

PRACTICAL GUIDE TO THE EDIROL R-09



**Amazing 24 bit/48 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/48 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-09.

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 came with the R-09.)

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



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Compact, with high sound quality.

Unbelievable high quality

The R-09's 24 bit/48 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 rewinding. One-button recording.

Unlike tapes, you don't need to search for a place to begin recording. A file is created for each recording, so organizing your files is a snap on your PC.



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-09 fits in your pocket or a corner of your bag.



The outstanding features of the R-09.

No mechanical noise. Convenient built-in mic.

The R-09 uses an SD card as its recording medium. 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.



Record in MP3.

MP3 is the most popular format for internet delivery and portable music players. MP3 provides high quality with small data sizes. The R-09 can record in MP3 format, allowing you to transfer your original music to your PC and distribute it over the internet quickly and easily.



High-visibility organic EL display.

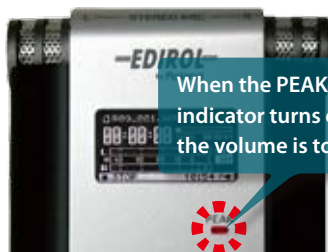
The R-09 supports a wide-angle view, energy-efficient organic EL display that can be used outdoors or onstage. The level meters respond quickly, and the display has a separate peak indicator. These features allow you to precisely set your recording level.





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-09 level meter reaches the highest level without the PEAK indicator, shown in red below, turning on.



When the PEAK indicator turns on, the 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. 37 in the Owner's Manual for setting the recording level.

Point 2 Positioning the R-09

The left and right microphones on the R-09 record sound that the left and right ear, respectively, would hear. So, aim the R-09 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, they can be useful for recording instrument practice.

Record Mode	Description
WAV	Get professional recording quality for digital audio by recording in 24 bit/48 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-09 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.

 See p.30-31 in the Owner's Manual for setting the recording mode.

Music Format Examples

Application	Recording Mode	Description	Capacity
1. Pro Quality	WAV 24bit/48kHz	Professional recording quality 	5 minutes about 100 MB
2. CD Quality	WAV 16bit/44.1kHz	Creating CDs on the PC 	5 minutes about 50 MB
3. Internet music distribution quality	MP3 128kbps/44.1kHz	Internet distribution of music 	5 minutes about 5 MB

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Point 1 Setting the mic gain for optimum performance

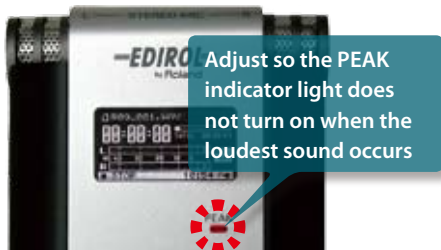
Bands are louder than normal everyday sounds. Set the mic gain in the back of the R-09 to LOW.



The R-09 allows you to set the basic mic gain in order to utilize its microphone's features to their fullest. By setting this first, the gain is optimized, the recording level is easier to adjust, and, of course, the result is a better recording.

Point 2 Optimizing recording levels

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

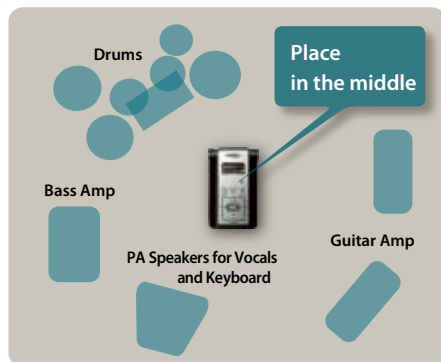


Although this process may take some effort, there are great benefits to be gained by doing it. If the level is set too low, the entire recording will be recorded at a low volume; if the sound level is set too high, then the sound will be "clipped," with pops and snaps.

See p. 37 in the Owner's Manual for setting the recording level.

**Point
3** **Placing
the R-09**

In rehearsal studios, instruments are placed in various locations throughout the room. To record the sound from each instrument equally, place the R-09 in the middle of the studio at about the height of a table. Placing the R-09 on the floor can garble the sound and the recording will not be clear. If the R-09 is placed too high, the lower frequencies will be dropped and the recording will sound tinny.



**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-09, 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-09 recording for an entire session for later review.

See p.30-31 in the Owner's Manual for setting the recording mode.

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

The optional cover/stand set (OP-R09C) 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-09 to a mic stand. With a single mic stand, you can place the R-09 in the optimal position and the optimal height in the studio.



The R-09 cover attaches directly to camera tripods



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





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-09 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-09.



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.

 See p. 37 in the Owner's Manual for setting the recording level.

Point 2 Selecting the cables to use

The R-09'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-09 uses a stereo mini-plug. Most compact cassette players and MD players also use this plug type.



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



**Point
3** **Setting
sound quality**

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



If creating CD

WAV 16bit/44.1kHz



For professional quality

WAV 24bit/48kHz

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/48 kHz setting. However, be aware that the 24 bit/48 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/48 kHz sound recording.

 See p.30-31 in the Owner's Manual for setting the recording mode.


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-09 for your archives.

Mini component stereo sets and radio-cassettes 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.

 See p.20 in this guide for PC applications



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. 37 in the Owner's Manual for setting the recording level.



Point 2

Placing the R-09

When using the R-09 internal mic, use the R-09 as if it's a microphone.

You can place the R-09 as you would a microphone by using the optional cover/stand set (OP-R09C) 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-09 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.

 See p.30-31 in the Owner's Manual for setting the recording mode.

Point 4 **Precautions when singing**

The R-09 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.

The R-09 internal mic is omnidirectional, 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.

Don't move your head



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-09 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-09!



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Point 1 Setting the recording level

Set the R-09 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.



After setting the mic gain, check the input level.

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

See p. 37 in the Owner's Manual for setting the recording level.

Point 2 Positioning the R-09

If possible, it's best to position the microphone while considering the future listener. For example, if you record a murmuring stream on the right and bird songs on the left, when you play back the recording your listener will be transported to that place.



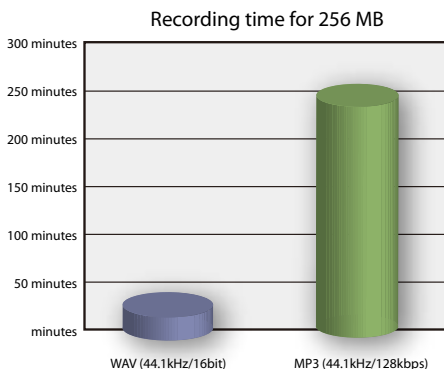
If the wind is strong, you can change the microphone direction to cut down the wind noise. Wind blowing into the microphone can drown out all other sounds. Monitor while recording to determine how to position the microphone.



**Point
3**

**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 kbps).



**Point
4**

Take extras

Check your batteries and SD card before leaving. Nature doesn't provide convenience stores where you can buy batteries. Be sure that you have these items, because without them, you can't do any recording.

Also, be aware that batteries are used up faster when it's colder. Even if you think that your batteries have enough charge, take some spares just in case.



When an external microphone is convenient

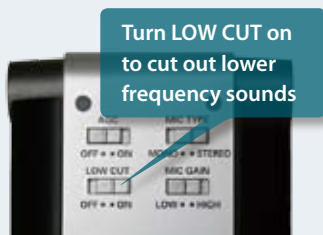
Whenever you record outside, there's always the chance that you may not be able to get to the place you want to record from. With an external microphone, you can sometimes reach those hard-to-get-to spots.

Use the optional stereo microphone (CS-15), sold separately. This microphone 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-09 operates independently of the microphone position, you can move more freely in the outdoors.



Using LOW CUT to block wind noise

If a strong wind blows into the microphone, 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-09. Because the wind sounds produce low frequencies, you can reduce the noise by cutting out the lower frequencies during recording.





Point 1

Setting the recording level for meetings

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

You can also turn AGC (Auto Gain Control) on. AGC turns the recording level up when the speaker speaks quietly and turns the level down when the speaker is loud. This setting maintains a good volume balance when reviewing the recording.



Point 2

Positioning the R-09

The R-09 microphone is an omni-directional microphone, so placement is not a serious issue when recording a meeting. To record all participants clearly, you'll probably want to place the R-09 in the middle of the table.

When placing the R-09 on a table, use the optional cover/stand set (OP-R09C) to eliminate noise from the table. Even a short burst of noise can block out the conversation in the meeting.



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

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 kbps. Although this level of compression will degrade the quality, it's sufficient for recording conversations during meetings.

See p.30-31 in the Owner's Manual for setting the recording mode.

Point

4

Using an external microphone for lectures

When recording lectures or other presentations where there's only one speaker, use an external microphone (CS-15), sold separately, for better performance.

The microphone captures sound from a specific source, so you can reduce the sounds from the audience.



The external microphone can also be setup as shown

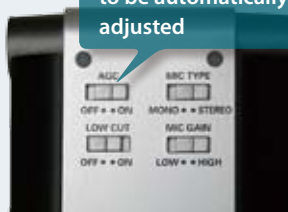
Using Auto Gain Control (AGC)

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.

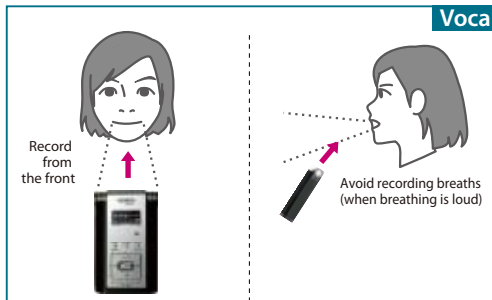
However, there are times when using AGC is not appropriate. This is especially the case when you're trying to capture the true nature of a sound. For example, if you record a piano recital with AGC on, you would lose all the inflection and dynamism of the piano because the sound would be recorded at 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

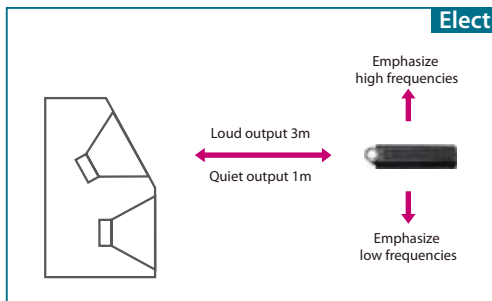
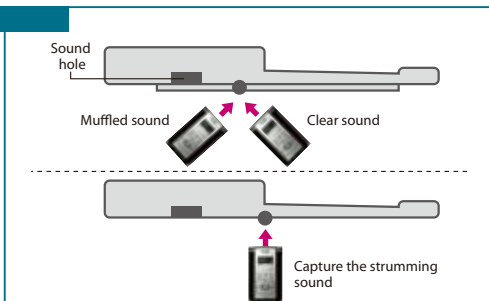
Ideally, recording occurs in a studio or other enclosed space that excludes outside noises. If you're recording in a room, choose a room where there is little environmental noise (street noise or city noise) and that doesn't echo much.

The microphone should be placed directly in front of the singer. However, you can place the microphone 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 microphone (which should be around the 15th or 17th fret), but change its angle so that the microphone 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.



Electric guitar or bass

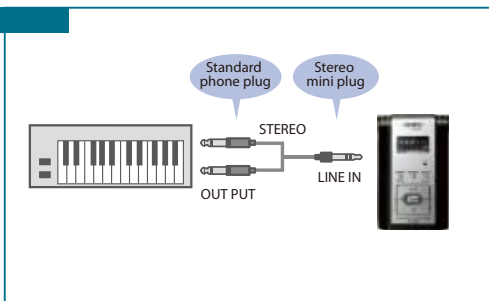
When playing the guitar or bass in a studio, the volume and settings are the same as for performances, in general. If you want to give the feeling of recording in a room, place the microphone 10 feet (3 m) or more away. Be aware however, that if you place the microphone too far away, the sound may become 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-09 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-09 LINE IN jack. In particular, digital synthesizers may have effects or mastering features that allow the faithful recording of their sounds through cable connections.

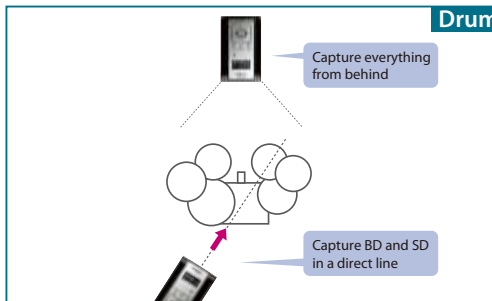
For instruments using an amp, use the same distance rules as for an electric guitar using an amp, as shown above.



Drums

If the microphone is pointed toward the bass drum, the snare drum is off-center and its sound becomes weak. Therefore, direct the microphone 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 microphone from the bass drum because the microphone is not directly in the front of the bass drum.

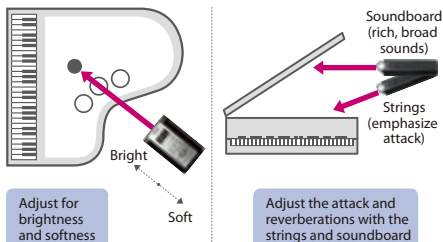
Another idea to consider when the attack is strong but quiet is to move the microphone 10 feet (3 m) or more away, or to place the microphone in the back of the drum set. Doing so produces a more rounded sound, and a clear recording is achieved, making level adjustment easier.



Piano

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

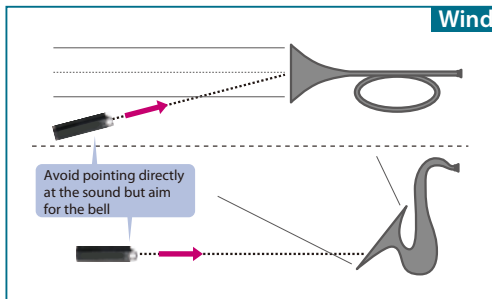
Position the microphone to maintain a balance between the strings and the soundboard. Adjust the balance between the attack and sustain using distance. Try different configurations to obtain the cleanest recording.



Wind instruments

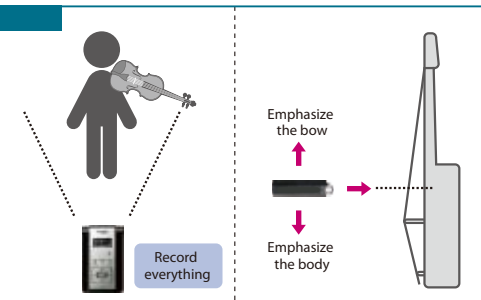
When recording a horn section with room sounds, set the microphone at least 10 feet (3 m) away. Don't point the microphone directly at the bell, but point it slightly upwards toward the bell to soften the direct sound of the horn and to capture the reflected sound. Also, to create a stereo effect, leave the microphone 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 microphone slightly down and slightly to the right or left for a smooth recording.



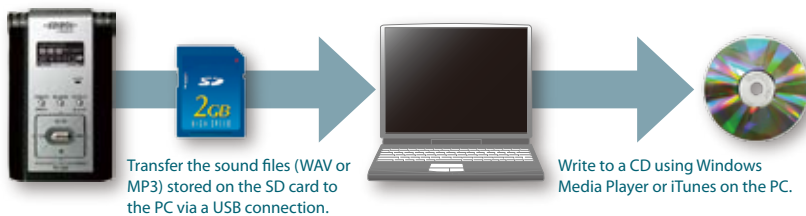
Stringed instruments

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-09 internal stereo condenser microphone should be placed about 6 feet (2 m) away, facing the instrument to capture the room sounds. Bringing the microphone in to about 3 feet (1 m) produces a clear, contoured sound. Taking the microphone out to 12 feet (3 – 4 m) produces a full sound. Adjust the microphone height and sound quality (low to increase the low frequencies and high to have a clearer sound) while monitoring the sound.



Have you ever wanted to have someone listen to a recording of a performance? For this type of situation, making a CD is better than making a cassette or MD. A CD is more likely to be listened to because CD players, CD radio-cassette units, and car stereos are all prevalent and easily accessible. Once you learn how to make a CD, it's an easy process.

CD Creation



To create CDs on a PC, you need a CD writeable drive and either Windows Media Player for Windows or iTunes for MacOS. The software usually comes pre-installed on new PCs. (However, some versions may not allow creating CDs. See the owner's manual for the software for details.)



Windows Media Player screen



iTunes screen

If you know that you're creating a CD, then we recommend using the WAV 16 bit/44.1 kHz format when recording on the R-09. These are the same specifications as the CD, so you don't need to spend extra time to convert the data!



Use **WAV** 16 bit/44.1 kHz for CDs

Application 3

Deleting unnecessary data on a PC

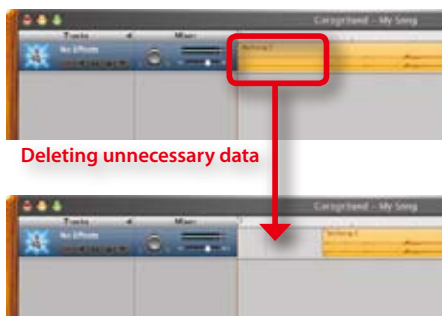
There are cases when you will want to edit your recording, such as, for example deleting the first five seconds because they're unnecessary.

For Windows PCs, you can use the Cakewalk SONAR Home Studio series (sold separately) or for MacOS, you can use GarageBand (included with the MacOS on newer models), or similar software to edit the R-09 recordings.

Either software allows you to easily delete unwanted sections in the recording. (See the respective owner's manual or help for the software for details.)



Cakewalk SONAR Home Studio screen



GarageBand screen

These software packages are designed for editing music, so they can edit sound files. For example, you can easily create a non-stop melody track by connecting several edited files together.



Cakewalk SONAR Home Studio

See <http://www.cakewalk.com/> for information on Cakewalk products.

Layering sounds on a PC to create a sound track

When you play back your R-09 recorded performance, wouldn't it be interesting to add sound effects in the background to enhance the recording?

For example, you can play relaxing piano music with a background of a murmuring creek or chirping birds. This method is often used to create relaxation CDs.

For Windows PCs, you can use the Cakewalk SONAR Home Studio series (sold separately) or for MacOS, you can use GarageBand (included with the MacOS on newer models), or similar software to layer two or more sounds, as shown in the image below. (See the respective owner's manual or help for the software for details.)



Cakewalk SONAR Home Studio screen

In the past, people would get frustrated because to do something like this they would have to carry around large, heavy equipment for recording. With the R-09, you can create your own sound library because you can carry it while walking around town, on trips, or even at lunch at your favorite cafe.

Also, Cakewalk SONAR Home Studio can import Windows compatible movie files (AVI/MPEG1 formats), so you can use your R-09 recordings as a sound track for videos! Garageband offers similar functionality.



Cakewalk SONAR Home Studio screen

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-09, you can make managing files easier by giving them easy-to-understand file 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-09. If you're going to play the file on the R-09, do not use the following file names.

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

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

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

When playing back multiple songs on the R-09, 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."

 See p.52 of the Owner's Manual for details on sequential playback.



Options for recording on the R-09

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■ Cover/Stand Set OP-R09C

The R-09 cover is a special cover that preserves the surface of the R-09 and protects the unit from impact. The cover is design so the R-09 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-09 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-09 to a microphone stand. Because the R-09 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!



The R-09 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-09. All of these items are handy when recording on the R-09!

■ Stereo Microphone CS-15

The R-09 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-09 unit and all the options you need to make your recordings.

Of course, the case holds the R-09 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-09. 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 change without notice.

Connect, Expand, Record!!

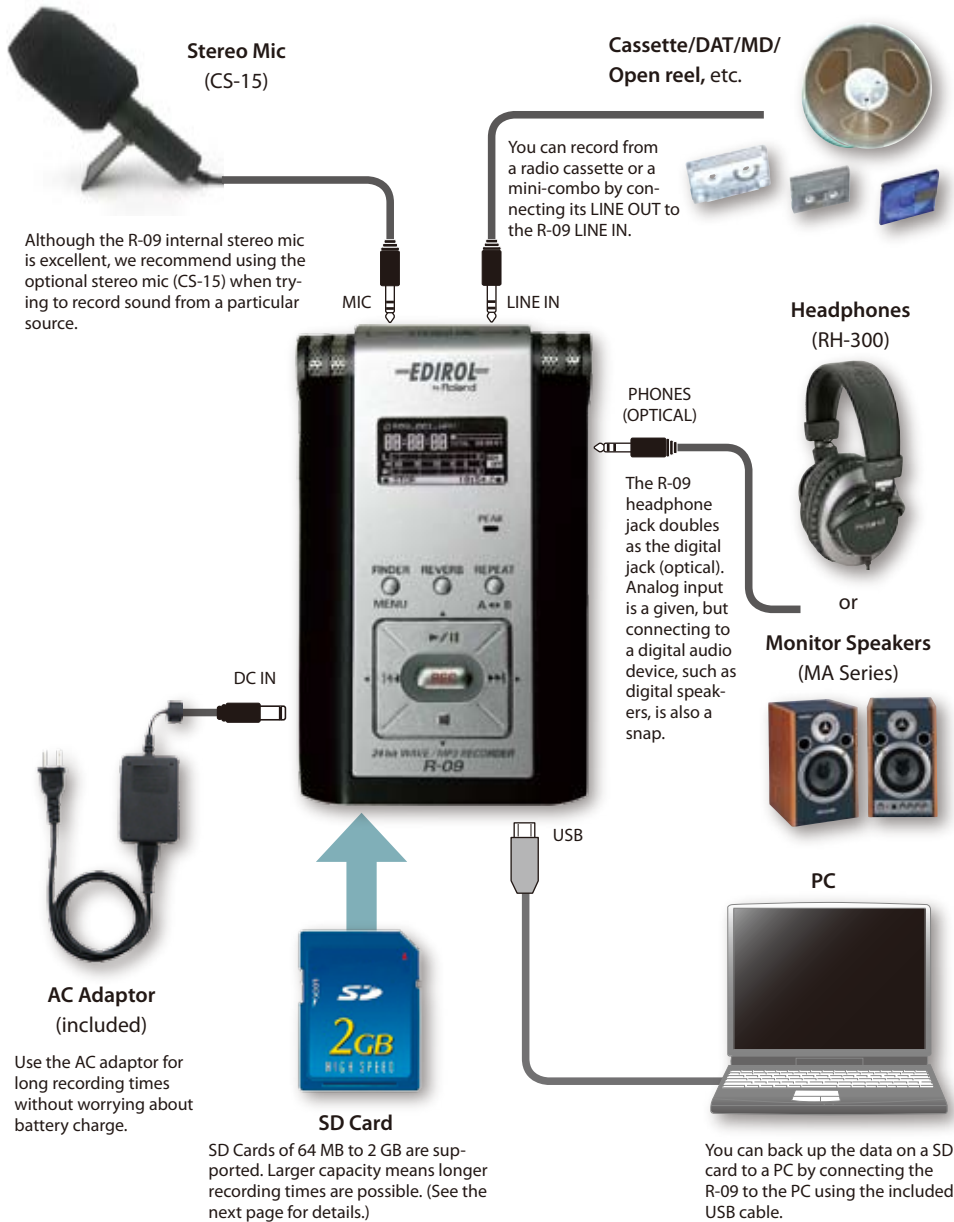
Examples of connecting accessories to the R-09

Chapter 1 The outstanding features of the R-09

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Specifications

Recorder Part

● Tracks

2 (stereo)

● Signal Processing

AD/DA conversion: 24 bits, 44.1/48 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 kHz
Bit Depth	16/24 bits

<For Playback>

Format	MP3 (MPEG-1 audio layer 3)
Sampling Rate	32/44.1/48 kHz
Bit Rates	64/96/128/160/192/224/256/320 kbps or VBR (Variable Bit Rate)

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

● Memory Card

SD Memory Card (supports 64 MB–2 GB)

Recording Time unit: minutes

Settings	Size of Memory Card				
	64MB	128MB	512MB	1GB	2GB
WAV (16 bits/44.1 kHz)	5	11	44	88	180
WAV (16 bits/48 kHz)	5	10	40	81	166
WAV (24 bits/44.1 kHz)	3	7	29	59	120
WAV (24 bits/48 kHz)	3	7	27	54	110
MP3 128kbps	62	126	490	980	1,993
MP3 224kbps	35	72	280	560	1,139
MP3 320kbps	25	50	196	392	797

* 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/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)

Digital Out Connector (Optical miniature phone type)

* Phones and Digital Out use a common jack.

● Nominal Input Level (Variable)

Mic Input: -36dBu (Default input level)

Line Input: 0dBu (Default input level)

* 0 dBu = 0.775 V rms

● Input Impedance

Mic input: 20 k ohms

Line input: 17 k ohms

● Output Level

25 mW (In case 16 ohms load)

● Recommended Load Impedance

16 ohms or greater

● Frequency Response

20 Hz–22 kHz

● USB Interface

Mini-B type

* support USB 2.0/1.1 mass storage device class

● Effects

Playback Reverb

4 types (Hall 1, Hall 2, Room, Plate)

Others

● Display

128 x 64 dot graphic display

● Power Supply

AC Adaptor, Alkaline dry battery LR6 (AA) type x 2, or Nickel Hydrogen battery (HR15/51) x 2

● Current Draw

360 mA

● Dimensions

62.6 (W) x 102 (D) x 29.1 (H) mm

2-1/2 (W) x 4-1/16 (D) x 1-3/16 (H) inches

● Weight

145 g / 6 oz (including batteries and memory card.)

Accessories

Owner's Manual

AC Adaptor

SD Memory Card (64 M bytes)

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® Me / XP Home Edition / XP Professional / 2000

Macintosh

Mac OS 9: 9.2 or later / Mac OS X: 10.2 or later


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by Roland



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