



Also available in black

HDP-3

Reference DEQX-HD™ Processor Pre-amp

Background: thirty years to DEQX-HD™

There's something extraordinary about the experience of hearing a truly realistic sound system playing an inspired musical performance.

Fortunately, many inspired musical performances abound, and many recorded in the last twenty years were recorded and mastered in the 24/96 format we now call HD-media. But whatever the resolution of the media, finding a truly realistic sound system that can deliver its potential (affordably) is difficult.

The pro-audio world of recording, production and distribution is called the audio 'A-chain'. So not surprisingly, the hi-fi world involving playback equipment is called the B-chain. Now that the A-chain people have begun distributing their original 24/96 HD-media on the Internet, it's time to take a fresh look at our hi-fi systems that still don't sound 'real' despite the three-fold resolution bonus that 24/96 delivers.

We hear 'real' sound all day long. So, unconsciously we notice when our hi-fi plays familiar sounds such as voice and musical instruments where some frequencies play louder or softer than we expect. We're also aware (somehow) when some frequencies seem incoherent with others. Of course we don't know which frequencies or by how much, but we know its *not* 'real'.

Now that digital audio distribution can occur at the high resolution that our hi-fi systems can finally deal with, **our passive loudspeakers have become by far the weakest link to audio realism.**

DEQX was founded in the late 90's to resolve the intransigent problems of loudspeaker design that only a new generation of Digital Signal Processing (DSP) can address. Today, its DEQX-HD™ technology is found in highest-end professional audio systems and more affordable audiophile systems.



"The DEQX HDP-3 is an incredibly powerful tool for audio enthusiasts"

Edgar Kramer, Six Moons

DEQX™

HDP3 Overview: an audio tool-kit like no other

DEQX's third generation HDP3 can provide all or part of DEQX-HD's unique ability to improve the sense of realism from any loudspeaker. Configured as a stereo preamplifier-processor, it has two digital and two analogue inputs, a measurement microphone input and USB port for connecting to a PC or Mac for set up. Its six analogue outputs provide up to 3-way active crossover outputs.

The HDP3 can be used at many levels. For example, it provides DEQX's unique ability to measure and correct timing, phase and frequency-response of a speaker's native anechoic behaviour. Almost any coloration disallows DEQX's goal of being-there reality but passive speakers just can't help themselves. Their mechanics, however refined, are fundamentally error-prone. Fortunately, their linear error is predictable if measured anechoically, so DEQX compensates the speaker's signal in detail.

Simultaneously with frequency-response correction, HDP3 corrects group-delay errors. These are the frequency-related timing errors that passive crossovers and speaker drivers inflict at many and varying degree. These timing errors are another block to our goal of the being there reality experience. Just as we are subconsciously aware of volume sounding unbalanced at some frequencies (frequency-response errors), so too are we aware when musical flow and coherence is amiss.

The HDP3 can help solve the problems mentioned above in existing passive speakers driven by a single amplifier. If bass extension is lacking from existing speakers, it can also be used to integrate mono or stereo subwoofers, then provide time domain room correction.

If full-range passive speakers are bi-wired, the HDP3 can drive two power amplifiers so that a separate measurement of the bass speakers (bass bi-wire connection) can include room acoustic time domain correction. This can be in addition to preference settings using the parametric EQ options.

To minimize loudspeaker distortion, its necessary to go to an active speaker architecture, which also tends to improve even frequency dispersion that's another to-do item on our being there reality wish-list. DEQX-HD™ implies that an active speaker is used to minimise distortion and improve natural dispersion, in addition to the frequency and group-delay correction mentioned above. The HDP3 allows stereo 3-way active configurations or 2-way active plus optional mono or stereo subwoofers. Active 4-way or 5-way sets ups are possible using two HDP3 units.

The DEQX-cal software, running on PC or Intel-Windows-Mac notebook, is required to set-up all of the HDP3's features except its remote controlled preamplifier, DAC and 3-band EQ functions. A notebook computer is ideal because it allows real-time adjustments in the listening areas. The DEQX-cal set-up software is only required for initial measurements, setting-up and real-time adjustment of detailed EQ.

The DEQX-cal software has 4 wizard driven operations:

Speaker measurement wizard performs quasi-anechoic measurements of each speaker, which can be a passive full range speaker, a bi-amped 2-way active speaker, a tri-amped 3-way active speakers or a subwoofer. This uses measurement techniques that exclude room acoustic reflections so its native behaviour is known and can be corrected in detail.

Calibrate speaker wizard takes the measurement/s described above and creates the phase and frequency-response correction filters. In the case of bi-amped or tri-amped active speakers, this is where the crossover filters are also chosen.

System configuration wizard selects sets up the unit for the configuration you will use. These can be a single-amp system allowing one or two optional subwoofers, a bi-amp setup also allowing subwoofers, or a full-range 3-way active speaker.

Room measurement wizard performs the final room measurement/s, which are displayed with multi-band parametric EQ that can be set to automatically apply adjustments to compensate for bass frequency problems. EQ can also be adjusted manually in real-time for preference setting.

The HDP3's remote control provides the following functionally:

Volume: post-DAC analogue attenuators to maintain full DAC resolution
Tone control: Bass, Mid and Hi include frequency and bandwidth adjustment
Store and Recall: 99 tone control settings for media and preference EQ
Profile: select from 4 different correction, crossover and room EQ set-ups

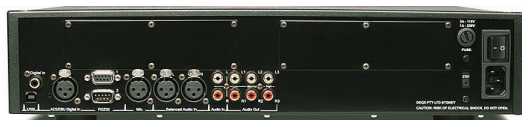
HDP3's standard hardware and active crossover features include:

Audiophile grade electronics and analogue power supply
Audiophile Analogue to Digital conversion at 24/96 resolution
Three audiophile DACs with post-DAC analogue volume controls
Crossovers offering Liner-phase with correction, Butterworth and Linkwitz Riley
Crossover slopes from 6dB/octave to 300dB/octave depending on filter type
USB interface to PC running DEQX-cal software, room
Phantom powered balanced input for DEQX-calibrated measurement microphones
Stereo AES3 (XLR) and S/PDIF (co-ax RCA) digital inputs
Stereo balanced (XLR) and unbalanced (RCA) analogue inputs
Six unbalanced outputs for L/R bass, midrange or full-range, and tweeters.

HDP3 options:

Balanced analogue output module – 6 x XLR or
Balanced analogue output module – transformer 6 x XLR
Digital output module - S/PDIF x 3 RCA co-ax, AES3 x 3 XLR. Includes AES sync input that Sample rate converts dig outputs to 24-bit/96kHz.
Standard Cal kit with Behringer microphone and DEQX-cal software
Reference Cal kit with calibrated Earthworks mic, DEQX-cal software*

**recommended for high-end anechoic speaker measurement*



Standard HDP3 rear panel



HDP3 with optional balanced outputs and digital outputs

DEQX™

Contact us at: www.deqx.com