

FMi 301 - Technical Specifications : Technical Specifications

RF SPECS

Output Power:**Range:****HD Radio only:**

750 W to 1.2 kW (-20 dB HD signal injection ratio)

FM + HD Radio:

1.5 kW to 2.8 kW (-20 dB HD signal injection ratio)

Exciter:

Broadcast Electronics FXi 250 digital FM/HD exciter

PA Efficiency:**HD Radio Only:**

40% or better at rated power

FM+HD Radio:

50% or better at rated power

Overall AC Efficiency:**HD Radio only:**

20% or better at rated power

FM + HD Radio:

40% or better at rated power

Frequency:**Range:**

87.5 MHz to 108 MHz, programmable in 10 kHz steps

Stability:

± 150 Hz, -10°C to $+50^{\circ}\text{C}$ using high accuracy internal oscillator. 10MHz and 1pps input for synchronization to external (GPS) reference. Automatic switching to internal oscillator if external reference fails.

VSWR:

Rated power into 1.5:1 VSWR, capable of operating in to higher VSWR with automatic power reduction, open and short circuit protected at all phase angles

RF Harmonics Suppression:

Internal harmonic filter meets or exceeds all FCC, IC, CE, CCIR and IEC215 requirements. Meets or exceeds standard NRSC-5A emission limits in all operating modes.

Modulation Type:

FM digitally synthesized direct to channel, HD digital direct to channel, FM + HD Radio digital direct to channel.

Operation Modes:

On the fly mode switching between FM only, FM + HD Radio, and HD Radio only.

FM Modulation Capability:

Great than ± 300 kHz

Synchronous AM S/N Ratio:

50dB minimum below equivalent 100% amplitude modulation with 75us de-emphasis and 400Hz high pass filter (FM deviation ± 75 kHz by a 400Hz sine wave). 60dB typical below equivalent 100% amplitude modulation with 75us de-emphasis and 400Hz high pass filter (FM deviation ± 75 kHz by a 400Hz sine wave).

Asynchronous AM S/N Ratio:

55dB minimum below equivalent 100% amplitude modulation by 400Hz using 75us de-emphasis (no FM modulation present). 72dB typical minimum below equivalent 100% amplitude modulation by 400Hz using 75us de-emphasis (no FM modulation present).

Impedance:

50 ohm

Regulatory:

Meets or exceeds all FCC requirements

AUDIO SPECIFICATIONS WITH FXI 250 DIGITAL EXCITER

Broadcast Electronics

Technical Specifications

Modes:

Stereo, mono (L+R), L only, R only; remote selectable

Stereo Performance (AES or analog inputs):

Pre-Emphasis:

Selectable None, 50 or 75 microseconds

Stereo Pilot Tone:

19kHz \pm 0.03Hz; injection level adjustable 0% to 15% in 0.1% steps; Nominal: 9%; Suppression: 38kHz, 57kHz, 76kHz, and 95kHz; 80dB below \pm 75kHz deviation.

Stereo Separation:

65dB or better, 20 to 15kHz

Dynamic Stereo Separation:

65dB or better, 20 to 15kHz

Amplitude Response:

0.1dB, 20Hz to 15kHz

Signal to Noise Ratio:

87dB or better below 100% modulation at 400Hz; measured in a 20Hz to 22kHz bandwidth with 75us de-emphasis and DIN "A" weighting.

Total Harmonic Distortion:

<.03%; 20Hz to 15kHz, in bandwidth 20Hz to 22kHz; with 75us de-emphasis

Intermodulation Distortion:

CCIF:

<.03% or less (14/15kHz 1:1)

SMPTE:

<.03% (60 and 7kHz 1:1)

Transient Intermodulation Dist:

<.03%; (2.96kHz square wave/14kHz sinewave modulation)

Linear Crosstalk:

90 dB below 100% modulation reference

Non-Linear Crosstalk:

80 dB below 100% modulation reference

Audio Overshoot:

<.2dB

Mono Performance (AES or analog input):

Pre-Emphasis:

Selectable None, 50 or 75 microseconds

FM Signal to Noise Ratio:

95dB or better below 100% modulation at 400Hz; measured in a 20Hz to 22kHz bandwidth with 75us de-emphasis and DIN "A" weighting.

Amplitude Response:

\pm .1dB, referenced to selected pre-emphasis curve.

Intermodulation Distortion:

CCIF:

.03% or less (14/15kHz 1:1)

SMPTE:

.03% or less (60/7kHz 1:1)

Transient Intermodulation Dist:

.03% or less (2.96kHz square wave/14kHz sine wave)

Composite Analog Input:

FM Signal to Noise Ratio:

95dB or better below 100% modulation at 400Hz; measured in a 20Hz to 22kHz bandwidth with 75us de-emphasis and DIN "A" weighting.

Amplitude Response:

\pm .01dB, 20Hz to 53kHz; \pm .1dB, 53kHz to 100kHz

Total Harmonic Distortion:

.005% or less over stereo sub band (10Hz to 53kHz) with 75us de-emphasis.



Broadcast Electronics

Technical Specifications

Intermodulation Distortion:

CCIF:

.005% or less (14/15kHz 1:1)

SMPTE:

.005% or less (60/7kHz 1:1)

Transient Intermodulation Dist:

.005% or less (2.96kHz square wave/14kHz sine wave)

Slew Rate:

11.8V/us-symmetrical

Phase Response Variation:

$\pm 0.05^\circ$ from linear phase, 10Hz to 100kHz

Group Delay Variation:

± 5 ns, 22Hz to 53kHz, ± 30 ns, 53kHz to 100kHz.

External SCA, RBDS Performance:

SCA Format:

Externally generated, analog FM subcarriers in the range 53-99kHz.

SCA Sub-band Amplitude Response:

± 0.5 dB; 40kHz to 100kHz.

SCA Channel FM Signal to Noise Ratio:

80dB below +6kHz subcarrier deviation at 400Hz with 150us de-emphasis.

Harmonic Distortion:

Less than .2% in audio pass-band of SCA generator

Intermodulation Distortion:

SMPTE(60 and 7kHz, 1:1): 0.2% or less, no pre/de-emphasis, SCA generator low-pass filter bypassed.

Crosstalk:

SCA to Stereo:

80dB below 100% modulation, L or R channel with 75us de-emphasis.

Stereo to SCA:

80dB below 100% modulation referenced to ± 6 kHz deviation and 150us de-emphasis

SCA to SCA:

80dB below 100% modulation referenced to ± 6 kHz deviation and 150us de-emphasis per channel.

Dual Internal SCA Performance:

Pre-Emphasis:

Selectable: 150us, 75us, 50us, none

Amplitude Response:

± 0.5 dB; 20Hz to 7kHz.

Subcarrier Frequency:

57kHz to 99kHz

Signal to Noise Ratio:

80dB with de-emphasis(150us).

Total Harmonic Distortion:

.1% 10Hz to 5kHz

SCA Deviation Capability:

1kHz to 10 kHz; software programmable.

Injection Level:

2% to 15%, software adjustable in 0.1% increments

Spurious & Harmonic:

2nd Harmonic:

Better than 40dB below subcarrier

3rd Harmonic:

Better than 45dB below subcarrier

All other components:

50Hz to 100kHz: better than 80dB below subcarrier.



Broadcast Electronics

Technical Specifications

RBDS Generator (Internal):

Subcarrier Frequency:

57kHz, ± 0.1 Hz

Injection Level:

2% to 15%, software adjustable.

MECHANICAL/PHYSICAL

Size:

30.64"W x 30"D x 64"H (77.83 W x 76.2 D x 162.56 H cm)

Weight:

525 lbs (238 kg)

Heat Dissipation:

HD Radio Only:

3200 watts (11,000 BTU/Hr) @ 1200 watts RF output

FM + HD Radio:

3900 watts (13,350 BTU/Hr) @ 2800 watts RF output

RF Output Connector:

1-5/8" EIA flange

ENVIRONMENTAL

Ambient Temperature Range:

+32°F to +122°F (0°C to 50°C)

Altitude:

To 10,000 feet (3050m) elevation above mean sea level, 60Hz operation; To 7500 feet (2286m) elevation above mean sea level, 50Hz operation

Humidity:

To 95% Non-Condensing

ELECTRICAL

AC Input Voltage:

3 Phase, Closed Delta:

196-252 VAC, 50/60 Hz

3 Phase, 4 wire, WYE:

339-437 VAC, 50/60 Hz

Single Phase:

196-252 VAC, 50/60 Hz

Power Factor:

.98 or better at 230 VAC

Current Draw:

3 Phase:

HD Radio Only:

15 amps

FM+HD Radio:

20 amps

Single Phase:

HD Radio Only:

30 amps

FM+HD Radio:

35 amps

AC Power Consumption:



Broadcast Electronics

Technical Specifications

HD Radio Only:

4.4 kW @ 1.2 kW RF output

FM + HD Radio:

6.6 kW @ 2.8 kW RF output

ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

