WHEATSTONE PROCESSING

OVERVIEW/PRODUCT PLANNING GUIDE

Wheatstone
BROADCAST AUDIO PERFECTIONISTS®

Wheatstone

VORSIS®

ULTRA HIGH RESOLUTION PROCESSING

Wheatstone believes that you should have the power to shape your OWN sound – one with a completely unique sonic signature that's your sound, not the one created by a processor manufacturer. To achieve this goal Wheatstone has developed Vorsis Ultra-High Resolution Processing technology to provide completely clean, high quality 'draw you in' sound that even the best ears in the business love to hear. This proven Vorsis technology is embedded in every Wheatstone processor to create the cleanest sound, as loud as you want it.

To get there, it required taking a completely fresh approach to processing. Vorsis Dynamics Control (AGC and compression) employs multiband AGC to ensure consistent spectral balance. Its Multiband Compressor works with the AGC to provide unprecedented dynamics control.

The Vorsis Bass Management System (VBMS) extracts and reveals nuances in the program to deliver pristine, deep, distortion-free bass over the air. No other processor delivers bass this bold and clean.

Vorsis' Superior Stereo Enhancement is integral to the processing and creates a smear-free perception of a wider sound field in the cleanest possible way. Just stunning.

Our limiting and clipping are, bar none, the finest you'll ever use. Up to 31-bands ensure surgical precision and the ability to have the cleanest, loudest signal on the dial.

Vorsis' presets are also some of the best in the world. You may never need to tweak them, but if you do, our Graphical User Interface, whether via the front panel or accessed by a PC, gives you an intuitive toolset that'll make you feel right at home.

We think Wheatstone's Vorsis Ultra-High Resolution Processing is the best you'll ever use. But don't take our word for it. Try it out. We CAN guarantee you'll be happy you did!

WHEATSTONE'S TECHNOLOGY
Vorsis Ultra High Resolution Processing

It's no secret that radio has sounded tired for a very long time now. With modern delivery options, exciting new technology and our brains buzzing with fresh ideas about how to use it, Wheatstone thinks it's time to for processors that work in unique new ways to make radio sound better than ever – WAY better. Wheatstone's Vorsis tools help you get the most out of your content, whether it's a minor bass adjustment or a format change requiring an entirely new sound. It's a new audience and Vorsis gives today's engineers a modern audio toolbox (a treasure chest, actually) for great sound. Contact Wheatstone for a free in-station demo – listen and see if you don't agree that it's a hugely positive difference whose time has come.

Bass Tools/VBMS:

Bass Tools is another Wheatstone Processing exclusive designed to achieve a level of smoothness in bass not possible with other bass enhancement systems. Enhancement is done in conjunction with our 31 band limiter system. The Bass Tools platform is side-chained so you can easily create the type of bass you want and then mix it back into the main program signal. This way, the bass is accurate and consistent, and since it is well controlled, does not add any amplitude to the overall signal.
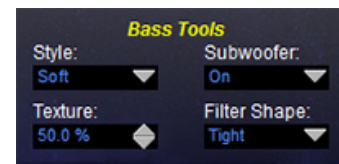

SQ (Super Quiet) Mic Preamps:

Found in our M1, M2 and the new M4-IP Microphone Processing BLADE, our SQ mic preamps ensure that the audio of your talent begins its journey to your listeners in the cleanest environment available. Wheatstone has taken its 30 year history of clean console microphone preamps and married it with Vorsis Processing Tools for EQ, Expansion, Compression and De-Essing for mic processors that have quickly become the industry standard.

31 Band Limiter:

Another exclusive to Wheatstone Audio Processing is our 31 band limiter, found in our AirAura X3 FM and HD audio processor. Championed in our legacy AP2000 processor, the 31 band limiter takes advantage of the way humans hear to limit audio in very few bands at a time. The result? Pinpoint accuracy, audio limiting focused only where needed and an overall audio signal that, at any given time, actually has LESS limiting going on than any other processor on the market. Other cool features? The 31 band limiter can be run in Wide (10 band mode) or Wide & Timbral (where the limiters auto-adjust between 5 and 10 band mode depending on content) or Timbral (where the limiters will adjust to deal with harmonics in the limiter and not in the clipper).
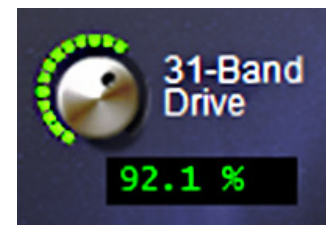
Multipath Limiter:

Exclusive to the Wheatstone line of audio processors is the Multipath Limiter. This single user control can help mitigate the audible effects of multipath as well as reduce receiver-induced stereo blend by managing the stereo image for a more consistent and predictable sound.

WheatNet-IP:

Every time you turn around, another Wheatstone Audio Processor is streaming audio using WheatNet-IP. WheatNet-IP allows you to easily manage audio to and from your processors, adding the power of Vorsis Processing Tools to your entire IP audio network and making them just as flexible as your WheatNet-IP surfaces and controllers!

Analysis Tools:

Now it's easy to SEE what you're hearing. Vorsis Analysis Tools give you the ability to visualize the audio created in your processor. For AirAura X3, these displays are expanded upon to show MPX analysis of your AirAura processing as well as giving you the option of inserting an external source to display.
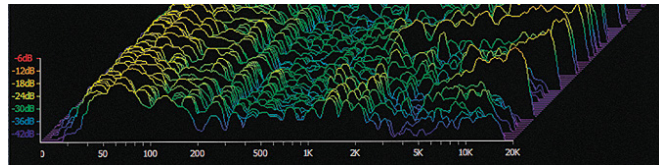
GUI Guru:

Each Wheatstone broadcast audio processor comes packaged with our powerful GUI Guru software. It's as if we sent a processing expert with each box! GUI Guru makes the tough behind-the-scenes decisions based on the simple to use controls supplied for AGC, Compression, Density, Loudness and Bass and Treble controls.
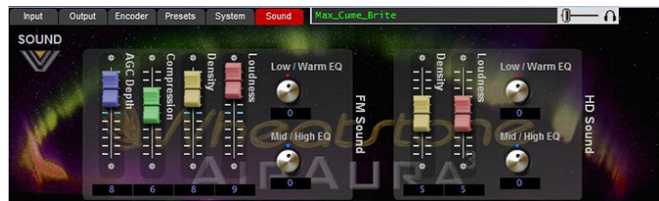
Wheatstone® baseband192:

Wheatstone® baseband192 digitizes the entire multiplex spectrum up to and including the RDS, doing away with an analog composite interface between processing and transmission.

A single AES/EBU cable carries the digitized signal between our baseband192-equipped processors and any FM transmitter equipped with a digital baseband input, bypassing the need for multiplexing in the exciter and eliminating the resulting signal overshoot and its associated loudness tradeoff. The baseband192 interface is a standard feature in all current Wheatstone audio processors.

PARTNERS & WHEATSTONE

It's our partnerships that open WheatNet-IP to the world

To be truly effective in the radio world, it takes working with the entire community to make the Intelligent Network all that it can be. We are thankful for our technology partners and their commitment to seamless interoperation. We consider it a privilege to work closely with them to achieve superior solutions.

THE INTELLIGENT NETWORK

CUSTOM HARDWARE

Case Study: Tieline Genie/WheatNet-IP Interface:

At Wheatstone, it's always our mission to find the most open, transparent, partner-friendly solutions; ones that take the direct design route and lock no one into a proprietary situation.

- With Tieline, the most efficient way to interface their Genie codec with WheatNet-IP was to create hardware that was the same size, shape and specs as their existing AES board, but with Wheatstone's Intelligent Network technology built in.

- Designed and fabricated by Wheatstone, these plug-in cards are provided to Tieline for installation into their Genie.

- Because Wheatstone uses modular design, universal standards, and non-patented technology with built-in provisions for interoperability, it was quick to engineer and put into production. The result is a seamless, plug-and-play solution.

PLUG-IN PCI CARDS

Our philosophy is straight-forward: utilize proven, off-the-shelf technology wherever possible to ensure 100% compatibility with our customers' existing hardware. This approach eliminates proprietary lock-out — even with custom solutions designed to fit our partners' technical and physical needs.

- Often a systems interface can reside directly on an off-the-shelf PCI Card with Wheatstone software code burned onto the card's programmable logic chip; an ideal solution with no increase in footprint size for those that use embedded PC cards in their designs.

- Wheatstone's built in provisions for 3rd party device integration and our use of universal standards (IP, TCP, UDP, IGMP, RTP, NTP, FTP) make these plug-and-play solutions seamless and easy to adapt into your designs.
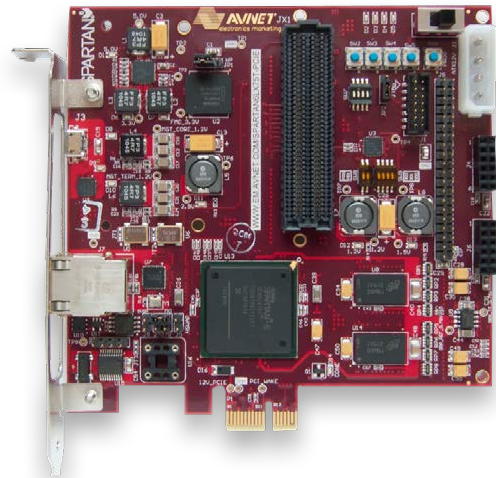
CUSTOM SOFTWARE

Wheatstone's take on software is simple: work with open standards — such as Linux — to facilitate non-proprietary solutions that can be easily adapted and modified by our partners.

- Creating plug-ins and drivers that enable our partners in automation and other technologies to communicate with Wheatstone's Bridge-TDM and WheatNet-IP networks often requires generating code to handle the process. Here at Wheatstone we anticipated this in our initial designs, and the result is that every router, processor, and control surface we make has been designed from the ground up for external interface and control by other devices on a network.

- We've developed test applications and provide sample source code to make it easy for our partners to take full advantage of the power of these Automation Control Interfaces (ACIs).

- Due to Wheatstone's ACIs, libraries, test tools, and source code, and our adherence to open standards, our partners have had great success in developing the most innovative and powerful integration solutions.

AirAura X5
Digital Spectral Audio Processor

Meet X5, Wheatstone's new flagship FM and HD audio processor.

Built from the ground up, it's based on several breakthroughs, including an innovative new approach to dynamics control and pre-emphasis management.

In more traditional audio processing designs, pre-emphasis is either managed by specialized limiting or carefully designed clipping that merely tolerated the pre-emphasis curve. Thinking about this problem, and the fact that it's been over a decade since there has been a major development about dealing with pre-emphasis, Wheatstone set out, through our work with DSP, to come up with the ultimate solution to the problem.

We have seen what the power of DSP can do to restore audio and video over the years. What if we found a way to apply that thinking to FM pre-emphasis and peak control?

Enter LIMITLESS. FM peak control technology that reconstructs the audio after the application of pre-emphasis. No more dull smeary highs or spitty audio. Just clean and clear high end that's perfectly matched to the texture of your HD audio.

X5 also leads the way with Unified Processing®, which allows the processor to share information between ALL stages. In the X5, the iAGC, Dynamics and Limitless Clipper work together no matter which control a user adjusts. Changes are made automatically, in real time, in ways never envisioned before.

The X5 also includes a totally redesigned limiter. As part of the Unified Processing system, this unique limiter, designed as 31 independent filter banks with no crossovers to colorize the audio, works directly with the X5's Limitless clipper, providing an audio blueprint for how the clipper should behave.

Additionally, X5 offers a full suite of static and dynamic RDS features along with with multi-stream UECP support.

The X5 adds a number of other state of the art features, including LIVE LOGGER which documents everything from remote logins to audio failover to preset changes. Our redesigned bass processor and enhancement controls in the iAGC that allow you to safely equalize your audio for maximum consistency. The days of "maybe it will sound better on the next song" are over. Your audio signature is preserved cut after cut, element after element.

Wheatstone's popular HD/FM audio alignment makes the jump to the X5 with our FM&HD LIVELOCK. The system works either with third-party HD/FM modulation monitors or by itself, using the FM/HD tuner built in to the X5.

Additionally, you can now keep the processor at the studio and still keep HD and FM audio in perfect alignment to the transmitter with our optional MPX SYNC-LINK receiver. MPX SYNC-LINK manages multiple audio streams to keep them in perfect sync, preventing any possibility of the FM and HD audio getting out of alignment.

AES insert points are also available via PPMport. Users can now insert their ratings encoder into the processing system instead of placing it in front of the processor. This allows the X5's specialized front end to deliver a steady audio diet to the encoder and increase the instances of watermark embedding. What's more, the sonic transparency of the LIMITLESS clipper preserves the watermark for more reliable detection at the meter.

X5 also offers built-in watermark encoding for the Kantar Media ratings measurement system.

We've spoken a lot about what's new in X5, but Wheatstone processing users will be happy to know that many of the features we've pioneered in previous models have been incorporated and improved on in the X5, including our legendary Multipath Mitigation algorithm, our composite processing system with selectable look ahead limiting or clipping, baseband192 composite AES connectivity, and a full set of analysis displays.

The X5. Processing for the needs of radio TODAY!

WHEATNET

THE INTELLIGENT NETWORK

Features Unique to the X5

PPM PORT INSERT LOOP FOR PEOPLE METERS

X5 features an insert loop to interface your ratings encoder AFTER the processing. This delivers a signal with greatly reduced audible artifacts, which ensures you'll be moving all those meters out there.

LIVE LOGGER LIKE THE NSA FOR YOUR X5

Live Logger keeps track of everything happening on your X5. Preset takes? Remote login? Audio failover? Every event is date and time stamped so you can review it. X5 takes audio to a whole new level and, with Live Logger, gives you absolute and complete peace of mind.

UNIFIED PROCESSING®

Each X5 function in the chain interacts closely with other functions to deliver just the right amount and type of processing needed, letting you create a sound that's as close to the original as possible while still dominating the dial.

LIMITLESS CLIPPER INTELLIGENCE KNOWS ITS PLACE

Limitless Clipper uses proprietary high-frequency distortion canceling technology to pass the highs, but not the overshoot. No more "spitty" highs or pops from clipping; no IM distortion whatsoever. This clipper will take all the highs you can give it and never give you back IMD. This clipper, along with X5's Phase Linear dynamics, gives you the most powerful FM processor on earth.

FM/HD LIVELOCK FM/HD SIGNAL SYNC

Integrated HD and FM analog signal alignment keeps listeners tuned in to your station even during extreme HD/FM blending conditions. No external boxes needed and no more "dip and skip" in reception that can cause tune out, affecting TSL.

MPX SYNCLINK STUDIO-TRANSMITTER LINK

MPX SyncLink extends the X5 with HD/FM alignment from your studio to your transmitter site. It carefully keeps the HD and FM packets in sync so time alignment done with the processor at the studio is maintained straight through to the receiver.

- Processor shares information between ALL stages – iAGC, limiters and clipper all share information and changes can be made automatically, in real time, in ways never envisioned before.

- Redesigned bass processor and enhancement controls in the iAGC that allow you to safely equalize your audio for maximum consistency.

- Full RDS capabilities.

- Works either with third-party HD/FM modulation monitors or by itself, with the new FM/HD tuner built in to the X5.

- AES insert points (PPMport) are also available for customers who wish to insert their ratings encoder into the processing system instead of placing it in front of the processor.

- New look and feel, with an intuitive GUI and dual touch screens on the front panel.

- Experienced users of Wheatstone processing will be happy to know that many of the popular features in previous models have been incorporated in the AirAura X5, including:

  – an improved Multipath Mitigation algorithm

  – redesigned composite processing with selectable look ahead limiting or clipping,

  – baseband192 composite AES connectivity

  – full set of analysis displays.

AIRAURA X1
Digital Spectral Audio Processor

AirAura X1 brings our proven technology for FM and HD processing to a very friendly price point.

Compromise. It's something you find yourself doing when you need to buy something but have to stick to a budget. The hope is that it will be good enough. In broadcasting today, with the connected dash and so many options, good enough is NO LONGER good enough, no matter what your budget. It was that thinking that inspired the creation of a line of budget priced audio processors from Wheatstone. The FM25 and the FM55 experimented in territory never before seen in an entry level processor. The secret got out, and the result? The FM25 and FM55 brothers are the fastest selling budget audio processors on the market today.

With that in mind, it was time to take the next step. Bring new features and new technology into a mid-priced audio processor for FM and HD stations while keeping the price just right. And with that, Wheatstone proudly presents the AirAura X1.

X1: intelligent Audio management
The AGC (Automatic Gain Control) in a modern broadcast facility works harder than ever before. More and more often, studios are unmanned and the levels on your console become set it and forget it. If your sources aren't carefully controlled it's up to the AGC to make those corrections. But even then a competent AGC is not enough. Differences in amplitude AND dynamic range must be considered for an AGC to properly operate in "the zone". That's where iAGC comes in. Not just a leveler, the iAGC is an amplitude AND dynamics manager that helps ensure the right amount of processing is added to your source material.

Is it too dense? The iAGC relaxes the processing so that dense material doesn't sound "double processed". Does your audio need more punch? If there is a lot of dynamic range in your audio, you can choose to leave it alone, or let the iAGC make real time adjustments to "program match" your audio to yield a consistent audio signature.

The choice is ultimately yours, but the possibilities are endless!

X1: 5-band Spectral Controller
Competitive audio in any market requires the use of multiband. Since the dawn of the multiband AGC/Compressor, the goal has been to improve tonal consistency and increase loudness by making algorithms smarter and, in turn, making the effects of multiband control less audible. We have something very new and very exciting in X1 that takes that control to a new level.

Most processors have AGC or Compression or maybe both. At any given time, these algorithms are working based on user settings, regardless of the type of audio being fed to them. We sat and thought about that for a bit. We also have AGC and Compression in our 5 band processing and it's really a good performer. But how can it be better?

The iAGC in the FM55 and AirAura X3 is a very smart algorithm and we collect a lot of data from it. We can slow down and speed up the processing based on dynamic range and amplitude. But what if we could also use that data in our 5 band AGC/Compressor to make IT even smarter?

Introducing our 5 Band Spectral Controller. Calling it an AGC or Compressor is not really valid anymore because it's both… or one or the other… or sometimes neither. In our effort to minimize processing artifacts wherever and whenever possible, the development of the 5 band Spectral Controller allows us to use the iAGC technology built into X1 to map not just amplitude and dynamic range, but also to chart spectral history. This data can be used to dynamically adjust our 5 band spectral controller to yield unprecedented tonal balance cut to cut WITHOUT the audio sounding over-equalized, artificial or "boxed in" to a signature. Of course, if consistency to the SOURCE is what you are after, that can easily be attained as well. What's the purpose of having your cake if you can't eat it?

THE INTELLIGENT NETWORK

X1: 10-band Master Limiter

New challenges bring new ideas. It's behind everything we do at Wheatstone, and processing is no exception. You've read about how we customize audio for consistent level and tonal balance, now it's time to really get serious. Peak management that doesn't distract from the sound you're after.

Introducing another first in a Wheatstone audio processor – the 10-Band Master Limiter. There's one for FM and one for HD.

It starts with something that sounds pretty simple: a 10 band limiter. What's so special about that? When the limiter works in conjunction with the data pulled from the iAGC and 5 band spectral controller, things start to sound more interesting. When we tell you that the 10 band limiter makes on-the-fly decisions from the real world data we have collected to maximize clarity, things become exciting. And when we tell you the audio from each band of the 5 band Spectral Controller is managed by not ONE but TWO limiter bands to allow for more precision, the choice is obvious.

X1: Matching the Medium

The HD and FM side of your audio processor require much different approaches for peak control and bass management. What sounds good on FM may be too much for the HD component. You want to emulate your FM signature on HD, but also make it stand out on its own. When the receiver blends to HD, the sound should have more detail and should be engaging to listen to but not SO different that it becomes distracting.

With X1, you have the tools to create on your audio canvas on both the FM side and the HD. There's no real worry that adjustments made to the 5 Band Spectral Controller will improve one path and degrade the other. With our separate 10-Band Master Limiters, the right amount of virtually everything is applied, matching your signature sound to the medium.

We've already gone over your audio foundation that applies to both the FM and HD path, now let's talk about the controls that help you customize your audio for each mode. You have separate 10-Band Master Limiters, separate dynamic bass enhancement, separate parametric equalizer controls and specialized final overshoot controllers for FM and HD. Our dual processing paths truly give you the power and control you need so that your listeners have the ultimate FM and HD experience.

Exclusive Multipath Control

Exclusive to the Wheatstone line of audio processors is the Multipath Limiter. This single user control can help mitigate the audible effects of multipath as well as reduce receiver-induced stereo blend by managing the stereo image for a more consistent and predictable sound.

- iAGC Intelligent Audio Management measures amplitude and density for perfect leveling
- 5-Band Spectral Controller perfects tonal consistency
- 10-Band Master Limiter auto adjusts attack and release times based on program content
- Separate bass enhancement, EQ and Peak Control for FM and HD processing paths
- Integrated diversity delay of 0-10 seconds, adjustable in 100 µS steps Codec conditioning to maximize the HD radio listening experience
- FM peak control via oversampled distortion masked clipper
- Precision FM stereo MPX generator with multiplex mask filters and dual composite outputs
- Composite audio processor increases competitiveness without MPX degradation
- Digitized SCA inputs for reliable subcarrier generation and recovery
- HD Radio Automatic Time Alignment (with compatible monitoring system)
- Analog, digital and WheatNet-IP audio I/O with automatic 'failback to primary'
- BS412 Loudness Management
- Exclusive stereo multipath controller technology for enhanced stereo reception
- Remote processor control via wired Ethernet and Windows based GUI
- Front Panel touchscreen control with Guru GUI for easy setup and processing adjustments
- Wheatstone® baseband192 built in for digital link to transmitter

MP-532
FM/AM/HD/Streaming Audio Processor

Wheatstone's new MP-532 audio processor is an affordable single-space rack unit that can handle any and all your broadcast processing applications – FM, AM, FM HD, AM HD, HD-only, or Streaming. It's priced so you can use multiple boxes where and how you need them without having to commit to a large expensive box with bells and whistles you may not need. It's the best way to install exactly what you need without spending a penny more than your budget.

The MP-532 offers tools that can provide the most clarity and articulation of any processor on the market. Breathtakingly airy and silky highs with detail that you get from the finest hifi audio gear, mids that never overstep their thresholds insuring mud-free warmth and presence, and deep powerful lows that are sculpted to be richly detailed and free from the muck that bogs them down in nearly every other processor.

All that comes without having to give up volume - indeed, just the opposite. MP-532 gives you "loudness-ability" courtesy new distortion canceling algorithms and precision look-ahead limiters to provide pristinely clean audio AND dial-dominating loudness.

There's full FM RDS capability so that $500 RBDS/RDS encoder you were going to have to buy to generate song, title and album data won't be needed. MP-532 has a built-in RBDS/RDS encoder.

A multiplex power controller is included, saving yet another costly unit to meet the ITU-R BS.412-7 modulation requirements for reducing adjacent channel interference.

Unique to Wheatstone processors, the MP-532 includes our intelligent five-band AGC technology — or iAGC — coupled to a five-band limiter and stereo generator. The combination provides automatic and superior real-time program density control for a consistent, spectrally-balanced sound regardless of density variations in incoming source material.

MP-532 is part of the WheatNet-IP audio network, with a full-blown interface, so you can set up and trigger presets remotely now and add on to your WheatNet-IP ecosystem later. It also includes 192kHz digital MPX connectivity to the transmitter for end-to-end native IP audio quality. It is equipped with two analog composite outputs, two SCA inputs, balanced analog Left/Right outputs and an AES digital output which may be switched to deliver either discrete Left/Right or baseband192 digital multiplex signal. Input audio may be delivered via analog, AES or WheatNet-IP.

For local and/or remote control, there's a full graphic user interface that allows you to tailor every function of the MP-532, so tweaking and making changes is both intuitive and accessible.

Stunning audio with little or no distortion

Fits perfectly into any/every broadcast workflow

Can do double redundant duty easily replacing a processor on another feed

Multipath mitigation that can increase your listening area

Is a part of the WheatNet-IP Intelligent Network

Features common to all signal paths:

- Input accepts analog, AES3 and WheatnetIP audio

- AES3 digital input accepts 32kHz to 96kHz sample rates

- AES3 digital output sample rate automatically synchronizes to AES3 digital input

- Processing may be in stereo or mono fed from left or right channel

- Front panel headphone jack for monitoring input source audio and processed output

- Variable high pass filter and voice phase rotator

- Dynamic L/R correlation meter for assuring proper stereo channel phase

- Front panel setup and configuration reduces the need for a PC during installation

- PC-based Graphical User Interface, for easy setup, navigation, and remote control

- Four GPI triggers for remote control triggered preset changes

- Ethernet-based remote control via rear panel 100BaseT Ethernet port

- Four-band equalizer: low/high shelf plus two band parametric

- User-adjustable multiband crossover frequencies

- Multiband windowing spectral manager assures spectral consistency across program types

- Independent multiband compressor and leveler may be operated separately or in combination

- Newly developed Bass Management System

- High-performance low distortion multiband limiters

- Full metering for all Input and Output levels and Dynamics processing

Features common to AM signal path:

- Specialized asymmetrical AM clipper minimizes distortion

- Transmitter tilt and high frequency pre-equalizers for both transmitter outputs

- Dual transmitter outputs and audio bandwidth filters, including NRSC

- AM outputs may be operated independently or in M/S mode for AM stereo

- Convenient polarity inversion for easy transmitter +/- polarity matching

- Up to ten seconds of AM/HD diversity delay

- Test oscillator with adjustable frequencies including LF Tilt Eq test

Features common to FM signal path:

- New distortion-masked FM peak clipper

- Specialized live voice algorithm minimizes voice distortion

- Exclusive stereo multipath controller can enhance stereo reception in weak signal areas

- Full-feature RDS generator supports static and dynamic RDS/RBDS

- Precision FM stereo MPX generator with multiplex mask filter

- Full support for ITU.BS-412 MPX Power regulations

- Wheatstone® baseband192 built in for 192kHz digital MPX link to transmitter

- Up to ten seconds of FM/HD diversity delay

- Test oscillator with adjustable frequencies including Bessel null test

Features common to HD/stream processing signal path:

- Separate low /high shelf and two-band parametric equalizer for contouring HD/stream spectral balance

- HD/Stream final processing accepts audio from unprocessed input, output of AGC, or output from multiband limiters

- HD/Stream processing includes BS.1770 loudness measurement and target loudness controller.

- Oversampled precision look-ahead limiters for exceptional final peak control

- Specialized dynamic high frequency protection for low bitrate codecs which can also operate in wideband (>12kHz) and <12kHz modes

- Precision ITU-BS.1770 loudness metering and controller with adjustable target loudness goals

- Full ITU-BS.1770 metering including 400mS, 3 second, 10 second, 30 second and long term average loudness

AURA8-IP BLADE-3
Vorsis Eight-Channel Audio Processing BLADE

Rack up eight audio processors in one networkable unit. Convenient, cost-effective, and more than able enough, the Aura8-IP audio processing BLADE-3 has I/O onboard and eight fully independent Vorsis multiband stereo audio processors. This 1RU BLADE-3 offers processing control and network connectivity through the WheatNet-IP Intelligent Network and full AGC, compression and limiting functions for HD, streaming or podcasting separate channels of programming in one unit.

The Aura8-IP BLADE-3 audio processor brings two of Wheatstone's core technologies together: Vorsis ultra-high resolution audio processing and the WheatNet-IP Intelligent Network. Merging these technologies in a single product provides a convenient and cost effective way to access audio processing wherever you need it on your WheatNet-IP network. The Aura8-IP occupies a single rack space, but packs in an impressive eight fully independent Vorsis® multi-band stereo audio processors.

Each processing chain consists of a 4-band parametric equalizer followed by a crossover and three bands of compression. The compressors each feed their own limiters, whose outputs are then fed to a broadband lookahead limiter for tight peak control. The Aura8-IP has its own local I/O, with four stereo pairs of AES digital audio and four stereo pairs of analog line level audio in and out, and can function as a standalone processing engine. Because it's a BLADE-3, it can also instantly configure itself as part of a new or existing WheatNet-IP Intelligent Network, making its processing power available throughout that network.

Like all BLADE-3 access units, the Aura8-IP BLADE-3 is AES67 compatible.

The Aura8-IP is configured and controlled over Ethernet using a laptop or desktop computer. Included with the unit is Wheatstone's acclaimed "Guru" GUI software, which allows easy setup of the processing using familiar, straightforward controls. Also available is a more sophisticated control interface called "GUI Pro," which provides access to every individual processing parameter for expert-level adjustments.

- Highest performance 24-bit A/D and D/A convertors
- 8 complete Vorsis multiband processors, each with:
  - 4-band parametric equalizer
  - 3-way crossover
  - 3 compressors
  - 3 limiters
  - Final lookahead limiter
- Two 8-channel utility mixers
- 4 AES digital inputs on RJ45 and "D" connectors
- 4 stereo analog inputs on RJ45 and "D" connectors
- 4 AES digital outputs on RJ45 and "D" connectors
- 4 stereo analog outputs on RJ45 and "D" connectors
- Built-in router control
- AES67 compatible
- Full color OLED front panel displays
- Front panel headphone jack
- Front Panel Metering
- Rugged Power Supply
- Can be used standalone or as part of a WheatNet-IP Intelligent Network
- Silence sensing can be applied to any outputs
- One Gigabit Ethernet port

THE INTELLIGENT NETWORK

What can you do with the Aura8-IP? Virtually anything you want! These are just a few of the ways you might use Aura8-IP. As a standalone processor, you get eight stereo channels of jaw-dropping Vorsis ultra high resolution processing power for under $500 per channel. That alone is worth the price of admission. But when you take advantage of Aura8-IP being a BLADE with its built-in utility mixers, full logic, SNMP messaging and silence detection, and use all that with its eight channels of processing, its power is really unleashed. How many ways can YOU think of to use the Aura8-IP?

Low Latency Talent Headphone Processing

Often, the key to talent turning in their best performances is what they hear in their headphones. Give them a sound that drives them to brilliance with Aura8-IP.

Remote Feed Conditioning

The great and hard thing about radio is that you can tie the world together on your broadcast. That means you can have audio flying in from all over. Aura8-IP is exactly what you need for all of it, at a price that will make you very happy!

Talkshow Call-Ins

Processing can make a huge difference in the on-air quality of call-ins on your talk shows. Aura8-IP is up to the task.

Mic Processing

Every microphone does a better job when it's processed not only for the voice that's speaking into it, but for the path it's taking on the way to someone's ears. Aura8-IP does a superb job processing microphone audio.

Satellite Uplink Peak and Spectral Control

The key here is keeping signals under control. Aura8-IP is perfect for the job, keeping an eye (or ear) on the peaks as well as ensuring the spectral range stays consistent.

IFB Conditioning

Clear communications between director, engineering and talent is key to presenting successful sports and multiple-report shows. Aura8-IP is perfect for cleaning up IFB.

STL Pre-Processing and Protection-Processing

There are a lot of dedicated STL systems out there. Or, if you have a WheatNet-IP, it's the perfect solution. No matter HOW you handle STL, let Aura8-IP handle processing to ensure the audio is optimized for it.

Multiple HD Feeds

HD Radio gives you the option of broadcasting multiple audio streams of varying quality. Make the most of each by giving them processing that will make them stand out.

Sweetening Incoming Commercials and Newsroom Feeds

Keeping your revenue sources sounding compelling can really help with audience perception and acceptance. Aura8-IP is a cost-effective solution for ensuring your entire audio stream sounds SWEET!

Codec Pre-Processing

Audio from codecs is subject to environmental conditions - at the source and through the connection. Processing with Aura8-IP can clean it up nicely.

Web Streams

Whether you are streaming now or getting ready to, there's no better investment you can make in your station than to ensure those streams sound great. That's exactly what Aura8-IP does.

Automation Streams

Wheatstone enjoys technology partnerships with the leaders in broadcast today. Use the AGC in Aura8-IP to keep your automation streams clean and under control.

M4IP-USB BLADE-3
Four Channel Mic Processing BLADE

This single rack unit BLADE-3 gives you four mic processors that are accessible from anywhere in your WheatNet-IP network. The M4IP-USB offers four completely independent channels of DSP-based high quality voice processing as well as four independent USB ports.

The M4IP-USB Microphone Processor BLADE combines four high-quality microphone preamps, four channels of Vorsis Embedded microphone processing, four independent USB ports, and a WheatNet-IP BLADE interface, allowing you to place four microphone inputs anywhere in your WheatNet-IP Intelligent Network (although it also works just fine as a standalone processor). The preamps and processors are accessed and controlled from any point on the network via its Windows-based GUI.

The M4IP-USB is a great way to maximize your investment in on-air talent by combining four mic processors into a single rack space, accessible from anywhere.

The M4IP-USB microphone processor is equipped with four matched Super-Quiet (SQ) microphone preamplifiers featuring an extremely low noise floor, very wide dynamic range, faithfully accurate transient response, and ruler flat frequency response. Operating in harmony with high quality 24-bit A/D converters and a 96kHz base sample rate, the M4IP-USB adds absolutely no undesired coloration to the signal and faithfully preserves the sound of any microphone and talent combination. It also features a four-section equalizer with high and low shelving EQ and two bands of fully parametric EQ, high and low pass filters, and de-esser and expander functions.

The signal path of the M4IP-USB includes four completely independent channels of Wheatstone's smooth-sounding Vorsis dynamics processing. Adjustable from anywhere on your network, the M4IP-USB offers the security of password protected TCP/IP-based remote control and no front panel controls.

Wheatstone-designed Equalization
Based on great-sounding designs built for Wheatstone's other high performance professional audio applications, the M4IP-USB's equalization section operates predictably and adds no noise, ringing, phasiness or other undesirable coloration to the sound.

Wheatstone-designed Dynamics Processing tools
A high performance and fully adjustable downward expander, de-esser, and smooth sounding broadband compressor and selectable low distortion final look-ahead limiter round out the M4IP-USB to create powerful and authoritative presence to production or on-air microphones.

Processing Presets
A variety of ready-to-use factory processing presets are provided, carefully tailored for different processing goals and formats. You can select a factory preset, confident that it will sound great just as it is. Or use a factory preset as a starting point and create a custom sound for each announcer, then save the new settings as a personalized user preset. In a facility with multiple microphone processors, presets saved in one unit can be easily copied to the others.

WheatNet-IP Native
The M4IP-USB is a WheatNet-IP BLADE which gives it a great deal of additional functionality. All Wheatstone's BLADEs are single rack-space interfaces that talk directly to WheatNet-IP control surfaces, other BLADEs and compatible third-party equipment. They contain features such as router control, logic control, gain control, two 8-channel utility mixers, silence detection and switching (among other things).

Wheatstone Talent Control Interface and GUI
Voice talent can activate his or her own personal sound at the press of a button using the Talent Control Interface, a special GUI designed for preset recall only. The Wheatstone Talent Control Interface software can reside on an air studio/control room PC and gives talent the ability to recall presets from any Wheatstone microphone processor without allowing processing adjustments.

All parameters of the M4IP-USB are controlled using the included Windows-based GUI (see page 10).

- Four extremely high performance microphone preamplifiers with 48V phantom power

- Four completely independent processing channels

- Four independent USB ports

- Four stereo analog line level outputs

- Four stereo AES outputs

- All digital, field proven Wheatstone-designed advanced processing algorithms

- Phase Scrambler to correct asymmetrical voice waveforms

- High- and low-pass filters

- Fully adjustable downward expander

- Precision de-esser sibilance controller

- Four-bands of EQ: low-frequency shelving, two-band parametric, high-frequency shelving

- Broadband compressor

- Final precision peak limiter – can be defeated if desired for lower latency

- TCP/IP-based remote control from anywhere via M4IP-USB Remote Control Software

- Talent Control Interface software for preset recall without processor control

- Front panel metering of input and output levels

WheatNet-IP BLADE-3 features include:
—12 Universal Logic ports (GPIO)
— Front panel headphone jack
— Front panel LED bargraph metering
— Built-in routing control
— Two built-in 8-channel utility mixers
— Gigabit Ethernet
— Silence sensing can be applied to any output
— Built-in Audio Clip Player
— Front Panel Logic Indicators
— LIO/SLIO Logging
— Aliases
— Associated Connections
— Dual OLED Displays
— Clock/Sync Indicators and more

M1 & M2
Voice/Mic Processors

The M1 is a flexible digital microphone processor. It offers unlimited presets, security and networkability in an all-digital framework, with easy-to-set up parameters. Either from the front panel, or from the GUI - all parameters of the M1 can be controlled to give each voice talent his or her own personal sound at the press of a button. The M2 is a dual-channel DSP-based voice processor. The M2 is able to operate in completely independent dual channel mode or, at the touch of a button, M/S mode for professional stereo recording applications.

Your on-air voices need to be clean, clear and distinct. On-air processing tuned for music just doesn't produce an optimum voice sound – you want your jocks to have punch that cuts through the music. You want a versatile production tool that can sweeten voiceover sound. You want to deliver consistent sound from talent to talent regardless of widely varying voice characteristics. One intelligent voice processor with individualized presets can handle it all – that perfectly describes Wheatstone digital voice processing.

Both the M-1 and M-2 begin with high-quality microphone preamplifiers approaching theoretical perfection – clean, transparent, and extremely low noise. Each preamp feeds wide dynamic range 24-bit analog-to-digital converters operating at 96kHz for absolute sonic accuracy. From then on, all processing is done in the digital domain by Vorsis algorithms optimized for broadcast voice. EQ, filtering, dynamics, downward expander noise gate and de-essing—everything you need to create your ideal voice sound.

Like all Wheatstone processors the M-1 and M-2's operating parameters are adjustable via Vorsis Remote Control Software installed on your PC. Up to 255 processors in a facility can be operated from a single control screen.

M-1 Ideal as a production studio tool—a single-channel voice processor with all processing controls available right on the front panel.

M-2 A dual-channel voice processor best suited for on-air talent processing. Set once and forget, or create individualized talent settings using custom presets – all recallable via software or automation control. No front panel controls to tempt well meaning but sometimes curious staff.

The M-2 includes an enhanced compressor section capable of operating in up to three bands. Producing a more consistent sound with fewer artifacts than a wideband compressor, it provides the benefits of dynamic spectral enhancement, maintaining bass and brightness balance over changing input levels and talent voice characteristics.

Processing Presets
A variety of ready-to-use factory presets are provided, all carefully tailored for different processing goals and formats. You can select a factory preset, confident that it will sound great just as it is. Or use a factory preset as a starting point and create a custom sound for your station - or even for each announcer. Then save the new settings as personalized user presets. In a facility with multiple microphone processors, presets saved in one unit can easily be copied to the others.
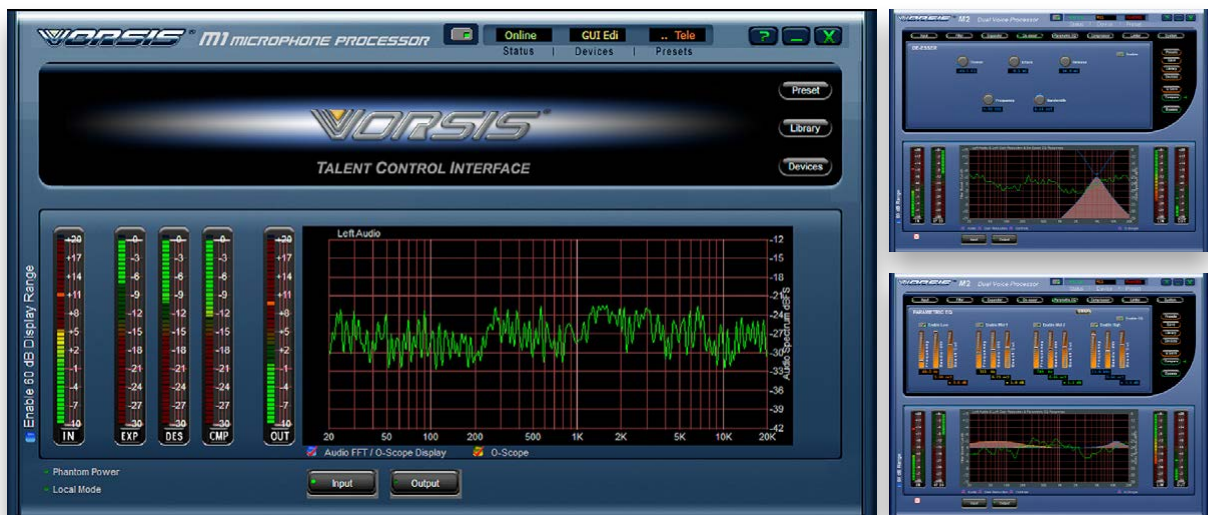
Vorsis Talent Control Interface

The Vorsis Talent Control Interface software can easily reside on an air studio/control room PC and gives talent the ability to recall presets from any Vorsis microphone processor—but does not allow any adjustments to audio parameters. The interface presents a large high-resolution FFT and scope display of talent real-time voice
audio, as well as input and output levels.

There's also a mini Talent Interface window that takes up only a small amount of screen real estate for simple recall of saved presets without visual metering.

Vorsis Control Software

In the M-1, processing adjustments are made at the front panel or via Wheatstone's Vorsis Control Software. In the M-2, all controls are accessed via the software; the front panel has no controls, only metering.

The Vorsis Control Software – separate versions for the M-1 and M-2 – loads on an external PC. You can connect the PC directly to the processor, or install the processor on your station's Ethernet LAN and access it from anywhere in your network (or remotely over VPN).

With Vorsis Control Software no adjustment is more than two mouse clicks away. And unlike other processors, every processing control is available and labeled for exactly what it does, giving you ultimate power to create your ideal sound.

The remote control screen is divided into an upper control area and a lower dynamic section that includes real-time display of gain reduction as well as a frequency-domain graph that shows the spectral characteristics of your audio. Every screen also includes accurate metering of input and output peak and average levels. Tabs across the top of the GUI software allow immediate access to each section of the processing.

Features for M-1 and M-2 unless otherwise noted

• M-1: one processing channel

• M-2: two processing channels

• M-1: front panel controls and control via Vorsis Remote Control Software

• M-2: all control is via Vorsis Remote Control Software

• All digital, field proven Vorsis-designed advanced processing algorithms

• Vorsis Remote Control Software to adjust the settings from your PC, locally or remotely

• Talent Control Interface software for preset recall without processor control

• High performance microphone preamplifiers with phantom power

• High- and low-pass filters; the M-2 also includes an adjustable High-Q notch filter

• Downward expander

• Phase Scrambler to correct asymmetrical voice waveforms

• De-esser precision sibilance controller

• Four-band EQ: low-frequency shelving, two-band parametric, high-frequency shelving

• Compressor:
   M-1: single band
   M-2: up to three bands

• Final precision peak limiter (M-2 only)

SG-192
Baseband192 Digital Multiplex Stereo Generator

The SG-192 is the first standalone FM stereo generator capable of passing full AES MPX composite baseband to the exciter, including RDS and SCA up to 67kHz, and is equipped with an intelligent stereo multipath controller which helps mitigate the effects of multipath-induced receiver blending. The new SG-192 can be used with any audio processor and for translator or repeater applications.

The new SG-192 FM stereo generator complements Wheatstone's audio processing line and can provide stereo generation for third-party audio compressors and limiters that lack a stereo generator or are installed in a location where their stereo generator cannot be used.

The SG-192 offers the exclusive stereo multipath controller which helps mitigate the effects of multipath-induced stereo receiver blending in the absence of clean reception. Audio interfaces for the exciter include the legacy composite analog signal (2 separate outputs are available) or Wheatstone's baseband192 AES digital composite baseband option for compatible exciters. A dedicated 10MHz synchronizing input is useful for single frequency networks, translators, and repeater applications.

Inputs can be traditional analog or AES plus the SG-192 is WheatNet-IP compatible so it can accept IP audio inputs from the WheatNet-IP Intelligent Network.

The SG-192 is equipped with Wheatstone's baseband192 technology, the only digital MPX technology that digitally samples the composite baseband at 192kHz in order to include the FM composite signal as well as RDS and SCA subcarriers up to 67kHz.

Digitally adding RDS and SCA signals to the digital composite baseband eliminates the noise problems created by analog technology which translates to a lower noise floor and less crosstalk between subcarriers.

The new SG-192 can be added at the studio or the transmitter site, depending on the STL in use, and comes with highly oversampled, low distortion composite clipping. A crisp front panel OLED display makes adjustments easy and the front panel headphone output allows confidence monitoring of the stereo generator's input signals.

Wheatstone baseband192
Wheatstone® baseband192 digitizes the entire multiplex spectrum including RDS and SCAs up to 67kHz, doing away with the conventional and noise-prone analog composite interface between processing and transmission.

A single AES/EBU cable between the SG-192 and a current solid-state FM transmitter carries the entire digital baseband signal, eliminating the need for stereo multiplexing in the exciter and also eliminating the resulting signal overshoot and loudness tradeoffs associated with it. Wheatstone's baseband192 is the only digital MPX technology that samples the baseband at 192kHz to include the FM composite as well as RDS and SCAs up to 67kHz.

Digitally adding RDS and SCA signals to the digital composite baseband eliminates the noise problems created by analog technology which translates to a lower noise floor and less crosstalk between subcarriers.

Exclusive Multipath Control

Exclusive to the Wheatstone line of audio processors and now the SG-192 stereo generator is our exclusive Stereo Multipath Controller. A single user control sets the algorithm for market and terrain-specific multipath environments and helps to mitigate the audible effects of receiver-induced stereo blending due to multipath conditions. The result is clearer stereo experience for listeners often accompanied by the perception of increased coverage area.
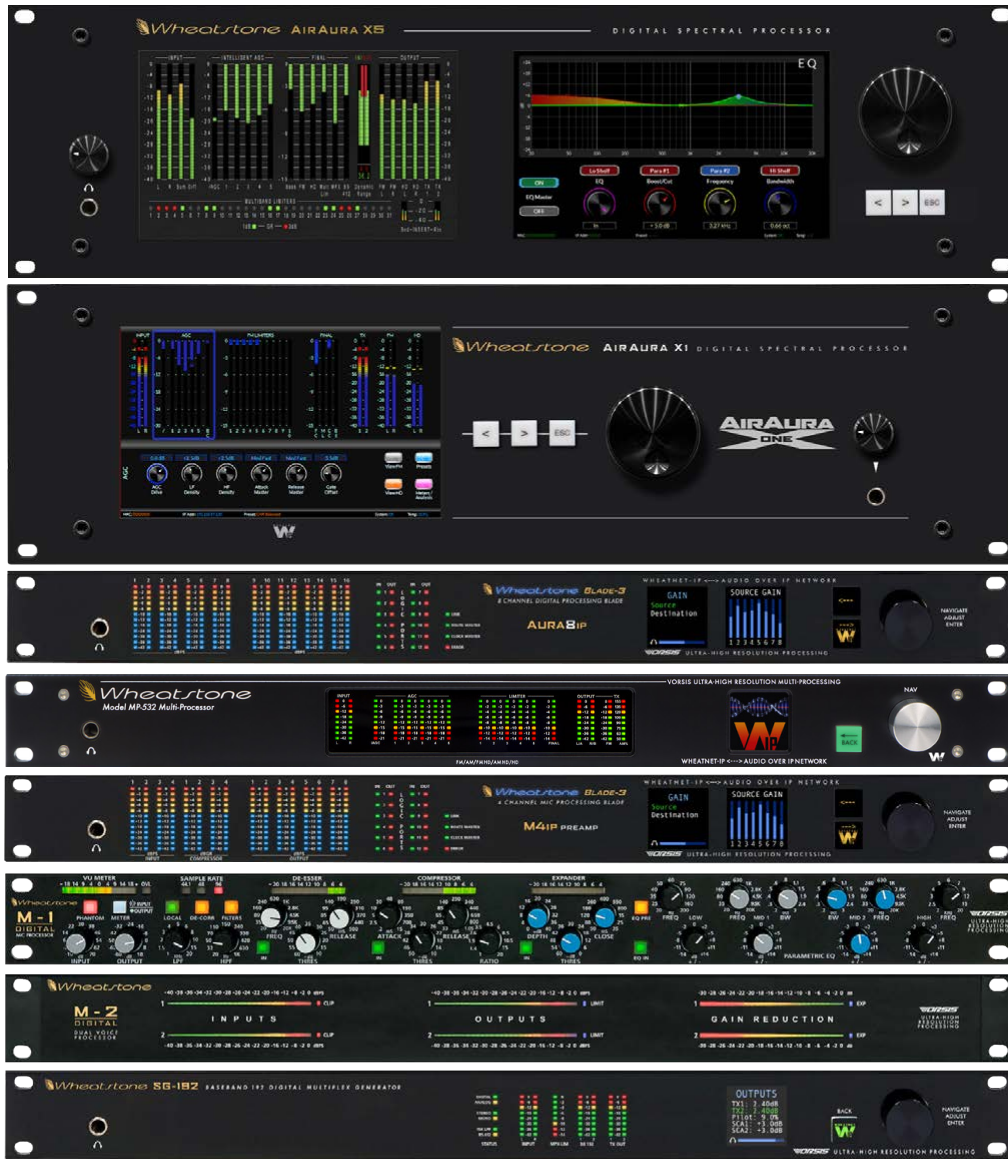
WheatNet-IP Compatible

The WheatNet-IP interface makes it possible to control the SG-192 from anywhere in the IP audio network, making it just as flexible as WheatNet-IP surfaces and controllers!

Recommended Applications:

FM
Single frequency networks
Translators or repeaters

- Dedicated 10MHz GPS clock input
- Highly oversampled composite clipping
- Exclusive stereo multipath controller technology for enhanced stereo reception
- Wheatstone® baseband192 built in for composite digital link to transmitter
- Ethernet-based remote control via 100BaseT Ethernet and rear panel RJ-45
- Front panel headphone jack
- AES3 digital input accepts 32kHz - 96kHz
- Precision FM stereo MPX generator with pilot and SCA protection filters
- Guru GUI, for easy setup and navigation
- WheatNet-IP compatible

Wheatstone
BROADCAST AUDIO PERFECTIONISTS®