



SOLID-STATE FM BROADCAST TRANSMITTERS QUANTUM-SERIES 6.0 kW to 9.6 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-Series** of FM transmitters, provide an unsurpassed broadcast signal. The **QUANTUM -Series** of 6.0 to 9.6 kilowatt transmitters offer the FM broadcaster the benefits of QEI's unequalled background in FM solid state performance and reliability. QEI developed the **QUANTUM-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-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-Series** solid state transmitters and gain the **maximum performance advantage.**

The **QUANTUM-Series** of transmitters feature modular power amplifiers and are available in power levels between 7.2 and 9.6 kilowatts in 1200 Watt increments. *You can buy precisely the amount of power you need.* This makes the **QUANTUM-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 produced an internal modular system that is unrivaled for its ease of maintenance and upgradeability. Yet even in this package, the **QUANTUM-Series** house 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-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-Series** are expertly crafted to be the best broadcast transmitters available in the world today!



The **QUANTUM 600E** 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 300E continues the tradition with our new *Super-Linear FMO*. This new advance in FMO technology is the secret to the **QUANTUM-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 high power cable-less solid-state 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-Series** with a single phase power supply.

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

QEI QUANTUM-Series 6.0 kW to 9.6 kW FM Transmitters

Technical Specifications

GENERAL

Power Output:

Quantum 6.0	1200 to 6000 Watts
Quantum 7.2	1200 to 7200 Watts
Quantum 8.4	1200 to 8400 Watts
Quantum 9.6	1200 to 9600 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 or operation at reduced power into any phase or magnitude)

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

Exciter:..... QEI QUANTUM M-series

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

Modulation Capability: Greater than +/- 350 kHz

Modulation Sensitivity vs. Temperature:

0.01 % 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	-150C to +500C
Startup	00C to +500C

Maximum Altitude: 10,000 feet AMSL

Maximum Humidity:95% non-condensing

Cabinet Size:24"W (61 cm) x 36"D (91cm) x 76"H (193cm)

MONAURAL PERFORMANCE

Input Impedance: 600 Ohm balanced

CMMR:>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 50 Hz to 15 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 50 Hz to 15 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 50 Hz to 15 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

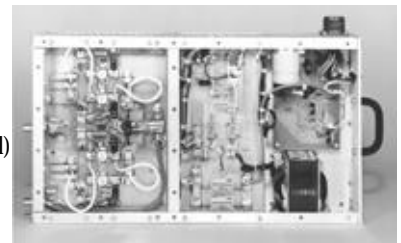
Subcarrier Input Impedance:..... 10 kOhm

Subcarrier Input Level:.....1.0 Vrms, for 10 % injection

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



QUANTUM-Series Control Group



600 Watt FET Power Amplifier Module

* Quantum-Series performance is specified using model 600E exciter/driver, 710A 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.