

The Omnia ONE – Digital Processing for Small Stations

by Mike Erickson

For a long time, digital processing was only available to larger groups or radio stations that could afford the hefty price tag. What is a small broadcaster to do?

Well, the stars have aligned. There is, finally, a great sounding domestic box with domestic support and domestic dealers at a price point that does not break the bank.

THE BUDGET DILEMMA

All too often, smaller and educational facilities have had to get by either with older analog chains that consisted of four or five pieces of gear in a rack, cheaper versions of digital processors from big names that had similar features to the big boxes but not the same sound, or inexpensive offerings from overseas that sounded good, but did not have tech support or approved vendors in the United States (if you are at a school or university, you know the problem).



The Omnia ONE

However, Omnia has stepped up and delivered a remarkable box. The Omnia ONE is an FM or DAB audio processor for under \$3,000 that finally combines the sound you expect from an Omnia box with the clean clipping you could only get in the past from the high end Omnia boxes.

The box is also available preloaded with two modes. Right now, FM and Multicast are available, with AM on the way soon (for all of you out there who like *real* radio).

FOUR BANDS, NO WAITING

Four bands of processing, in my opinion, is the minimum you should use for FM. Every one of the best sounding, classic FM airchains (from the Optimod 8100 with 4-band Prisms to CRL's with the 4-band compressor) used a 4-band design or better. Four bands allows for more definition and detail (especially with the bass frequencies).

The original Cutting Edge Unity 2000 used a wideband AGC, a 4-band leveler and a 4-band limiter. Sound familiar? The layout of the Omnia ONE is very much reminiscent of the Unity 2000, which provided excellent spectrum control – and was obviously the first box that was truly Frank Foti's design from end to end.

This is not to say that the ONE is a repackaged Unity. Many advances in the 16 years since the Unity was introduced pack a lot more punch into a box that is literally 1/4 the size of the original Cutting Edge offering.



The rear of the Omnia ONE.

To my way of thinking, this is the “have your cake and eat it too” feature with the Omnia ONE: it is a low-cost processor with 4-band processing. In both FM and Multicast mode, the processor has a wideband AGC and 4-band leveler, followed by a 4-band limiter.

INSTALLATION

My ONE arrived in a standard Omnia box; it is a one rack-unit high piece of gear. Placing it on the air and getting it going with a preset was easy.

Our situation has the processing at the transmitter, being fed with audio over fiber. The audio inputs are

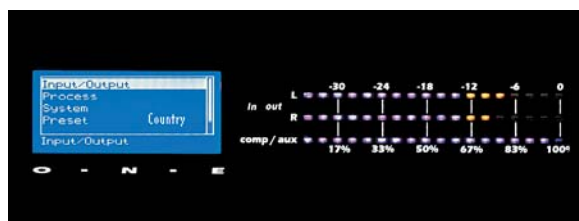
using standard XLR connectors for analog and RJ-45 plugs for the AES/EBU input and output. (Radio Systems' STUDIOHUB+ supplies RJ-45 to XLR adaptors to interface, but the Omnia ONE manual also supplies a pin out so you can wire this connector yourself.)

On its rear, the ONE has two composite outputs so we were able to feed the main and backup transmitters from the one processor. Each composite output had its own drive level in the software menu.

PUTTING THE ONE TO WORK

The boot-up sequence is one of the few complaints I have about the box: it can take anywhere from 20 to 30 seconds for the box to boot from “power on” until audio appears at the output, analog or composite. I recommend users make sure the box is on a good UPS supply; you will restrict your experiences with the long boot-up to only scheduled downtimes.

We chose the Country preset and tweaked it out from there and were happy with the results. Digging in to the clippers to trade off loudness and dynamic range, I found the clipper “silk” setting to help, but overusing it took detail out of the highs. A setting of 5 or 6 (out of 10) was about where we were happy with it.



The Country Preset provided a good starting point.

The composite clipper was very clean – possibly the cleanest of any processor I have heard in awhile – and I would not be surprised if it was borrowed from the latest Omnia 6 software. Those who really like to rock and roll can go pretty far with this. The ONE does a good job of suppressing subcarrier junk even with high levels of composite processing, but it is always a good idea to play off any composite processor control with your terrain, subcarriers and checking for multipath.

Other enhancements in the ONE for FM include a bass clipper, which allows you to clip for “girth” or “tightness” of bass. We liked the girth clipping better, since it gave the audio a more rounded bottom end. The

final on-air product was very polished and to trained ears sounded very close to the more expensive audio processors, which was the goal.

WEB STREAMING, TOO

After the on-air demo, it was time to see the other end of the processor – its use as a Multicast processor – this time using it for streaming with Omnia's SENSUS technology, which optimizes audio for the intended streaming codec.

In this case, we set up a Shoutcast MP3 stream using Oddcast as the encoder with the streaming PC as the

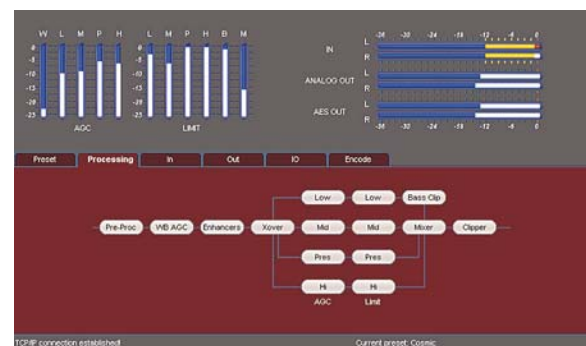
server, streaming in stereo at 32 kHz at a sample rate 44.1, and listened back using Windows Media Player 11 on a standard built-in, run-of-the-mill Dell soundcard (the PC we used to send the stream also used a standard onboard soundcard. We wanted to see how “bad” we could make it).

We chose the preset “Music 64 kbps” and, with a few EQ changes and some adjustment to the SENSUS control, found that the processor sounded a lot cleaner and more open than the previous brand name processor we had demo'ed against it, especially when it came to brass instruments and voice (anyone streaming a jazz or classical format should have this technology, no matter what bandwidth you have to use).

We tried the SENSUS technology with a bunch of different styles of music, from classical to rock to oldies to metal and everything in between. Each time, tweaking the SENSUS made the audio stream at the other end sound better than if we set the SENSUS level to zero and virtually bypassed the feature.

REMOTE CONTROL

Saving presets and navigating the box from the front panel is easy, connecting it to a computer and using the built-in web interface makes it even better. As with all other processors, you can save and recall presets (there is no day-parting feature) as well as adjust other things like pre-emphasis (FM version) and trim for the right input to achieve life's balance.



The Omnia ONE can be controlled easily from your car or living room.

The processor itself has been very reliable. We have used it on air since July; there have not been any issues with downtime. The only real drawbacks are the above mentioned boot time (something, again, that can be cured with a good UPS supply – which should be standard in any rack), and the fact that you have to reboot the software to change from the FM mode to the Multicast mode (also not a big deal anyway, since the box was not designed to do multiple modes at once).

As the product matures, I hope the software upgrades provide slightly more flavor in the 4-band limiters for FM. They sound really good and the processing is very loud, but a touch more depth would add some tasteful, user defined “color” to the audio for the FM side. On the multicast side, there probably is no better box for streaming.

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Omnia Equipment
is available at:

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