

Processing Guide

by Mike Erickson

Audemat Brings RDS and Audio Processing Together

About five years ago, I was demonstrating an audio processor from an upstart company with my friend and colleague Russ Skadl when he turned to me and said he thought it would be so cool if an audio processor could incorporate an RDS encoder in the actual processor itself, not just via outboard gear.

I thought it was a good idea, too, and we both included our suggestion in a response back to the processor manufacturer. The idea never went any further than that and we never really thought about it again.

A WISH FULFILLED

Flash forward to April 2007. At the NAB show in Las Vegas was a new offering from Audemat-Aztec (now just Audemat), known to me in the past as the “RDS people.”

But this was more than an RDS encoder, it was an RDS encoder *with an audio processor attached* (and a few other bells and whistles that we will get to in a moment). I called Russ and sent him the link. We both thought it was so cool that our idea ended up somewhere – see, we were not so dumb, after all!

I had to know more. On sheer nerve, I telephoned Audemat and asked for information on this new product, the Digiplexer 214, which at the time sported not only a two-band processor (OK, two bands can do *some* cool things), but the RDS encoder *and* a remote control with eight relay outputs *and* an 80 GB hard drive for audio backup – in case your audio path to the transmitter should fail, the box will start playing out from the internal hard drive.



The Audemat Digiplexer

I spoke with Christophe Poulain and expressed an interest in evaluating the box. With the price tag too rich for my budget as an individual, I knew of a couple of educational stations where I could try this box if he wanted some unbiased feedback on what it can and cannot do. He seemed very interested, and took my information, promising to contact me when the box was ready for human consumption.

CHECKING IT OUT

That date came in late November. I received an email from Chris asking if he could fly to New York to place the audio processor on the air at one of the stations I had mentioned. That was the first bit of good news.

The second piece of news was that the Digiplexer now had a four-band option available to demonstrate. Awesome! We chose WSHR, an educational FM in Lake Ronkonkoma NY at 91.9 MHz; the station plays a little bit of everything.

The audio processor was placed at the transmitter with the radio station’s call letters and slogan inserted into the RDS encoding software ahead of time. The audio processor actually hosts the server itself – you can access it via a laptop or PC.

A COMPLETE PACKAGE

Any and all software needed for the operation of the Digiplexer 214 can be downloaded right from the box itself, which turned out to be a really good feature. As it happened, the night we were out there, the radio station’s laptop decided to “take the night off.”

In a pinch, we called my friend/engineer Zack Wiegand (This digital age is just amazing: “Dude, I am testing an audio processor, do you have a laptop handy?”). He quickly supplied us with his laptop, and we downloaded

the software for the RDS encoder and audio processor. The laptop connected right away, and we switched the processor on the air.

My Zune’s FM receiver immediately said “WSHR 91.9 FM” – we had RDS. Meanwhile, audio came pouring out of the monitor at the transmitter. We had music – and it sounded very good!

INITIAL LISTENING

There are many schools of thought on audio processing; one man’s taste is not for another man’s plate. But the processing on the Audemat Digiplexer 214 was very engaging. It got into the audio, worked well with transients and had much better bass than the previous digital processors.

I found that it was very easy to get really deep “hefty” lows that you can feel, but that do not overpower the mix at all. The high sampling rate of 192 kHz actually gave me the impression that I was listening to an analog box with the accuracy of a digital processor.

It was very enjoyable to listen to the Digiplexer sound. It was unlike anything else on the dial, which was a good thing (the worst thing you can say about an audio processor is that it “sounds like brand ‘X’”). This unit had its own sound that allowed you to create your own signature. It took us about 20 minutes to get one of the factory presets to settle in where we wanted it. Then we just sat back and listened for while.

GETTING TO KNOW THE DIGIPLEXER

Then we tested some more and dug deeper into the Digiplexer 214’s feature set.

We pulled the audio inputs out of the back of the Digiplexer 214. After ten seconds, the audio switched to the uploaded file. We plugged the audio back into the box and the Digiplexer actually cross-faded the station’s audio with the uploaded file, making for a smooth transition.

It should be noted that the Digiplexer 214 runs on a one rack-unit PC. Scary? Not at all. We have had it running for ten weeks as I write this article – and there has not been one failure.

Suppose you must reboot for some reason? What about dead air during a reboot? This turned out not to be a problem. Chris showed us how we can reboot the PC and not have one second of downtime. Voila! He did just that, the PC recycled, and the audio stayed on.

How? All processing work is done on a DSP board that gets its power from the PC slot it is sitting in. Thus, the card just keeps working. If the whole unit loses power? Chris claims three seconds from power on to audio. We counted about one and a half to two seconds.

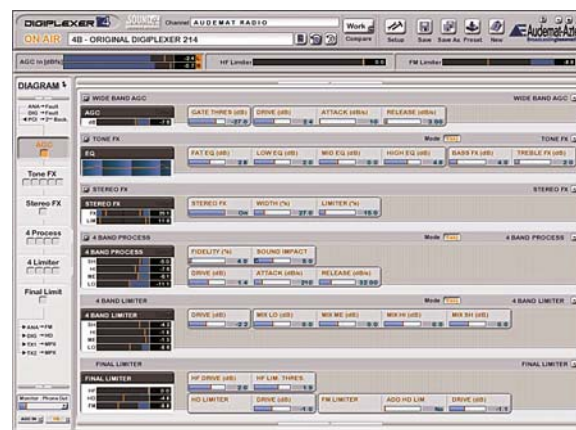
GREAT SOFTWARE INTERFACE

The remote software is virtually flawless. Everything is practically on one page (depending on screen size).

Every parameter you change becomes highlighted. You can also undo multiple changes and go back if you go too far. There are two layers of adjustment for beginners and advanced users. Furthermore, all of the controls can be separately adjusted and then changed with a ganged control so you can adjust everything at once (a feature that is sorely missed on other processors and makes things much more flexible here).

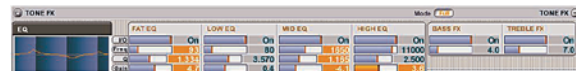
One of the more interesting displays on the Digiplexer 214 is the MPX power meter. This is a quick way to actually see the efficiency of your audio. Using the MPX power meter with your regular modulation monitor will help set just the right loudness level for your station and format.

All of the presets and changes you make are saved and grouped by month created. That way you can go back at any time and see what changes you made that were so hot last summer.



With the Digiplexer 214 software it is easy to see exactly what the unit is doing.

The Digiplexer 214 can be configured in many ways. You can order the basic two-band version with a basic RDS encoder and Scripteasy remote software for around \$5,000. Or, you can go for the Full Monty and essentially throw the heart of your radio station into one easily programmable one rack-unit box for around \$8,000, which includes the four-band processor, advanced RDS, Scripteasy with 16 digital inputs and 8 relay outputs, and an 80 GB hard drive.

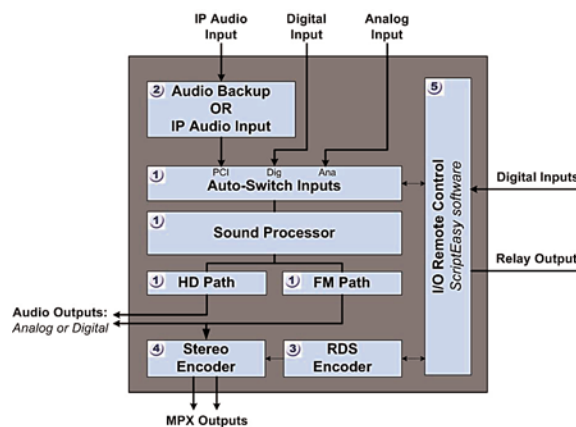


The four-band parametric equalizer includes a display of the EQ setting.

There are even more options, including a Local IP backup (you could actually have the box switch to an IP address during an audio failure and put your stream on the air).

OVERALL IMPRESSIONS

I walked away from the demonstration thinking that this unit has a very impressive processing algorithm. There have been some fresh new ideas out there in the last couple of years and this is one of them.



A functional diagram of the Digiplexer 214

While there are a lot of pluses, there are some drawbacks, the biggest being that there is no built-in delay for HD. While there is a separate audio path for a digital output, you would have to use the built-in delay in your exciter. Navigating up and down in the remote software could be a little easier; I am told that is being addressed. Also being addressed are requests for the addition of some basic processing controls on the front panel of the box.

The best part of working with Audemat on this project has been their attention to detail and their willingness to listen to end-user feedback and incorporate it in updates. For example, at the Spring NAB Audemat introduced the Digiplexer 246, a three rack-unit version with a touch screen on the front panel. The Digiplexer 246 also can be equipped with a 20 or 100 W FM exciter as an option.

Overall, this is a very powerful audio processor, one of the best I have heard in its price class. Everyone who has heard the box has been impressed with how it breaks the mold. It does not sound “packed in” on the high end. Some of the other comments I have heard include “It flows with the music” and “It’s punchy but not exaggerated.”

Audemat is the leader in RDS and the processing backbone comes from Sound 4, which is a group made up of people from IDT, which made some really loud machines in France in the late 1990’s. If you are in the market for an audio processor, in this election year the Digiplexer 214 *needs* to be on your list of candidates.

Mike Erickson loves to tinker and play with audio processing of all sorts. He can be reached at wirelessmedia@gmail.com