

RC-50 Loop Station



Audio Inputs and Outputs

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RC50WS04

About the RC-50 Workshop Booklets

The BOSS RC-50 Loop Station sets a new standard for performance loopers. With 49 minutes of mono recording time (or 24 minutes in stereo), onboard storage for up to 297 phrases, and massive realtime control, the RC-50 is a powerful realtime performance tool. While looping is its primary function, it can be used in many other ways as well: as a sampler, a backing track player, a practice aid, and more.

Each RC-50 Workshop booklet focuses on a specific topic to help you get the most out of your RC-50 and spark some ideas for its creative use. RC-50 Workshop booklets are intended as companions to the *RC-50 Owner's Manual*.

About This Booklet

The RC-50 features three different types of audio inputs, allowing you to connect and record a variety of mono or stereo audio sources, such as an electric guitar or bass, a microphone, or a CD/MP3 player.

For monitoring, there are two pairs of audio outputs and a headphones jack. You can assign input signals, phrases, and the guide to either or both output pairs, giving you a multitude of options for monitoring and signal processing after the audio leaves the RC-50.

In this booklet, we'll give you the lowdown on the inputs and outputs, and offer a few performance tips as well.

Understanding the Symbols in This Booklet

Throughout this booklet, you'll come across information that deserves special attention—that's the reason it's labeled with one of the following symbols.



A note is something that adds information about the topic at hand.



A tip offers suggestions for using the feature being discussed.



Warnings contain important information that can help you avoid possible damage to your equipment, your data, or yourself.

Terminology

- On the RC-50, a “phrase” is a container for audio data.
- An RC-50 patch contains three phrases, and each can loop indefinitely or be triggered sampler-style using the “One Shot” function.
- When a phrase is empty, capturing audio into it is called “recording.”
- While recording a phrase, pressing the REC/PLAY/OVERDUB pedal stops recording and starts the phrase playing back from the beginning. This action determines the phrase's length, and we call it “closing the phrase.” Alternately, a phrase can be closed by pressing the STOP pedal during phrase recording.
- When a phrase already contains audio and you wish to layer more—or replace some—you “overdub” audio into the phrase.

Using the RC-50's Inputs

The RC-50's audio input jacks are located on its rear panel. All the inputs can be used simultaneously, so you can have multiple sources plugged in and ready to go for phrase recording.



Making Connections

INST R(MONO) and INST L Inputs

The INST R(MONO) and INST L input jacks accept standard 1/4" audio connectors, and can accommodate a wide variety of source signals. If you're using:



- a *single mono-output instrument or device*—such as an electric guitar or bass, a keyboard, or a mixer with a mono output, connect it to the INST R(MONO) jack.
- a *stereo-output instrument or device*—such as a multi-effects processor, keyboard, or stereo mixer, connect its left and right outputs to both the INST R(MONO) and INST L jacks.

MIC Input

The MIC input jack accepts an XLR connector, and is designed for the connection of a balanced microphone.



If you have a condenser-type microphone that requires +48 V phantom power, it can be supplied from the MIC input's XLR jack. To enable phantom power, set the PHANTOM 48V switch—located next to the MIC jack—to the ON position.



Always turn the phantom power off when connecting any device other than a condenser microphone that requires phantom power. You risk causing damage if you mistakenly supply phantom power to dynamic microphones, audio playback devices, or other devices that don't require such power. Be sure to check the specifications of any microphone you intend to use by referring to the manual that came with it. (The RC-50's phantom power: 48 V DC, 10 mA Max.)



The MIC jack's XLR wiring arrangement is provided on a label next to the jack.

AUX Input

The AUX input jack accepts stereo signals on a single 1/8" TRS mini jack. This type of jack is also often found on the headphone output of devices such as:



- MP3 players.
- MiniDisc players.
- portable CD players.
- laptop computers.

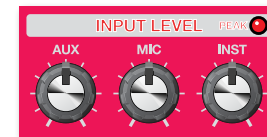
Connect the headphone output of one of these devices to the AUX jack using a stereo cable with an 1/8" TRS connector on both ends.



If your device has a stereo output but uses a different type of jack (or jacks), you can still connect it to the RC-50's AUX jack by acquiring the appropriate cable or cable adaptor.

Setting Input Levels

The front-panel INPUT LEVEL knobs set the volume levels of signals entering the RC-50. Each input—INST, MIC, and AUX—has its own knob. A PEAK indicator lights when incoming audio reaches 6 dB below the level that causes distortion. The settings made here determine the level of the audio that's recorded in the RC-50's phrases.



After connecting your instrument, mic, etc. to the appropriate input(s), you'll want to set the input signal level. For the best audio quality, the level should be set as high as possible without causing distortion.

Recording One Input at a Time

If you plan to record only one connected device at a time, set each input's signal level as follows:

- 1 Send audio from a connected device at the level you intend to perform at.
- 2 Turn the corresponding INPUT LEVEL knob so the PEAK indicator lights occasionally during the loudest passages.
- 3 Repeat Steps 1-2 for devices connected to other inputs.

Recording Multiple Inputs Simultaneously

If you plan to record multiple connected devices all at once, their combined signals will usually be louder than a single signal would be. You'll need to create the desired volume balance between them with the INPUT LEVEL knobs, while still striving for the highest possible level before distortion. Here's a good approach:

- 1 Send audio from the loudest device at the level you intend to perform at.
- 2 Turn the corresponding INPUT LEVEL knob so the PEAK indicator lights occasionally during the loudest passages.
- 3 Now, send audio from all connected devices at the levels you intend to perform at, and use the remaining INPUT LEVEL knobs to adjust their overall balance.
- 4 If the PEAK indicator lights continuously—or if you hear distortion—lower all the INPUT LEVEL knobs an equal amount until the PEAK indicator only lights occasionally during the loudest passages.

Input Settings

Monitoring the Input Sound

Audio arriving at the input jacks can be routed to either or both of the RC-50's output jack pairs for monitoring. These routing assignments can be made on a system-wide level—affecting all patches—or individually for each patch.

System Input Settings

Use the following procedure to make system-wide input settings:

- 1 Press SYSTEM/USB.
- 2 Use the parameter buttons to display Sys:Input Out.



Sys: Input Out
PATCH

- 3 Turn the PATCH/VALUE dial to choose the desired setting. When Sys: Input Out is set to:
 - *PATCH*—the input signal routing is determined by the settings in the individual patches.
 - *MAIN*—the input signals are routed to the MAIN OUTPUT pair, regardless of a patch's setting.
 - *SUB*—the input signals are routed to the SUB OUTPUT pair, regardless of a patch's setting.
 - *MAIN+SUB*—the input signals are routed to both the MAIN OUTPUT and SUB OUTPUT pairs, regardless of a patch's setting.



When the input signals are routed to the MAIN OUTPUT pair, they're sent to the PHONES jack as well.

- *MUTE*—The input signals are muted, regardless of a patch's setting. (When the input signals are muted, they can still be recorded to the RC-50's phrases.)



Muting the input is useful when you wish to monitor the source audio separately from the RC-50's outputs (great for live multitrack recording and using multiple amplification systems in a performance). For example, if the source audio is a multi-effects processor such as the BOSS GT-8, you can monitor its sound from its MAIN outputs, while using its SEND jack to send a duplicate signal to the RC-50 for phrase recording. After you set the RC-50's input levels, you probably won't want to hear the input signal from the RC-50's outputs, as you're already hearing it from the GT-8's MAIN outputs. By muting it on the RC-50, you can avoid this duplication.

- 4 Press EXIT when you're done.

Patch Input Settings

When the Sys:Input setting is set to PATCH, the input signal routing is determined by the setting in each patch:

- 1 Press NAME/PATCH twice.
- 2 Use the parameter buttons to display the Patch:Input Out screen.



Patch:Input Out
MAIN+SUB

- 3 Turn the PATCH/VALUE dial to choose the desired setting. When Patch:Input Out is set to:
 - *MAIN*—the input signals are routed to the MAIN OUTPUT pair.
 - *SUB*—the input signals are routed to the SUB OUTPUT pair.
 - *MAIN+SUB*—the input signals are routed to both output pairs.



When the input signals are routed to the MAIN OUTPUT pair, they're sent to the PHONES jack as well.

- 4 Press EXIT when you're done.



If you want to save your Patch:Input Out setting, you'll need to save the patch to one of the 99 onboard patch locations. To learn how, see the RC-50 Workshop booklet *Patches* or Page 54 in the *RC-50 Owner's Manual*.

Input Mode Settings

The Input mode settings affect how audio signals are recorded from the RC-50's audio inputs. Use the following procedure to adjust Input mode settings:



- 1 Press INPUT MODE.
- 2 Use the PARAMETER buttons to display the desired Input mode screen.
- 3 Turn the PATCH/VALUE dial to choose the desired setting.
- 4 Repeat Steps 2-3 to make other Input mode settings.
- 5 Press EXIT when you're done.

Following are descriptions of the three Input mode screens.

Input:AUX Center Cancel



Input:AUX Center
Cancel ON

Affecting only signals arriving at the RC-50's AUX jack, the AUX Center Cancel function reduces the volume of sounds that are located in the center of the stereo field. This is useful for removing vocals and other center-located sounds from popular recordings when you're creating karaoke-style performances or practicing. To disable AUX Center Cancel, set it to OFF.



AUX Center Cancel works best on dry (unprocessed) vocal and instrument sounds located directly in the center of the stereo image. If the sound is panned slightly to either side—or if a stereo effect such as reverb has been applied to the sound—AUX Center Cancel will be less effective.



Audio arriving at the INST and MIC inputs is not affected by the Input:AUX Center Cancel setting.

Input:AUX & MIC Flat Amp



Input:AUX & MIC
Flat Amp ON

If you're using the RC-50 with a guitar amp, you'll probably find that an electric guitar connected to the INST input(s) sounds great, while signals connected to the MIC and AUX jacks don't sound as good as they should. This is because a typical guitar amp has a limited frequency response and is unable to reproduce audio in the extreme high and low frequency ranges. While this is fine for an electric guitar, full-range sounds—such as audio from a microphone or a CD/MP3 player—can't be reproduced accurately with this type of amplification system.

To help, the Flat Amp Simulate function can be used to process signals arriving at the MIC and AUX input jacks. It alters the tonality of these signals so they sound better when played through a frequency-limited amplification system. To disable Flat Amp Simulate, set it to OFF.



Audio arriving at the INST inputs is not affected by the Input:AUX & MIC Flat Amp setting.

Input:Rec Mode



The Input:Rec Mode setting—MONO or STEREO—determines the phrase recording mode. When all the RC-50's phrases are empty, the available recording time is 49 minutes in mono or 24 minutes in stereo. Here are a few things to keep in mind when choosing the recording mode.

- Stereo audio requires twice as much memory as mono audio. The remaining recording time—displayed on the Play screen—reflects the time available for the chosen mode.
- If you're recording a mono source—such as a guitar connected only to the INST R/MONO jack or a mic connected to the MIC jack—it makes sense to conserve the RC-50's memory by choosing MONO as the recording mode. You won't gain any more fidelity by recording in stereo.
- If you're recording a stereo source—such as a stereo instrument connected to the INST R/MONO and INST L jacks or a CD/MP3 player connected to the AUX jack—choose STEREO as the recording mode to preserve the source's stereo image. If you choose MONO as the recording mode, the stereo source audio will be combined and captured as a mono recording.
- You can change the recording mode before recording any phrase; this allows you to create both stereo and mono phrases within the same patch.
- When overdubbing audio into a phrase, the phrase's original recording mode is maintained regardless of the current recording mode setting.

Using the RC-50's Outputs

The RC-50's rear panel has two pairs of stereo outputs and a PHONES jack.



Making Connections

MAIN OUTPUT R(MONO) and L Jacks

The MAIN OUTPUT R(MONO) and L jacks are the RC-50's primary outputs. They accept standard 1/4" connectors.



- Use *MAIN OUTPUT R(MONO)*—if you're connecting the RC-50 to a mono amplification system (such as a regular guitar amp) or a single channel on a mixer or multitrack recorder.
- Use *both MAIN OUTPUT R(MONO) and MAIN OUTPUT L*—if you're connecting the RC-50 to a stereo amplification system, two separate guitar amps, or two channels on a mixer or multitrack recorder.

SUB OUTPUT R(MONO) and L Jacks

The SUB OUTPUT R(MONO) and L jacks are the RC-50's secondary outputs. Like the MAIN OUTPUT jacks, they accept 1/4" connectors.



Use the SUB OUTPUT jacks when you wish to monitor some of the RC-50's audio separately from—or in addition to—the MAIN OUTPUT jacks.

For connections, use the same guidelines described for the MAIN OUTPUT jacks.

PHONES Jack

The PHONES jack accepts a stereo (TRS) 1/4" connector. Connect a set of headphones here.



Any audio that's assigned to the MAIN OUTPUTS is sent to the PHONES jack as well.

Phrase and Guide Output Assignments

Each phrase—as well as the built-in guide—can be assigned to send its sounds to either or both output jack pairs. As with input assignments, output settings can be system-wide or made patch-by-patch.

System Output Settings

Use the following procedure to make system-wide output settings for the phrases and guide:

- 1 Press SYSTEM/USB.
- 2 Use the parameter buttons to display the desired screen—Sys: Phrase(1,2, or 3) Out or Sys: Guide Out.
- 3 Turn the PATCH/VALUE dial to choose the desired setting. When the system output is set to:
 - *PATCH*—the output routing is determined by the settings in the individual patches.
 - *MAIN*—the RC-50's sound is routed to the MAIN OUTPUT pair and PHONES, regardless of a patch's setting.
 - *SUB*—the RC-50's sound is routed to the SUB OUTPUT pair, regardless of a patch's setting.
 - *MAIN+SUB*—the RC-50's sound is routed to all outputs (MAIN OUTPUT, SUB OUTPUT, and PHONES), regardless of a patch's setting.
- 4 Repeats Steps 2 and 3 to make additional system output settings.
- 5 Press EXIT when you're done.



In this example we've selected the Sys:Phrase3 Out screen.

Patch Output Settings

When the system output for a phrase or the guide is set to PATCH, the output routing is determined by the setting made in each patch.

Setting Phrase Outputs

- 1 Press the PHRASE EDIT button for the desired phrase: PHRASE 1, 2, or 3.
- 2 Use the PARAMETER buttons to display the selected phrase's Output screen.
- 3 Turn the PATCH/VALUE dial to choose the desired output. When it's set to:
 - *MAIN*—the phrase's sound is routed to the MAIN OUTPUT pair and PHONES.
 - *SUB*—the phrase's sound is routed to the SUB OUTPUT pair.
 - *MAIN+SUB*—the phrase's sound is routed to all outputs.
- 4 To adjust the output setting for another phrase, select the phrase by pressing its PHRASE EDIT button, and then use the procedure described in Step 3.
- 5 Press EXIT when you're done.



In this example we've selected Phrase 1's Output screen.

Setting the Guide Output

- 1 Press GUIDE SELECT.
- 2 Use the PARAMETER buttons to display the Guide: Output screen.
- 3 Turn the PATCH/VALUE dial to choose the desired output: MAIN, SUB, or MAIN+SUB.
- 4 Press EXIT when you're done.



If you want to save your patch output settings, you'll need to save the patch to one of the 99 onboard patch locations. To learn how, see the RC-50 Workshop booklet *Patches* or Page 54 in the *RC-50 Owner's Manual*.

Setting Levels and Panning

Master Level

Use the MASTER LEVEL knob to control the volume of the MAIN OUTPUT and PHONES jacks.



The MASTER LEVEL knob doesn't affect sounds sent to the SUB OUTPUT jacks.

Patch Level

In addition to using the MASTER LEVEL knob, you can set the RC-50's overall level on a per-patch basis. The difference between the MASTER LEVEL and patch level is:

- the patch level affects all outputs, while the MASTER LEVEL only affects the MAIN OUTPUT and PHONES.
- the patch level can be stored with a patch, while the MASTER LEVEL cannot.

Basically, you'll want to use the MASTER LEVEL knob to set the RC-50's overall level, and use the patch level settings to create a good balance between patches. Here's how to set a patch's level:

- 1 Press NAME/PATCH twice.
- 2 Use the PARAMETER buttons to display Patch:Level.



- 3 Turn the PATCH/VALUE dial to set the desired level, from 0 to 200. 100—the default level—is a good place to start.
- 4 Press EXIT when you're done.



When an optional EV-5 or FV-500H Expression Pedal is connected to the EXP/CTL 3, 4 PEDAL jack, it can be assigned to control the patch level. In this case, the Patch:Level setting determines the patch's volume level when the pedal is at its maximum setting (fully forward).

Phrase Level and Panning



You can quickly set the level for each phrase using the PHRASE EDIT LEVEL knobs. When a knob is turned, the current setting is briefly displayed.

Detailed level and pan settings for each phrase can be made on the PHRASE EDIT screens:

- 1 Press the PHRASE EDIT button for the desired phrase (PHRASE 1, 2, or 3).
- 2 Use the PARAMETER buttons to display the selected phrase's Level screen.
- 3 Turn the PATCH/VALUE dial to set the phrase's level, from 0 to 200.
- 4 Use the PARAMETER buttons to display the selected phrase's Pan screen.
- 5 Turn the PATCH/VALUE dial to set the phrase's pan position. You can set the phrase's panning to any of the following values: L50-L1, CENTER, or R1-R50.



By "hard-panning" a phrase to L50 or R50, you can isolate it to the left or right output of its assigned output pair(s). This works great when you want to monitor individual phrases separately.



If you're only using a mono output (MAIN OUTPUT R/MONO or SUB OUTPUT R/MONO), the pan setting won't have any audible effect on the sound.

- 6 Repeat Steps 2-5 to adjust the level and panning for other phrases. (While you're on any Phrase Edit screen, you can select a different phrase by pressing its PHRASE EDIT button.)
- 7 Press EXIT when you're done.



If you want to save your patch level, phrase level, and pan settings, you'll need to save the patch to one of the 99 onboard patch locations. To learn how, see the RC-50 Workshop booklet *Patches* or Page 54 in the *RC-50 Owner's Manual*.

Input and Output Tips

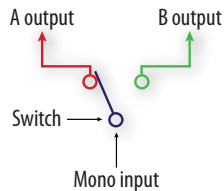
A Neat Stereo Input Trick

If you're using a mono instrument (such as an electric guitar), there's a unique way you can take advantage of the RC-50's stereo phrase recording capability. By incorporating an optional device called an "A/B switch," you can connect your mono instrument to both the INST R(MONO) and INST L inputs simultaneously, and switch between the two.

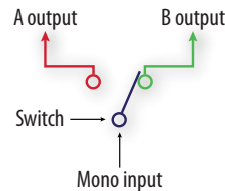
When the recording mode is set to stereo, this allows you to discreetly record and overdub to either the left or right side of a phrase, depending on the input that's currently chosen. When monitoring in stereo, you'll hear your new recordings and overdubs hard-panned in the left and right outputs. In a way, this gets you "two phrases in one."

What's an A/B Switch?

An A/B switch—also known as an "A/B box" or a "two-way selector"—is a simple switching device that takes a mono input signal and routes it to one of two different output destinations. The output is selected with a footswitch incorporated in the device.



You can select the A output...



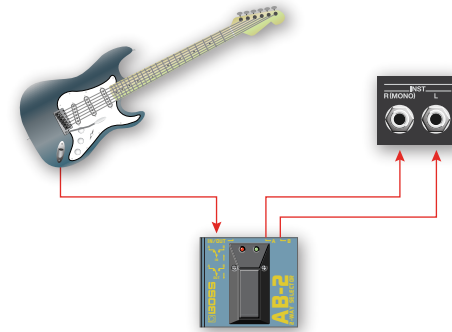
...or the B output.



Usually, A/B switches can also work in a reverse fashion, selectively routing either of two inputs to a single output destination.

A/B switches are relatively inexpensive, and they're available from a variety of manufacturers. BOSS offers the AB-2 2-Way Selector, and we'll use it for our example here.

Connections and Set Up



- 1 Connect your mono instrument's output to the AB-2's IN/OUT jack.
- 2 Connect the AB-2's A jack to the RC-50's INST R(MONO) jack.
- 3 Connect the AB-2's B jack to the RC-50's INST L jack.
- 4 Connect the RC-50's MAIN OUTPUT and/or SUB OUTPUT jacks to a stereo amplification system.
- 5 Repeatedly press the RC-50's OVERDUB MODE button until the OVERDUB indicator lights.
- 6 Set all phrases for looped playback.



Settings for loop or One Shot playback are made on a phrase's One Shot screen. To learn how to adjust these settings, see the RC-50 Workshop booklet *Patches*, or Page 52 in the *RC-50 Owner's Manual*. (When an RC-50 patch is in an initialized state—that is, a blank patch that's set to factory settings—all of its phrases are set for looped playback by default.)

- 7 Using the procedures described previously in this booklet, make the following settings:
 - set the recording mode to STEREO (see Pages 5-6).
 - set all phrases' pan settings to CENTER (see Page 8).
 - assign all phrases to the output(s) used in Step 4 (see Page 7).
 - assign the input to the output(s) used in Step 4 (see Pages 4-5).

Recording and Overdubbing a Phrase

- 1 Select an empty phrase for recording by pressing its PHRASE SELECT pedal.
- 2 Press the AB-2's footswitch so its indicator lights red. This routes your instrument to the RC-50's INST (R)MONO input.
- 3 Press the REC/PLAY/OVERDUB pedal to begin recording.
- 4 When you're finished recording, press REC/PLAY/OVERDUB again to close the phrase. You'll now hear it playing in the right channel of your monitoring system.
- 5 Press the AB-2's footswitch so its indicator lights green. This routes your instrument to the RC-50's INST L input.
- 6 Press REC/PLAY/OVERDUB to overdub audio into the phrase. The right indicator on the phrase's PHRASE SELECT pedal lights orange during overdubbing.
- 7 When you're finished overdubbing, press REC/PLAY/OVERDUB again. Now, you'll hear your overdub in the left channel while the initial recording is playing in the right channel.
- 8 Repeat the above steps to record and overdub to additional phrases.

Creative Uses for the Outputs



With the ability to route sounds to multiple outputs and pan them at will, you have lots of options for monitoring and manipulating phrases and the guide after they leave the RC-50. Here are a few ideas to get you thinking about the creative possibilities for multiple outputs.

- *Expansive live sound*—Send separate phrases to multiple amps onstage to create a mind-blowing experience for your audience.
- *Create a duplicate mix*—When the phrases are routed to MAIN+SUB, the same mix is sent to both output pairs. Send the MAIN OUTPUTS to your onstage amp, and send the SUB OUTPUTS to an alternate destination, such as the house P.A. system or a stereo recorder.
- *Isolate phrases for multitrack recording*—Using output assignment and panning, send individual phrases to separate outputs so they can be connected to separate tracks of a multitrack recorder.

- *Isolate the guide sound for monitoring*—The RC-50's guide enhances your performances, providing a nice rhythmic backing for phrase recording and playback. However, there may be situations where you simply want to use it as timing reference and not have your audience hear it. Just send the guide to a separate output from the phrases, and then connect it to your onstage monitoring system so only you and/or other performers can hear it.
- *Use different amp types for different sounds*—Send phrases recorded with an electric guitar to a regular guitar amp, while sending the guide and phrases recorded via the MIC and AUX inputs to a full-range system.
- *Mix things up with a mixer*—Send separate phrases to individual channels of an external mixer, and mix and EQ them any way you like.
- *Sweeten or mangle phrases with effects*—Send separate phrases to external effects units and process 'em to your heart's content.

The End

We hope you've found this workshop helpful. Keep an eye out for other RC-50 Workshop booklets, available for downloading at www.BOSSUS.com and www.RolandUS.com.



For the latest RC-50 updates and support tools, visit the BOSS U.S. Web site at www.BOSSUS.com. If you need personal assistance, call our amazing Product Support team at 323-890-3743.