

# Xilica XD-4080

By Mark Frink

Toronto, Canada-based Xilica Audio Design is a manufacturer of stand-alone DSP systems. Principal Engineer Donny Chow is a familiar face at trade shows, as many of his best customers are OEM manufacturers who rely on his designs for their own branded system processors. If you look closely at this processor, and then around our industry, you'll easily recognize his work.

There are two XD models: the 4x8 XD-4080, reviewed here, and the 8x8 XD-8080, which is more of an installation piece. As such, it comes with Phoenix connectors instead of XLRs. Both products are distinguished by digital I/O on a female DB-25 connector and by the ability to employ FIR filters.

Otherwise, the 40-bit floating point DSP and high performance 96k/24-bit converters are identical to those in Xilica's analog-only XP models: the XP-2040, XP-2060 and XP-4080, which also employ a slightly smaller display. The analog-only XP-8080 again has Phoenix connectors for the installation market. There are two alternate models, the XD-4080M and XD-8080M, which also provide mic pre-amp inputs with 45 dB of gain in 3dB steps, useful for room-combining applications.

Five-LED metering provides signal indication with three green LEDs for -30, -12 and -6dB, a yellow -3dB LED and a red over/limit LED. Each input's red LED references maximum headroom, while each output's red LED indicates the threshold of the output limiter. Below each channel's metering are mute and select buttons, which sensibly illuminate as red and green, respectively, when engaged. The display has a generous four line, 26-character backlit LCD and next to it are the menu navigation buttons: menu up and down, cursor up and down, enter and exit. On the front panel far left are conveniently located USB and RS232 connectors.

Both the XD and XP processors are 9 inches deep, weigh 10 pounds and are the typical single rack-space. They all operate on any international AC from 100 to 240 volts.

All of these processors are assisted by the same XConsole Windows-based application for programming and control of the devices via either the front USB or rear Ethernet connection, the latter allowing wireless control with a WiFi router. Using VNC or a slate PC, wireless control of the Xilica is possible.

Holding an input or output channel select button and pressing another (of the same, input or output) links those channels together, indicated by their green LEDs illuminating together, and data changed for the selected channel is applied to the linked channels as well, handy for stereo applications.

Every input and output channel has a generous 8 bands of EQ that, in addition to being parametric EQ, can also be low- or high-shelf and first- or second-order all-pass filters.

Every input channel also has a 31-band graphic EQ, allowing loudspeaker designers to employ the 8-band output PEQ for enclosure optimization and systems engineers to use the 8-band input PEQ for array and room tuning, while leaving the graphic EQs for the artist's mix engineer to make final adjustments to taste.

Both the XP and XD have an industry-standard choice of Bessel, Butterworth or Linkwitz-Riley crossovers with slopes from

6 to 48 dB-per-octave. Under General Settings, the EQ and crossover settings can be made in either 1 Hz increments or 36 steps per octave.

Input compressors have ratios up to 40:1 and thresholds from -20 to +20dBu in 0.5dB steps, with attack times from 0.3 to 100 ms and five release times from 2x to 32x. The outputs' brick-wall (40:1 fixed) limiters have the same threshold, attack and release. Each output can have each input sent to it from — inf. to 0 dB, acting as a mix matrix if needed. Input and output channels have 6-character names ("L\_SUB," "R\_HIGH," etc.), while the 30 presets can have 12 character names ("JBL\_AS\_3XFIR").

## Hard Case FOH

For this review, we chose a hard case: The Jacksonville Symphony's 18-year-old JBL Architectural Series PA, which gets dragged out for smaller pops shows, when renting a sound company system isn't in the budget — a pair of AS2215-64 single-15 two-way trapezoids and dual 18-inch subs with 2241 drivers. Thankfully, due to a recent refit, these are powered with three QSC Audio PLX amps: a 1602, a 3002 and two bridged 3402s for the subs). Unfortunately, these were crossed over with an old 48 kHz "PA" processor.

After we installed the XD-4080, it was a straightforward process of choosing our crossovers and examining the unequalized response (easy as a single-cabinet array) with SMAART. We employed Linkwitz-Riley 48 dB filters at 80 and 1800 Hz, building our first preset entirely from the front panel controls to get a feel for them.

Xilica's data encoder is a distinctive rotary thumb wheel that employs velocity

sensing to quickly make larger changes. This unique encoder initially seems impractically stylish, but its functionality (which more products should employ) quickly becomes apparent. Additionally, when changing frequency (and delay), moving this encoder while pressing "Enter" changes values by 100X.

We proceeded to quickly "lop off the tops of the mountains," especially in the full-range AS2215, using all 8 parametric filters in both bands. Anyone who remembers the Architecture Series, or is familiar with JBL's 2225 and 2446 components in other enclosures, knows they benefit from precise EQ work in the mids and highs. Companies with these drivers in proprietary wedges should consider either Xilica 4080 for 4-mix amp racks.

We easily performed all this in a few hours after the symphony's maestro suddenly cancelled an afternoon rehearsal, and then we used the system for our show that night. It was night and day, like getting a new system for the price of new DSP.

## FIR? What FIR? FOH

We later went back and replaced the mid-high LR48 crossover with a FIR crossover (Finite Impulse Response), writing a new preset so we could go back and forth. This tightened up 1800 Hz and eliminated the need for our out-of-band HF EQ at 1500 Hz. We next noticed that employing more FIR taps made the slopes steeper, choosing to go with 200 instead of 150.

The number of FIR taps assigned are paired for outputs 1&2, 3&4, etc., so when using FIR filters for stereo systems, it's best to pair left and right bands, making linking them easier too. The sum of all taps cannot

exceed 1500, and maximum taps per pair is 1200, with a minimum of 50.

This means crossover points below 210 Hz aren't possible with FIR, so sub-woofers will always employ IIR filters, which you would want anyway, due to the latency issue. That said, there are plenty of taps for any other combination of mid- and high-frequency FIR crossovers (stereo 4-way, quad bi-amp, etc.).

Like all FIR filters, there's a larger latency penalty for using them at lower frequencies, where more taps are required. Using more taps at the same frequency provides a steeper slope, but induces more delay. For example, the maximum of 1200 taps would create a 6.25 ms delay. For our 1800 Hz crossover with 200 taps, the delay was about 1 ms — quite acceptable for monitors and other two-way enclosures.

Instead of the front panel controls, this time we used Xilica's XConsole Windows application connected via USB. After a couple of hiccups ("O.E.," quickly addressed by Xilica's fast, friendly tech support), we were able to adjust the parameters more quickly on XConsole than from the front panel to configure our FIR preset. I'm not sure the extra cost of the FIR filters is justified in this particular case for our legacy system, but for newer systems, particularly line arrays, it would make a bigger difference, and the added ability to create all-digital drive would be good in larger venues.

## Conclusion FOH

If you don't need XD's FIR filters or digital I/O, Xilica's XP, analog-only processors provide the same great performance for much less, saving about a third with the 4080. An afternoon with a Xilica processor this winter might be just what you need to breathe some life into your old mains (or wedges). **FOH**

