PRACTICAL GUIDE TO THE
EDIROL R-09HR

Amazing 24 bit/96 kHz super sound quality!
Ultra-lightweight recorder. Fits in your pocket!
Functional! Fun! Record anywhere!
Detailed explanation of practical techniques.

Welcome to the World of Live Recording.

Record band performances. Record bird songs. Record children singing.

Record trains. Record realistically. Record the air around you.

Record in uncompressed 24 bit/96 kHz.

Record, record, and record some more.

Everyone wants to record the sounds of their lives.

This book is written for those who are new to the world
of Live Recording using the EDIROL R-09HR.
It's a practical how-to book filled with hints and explanations for every recording
situation. (For specific operating instructions, please see the owner's manual that
cames with the R-09HR.)

So, let's begin live recording with the R-09HR.

Chapter 1 : The outstanding features of the R-09HR

Chapter 2 : Situation practical use technique

Chapter 3 : Applied technique

Chapter 4 : Appendix

Compact, with high sound quality.

Unbelievable high quality

The R-09HR's 24 bit/96 kHz quality is suitable for professional recording studios and surpasses the 16 bit/44.1 kHz standard for CDs.

You can capture the dynamics and details of recorded sound.

No searching!! Start recording immediately by pressing a button!! Immediately playback!!

Unlike tapes, you don't need to search for the beginning of a recording. And you can check the recording on-site with the internal monitor speaker!!

Ultra-light. Take it anywhere, anytime.

A heavy recorder is just another burden when you're carrying a lot of luggage. The ultra-light, compact R-09HR fits in your pocket or a corner of your bag.

Reduce operation noise with the remote control!!

You can adjust recording levels or start playback using the remote control.
You can also eliminate worry about recording noise from button operations by using the remote control even when recording nearby.

The outstanding features of the R-09HR.

No mechanical noise. Convenient built-in mic.

The R-09HR uses an SD card as its recording media. Recording doesn't involve moving parts, so you don't have to worry about recording the mechanical noises associated with tape- and disc-based recorders.

The built-in stereo mic is both practical and powerful.

Includes "pyro Audio Creator LE" from Cakewalk!!

Includes "pyro Audio Creator LE" software for waveform editing. You can freely edit recorded sounds on a PC and create CDs!

High-visibility OLED display.

The R-09HR supports a wide-angle view, energy-efficient OLED (Organic Light-Emitting Diode) display that can be used outdoors or onstage. The level meters respond quickly, and the display has a separate peak indicator. These features allow you to precisely set your recording level.

Note: The actual specifications, appearance, or display screen of the product may be subject to change without notice.

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Recording acoustic instruments

Point 1 Setting the recording level

First, set the recording volume. Play a phrase that has the highest volume, and then adjust the recording level so that the R-09HR level meter reaches the highest level without the PEAK indicator, shown in red below, turning on.

When the PEAK indicator turns on, the input volume is too high.
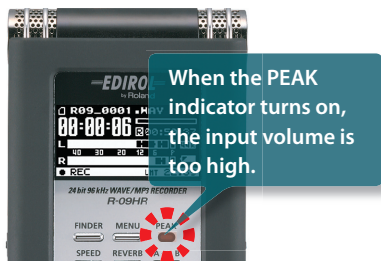
If the level is set too low, fidelity is lost. If the sound level is set too high, pops and snaps may be produced.

☞ **See p. 45 in the Owner's Manual for setting the recording level.**

Point 2 Positioning the R-09HR

The left and right microphones on the R-09HR record sound that the left and right ear, respectively, would hear. So, aim the R-09HR to directly at what you want to record.

Also, moving closer to the sound source creates a more distinct recording, while moving further away softens the sound by recording the ambient sound of the room.

Aim directly at the sound source.

☞ **See "Techniques for recording specific instruments" on p. 18 in this guide for recording different instruments.**

Point 3 — Setting sound quality

We recommend recording instruments in WAV format. However, because MP3 recordings are compact in file size, they can be useful for recording instrument practice.

Record Mode	Description
WAV	Get professional recording quality for digital audio by recording in 24 bit/96 kHz. Recording in 16 bit/44.1 kHz allows you to transfer data to the PC and burn a CD without any conversion.
MP3	The MP3 data format was created to preserve the quality of WAV data while compressing the file size. Until now, you had to convert WAV file to an MP3 on a PC, but the R-09HR allows you to record in MP3 format directly. Not only can you transfer data to a PC and distribute it directly on the internet, you can also record hours of practice, taking advantage of the smaller file size.

Music Format Examples

Application	Recording Mode	Description	Capacity
1. Pro Quality	**WAV** 24 bit/96 kHz	Professional recording quality	5 minutes **about 200 MB**
2. CD Quality	**WAV** 16 bit/44.1 kHz	Creating CDs on the PC	5 minutes **about 50 MB**
3. Internet music distribution quality	**MP3** 128 kbps/44.1 kHz	Internet distribution of music	5 minutes **about 5 MB**

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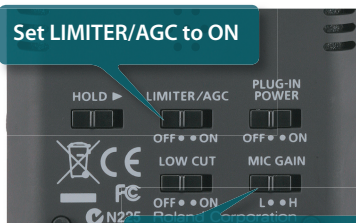
Chapter 4 — Appendix

Recording band performances

Point 1 What is a good level?

Bands are louder than normal everyday sounds. Set the mic gain in the back of the R-09HR to LOW.

Set LIMITER/AGC to ON

Set to HIGH for quieter sounds
Set to LOW for louder sounds

Also, you should turn on the limiter. The limiter is a feature that suppresses noise by lowering the volume level when the sound input is too high.

Point 2 Placing the R-09HR

When instruments are placed in various locations in a room, like a rehearsal studio, you should position the R-09HR in the middle of the studio to record the sound of each instrument equally. The microphone should be placed at about table height.
If the mic is placed on the floor, the sound is muffled and unclear; if it is placed too high, you lose the bass range and the sound becomes tinny.

Drums

Place in the middle

Bass Amp

Guitar Amp

PA Speakers for Vocals and Keyboard

Remote

Of course, once the R-09HR is setup, you can use the remote to adjust the recording level or to start/stop the recording.

Point 3

Optimizing recording levels

Before recording the band, find where the loudest sound occurs. Adjust the recording level so that the R-09HR level meter reaches its highest level without the PEAK indicator, shown in red below, turning on.

Adjust so the PEAK indicator light does not turn on when the loudest sound occurs

When you are using a remote control, you can use the remote indicator to determine the recording level. Adjust the level so that the remote indicator does not blink fast.

Point 4

Setting sound quality

Choose the sound quality according to the purpose.

If sound quality is important:
WAV

If long recording time is important:
MP3

For example, we recommend recording in WAV format when you want to archive material or when you'll use the recording as the master for making a CD. WAV format maximizes the features of the R-09HR, so it's appropriate for recordings you want to keep.

On the other hand, we recommend recording in MP3 format when reviewing practices at rehearsal studios or when making long recordings. You can leave the R-09HR recording for an entire session for later review.

The optional Cover/Stand Set is not just a simple protective cover.

The optional cover/stand set (OP-R09HR-C) is not just a protective cover—it connects to the included stand. The cover can also attach to commercially available tripods for cameras or video cameras. So if you need the extra stability, you can use a tripod in place of the stand. In addition, you can use the mic stand adaptor (OP-R09M) to attach the R-09HR to a mic stand. With a single mic stand, you can place the R-09HR in the optimal position and the optimal height in the studio.

Convenient stand attachment!

The R-09HR cover attaches directly to camera tripods

The R-09HR cover attaches directly to microphone stands when using the mic stand adaptor (OP-R09M)

Recording from cassettes

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Point
1
Setting the recording level

First, check the volume setting on the playback device. If the volume is set too low, then the volume of the recording will be too low no matter how high the R-09HR input level is set. Conversely, if the volume is too high, the sound will be distorted no matter how you adjust the level on the R-09HR.
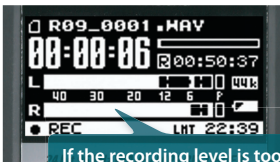
If the recording level is too low, the level meter doesn't move much. If the recording is made with these settings, then the sound at playback will be unsatisfactory.

Next, find the loudest point of the song to be recorded. Every song has its loudest and quietest points. Set the level so that PEAK light doesn't quite turn on when the loudest section is played.

Point
2
Selecting the cables to use

The R-09HR's audio input uses a stereo mini-plug. Select a cable that's compatible with the output jack(s) on the playback machine. Most combo or radio-cassette units use an RCA plug; most compact players use a stereo mini-plug. Verify the type of plug used by the playback device in its owner's manual.

The R-09HR uses a stereo mini-plug. Most compact cassette players and digital audio players also use this plug type.

RCA connectors are often used for sound input to mini component stereo sets and video decks.

Note: The actual specifications, appearance, or display screen of the product may be subject to change without notice.

Point 3

Setting sound quality

Use WAV format to preserve important recordings that are faithful to the source.

If creating CD
WAV 16 bit/44.1 kHz

For professional quality
WAV 24 bit/96 kHz

Because 16 bit/44.1 kHz is the same setting used on audio CDs, it's ideal for burning to CD for playback on a CD player. This format is great for making CDs to pass out to friends, or to keep.

If the sound source is high quality, it may be preferable to use the best quality 24 bit/96 kHz setting. However, be aware that the 24 bit/96 kHz setting takes up a lot of memory (in other words, the recording time on the SD card is shorter). Also, when making a CD on a PC, you'll need software capable of handling a 24 bit/96 kHz sound recording.

Checking the playback settings is also important!

Portable cassette players and MD players often have built-in features such as equalizers or bass boosters to intensify the sound. These features are important when listening outdoors so you can enjoy the music. However, we recommend turning these features off when recording on the R-09HR for your archives.

Mini component stereo sets and cassettes players also use features such as bass boosting or loudness to intensify the sound from the compact speakers. These features should also be turned off.

If these features are left on, then the lower frequencies will be louder than the other frequencies. If recorded in this state, the original sound will not be recorded faithfully. Also, it's difficult to edit or process these recording later on so that they resemble the original sound.

The best method is to faithfully record the original sound, and then use editing software on a PC to do any additional processing. Doing so allows you to preserve a faithful recording of the original sound. Using a copy of the recording, you can then edit or process the sound as much as you like.

Recording vocals

Point 1 | **Setting recording levels**

Have the singer sing the loudest section of the song. Since the singer may quickly tire of singing just for setting a recording level, try to determine the level quickly.

Remember that body temperature rises after singing for a while, and the voice can get louder. It may be a good idea to set the level a little lower to compensate for this.

☞ **See p. 45 in the Owner's Manual for setting the recording level.**

Point 2 | **Placing the R-09HR**

When using the R-09HR internal mic, use the R-09HR as if it's a microphone. You can place the R-09HR as you would a microphone by using the optional cover/stand set (OP-R09HR-C) and the mic stand adaptor (OP-R09M).

Unlike other types of recording, when recording vocals, you should be aware that the singer's breaths may be captured by the mic. You can prevent this by using a pop guard (see photo on left).

Point 3 — Setting the recording quality

Using for vocal training and checking vocals
Sounds like vocals have subtleties that are best captured by high sound quality. Since long recordings are not likely, use 16 bit/44.1 kHz or better high-quality WAV format.

Keep in mind that if you use the 16 bit/44.1 kHz WAV format, you won't need to do any conversions on your PC when using the recording to make a CD.

Using as a voice memo recorder
If you're using the R-09HR to record ideas for songs or melodies, use the MP3 format. The sound quality is sufficient to jog your memory for melodies. Because the data is compressed, you have the additional bonus of being able to record for longer periods of time.

Point 4 — Precautions when singing

The R-09HR internal microphone records in stereo, so sound is recorded realistically. However, if the vocalist's head moves during the recording, the sound will move from side to side during playback.

The playback of such a recording results in minute fluctuations that don't sound very good.

Don't move your head

The R-09HR internal mic is omni-directional, so these fluctuations are less noticeable. Consequently, this caution does not have to be strictly observed, but with a little effort, a steady recording can easily be made.
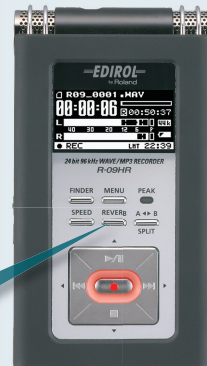
Using the Reverb function to add ambience

Often when recording for CD, a reverb effect is added to vocals and acoustic instruments. Reverb is an effect that adds an aesthetic ambience to a song like one might hear in a concert hall.

The R-09HR has a feature to add a reverb effect during playback. This feature is convenient for listening to a recording to hear how it sounds with reverb applied.

When using the reverb feature, record about 4 inch (10 cm) from the mic to cut out unnecessary natural ambience. If ambience is recorded, it will interfere with the reverb and the sound will become garbled.

Press the REVERB button to apply four types of reverb effects during playback on the R-09HR!

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Recording outdoors

Point 1 | **Setting the recording level**

Set the R-09HR mic gain to HIGH when recording bird songs or other quiet sounds. This setting makes the microphone very sensitive so that even the smallest sounds are captured. Conversely, set the mic gain to LOW when recording nearby loud noises such as trains for proper mic sensitivity.

Set to HIGH for quieter sounds
Set to LOW for louder sounds

After setting the mic gain, check the input level.

Remember to check the PEAK indicator when the loudest sound is heard!

Point 2 | **Using the Limiter Effectively**

The limiter is a feature that reduces the recording level when the sound being recorded becomes too high. When the limiter is on and a loud sound is suddenly played, the noise is moderated.
But, if the sound being recorded often goes over the set input level, then a sound that you want may be moderated. When you listen to the recording later, the overall sound may be muffled. In the end, setting the input level to the correct level is a major point.

Set LIMITER/AGC to ON

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Point 3 — Positioning the R-09HR

It is best to plan where to point the mic by imagining listening to the recording later. For example, you can create a realistic feel by recording the murmuring of a brook on the right and the twittering of the birds on the left.
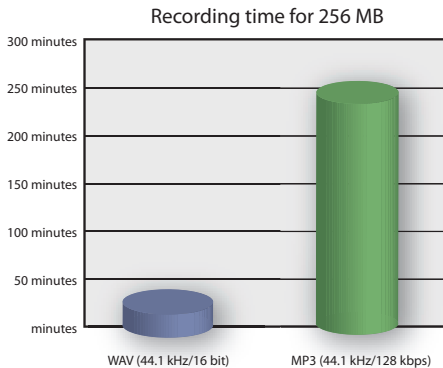
Increase realism with stereo recording

When the wind is strong, try changing the mic direction or to use some wind break, such as a handkerchief or urethane sponge, so that the wind doesn't directly blow into the mic.
You can determine the right direction by recording while monitoring with headphones to keep noise from being recorded.

Point 4 — Setting sound quality

In normal situations, when you want even just a little better quality, it's best to record in WAV format. However, if you're recording outside, you will probably want to record for an extended time. For this situation, MP3 may be best. MP3 recordings are about 1/10 the size of WAV recordings (at 128 kpbs).

Recording time for 256 MB

300 minutes
250 minutes
200 minutes
150 minutes
100 minutes
50 minutes
minutes

WAV (44.1 kHz/16 bit)   MP3 (44.1 kHz/128 kbps)

When an external mic is convenient

Whenever you record outside, there's always the chance that you may not be able to get to the place you want to record from. With an external mic, you can sometimes reach those hard-to-get-to spots.

Use the optional stereo mic (CS-15), sold separately. This mic can capture sound from a specific location, allowing you to target the sound you want. So you can target the sound you want. And since the R-09HR operates independently of the mic position, you can move more freely in the outdoors.

Using LOW CUT to block wind noise

If a strong wind blows into the mic, other sounds will be affected by the sound of the wind.
Sometimes the wind is louder than the sound you're trying to record, making it impossible to get the recording you want. If this happens, try turning on LOW CUT located on the back of the R-09HR. Because the wind sounds produce low frequencies, you can reduce the noise by cutting out the lower frequencies during recording.

Turn LOW CUT on to cut out lower frequency sounds

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Recording meetings

Point 1

Setting the recording level for meetings

First, set the mic gain to HIGH. For normal every-day volumes, such as meetings, setting the mic sensitivity to HIGH is best. You can do level checks by putting the R-09HR into recording standby during the pre-meeting chatter.

You can also turn AGC (Auto Gain Control) on. It automatically raises or lowers the recording level to match the loudness of the sound. When you listen later, you will have a record that has a balanced volume.
Because the same switch is used for the limiter, set the switch function to AGC on/off.

> **Set LIMITER/AGC to ON**
> **SET MIC GAIN to HIGH**

Point 2

What mic should I use? Where should I point it?

The R-09HR mic is omnidirectional, so if you want to record all participants equally in order to clearly record conversation, place it in the middle of the table. When placing it on the table, you can eliminate noise from the table by using a cover stand set (OP-R09HR-C), sold separately. You should exercise some caution because a loud noise for even a short time can interfere with recording the conversation.

Also, when recording a distant single speaker or sound source, such as a lecture, it is advantageous to use the separately sold stereo mic (CS-15). This mic records only the sound from the targeted point, so you can reduce the sounds from the audiences, such as talking or coughing.

The R-09HR with the optional cover/stand set. The R-09HR looks quite stylish on the tripod.

The external microphone can also be setup as shown.

Point 3

Setting sound quality

Since the purpose of recording a meeting is to be able to hear what is being said, there is no strict requirement for good sound quality. More importantly, the recording will often be for an extended time, so MP3 is probably the best format.

MP3 is recommended for extended recordings

If you need to record for a longer time, set the bit rate to 64 kpbs. Although this level of compression will degrade the quality, it's sufficient for recording conversations during meetings.

☞ **See p. 38-39 in the Owner's Manual for setting the recording mode.**

Point 4

Playback Feature can also be used for transcribing

You can change the R-09HR playback speed by pressing the SPEED button during playback. So you can slow down playback when the lecturer speaks too quickly to understand.
You can also use the AB repeat buttons during playback to define a section to play over several times.
The R-09HR can become a valuable assistant for transcription if you freely use the "slow playback" and "repeat playback" features.

Using Auto Gain Control (AGC)

The AGC automatically changes the recording level according to the volume of the sound being recorded. You may think that this convenient feature should be left on all the time.

However, there are times when using AGC is not appropriate. This is especially the case when you're trying to capture the true nature of a sound.
For example, if you record a piano recital with AGC on, you would lose all the inflection and dynamism of the piano because the sound would be recorded at the same volume throughout. Also, the recording level is constantly being increased and decreased, giving the recording a less natural sound.

For meetings and lectures, it's best to keep the volume even so that you can capture what's being said. This is when the AGC feature can be best put to use.

Turning AGC on causes the recording level to be automatically adjusted

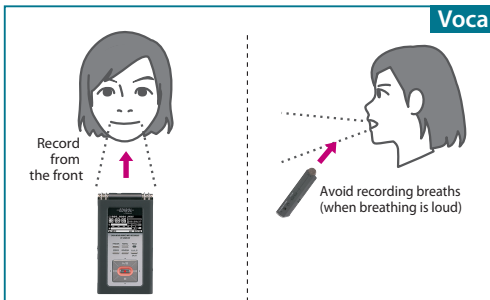# Techniques for recording specific instruments

Vocals

Record from the front
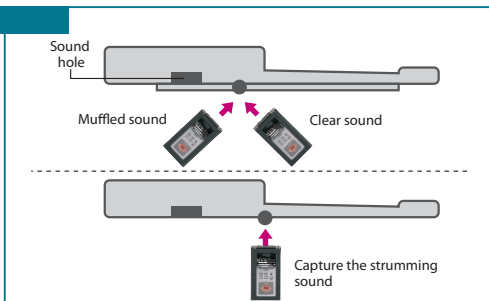
Avoid recording breaths (when breathing is loud)

Ideally, recording occurs in a studio or other enclosed space that excludes outside noises. If you're recording in a room, choose a room where there is little environmental noise (street noise or city noise) and that doesn't echo much.

The mic should be placed directly in front of the singer. However, you can place the mic a little below the mouth to reduce the sound of breathing. By doing this, a more rounded sound, with more lower frequencies, can be recorded, depending on the voice quality or the settings. To prevent this effect, set LOWCUT to ON. Doing so will make the sound more crisp.
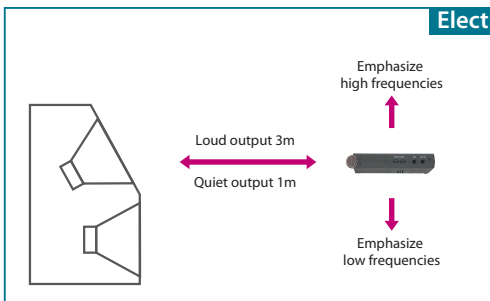
Acoustic Guitar

The acoustic guitar provides rich mid and low frequency sounds. However, if these sounds are too loud, the music may sound muffled. In this case, don't change the position of the mic (which should be around the 15th or 17th fret), but change its angle so that the mic is at an angle from the neck of the guitar. This should make the sound clearer.

When you want to record the sharp sound of strumming the guitar, place the microphone away from the body near the point where neck is attached, in order to record the string vibration while reducing the level of the low and mid frequencies.

Sound hole

Muffled sound   Clear sound

Capture the strumming sound

Electric guitar or bass

Emphasize high frequencies

Loud output 3m
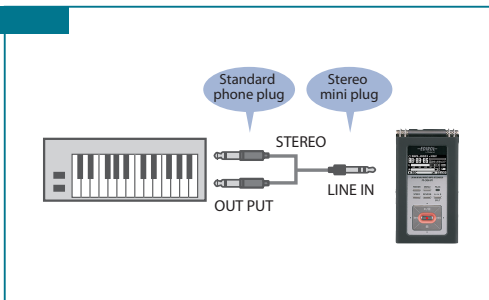
Quiet output 1m

Emphasize low frequencies

When playing the guitar or bass in a studio, the volume and settings are the same as for performances, in general. If you want to give the feeling of recording in a room, place the microphone 10 feet (3 m) or more away. Be aware however, that if you place the microphone too far away, the sound may become less clear because there's too much room ambience. On the other hand, to create the impression of the instrument playing directly in front of the listener, place the microphone about 3 feet (1 m) away or less.

If you're recording in a room, it's best to directly connect an effect processor with an amp modeling feature, or an amp to the R-09HR via cables. Devices with internal amp modeling can provide realistic sounds when connected via cables.

Synthesizers and organs

Connect digital instruments such as synthesizers, organs, samplers, or rhythm machines directly to the R-09HR LINE IN jack. In particular, digital synthesizers may have effects or mastering features that allow the faithful recording of their sounds through cable connections.

For instruments using an amp, use the same distance rules as for an electric guitar using an amp, as shown above.

Standard phone plug   Stereo mini plug

STEREO

OUT PUT   LINE IN

Drums

Capture everything from behind

Capture BD and SD in a direct line

If the mic is pointed toward the bass drum, the snare drum is off-center and its sound becomes weak. Therefore, direct the mic so that the bass drum and snare drum are in a direct line, and they will then be heard in the center during playback as a clear rhythm. This placement also helps reduce air puffs into the mic from the bass drum because the mic is not directly in the front of the bass drum.
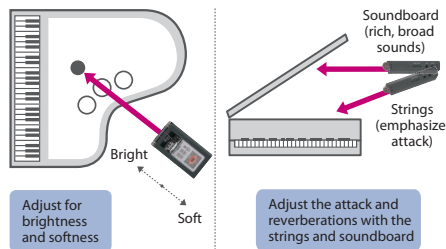
Another idea to consider when the attack is strong but quiet is to move the microphone 10 feet (3 m) or more away, or to place the mic in the back of the drum set. Doing so produces a more rounded sound, and a clear recording is achieved, making level adjustment easier.
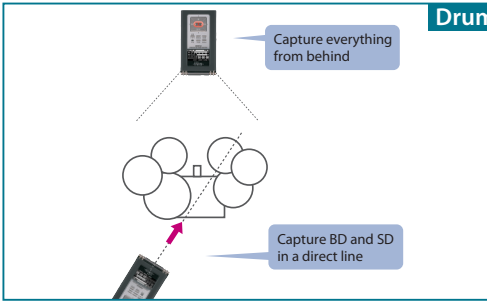
Piano

Unlike small instruments, a piano produces sound from its entirety. Since the internal microphone is an omni-directional microphone, it's especially good at recording a piano's stereo sound.

Position the microphone to maintain a balance between the strings and the soundboard. Adjust the balance between the attack and sustain using distance. Try different configurations to obtain the cleanest recording.

Soundboard (rich, broad sounds)

Strings (emphasize attack)

Bright

Soft

Adjust for brightness and softness

Adjust the attack and reverberations with the strings and soundboard

Wind instruments

Avoid pointing directly at the sound but aim for the bell

When recording a horn section with room sounds, set the mic at least 10 feet (3 m) away. Don't point the mic directly at the bell, but point it slightly upwards toward the bell to soften the direct sound of the horn and to capture the reflected sound. Also, to create a stereo effect, leave the mic where it's and have the players move apart.
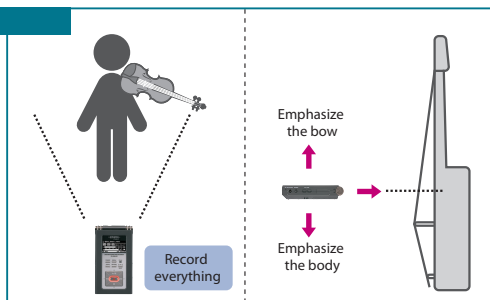
On the other hand, when recording a solo performance up close, woodwinds, like the saxophone, don't produce sound solely from the bell but also from the keys. Also, when all the keys are pressed, the sound from the bell changes suddenly. For these cases, place the mic slightly down and slightly to the right or left for a smooth recording.
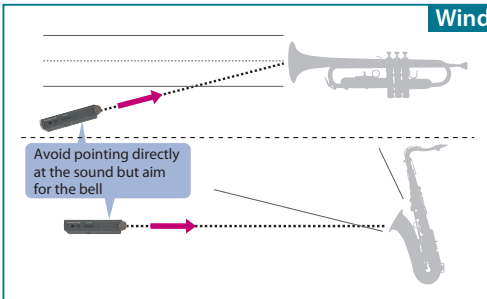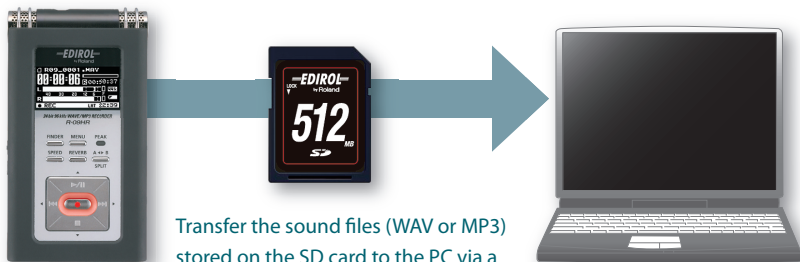
Stringed instruments

Stringed instruments, such as the violin or contrabass, are similar to the acoustic guitar. The secret is to have a balance between the string vibrations and the sound from the body. The R-09HR internal stereo condenser mic should be placed about 6 feet (2 m) away, facing the instrument to capture the room sounds. Bringing the mic in to about 3 feet (1 m) produces a clear, contoured sound. Taking the mic out to 12 feet (3 – 4 m) produces a full sound. Adjust the mic height and sound quality (low to increase the low frequencies and high to have a clearer sound) while monitoring the sound.

Emphasize the bow

Emphasize the body

Record everything

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Save to a PC!!

No problem when your SD card becomes full! You can easily save to a PC using a USB cable.

Transfer the sound files (WAV or MP3) stored on the SD card to the PC via a USB connection.

Just connect the R-09HR to a PC with a USB cable, then drag and drop your files. You can take songs you've just recorded and mail them to your friends or release them on your website or blog as you like. You should record in MP3 if you plan to e-mail your music. If you record in WAV, the file may be too large to attach to an e-mail.

You can easily edit the file name after saving to a PC. You should use a suitable file name here for future reference.

Also, you'll notice that the date and time of the recording is saved when you look at the file properties of the song recorded with the R-09HR. This date is taken from the R-09HR internal clock. However, the internal clock resets if power is not turned on for several days. Be sure to set the R-09HR internal clock before recording.

Application

3
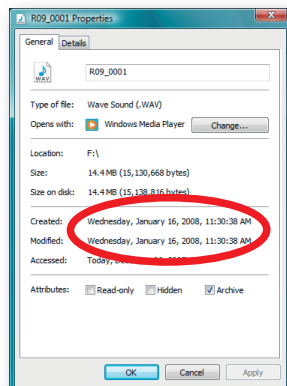
Deleting unnecessary data on a PC

There are many cases when you'll want to edit the sound after recording, for example to erase the first five seconds that you don't need. In these cases, you can use the included pyro Audio Creator LE to edit the recorded sound (Windows only).
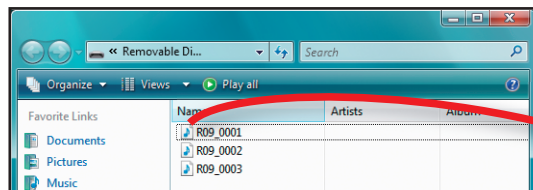
drag and drop

pyro Audio Creator LE has ample editing feature such as fade-in, fade-out, and normalize, as well as effects such as mastering limiter. If you master Audio Creator LE, you'll be able to edit your recordings freely!
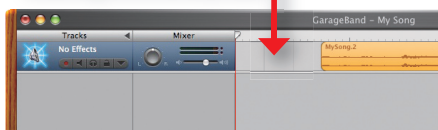

Deleting unnecessary data

pyro Audio Creator LE screen

If you are using Mac OS, you can perform similar edits using software such as "GarageBand" that is normally bundled with new Macs. (For details on operations, see the owner's manual or help for the software that you are using.)


Deleting unnecessary data

GarageBand screen

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Creating CDs on a PC

For example, have you ever wanted to have someone listen to your recorded music? If so, CDs are better than cassettes. Since CD players, and CD car stereos are really common, there's a better chance that a CD will get heard. If you have a CD-writeable drive, you can easily create CDs with the included pyro Audio Creator LE (Windows only). Once you learn how, making CDs is easy, so you should learn how to do it.
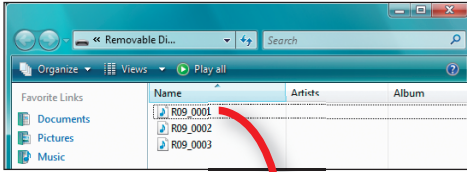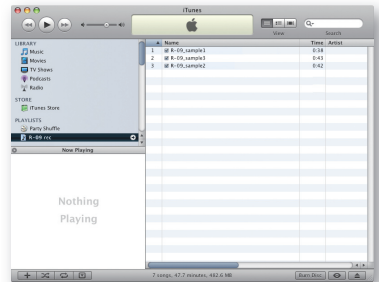

1. drag and drop
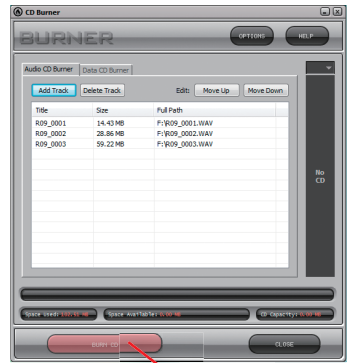
2. Click

If you have Mac OS, you only need "iTunes." "iTunes" comes bundled with Macs, so you can make CDs right away. (However, be aware that some versions of this software cannot create CDs! For details , see the owner's manual or help for the software that you are using.)

iTunes screen

If you already know that you are going to create a CD, we recommend recording in WAV. 16bit/44.1kHz on the R-09HR. Since this is the same as the CD specifications, it will take just a short time to convert the data!!

Application 5
Techniques for applying file names

Cautions when renaming files

When backing up WAV or MP3 files on the PC that were recorded on the R-09HR, you can make managing files easier by giving them easy-to-understand files names. Name your files something that's easily recognizable, e.g., use the instrument name or place name where the recording was made.

However, there are some restrictions for naming files on the PC. If you name your file with one of the names shown below, the file will not display properly when it's played back on the R-09HR. If you're going to play the file on the R-09HR, do not use the following file names.

File Name	Description
File names beginning with a period (.)	These files are ignored by the R-09HR and are not played.
Files using extensions other than .WAV or .MP3	These files are ignored by the R-09HR and are not played.

Deciding play order on the R-09HR based on file name

We'd like to introduce some file-name tricks when you're using the R-09HR as a portable music player.

When playing back multiple songs on the R-09HR, the song-order playback mode can be either shuffle playback (SHUFFLE) or sequential playback (SEQUENTIAL). When sequential playback is selected, the files are played back in the following order:

(space) ! # $ % & ' ( ) + , - . 0 1 2 3 4 5 6 7 8 9 ; = @
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z { }

In other words, to create the desired song playback order place a number sequence in front of the file, such as "001mysong.wav," "002mysong.wav," … "024mysong.wav."

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Options for recording on the R-09HR

■Cover/Stand Set　OP-R09HR-C

The R-09HR cover is a special cover that preserves the surface of the R-09HR and protects the unit from impact. The cover is design so the R-09HR can be used while it's on. There is also a place to attach tripods on the back of the cover. Attach the stand included with the Cover/Stand Set or a commercially available tripod to set the R-09HR at the desired height and angle.

Use the included stand as a convenient hand grip to reduce handling noise.

The cover can be attached to commercially available tripods.

■Microphone Stand Adaptor　OP-R09M

The Microphone Stand Adaptor allows you to attach the R-09HR to a microphone stand. Because the R-09HR can be attached to microphone stands in the rehearsal studio, you can freely set it anywhere.
The Microphone Stand Adaptor is essential for studio recordings!

■Pouch　OP-R09HR-P

The R-09HR cover attaches directly to microphone stands when using the mic stand adaptor (OP-R09M).

There are many optional items (sold separately) available to help you optimize your recordings on the R-09HR. All of these items are handy when recording on the R-09HR!

■Stereo Microphone   CS-15

The R-09HR internal microphone is omni-directional and picks up a wide range of sounds. It's useful in many situations. If you use the optional Stereo Microphone CS-15, you can zero-in on specific sounds. For example, when recording outdoors, if you want to record the sound of the river, wind, and bird songs, then the internal microphone is best. If you want to record just one of these sounds, the external Stereo Microphone CS-15 is best.

You can make the best recordings by choosing the microphone that fits the situation.

An easy-to-grip microphone holder is included

The microphone can also stand alone

■Carrying Case   CB-R09S

This Carrying Case can hold the R-09HR unit and all the options you need to make your recordings.

Of course, the case holds the R-09HR and cover, microphone, and AC adaptor, but it also has pockets for extra media and batteries.

You can keep all the necessities for recording in the case, and be ready to leave at any time!

■Headphones   RH-300

The RH-300 headphones are sealed for optimal monitoring. Of course these headphones are completely compatible with the R-09HR. With newly developed 45 mm drivers using a Neodymium magnet onboard, these headphones deliver a rich dynamic range. You can safely play back sounds even at high volumes.

These sealed headphones are ideal for monitoring recordings outdoors.

Note: The actual specifications, appearance, or display screen of the product may be subject to change without notice.

Connect, Expand, Record!! Examples of connecting accessories to the R-09HR

Monitor Speakers
(MA Series)

or

Headphones, In-Ear Earphones
(RH-300)   (RH-iE3)

PHONES

Stereo Mic
(CS-15)

MIC

Although the R-09HR internal stereo mic is excellent, we recommend using the optional stereo mic (CS-15) when trying to record sound from a particular source.

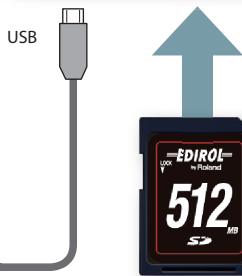**Cassette/DAT/Open reel,** etc.

LINE IN

You can record from a cassette player or a mini-combo by connecting its LINE OUT to the R-09HR LINE IN.

DC IN

AC Adaptor
(included)

Use the AC adaptor for long recording times without worrying about battery charge.

USB

PC

You can back up the data on a SD card to a PC by connecting the R-09HR to the PC using the included USB cable.

SD Card

Larger capacity means longer recording times are possible. (See the next page for details.)

Note: In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

R-09HR Specifications

Recorder Part

● **Tracks**
2 (stereo)

● **Signal Processing**
AD/DA conversion: 24 bits, 44.1/48/88.2/96 kHz

● **Data Type**

<For Recording>
* Stereo only

Format	MP3 (MPEG-1 audio layer 3)
Sampling Rate	44.1/48 kHz
Bit Rates	64/96/128/160/192/224/320 kbps

Format	WAV
Sampling Rate	44.1/48/88.2/96 kHz
Bit Depth	16/24 bits

<For Playback>

Format	MP3 (MPEG-1 audio layer 3)
Sampling Rate	32/44.1/48 kHz
Bit Rates	32–320 kbps or VBR (Variable Bit Rate)

Format	WAV
Sampling Rate	32/44.1/48/88.2/96 kHz
Bit Depth	16/24 bits

● **Memory Card**
SD Memory Card

Recording Time   unit: minutes

Settings	Size of Memory Card				
	512MB	1GB	2GB	4GB	8GB
WAVE (24bit/96kHz)	13	27	55	110	220
WAVE (24bit/88.2kHz)	15	30	60	120	240
WAVE (24bit/48kHz)	27	54	110	220	440
WAVE (24bit/44.1kHz)	29	59	120	240	480
WAVE (16bit/96kHz)	20	40	80	160	320
WAVE (16bit/88.2kHz)	22	44	88	176	352
WAVE (16bit/48kHz)	40	81	166	332	664
WAVE (16bit/44.1kHz)	44	88	180	360	720
MP3 320kbps	196	392	797	1540	3080
MP3 128kbps	490	980	1993	3990	7980

* Each recording time is approximate. The times may change depending on the card specifications.
* In case that there are plural files, the sum of recording time would be shorter than above.

Input/Output

● **Audio Inputs**
Internal Stereo Microphone
Mic input
(Stereo miniature phone type, plug-in powered mic)
Line input (Stereo miniature phone type)
* The Internal/External MIC and the LINE IN can't be used at the same time; only the LINE IN is effective.

● **Audio Outputs**
Phones (Stereo miniature phone type)

● **Nominal Input Level (Variable)**
Mic Input: -33dBu (Default input level)
Line Input: 2dBu (Default input level)
* 0 dBu = 0.775 V rms

● **Input Impedance**
Mic input: 30 k ohms
Line input: 15 k ohms

● **Output Level**
20 mW (In case 16 ohms load)

● **Recommended Load Impedance**
16 ohms or greater

● **Frequency Response**
20 Hz–40 kHz

● **USB Interface**
Mini-B type
* Support USB 2.0/1.1 mass storage device class

● **Effects (Playback only. Excludes playback in 88.2 kHz or 96 kHz)**
Playback Reverb : 4 types (Hall 1, Hall 2, Room, Plate)
Speed Change : 50–15% of playback speed

Others

● **Display**
128 x 64 dot graphic display

● **Power Supply**
AC Adaptor, Alkaline dry battery LR6 (AA) type x 2, or Nickel-metal hydride battery (HR15/51) x 2

● **Current Draw**
370 mA

● **Dimensions**
62 (W) x 112.9 (D) x 27 (H) mm
2-1/2 (W) x 4-1/2 (D) x 1-1/16 (H) inches

● **Weight**
174 g / 7 oz (including batteries and memory card.)

Accessories

Owner's Manual
AC Adaptor
SD Memory Card (512 M bytes)
Remote Control
Stand
CD-Rom (Cakewalk [pyro Audio Creator LE])
USB cable (Mini-B type)

* Expected AA alkaline life under continuous use:
  Continuous playback: approximately 5.5 hours
  Continuous recording: approximately 4 hours
  (These figures will vary depending on the actual conditions of use.)

* In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

System requirements

Windows

Microsoft® Windows Vista®

Microsoft® Windows® XP Home Edition / XP Professional / 2000 / Me

Macintosh

Mac OS X: 10.2 or later

*You can update the R-09HR to the most recent system version via the Internet.
Refer to **http://www.EDIROL.net** for details.

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