

There's no denying that mastering in general is a hot topic, with producers of all experience levels discussing the latest techniques to achieve a bigger and better final master. Many of the tools and methods discussed—such as brickwall limiting, dithering and multiband compression—are already familiar to many of you.

Although there is a lot of information available on the subject of mastering, there are still certain techniques that receive less press than others. That might be because of the required equipment not being available to the masses, or it could be that more experienced engineers are reluctant to share their secrets.

One mastering technique that's short on exposure is M/S (mid/side) processing. If you have used microphones in your work or are versed in microphone placement, M/S may be familiar to you. It basically involves using two microphones on a single source to create a stereo signal. While one microphone (the mid signal) is fed to the left and right channels, the second (the side signal) is sent to the left side phase correct and the right side phase reversed.

That itself isn't anything spectacular, but when you consider that by altering the individual microphone levels you can alter the stereo width and maintain perfect mono compatibility, it really is a neat trick. However, the main problem with the M/S technique is the time it takes to set up and the fact that it essentially uses three channels rather than the usual two channels. That means the signal has to be encoded to behave as a normal stereo audio stream.

There are encoders available in hardware form that can take the signal from the two mics and separate the incoming signals into M/S data. But those devices are costly and not available to everyone. Luckily there are more realistically priced software tools available now.

You may want to read more about M/S microphone technique, but for now I will concentrate on the use of M/S processing in mastering. How is this reasonably complex microphone technique even relevant to the mastering of entire tracks?

MASTERING M/S PROCESSING

Just as you can have M/S encoders that take separate streams from a microphone setup and convert them into a stereo signal, the reverse can be done with a stereo signal, allowing you to break the audio into its stereo and mono components so that you can control them independently. With this sort of setup, not only are you able to increase the apparent stereo width of the mix by raising the level of the stereo elements, but you can also—with the right equipment—EQ these different areas of your mix individually.

For instance, stereo strings and guitars can be brightened and turned up, while the mono elements, such as bass, could have their low frequencies amplified and higher frequencies attenuated. This can give your overall master a wider, deeper and generally more impressive sound.

Mastering engineers have been using the M/S technique for years; many even see it as a trade



Divide and Conquer

Unlock the secret of mid/side processing, a mastering technique that lets you split audio files into mono and stereo information By Mo Volans



CEREBRAL CORTEX >

The professional mastering plug-in Brainworx BX_digital includes a 5-band EQ (7-band from TDM) with peak, shelving, lowpass and highpass EQs, and it works in L/R, M/S mastering and M/S recording modes. In the M/S modes, you get the 5-band EQ on both the Mono and Stereo sections.

secret, which may explain the lack of coverage on it. The equipment needed to reproduce M/S routing has always been both complex and expensive—until now.

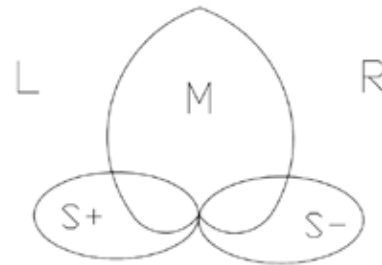
THE PIONEERS

There are some companies that are starting to venture into the world of M/S plug-ins, with offerings such as the free Voxengo MSED plug-in (www.voxengo.com), which allows basic M/S encoding/decoding. That's really useful for creating stereo streams from M/S microphone setups but not hugely useful when it comes to mastering situations.

Digital offerings in the world of M/S processing are

unfortunately pretty thin, but one company not only supplies M/S tools but also truly innovates in the area as well. Brainworx Music & Media (www.brainworx-music.de) is a German company that really pushes the boundaries in this field.

Brainworx' flagship processor/plug-in, Bx_digital, is designed by Dirk Ulrich and Mazen Murad, mastering engineers with numerous international credits to their name. The plug-in is capable of taking a stereo signal and breaking it up into its separate mono and stereo components and treating them totally independently. There are also modes for encoding and decoding M/S microphone arrays.



PAIR OFF > In M/S recording, a directional mic picks up the mid, and a bidirectional mic picks up the sides. M/S processors split stereo signals in a similar way.

The processor has a fully featured EQ for both sections of the audio signal and includes presence and bass enhancers designed specifically for mastering purposes. Changing the relative level of the stereo and mono components can also alter the stereo width of your mix. There is even a built-in de-esser, which lets you reduce sibilance in a vocal part within your mixdown—pretty impressive.


Bx_digital also includes some other impressive innovations, such as Brainworx' signature Mono Maker algorithm. That enables you to force your program material to become a mono signal below a user-defined frequency. The Mono Maker circuit also compensates for any frequencies that may be lost in the process, retaining the original character of your audio. That is a really useful feature for ensuring that the low frequencies of your mix are focused and powerful.

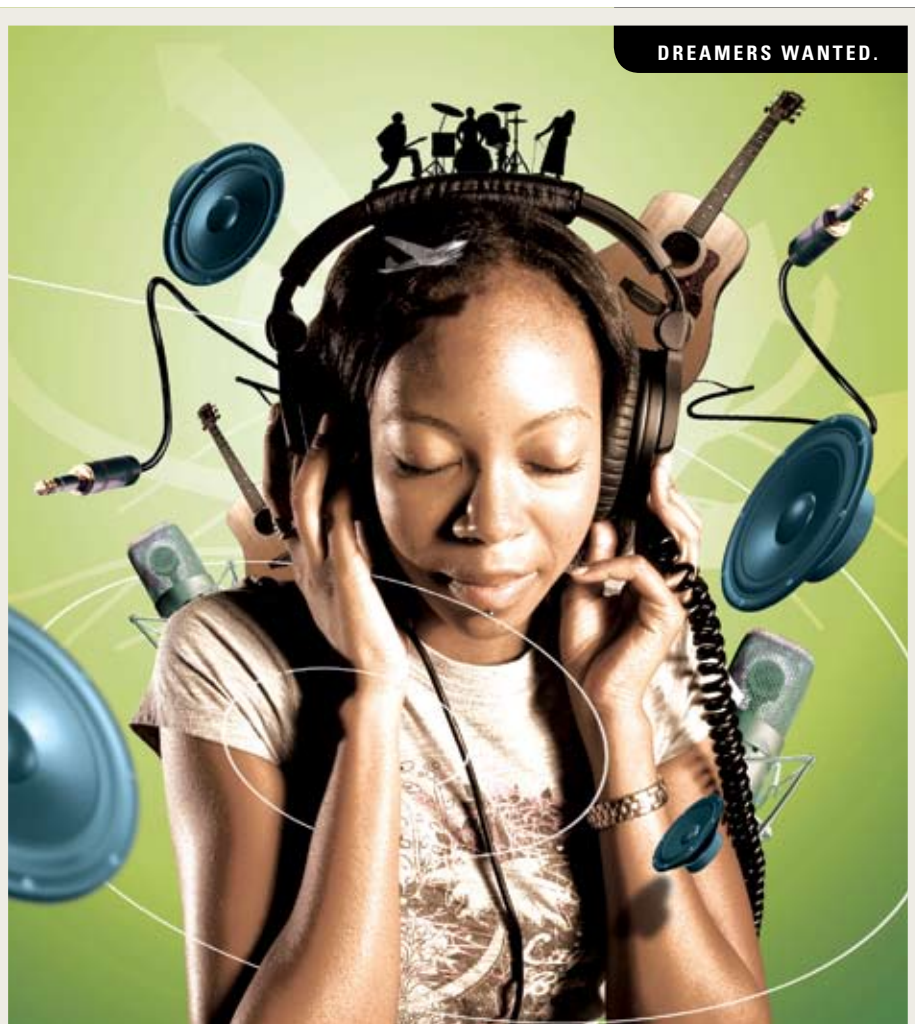
The plug-in essentially consists of two main components—the BX-1 and the BX-2—each taking care of separate functions. In plug-in form, these separate devices are knitted together seamlessly to create one hybrid unit. It is worth noting, though, that Brainworx does intend on supplying both the BX-1 and BX-2 in hardware form, and the company currently has working prototypes of the unit on demo in Germany. The hardware versions will be quite pricey—more than \$20,000—and therefore not realistic for most users. However, Bx_digital is available now as a TDM, RTAS/VST/Audio Units or RTAS-only plug-in. Prices vary



L'L BRAIN > Brainworx BX_solo is a free plug-in for listening to (but not processing) the M/S channels.

depending on the format, whether you buy a download or physical box and whether you have to pay the German VAT tax or not. For example, at the low end, the Bx_digital RTAS-only download without VAT costs 292 euros (approx. \$455), and the TDM version with VAT costs 698 euros (approx. \$1,085).

Brainworx also supplies other processors that use M/S processing to a lesser degree, including a free plug-in called Bx_solo. This useful little processor enables you to solo the mono and stereo components of your audio and increase or decrease its stereo width. It is quite likely that once you enter the world of M/S audio tools, you will not want to master again without them. 



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