



# X32 Guidebook

A Guide for the Behringer X32

*brought to you by Kade Young with*



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# Table of Contents

<b>2</b>	Gain, Phantom Power & Polarity
<b>3</b>	EQ & Low Cut Filter
<b>5</b>	Gate & Ducker
<b>7</b>	Compression & Expander
<b>8</b>	Bus Sends for Monitor Mixes
<b>9</b>	DCA, Bus & Mute Groups
<b>10</b>	Labeling Channels (Scribble Strip)
<b>11</b>	Linking Stereo Channels
<b>11</b>	Library Presets & Scenes
<b>12</b>	USB Recorder
<b>12</b>	Talkback Mic
<b>13</b>	Gate & Compression Sample Settings
<b>14</b>	X32 Video Courses

# Gain, Phantom Power & Polarity

Properly setting the gain is *foundational* to excellent sound.

Every audio device emits a different level of sound signal. Gain enables you to normalize the signal so every input is on the same playing field before it moves through the rest of the mixer (EQ, bus sends, fader, etc.).

Think of it like a water faucet. The amount of water (signal) carried through the pipe (input cable) has an output that is regulated by the faucet (gain).

Gain affects everything else on your mixer.

Although you should not be scared to change the gain, you should do so with caution. Otherwise, you chance blowing out the ears of those using in-ear monitors, or creating feedback problems if your floor wedges are set too loud.

## How to Set the Gain

1. Select the channel you are working on
2. Make sure singer/instrumentalist is singing/playing at the same level they will during the service or performance
3. Use the level meter next to the gain knob to adjust the gain until it is **averaging around -18dB**

Shooting for a -18dB average on the gain level meter gives you a solid signal with plenty of headroom in case your band member really lets it rip.

### KEEP IN MIND

*Gain is not a set it and leave it type of situation. Lots of things can change from week-to-week, so keep an eye on it and adjust as needed.*

## Phantom Power and Polarity

The **48V** button must be activated for microphones that require phantom power, such as condenser mics or drum overhead mics.

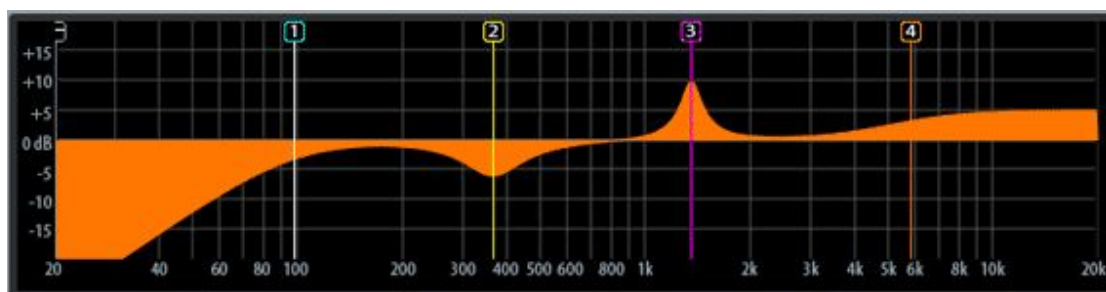
The polarity button (**Ø**) reverses the polarity of the audio signal. The most common application for this is when you have a mic at the top and bottom of your snare drum. In this case, you would activate the polarity button for the mic on the bottom to keep both mics in phase with each other.

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## EQ & Low Cut Filter

The X32 uses parametric EQ with the following modes:

- **High & Low Cut Filters** allow you to completely cut the frequencies above or below a specific threshold. The low cut filter is most useful on vocals as you can cut out all the unnecessary low frequencies that cause popping, feedback and muddiness.
- **Shelving Filters** allow you to boost or cut all frequencies over or under a specific threshold. This is similar to high & low cut filters except you have the freedom of choosing how much to cut or boost the frequencies (instead of cutting them out completely).
- **Peaking Filters (PEQ)** allow you to target specific frequency bands to cut or boost. Although shelving filters have their place, peaking filters will generally be the best option when solving a frequency problem.



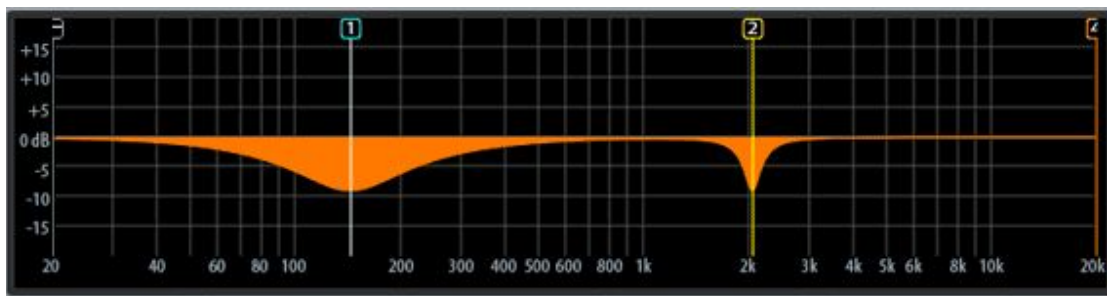
1: Low Cut Filter    2 & 3: Peaking Filter (PEQ)    4: High shelving filter

*Note: VEQ is essentially the same as PEQ. For simplicity sake, use PEQ.*

## Gain, Frequency & Q

The 'gain' and 'frequency' knobs are exactly what you would expect them to be. Gain controls how much you cut or boost the frequency while the frequency knob allows you to choose which frequency to target.

The 'Q' is a bit more mysterious. It is only available when using peaking filters (PEQ) and allows you to set the bandwidth of frequencies to be affected. The lower the Q value, the more frequencies affected. The higher the Q value, the less frequencies affected.



1: Low Q value (1)    2: High Q value (7.1)

## Finding the Right Q Value

Prior to digital mixing, 31-band graphic equalizers were the best way to dial in your sound. To help give some perspective, a Q value of 4.3 will give you the same result of adjusting one of the knobs on a 31-band graphic EQ.

Therefore, in most cases, I find it best to start with the Q value at 4. This starts the process at a place most people are familiar with, especially if you transitioned from analog to digital mixing. Then, the goal is to find the most narrow bandwidth (higher Q value) that achieves the desired result. After all, there is no reason to cut out neighboring frequencies if you don't have to.

## EQ Techniques for Church Sound

Now that you know how to use the X32's parametric EQ, it's time to learn how to get it dialed in just right. Check out [collaborateworship.com/EQ](http://collaborateworship.com/EQ) to get started.

# Gate & Ducker

Audio gating allows you to suppress signal that is lower than a specified threshold while allowing everything over the threshold to pass through. If that went over your head, imagine standing in front of an actual gate and whispering, “Open, please”, but nothing happens. Then, you yell, “OPEN PLEASE”, and this time, the gate opens. The higher volume is what triggered the gate to open.

## When to Use Gating

The most common use of gating is to cure mic bleed. Whether it is too much cymbal noise coming through the snare mic or too much stage noise coming through a vocal mic, gating can suppress mic bleed.

Gating can also be used to clear up a signal. For example, let’s say your electric guitar has an annoying hum or buzz when they are not playing. A properly set gate will suppress the buzz while letting the actual guitar tone come through untouched.

### KEEP IN MIND

*Never use gating just because it is available - only use it to solve a problem.*

## Gate Parameters

- **Threshold** is where the gate opens and closes. Signal below the threshold will be suppressed (gate closed) whereas signal above the threshold will pass through (gate open). Adjust to where the only thing passing through the gate is what you want to hear.
- **Attack** controls how fast the gate opens once the signal goes above the threshold. Start with the fastest attack time possible, but if you hear a click or distortion when the gate opens, increase your attack time until the click disappears.
- **Release** determines how fast the gate closes. In most cases, the release time should match the natural decay of the instrument. For example, a snare drum will have a shorter release time whereas a tom drum will have a longer release time

so you can hear its natural decay. In short, if the gate opening and closing sounds unnatural, increase the release time until it sounds natural again.

- **Hold** determines the minimum amount of time the gate is held open. Start with a short hold time (10ms). Then, if the gate is opening and closing too often, increase the hold time.
- **Range** controls how much the signal is suppressed once the gate is fully active. A good starting point is 40dB, as this will generally make signals below the threshold inaudible. But, if you can still hear the surpassed signal in the mix, increase the range.
- **Key filter** allows you to target a specific frequency range that triggers the gate to open. For example, let's say you have a gate on the snare drum to cut out bleed from the cymbals but your cymbals keep sneaking through anyway. You could use a key filter to target a frequency range that is prominent in the snare but not the cymbals (i.e. 250Hz). This would prevent the cymbals from triggering the gate to open.

## Ducker

Although not used often, audio ducking can come in handy in some situations. Simply put, ducking allows you to lower the volume of one audio source based on the input of another source.

The same parameters used with gating are available for ducking as well. The range determines how much the audio source will be turned down when ducking is engaged. The other parameters do exactly what you would expect them to.

## When to Use Ducking

When it comes to church sound, one use for ducking is to lower the volume of your bass guitar when the kick drum is hit. This is especially handy if your subwoofers are prone to overloading.

To do this, apply the ducker to your bass guitar and use the kick drum as the key source. Then, fine tune the other parameters to get the desired effect.

There are other uses for ducking, but it is mostly used in the studio, not for live sound.

# Compression & Expander

Audio compression allows you to limit the dynamic range of an input signal. In other words, imagine the vast volume difference between a vocal singing softly versus really belting it out. Compression allows you to bring the two closer together by reducing the level of the loudest moments.

## When to Use Compression

I recommend using compression primarily on vocals. The average uncompressed vocal has a 40dB dynamic range. This is huge when it comes to live mixing and explains why you have such a hard time keeping vocals on top of the mix without getting too loud during the 'belt it out' moments.

### KEEP IN MIND

*Never use compression just because it is available - only use it to solve a problem.*

## Compression Parameters

- **Attack** sets the speed at which the compressor activates after the signal crosses the threshold. So, a slower attack time will allow the beginning of the signal pass through untouched before applying the compressor, whereas a fast attack time will apply the compressor almost immediately.
- **Release** sets the speed at which the compressor 'lets go' once the signal goes back under the threshold. A release time that is too short can produce a choppy or jittery sound, whereas a release time that is too long can result in a signal sounding 'squashed'.
- **Gain** allows you to restore the signal back to its original level before compression. So, if you are compressing the signal by 6dB, you can apply 6dB of gain to bring the signal back to where it was. In essence, this brings the uncompressed signals up by 6dB while leaving the compressed signal where it was to begin with.
- **Threshold** determines when the compressor kicks in. So, if a threshold is set to -30dB, the compressor will start working when the signal gets louder than -30dB.



- **Ratio** determines how much compression is applied. For example, if the ratio is set to 4:1, every 4dB of signal that crosses the threshold will be compressed down to 1dB. So, if the signal crossed the threshold by 8dB, only a 2dB increase would be heard after compression.
- **Knee** determines how the compressor responds once the signal crosses the threshold. A hard knee clamps down right away, while a soft knee causes the compressor to gradually kick in as the signal gets further past the threshold.
- **Key filter** allows you to target a specific frequency range that activates the compressor. The compressor is still applied to the full frequency spectrum, but it is only activated by the frequency range set by the key filter.

## Expander

The expander is very similar to a gate. The only difference is that an expander pays attention to where the level is after it falls below the threshold and reduces the level accordingly, whereas a gate closes as soon as the signal goes below the threshold.

When it comes to mixing for worship, I really can't think of a time where expansion should be used over gating. The main thing you need to understand is that expansion is almost identical to gating, so you are better off leaving the control open for compression.

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# Bus Sends for Monitor Mixes

## How to Setup a Bus for Monitor Mixes

1. Select the bus you want to use, navigate to the 'config' screen, and set the 'Channel Sends Preconfiguration' to Pre Fader
2. Make sure 'STEREO BUS' is *not* selected under the 'MAIN BUS' section
3. Navigate to the 'dyn' tab and use the following settings to apply a limiter to your monitor mix to protect your speakers and musicians' ears:
  - a. Threshold: -12dB
  - b. Ratio: 10
  - c. Attack, Hold & Release: Auto
4. Navigate to the 'eq' tab and apply EQ as needed - I recommend using a low cut filter on monitor wedges around 400Hz to cut back on stage noise

5. Start with your bus fader at 0
6. Tap the 'SENDS ON FADER' button and use the channel faders to create your monitor mix, then hit the 'SENDS ON FADER' button again to return to normal

## Checking the Output Signal

Once you have a mix you are happy with, you need to make sure you are sending a strong signal to your monitors. A strong signal equals better sound quality.

To do this, simply take a look at the bus level meter (right under the bus's select button) while the band is playing. Just like setting the gain, you want it to average around -18dB. For big adjustments, use the 'SENDS ON FADER' button to adjust your mix. For small adjustments, use the bus fader.

If your monitors are too loud when sending a strong signal, you will need to turn them down at the amp, or on the back of the monitor if it is a powered speaker.

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## DCA, Bus & Mute Groups

### DCA Group vs Bus Group

When you assign channels to a DCA group, the only thing you can do is adjust the output of a group of faders. So, if you assigned the drums to a DCA group, adjusting the DCA fader is the same as adjusting all the drum's individual faders at the same time.

If you are looking to use EQ, compression or some other type of audio processing across a group of channels, you have to use a bus group.

### DCA Group Setup

To set up a DCA group, simply hold down the select button above the DCA group and then tap the select button for each channel you want in the group.

## Bus Group Setup

1. Select the bus you want to use, navigate to the 'config' screen, and set the 'Channel Sends Preconfiguration' to Post Fader
2. Make sure 'STEREO BUS' is selected under the 'MAIN BUS' section of the X32
3. Hit the 'SENDS ON FADER' button and bring the fader up to 0 for every channel that should be in the bus group, then hit the 'SENDS ON FADER' button again to return back to normal
4. Take every channel that you added to the bus group out of the stereo bus by selecting the channel and deselecting 'STEREO BUS' (otherwise each channel will be sent to your main mix twice - once through the bus and once on its own)

Now, you can add compression, EQ and other audio processing to the bus and it will be applied to the group. The bus fader will also adjust the overall volume of the group, much like a DCA group.

## Mute Group Setup

The best use for mute groups is for quick access to muting a group of channels or multiple groups. For example, at my church we use mute group 1 to mute the entire band when worship is over and we use mute group 2 to mute all effects so that we can quickly kill the reverb and delay when a vocalist starts talking.

1. Tap the 'MUTE GRP' button next to the X32's screen
2. Hold down one of the MUTE GROUP buttons
3. Tap the select button for each channel you want in that mute group
4. Hit the 'MUTE GRP' button again to return back to normal.

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## Labeling Channels (Scribble Strip)

Labeling channels on the X32 is easy once you know what they call it: the scribble strip.

1. Navigate to the SETUP screen and 'scribble strip' tab
2. Select the channel you want to name
3. Under 'Name' click Edit
4. You can also change the color or assign an icon

# Linking Stereo Channels

There is a good chance you will need to connect stereo inputs to your mixer. The most common are keyboards, synthesizers or a computer for pre-service music. Of course, you want both the L&R channels to stay in sync, and the X32 makes this extremely easy.

1. Select the first channel in the pair
2. Navigate to the home screen and 'config' tab
3. Tap the 'Link' button on the bottom left, then tap the 'YES' button

Note: The first channel in the linked pair must be an odd number. For example, you can link Ch01 & Ch02, but you cannot link Ch02 & Ch03.

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# Library Presets & Scenes

## Library Presets vs Scenes

Library presets are used to save settings for an individual channel. For example, let's say you have two vocalists that alternate weeks on the worship team. You can use a library preset to save and recall specific settings (name, EQ, etc) for each vocalist so they can use the same channel on your mixer with little effort.

Scenes are used to save the entire mixer. So you can use scenes to backup all your settings or, if you have two completely different bands using the same mixer, you can have a scene for each and recall with the click of a button.

## How to Save and Recall Library Presets

1. Select the appropriate channel
2. Tap the LIBRARY button next to the X32's screen
3. Scroll through to either load or store a preset

## How to Save and Recall Scenes

1. On the right side of the X32, under SCENES, tap the VIEW button

2. Navigate to the 'scenes' tab
3. Scroll through to either save or load (Go) a scene

Keep in mind, the 'param safe' tab allows you to select certain parameters that are *not* recalled when you load a scene. These parameters are still being saved, they just aren't being loaded. You can also safe specific channels on the 'chan safe' tab.

This is especially handy when you want to use scenes for each song in your set list. In this case, I recommend setting everything but 'Fader, Pan' and 'Mix 13-16 Sends' as parameter safe so you only recall fader position and effects sends. You will also want to channel safe anything that should stay the same throughout songs.

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## USB Recorder

Gone are the days of having to connect your mixer to your computer to record the sermon. On the Behringer X32, all you have to do is plug in a USB drive.

1. Plug in the USB drive and tap the VIEW button
2. Navigate to the 'config' screen
3. To record the main mix, set the Left 'Signal Source' to 'Main L' and the Right (press the second knob from the left to set Right Signal Source) to 'Main R'
4. You can use 'Rec. Trim' to adjust the volume of the recording
5. Navigate back to the home tab and press the record button to start recording

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## Talkback Mic

The X32 has an onboard mic so that the sound tech can easily talk to the band through in-ears or monitor wedges. Here's how you set it up.

1. Tap the VIEW button next to the 'TALK B' button
2. Select the busses that you are using for monitor mixes
3. Now, hold down the 'TALK A' button to talk through the monitor mixes
4. You may need to use the 'TALK LEVEL' knob to adjust the volume of the mic

# Gating Sample Settings

## Snare Drum

To cut out mic bleed on a kick drum, start with the following settings:

- Attack/Hold/Release: 5ms/0ms/150ms
- Key Filter: Frequency: 250Hz/Q: 8/Source: Self
- Threshold: Adjust to where the gate only opens for the snare

## Signal Buzz

To get rid of signal buzz when an instrument is not playing, start with:

- Attack/Hold/Release: 5ms/0ms/50ms
- Threshold: Start low and increase until the buzz is muted

## Common Gating Problems

- If it sounds unnatural, increase the release time.
- If the gate opens and closes too quickly, increase the hold time.
- If you hear clicking or distortion, increase the attack time.
- If the gate is cutting off what should be coming through, decrease the threshold.

# Compression Sample Settings

## Vocal Compression

- Ratio: 3
- Attack/Hold/Release: Auto
- Threshold: Set to where loud moments are compressed around 6dB
- Gain: 6dB

## Kick Drum Compression

- Ratio: 2.5
- Attack/Hold/Release: 60ms/30ms/300ms
- Threshold: Set to where loud hits are reduced by 3-6dB
- Gain: 3dB

# Behringer X32 Mastery

Meet the fastest way to master the Behringer X32.

Our X32 Mastery Course is the only training resource you need to become a confident X32 user. Plus, you'll waste no time doing it. We made sure you get everything you need and nothing you don't.

The best part of it is, the course was created specifically for church sound techs. In other words, it will fit like a glove.

Looking to establish consistency across your entire tech team?

We offer a team license that allows you to enroll unlimited team members, now and in the future.

Finally, everyone will be on the same page. Plus, you can say goodbye to the headaches of onboarding new team members.

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