

### FMi 25T - Technical Specifications : Technical Specifications

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#### RF SPECS (FM+HD)

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**Output Power:****Maximum:**

25kW (-20 dB HD signal injection ratio)

**Exciter:**

Broadcast Electronics FXi 60 digital FM/HD exciter

**PA Efficiency:**

67% or better at rated power

**Overall AC Efficiency:**

57% or better at rated power

**Frequency:****Range:**

87.5MHz to 108MHz; programmable in 10kHz steps

**Stability:**

+/- 150Hz, -10°C to +50°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 1.8:1 VSWR, capable of operating into higher VSWR with automatic power reduction; Protected against open and short circuit, 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:**

FM + HD Radio or FM Only.

**FM Modulation Capability:**

Greater than +/-300 kHz

**Asynchronous AM S/N Ratio:**

55dB minimum below equivalent 100% amplitude modulation by 400Hz using 75us de-emphasis (no FM modulation present). 65dB typical 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 60 DIGITAL EXCITER

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**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

# Broadcast Electronics

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**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:**

±.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:**

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

**Total Harmonic Distortion:**

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

**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:**

±.05° from linear phase, 10Hz to 100kHz.

**Group Delay Variation:**

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



# Broadcast Electronics

## Technical Specifications

### External SCA, RBDS Performance:

#### SCA Format:

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

#### SCA Sub-band Amplitude Response:

$\pm 0.5$ 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  $\pm 6$ kHz deviation and 150us de-emphasis.

##### SCA to SCA:

80dB below 100% modulation referenced to  $\pm 6$ kHz deviation and 150us de-emphasis per channel

### Dual Internal SCA Performance:

#### Pre-Emphasis:

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

#### Amplitude Response:

$\pm 0.5$ 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.

### RBDS Generator (Internal):

#### Subcarrier Frequency:

57kHz,  $\pm 0.1$ Hz.

#### Injection Level:

2% to 15%, software adjustable.

### MECHANICAL/PHYSICAL

#### Size/Overall Dimensions Installed:

##### Transmitter:

56.5" W x 31.5" D x 70" H (143.5 W x 80 D x 177.8 H cm)

##### Power Supply:

34.5" W x 31.5" D x 70" H (87.6 W x 80 D x 177.8 H cm)



# Broadcast Electronics

## Technical Specifications

**Weight/Unpacked:****Transmitter:**

1500 lbs. (682 Kg)

**Power Supply:**

1750 lbs. (794 Kg)

**Cooling Air Requirements:****PA Cabinet:**

1500 CFM

**Driver Cabinet:**

500 CFM

**High Voltage Power Supply:**

natural convection

**Air Outlet:**

Air exhaust at top of cabinet

**Primary:**

Top of Power Amplifier Cabinet (33" X 30")

**Secondary:**

Top of Driver (22" X 30"), Power Supply Cabinet (33" X 30")

**Heat Dissipation:****Typical:**

20 kW (68,260 BTU/hr) @ 25 kW RF output

**Maximum:**

25 kW (85,325 BTU/hr) @ 25 kW RF output

**Air Conditioning Sizing:**

7.1 ton

**RF Output Connector:**

3-1/8" EIA flange

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**ENVIRONMENTAL****Ambient Temperature Range:**

+32°F to +122°F (0°C to 50°C)

**Altitude:**

7500 ft. (2286 M) @ 50 Hz; 10,000 ft. (3048 M) @ 60 Hz

**Humidity:**

0% to 95% Non-Condensing

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**ELECTRICAL****AC Input Voltage:****3-Phase Closed Delta:**

240 VAC (196-252 VAC), 50/60 Hz

**3-Phase WYE 3 Wire:**

240 VAC (196-252 VAC), 50/60 Hz

**3-Phase WYE 4 Wire:**

400 VAC (339-437 VAC), 50/60 Hz

**Disconnect Size:**

300 A per phase, fused disconnect recommended

**AC Wire Size:**

400 KCMIL copper, THHN or equivalent

**Current Draw @ 25 kW:**

155 A per phase average (actual determined by line voltage, carrier frequency, etc.)



# Broadcast Electronics

## Technical Specifications

**AC Power Consumption:**

**Typical @ 25 kW RF Output Power:**

45 kW

**Maximum @ 25 kW RF Output Power:**

50 kW

**Power Factor:**

0.94 or better at full load

**Surge Protection:**

External surge suppressor (supplied by customer)

**ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE**

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