



AM1 Features

INPUTS:

- Gain-Sharing Automatic Mic Mixing:
 - 4 XLR Inputs with Level controls & Sig/OL indicators.
 - Select Mic, Mic with 48V phantom, or Line-level.
- Manually Mix:
 - Overall Mic Mix.
 - Two Aux Inputs: dual RCA & 3.5 mm, independently monoed.
 - USB Audio Input (16-bit, 48 kHz).

OUTPUTS (all mono):

- XLR Main with Mic/Line switch, Level control & Sig/OL.
- Dual RCA Record.
- Headphone ¼" and 3.5 mm Outputs with Level control:
 - Source select cues Mics, Aux 1, Aux 2, USB Input or Output.
- USB Audio Output (16-bit, 48 kHz).
- USB Charge Port for iPod® or other USB-powered devices.
- Rane RAD and Cascade IN RJ-45 Ports:
 - Cascade In Port connects up to seven Rane AM2 Automixers.
 - RAD Port sends Output to Rane HAL or Mongoose Systems.

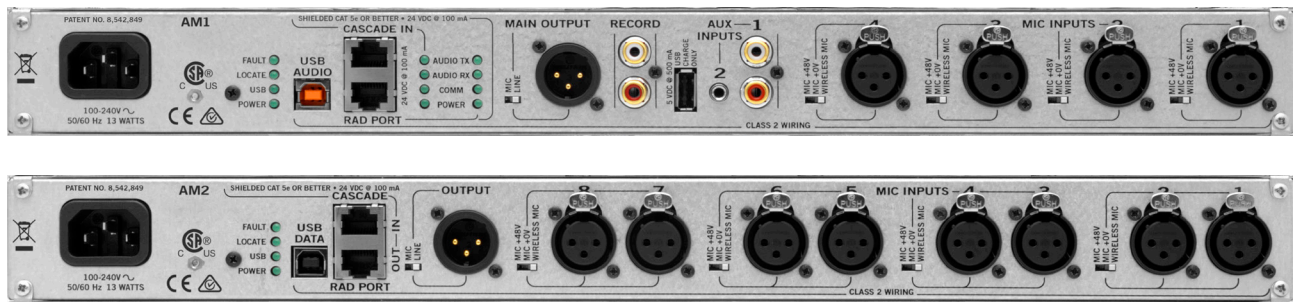
AM2 Features

INPUTS:

- Gain-Sharing Automatic Mic Mixing:
 - 8 XLR Inputs with Level controls & Sig/OL indicators.
 - Select Mic, Mic with 48V phantom, or Line level.

OUTPUTS (all mono):

- XLR Main with Mic/Line switch, Level control & Sig/OL.
- Rane RAD and Cascade IN RJ-45 Ports:
 - Cascade In Port connects up to seven Rane AM2 Automixers.
 - RAD Port may send Output to Mongoose (CobraNet).
 - RAD Port may send Output to HAL (DSP/control). It is possible to cascade the AM2 mix into Halogen's Gain-Sharing Auto Mixer or Room Combine Processor DSP, so that all mics connected to HAL may gain-share (does not work with the AM1).



AM1 and AM2 Common Features

The Rane AM1 and AM2 may be each be used on their own as a standalone mixer, or add more gain-shared mics using up to seven AM2 Automixers.

Each of the XLR Mic Inputs offers front panel input Level controls feeding a gain-sharing automatic mixer. The AM1 has four Mic Inputs, the AM2 has eight. Rear panel, 3-position switches for each Mic Input support dynamic mics (no phantom power), condenser mics (48 V), or wireless receiver outputs (+12 dBV max). A front panel Mic Mix Level control adjusts the volume of all automixed mics.

The Mic Inputs are optimized for automixing speech. They have a fixed 80 Hz to 7 kHz bandpass filter (2nd-order Butterworth) to provide the best voice-only automatic mixing using a gain-sharing algorithm.

Signal and Overload indicators monitor every Input Level control and the Output Mix Level. Indicators flank each corresponding Level control.

The XLR Main Output can be set to Mic- or Line-level to feed a mic snake or a +20 dBu max balanced input. The front panel Output Level control affects the XLR Output and the RAD Port output.

AM2 mixers may be cascaded, but only one AM1 may be used, and it must be the final unit in a chain of no more than eight AMs. Simply connect Cascade OUT ports to Cascade IN ports and the final Output level on the last AM controls the main mono output mix.

Use the RAD Port to transport the main output mix digitally via shielded CAT 5e to either a Rane HAL's RAD Port for further signal processing and control, or to a Mongoose for potential routing to a CobraNet network.

Both the RAD and the Cascade IN port have status indicators to aid setup and troubleshooting. Rear panel Fault, Locate, USB and Power indicators inform head-scratchers of device errors, the AM's physical location, positive USB audio device OS registration and AC power status. Duplicate Locate and Power indicators are on the front and rear.

Universal IEC power on the rear supports 100 to 240 VAC and 50/60 Hz.

AM1 Unique Features

The Rane AM1 is part gain-sharing automatic mic mixer, part manual line mixer, part USB audio I/O device, and simultaneously a Rane RAD. Use it as a standalone mic/line mixer with up to four mics, or add more gain-shared mics using up to seven AM2 Automixers for up to 60 gain-shared mics.

Three manually-mixed audio inputs provide a simple user interface and installation. The Aux 1 Input dual RCA and Aux 2 3.5 mm jacks are independently mono'ed, each with a front panel Level control. A dedicated USB Charge port adjacent to Aux 2 provides power to USB devices such as iPods® or other USB-powered devices. The separate orange USB Audio Input also offers a front panel Level control for the 16-bit, 48 kHz digital audio that is mono'ed immediately upon entry.

The AM1 appears in Windows and Apple OS X computers as a standard USB Audio Device, immediately compatible with dozens of audio recording and playback audio applications. The AM1 registers with the OS as a 16-bit 48 kHz device for both incoming and outgoing audio. The USB Audio port doubles as a firmware update port if future updates become available.

The front panel Output Level control affects the XLR Output and the RAD Port output. The analog RECORD RCA Outputs and the digital USB Audio output are both mono, pre-Output Level, containing the same mix as the Main Output.

A front panel pre-Output Selector permits headphone cueing so users can verify input and output operation before bringing new sources into the live Output mix. Both ¼" & 3.5 mm headphone jacks with a Level control are provided.

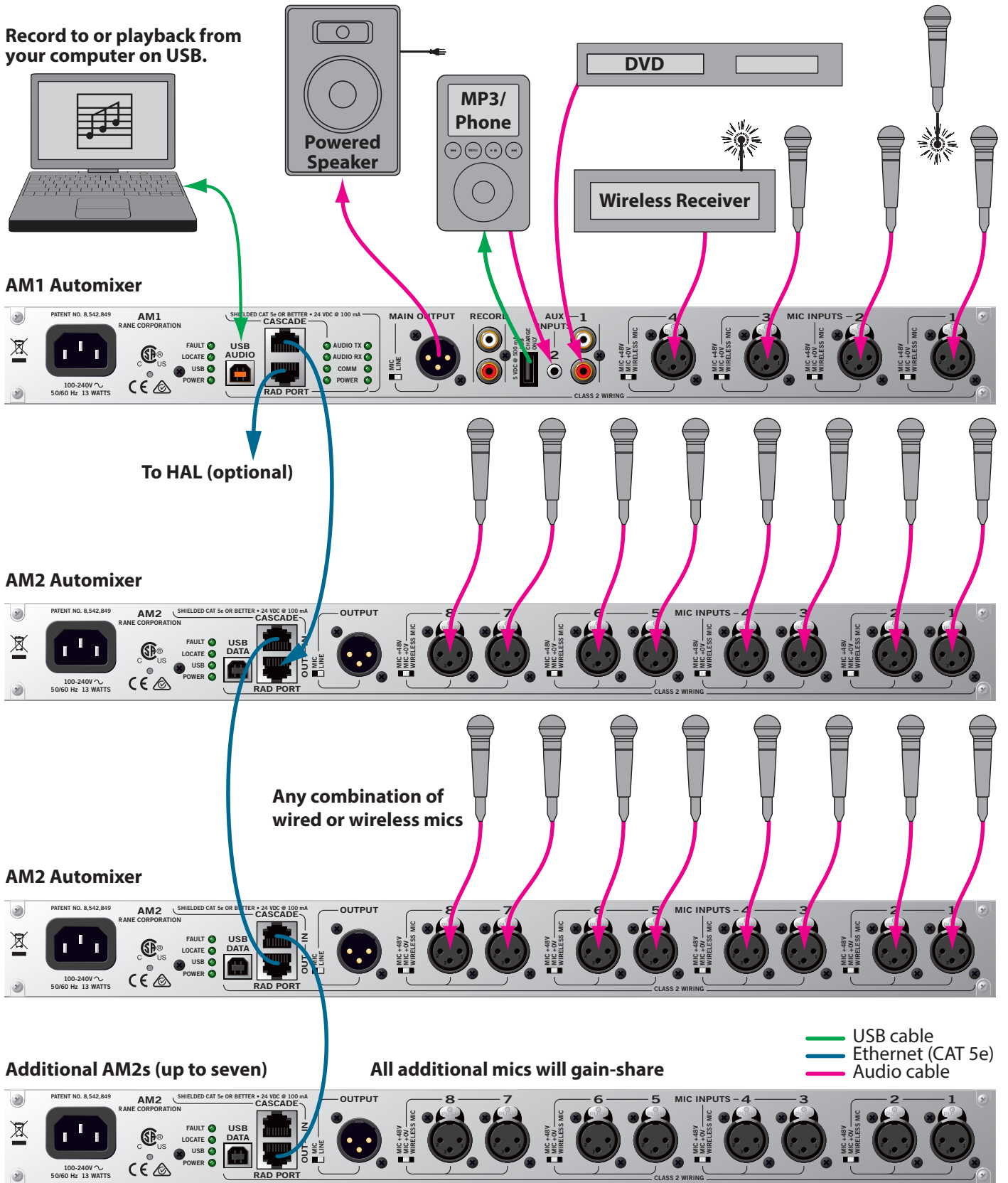
AM2 Unique Features

The Rane AM2 is both an 8 channel, gain-sharing automatic mic mixer and simultaneously a Rane RAD. Use it as a standalone mic-only mixer, or add more gain-shared mics using up to seven additional AM2 Automixers for up to 64 gain-shared mics.

When an AM2 is used standalone, both the XLR Output and the RAD Port output audio are affected by the front panel Output Level control. When the AM2's Cascade Output feeds a downstream Rane AM1 or AM2, the front panel Output Level control only affects the XLR Output.

The USB port is solely used as a firmware update port if future updates are needed.

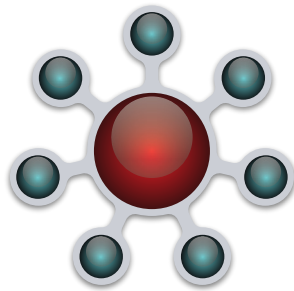
Cascaded AM System Example



AM1 and AM2 as RADs with Mongoose or HAL



**Mongoose
Tracker**



HALOGEN

RADs

An entire family of RAD models interface with HAL or Mongoose Systems for digital conversion at the wall. Each converts analog audio to and/or from 24-bit, 48 kHz digital audio. Shielded CAT 5e (or better) cable and termination transport four digital audio channels – two channels each direction – as well as power, ground and a communications channel, with status indicators at each RAD, host unit, and host software. All RADs are both “location-aware” and hot-swappable with 500-foot homerun connections (66% farther than Ethernet). Most RADs mount in standard US electrical boxes, and are available in white, ivory, or black, with a matched Decora™ plate cover included.

Mongoose

Mongoose can replace the analog mic and line level portions of an audio system with digitized audio over shielded CAT 5e cable (or better). Mongoose can be used with or without CobraNet.

The Mongoose’s 32-by-32 digital audio matrix router receives its first 16 audio channels from up to eight RADs via the eight rear panel 8P8C (RJ-45) Remote Audio Device ports. The second 16 matrix input channels come from two eight-channel CobraNet receive (Rx) Bundles via standard CobraNet Primary and Secondary/backup ports. The 32 matrix router outputs transmit 16 channels to eight RADs and 16 more channels to two CobraNet transmit (Tx) Bundles. Mic inputs can be greatly increased by connecting a RAD output from an AM1 and/or cascaded AM2s.

Find out more at rane.com/mongoose

HAL1

Meet HAL, an expert in room combining, paging and distributed audio systems. This groundbreaking architecture is dimensions beyond any other solution. HAL easily guides even novice users through what used to be complex tasks in just minutes. No intricate matrix mixing or presets are required for room combining and paging. No virtual wiring required to distribute pages and background music to multiple zones.

Seamlessly interface HAL to your facility with a broad variety of peripheral devices including smart Digital Remotes, RADs, portable and in-rack automixers, audio I/O and control logic expansion devices, wall sensors, ambient sensing mics, small remote amplifiers, and an advanced Paging Station.

The HAL and Halogen software check the status, location, CAT 5 wiring integrity, and that audio is flowing in all peripheral devices, so you know your system is properly connected and ready to go. HAL is more than just another DSP drag-and-drop system — it has revolutionized system design and installation.

Three HAL Multiprocessors provide various audio I/O and control options for both large and small installations, with expandable systems capable of hundreds of mics (HAL1) or economical and adaptable 4 in x 8 out (HAL3).

Find out more at rane.com/hal

AM Automixers with HAL

An AM1 is a RAD, and an AM2 is a RAD, and the final output of cascaded AM mixers is a RAD. Any of these allow the manually created mono mix to be sent digitally to a Rane HAL’s RAD port via a shielded CAT 5e cable (or better). The Rane RADX supports doing so portably – with the AM mixer(s) in a padded rack or on a portable AV cart, for example. Once the AM mix is in the HAL, additional signal processing such as EQ and compression can be added. Control of the mix’s level using Rane’s DR1 or DR3 Digital Remotes is a breeze.

AM1 use with HAL

The AM1 does not have a Cascade Out Port, therefore it is not possible to cascade the AM1 mix into Halogen’s Gain-Sharing Auto Mixer or Room Combine Processor. You must use the AM2 mixer for cascading with these DSP blocks.

AM2 use with HAL

The AM2 mixer digitally cascades into Halogen’s Gain-Sharing Auto Mixer or Room Combine Processor. This means the gain-sharing algorithm automatically treats AM2 microphones and any other microphone wired into these DSP blocks as being part of the same gain-share. This provides superior gain before feedback since all mics in the room, regardless of where and how they are plugged in to the audio system, all work as one. This maintains your feedback stability margin.

To maintain PAG & NAG like you never have before, connect the AM2’s Cascade Out jack with a shielded CAT 5e (or better) cable into any HAL’s RAD port. In Halogen software, in the Processing Workspace, drag the AM2 onto the Cascade In on either a Gain-Sharing Auto Mixer or a Room Combine Processor.

You can cascade as many AM2 mixers into these two DSP blocks as you have RAD Ports available. With a maximum of 36 total RAD ports in a HAL1 full with EXP1s, and a maximum of 8 AM2s cascaded externally, over two thousand possible channels are possible!

Features and Specifications

XLR Inputs	Mono, Balanced, Mic/Line Selectable
Phantom Power	+48V per IEC 60268-15, Selectable in Mic mode
Maximum Input	-18 dBV / -6 dBV / +12 dBV (Dynamic / Condenser / Wireless)
Input Impedance	2.01k, 1%
Input Gain Range (Mic/Wireless)	-80 to +34 dB / -80 to +26 dB
Frequency Response	80 Hz to 7 kHz, 2nd-order Butterworth, +0/-3 dB, -20 dBFS, Extended vocal range
AM1 Aux Inputs 1 / 2	Dual Mono, Unbalanced, RCA / 3.5 mm TRS
Maximum Input	+8 dBu
Input Impedance	18.8 k Ω , 1%
Gain Range	-80 to +12 dB
Frequency Response	20 Hz to 20 kHz, +0/-0.25 dB
Main Output	Mono, Balanced, XLR
Maximum Output (Mic/Line)	-20 / +20 dBu, 10 k Ω load
Output Impedance (Mic/Line)	51 / 300 Ω , 1%
Output Gain Range	-80 to 0 dB
Dynamic Range (Line)	101 dB re +20 dBu, 20 kHz BW, A-weighted, 0 dB gain, 10 k Ω load
AM1 Frequency Response	23 Hz to 20.5 kHz, +0/-3 dB
AM2 Frequency Response	80 Hz to 7 kHz, +0/-3 dB, -20 dBFS
AM1 THD+N	< 0.01%, 22 Hz to 20 kHz, A-weighted, +4 dBu, 0 dB gain, 10 k Ω load
AM2 THD+N	< 0.02%, 100 Hz to 7 kHz, A-weighted, +4 dBu, 0 dB gain, 10 k Ω load
AM1 Record Output	Dual Mono, Unbalanced, RCA
Maximum Output	+12 dBu, 10 k Ω load
Output Impedance	602 Ω , 1%
Frequency Response	23 Hz to 20.5 kHz, +0/-3 dB
Dynamic Range	101 dB re +12 dBu, 20 kHz BW, A-weighted, 0 dB gain, 10 k Ω load
THD+N	< 0.01%, 22 Hz to 20 kHz, A-weighted, +4 dBu, 0 dB gain, 10 k Ω load
AM1 Headphone Output	Dual Mono, Unbalanced, ¼" and 3.5mm TRS
Maximum Output	+9 dBu, 150 Ω load
Maximum Output Power	30 mW into 150 Ω
Output Gain Range	-63 to +16 dB
Frequency Response	23 Hz to 20.5 kHz, +0/-3 dB
Dynamic Range	101 dB re +9 dBu, 20Hz to 20 kHz BW, A-weighted, 0 dB Gain, 150 Ω load
THD+N	< 0.06%, 22 Hz to 20 kHz, A-weighted, +4 dBu, 0 dB gain, 150 Ω load
LED Meters	Mono, peak detecting
Signal	-50 dBFS, Green LED, Peak-Reading
Overload	-0.5 dBFS, Red LED, Peak-Reading
RAD / Cascade In / Out	8P8C (RJ-45) Connector. The AM2 has a Cascade Output, the AM1 does not.
Sample Rate and Resolution	48 kHz @ 24 bits, fixed-point
AM1 USB Digital Audio	Dual Mono In/Out, USB-B connector
Sample Rate and Resolution	48 kHz @ 16 bits
AM1 USB Charge Only Port	USB-A Connector
Output Voltage and Current	+5 V max @ +500 mA max
Unit	All Steel Construction
Universal Line Voltage	100 to 240 VAC, 50/60 Hz, 13 W
Conformity	CE, FCC, cCSAus
U.S. Patent No. 8,542,849	
Size	1U 1.75"H x 19"W x 8.5"D (4.4 cm x 48.3 cm x 21.6 cm)
Weight	5 lb 4 oz (2.4 kg)
Shipping Size	4.5" x 20.3" x 13.75" (11.5 cm x 52 cm x 35 cm)
Shipping Weight	9 lb (4.1 kg)
	<i>Note: 0 dBu = 0.775 Vrms</i>

Applications

Facilities and rental agencies are called upon to provide either equipment, or equipment and operators, for meetings or conferences needing A/V support. The equipment providers must ensure audio quality throughout the event to get repeat business. However, the provided equipment may be operated by presenters who have no audio experience. If an operator is sent with the equipment to set up and manage the system during the presentation, that operator may have little audio experience. Pitfalls abound when interconnecting the system, and managing multi-microphone gain before feedback, mixing and volume. Handling iPod and laptop playback and/or recording adds even more complexity. Enter the Rane AM Automixer.

The AM1 makes it easy for an inexperienced operator to quickly set up and manage audio for a multimedia presentation involving up to four participants with microphones (wired or wireless) and several program audio sources (e.g., DVD, Laptop, MP3 player).

The AM2 easily handles an eight-person discussion panel or board meeting. Additional AM2 mixers easily handle more mics when needed, all gain-sharing, making operation simple.

The AM1 provides line audio sources, manually mixed since there is no acoustic feedback potential. The AM1's flexible line input combination of RCA, 3.5 mm and separate USB Charge and Audio I/O ports makes integration and cabling easy. And since the USB Audio port can simultaneously playback audio and record the AM1's output, the same laptop can be a source and a recording device to document AV meetings, presentations, trainings, and family karaoke nights for AV contractor employees.

The AM Automixer offers a professional integrated solution that provides superior automatic gain before feedback while eliminating operator error with simple controls. The microphone gain-sharing algorithm automatically and appropriately attenuates mics not in use while maintaining the 3 dB per doubling of mics for different (noncoherent) talkers, and 6 dB per doubling for the same (coherent) talker who is directly between two mics. Think of the person wearing a live lavalier or headset, while approaching a live podium mic...no problem!



- AV Rental Systems
- Auditoriums
- Conference Centers
- Houses of Worship
- Hotels
- School AV Nerds
- Panel Discussions
- Podcasting

AM1 Architectural Specifications

The 1U audio device shall provide 4 rear-mounted XLR inputs automatically mixed using a gain-sharing algorithm. Each input shall permit independently selectable mic, mic with 48 volt phantom power, or line input level intended for wireless receiver output. Front panel mic input level controls for each input shall indicate signal and overload and an overall mic mix level control with signal and overload shall be provided.

Three manually-mixed inputs shall include dual RCA inputs, a 3.5 mm stereo jack and dedicated USB charge port, and an independent USB audio input; all three shall be monoed before mixing. Front panel mix level controls for all three inputs shall supply signal and overload indication.

Accommodation for two, post-level audio outputs shall be provided. One on a single XLR male balanced analog output with mic/line selector switch and the second via a Rane RAD Port on RJ-45 providing 24-bit, 48 kHz PCM digital audio transport. A mono, pre-output level mix shall be provided on dual-mono RCA jacks and via a USB Audio port providing 16-bit, 48 kHz PCM audio.

The USB Audio I/O port shall be recognized by Windows and Apple OS X devices as a standard USB audio device permitting simultaneous playback and recording to and from the device.

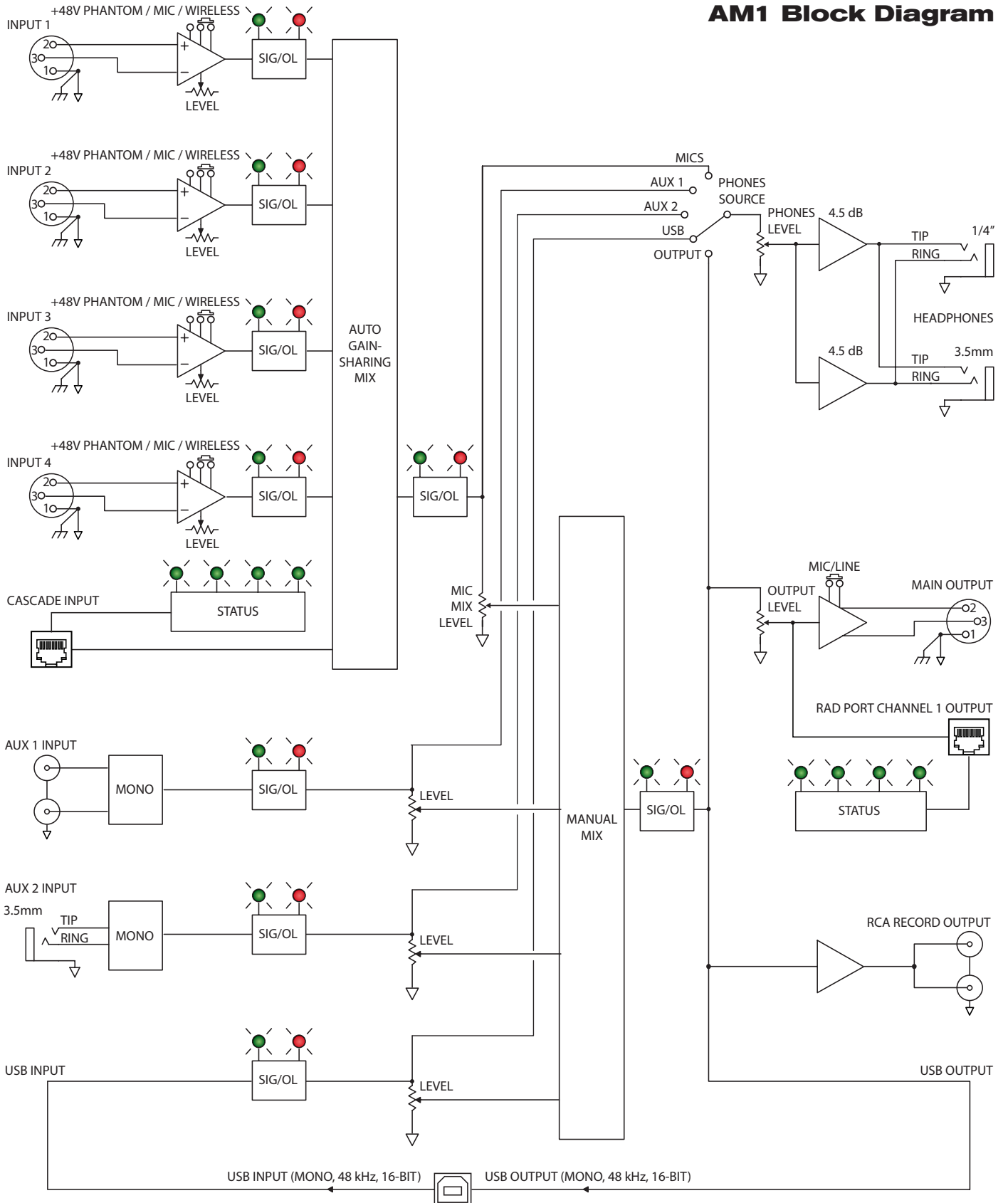
A cascade input RJ-45 shall permit gain-sharing mic mix expansion in groups of 8 channels from external automixer devices. Up to 60 gain-shared mics shall be supported.

A front panel pre-level selector shall provide headphone cueing with level control of either the mic mix, the RCA input, 3.5 mm input, the USB audio input, or the main output mix. Headphone outputs shall be provided on both ¼" and 3.5 mm jacks.

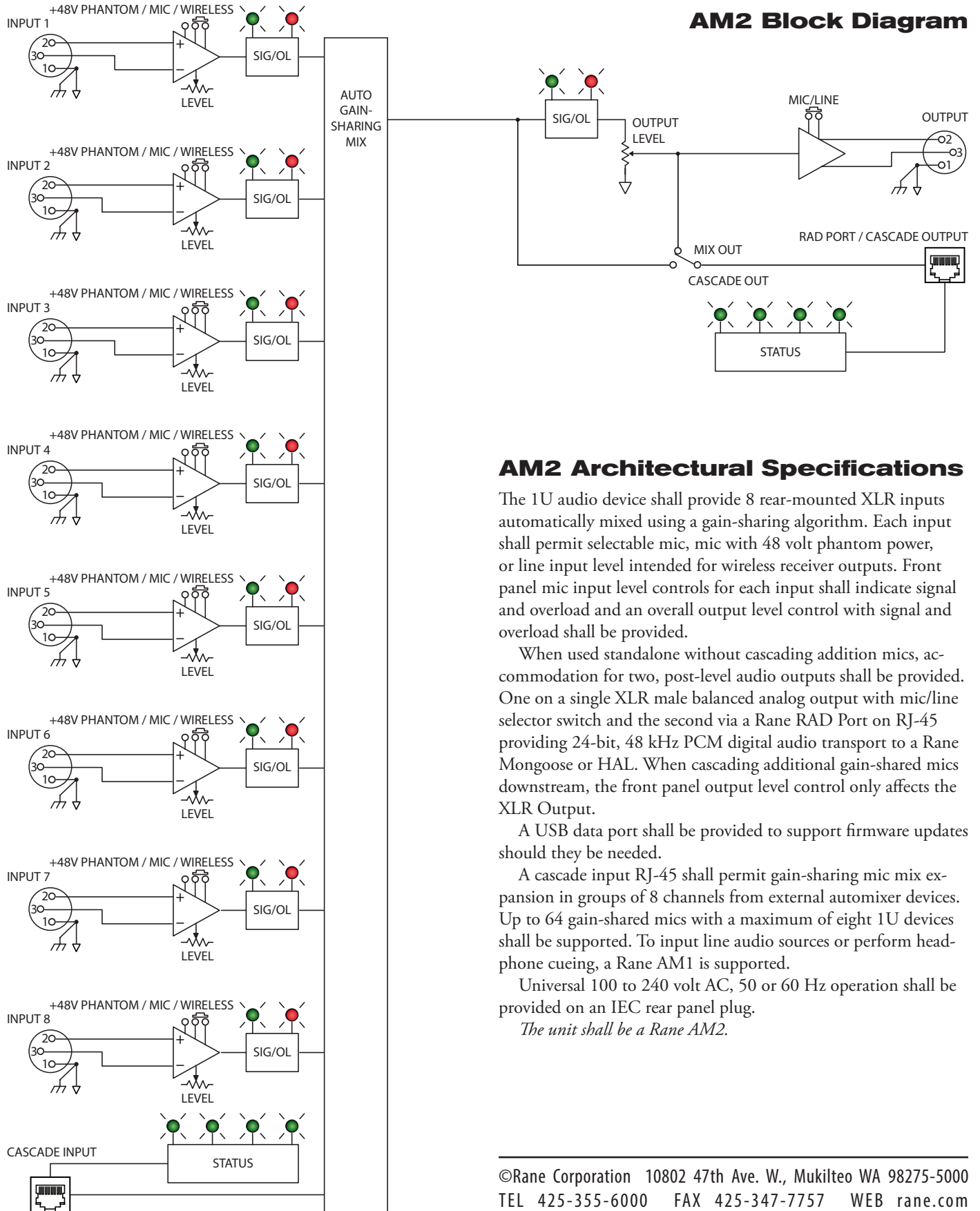
Universal 100 to 240 volt AC, 50 or 60 Hz operation shall be provided via an IEC rear panel plug.

The unit shall be a Rane AM1.

AM1 Block Diagram



AM2 Block Diagram



AM2 Architectural Specifications

The 1U audio device shall provide 8 rear-mounted XLR inputs automatically mixed using a gain-sharing algorithm. Each input shall permit selectable mic, mic with 48 volt phantom power, or line input level intended for wireless receiver outputs. Front panel mic input level controls for each input shall indicate signal and overload and an overall output level control with signal and overload shall be provided.

When used standalone without cascading addition mics, accommodation for two, post-level audio outputs shall be provided. One on a single XLR male balanced analog output with mic/line selector switch and the second via a Rane RAD Port on RJ-45 providing 24-bit, 48 kHz PCM digital audio transport to a Rane Mongoose or HAL. When cascading additional gain-shared mics downstream, the front panel output level control only affects the XLR Output.

A USB data port shall be provided to support firmware updates should they be needed.

A cascade input RJ-45 shall permit gain-sharing mic mix expansion in groups of 8 channels from external automixer devices. Up to 64 gain-shared mics with a maximum of eight 1U devices shall be supported. To input line audio sources or perform headphone cueing, a Rane AM1 is supported.

Universal 100 to 240 volt AC, 50 or 60 Hz operation shall be provided on an IEC rear panel plug.

The unit shall be a Rane AM2.