

# Behringer Xenyx 1204FX Mixer

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When considering a piece of budget priced audio gear, it's important to understand a unit's strengths and weaknesses, to use it appropriately, and not push it beyond reasonable expectations. With that in mind, there can be a lot of bang for the buck. Let's see what \$170 (street price) buys from Behringer, a company who consistently sets the bar for low price with acceptable performance..

## Features

The Xenyx 1204FX is housed in a solid steel case with an internal power supply. The knobs and faders feel good, with smooth travel and without excess wobble. There are four mono input channels featuring Xenix mic preamps, phantom power, and a low cut filter. Mic inputs are electronically balanced on XLRs, with an input impedance of 2 k $\Omega$ . Phantom power (45V) supplies 10 mA to all four channels simultaneously. Good for Behringer!

Two stereo line level input channels, two stereo auxiliary returns (one normalled from the effect processor output), and a pair of Tape Input jacks complete the gozintas. There are no high impedance instrument inputs, so bring your own DI if you intend to plug in a guitar or bass.

Each input channel has a three band equalizer - 80 Hz and 12 kHz shelving and midrange boost/cut centered at 2.5 kHz. Mono channels have a pan control, stereo channels have a balance control which functions as a pan when a single input is connected to the left input of the pair. Each channel has two auxiliary sends, both post EQ. One is switchable pre or post fader, the other, post fader, is wired to the built-in effect processor, and is available on an output jack as well.

A Mute button with an associated yellow LED indicator switches the post-everything channel signal from the main L/R bus to the ALT 3-4 bus, a familiar architecture introduced by Mackie many years ago. The ALT bus has its own faders and output jacks, but there's no internal routing path that allows it to be a submix to the Main L/R bus. The Tape Inputs, normally intended for I recorder or DAW playback, can be switched to the Main outputs to provide intermission music. Control Room Monitor outputs can be fed from the L/R bus, the ALT bus, the Tape In jacks, or any combination of the three, so the ALT bus *can* be a submix to the control room outputs. Control Room outputs and Headphone jacks share a common level control.

Main outputs, balanced and differential on male XLR connectors, are duplicated unbalanced and 6 dB lower in level, on the Tape Out RCA jacks. All other outputs are balanced single ended ("impedance balanced") on 1/4" TRS jacks.

The effect processor has 100 presets with no adjustable parameters – just turn the knob to the number you want (there's a list of effects on the front panel) and push the button to select it. A foot switch jack is provided to mute the effects. Effects can be assigned to either the Main L/R or ALT 3-4 busses, handy if you're using the ALT bus for recording and want to record with effects.

A potentially handy knob sends the Aux Returns 1 signal to the Aux Send 1 bus, but Behringer missed the target here. Since Aux Send 1 can be switched pre-fader, it's the logical choice for a monitor or cue mix. Given the mixer's likely applications, having the built-in effects processor available to the monitor mix would be an attractive feature. Alas, the processor's output is normalised to the Aux Returns 2 jacks, which can only be routed to the Main or ALT busses. The control is a good idea, it's just wired to the wrong jacks so it's only useful if you connect an outboard effect processor's output to Returns 1.

Each channel has a Solo button with a global switch to select whether solo is pre (PFL) or post (AFL) fader/pan. The channel's Clip LED doubles as a Solo mode indicator, and a master LED (two, actually, red for AFL and green for PFL) indicates that something is soloed.

With neither channel inserts nor direct outputs, the only path from mic preamp to recorder is through either the Main or ALT bus, adding some extra electronics. Maximum output before clipping is a healthy +26 dBu at the XLR outputs and +20 dBu at all other outputs. 0 VU on the meters corresponds to +6 dBu at the main XLR outputs or 0 dBu at the Tape and ALT outputs. With the input trim fully clockwise and channel and main faders at their unity gain settings, gain from mic input to Main output is nominally 60 dB. At these settings and input terminated with 150Ω, output noise is -64 dBu.

Frequency response from mic or line input to main output is flat within ±1 dB up to 90 kHz. Low end response varies as a function of input gain. With 30 dB gain, 20 Hz is down 0.8 dB, while at maximum gain, 65 Hz is down 1 dB and 4 dB down at 20 Hz.

A Behringer UCA202 USB audio interface is included to add digital I/O capability to the mixer. The UCA202 is a 16-bit 44.1/48 kHz device, but its performance is decent, better than the sound card built into most computers. And wait! There's more – a pair of rack mount brackets.

## **In Use**

The 1204FX can serve as a small PA mixer or the control center for a tabletop recording studio. During the time I had it for review, I didn't have a suitably sized

PA gig on which to try it, but checked out routing options on the bench with a mockup of a typical club setup.

As a PA mixer, I used the Main outputs to feed powered speakers, For the studio setup, I connected the UCA202 to the Tape In and Tape Out jacks, using the Control Room outputs fed the monitors. The manual contains no suggested setup diagrams or tips, so beginners will likely have questions.

The Input Trim, because of an odd control taper (the relationship between knob rotation and gain) was the only major problem I encountered with the mixer. I work primarily with acoustic instruments where, with the mics I typically use, I need 45-60 dB gain. With that range squeezed into just one division of the Trim control's rotation, gain adjustment was finicky. The smoothly adjustable gain range of 25 to 40 dB is appropriate for kick-butt rock, but not gentle acoustic music. This sort of taper isn't unique to Behringer – I've seen it on other contemporary mixers, so I guess somebody likes it. Also, the Trim control was somewhat scratchy and there were a number of half-dB jumps throughout its range. You don't want to have to adjust this control while the tape is rolling or the band is playing softly on stage.

There's some evidence that the mix bus is shy on headroom. With active inputs on all channels, lowering the channel gains and pushing the Master fader above its unity position gives a cleaner mix than with the channel faders near unity gain. This is reminiscent of the Mackie mixers of a dozen years ago, with most users eventually learning this gain staging trick.

It would be more honest to call this a mixer with a nominal output level of around -6 dBu and gobs of headroom rather than +4 dBu, with a bus that runs too close to clipping when mixing a loud band.

In another gain structure issue, the UCA202 A/D converter has no level controls. Being a nominal -10 dBV I/O device, it hits digital full scale when the mixer's VU meters are barely above 0 (half scale). This actually matches up nicely for acoustic recordings with the preamp Trim set below the "Big Bang" We tend to run a PA system more by ear than by meter, however, so when recording the board mix, it would be very easy to clip the UCA202 when the PA still has plenty of headroom.

This comment could apply to the Tape Outputs instead of the UCA202. I only picked on the UCA202 because it's included in the package. These days Tape Outputs are equally likely to be connected to a portable flash memory recorder, many of which will overload before the mixer's meters hit the +10 LED. I wish manufacturers would recognize this and either just pad those outputs down by 10 dB or include a jumper better match the output level to the recording device.

The high and low shelving EQ works as expected, but the midrange EQ (actually centered closer to 2.1 kHz than the nominal 2.5 kHz) is extremely broad, having a Q of approximately 0.16. It's more like a volume control with a very mild presence boost.

With 100 effect processor presets, there's bound to be a few you'll find useful. To me, the rooms sounded boomy and the plates too metallic, but the smaller hall reverbs were OK. The spring sounds like an old guitar amplifier (a good thing). I didn't get much out of the chorus, and the pitch shift was just plain odd.

## **The Inevitable Comparison**

Comparison with the other -nyx mixer is unavoidable (Behringer swears they picked the name Xenyx before they saw a Mackie Onyx) so here goes: On a Mackie Onyx 1220 with a mic input terminated in 150Ω, gain trim fully clockwise, and the channel and main faders set to their unity gain positions, the noise level at the main output measures -70 dBu. This is 7 dB quieter than the Behringer, and the noise is yet 2 dB lower at the Onyx Recording output. The Onyx low end frequency response beats the Xenyx, being only 1 dB down at 20 Hz at full gain, though the Xenyx's low frequency rolloff is similar to that of the Mackie VLZ Pro series.

Upon listening to several different microphones through the Xenyx, a Mackie Onyx and a Mackie VLZ3 side by side, the Onyx was the clear winner as might be expected considering the price differential. Neither the VLZ3 nor the Xenyx has the full low end of the Onyx, and while all compared favorably in the midrange, the Xenyx wasn't as open at the top as the Onyx or VLZ3. A small boost of the high frequency channel EQ brought its top end pretty close to the VLZ3 but the low end difference isn't easily fixed with EQ. When listening to a single track, the higher noise floor of the Xenyx wasn't bothersome, but noise likely to build up faster than the Onyx in a multitrack mix.

When it comes to features and price, the Mackie DFX-12 or DFX-6 actually comes closer to the Xenyx 1204FX, though the DFX lacks the ALT bus, it offers inserts which get your recording interface closer to the mic preamps.

## **Conclusions**

The Behringer Xenyx 1204FX is a workable mixer if you can handle the input gain adjustment. It'll work fine for a coffee house gig or as a podcasting or demo production mixer. If you're considering it as the front and back end (mic preamps and monitor control) of a DAW-based system, remember that it's a \$200 mixer and you'll run into its limitations sooner than if you spent more money up front. But for those on a really tight budget, it's an inexpensive entry into the "hands on" mixing world and it would be a great learning tool.

While the effect processor might be useful for live work, you'll probably find it lacking for music recording. The same mixer is available without the FX as the model 1204, and I'd recommend that version if you don't have an interest in using it for live sound work. In the non-FX version, Behringer took advantage of the panel space occupied by the effects display and control and stretched out the VU meters, adding four more LEDs to the ladder and improving the resolution.

The manual is clear and complete (and in many languages), but it's a reference, not an operating or hookup guide. Given that for most buyers, this will be an entry level mixer, the manual should offer some more practical guidance.

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### Fast Facts

*Application:* Small PA, personal recording

#### *Key Features*

4 mic/line, 2 stereo line input channels, 100 preset effects, includes 16-bit 44.1/48 kHz stereo USB I/O interface. 100-240V universal internal power supply

*Price:* \$209.99 list, \$170 typical street price.

\$30 less loses the effects, adds higher resolution meters

*Contact:* <http://www.behringer.com>

USA: (425) 672-0816

Germany: +49 2154 9206 0

### Product Points



Solid steel case, good feeling controls, internal power supply

Straightforward layout

A few effects usable for PA applications



No inserts, no direct preamp outputs, no instrument inputs

Preamp Trim adjustment is touchy near the top of the control range

Low frequency response drops off at high gain

A bit noisy

Effects quality mediocre

No 1/4" jack outputs for the Main mix (I *never* thought I'd say that!)

Odd routing choice for the "effects to monitor" control

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## Sidebar

### *The Big Bang Theory*

When I first checked out this mixer, I was about to declare it unusable because there was a 20 dB gain jump at the very end of the rotation of the Trim control, right in the gain range which, for my applications, was most needed. This wasn't just a rapid increase in gain over a small amount of rotation, it was like a switch. Since all four mic channels behaved the same way, I contacted Behringer, asking if perhaps there had been a production change, or perhaps a bad batch of pots that got through QC.

I received two answers, one from Tech Support saying that's the way it was supposed to be. The other answer came a little later, and from a buddy at Behringer US who ran my question up to headquarters. He found that there had indeed been a run of mixers with incorrect pots that slipped through a crack, and he sent me another mixer. The control action on second mixer was steep at the ends and relatively flat in the middle but it was probably what Tech Support thought I was describing. The "big bang" at the top end of the control was gone, however, and with some care, I was able to work with it.

There's a method in this madness - to put most of the working range of the control in the area that (the proverbial) most people will be using most of the time. For a drum, an electric guitar, or a strong singer working close to a modern microphone, 30-40 dB of gain is about right. For a gut strung banjo with the mic a foot and a half away, you need 50-60 dB of gain.

One whose marketing hat was a little skewed might say that it's designed so that by turning the knob half way up, you won't go too far wrong most of the time. Users tend to be uncomfortable if they have to turn a knob too far or not far enough to get the result they expect. I see frequent forum posts about "my preamp isn't hot enough" because in order to fill up the waveform graphic on their DAW, they need to turn the gain nearly all the way up. So by designing a control with a wide mid-range that's about right, the users think that the gear is working the way it's supposed to, and that makes for happy customers. From a marketing standpoint, this is a good thing.

If they gave the Trim control a 40 dB range, made gain linear with rotation, and put a 20 dB pad switch ahead of it, then the knob would be close to the center either with "normal" (loud) or "pretty quiet" sources. Of course that would add to the cost of the mixer, and some instruction to beginners would be necessary to explain how the knob and pad switch interact. Given the target price and target users, Behringer has probably made a good design compromise. On an \$8,000 studio console, however, I'd expect different.

Behringer 1204FX Trim Action

