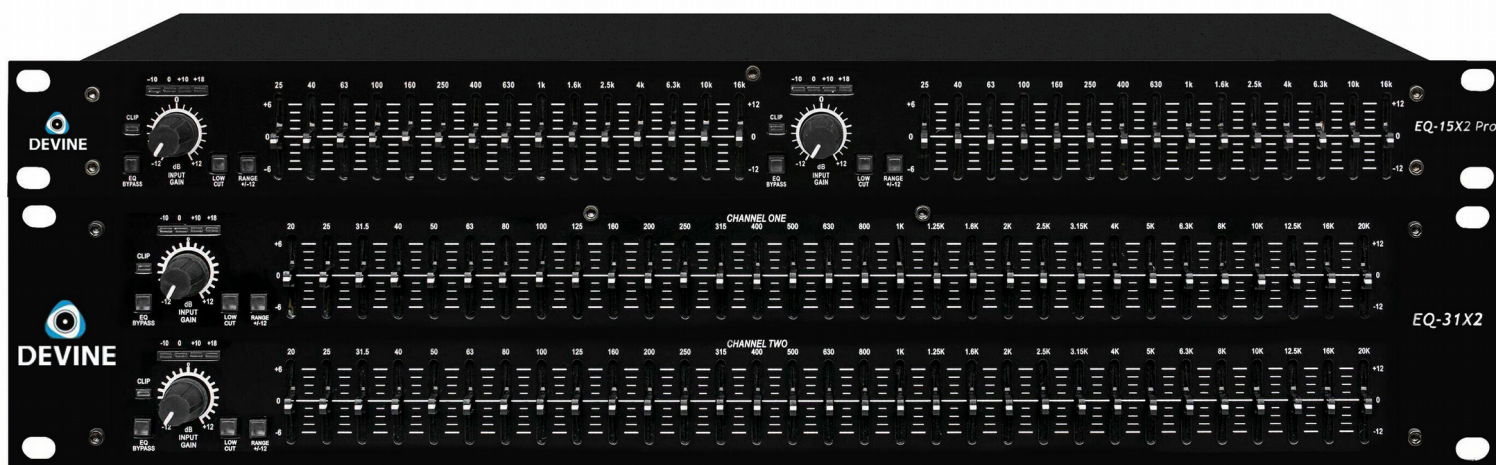


DEVINE

**EQ series (EQ-15X2 Pro, EQ-31X2, EQ-31X2 Pro)
Graphic equalizer**



User manual

The information in this user manual is subject to change at any time without notice.

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Introduction

Thank you for purchasing this Devine EQ series equalizer. We advise that you read this user manual in its entirety before unpacking the contents of the box, so that you are familiar with all of the functionality that this product has to offer. Please be sure to check that all of the parts and accessories listed below under 'box contents' are included in the package. In the event that the product does not function properly, or if you have any issues while operating it, please remove the plug from the power socket and contact your dealer for assistance.

Box contents:

- Devine EQ series equalizer (EQ-15X2 Pro, EQ-31X2 or EQ-31X2 Pro)
- power cable IEC C13 to Schuko

Please inspect the device and the included accessories.

Should you discover that either the device or one or more of the included parts have been damaged or rendered defective while in transit, please contact your dealer directly.

Please note that the pictures in this user manual serve illustrative purposes only and may differ from the product you receive.



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Contact:

Devine Pro Audio Products
Verrijn Stuartweg 18
4462 GE Goes
The Netherlands

*Please do not send any products to this correspondence address.
Should you wish to send in a product for repair or for a refund, please contact your dealer for an RMA
(Return Merchandise Authorisation).*

Safety instructions



WARNING!



Keep this device away from moisture, water and rain to avoid the chance of electric shocks.

Everyone involved with the installation, operation and maintenance of this device must:

- Be qualified
- Be skilled
- Have read the instructions in this user manual
- Be sure that neither the device nor the included accessories are damaged. Should the device or the included accessories be damaged, please contact your dealer for more information.
- Ensure that the device is in good working condition and is safe to operate. Please follow the advice and instructions as they are described in this user manual.

Damage caused by misuse and/or modifications made to the device are not covered by the warranty. This device does not contain any parts that need to be repaired or replaced by the user. Should maintenance or repairs be necessary, they must be handled by a qualified technician.

Important information regarding health and safety:

- Do not remove any labels or stickers from this device.
- Do not leave any cables lying around.
- The device should not be opened up, and any hardware or software that may be present should not be modified.
- To achieve optimal performance, inputs on this device should not be fed with a signal higher than necessary.
- The device should only be used indoors; contact with water, rain and moisture should always be avoided. Do not place any objects containing liquids on top of the device.
- Remove the device from any nearby flames or heat sources; do not place it near flammable liquids, gasses or objects.
- Disconnect this device from the power supply if it will not be used for a longer period of time, if maintenance is necessary, or if the device needs to be cleaned.
- Do not pull on the cable to remove a connector, as this could cause damage.
- Do not use any cables other than the ones described in this manual. Do not use defective cables. Please contact your dealer if the included or necessary cables do not function properly with this device.
- Only use this device with power from a grounded power source.
- In the event that the device is exposed to extreme temperature changes (e.g. transported through a cold outdoor environment into a warm indoor environment), it should not be turned on until it has reached room temperature. This is necessary to prevent moisture from forming in the device, which could lead to electric shocks.

Guidelines and operation of this device:

- This device is intended for adult use only.
- This device is not suitable for use by children, and should always be operated by an adult.
- This device may only be used in a suitable environment where no damage to the device can occur. Do not use the device in moist or dusty environments such as:
 - indoor swimming pools where chlorine is used
 - beaches where there is sand and salt
 - outdoors
 - indoors in spaces where intense heat sources are present, or where it reaches temperature levels that would be considered uncomfortable for a person
- Avoid impacts and collisions during use and transport. Do not transport the device while it is in use. Avoid using excessive force when installing and operating the device.
- The user should become familiar with the functions of this device before using it.
- The user should be able to stop the device's power supply in case of emergencies. At least one of the following should therefore be accessible at all times:

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- the on/off switch on the back of the unit (if present)
 - the power cable connector on the back of the unit
 - the power socket the cable is plugged in to
 - the power socket switch or extension cable switch
- Should the device not be used in the manner described in this user manual, damages or even injuries could occur. Devine cannot be held responsible for any injuries or damages that occur as a result of improper use of this product.




Storage and transport:

- This product is designed for mobile use. It can be transported separately as long as it's well-protected against shocks and collisions.
- This device is not designed for permanent (24/7) use. The expected lifespan of the device will not be affected by occasionally turning the device off. Disconnect the device or turn off the power when it is not actively in use.
- If the device will not be used for a longer period of time, it should be disconnected and stored in a dust-free environment.
- Do not expose the device to extreme temperature differences.

Housing

- Inspect the device's housing frequently, and always just before use. Avoid operating the device if there are large dents or cracks, or if screws are missing. Do not use the device if the housing is not in good condition. Contact your dealer or a qualified technician if you are unsure about the state of the device.
 - Check the device and the screws for corrosion. Corrosion must not be present on this device. Contact your dealer or a qualified technician if you find any corrosion on the screws.
- Every power and signal connector should be securely mounted. Do not use the device if the connectors are not secure.
- Avoid dust and dirt build-up. Clean the device once a month by disconnecting it from the power supply and wiping it down with a dry or slightly moist cloth. If the device is used frequently, the cleaning intervals should increase.

Symbol explanation:

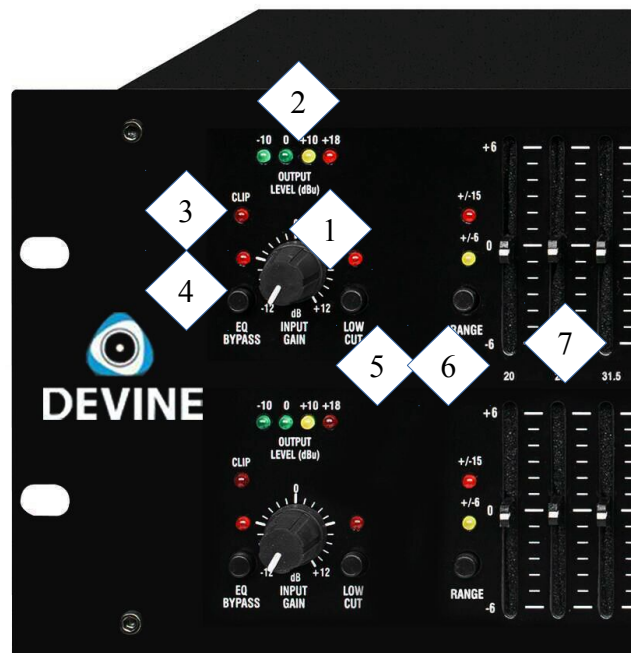
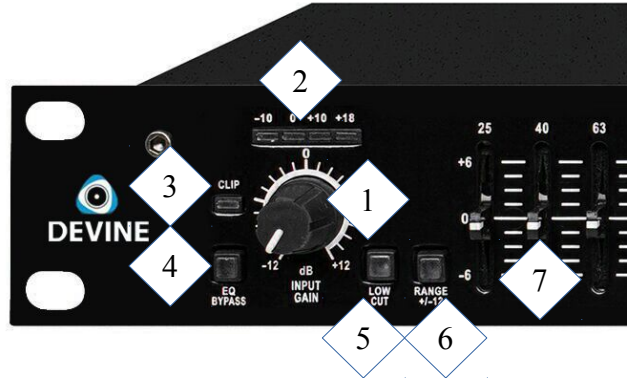
	<p>WEEE: Ensure that this device is disposed of properly. This product falls under the WEEE (Waste Electrical and Electronic Equipment) directive. The requirements of this directive apply to all manufacturers and producers of electronic devices in the EU. Do not throw this product away with regular rubbish. Please contact your local authority for more information about how to recycle and dispose of these products in your region. By recycling this product in the proper manner, we can work together to ensure that we can continue to enjoy these kinds of products and still protect the environment as much as possible from pollution.</p>
	<p>CE: The CE logo indicates that this product meets the European norms and requirements to which it must legally conform.</p>
	<p>Only suitable for indoor use: this product was only designed for indoor use. The maximum environmental temperature must not exceed 40 degrees Celsius (104 degrees Fahrenheit).</p>

Guidelines and operation of the device

Devine's EQ series is equipped with lots of practical features to get the best out of your speaker system. On this page, you can see the possibilities offered on the front of each model and on the next page the back of each unit is shown. They appear in the following order: **EQ-15X2, EQ-31X2, EQ-31X2 Pro**

The following list provides an overview of the different functions. Be aware that all of these functions are not available on every device.

1. Rotary gain
2. LED VU meter for output signal
3. CLIP LED
4. EQ Bypass
5. Low cut on/off
6. Range +/- 6/12 (+/- 6/15 on 31X2 PRO)
7. equalizer frequency slider

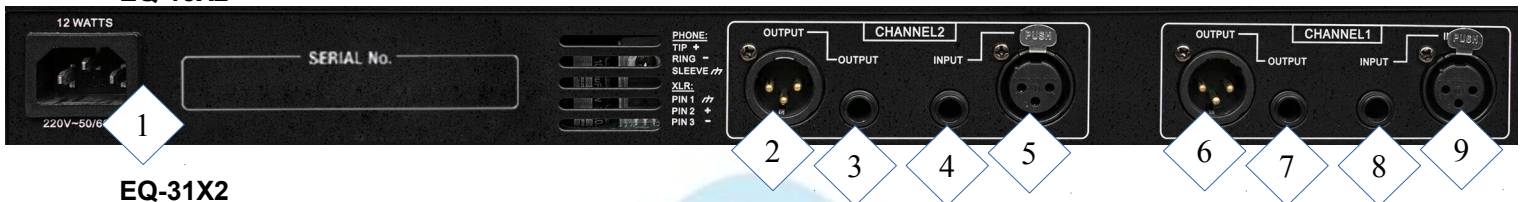


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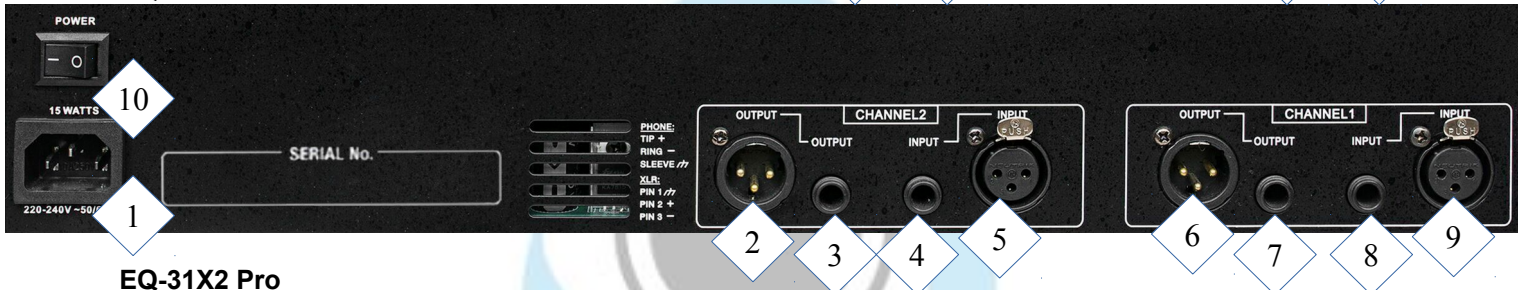
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1. power input
2. balanced 3-pin XLR output channel 2
3. balanced TRS jack output channel 2
4. balanced TRS jack input channel 2
5. balanced 3-pin XLR input channel 2
6. balanced 3-pin XLR output channel 1
7. balanced TRS jack output channel 1
8. balanced TRS jack input channel 1
9. balanced 3-pin XLR input channel 1
10. power switch
11. strip terminals channel 1
12. strip terminals channel 2

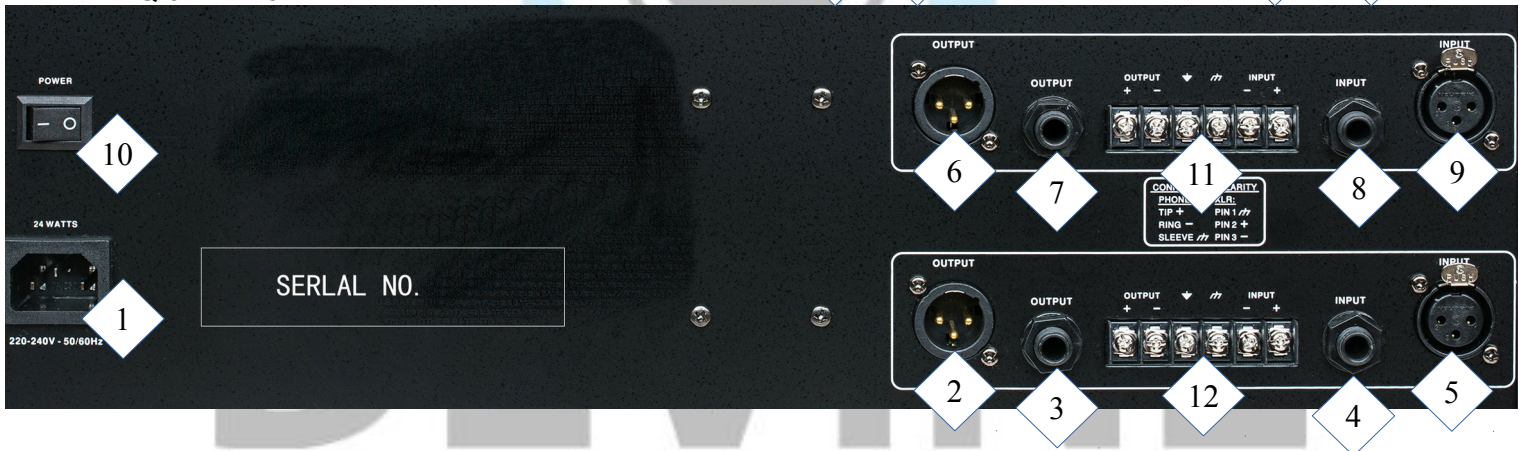
EQ-15X2



EQ-31X2



EQ-31X2 Pro



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Operating the device

What is an equalizer?

An equalizer is a device used to manipulate the sound balance of an audio source. It is typically used to adjust the audio signal from a sound source like a mixer or DJ controller for optimal sound reproduction by the speaker system.

Because speakers do not reproduce sounds with 100% accuracy or neutrality and the surrounding environment also affects the overall sound quality, the ability to manipulate certain frequencies can improve the sound. An equalizer allows you to accurately adjust the sound and tweak it to your preferences.

An equalizer is normally connected directly to the main sound source. In addition to equipment like mixers and DJ controllers, they can also be used with things like computers, tablets and MP3 players, among others.

How does an equalizer work?

An equalizer is equipped with different slide controls that each affect a different part of the audible frequency spectrum. Normally, the frequency range goes from 20 to 20,000 Hz and each slider controls a different frequency range which can vary depending on the total number of controls. Often, there are 15 or 31 sliders.

Each slide control is essentially a filter that manipulates the pre-determined frequency range as well as just below and above the indicated values. It should be noted that from a technical perspective, it's virtually impossible to manipulate the frequencies to an exact number.



Unfortunately, equalizers don't work this way.

In practice, therefore, the indicated frequency refers to the peak of the curve which flows off in both directions. The further below or above the peak a frequency is, the less it is affected.

The strength of an equalizer can also be controlled. Normally, you can choose between +/- 6 dB although it's sometimes possible change the range to something like +/- 12 dB.

This means that you can control the volume of each frequency band separately by cutting or boosting its signal by 12 dB, for instance.

By doing this, you are lowering or raising a threshold or even creating a dip in your frequency spectrum. The effect of an equalizer on an audio signal can be compared to driving a car on a road. The smoother the road, the smoother the ride. Bigger bumps and holes will have a bigger effect on the ride in the same way that more extreme equalizer settings will have a more extreme affect on the sound.



What are the ideal settings?

An equalizer is not an amplifier

When the control for a specific frequency range is turned up (above 0), that part of the signal is given a slight boost, or in other words is lightly amplified. Because an equalizer is not designed to be an amplifier, however, it actually makes more sense to dampen other frequencies instead so that they are less prominent.

In this way, the equalizer is used more as a limiter, which doesn't distort the sound or negatively affect the dynamics. Listen well to the sound and try to figure out which frequencies are lacking. You can then adjust other frequencies until the one that's too low becomes more prominent. This gives you a better sound overall than amplifying certain frequencies.

To summarise: if a device is not an amplifier, don't use it as one.

In practice, however, making small adjustments is unlikely to be detrimental to the overall sound and in certain situations it may be necessary to quickly boost a frequency to improve the quality of the sound.

Not a bass booster

Equalizers are commonly used to give smaller speakers more low end. This can best be achieved by cutting some other frequencies (as described above). It can also be done by boosting the low frequencies themselves, but this can be detrimental to the overall sound quality.

You should also be aware of the fact that most small speakers aren't designed to reproduce prominent low tones, especially when they're built to handle a full range of frequencies.

At lower volume levels, these types of speakers probably won't be damaged, but at higher volume levels, the effect will be more pronounced, which can result in audible distortion and possible damage to the speakers.

Many amplifiers are also not designed to handle high levels of low frequencies as a huge amount of power is needed to amplify them properly. This means that the limit of your amplifier is likely to be reached much more quickly.

In most situations, using a separate subwoofer is the best solution. Contact your retailer if you need more advice about this.

Slide controls

The EQ series equalizers are equipped with sliders that can be used to adjust certain frequency ranges. The greater the number of controls, the more accurately the sound can be adjusted.

Functionality

The functionality of each equalizer model is different, which is why we have specified them separately.

Gain

The gain control is a type of volume knob that can be used to adjust the level of the input signal. In an ideal situation, the signal being sent out will be at the right level (not too quiet or too loud) when the value is set to 0 dB. In these situations, it can be left in this position. Adjustments may need to be made depending on the settings of the various frequency slide controls, however.

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In the event that you need to turn up the gain control in order to get a sufficient signal level, it's worth checking the output volume of the sound source first.

In the event that you need to turn down the gain control in order to prevent the sound from distorting, it's worth checking the output volume of the sound source first.

In practice, adjusting the gain signal by small amounts will not be detrimental to the overall signal quality.

Clip LED

This indicator lights up to show a heavily-distorted input signal. The LED will come on as soon as the signal is just 3 dB below the point of distortion and the closer the signal is to the distortion point, the more static the LED indicator will become. Ideally, you want to adjust the gain control, the sliders and the volume control to prevent the Clip LED from coming on at all.

EQ Bypass

The EQ bypass is a function that instantly overrides the settings of the slide controls. Other functions like the low cut filter, the gain control and the level meters are unaffected by the EQ bypass function.

Low cut

All of the equalizers have a low cut filter that can be turned on or off as required. A low cut filter removes low tones that are barely reproduced by normal speakers, leaving more room for the other frequencies.

The low cut filter starts at 50 Hz and dampens the lower frequencies by 12 dB / octave. If you're using a subwoofer as part of your setup, it is not recommended to use the low cut filter.

Output level LED

These LEDs indicate the strength of the output signal, which ideally should not exceed the level of 0 dB. This 'ideal' level can be identified when only the 0 dB LED lights up and the +10 and +18 dB LEDs are not illuminated. If the other LEDs light up, it's recommended to turn down the gain control to prevent distortion.

Range

The Range switch can be used to instantly lower or raise the level of all the slide controls simultaneously. Using a low range gives you a more accurate slide control adjustment. In order to make bigger adjustments, however, a bigger range should be used. The range of each channel on the equalizer can be adjusted separately.

The [EQ-15X2 Pro](#) and [EQ-31X2](#) have a range switch that gives settings of either +/- 6 or +/- 12. When the LED on the switch is illuminated, the +/- 12 dB mode is active.

The [EQ-31X2 Pro](#) has a range switch that gives adjustable settings from +/- 6 to +/- 15. Each setting has a separate LED indicator that clearly shows the selected range.

Housing

The EQ series equalizers can all be mounted in front or top-loading 19-inch racks or flight cases.

The equalizers take up either 1, 2 or 3 units of rack height space. Each device is equipped with rack ears that have pre-drilled holes for easy mounting. Rackware is not included as this can be different depending on the rack or case you have.

Inputs and outputs

The EQ series equalizers are equipped with various inputs and outputs. As standard, they have balanced XLR and balanced TRS jack inputs and outputs.

The PRO versions are equipped with gold-plated connectors and the EQ-31X2 Pro also has screw terminals for direct wire connections. This is ideal for rack mounting and installations because the ground connector is then connected to the power supply and housing via a metal strip. It's recommended to leave this setup as it is unless it causes interference in the audio signal. By removing the metal strip, the earthing connection between the audio signal and the power supply / housing will be broken (ground lift). This will also be the case if you use connectors other than the screw terminals. When connecting wires via the screw terminals,

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the contacts should be fitted with ferrules and/or cable lugs.

Because the inputs and outputs are connected to each other, it's possible to use a type 1 connector for the input and another type of connector for the output.

It's even possible to use the inputs and outputs as a sort of splitter where 1 pair of inputs and outputs is used with other equipment. So long as the sound is not split more than once, this is unlikely to have a noticeably detrimental effect on the sound quality.

Whenever possible, the XLR connectors on the device should be used as these are the most robust and the most reliable. This is especially true when multiple inputs and outputs are being used.

User applications

Generally speaking, equalizers like this are used in the following situations:

- to manipulate sound systems (speaker sets in live or studio applications)

Here, an equalizer is used to give the sound a certain character. This can be done simply to accommodate the preferences of the listener or to eliminate acoustic problems.

- prevent microphone feedback loops

The Devine EQ equalizers are equipped with separate inputs and outputs that are independent of each other. This means the 2 channels can be used for stereo as well as dual mono setups.

With microphones, an EQ can be used via your mixer as an insert in your signal chain that comes after the microphone amplification, allowing for further signal processing.

Things like speaker positioning (of PAs and monitors) and differences in microphone sensitivity can cause certain frequencies to create feedback loops. These will continue until the speaker and microphone are adjusted or repositioned.

Dampening certain frequency bands on the equalizer can help to solve sound issues by ensuring that problematic frequencies are not picked up by the microphone.

- manipulating (floor or side) monitor systems

When a floor monitor is used to give a musician their own sound mix in order to hear surrounding musicians, it can be handy to filter out certain frequencies. Low frequencies, for instance, are often filtered out as these travel further and tend to reach the musician from other sound sources anyway. The low-cut function is ideal for this.

Protection during transport

Products in the Devine EQ series are suitable for mobile use, but they should be adequately protected during transport. They are not waterproof and caution is therefore advised if they are taken outside during rain or in adverse weather conditions. If they are exposed to moisture in any form, ensure that they are completely dry again before use. Failure to do so may result in a short circuit, which could cause permanent damage or injury. Exposure to moisture can also cause visible or invisible corrosion which may cause damage in the long term.

Solving equalizer problems

If you have a problem with your equalizer, please consult this troubleshooting section for possible solutions. If, after consulting this section, the problem remains unresolved, please contact your dealer for more information and/or help.

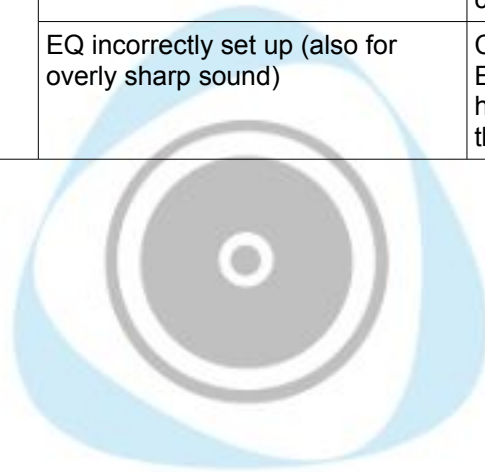
This troubleshooting section contains information on how to solve the most common equalizer problems, but it does not and cannot cover every eventuality. It is possible that you won't find your problem, cause and solution in this section due to differences between products.

Problem	Possible cause	Solution
Equalizer does not turn on with mains power	Power LED doesn't light up	If the equalizer is connected to an active power socket, the fuse has been checked and the power switch is ON but the power LED is not lighting up, there may be a problem with equalizer itself. In this case, the equalizer should be turned off again and you should contact your dealer for assistance.
	Problem with the power cable	Check that the power cable is plugged into an active power socket and the equalizer properly. Try using another cable of the same type to determine if there's a problem with the power cable and if there is, replace the faulty cable.
	Equalizer doesn't switch on	Check whether the switch on the back of the equalizer is in the 'ON' position. If it's connected to other switches, check that these are also in the 'ON' position.
No sound via one of the inputs	Cable not connected properly	Check to see that the cable between the audio source device and the equalizer is connected properly. A device always needs to be connected to one of the equalizer's inputs.
	Incorrect settings on source device	Check that the source device (e.g a mixer) is sending out a signal and that the appropriate channel fader is set to the correct level.
No sound from the equalizer's output	Input-related problem	Check that the problem isn't actually being caused by the input issue above.
Red Clip Limiter LED lights up often or continually	Volume is too high	Lower the equalizer's volume by using the gain controls or adjust the settings of the audio source. Prolonged exposure to distortion can cause permanent damage to your speaker system.
Distorted, clipping, crackling sound	Source device is transmitting a distorted signal	Check if any of the connected source devices are transmitting a distorted signal and turn down the volume on the device if necessary.

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	Volume control is too loud	Turn the volume down
	The tone controls for certain frequencies are too low or too high	Turn all the tone controls back to 12 o'clock and listen to see if clipping is still audible.
	Speaker or amplifier is faulty	If a speaker or amplifier is exposed to a loud, distorted, or clipped signal for a longer period of time, this can cause permanent damage to its internal components. If you suspect that this is the case, contact your local dealer for assistance.
Sound is dull	The speaker's tweeter could be faulty	Turn the speaker to an appropriate volume (ensure that it's not too loud) so that you can listen directly to the tweeter close to your ear. If the tweeter is not responding, it is probably defective and you should contact your dealer for assistance.
	EQ incorrectly set up (also for overly sharp sound)	Check that one (or more) of the EQ slide controls are not set too high and if they are, try returning them to a more neutral position.



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Specifications

General specifications for all models:

- suitable for manipulating the tone of a wide range of audio signals
- compact 19-inch 1U model to comprehensive 19-inch 3U model
- two-channel setup for dual mono or stereo use
- inputs and outputs with various connectors
- metal construction
- range switch (model specific)
- EQ bypass function (with retention of settings like gain, low-cut etc.)
- low cut function, works from 50 Hz and dampens the low frequencies by 12 dB / octave
- gain control, operated by rotary knob
- LED VU meter shows output level

Technical specifications per model:

Model	EQ-15X2 Pro	EQ-31X2	EQ-31X2 Pro
Frequency bands	15	31	31
Frequency band division	25 – 40 – 63 – 100 – 160 – 250 – 400 – 630 – 1k – 1.6k – 2.5k – 4k – 6.3k – 16k	20 – 25 – 31.5 – 40 – 50 – 63 – 80 – 100 – 125 – 160 – 200 – 250 – 315 – 400 – 500 – 630 – 830 – 1k – 1.25k – 1.6k – 2k – 2.5k – 3.15k – 4k – 5k – 6.3k – 8k – 10k – 12.5k – 16k – 20k	
Channels	2		
Range switch	+/- 6 and +/- 12 dB		+/- 6 and +/- 15 dB
Clip LED indicator	yes, at -3 dB		
Gain control	Rotary knob		
Low cut frequency	50 Hz, 12 dB/oct		
Frequency band fader length	2.54 mm / 1-inch with zero point		5.08 mm / 2-inch with zero point
Output dB VU meter	-10, 0, +10, +18 dB		
Inputs	– TRS jack plug – 3-pin XLR (locking)	– TRS jack plug – 3-pin XLR	– TRS jack plug – 3-pin XLR (locking) – wire clamp screw terminals
Outputs	– TRS jack plug – 3-pin XLR (locking)	– TRS jack plug – 3-pin XLR	– TRS jack plug – 3-pin XLR (locking) – wire clamp screw terminals
Size	19-inch, 1 U	19-inch, 2 U	19-inch, 3 U
on/off switch	none	front panel	rear
Operating voltage	230V AC, 50 Hz		
Power consumption	12 W	15 W	24 W
Dimensions	483 x 44.5 x 150 mm	483 x 89 x 130 mm	483 x 133.5 x 200 mm

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