

QUICK START

If you're setting up the AM1 automixer, but your life depends on getting back to Twitter® feeds and Facebook® posts, then this Quick Start is for you. It's intended to get your audio working quickly in slightly more than 140 characters.

Plug microphones into the Mic Inputs using standard XLR mic cables. Condenser mics need the MIC +48V switch position. Use the MIC +0V middle position for dynamic mics. The LINE position is used when a wireless microphone's receiver output is connected.

When using the USB Charge-Only port, connect charging MP3 player audio only to the AUX 2 3.5 mm jack. All other line-level sources (e.g., DVD/CD) must use the AUX 1 RCA jacks. Use the USB Charge-Only port for keeping the iPod's battery charged during playback.

Connect the Main Output XLR to your amplifier or powered loudspeaker and select the LINE switch position. If the Main Output feeds a microphone input, select the MIC position.

Connect the computer's USB port to the USB Audio jack. Once the Windows® or Apple® operating system recognizes the AM1 as a stereo I/O device, the rear green USB light illuminates.

Start with all the front panel gray knobs turned all the way down – fully counterclockwise. One at a time for each mic, talk very loudly and very closely to the mic and adjust the corresponding front panel LEVEL control so only the loudest speech just barely flickers the red overload (OL) indicators. Once the input gains are set, the AM1 automatically controls the mic mix to avoid feedback. (You won't need to ride these controls.)

Sources with output volume controls (e.g., iPods) need to be turned up most of the way to get the hottest signal, but without making the AM1 overload lights flash.

Play audio from your computer's audio software application and select the Rane AM1 as the playback and/or recording device (See USB Audio later in this Manual). If the software offers playback volume, turn it up all the way.

Turn on the amplifier/loudspeaker and turn it up about half way. Also turn the AM1 OUTPUT gray knob up until the volume is appropriate for your application. Use the four gray Mix knobs to adjust the relative volume of the sources.

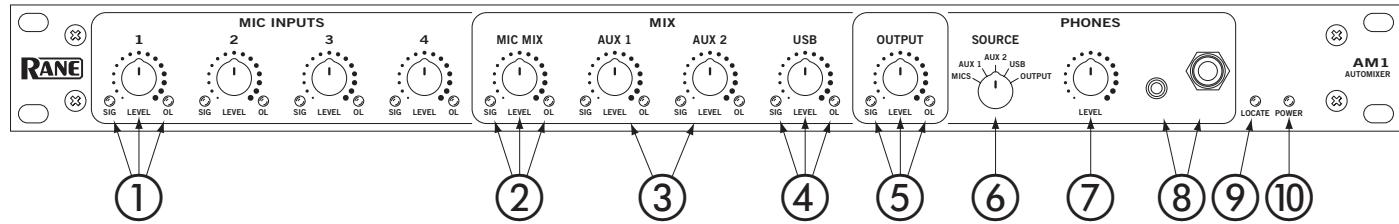
If the system feeds back (that horrible squeal), something is turned up too much. First try moving the mics farther from the loudspeaker and/or pointing the mics and loudspeakers away from each other. If this does not reduce feedback, don't reach for the black Mic Input knobs, instead turn down the gray Mic Mix knob. While turning down the output or amplifier may help, this also turns down the iPod, CD or USB Audio, only hiding the feedback problem.

If your system uses the RAD Port, connect a shielded CAT 5 cable to one of the Rane Mongoose's rear panel Remote Audio Device ports. Some systems may provide a wall plate location to connect the RAD Port cable.

When cascading one or more AM2 automixers into the AM1, be certain each Cascade In connection feeds a Cascade Out. In the cascaded chain, the AM1 must go between all the AM2s and the Mongoose. Only one AM1 can be included in a cascaded system.

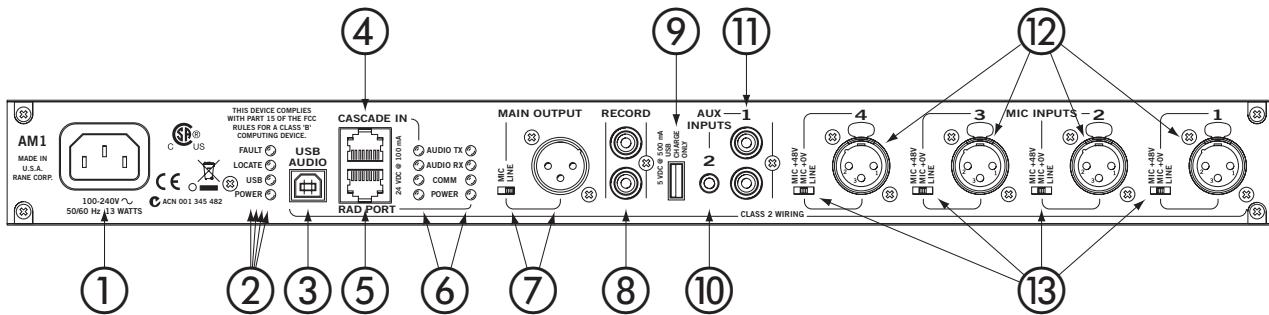
Now you can tweet that your AM1 is working fine.

FRONT PANEL DESCRIPTION



- ① **MIC INPUT LEVEL** controls adjust the mic input gain. The green Signal indicators inform of audio presence. Overload indicators warn of excessive signal levels.
- ② **MIC MIX LEVEL** control adjusts the volume of all mixed microphones, including all upstream microphones when cascading additional mics from a Rane AM2 (sold separately). Signal and Overload indicators inform and warn.
- ③ **AUX 1 & AUX 2 MIX LEVEL** controls alter the mix volume of the Aux 1 and Aux 2 inputs, respectively. Corresponding Signal and Overload indicators flank each.
- ④ **USB MIX LEVEL** control adjusts the mix volume of the USB audio received from a computer connected to the rear panel USB Audio jack. Signal and Overload colors are reminiscent of holiday lights.
- ⑤ **Main OUTPUT LEVEL** control adjusts the level of the mix exiting the XLR output and the RAD Port output. The Record Output level is not affected by this control.
- ⑥ **PHONES SOURCE** cue switch selects which audio is heard in the headphone outputs: the mix of all Mics, the Aux 1 input, the Aux 2 input, the USB audio input, or the Main Output. This allows listening in headphones to any single input before turning each up in the mix, or listening to the main mix before turning it up in the PA for the world to hear.
- ⑦ **PHONES LEVEL** control adjusts the volume of both the 3.5 mm and 1/4" headphone jacks.
- ⑧ **PHONES** include both 3.5 mm and 1/4" headphone jacks for either size headphone plug.
- ⑨ **LOCATE** indicator helps system installers identify a specific AM1 Automixer when using Rane's Mongoose Tracker software.
- ⑩ **POWER** indicator lights whenever adequate power is applied to the unit.

REAR PANEL DESCRIPTION



① **AC Power IEC input** accepts electrons to power up the AM1. Though it is first in this list, it's best to connect it last.

② **FAULT indicator** lights when something goes awry.
LOCATE indicator flashes when toggled from the Mongoose Tracker software. When using multiple AM1 devices in a Rane Mongoose-based CobraNet™ system, this uniquely identifies a specific AM1.

③ **USB AUDIO connector** allows simultaneous 16-bit, 48 kHz playback and recording via a computer. The AM1 registers as a standard sound card with either Windows or Apple operating systems.

④ **CASCADE IN port** permits adding up to 56 more microphones to the AM1's 4 mic inputs using up to 7 Rane AM2 automixers, sold separately. Use shielded Ethernet CAT 5 cable connected from the AM2's Cascade Out.

⑤ **RAD PORT** connects to a Rane Mongoose's Remote Audio Device port to transport the single-channel, Main Mix of the AM1 to a CobraNet network or another Remote Audio Device.

⑥ **CASCADE IN & RAD PORT status indicators** prove that proper cable termination and device configuring has occurred when all four indicators illuminate. If any of these are off or flashing, a configuration or wiring error is the culprit.

⑦ **MAIN OUTPUT XLR connector** contains the main mix of all mics, Aux 1, Aux 2 and USB Audio input signals. The front panel Output Level control adjusts the level exiting this jack.
MIC/LINE Output switch changes this Main XLR Output to mic-level, for feeding the output mix to a mic input device; or line-level for feeding line-level input devices.

⑧ **RECORD Output RCA jacks** contain the same audio mix as the Main Output. The signal is not affected by the Output Level control.

⑨ **USB CHARGE-ONLY port** powers and charges many USB devices such as iPods®.

⑩ **AUX INPUT 2 stereo 3.5 mm jack** is internally monoed immediately and useful for connecting MP3 players of all kinds.

⑪ **AUX INPUT 1 dual RCA jacks** are internally monoed immediately and enjoy being fed audio from CD, DVD, 8-Track tape players, reel-to-reel machines, docking stations or iPhone®, iPod® or iPad® headphone jacks.

⑫ **MIC INPUTS 1 thru 4** accept dynamic or condenser microphones, or the output of a wireless microphone receiver. These inputs are optimized for speech and have a fixed 100 Hz low-cut and 7 kHz high-cut filter. Both filters are 2nd-order Butterworth filters.

⑬ **3-position MIC/LINE switches** support 48 volt phantom power Mic position for condenser mics, zero volt Mic position for dynamic mics, and the Line position intended for wireless mic receiver outputs.

CONNECTION

Connect the AC power cord *last* to avoid loudspeakers hurting your sensitive ears.

MIC INPUTS

The four mic jacks are balanced XLR inputs. Unbalanced mics or wiring can also be used with their inherent lower quality and higher potential for hum and noise. Standard microphone cable with a two-conductor twisted pair plus a shield is best. Rane follows the AES recommended practice of pin 2 positive (hot), pin 3 negative, and pin 1 to shield. If your microphone is unbalanced (only two conductors), see the Sound System Interconnection RaneNote elsewhere in this manual or on Rane's website for the proper cable to use. Or better yet, get a balanced mic.

For condenser microphones which require phantom power, use the MIC +48V switch position. Dynamic mics use the center, MIC +0V position. When using a wireless microphone receiver, use the LINE position.

AUX INPUTS

The two Aux inputs accept line-level audio: Aux 1 for connection to CD/DVD players, and Aux 2 for use with portable MP3 players utilizing the USB Charge-Only port.

Portable MP3 players connected to external AC USB chargers (wall warts) should connect to the RCA Aux 1 jacks. Using the Aux 1 RCA jacks with an audio device that is also plugged into the USB Charge-Only port may cause hum. Low-end MP3 players often lack sufficient isolation between the USB and audio grounds which can cause hum with some setups.

While the physical 1/4" and 3.5 mm jacks are both stereo, the internal audio on both Aux inputs is immediately monoed since the AM1 Mix is mono.

USB CHARGE-ONLY PORT

The USB Charge-Only port supplies 5 volts DC at up to 500 mA to charge iPods® and many other USB-powered devices. The 3.5 mm Aux 2 input is optimized to accept audio from devices plugged in to the USB Charge-Only port.

RECORD OUTPUT

The RCA line-level outputs are unbalanced. Both RCA jacks contain the same mono mix of the Mic, Aux, and USB Audio inputs.

MAIN OUTPUT

The Main Output is a mono balanced XLR jack. Connect the Main Output XLR using mic cable to your amplifier or powered loudspeaker and select the LINE position on the adjacent switch. If the Main Output feeds a microphone snake or mic input, select the MIC switch position.

USB AUDIO PORT

Connect a USB cable from this port to the computer's USB port. Once the operating system recognizes the AM1 as a stereo input and output "sound card," the rear panel USB indicator lights. The AM1 can simultaneously playback and record via a computer using this USB audio port.

RAD PORT

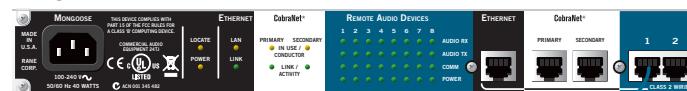
If your audio system delivers the AM1's Main Output audio mix using Rane's digital audio transport technology exiting the RAD Port, connect a shielded Ethernet patch cable to the RAD Port. When the Rane Mongoose at the other end of this connection recognizes the AM1's RAD Port, audio nirvana is achieved and all four adjacent RAD Port Status indicators illuminate.

CASCADE IN

Connect a shielded Ethernet patch cable from the CASCADE IN port to a Rane AM2's CASCADE OUT port to add more mics to the mic mix of an AM1. All four CASCADE IN Status Indicators illuminate when the two devices recognize each other. Connect up to seven Rane AM2 Automixers to add up to 56 more mics. Be certain to connect CASCADE OUT to CASCADE IN throughout – otherwise, nirvana won't be achieved.

Note: Only one AM1 Automixer is permitted in a cascaded system. When cascading mixers, the AM1 must be the device that feeds the Mongoose. In other words, the AM1 RAD Port wires to the Mongoose, and up to seven AM2 mixers chain together into the AM1's CASCADE IN. See the illustration below.

Mongoose



AM1 Automixer



AM2 Automixer



AM2 Automixer



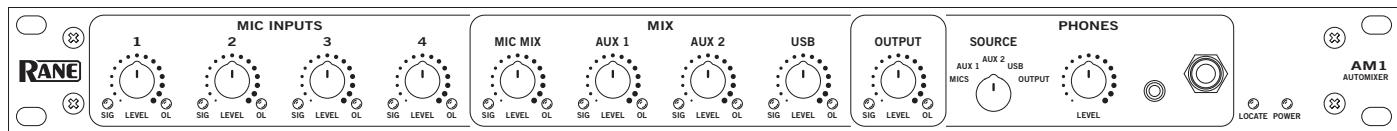
AM2 Automixer



AM2 Automixer (up to seven)



OPERATION



MIC INPUTS

The rear panel, three-position Mic/Line switches set the mic input gain such that the maximum signal permitted almost clips the A/D converter. This is true for each switch position. The Mic Inputs are automatically mixed using a gain-sharing algorithm. Set the inputs using the black knobs so they do not (or rarely) clip. Then, sit back and relax. If you've already set up the inputs and someone starts talking louder/closer than you expected, feel free to turn them down a little.

The green Signal indicators should easily light for soft talkers even at relatively low Level settings. The Overload indicator should light only occasionally for only the loudest talkers.

The gray Mic Mix knob adjusts the level of the automatic mix of all Mic Inputs. Use it to change the mix of all the Mics relative to the Aux 1, Aux 2 and USB Audio Line Inputs. Even when multiple Rane AM2 Automixers are cascaded into an AM1 providing additional microphones, the Mic Mix knob on the AM1 still adjusts the overall mix of all microphones – up to 60 mics when using seven AM2s. The Overload indicator adjacent to the Mic Mix knob indicates that the mix of all mics is getting too loud for the internal circuitry. It can light occasionally, but only during the loudest talking.

Since these Mic Inputs and their underlying gain-sharing automix algorithm are designed and optimized for speech signals, do not use these Inputs with non-speech audio signals such as musical instruments or CD/DVD.

AUX INPUTS

The 3.5 mm Aux 2 input jack is optimized for use with devices connected to the adjacent USB Charge-Only port. For other audio sources, use the Aux 1 RCA jacks. Since the AM1 mix is mono, audio at these two stereo inputs is monoed upon entering the AM1. Adjust the front panel Aux Level controls for Aux 1 and Aux 2 to set the relative mix of these sources. The Overload indicators light when the incoming audio is getting too loud. Only the very loudest audio sources should occasionally light the Overload indicator.

If you're using an iPod® or other aux/line source that allows output volume adjustments, turn the volume up as far as possible without lighting the Overload indicator too often.

MIXING

The Mic Inputs are automatically mixed. Use the four gray Mix knobs to adjust the relative volume of the four inputs: Mic Mix, Aux 1, Aux 2 and USB Audio from the PC. The red overload indicators should light only when the loudest source sounds are running at full-tilt boogie.

OUTPUTS

All the AM1 audio outputs, digital and analog, contain a mono mix of the automatically mixed Mics and manually mixed Line Inputs from the four gray Mix knobs.

RECORD OUTPUT

The level or volume of the Record Output is not altered by the AM1's front panel Output level control. This permits consistent recording levels on your favorite recording device, while adjusting the volume in the room / PA system.

MAIN OUTPUT

The front panel Output Level control adjusts the level of this output.

HEADPHONE AND CUEING

Plug in headphones and adjust the Phones Level knob to a comfortable volume. All headphone audio is mono – just like all the other AM1 outputs.

The Source knob allows cueing each mix source independently. This allows verification that a source is working properly before bringing it into the mix.

With the Source set to Output, the entire mix is heard. Use the four gray Mix knobs to adjust the relative volume of each source. Select Mic Mix to hear the automatic mix of all microphones in the system. Select Aux 1, Aux 2 or USB to hear each of these inputs individually.

Use only one of the headphone jacks at a time.

CASCADE IN PORT

The Cascade Input allows more mics to be added to the gain-sharing mic mix algorithm of the AM1's four Mic Inputs. When a shielded Ethernet patch cable fed from an AM2 is connected here, all cascaded AM2 microphones are automatically added to the automatic Mic Mix of the AM1. (US Patent Pending.)

Cascade audio is 24-bit, 48 kHz, fixed-point for the curious audio nerd.

To add more microphones to your system, use a Ethernet patch cable to connect an AM2 CASCADE OUT port to the AM1 CASCADE IN port. Doing so allows all 12 mixed microphones (eight AM2 + four AM1) to be heard at the AM1's Main, Record, USB Audio and RAD Port Outputs.

When all four Cascade Status indicators light, this means the cable is wired properly. If any of the Status indicators are flashing, the cable is not wired properly or damaged. In this case, perhaps an Ethernet crossover cable was accidentally connected, or the cable crimp has an error.

We recommend using shielded twisted-pair for the best EMI performance.

CASCADE IN Status indicators are defined below:

AUDIO TX LED – lights when the AM1's audio is successfully transmitted to, and received by, the AM2. If this is off, check the cable.

AUDIO RX LED – lights when the connected AM2 successfully sends audio which also proves this twist in the cable is correct.

COMM LED – lights green when the AM2's Cascade Out is properly communicating with the AM1 and proves that the twisted pair for Comm in the cable is good. If this indicator is off, the cable is not a happy camper.

POWER LED – is always on when the AM1 is powered. If the AM1 is powered and this is off, make sure the power twisted pair in the connected cable is not shorted.

RAD PORT

The RAD Port contains a Rane-specific digital audio transport protocol allowing audio delivery to and from a CobraNet™ digital audio network via a Rane Mongoose (sold separately). The audio exiting the RAD Port contains the main mix and is attenuated by the AM1's front panel Output Level control. This port can only be used to connect to a Rane Mongoose.

For inquisitive technophiles, RAD Port audio is 24-bit, 48 kHz, fixed-point.

RAD PORT Status indicators are defined below:

AUDIO TX LED – lights green when communications with the Mongoose has been established and the Mongoose is receiving the AM1's Tx audio. If this indicator is off, either the cable is bad, or there is a communications error between the Mongoose and AM1 RAD Port (see **COMM LED** below).

AUDIO RX LED – lights green when the RAD Port successfully receives audio from the Mongoose. If this indicator is off, you may have a bad cable, or the Mongoose at the other end of the cable is not powered or connected.

COMM LED – lights green when communication is established between the Mongoose and the AM1. This indicator turns off if the RAD Port cannot communicate with the Mongoose for some reason – most likely due to a faulty cable.

POWER LED – lights green when the RAD Port is receiving 24 volt power from the Mongoose. This also indicates that the twisted pair for power within the cable is wired and crimped properly. If the Power LED is off and the other end of the cable is plugged into a powered Mongoose, there is a problem with the cable.

USB AUDIO I/O

Since the AM1 appears as a standard Windows or Mac stereo playback and record device, you can simultaneously record the AM1 Main Mix and playback audio via the USB. This makes many popular audio software programs instantly compatible with the AM1. Once the computer's operating system finishes registering the AM1 via USB, the rear panel USB indicator lights. The AM1 always registers as a 16-bit, 48 kHz device. Most audio programs work after setting the AM1 as a default device, but a few programs may need their preferences manually set to play or record at 16-bit, 48 kHz.

Play audio from your computer's audio software application and select the Rane AM1 as the playback and/or recording device. If your audio software offers a playback volume control, turn it up most or all of the way, but without flashing the front panel USB input Overload indicator too much. The front panel USB Mix Level knob adjusts the mix volume of the incoming USB audio.

WINDOWS OPERATION

When Windows detects the AM1 it automatically sets it as the default Recording and Playback device. With Windows XP® and Vista®, any audio applications currently running will continue to use the previously selected default device. Restart the application to make it use the AM1 for recording or playback. Windows 7® automatically switches a running application to the newly connected AM1. To avoid surprises, we recommend turning the USB Level down while connecting.

Remember that Windows likes to play different bleeps and bleeps when updates install, devices are plugged in and unplugged, or other operating system events happen. If you do not want these sounds played into your mix, turn off Windows system sounds. This can be found in:

Start->Control Panel->Sound->Sounds (tab)->Sound Scheme->No Sounds.

Finding the audio properties and devices in Windows varies slightly with each version.

Windows XP:

Classic View

Start->Control Panel->Sounds and Audio Devices->Audio (tab)

Category View

Start->Control Panel->Sounds, Speech, and Audio Devices->Sounds and Audio Devices->Audio (tab)



Windows Vista:

Classic View

Start->Settings->Control Panel->Sound->Playback (tab) and Record (tab)

Control Panel Home

Start->Control Panel->Hardware and Sound->Sound->Playback (tab) and Record (tab)



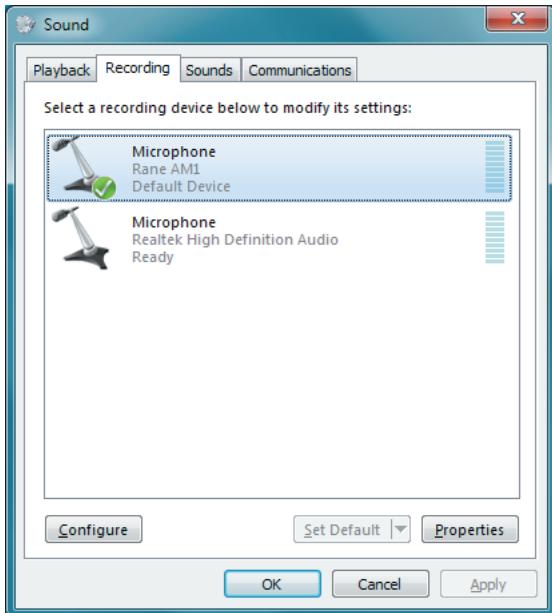
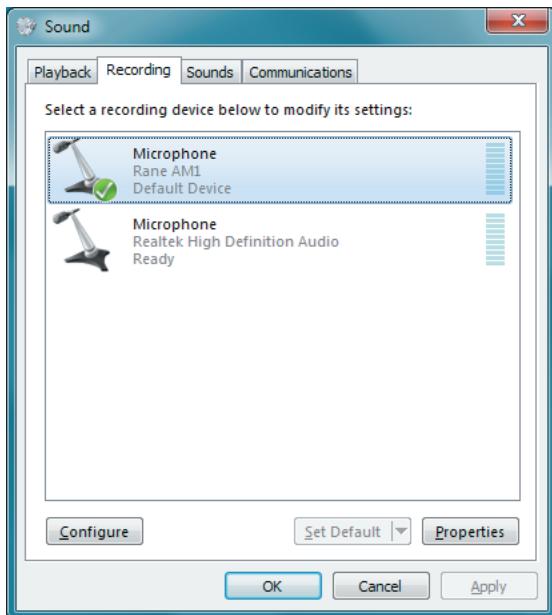
Windows 7:

Small/Large Icon View

Start->Control Panel->Sound->Playback (tab) and Record (tab)

Category View

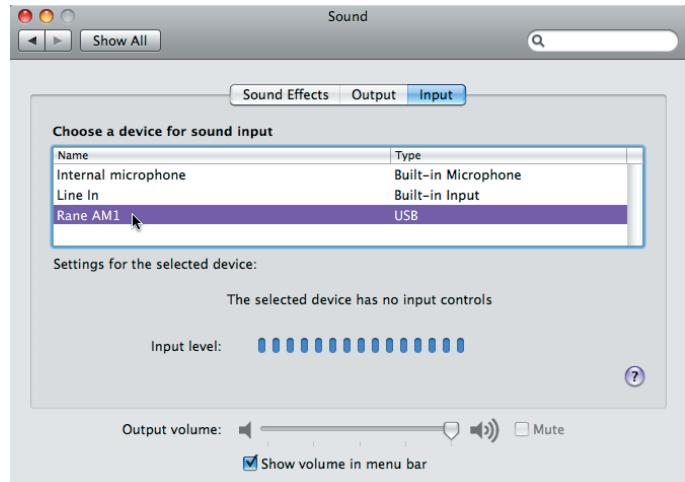
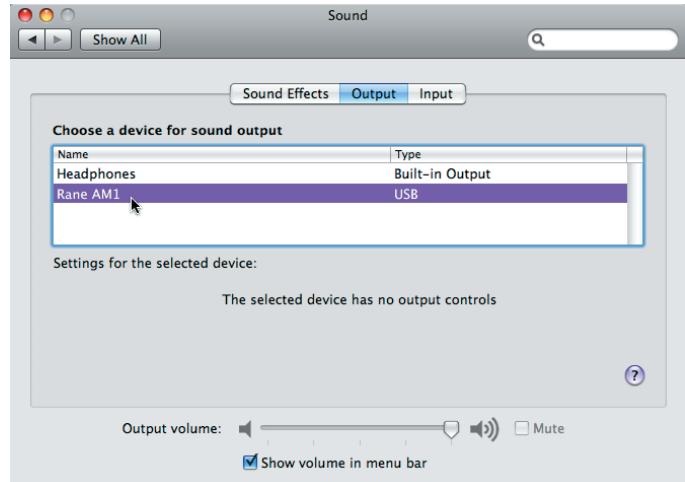
Start->Control Panel->Hardware and Sound->Sound->Playback (tab) and Record (tab)



MACINTOSH OPERATION

When OSX® detects the AM1, it adds it to the list of audio input and output devices, but does not automatically set it as the default device. Some Macintosh® applications allow you to select the device you want to use. Other applications only use the device specified as the OSX default. We recommend that you set the default audio input and output device to the AM1 before starting the application you want to use.

Configure the default audio device in OSX by navigating to: System Preferences->Sound->Output (tab) and Input (tab).



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