

Quest™ Series

**100, 250, 500 &
1000 Watt
FM Transmitters**

The Harris Quest™ Series is a cost-effective VHF/FM broadcast transmitter line using the latest advances in RF technology.

The microprocessor-based controller provides comprehensive monitoring and control functions not found in other transmitters in this power range. Front panel controls include: PA on/off, power raise/lower, and remote/local control mode selection. A convenient LCD display indicates forward power, reflected power, power amp voltage and current. Front panel and remote status of faults and on/off status are provided. The PA module is from the Harris PT solid-state FM transmitter which has a proven track record for excellent reliability and performance. The Quest Series uses a transient protected, non-switching, self-regulating power supply, coupled with automatic power control, providing stable RF output power. The Quest Series transmitters include an integrated high quality analog exciter. The Quest Series can also be configured with the DIGIT®CD exciter providing CD quality audio performance in a low power FM transmitter.

Features/Benefits

- ▶ Value leader solid-state VHF/FM transmitter.
- ▶ Broadband 87.5 to 108MHz with no tuning.
- ▶ Field-proven MOSFET RF amplifiers.
- ▶ Integrated direct carrier FM exciter.
- ▶ Microprocessor-based controller.
- ▶ Standard automatic power control, VSWR protection, VSWR foldback, temperature and AC/DC overload protection.
- ▶ Remote control and monitoring capability.



Quest Series FM Transmitter Specifications

General

Frequency Range: 87.5MHz to 108MHz in 10kHz steps.
Excitation: Integrated 10 watt exciter.
Type of modulation: Direct carrier frequency modulation (DCFM).
Frequency Stability: ± 3 ppm, 0°C to 50°C (4 minute stabilization period).
Modulation Capability: ± 350 kHz.
RF Load Impedance: 50 ohms; fully VSWR protected.
RF Output Termination: Type N, female.
RF Sample Port: Type BNC, female; 1V RMS nominal into 50 ohm load.
Maximum Load VSWR: 1.5:1 VSWR, maximum for full output power; automatic power reduction into higher VSWR. Continues to operate at reduced forward power into $>5:1$ VSWR at foldback extreme. At higher outputs: Up to 110% of nominal rated power into a 1.2:1 VSWR.
RF Harmonic/Spurious Output: Suppression meets or exceeds FCC/IC/CICR specifications.
AC Input Power: 120VAC 60Hz or 208/220/240VAC 50/60Hz, single phase, 2-wire, $+10/-15\%$ line variation.
Ambient Temperature Range: 0°C to $+50^\circ\text{C}$ at mean sea level; derated $2^\circ\text{C}/304.9\text{m}$ (1,000ft) altitude.
Maximum Altitude: 3,049m (10,000ft); 50/60Hz mains frequency.
Maximum Humidity: 95% non-condensing.
Air Cooling Requirements: 60Hz; $9.9\text{m}^3/\text{min}$ (350cfm). 50Hz; $8.2\text{m}^3/\text{min}$ (290cfm).
Cabinet Size: 62.2cm (24.5") H x 56.3cm (22.2") D x 48.3cm (19") W; 19-inch EIA rack compatible.
Weight: Quest 1 104.5kg (230 pounds)
Quest 500 88.6kg (195 pounds)
Quest 250 77.3kg (170 pounds)
Quest 100 72.7kg (160 pounds)
Remote Monitoring And Control/Interface Levels Commands: 5V optoisolated, active low; comprising - Momentary Controls: Tx On/Off, Power Raise/Lower. Latching Control: Tx Low Power Mode. Automatic recovery when low is lifted [can be slaved to U.P.S. (uninterruptible power supply)].
Status: Open collector, low condition indicates fault; comprising Transmitter On, Local Control, Mute, PLL, Temperature, DC, VSWR, Interlock.
Analog (telemetry): 0-5VDC, comprising Forward Power, Reflected Power, PA Voltage, PA Current.

Wideband Composite Performance

Input: Unbalanced, jumper selectable 50Ω or $10,000\Omega$ (resistive), BNC jack or Balanced (jumper selected), $10,000\Omega$ (resistive), XLR jack.
Input Sensitivity: 3.5Vp-p nominal for ± 75 kHz deviation.
Amplitude Response: ± 0.1 dB, 30Hz to 53kHz.
FM Signal To Noise Ratio: 80dB below ± 75 kHz deviation at 400Hz with 75 μ s de-emphasis, 22Hz to 500kHz bandwidth.
Harmonic Distortion (THD+N): 0.02%, 30Hz to 100kHz with 75 μ s de-emphasis.

Intermodulation Distortion: 0.03% (60Hz/7kHz 1:1 tone pair).
CCIF Intermodulation Distortion: All distortion products down 74dB (reference 14kHz/15kHz tone pair).
Asynchronous AM Noise: 55dB below equivalent 100% amplitude modulation.
Synchronous AM Noise: 60dB minimum below equivalent 100% amplitude modulation with 75 μ s de-emphasis and 400Hz highpass filter (FM deviation ± 75 kHz by a 1kHz sinewave).
Phase Response: ± 0.5 degrees variation from linear phase, 30Hz to 53kHz, limited by measurement equipment (see stereo separation below).
Stereo Separation: 30Hz to 300Hz: 40dB; 300Hz to 15kHz: 50dB (as limited by external stereo generator).
Transient Intermodulation Distortion: (DIM): 0.05%, 2.96kHz square wave/14kHz sinewave modulation.

Monaural Mode (Standard)

Input: XLR (female) connector, 600 ohms, balanced, resistive, transformerless.
Input Sensitivity: -8dBm to +12dBm for ± 75 kHz deviation at 400Hz, adjustable.
Amplitude Response: ± 0.5 dB with respect to pre-emphasis curve. Selectable pre-emphasis: flat, 25, 50 or 75 μ s.
Harmonic Distortion: (THD+N): 0.02%, 30Hz to 15kHz with 75 μ s de-emphasis.
Intermodulation Distortion: 0.03%, 60Hz/7kHz tone pair, 4:1 ratio, 75 μ s pre-de-emphasis (SMPTE).
CCIF Intermodulation Distortion: All distortion products down 74dB (reference 14kHz/15kHz tone pair).
Transient Intermodulation Distortion: (DIM): 0.05%, 2.96kHz square wave/14kHz sinewave modulation (flat).
FM Signal To Noise Ratio: 80dB below ± 75 kHz deviation at 400Hz with 75 μ s de-emphasis, 22Hz to 500kHz bandwidth.

SCA/RBDS/RDS Inputs (Standard)

Number Of Inputs: Three, female BNC.
Input Impedance: 10,000 ohms, unbalanced.
Input Sensitivity: 1.5Vp-p (nominal) for 10% injection.
Subcarrier Frequency Range: 57kHz to 92kHz (25kHz to 92kHz in monaural operation).
Amplitude Response: ± 0.3 dB, 20kHz to 100kHz.

Model	Power Ratings (watts)	FCC Type Notified	Power Consumption
	Nominal		Nominal
Quest 1	1,000	250-1,100	2,200
Quest 500	500	125-550	1,200
Quest 250	250	65-275	800
Quest 100	100	25-110	400

Specifications subject to change without notice.



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