

Solutions for

Tomorrow's Radio

FM-2C

2 kW Solid State FM Transmitter

The Broadcast Electronics' 2 kilowatt Solid State FM transmitter has set the standards for audio quality, cost-efficiency, reliability and long life. The FM-2C offers proportional VSWR foldback which protects the power amplifier by automatically reducing output power to a safe operating level. The Solid State FM transmitters represent just one of our many solutions to your radio needs.

Need Solutions? www.bdcast.com

BROADCAST ELECTRONICS, INC.

4100 N. 24th Street • Quincy, IL 62301 Phone: (217)224-9600 Fax: (217)224-9607 e-mail: bdcast@bdcast.com



Features

- Contains the renowned FX-50 Exciter technology which is the broadcast standard for FM audio performance.
- Full RF redundancy multiple front panel plug-in power amplifiers.
- Redundant P.A. power supplies are front plug-in units.
- True proportional (VSWR) foldback to keep the transmitter on the air even in the worst conditions.
- Advanced transmitter controller provides exceptional front panel transmitter control capabilities and extensive metering of individual modules.
- Conservative power rating.

- Integrated automatic power control system maintains constant RF output power.
- Developed with a low noise super cooling system that significantly extends transistor life.
- Frequency agile, N+1 compatible so you can have an automatic back-up for any signal in the band.
- Rack mountable fits the standard 19-inch racks.
- Accessories are available: automatic exciter switcher, digital stereo generator or SCA generator.



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Performance Specifications

GENERAL

Power Output: 500 watts to 2,000 watts. **DC to RF Efficiency:** 66% minimum, 70% typical.

Frequency Range: 87.5 to 108 MHz, tuned to specific operating frequency. Exciter programmable in 10 kHz steps.

RF Output Impedance: 50 ohms. **Output Connector:** 1-5/8" EIA flange. **VSWR:** Rated power into 1.5:1 maximum. Capable of operating into higher VSWR with automatic power reduction. Open and short circuit protected at all phase angles.

Frequency Stability: ±300 Hz, 0 to 50 degrees C. Type of Modulation: Direct frequency modulation of carrier frequency.

Modulation Capability: Greater than ±350 kHz. Modulation Indication: Peak reading, color coded, LED display with baseband overmodulation indicator.

Exciter: Solid state, 125 watt output, Model FM-100C, incorporating a digitally programmed synthesizer (10 kHz increments). **Pre-Emphasis:** FCC 75µS, CCIR 50µS

(where specified, 25µS [Dolby]) or flat response, selectable.

Asynchronous AM S/N Ratio: 55 dB below reference carrier with 100% AM modulation @ 400 Hz, 75µS de-emphasis (no FM modulation present).

Synchronous AM S/N Ratio: 50 dB below 2 kW reference carrier with 100% AM modulation @ 400 Hz, 75µS de-emphasis (FM modulation ±75 kHz @ 400 Hz).

IMD Protection: The output filtering supplied with the transmitter will be adequate to provide spurious and harmonic suppression as required below. Bandpass or notch filters required at sites used by multiple stations will be vendor supplied on an as needed basis. The module RF amplifier combining system provides 20 dB or more mixing Turn Around Loss to interfering signals.

RF Harmonics: Suppression meets all FCC/DOC requirements and CCIR recommendations. **AC Input Power:** 195-252 VAC, 50/60 Hz, single phase.

Overall Efficiency: 46% at 230 VAC. 2000 watts into 50 ohms, 48% typical. Altitude: 7500 ft. (2286 M) @ 50 Hz; 10,000 ft. (3048 M) @ 60 Hz.

Ambient Temperature Range: 0 to +50 degrees C.

MONAURAL OPERATION

Audio Input Impedance: 600 ohms balanced, resistive, adaptable to other impedances, 60 dB common mode suppression. Audio Input Level: +10 dBm nominal for ±75 kHz deviation @ 400 Hz. Audio Frequency Response: ±0.5 dB, 30 Hz to 15 kHz, selectable flat, 25, 50, 75 microsecond pre-emphasis. Total Harmonic Distortion + Noise: 0.02% or less at 400 Hz.

SMPTE Intermodulation Distortion:

0.02% or less, 60 Hz/7 kHz, 4:1 ratio. **CCIF Intermodulation Distortion:** 0.02% or less, 15 kHz/14 kHz, 1:1 ratio. **Transient Intermodulation Distortion:** 0.02% or less, sine wave/square wave. **FM S/N Ratio:** 85 dB below ±75 kHz deviation @ 400 Hz, measured in a 20 Hz to 30 kHz bandwidth with 75µS de-emphasis.

WIDEBAND COMPOSITE OPERATION

Composite Inputs: 3 total, (1) unbalanced and (1) balanced plus front panel test. All connectors BNC.

Composite Input Impedance: 10K ohm or 50 ohm, nominal, resistive, selectable. **Composite Input Level:** 3.5V p-p nominal, for ±75 kHz deviation.

Composite FM S/N Ratio: 88 dB below \pm 75 kHz deviation @ 400 Hz. Measured in a 20 Hz to 30 kHz bandwidth with 75µS de-emphasis. Composite Harmonic Distortion + Noise: 0.02% or less @ 400 Hz.

Composite SMPTE Intermodulation Distortion: 0.02% or less, 60 Hz/7 kHz, 1:1 ratio. Composite CCIF Intermodulation Distortion:

0.02% or less, 15 kHz/14 kHz, 1:1 ratio. Composite Transient Intermodulation Distortion: 0.02% or less, sine wave/square wave.

Composite Altitude Response: ±0.05 dB, 30 Hz to 100 kHz. Composite Phase Response: ±0.25 degrees

from linear phase, 30 Hz to 53 kHz. Composite Group Delay: 125 nanoseconds. Composite Slew Rate: 9 V/microsecond (symmetrical).

STEREO OPERATION

Audio Input Impedance: 600 ohms balanced. resistive, floating (adaptable to other impedances). Audio Input Level: +10 dBm, ±1 dBm, for 100% modulation @ 400 Hz. Audio Input Filters: 15 kHz LPF with delay equalization for minimum overshoot. Frequency Response: ±0.5 dB, 30 to 15,000 Hz, 75µS pre-emphasis (flat, 25 or 50µS pre-emphasis selectable). **Total Harmonic Distortion:** 0.05% or less @ 400 Hz. **SMPTE Intermodulation Distortion:** 0.05%, 60 Hz/7 kHz, 4:1 ratio. **CCIF** Intermodulation Distortion: 0.05% or less, 15 kHz/14 kHz, 1:1 ratio. Transient Intermodulation Distortion: 0.05% (square wave/sine wave). FM Signal to Noise: -82 dB or better below 100% modulation @ 400 Hz, 75uS de-emphasis. Stereo Separation: 50 dB or better. 30-15,000 Hz (sine wave) Dynamic Stereo Separation: 40 dB or better, 30-15,000 Hz (normal program content). Linear Crosstalk: Main to Sub/Sub to Main due to amplitude and phase matching of left and right channels. 30-15,000 Hz, 45 dB minimum below 100% modulation.

Non-Linear Crosstalk: Main to Sub/Sub to Main due to distortion products. 70 dB minimum below 100% modulation.

38 kHz Suppression: 80 dB minimum below 100% modulation.

Pilot Stability: ±0.5 Hz, 0 to 50 degrees C. **Modes:** Stereo, Mono L+R, Mono (L) and Mono (R) remote controlled. (See FS-30 data sheet for full details.)

FM-2C system performance is specified using model FM-100C Exciter and FS-30 Stereo Generator where applicable, measured at rated transmitter power of 2 kW into a 50 ohm resistive load.