept, majoring on expanding the control facilities through SAM software. With the D16 under SAM control, the user is presented with a virtual set of modules that reflect a traditional console layout, with the software "views" in turn enabling real-time control of the D16 and operation of SAM's more conventional cue-based automation facilities.

Operating the D16 via SAM software also provides the added benefit of allowing the operator to utilise the powerful onboard MIDI automation features. This MIDI control system is integrated as standard within SAM and provides functionality that includes comprehensive control of MIDI parameters, extensive MIDI sequencing control, the firing of custom MIDI System Exclusive (SysEx) commands and MIDI mapping. In addition, it is possible to control D16 parameters via an external MIDI controller, when used in conjunction with the SAM automation system.



D16 – A POWERFUL PERFORMER

- Very low latency of 400µs analogue IN to analogue OUT, regardless of DSP processing
- Scalable, active digital splitter from 1 in 16 out (2 in 8 out etc)
- High build quality with hand-tuned common mode rejection and balanced circuitry on the I/O
- MIDI control via SAM, with auto-learn facility, allowing physical control of D16 parameters from any external MIDI device (or MIDI enabled console)
- Seamless integration with Cadac automated consoles through bus link connectors
- Designed to integrate with any audio mixing console
- Integral Digital Clip Protection to maintain audio and system integrity, simulating analogue clipping
- Interfaces directly with the Cadac M16 16-channel remote control mic preamp
- Single SAM application can provide integral control over multiple D16/M16 units, in addition to automated Cadac consoles
- Designed to exceed current EMC directives, and immune from receiving or transmitting radio frequency interference



D16 SPECIFICATIONS

ANALOGUE INPUTS

Impedance:	10k (electronically balanced)
Nominal Input Level:	0dBu
Max. Input Level:	+24dBu (balanced)
Reference:	+4dBu = -20dBfs
CMRR:	-85dB (50Hz - 10kHz)
A to D Conversion:	24-bit 96kHz
Signal to Noise:	-105dBu at zero gain
Dynamic Range:	119dB, 20Hz to 20kHz unweighted
THD:	0.008% @ 1kHz, 10dB gain, +4dBu
Frequency Response:	5Hz to 80kHz: ±0dB
Crosstalk:	-80dB at 10kHz

ANALOGUE OUTPUTS

Impedance:	<100 (balanced)
Nominal Load Impedance:	600
Nominal Output Level:	0dBu
Max. Output Level:	+24dBu in to 600
Output Balance:	-65dB (50Hz - 10kHz)
D to A Conversion:	24-bit 96kHz
Dynamic Range:	119dB, 20Hz to 20kHz unweighted
THD:	0.009% at 1kHz, 10dB gain, +4dBu
Frequency Response:	5Hz to 65kHz: ±0dB
Crosstalk:	-80dB at 10kHz
Output Reference Level:	+4dBu = -20dBfs

DIGITAL PROCESSING

Internal Sampling Frequency:	96kHz
Internal Processing:	32-bit floating point
Latency analogue in analogue out:	<400µs

Line Level Gain:	±10dB Input Trim
	-65 to +10dB Channel Fader
	-75 to +10dB Matrix Send
	-75 to +10dB Output Fader

Overall system frequency response at any analogue output:

5Hz to 45kHz. (-3dB point)

Overall system noise at any analogue output:

-95dBu (input and output faders at 0dB)

EQ PARAMETERS

4 band parametric:	LF	20Hz to 200Hz
	LMF	60Hz to 600Hz
	HMF	400Hz to 4.0kHz
	HF	1.5kHz to 15.0kHz
	all bands	18dB gain
	Q	1.0 to 3.0
	HPF	14.0Hz to 400Hz
	LPF	1.0kHz to 35.0kHz

DYNAMICS PARAMETERS

Gate:	Threshold	-70dBu to +23dBu
	Attack	100µs to 250ms
	Release	25ms to 2.6s
	Hold	25ms to 4s
Compressor:	Threshold	-70dBu to +23dBu
	Attack	100µs to 250ms
	Release	25ms to 2.6s
	Hold	25ms to 4s
	Ratio	1.5:1 to 20:1
	Knee	hard, soft, variable
		Peak or RMS selectable
	Makeup Gain	0.0dB to +30.0dB
Limiter:	Threshold	-40dBu to +23dBu
	Attack	50µs to 250ms
	Release	25ms to 500ms
	Hold	25ms to 4s
	Makeup Gain	0.0dB to +30.0dB

Matrix Send

Source Selection:	Pre EQ
	Post EQ (Pre Fader)
	Post Fader

Memory Scenes:	Standalone:	1
	Under SAM:	unlimited

MIDI Control:

MIDI input: All D16 variables controllable in real-time using SAM's MIDI input mapping feature

MIDI output: Complete suite of MIDI functionality from SAM

I/O AUDIO CONNECTIONS

Analogue Input: XLR3F, 37-way D-sub (pin-out to M16)

Analogue Output: XLR3M

Bus Link Analogue

Output 1 to 16: 37-way D-sub * (pin-out to J-Type sub-groups)

PFL bus

- 1). Local headphones (Z=50 min) on TRS jack.

- 2). Console – 9-way D-sub. Line level output *(with logic line control for CADAC consoles)

* These outputs provide balanced drive with an output Z=3k6, suitable to drive Cadac console virtual earth mix busses directly. They may be connected to high impedance (>10k) inputs if required, but will be subject to a small signal loss (-3dB).

CONNECTIONS

Computer Interface: USB Type B downstream.

Control Interface: RS485 on 15-way D-sub

Power 3-pin IEC22

EMC

Complies with: EN55103-1: Emissions.
EN55103-2: Immunity

GENERAL

Power Requirements 90 – 250VAC 50/60Hz

Power Consumption 2A

Dimensions in mm (WxDxH) 430 x 400 x 3RU (excluding rack mounting ears)

Unit Weight 6.5kg (14lbs)

Average Shipping Weight 10kg (22lbs)



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