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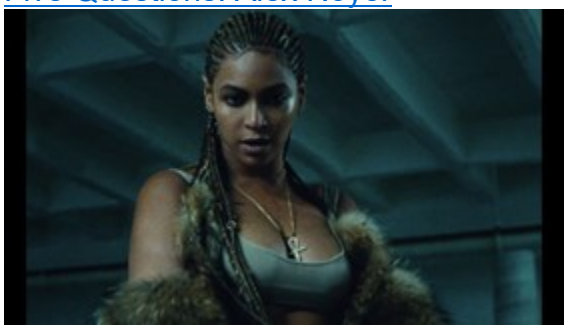

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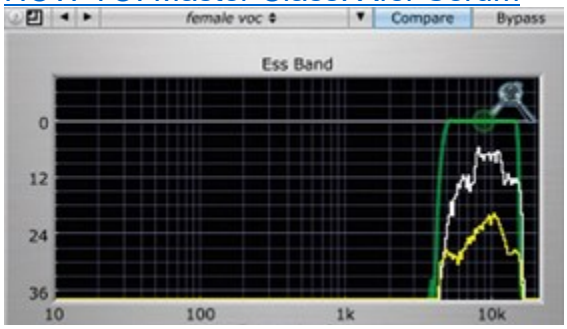

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BEHRINGER DDX3216

BY NICK BATZDORF
October 1, 2002

It's hard to describe Behringer's new DDX3216 digital mixer without sounding like an infomercial. What if I told you that this board lists for $1,999 and has a potential 32 simultaneously available inputs, 4 internal effects processors, full dynamic and snapshot automation, and a total of 17 ALPS 100 mm motorized faders? That's not enough? Then what if I threw in a total of 6 D/A converters, 12 mic/line inputs and 4 line inputs, and parametric EQ and dynamics on every channel? What, you want more? Okay, how about 16-stage LED meters next to each fader and 17 Channel Control lighted rotary encoders?

The DDX3216 is that kind of product. It's not that those features are revolutionary — it's that you get them all on a mixer that costs less than $2,000. The features just keep piling up: 24-bit conversion, SMPTE time-code input, MIDI Time Code (MTC) input and output (the unit can generate MTC), word-clock in and out, and even a PC Card slot for storing settings and mixes. Clearly, Behringer has done a championship job in the features-per-dollar category (actually, make that features-per-euro — the company is German).

JUDGING BY THE COVER

The 24-bit, 44.1 or 48 kHz DDX3216 is a relatively small and narrow mixer (with the included rack ears, the unit is 19 inches wide by 22.5 inches deep), with an angled top panel that rises gently to a horizontal jack field at the back (see **Fig. 1**). Though aesthetically it may be more pleasing to have all cables out of sight at the rear, the top-panel location is more convenient — and mandatory if the mixer is racked.

Despite its size, this little board provides close to the same number of ins and outs as many larger digital mixers. Though its panel is busy and its faders appear to be close together, there's plenty of room for normal-size fingers to get at all the controls, and the faders don't feel cramped.

Speaking of faders, they are one of the first things you notice about the DDX3216. They feel every bit as good as the motorized faders on some higher-end digital mixers, and they're considerably quieter than many. Motorized faders tend to chatter loudly when they're paired or grouped with others; these barely peep. However, you don't want to push down on the faders too hard, or they'll bottom out. They're not touch sensitive, either, which means they can't automatically “feel” when you're punching in replacement fader-automation moves. Still, if

they were spaced farther apart and had larger finger pads, the faders would feel perfectly at home on a digital console costing more than twice as much.

The LCDs on most midpriced digital mixers are two times the size of the DDX3216's, which means you're going to be doing some window-hopping. But the menus are well organized, the graphics are clear, and the six knobs and four buttons dedicated to screen navigation let you move around pretty quickly. Also, the LED meters next to the channels take the place of the onscreen meters on other digital mixers, saving screen real estate and making it unnecessary for Behringer to offer a meter bridge.

The DDX3216 has much in common with other digital mixers, so those people who have worked with other units should be able to find their way around this board pretty easily with only a cursory read of the manual. The unit's faders are layered into banks, with the topmost row of buttons determining the active layer (channels 1 through 16, 17 through 32, bus outs, or sends). Below that, in the switch matrix, buttons determine what the Channel Control rotary encoders (one per channel) adjust: pans, send levels to one of the four auxes, or levels to one of the four effects processors. Each knob is encircled by 12 lighted “spokes” to indicate its approximate position. Actual resolutions, however, are much finer than those indicated by positions of the spoke lights.

Individual channel settings — routing, EQ, gating, compression, and delay (which is available only on analog channels 1 through 16) — are accessed by a shared set of buttons. As with all digital consoles, the Select button you push determines which channel is to be operated on.

In short, the designers did a good job of making this mixer's interface easy to navigate, and the display tells you what to push whenever there's any question. That operation could be streamlined with some shortcuts, though. On the Panasonic DA7, for example, hitting Select and Mute at the same time snaps a fader to unity gain, and simultaneously pushing the Select buttons on two adjacent channels pairs them. However, on the DDX3216, you can zero master fader and aux or effects sends by pushing down on encoder knobs next to the display.

Fortunately, the board's operating software is in flash memory, so it can be updated as improvements arrive. Updates can be downloaded from the Behringer Web site. Unfortunately, though, the DDX3216 File Exchange software — a file librarian for this and other kinds of bulk mixer data — is available for Windows only, not Macintosh. You can also do updates through the PC Card slot, so one work-around is to find a Windows machine with a PC Card writer.

The DDX3216 stores as many as 128 snapshot files, which reflect the state of the board (except, of course, for analog settings such as control-room and headphone levels) at any time. You can choose which parameters are to be recalled from stored snapshots — a nice feature. However, the board can hold only one dynamically automated mix at a time in its battery-backed memory — you don't lose the mix when you power down — so to store multiple mixes, you definitely need to use the DDX3216 File Exchange software, PC flash memory, or a device that stores bulk MIDI dumps.

The DDX3216 gets warm with use, but it didn't get hot or start acting strangely after I left it on for 48 hours straight. It has a fan on one side — something to consider in rackmounted installations — but fortunately, the fan is quiet, and that's coming from someone who's sensitive to fan noise.

My only quibble about the board's ergonomics is that your head must often hover over the middle of the panel — that's the only way to see the Channel Control encoders if they're at 12 o'clock. You must also get close to the button matrix at the upper left to read the black-on-silver labeling. Plan on putting the board where you can belly right up to it, especially at first, when you're learning your way around.

CONVERSION EXPERIENCE

In order for the DDX3216 to reach its full 24- or 32-input by 16-bus potential, one or both of its two rear-panel slots must be outfitted with optional digital I/O cards. Behringer offers 16-channel ADAT and TDIF cards and 8-channel AES/EBU cards (see **Fig. 2**). You can assign inputs and outputs in blocks of eight, mixing and matching to suit your needs. No analog card is available, but you can always connect additional A/D converters to the digital cards if you need more analog inputs.

I worked with a stock unit, which has just the analog I/O and a stereo S/PDIF digital I/O pair and no digital I/O cards. Unlike the cards' digital inputs, the S/PDIF input is asynchronous, meaning that it will accept a range of sampling rates and convert them to the board's current operating rate. That handy feature solves the common problem of having to switch digital-clock sources when monitoring DAT machines.

The 16 analog inputs consist of 12 mic/line channels and 4 line-level channels, all mono and all balanced; there are no aux returns for external effects. (It's typical for budget and midpriced digital mixers to have a short supply of A/D/A converters as a way of keeping costs under control.)

Inputs 1 through 12 provide pre-A/D-converter, unbalanced insert send/returns and 20 dB attenuation pads. Phantom power for condenser mics is available in two groups of six inputs. These channels have both XLR mic and ¼-inch TRS line-level inputs in parallel. But, of course, they're not active simultaneously — anything plugged in to the line input takes precedence.

The mic preamps provide 60 dB of gain — enough oomph to work with anything from low-output ribbon mics on up. Inputs 13 through 16 have ¼-inch inputs only (accommodating line-level signals from -20 to +20 dBV) and no inserts.

The only analog outputs not on the top panel are on the rear: two Control Room, four assignable Multi Outputs (all on balanced ¼-inch TRS jacks), and the main XLR balanced L/R outs. Other than the XLR jack for SMPTE time-code input, all the other rear-panel connections are digital: S/PDIF in and out, RS232 serial port for connection to a PC, word-clock in and out, and MIDI In, Out, and Thru.

In addition to sending and receiving MIDI Time Code, the DDX3216 can transmit its automation moves as continuous controllers that can be recorded to an external sequencer. Snapshots of the state of the device can be switched with program changes, and other settings such as EQ and dynamics can also be recalled. Unfortunately, there's no MIDI fader layer to allow remote control of external devices (such as digital-audio-workstation onscreen mixers); however, the DDX3216's transport buttons can control other devices using MIDI Machine Control.

Behringer touts the board's 24-bit AKM A/D and Crystal D/A converters, and in general the analog audio quality is higher than I would have expected from a $2,000 digital mixer. The mic preamps are nice and quiet, with sound quality in line with my expectations. I've heard better- and worse-sounding digital boards, but I haven't heard one that sounds better for less than five grand.

GRASS ROUTES

The DDX3216 has a total of six D/A converters. Four of them go to the Multi Outputs, which can carry a choice of signals. Aux sends are the most likely candidate for those outputs, but they can also carry signals from some of the 16 regular buses, the effects sends, the solo bus, or the main stereo L/R bus. The other two D/A converters handle various incarnations of the main stereo bus: XLR balanced outs and control-room monitor and headphone outs.

It's somewhat surprising to see RCA tape outputs and returns. Now that it's so cheap to burn CDs, cassette decks have waned in popularity. But they are still around, so the DDX3216 has you covered. The tape returns can be routed to inputs 15 and 16 (borrowing their A/D converters) or directly to the control-room outs.

One interesting feature is that the actual fader channels aren't hardwired — the inputs and buses can all be routed, eight at a time, to any block of eight faders. For example, you'd normally expect to have the 16 analog inputs routed to channels 1 through 16 and the digital inputs to 17 through 32. But if you were feeling wacky, you could, for example, just as easily set up the board with faders 1 through 8 controlling eight of the main buses, 9 through 16 controlling the second eight ADAT Lightpipe inputs (from a digital I/O card), 17 through 24 controlling eight TDIF inputs (from a second digital card), and 25 through 32 controlling another eight main buses.

CHANNEL TOUR

The DDX3216 has no stereo inputs — all its inputs are genuine mono inputs. Like all digital mixers, however, it does allow you to make adjacent channels into a pair, so that when you move the fader on either channel, the other fader follows it. Paired faders share channel settings (EQ, dynamics, and so on), and their pan controls join together to become stereo balance controls. Oddly, paired faders can't be offset to different levels — the right fader snaps to the left one's level. Something to look at for the next software release?

You can also connect as many as eight fader groups per fader layer, and members don't have to be adjacent, though they do have to be on the same layer — a minor limitation that seems unnecessary. Unlike pairs, grouped faders don't share channel settings. They can also be offset from each other, and their movements are scaled, meaning that their levels change by the same percentage when moved. So channels that start off higher travel a greater distance when you slide any fader in the group.

Before affordable digital mixers came along just a few years ago, group muting was a feature found only on expensive boards. Not only does the DDX3216 provide group muting, but it also lets you set up groups with channels in the same or opposite on/off states. That is useful for comparing two sets of channels — one set gets muted, whereas the other is active.

The DDX3216 lets you store libraries of EQ, gate, and compression settings. You can save as many as 127 of each, a feature that's useful if you regularly record certain instruments using the same recording chains. (It would be nice if that kind of list wrapped around, by the way — scrolling to No. 127 takes a long time.)

Rather than a standard in/out switch, the DDX3216 provides an A/B edit/compare switch for most of the channel and effects settings. Even though it often clicks between settings, it's a useful feature.

Four overlapping bands of fully parametric EQ, with a boost/cut range of 18 dB, are available on each of the 32 channels. The Q (bandwidth) range is 0.1 to 10 — from very surgical to very broad.

You can also switch the upper and lower bands to low-cut, high-cut, or shelving types of EQ. Shelves are for overall “make it brighter, bassier, duller, or less boomy” adjustments — the type of EQ you find at the high and low bands on most consoles — and the cut filters simply roll off everything below the cutoff frequency.

The compressors and the gates can be keyed from channels 1 through 24 (but not 25 through 32, for some reason), a welcome feature that is lacking on digital boards of similar price and size. All the standard gating and compression parameters are there, including a nice bonus: variable-knee compression. That lets you dial in how gradual the onset of compression is as the signal approaches threshold.

Channel delay is a standard feature on digital mixers, but the DDX3216's delays also feature a wet/dry level control and feedback. Thus, in addition to using it to compensate for things such as mic positioning, you can use channel delay as an effect. The maximum delay time is 300 ms, with minimum settings in the single-sample range. Thoughtfully, delay times are displayed in samples, milliseconds, and musical values; it's too bad, though, that delay is available only on the analog channels.

EFFECTIVE NOW

The DDX3216 is powered by four Analog Devices SHARC processors, which means that its engine packs a kick like a mule. That's part of the reason the overall quality of the effects is so high.

Most of the effects are mono in/stereo out, and most have eight adjustable parameters — plenty to let you customize the programs. You can even automate parameter changes, which is a feature that's become particularly important in certain contemporary-music styles.

The effects collection includes various reverbs (including a simulated spring reverb), delays and delay-modulation effects (flange, chorus, and so on), pitch shifting, an enhancer, and ring modulation. It also includes a couple of effects that are very much du jour: LoFi (bit-reduction grunge) and an autofilter. Unlike the effects processors added almost casually to some digital boards, this selection really adds value to the mixer. You could easily produce credible mixes using just this board.

DIGITAL DETAILS

At and above 10 dB below nominal, the DDX3216's fader resolution is in approximately 0.2 dB steps, which is good for a budget digital mixer. Below -10, the resolution goes down to 1 dB, which is adequate. Yet I didn't hear any zippering on fades, so it's possible the board interpolates between positions internally.

The board's panning resolution is in 60 steps — fine enough to avoid zippering during sweeps and plenty for setting up relationships between instruments in the stereo field. Other features, such as word-clock I/O and selectable noise-shaped dither on the digital outputs, show that Behringer didn't gloss over important details.

NO HANDS

The DDX3216's onboard automation sequencer is easy to learn and use; you just enable the automation parameters you want to record and go. With the notable exception of “offline” event editing, all the standard features are there: a trim mode that lets you change the overall level of a fader that has rides written already, a programmable fader-return time or write-to-end option, and so forth.

Motorized boards that don't have touch-sensitive faders use one of two methods to sense when you're punching in automation overwrites. The first is some sort of “clutch” button or footpedal that disengages the fader from the motor while it is being depressed. The other, used on the DDX3216, simply senses the resistance when you move a fader; you punch out by stopping the machine supplying time code or hitting Stop (or some other button).

Some people find the resistance-sensing method a bit harder to use, so it would be nice if both types were available. Also, the Undo function isn't at the top level in the display. Given that many of a $2,000 mixer's users are likely to be new to all this, it should probably have been more accessible. But it's great that the DDX3216 provides two levels of undo.

UPPING THE ANTE

Anyone considering a digital mixer near this price range is advised to take a serious look at the Behringer DDX3216. An automated console of this quality, with its potential 32 inputs and 20 outputs, is already appealing, but the 4 high-quality effects processors put the DDX3216 over the top. The entry-level to the world of digital consoles is now quite a bit higher — and that's saying a lot, considering it was none too shabby even before the DDX3216 came along.

Nick Batzdorf *writes articles and music in Los Angeles. He was the editor of another industry magazine for a decade but is now kicking back and enjoying the freelance easy life of hot tubs, jets, parties, and Florida swampland sales*.

DDX3216 Specifications

Mixer Configuration	32 × 16 × 2
Channel EQ	4-band parametric; highpass filter

Faders	(17) 100 mm ALPS motorized (not touch-sensitive); (256) steps
Digital Signal Processing	32-bit floating-point
Sampling Rates	44.1, 48 kHz
Effects Processors	4
Dynamics Processors	gate; compressor
Attenuation Pads	(12) 20 dB
Analog Inputs	(12) balanced XLR; (4) balanced ¼"
Analog Outputs	(2) servo-balanced XLR (main); (4) balanced ¼" TRS (Multi); (2) balanced ¼" TRS (control room)
Digital I/O	(1 pr.) S/PDIF on RCA connectors
Inserts	12
Other Ports	word-clock I/O on BNC connectors; SMPTE input on XLR connector; RS232 (serial port) on 9-pin DIN connector; MIDI In, Out, Thru
A/D Converters	24-bit delta-sigma (AKM)
D/A Converters	24-bit delta-sigma (Crystal)
Synchronization	SMPTE, MTC, or internal clock
MIDI Implementation	MMC, Program Changes, Control Changes, SysEx
Display	1.50" × 5.25" LCD
Options	ADT1616 ADAT digital interface; TDIF1616 digital interface; AES808 AES/EBU digital interface; ACB808P rack box for AES808
Latency (channel input to main out)	<1.6 ms @ 48 kHz
Frequency Response	20 Hz-20 kHz (±1 dB)
Signal-to-Noise Ratio	95 dB (mic inputs 1-12); 92 dB (line inputs 13-16)
Total Harmonic Distortion + Noise	0.05% (mic inputs 1-12); 0.02% (line inputs 13-16)
Crosstalk	•85 dB (mic inputs 1-12); •90 dB (line inputs 13-16)
Power	internal
Dimensions	17.25" (W) × 6.50" (H) × 22.50" (D)
Weight	29.75 lb.

PRODUCT SUMMARY

Behringer
DDX3216
digital mixer
$1,999

FEATURES	**4.0**
EASE OF USE	**4.5**
AUDIO QUALITY	**3.5**
VALUE	**5.0**
RATING PRODUCTS FROM 1 TO 5	

PROS: Big feature set, including EQ/gate/compression on all inputs, channel delay on analog inputs, and lighted, multifunction rotary knobs on all channels. Pleasing and easy-to-use interface. Nice-quality motorized faders. Four good internal effects processors. Solid dynamic and snapshot automation.

CONS: File Exchange software is for Windows only. No MIDI fader layer. No offline event-list automation editing.

Manufacturer

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Web www.behringer.com or www.ddx3216.com

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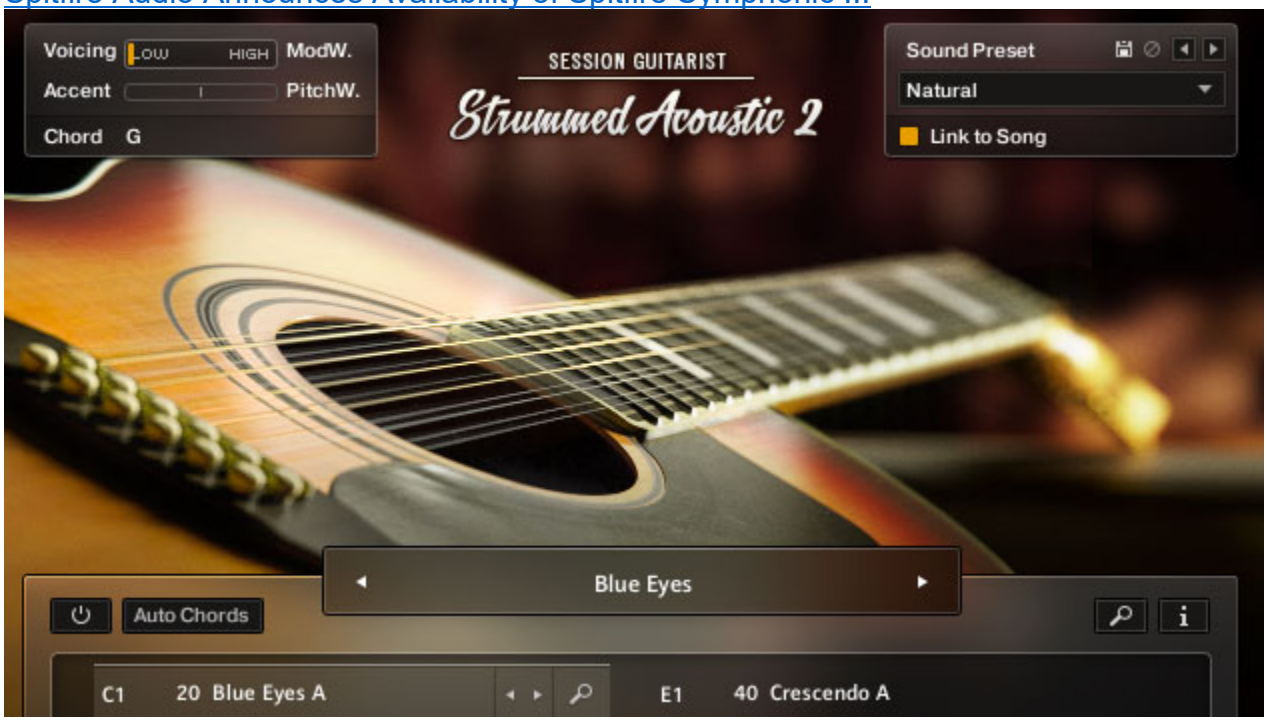

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