General Description

Rane's MM 42 Monitor Processor fulfills the demanding needs of performers and engineers striving to optimize personal monitor systems while ensuring a safe, dynamic mix. Connected in-line between a mixing console and a wired or wireless monitor system, the MM 42 processes a single stereo mix or two independent mono mixes using Shelf/Cut Filters, 3-band Compressor, 5-band Parametric EQ, and 3-band Peak Limiter. An assignable Sub (low frequency) output with adjustable bandpass filter is included for direct connection to powered subwoofers or bass shakers without requiring an external crossover. The on-board headphone amp and Cue Bus functionality permit easy setup and monitoring of multiple mixes.

Process a *single stereo mix* or *two independent mono mixes* using the MM 42's flexible input to output routing. Any combination of the MM 42's *four line-level inputs* is assignable to any output processing chain. The relative mix of inputs is easily adjusted using front panel level controls, making "more me" mixes a breeze.

Create a separate low-frequency mix for driving onstage subwoofers or tactile thumpers using the *Sub Output* with adjustable bandpass filter. Any input or combination of inputs is assignable to the Sub Output. External crossover not required!

Connect multiple MM 42s together using the *Cue Bus* and avoid the hassle of having to constantly re-patch headphones when monitoring more than one mix. Any mix can be placed on the cue bus and monitored (soloed) simply by pressing the desired mix's CUE BUS button. Connect the dedicated *Cue Outputs* on the rear panel to a spare transmitter or hardwired beltpack and hear the mix exactly as the performer hears it.

Add low frequency thump and high frequency sparkle to a mix using the adjustable *Low and High Shelf/Cut Filters.*

Control the dynamics of a mix with precision using the *3-Band Compressor*. Adjustable crossover frequencies allow you to easily tame excess low end, while keeping the vocals and guitars clear and present.

Use the *5-Band Parametric EQ* to improve the overall sound of the mix. Uses range from simple, broad sweetening effects to precise boosts or cuts to account for a performer's hearing loss or a particular earphone's response.

Protect the performer's hearing and keep output levels under control using the *3-Band Peak Limiter*. The Limiter's crossover frequencies are fully adjustable and independent of the Compressor's crossover settings.

Monitor the mix pre- or post-processing using the *on-board headphone amp.* Both ¼" phone and ⅛" mini jacks are offered on the front panel. In many cases the headphone amp can replace a hardwired beltpack for the less mobile musicians on stage – the drummer or keyboard player, for example.

Save precious Aux outputs on the mixing console by using the *Direct Outputs* to daisy chain (pass-through) a common mix or mixes across multiple MM 42s. Feed a band's stereo mix through to multiple MM 42s using the Direct Outs, then use the additional Inputs on each device to add solo instruments to the overall mix.

Recall memory presets and adjust parameters remotely via *MIDI.* MIDI Sys Ex is also used to backup system settings and for device firmware updates.

Features for the Artist

- Process a single stereo mix or two independent mono mixes.

- Signal processing, main outputs: Shelf/Cut Filters, 3-band Compressor, 5-band Parametric EQ, 3-band Peak Limiter.

- 4 line-level Inputs assignable in any combination to either output processing chain.

- Assignable Sub Output with bandpass filter, assignable to any combination of Inputs including a mono sum.

- 16 Memory locations for storing custom user presets.

Features for the Engineer

- Built-in headphone amplifier with ¼" and ⅛" jacks.

- Cue Bus allows listening to mixes across multiple MM 42s without re-patching headphones. Cue selectable Pre- or Post-processing.

- Line-level Cue Outputs for spare transmitter or return to console.

- Direct Outputs allow distribution of common mixes to multiple devices, requiring fewer aux sends on console.

- Neutrik® ¼"-XLR combo jacks allow interfacing with a variety of console aux/group outputs.

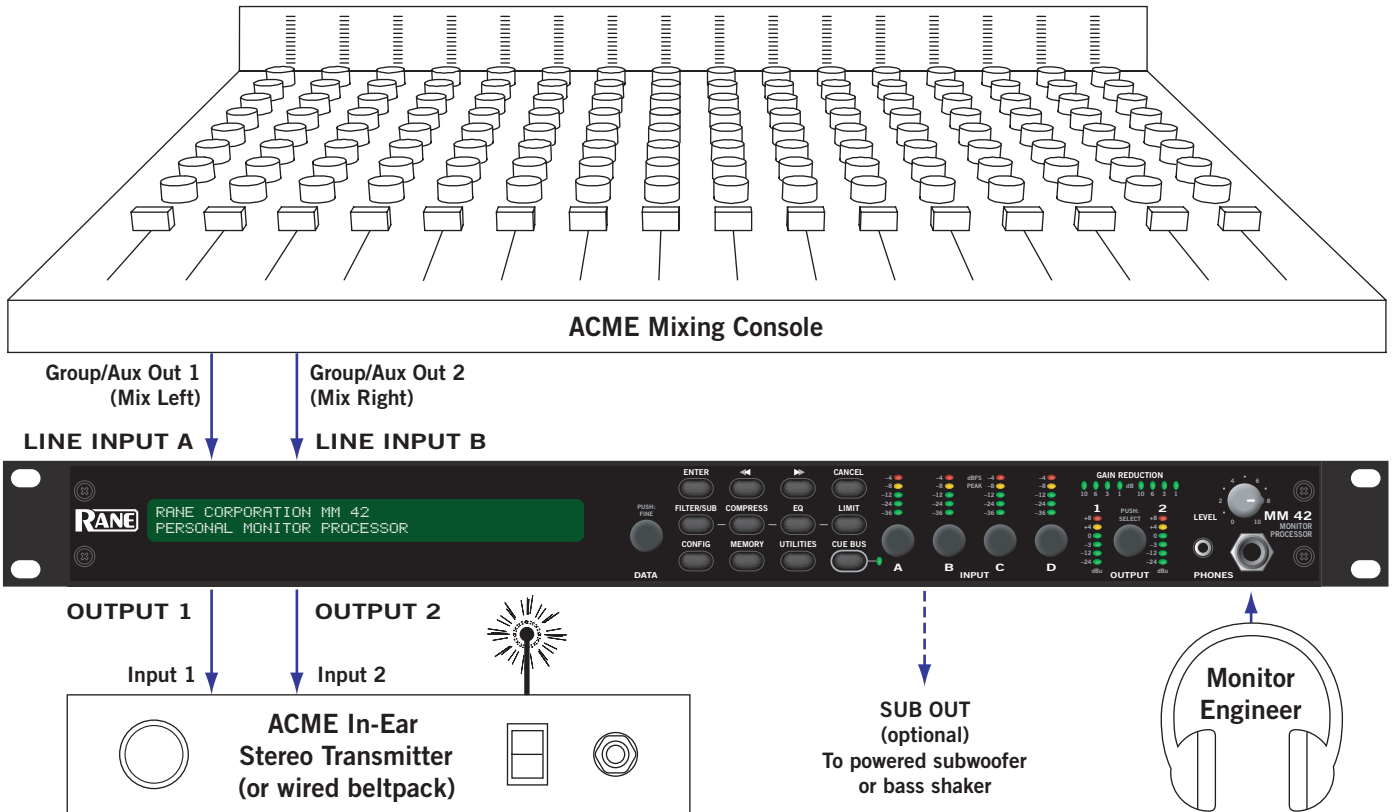- Device control and firmware updates via MIDI.

Parameter	Specification	Limit	Units	Conditions/Comments
Gain	0	±1.25	dB	Level
Frequency Response	20 Hz to 20 kHz	+0/-2	dB	
THD + Noise	<0.01	0.005	%	+4 dBu, 1 kHz, A-weighted
Dynamic Range	105	typ.	dB	A-weighted, re +24 dBu
IM Distortion (SMPTE)	<0.01	0.01	%	60 Hz / 7 kHz, 4:1, + 4 dBu
Propagation Delay	1.5	±0.2	ms	Input to Output
Crosstalk	-100	typ.	dB	1 kHz bandpass, any channel
LINE INPUTS: Connectors	XLR & ¼" TRS			Neutrik combo, active balanced
.....Maximum input	+24	typ	dBu	@ 1 kHz
.....Input Impedance	21k	1%	Ω	"+" to "–"
.....Gain Trim	+6 to -40	0.1	dB	Minimum ½ dB steps
OUTPUTS	Active balanced, cross-coupled			RFI filtered
OUT1 / OUT2: Connectors	XLR			Shields are chassis grounded
.....Maximum output	+24	typ	dBu	@ 1 kHz, 2 kΩ load
.....Impedance	100	1%	Ω	each leg to ground
.....Output Range	0 to -40 & MUTE	0.1	dB	Minimum ½ dB steps
SUB: Connectors	¼" TRS			Shields are chassis grounded
.....Maximum output	+24	typ	dBu	@ 1 kHz, 2 kΩ load
.....Impedance	100	1%	Ω	each leg to ground
.....Output Range	+6 to -40 & MUTE	0.1	dB	Minimum ½ dB steps
DIRECT OUTS: Connectors	¼" TRS			Shields are chassis grounded
.....Maximum output	+24	typ	dBu	@ 1 kHz, 2 kΩ load
.....Impedance	100	1%	Ω	each leg to ground
CUE OUT1/CUE OUT2: Connectors	¼" TRS			Shields are chassis grounded
.....Type	Active Balanced			Cross-coupled
.....Maximum output	+24	typ	dBu	@ 1 kHz, 2 kΩ load
.....Impedance	100	1%	Ω	each leg to ground
HEADPHONES: Connectors	¼" & ⅛" mini TRS			tip-ring-sleeve
.....Headphone Output	220	min.	mW	into 150 Ω, both driven @ 1 kHz
CUE BUS: Connectors	6-P MOD (RJ 12)			Current summing
.....Maximum output	+10	typ	mA	
.....Impedance	301	typ	Ω	
Signal Processing (OUT 1 and OUT 2)				
High- & Low- Shelf or Cut Filters	Fixed 2nd-order			12 dB / octave, Butterworth
3-band rms Compressor				Adjustable crossover frequencies.
5-band Parametric EQ				1/24-octave to 4 octaves
3-band Peak Limiter				Adjustable crossover frequencies.
Signal Processing (SUB Out)	High- & Low-Cut Filters (bandpass)			12 dB / octave, Butterworth
A/D Converters	Delta-Sigma			24-bit conversion
.....Dynamic Range	106	typ	dB	A-weighted
.....Sample Rate	48		kHz	
D/A Converters	Delta-Sigma			24-bit conversion
.....Dynamic Range	114	typ	dB	A-weighted
.....Sample Rate	48		kHz	
Communications:	MIDI			In, Out / Thru
NOVRAM Memory: Storage Locations	16			Non-volatile, batteries not required
Unit: Power Supply Requirement	100 to 240, 50/60 Hz	±10	VAC	Universal, internal
.....Agency Listing				UL/cUL/CE
.....Construction	All Steel			
.....Size	1.75"H x 19"W x 8.3"D (1U)			(4.4 cm x 48.3 cm x 21 cm)
.....Weight	5.5 lb			(2.5 kg)
Shipping: Size	4.5" x 20.3" x 13.75"			(11.5 cm x 52 cm x 35 cm)
.....Weight	8 lb			(3.6 kg)

Note: 0 dBu=0.775 Vrms

Block Diagram
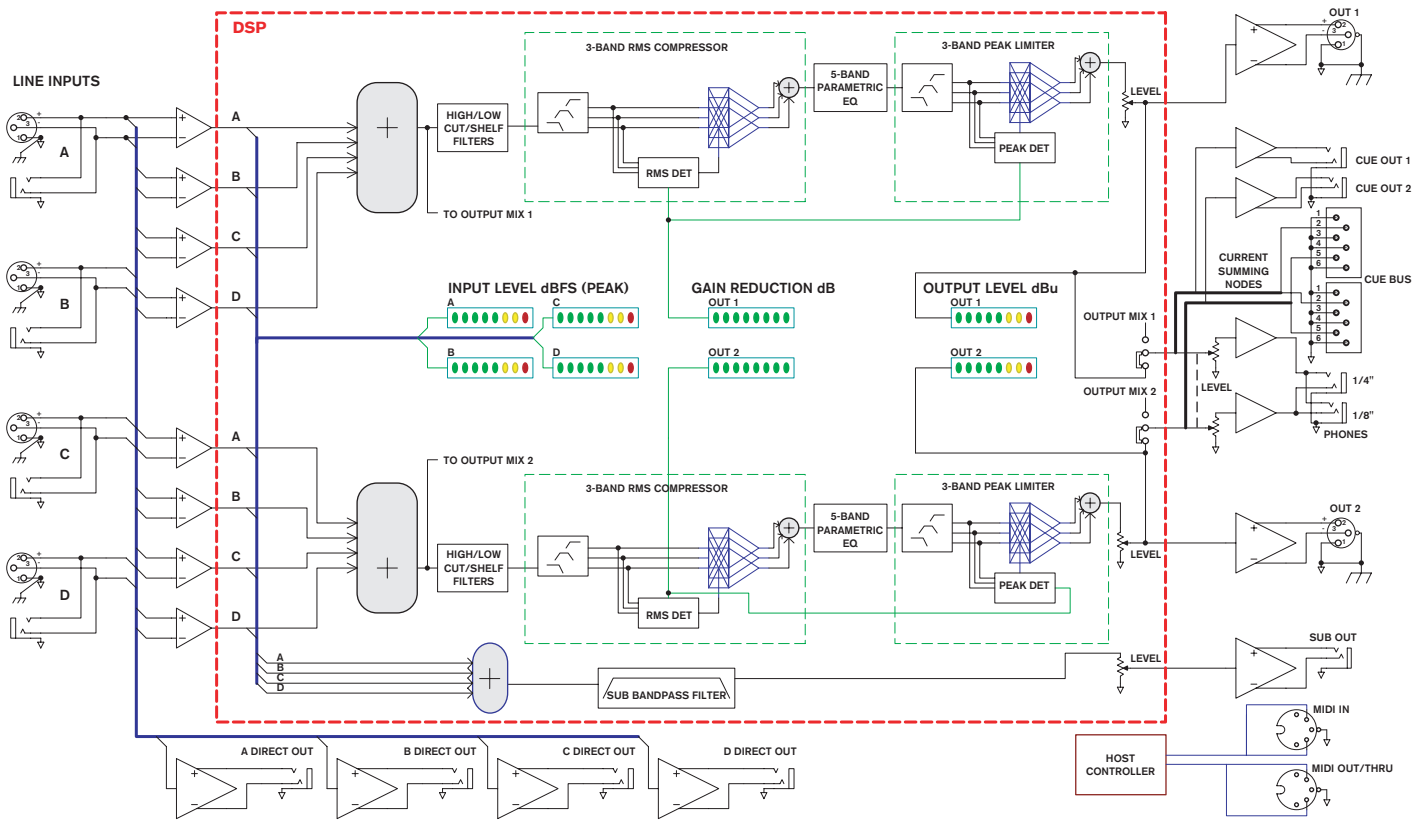
Basic Stereo Monitoring Application

MM 42

MONITOR PROCESSOR

RANE

Rear Panel
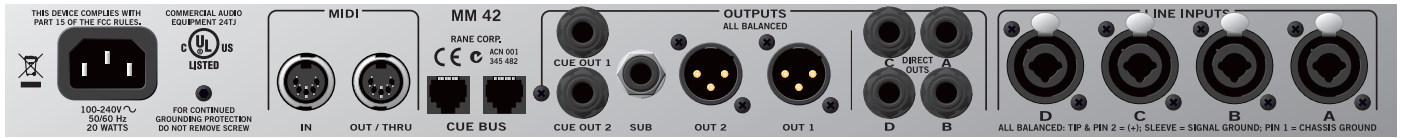
Australian Outback Touring Application

ACME Mixing Console

Aux 8 | Aux 7 | Aux 6 | Aux 5 | Aux 4 | Aux 3 | Aux 2 | Aux 1

Spare (any mix on Cue Bus)

Stereo Transmitter

Monitor Engineer/ Backup

CUE OUT 1
CUE OUT 2

MIDI IN — **CUE BUS**

Stereo Transmitter — Lead Vocals

MIDI OUT/ THRU

MIDI IN — **CUE BUS** — **SUB OUT**

Mono Transmitter — Bass

Wired Beltpack — Drums

Drum Shaker

MIDI OUT/ THRU

MIDI IN — **CUE BUS**

Mono Transmitter — Guitar

Wired Beltpack — Keys

MIDI OUT/ THRU

MIDI IN — **SUB OUT**

Stereo Transmitter — Dijeridoo

Subwoofer / Amp

126

ACME MIDI Controller

- - - - > **MIDI**
———> **Analog Audio**
········> **Cue Bus**

Data Sheet-4