

## DexStar®

### AM HD Radio™ Exciter

**DexStar® AM In-Band On-Channel exciters offer an unrivaled experience in digital transmission. The result is a superior exciter that delivers “best-in-class” performance, functionality and simplicity—during and after the transition from analog to IBOC digital radio.**

The DexStar exciter incorporates exclusive features to ensure maximum performance and functionality in real-world environments. Its improved audio I/O, RF I/O, re-engineered digital upconverter, and all-new controller and user interfaces make this exciter a no-compromise choice for IBOC.

Beyond its many advantages, DexStar is available with the exclusive ePAL® for maximum configuration flexibility. ePAL provides all of the required synchronization and sample rate conversion to the STL signal, delayed audio bypass switching and digital audio distribution. ePAL also allows for the addition of a second, optional DexStar exciter for full IBOC redundancy.

### Product Features

- Standard, internal GPS receiver, providing stable and accurate time reference for all subassemblies and synchronization with external systems
- Internal AES 44.1 kHz clock; ensures synchronization of audio processors and ePAL option
- Easy operation (locally or remotely) with exclusive graphical user interface (GUI)
- Extensive diagnostics with automatic fault-logging for troubleshooting
- Standard 19 in. rackmountable slide-out chassis for easy maintenance
- Ready access to subassemblies by removing cover on top of chassis

- All audio, RF and control connections via a back panel
- Backed by 24/7 service and parts support — the industry's best

### Product Details

DexStar includes five major subassemblies:

- Digital upconverter
- Audio I/O
- RF I/O
- Controller with Graphical User Interface
- Audio cards

The exciter is housed in a chassis that measures 19 in. wide x 7 in. high x 22 in. deep and slides into a standard EIA 19 in. rack. Subassemblies are accessible by removing a top cover, and all audio, RF and control connections are on the rear panel.

#### Digital Upconverter

The digital upconverter plugs into a PCI slot in the motherboard, receiving power and grounding from the PCI connector and using the PCI bus for configuration, control and baseband data transfer. The digital upconverter receives complex I and Q data and baseband magnitude data from the PCI bus. The I and Q signals are converted to magnitude and phase component signals, respectively. The phase signal is upconverted to the assigned AM

carrier frequency. The resulting on-channel phase signal is filtered and fed to the RF I/O, where it is buffered and amplified, and then output to a rear-panel BNC connector. A balanced phase signal is also available on an XLR jack on the rear panel. The magnitude signal passes through the Audio I/O and is available on the XLR connector for the AM transmitter's analog audio input.

#### Audio Cards

Each DexStar exciter includes two professional-grade audio cards with 20-bit resolution. One card handles analog AM audio and the other, IBOC audio. The cards are connected to the Audio I/O on the rear panel. Audio cards are synchronized to the DexStar exciter's 44.1 kHz sample rate, which is derived from a clock in the digital upconverter.

IBOC digital audio is delivered directly to the motherboard for processing and modulation.

In the AM version, analog audio is passed through a delay circuit, and converted to baseband I (in phase) and Q (quadrature) signals, before being sent on to the digital upconverter.

#### RF I/O

This assembly provides all RF and GPS outputs via BNC connectors on the rear panel. Two 1 PPS outputs and two 10 MHz outputs from the internal GPS receiver are provided.

The RF I/O also provides the AM Phase output. The AM Phase output is amplified and is adjustable from 3-10 V<sub>p</sub> via a potentiometer on the RF I/O board. A sample of the AM Phase signal is fed to the exciter controller for frequency verification. If carrier frequency has deviated +/-5% from its selected value, the exciter controller mutes the digital upconverter's phase output, preventing the damage to the AM transmitter that can result from an incorrect carrier frequency input.

#### Audio I/O

This assembly provides inputs and outputs for all audio via XLR inputs on the DexStar rear panel. Inputs are provided for IBOC digital and analog AM audio. Outputs are provided for IBOC digital monitoring, AM Magnitude and AM Phase (balanced) from the digital upconverter. The Audio I/O also samples the AM Magnitude signal and delivers this information to the DexStar controller.

All signals are EMI-filtered and synchronized to the 44.1 kHz sample rate. The synchronized signal can be used for synchronizing audio processors or with the GatesAir ePAL option.

#### Controller

The controller monitors the status lines of the motherboard, the main power supply voltages, and then communicates status information to the GUI. The controller monitors faults, generating alarms and communicating status to ePAL, and also controls status LEDs on the exciter's front panel. Fault outputs are provided on the user I/O DB25 connector for connection to remote control systems or to trigger external backup sequencing.

## Specifications

*Specifications and designs are subject to change without notice*

<b>AM Specifications</b>	
Magnitude Output Level	+10 dBm max into 600 ohms, balanced
Magnitude Output Connector	XLR
Phase Output	3 to 10 V, adjustable
Phase Output Connector	BNC, 50 ohms unbalanced, or XLR 110 ohms balanced
IF/AM Output	-30 to -5 dBm, max into 50 ohms, -20 dBm, nominal
<b>General Specifications</b>	
Power Requirements	115/230 VAC, 50/60 Hz, 100 Watts nominal
GPS Antenna Input	TNC, 50 ohms for use with recommended antenna
Clock Outputs	10 MHz (1 ppm, at +7 dBm nominal, 50 ohms, BNC); 1 PPS, (1 ppm, TTL level, BNC connector); 44.1 kHz (1 ppm, TTL level, XLR connector, 110 ohms)
AM AES Audio Inputs	XLR-F, 110 ohms, 44.1 kHz
DAB AES Audio Inputs	XLR-F, 110 ohms, 44.1 kHz
Monitor AES Audio Outputs	2 XLR-M, 110 ohms, 44.1 kHz
Communication Ports	2 DB9, DTE-RS232
USB Port	USB Connector Rev 1.0
Keyboard/Mouse	PS2 compatible
Ethernet	RJ45, 10/100 Mb/s
Remote Inputs	DB15, male
Remote Outputs	DB25, female
ePAL Interface	12-pin Wago Style
<b>Operating Temperature</b>	
Operational Relative	0 to 45° C derated 2° C per 304.9 m (1,000 ft.) Above Mean Sea Level (AMSL)
Humidity	0 to 90%, non-condensing
Dimensions (H X W X D)	7 x 19 x 22.4 in.
Weight	28.5 lbs.