



FXi 250 and FXi 60 FM Analog and HD Radio Exciters

The best for both worlds

Providing outstanding RF and audio performance, the FXi 250 and FXi 60 were designed to address current and future FM analog and HD Radio requirements. The FXi 250, with 250 watts output, and the 60-watt FXi 60 provide FM analog, HD Radio and FM-plus-HD Radio operation—with mode switching available on-the-fly.

Ultra-linear, direct-to-channel RF frequency generation results in the best RF performance. The transmitting frequency is created directly by the DSP system without any IF stages or frequency conversion. Noise and spurious emissions present in some digital exciters are non-existent.

Even when used with your current RF power amplifier, the innovations in the FXi Series exciters can provide you with better sounding audio to keep your listeners tuned in.

HD Radio without compromise

The reliable, field-proven FXi Series exciters are fully embedded solutions, eliminating the need for PC-based HD Radio equipment at the transmitter site. The optional plug-in Engine card modulates the HD Radio OFDM carrier for implementation of HD Radio multicasting using second-generation architecture. The need for a bidirectional link between the studio and transmitter sites is eliminated. With an FXi Series exciter, upgrading first-generation HD Radio systems involves installing modules—not replacing the entire exciter.

The FXi Series incorporates a number of functions to facilitate point-to-multipoint HD Radio distribution systems, as well as boosters and translators. An AES output decoded from the HD Radio Codec (HDC) stream, built-in delay and integrated GPS receiver option are more reasons the FXi Series exciters are the most versatile available.

It's all here

Standard features include multiple connection options addressing nearly every implementation schemes. For example, the HD Radio stream can be decoded and tapped from an AES output. In addition, an RF output low-pass filter permits direct on-air use. DSP control provides exceptionally precise parameter adjustment from the front panel video menu system as well as pre-correction of non-linearities in the transmitter amplifiers.

Providing analog FM data services is simplified with the two SCA generators and basic RDS encoder built-in, as well as the input for an external, dynamic RDS generator such as The Radio Experience RDi 20 from BE.



KEY PRODUCT FEATURES

- Direct-to-Channel RF frequency generation for superior RF and audio performance
- 60 watt and 250 watt models for flexible deployment
- The full complement of audio inputs—L&R analog, composite, mono analog and AES (wired and optical)—are concurrently available for primary and backup source assignment
- Ethernet connectivity links the FXi to the BE XPi 10 HD Radio Exporter for programming and data service transmission
- Universal power supply with power factor correction (PFC) and high/low voltage detection
- Fully compatible with all HD Radio system architectures
- FM analog, HD Radio and FM-plus-HD Radio operation—with real-time mode change
- Creates modulated OFDM HD Radio carriers with digital up-conversion to the FM band
- Corrects non-linearities in transmitter
- AES output provides audio decoded from HDC stream for primary or backup applications
- External frequency reference input for locking to GPS or other external source for on-frequency booster transmission
- Two SCA generators and a basic RDS encoder are standard, with inputs for external SCA or RDS equipment
- RF output low-pass filter is included for use directly on air
- PA contains dual modules. If one fails, the FXi stays on at reduced power
- Video menu system (640 x 480 VGA resolution) eases setup, operation, and maintenance
- DSP control provides exceptionally precise parameter adjustments
- User interface can be password protected for security for local and remote operation



FXi 250 and FXi 60 FM Analog and HD Radio Exciters

GENERAL

RF power Output: 60W: 5-60W
250W: 25-250W

Output Impedance: 50 ohms nominal

VSWR: Rated power (60 or 250W) into 1.5:1 VSWR.
Open and short circuit protected at all phase angles.

Frequency Range: 87.5 MHz to 108 MHz; 100kHz increments,
10kHz when specified

Frequency Stability: Internal TCXO: $\pm 300\text{Hz}$, -10C to +50C
External 10MHz Input: \pm accuracy of reference source

Audio Inputs: AES (wire & optical), L&R analog, composite, SCA/
RBDS/RDS external generator input, SCA audio inputs
(2); two internal SCA generators, internal RBDS/RDS
generator

Modulation Type: Direct-to-channel digitally generated FM (no analog up-
conversion); FM only, HD Radio only, or HD Radio + FM.

Modulation Capability: Up to 300kHz

Asynchronous AM S/N Ratio: 80dB below rated power reference carrier with
100% AM modulation at 400Hz, 75 μsec de-emphasis
with no FM modulation present

Synchronous AM S/N Ratio: 60dB below rated power reference carrier with
100% AM modulation at 400Hz, 75 μsec de-emphasis
with FM modulation $\pm 75\text{kHz}$ at 400Hz

Spurious and Harmonic: 85dB or better; low pass filter standard

AC Input: 90 to 264VAC; 47-63Hz

Power Factor: 0.98 or better

Surge Protection: Tested with IEEE C62.41-1991 recommended wave-
forms for location category B3 and IEC 801-4 standard
waveforms for severity level 4

Regulatory: FCC; DOC, CE; CCIR; IEC 215 Safety

ENVIRONMENTAL

Temperature Range: -10° C to +50° C
Altitude: 10,000 ft. (3048M)
Humidity: 95% maximum; non-condensing

STEREO PERFORMANCE

Operational Modes: Stereo, mono (L+R), L only, R only

Input Level: AES: -2dBfs for 100% modulation; 16-24 bits (32,
44.1, 48 or 96kHz typical rates for AES/EBU devices)
L&R: +10dBm for 100% modulation into 600 ohms

Impedance: AES: 110 ohms balanced
L&R: 600 ohms or 10k selectable; balanced

Connector: AES: Wire – XLR, Optical – Toshiba (TosLink)
L&R: XLR

Amplitude Response: $\pm 0.5\text{dB}$, 20Hz to 15kHz

THD+Noise: 0.03% or better

IMD Distortion: 0.03% or better

S/N Ratio: 85dB or better below 100% modulation @ 400Hz

Stereo Separation: 70dB, 20Hz to 15kHz

Linear Crosstalk: 70dB below 100% modulation; 20Hz to 15kHz; main
to sub and sub to main

Pilot Stability: $\pm 0.3\text{Hz}$, 0° C to 50° C

Audio Overshoot: 2dB max

38, 57, 76, and 95kHz Suppression: 80dB below 100% modulation

COMPOSITE PERFORMANCE

Input Level: 3.5V p-p for 100% modulation into 10k ohms

Impedance: Balanced: 10k ohms or 50 ohms selectable
Unbalanced: 10k ohms

Connector: Balanced: BNC
Unbalanced: BNC

Amplitude Response: $\pm 0.01\text{dB}$; 20Hz to 53kHz; 0.1dB; 53kHz to 99kHz

Phase Response: $\pm 0.1^\circ$ from linear phase; 53kHz to 100kHz

THD + Noise: 0.005% or less

IMD Distortion: 0.005% or less

FM S/N Ratio: 90dB below 100% modulation @ 400Hz

MONO PERFORMANCE

Operational Modes: Mono (L+R), L only, R only

Input Level: 3.5V p-p for 100% modulation into 600 ohms

Impedance: 600 ohms or 10k ohms selectable

Connector: XLR

Amplitude Response: $\pm 0.5\text{dB}$; 20Hz to 15kHz

THD + Noise: 0.05% or less; 20Hz to 15kHz

IMD Distortion: 0.05% or less, 20Hz to 15kHz

FM S/N Ratio: 90dB below 100% modulation @ 400Hz

SCA 1&2 PERFORMANCE (INTERNAL)

Input Level: +10dB for 10% modulation into 600 ohms

Impedance: 600 ohms or 10k ohms selectable

Connector: D-Sub 9-position female

Amplitude Response: $\pm 0.5\text{dB}$; 20Hz to 7kHz

S/N Ratio: 60dB or better

Frequency: 20kHz to 99kHz; software programmable

Deviation: 2.5 to 10kHz; software programmable

Injection Level: 2 to 15%; software programmable

RBDS/RDS PERFORMANCE (INTERNAL)

Frequency: 57kHz

Injection Level: 2 to 15%; software programmable

SCA/RBDS/RDS (EXTERNAL)

Input Level: 3.5V p-p for 10% deviation

Impedance: 10k ohms unbalanced

Connector: BNC

Amplitude Response: $\pm 0.5\text{dB}$; 20Hz to 100kHz

19kHz Output: 19kHz synchronization clock for external RBDS/RDS
operation 2.5V p-p into 50 ohms

PHYSICAL

Height: 7 inches

Width: 19" EIA rack mountable

Depth: No rear rails required – fits into 24" deep rack

Airflow: Intake and exhaust through back of unit

Weight: 38 lbs. unpacked

