GatesAir Service Support

HD Radio Overview and Quick Start Guide

April 12, 2015

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Featuring GatesAir's

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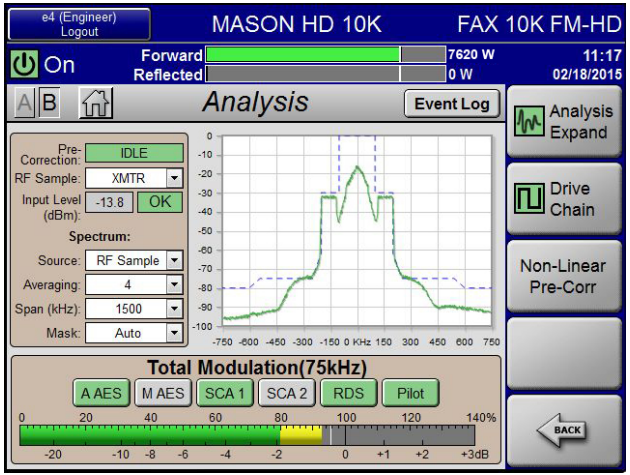
Introduction

- Identify the major components used to generate IBOC
- Discuss the primary function of each piece of equipment
- Explain basic interconnections and setup
- Discuss common installation variances



FAX Compact Transmitters with Gen 4 Exgine

- Compatible with all FAX Compact Class exciters/transmitters
  - 50W to 3.5kW
  - Up to 80kW if installed in HP FAX transmitter.
- Rich GUI Interface
- Crest Factor Reduction
- Next Generation RTAC (Real-Time Adaptive Correction)
- Built in Spectral Analysis Tool

- **Exgine Primary Function:** Decodes UDP E2X traffic, generates IBOC carriers and delivers them to the modulator for transmission
- Secondary Functions: Adaptive Correction and Crest Factor Reduction

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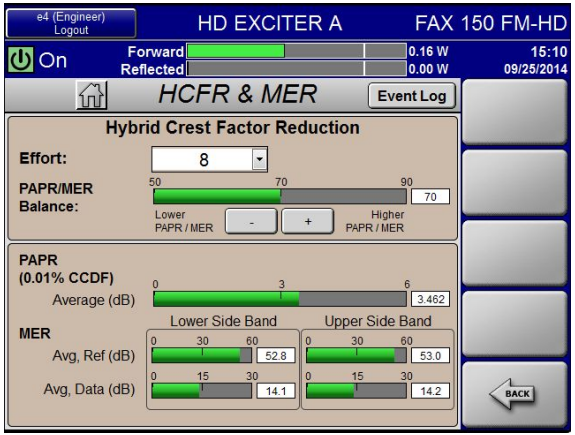
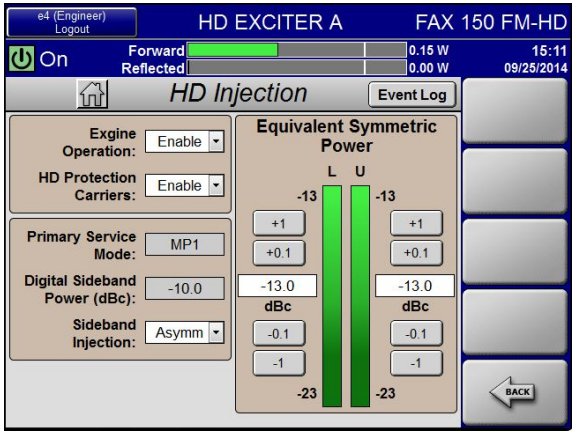
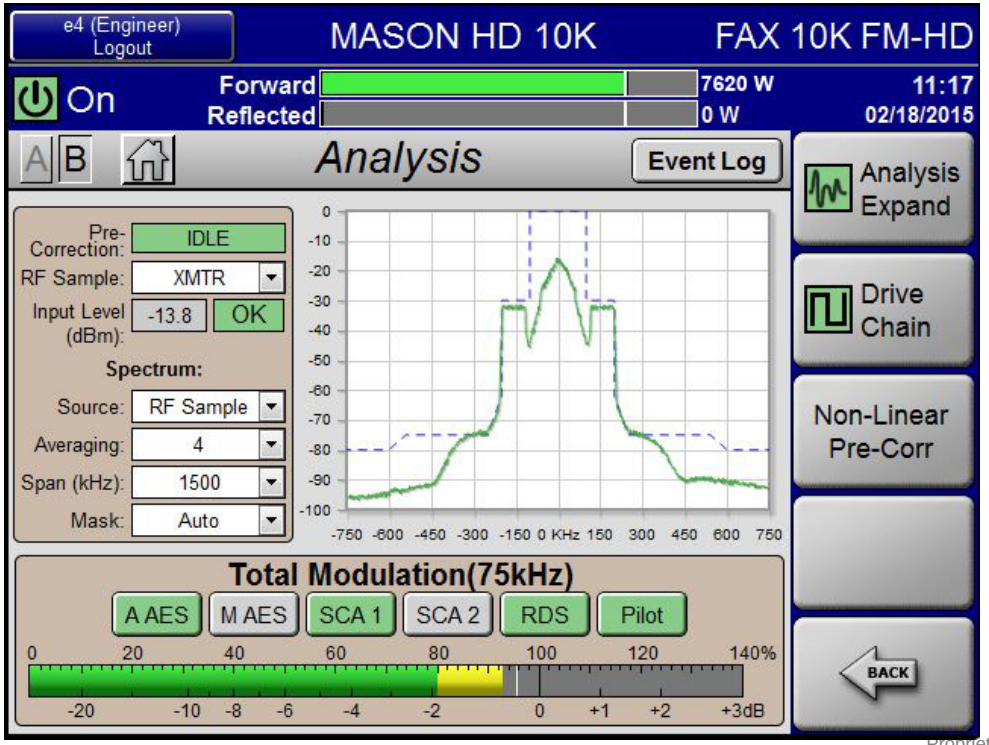




HD Radio signal management and monitoring through simple Web GUI pages.



HDE-200 Exporter

- Non-PC based
- No hard drives, fans, moving parts or air filters
- Built In GPS
  - 44.1 Word Clock Output
  - 1PPS and 10MHz output
- Built-in switch

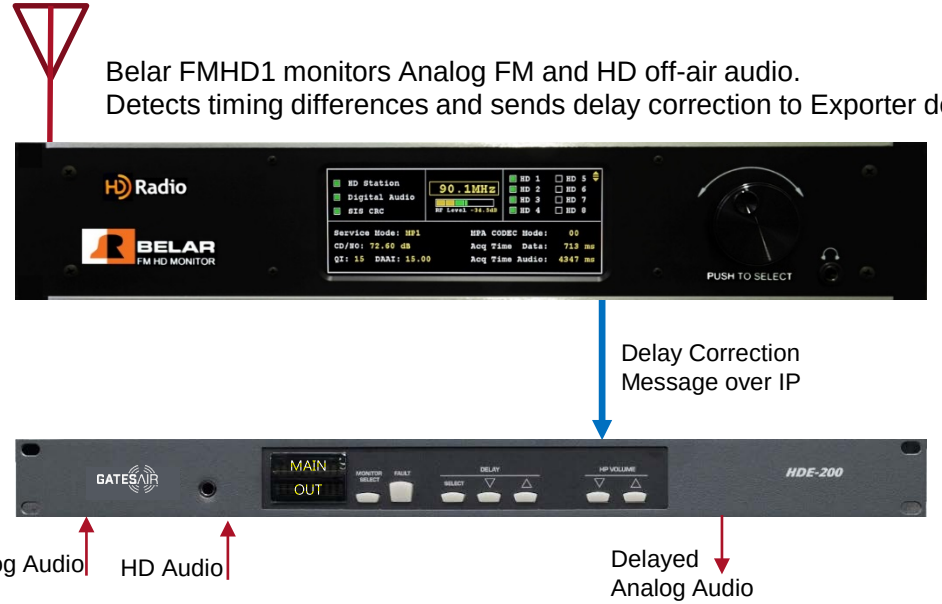
- **Primary Functions:**
  - **Converts MPS (HD1) AES audio to digital format and multiplexes it onto E2X data stream.**
  - **Multiplexes I2E (importer to exporter) information into the E2X data stream if AAS (Advanced Application Services) or SPS (Supplemental Program Services) channels are being utilized.**
- Secondary Functions
  - Diversity Delay
  - System timing

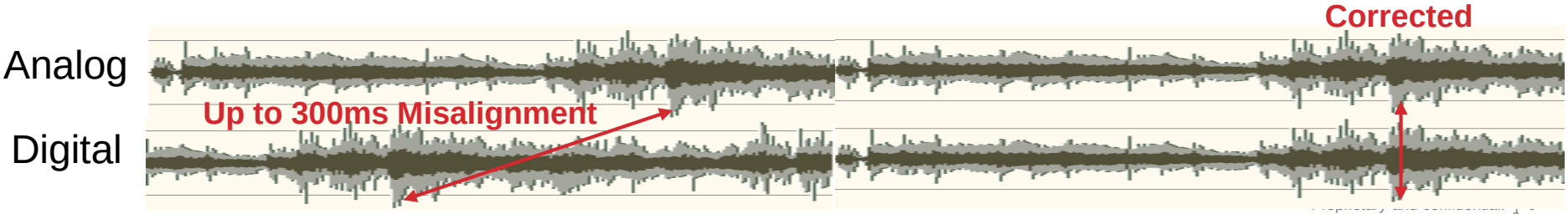
Diversity Delay Alignment

Proper Diversity Delay Alignment between the analog and HD Radio programs is critical to the listener experience during blends

Network timing issues and synchronization can cause continual drift or sudden shifts in otherwise perfectly aligned installations causing “skips”

The latest Belar FMHD1 modulation monitor continuously monitors and corrects HDE-200 Program Exporter’s internal diversity delay assuring that the FM and HD audio streams are always synchronized





HDI-200 Importer

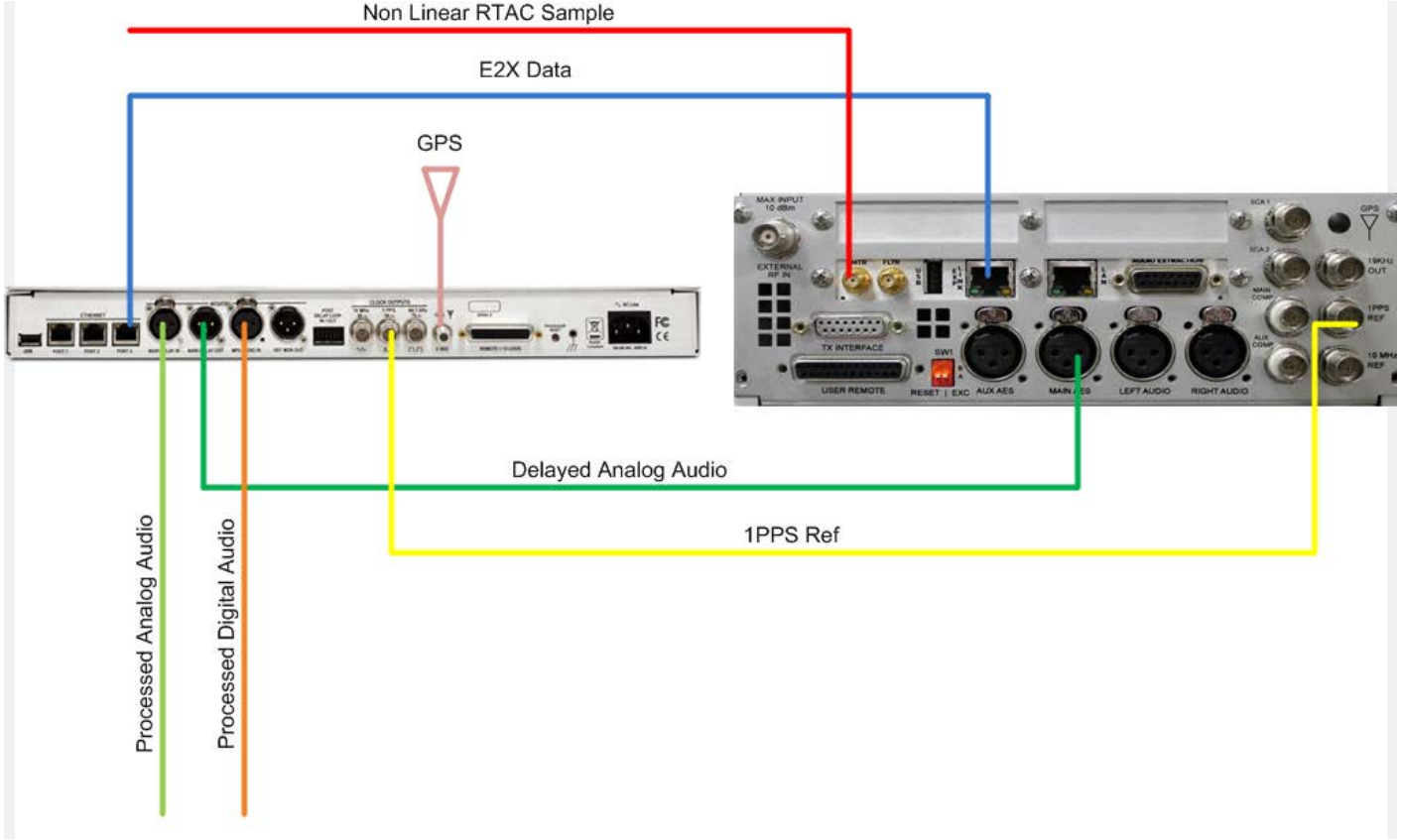
- Quick boot time
- Solid State Hard drive
- Windows 7
- Lynx AES16 Audio Card
- Server Grade Computer

- **Primary Function #1: Transmits SPS channel audio and AAS data to exporter**.
  - Anything in addition to HD1 audio and PSD data goes through the HDI-200
    - HD2, HD3 and HD4 and associated PSD data
    - Artist Experience
    - Navteq Traffic
- **Primary Function #2: Uses a program called WebAdmin to define channel bandwidth of the HD carriers.**

Network Planning

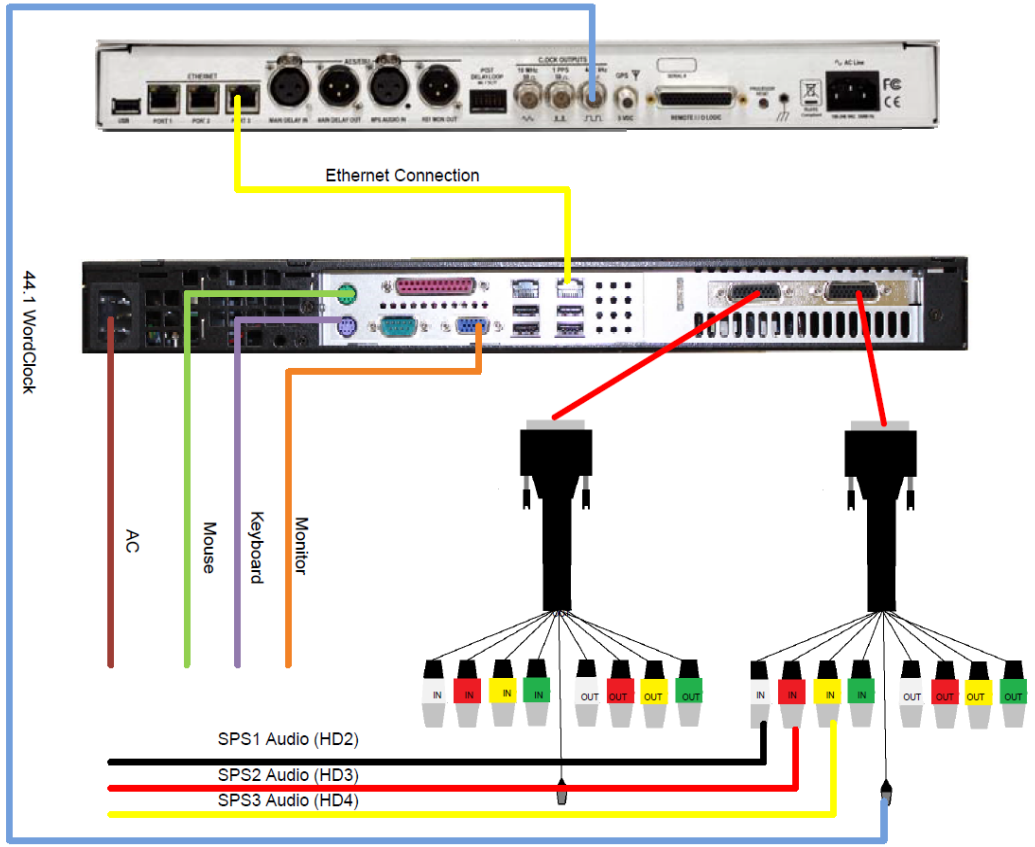
- HD equipment should be on segregated network
  - Physically separate
  - Set up VLANs
  - Use high quality managed switches
- Involve your IT department if integrating to company network.
- Marginal networking will impact the reliability of your HD channels
- Importer should not have access to internet.
  - No Antivirus software
  - No Windows updates
- Sufficient throughput, minimal jitter, high quality

Basic Interconnect for HD1

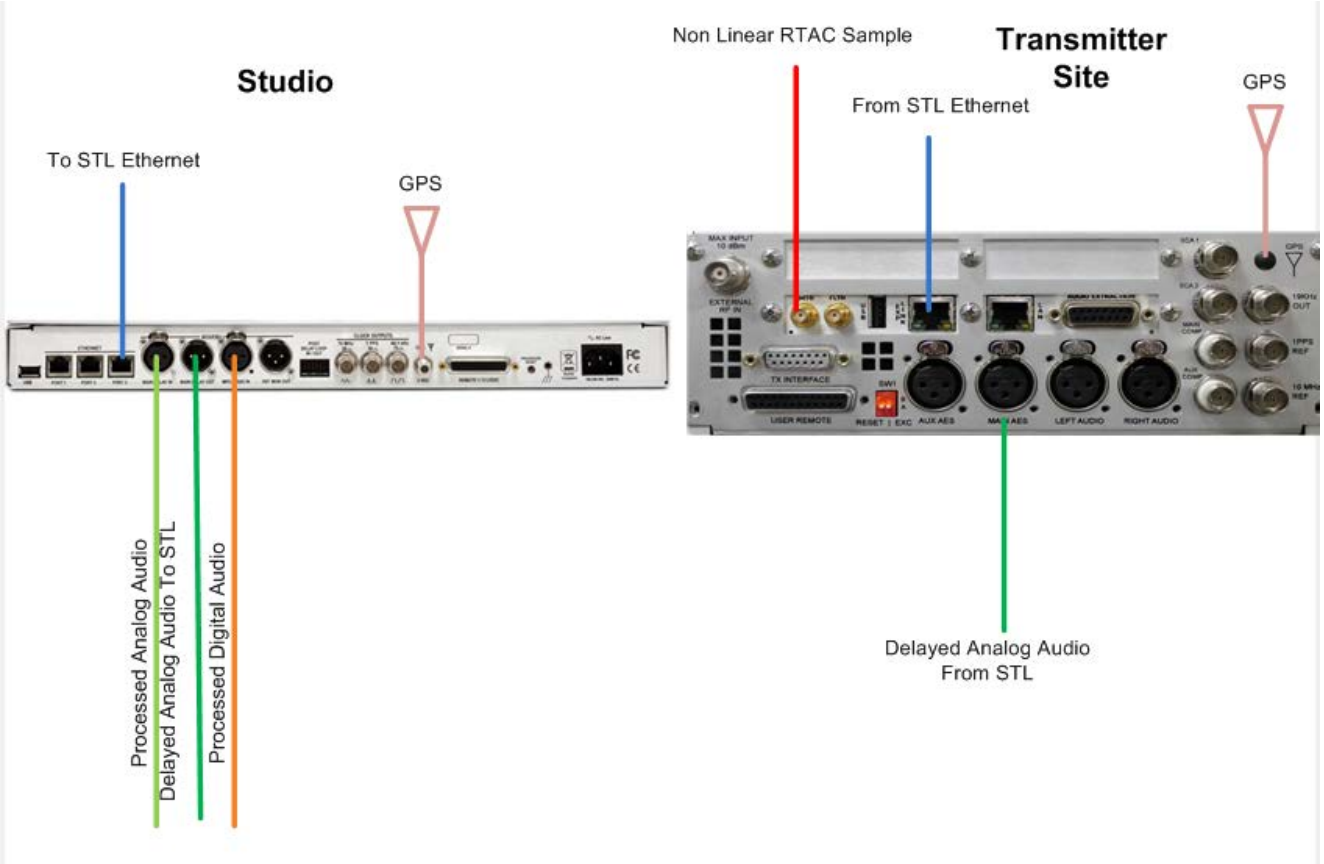
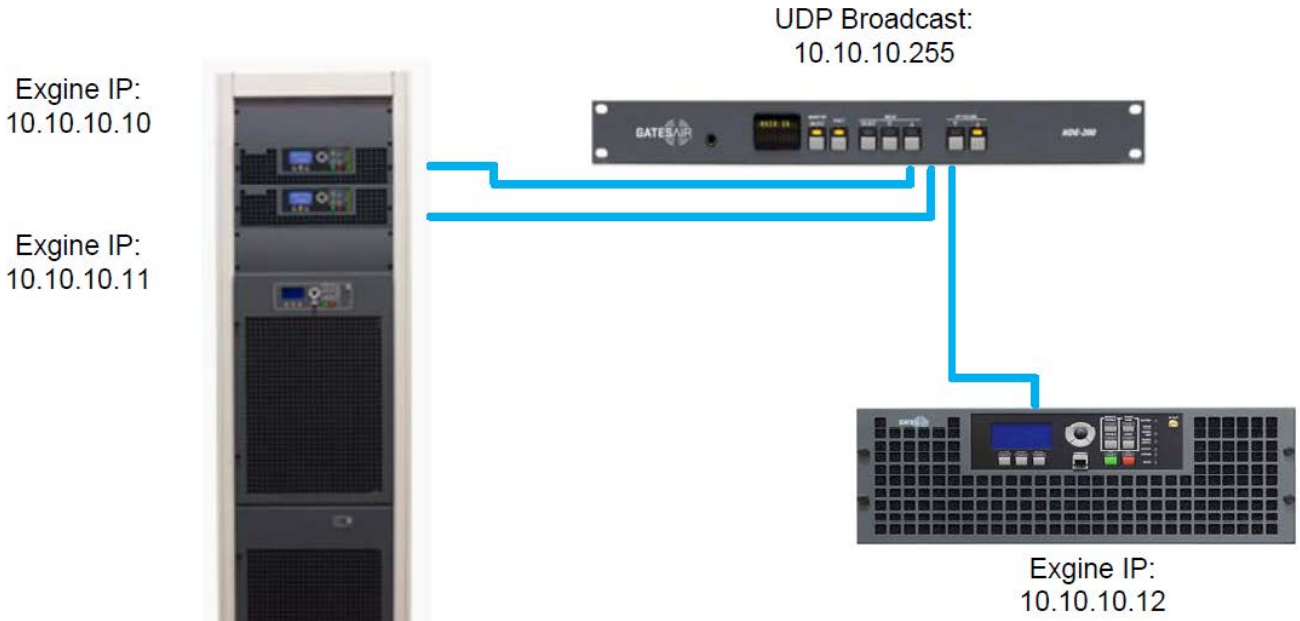


Adding an Importer

- If adding and Importer to utilize SPS or AAS services the following connections will also be required in addition to the previous slide.



Separating Exporter from Exciter



1 Exporter -> Multiple Exgines