



SOLID-STATE FM BROADCAST TRANSMITTERS QUANTUM M-SERIES 1.2 kW to 5.4 kW

QEI Solid State FM Transmitters, precision crafted to be the very best. Designed for years of trouble free service, the totally solid state **QUANTUM M-SERIES** of FM transmitters, provide an unsurpassed broadcast signal. The **QUANTUM M-SERIES** of 1.2 to 5.4 kilowatt transmitters offer the FM broadcaster the benefits of QEI's unequaled background in FM solid state performance and reliability. QEI developed the **QUANTUM M-SERIES** utilizing decades of real-world field proven experience in solid state FM transmitter design. This completely solid state design offers significant savings by eliminating tube replacement costs associated with conventional transmitters. The **QUANTUM M-SERIES** offer high efficiency resulting in additional savings in power consumption and reduced heat loads.

For about the same price as tube transmitters, you can now own one of QEI's **QUANTUM M-SERIES** solid state transmitters and gain the **maximum performance advantage.**

The **QUANTUM M-SERIES** of transmitters feature modular power amplifiers and are available in power levels between 1.8 and 5.4 kilowatts in 600 Watt increments. *You can buy precisely the amount of power you need.* This makes the **QUANTUM M-SERIES** of transmitters affordable to own and operate by avoiding the inefficiency of running a higher power transmitter at low output power levels.

By using modern CAD/CAM techniques and computer assisted manufacturing, QEI has reduced the size of the transmitter to **less than 5 feet tall!** Yet even in this small package, the **QUANTUM M-SERIES** houses the exciter, driver, FET power amplifier modules, output combiner, power supplies and harmonic filter/directional coupler assemblies in one unit.

QEI engineers designed the **QUANTUM M-SERIES** to deliver what broadcasters need... **RELIABILITY.** Every step of the way QEI selected only the highest quality components. You can feel it

in the ergonomically placed controls and metering, and see it in the attention to detail on the FET power amplifier modules. The **QUANTUM M-SERIES** are expertly crafted to be the best broadcast transmitters available in the world today!



The **QUANTUM M-Series** exciter/driver was specifically designed with the needs of a high power solid state transmitter. No other transmitter manufacturer has taken such care in the development of the entire transmitter/exciter package. QEI developed the first truly linear frequency modulated oscillator (FMO) over 20 years ago with our best selling Model 675 exciter. The **QUANTUM M-Series** continues the tradition with our new *Super-Linear FMO*. This new advance in FMO technology is the secret to the **QUANTUM M-series** transmitter's outstanding broadcast audio performance.

The power amplifier modules are comprised of four FETs combined for 600 Watts of output power. Each module is fed by a self aligning connector to the state-of-the-art combiner. This provides reliable, low-loss matching and isolation of the power amplifiers. This QEI exclusive design eliminates all trouble prone connections and high loss cabling. Filtered air positively pressurizes the cabinet eliminating dust infiltration. The power amplifier module compartment has multiple, super quiet fans for redundancy and to ensure even cooling of

all modules.

QEI pioneered single phase high power transmitter design and continues to dominate the industry by manufacturing the **QUANTUM M-SERIES** with a single phase power supply.

QEI's **QUANTUM M-SERIES** of Solid-State FM Broadcast Transmitters are designed and manufactured with pride in the U.S.A.

QEI QUANTUM M-Series 1.2 kW to 5.4 kW FM Transmitters

Technical Specifications

GENERAL

Power Output:

Quantum 1.2.....	600 to 1200 Watts
Quantum 1.8.....	600 to 1800 Watts
Quantum 2.4.....	600 to 2400 Watts
Quantum 3.0.....	600 to 3000 Watts
Quantum 3.6.....	600 to 3600 Watts
Quantum 4.2.....	600 to 4200 Watts
Quantum 4.8.....	600 to 4800 Watts
Quantum 5.4.....	600 to 5400 Watts
Quantum 6.0.....	600 to 6000 Watts

Frequency Range: 87.5 to 108 MHz

RF Load Impedance: 50 ohms

Output Connector: 1-5/8" EIA flange
(Other connectors are optional)

VSWR: 1.6:1 max. at full power
(automatic arc suppression and power control for operation at reduced power into any phase or magnitude)

RF Harmonic/Spurious: Suppression meets or exceeds all FCC/DOC/CCIR specifications

Exciter: QEI QUANTUM 300E

Frequency Stability: +/- 200 Hz from 0° to 50°C

Modulation Capability: Greater than +/- 350 kHz

Modulation Sensitivity vs. Temperature:
..... 0.001 % per degree Centigrade

Pre-Emphasis:

Standard.....	75usec (FCC)
Optional.....	50usec (CCIR)

Asynchronous AM S/N Ratio (AM Noise): -55 dBc (no FM Modulation present)

Synchronous AM S/N Ratio (Incidental AM): -50 dBc with 100 % FM modulation

ELECTRICAL/MECHANICAL

AC Power requirement: 208/240 VAC
50/60Hz single phase (tap range 198 to 250 VAC other line voltages and frequencies optional)

Ambient Temperature Range:

Operating.....	-15°C to +50°C
Startup.....	0°C to +50°C

Maximum Altitude: 10,000 feet AMSL

Maximum Humidity: 95% non-condensing

Cabinet Size: 24"W (61 cm) x 36"D (91cm) x 59"H (149cm)

MONAURAL PERFORMANCE

Input Impedance: 600 Ohm balanced

CMRR >60 dB

Input Level: +10 dBm nominal for 75 kHz deviation at 400 Hz

Frequency Response: +/-0.5 dB, 30 Hz to 15 kHz

THD+N: 0.02 % at 400 Hz

FM S/N Ratio: 80 dB below 75 kHz deviation at 400 Hz, measured in a 20 Hz to 30 kHz bandwidth with 75 usec de-emphasis

WIDEBAND COMPOSITE PERFORMANCE

Inputs: (1) unbalanced on rear panel, BNC connector

Input Impedance: 10 kOhm

Input Level: 3.5 V_{P-P} for 75 kHz deviation

FM S/N Ratio: 80 dB below 75 kHz deviation at 400 Hz, measured in a 20 Hz to 30 kHz bandwidth with 75 usec de-emphasis

THD+N: 0.02 % at 400 Hz

Amplitude Response: +/-0.01 dB, 20 Hz to 75 kHz

Phase Response: +/-0.1 degrees from linear phase, 20 Hz to 75 kHz

Composite Slew Rate: 9 V/microsecond (symmetrical)

STEREO PERFORMANCE*

Modulation Type: True numeric digital stereo generation, digitally generated pilot; no alignment required.

Frequency Response: +/-0.1 dB, 20 Hz to 15 kHz

THD+N: 0.02 % at 400 Hz

FM S/N Ratio: 80 dB below 75 kHz deviation at 400 Hz, measured in a 20 Hz to 30 kHz bandwidth with 75 usec de-emphasis

Stereo Separation: >60 dB

Dynamic Stereo Separation: >60 dB

Crosstalk (linear) >60dB

Crosstalk (non-linear) >60dB

SCA PERFORMANCE

Subcarrier Inputs: (3) total, unbalanced, BNC connectors

Subcarrier Input Impedance: 10 kOhm

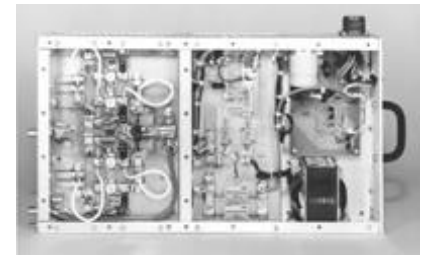
Subcarrier Input Level: 1.0 V_{rms}, for 10 % injection

Subcarrier Amplitude Response: +/-0.2 dB, 40 kHz to 100 kHz



QUANTUM M-Series Control Group

600 Watt FET Power Amplifier Module



* Quantum-Series performance is specified using model 300E exciter/driver, 710 digital stereo generator at rated transmitter power into a 50 ohm resistive load. Specifications are subject to change without notice. Since measurement techniques vary, care should be observed in comparing specifications of different manufacturers.