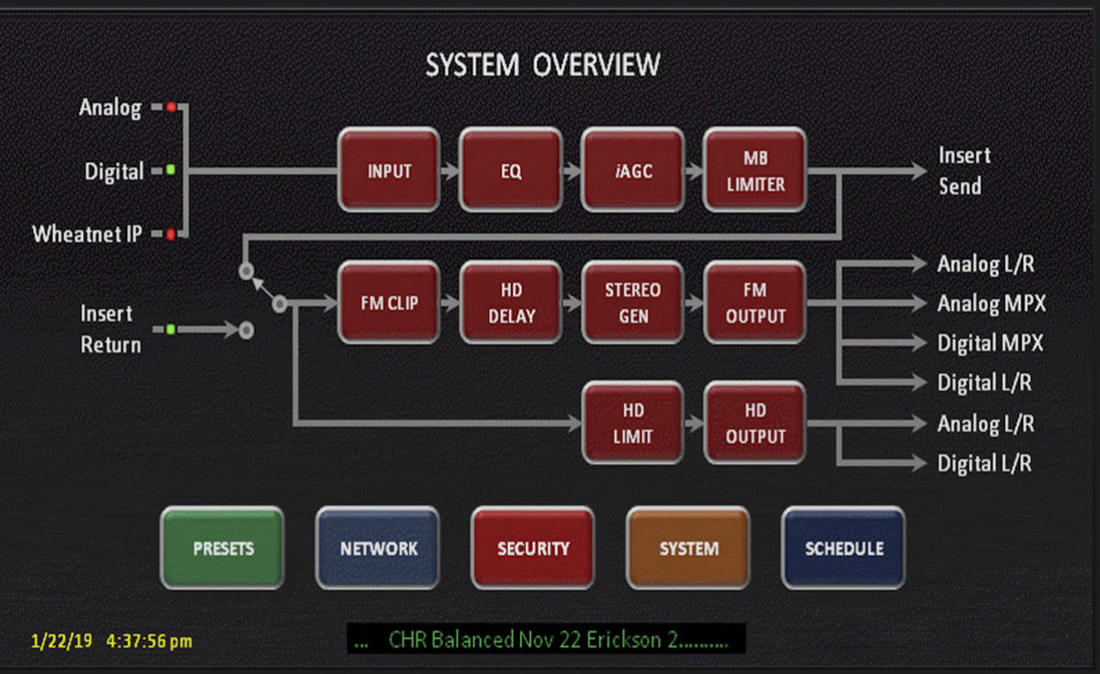
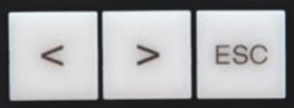
DIGITAL SPECTRAL PROCESSOR





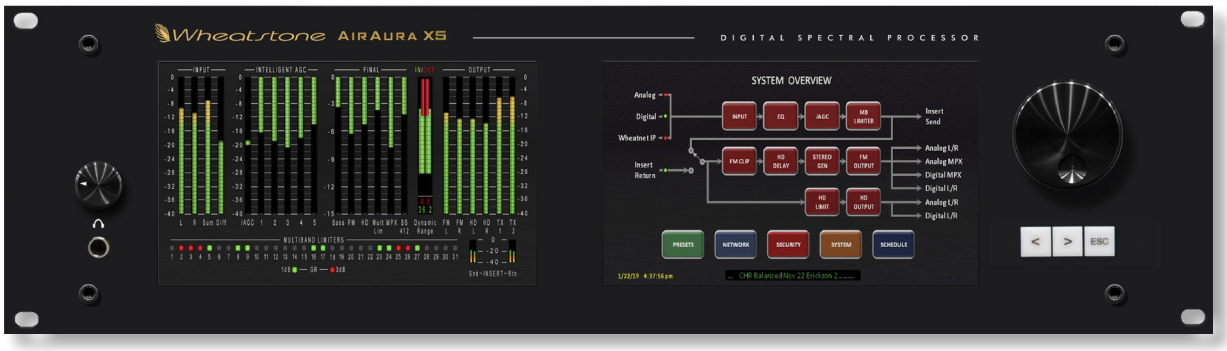
BETTER SOUND MORE LISTENERS X5

FM/HD Broadcast Audio Processing and Management

Wheatstone
BROADCAST AUDIO PERFECTIONISTS®

the front panel

dual wide screen displays give you new ways to visualize your sound for incredible control



Wheatstone's new flagship FM and HD audio processor was built from the ground up 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.

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 SYNC-LINK receiver. 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.

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!

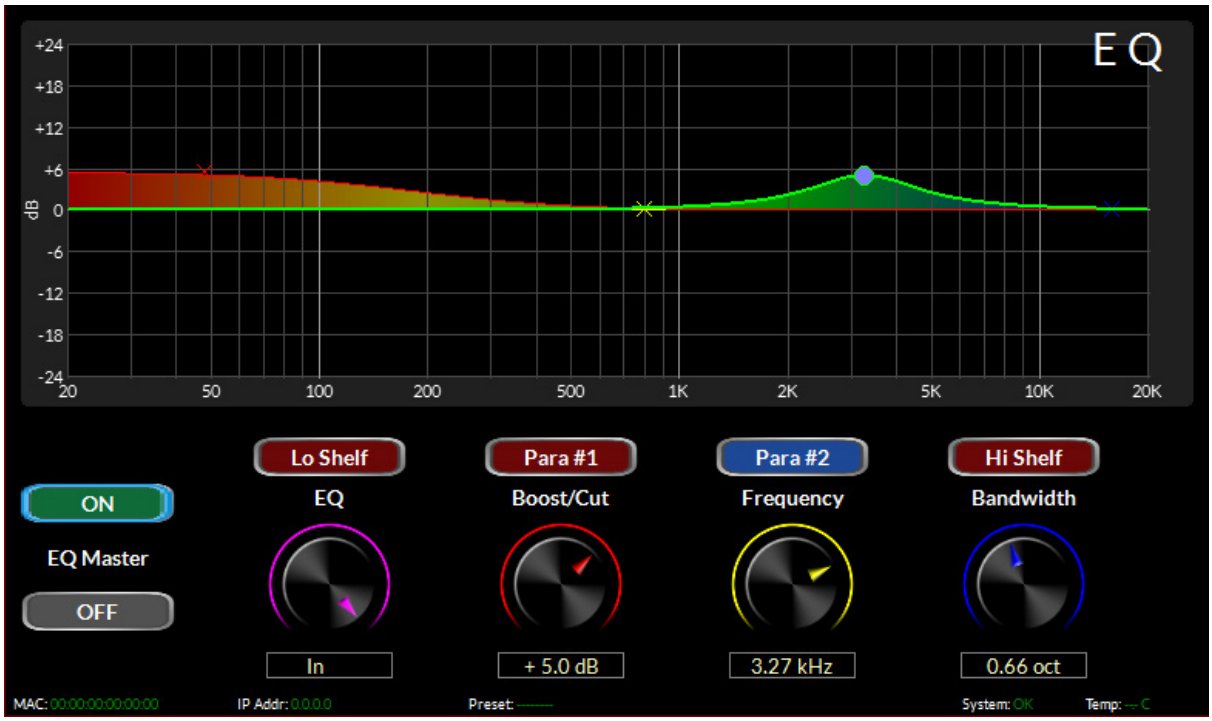
behind the screens

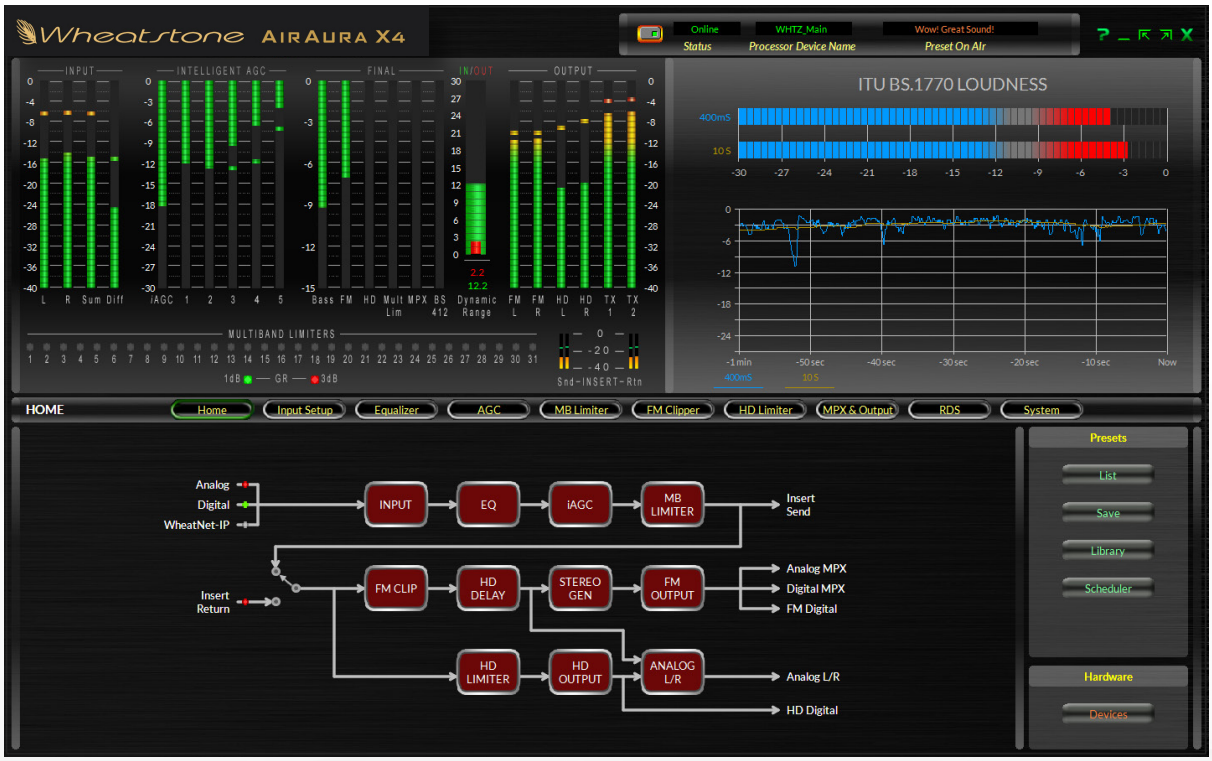
X5 provides a bazillion ways to get in an out with the most intense sound ever

- 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.

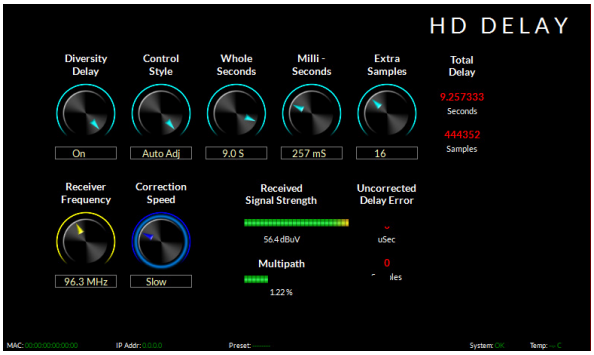
display gallery

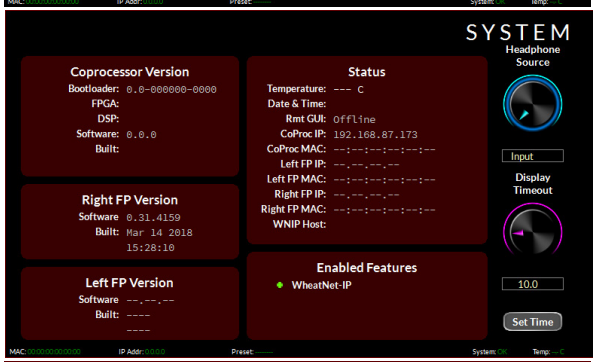
front panel dual display and the GUI offer exceptional control over everything



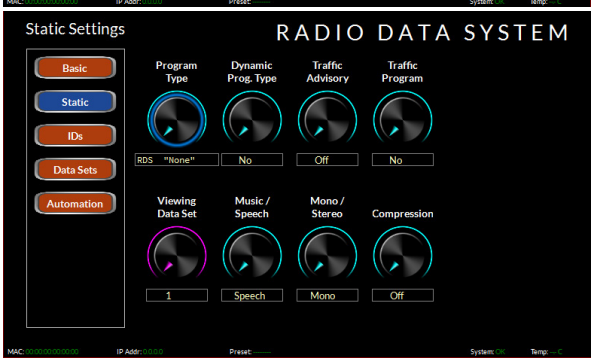


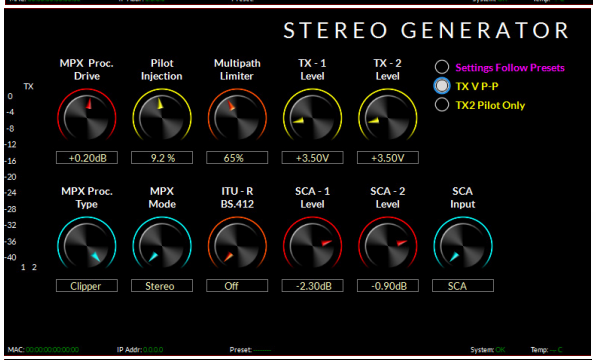
MB LIMITER
Master Drive
Master Threshold
Master Attack
Master Release
Multiband Knee
Clipper Drive
0.9 dB
+0.5 dB
Auto
Auto
Hard
+0.35dB
Bass Enhance
Bass Style
Bass Texture
Bass Filter Style
Bass Filter Frequency
Bass Clip Threshold
+ 2.5 dB
Soft
10.0 %
Broad
255 Hz
- 3.5 dB

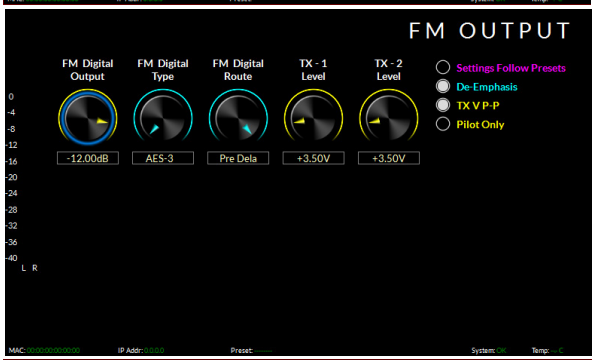

HD DELAY
Diversity Delay
Control Style
Whole Seconds
Milli - Seconds
Extra Samples
Total Delay
9.257333
Seconds
444352
Samples
On
Auto Adj
9.0 S
257 mS
16
Receiver Frequency
Correction Speed
Received Signal Strength
Uncorrected Delay Error
96.3 MHz
Slow
56.4 dBuV
uSec
Multipath
1.22 %

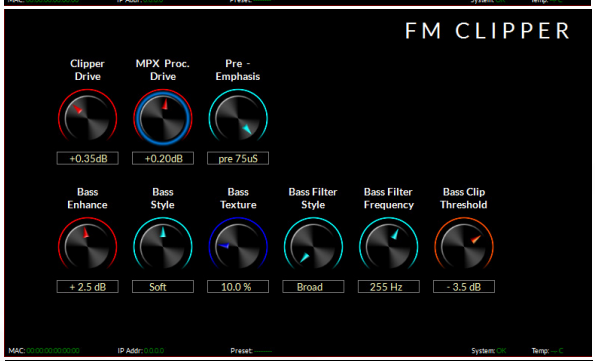

SYSTEM
Coprocessor Version
Bootloader: 0.0-000000-0000
FPGA:
DSP:
Software: 0.0.0
Built:
Right FP Version
Software 0.31.4159
Built: Mar 14 2018 15:28:10
Left FP Version
Software --.--.--
Built: ----

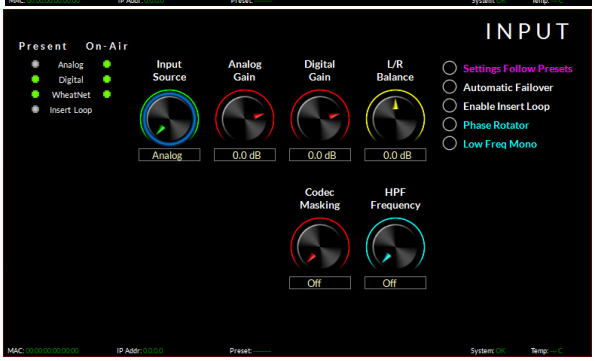
Status
Temperature: --- C
Date & Time:
Rmt GUI: Offline
CoProc IP: 192.168.87.173
CoProc MAC: --:--:--:--:--:--
Left FP IP: --.--.--.--
Left FP MAC: --:--:--:--:--:--
Right FP IP: --.--.--.--
Right FP MAC: --:--:--:--:--:--
WNIP Host:
Enabled Features
WheatNet-IP
Headphone Source
Input
Display Timeout
10.0
Set Time

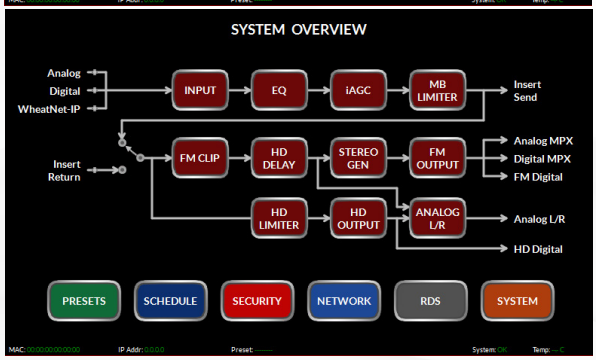

Static Settings
RADIO DATA SYSTEM
Basic
Static
IDs
Data Sets
Automation
Program Type
Dynamic Prog. Type
Traffic Advisory
Traffic Program
RDS "None"
No
Off
No
Viewing Data Set
Music / Speech
Mono / Stereo
Compression
1
Speech
Mono
Off


STEREO GENERATOR
MPX Proc. Drive
Pilot Injection
Multipath Limiter
TX - 1 Level
TX - 2 Level
Settings Follow Presets
TX V P-P
TX2 Pilot Only
+0.20dB
9.2 %
65%
+3.50V
+3.50V
MPX Proc. Type
MPX Mode
ITU - R BS.412
SCA - 1 Level
SCA - 2 Level
SCA Input
Clipper
Stereo
Off
-2.30dB
-0.90dB
SCA


FM OUTPUT
FM Digital Output
FM Digital Type
FM Digital Route
TX - 1 Level
TX - 2 Level
Settings Follow Presets
De-Emphasis
TX V P-P
Pilot Only
-12.00dB
AES-3
Pre Dela
+3.50V
+3.50V


FM CLIPPER
Clipper Drive
MPX Proc. Drive
Pre - Emphasis
+0.35dB
+0.20dB
pre 75uS
Bass Enhance
Bass Style
Bass Texture
Bass Filter Style
Bass Filter Frequency
Bass Clip Threshold
+ 2.5 dB
Soft
10.0 %
Broad
255 Hz
- 3.5 dB


INPUT
Present
On-Air
Analog
Digital
WheatNet
Insert Loop
Input Source
Analog Gain
Digital Gain
L/R Balance
Settings Follow Presets
Automatic Failover
Enable Insert Loop
Phase Rotator
Low Freq Mono
Analog
0.0 dB
0.0 dB
0.0 dB
Codec Masking
HPF Frequency
Off
Off


SYSTEM OVERVIEW
Analog
Digital
WheatNet-IP
INPUT
EQ
iAGC
MB LIMITER
Insert Send
Insert Return
FM CLIP
HD DELAY
STEREO GEN
FM OUTPUT
Analog MPX
Digital MPX
FM Digital
HD LIMITER
HD OUTPUT
ANALOG L/R
Analog L/R
HD Digital
PRESETS
SCHEDULE
SECURITY
NETWORK
RDS
SYSTEM

i AGC
i AGC
Band 1
Band 2
Band 3
Band 4
Band 5
Effects
Window Size
Attack Speed
Release Speed
Return To Zero Speed
Adapt Mode
+4.0dB
3.000 S
3.000 S
3.000 S
Adaptive
Gate Threshold
Pre Proc Fast/Slow
i AGC Style
Multiband AGC
Multiband Compressor
-45.0 dB
0
Off
Off
Off
Global Controls

new and cool

tools that can make a chartable difference in your bottom line

PPMport

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.

UP

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.

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.

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

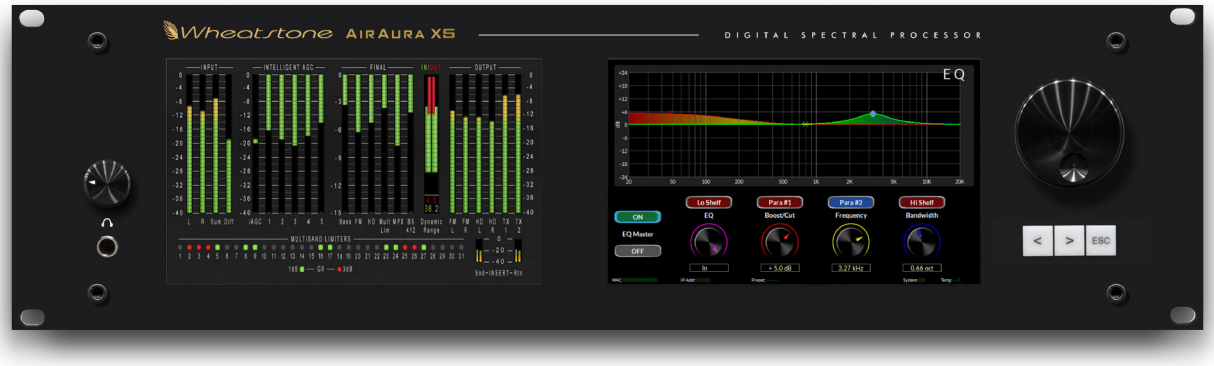
STUDIO-TRANSMITTER LINK

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.

MULTIPATH MITIGATION

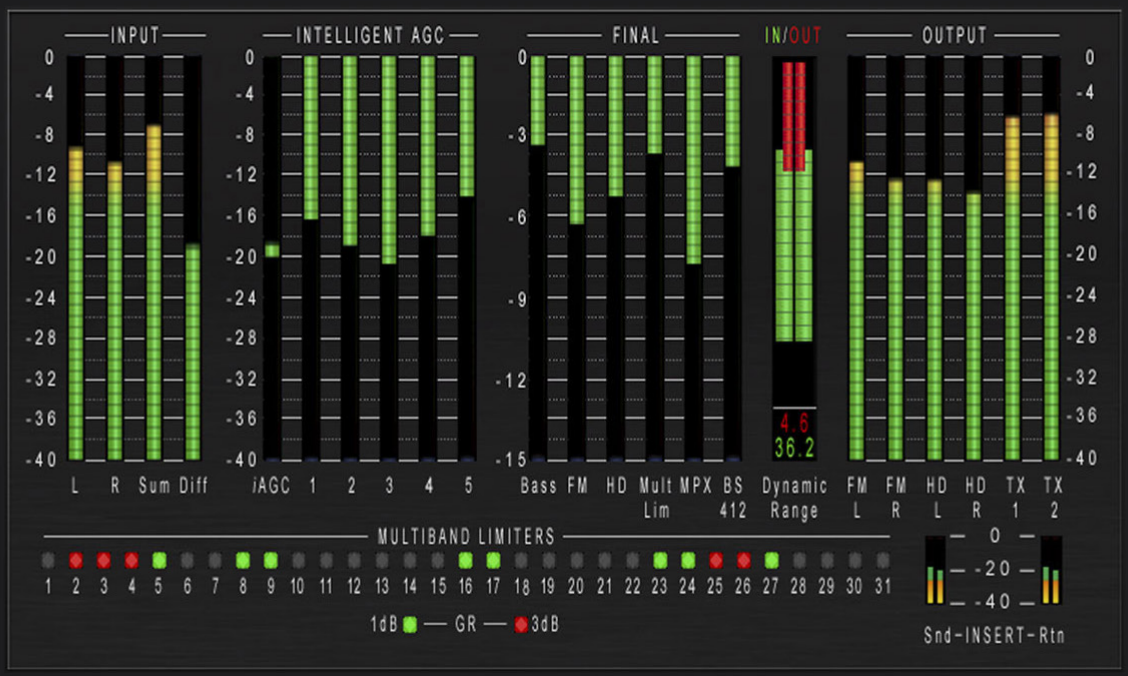
MORE PATH. LESS MULTI.

X5's multipath mitigation delivers your signal to more listeners while PPM Port's smart AES insertion points ensure each and every one of those PPMs register. Better sound delivered to more radios – sound that cuts through and sounds amazing.



BETTER SOUND MORE LISTENERS X5

Wheatstone AIRAURA X5



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