



# AM-6A

*Solutions for  
Tomorrow's Radio*

The 6kW Solid State AM transmitter from Broadcast Electronics is based on the original AM-5, but has been improved to deliver more power, better efficiency and many more hours of trouble free operation. To increase the life of the power transistors, the AM-6A operates at a lower temperature above ambient than its predecessors. The AM-6A Solid State AM transmitter represents just one of the many solutions to your radio needs available from Broadcast Electronics.

## **6 kW Solid State AM Stereo Transmitter**



### **Features**

- Exclusive, patented class E power modules achieve unequaled power economy and operating efficiencies.
- Operates at five user-defined power levels, low enough to handle any nighttime power requirement.
- Performs at the highest audio quality - even at the station's lowest output power.
- Multiple front-panel plug-in power amplifiers.
- Unique redundant power supply design enhances transmitter reliability.
- Low-noise super cooling system extends transistor life up to eight times.
- Built-in output network eliminates the need for external impedance matching.
- Built-in C-QUAM stereo delivers the highest quality stereo performance, eliminating the need for additional equipment.

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## 6 kW Solid State AM Stereo Transmitter

### Performance Specifications

**General:** The AM-6A transmitter complies with Broadcast Electronics safety standards and meets IEC 215 safety requirements. The AM-6A also meets or exceeds FCC and DOC technical requirements.

**Transmitter Configuration:** The AM-6A is comprised of the following assemblies: One Exciter Control Unit (ECU), Three Power Blocks, One Output Network, Three Power Supply Panels, One AC Distribution Panel, and Three Fan Assemblies.

**PA Configuration:** Six plug-in power modules for easy front panel removal, rated at 1100 watts RF power output. Each power module is comprised of two power amplifier boards and one modulator board. The power amplifiers use high efficiency Class E (patented) switching amplifiers in push pull mode. The modulator uses a high efficiency forward Pulse Width Modulation (PWM) switchmode converter.

**Power Output:** 6 kW nominal. 25 watts to 6600 watts capability. Five (5) Preset Power Levels available by local or remote control. Power Controls 1 & 2 adjustable between 25 and 3000 watts. Power Control 3 is switchable between either 25 to 3000 watts or 2000 to 6600 watts. Power Controls 4 & 5 adjustable between 2000 and 6600 watts.

**RF Output Load Impedance:** 50 ohms, unbalanced. Matching network to optimize nominal VSWR of 1.5:1 at any phase angle at carrier frequency.

**Output Connector:** 1/2" or 7/8" coax clamp.

**Load VSWR:** Nominal 1.5:1 at full carrier power.

Will operate into higher VSWR with automatic power reduction, open and short circuit protected.

**Harmonic And Spurious Suppression:** Meets or exceeds FCC, DOC, and CCIR requirements, when preceded by external NRSC-1 compatible audio low pass filter(s).

**Carrier Frequency Range:** 522 kHz to 1705 kHz.

Supplied on one frequency (synthesized), as ordered. Accommodates 9 kHz or 10 kHz channel spacing.

**Carrier Frequency Stability:** +/-3 ppm, 0 to 50 degrees, centigrade.

**Carrier Shift:** Less than 1% at 95% negative modulation at 1 kHz.

**Type of Modulation:** Pulse Width Modulation of L+R envelope with integrated standard C-QUAM™ AM stereo. An RF input connector (BNC) is also provided for an external stereo exciter.

**Modes:** Stereo, Mono L+R, Mono L, Mono R by local or remote control.

**Modulation Capability:** 145% peak positive capability at 6600 watts. 130% into 1.5:1 VSWR.

**Modulation Input Indication:** Peak reading, color coded, LED bar graph display with an autorange feature for monitoring positive or negative input levels of four different audio channels (L/R or L+R/L-R) in the transmitter.

**Audio Input Level:** +10 dBm, +/-1 dB, L=R (or mono) to produce 100% L+R envelope modulation. Other input levels accommodated by internal resistor selection.

**Audio Input Impedance:** 600 ohms. Inputs are balanced, transformerless, and resistive with passive RFI filtering. Other impedances can be accommodated.

**Audio Frequency Response (Mono):** +/-0.5 dB, from 20 Hz to 10 kHz at 90% negative modulation (high frequency boost in) +0.1 dB, -3 dB from 20 Hz to 10 kHz at 90% negative modulation, standard configuration.

**Audio Harmonic Distortion (Mono):**

Less than 0.8%, 20 Hz to 10 kHz, at 6 kW;  
Less than 1.5%, 20 Hz to 10 kHz, at 3 kW;  
Less than 2.0%, 20 Hz to 10 kHz, at 1.5 kW;  
Less than 3.0%, 20 Hz to 10 kHz, at 600 W.

All mono audio harmonic distortion specifications are referenced to an audio input level which generates 90% modulation at 1 kHz (9 dBm).

**Audio Harmonic Distortion (Stereo):** Less than 1.5% at 50% single channel modulation, 50 Hz to 10 kHz, at rated power.

**Audio Intermodulation Distortion (Mono):** 1.2% or less 1:1 ratio; 1.7% or less 4:1 ratio, 60/7000 Hz SMPTE standards at 85% modulation, at rated power.

**CCIF Intermodulation Distortion (Mono):** 1.0% or less 1:1 ratio, 4 kHz/5 kHz at 85% modulation, at rated power.

**Transient Intermodulation Distortion (Mono):** 1.0% or less 4:1 ratio, 2.96 kHz square wave/8.00 kHz sine wave at 85% modulation, at rated power.

**Incidental Phase Modulation (Stereo):** Less than 2 degrees (0.035 radians) average, or 30 dB (typical 40dB) below equivalent 100% L-R C-QUAM™ modulation 50 Hz to 10 kHz, at rated power. Measured with an audio input level which generates 95% negative L+R envelope modulation at 1 kHz (9.5 dBm).

**Stereo Separation:** -30 dB or better, 50 Hz to 10 kHz, at 50% single channel modulation into a 50 ohm resistive load, at rated power.

**Squarewave Overshoot (Mono):** Less than 0.1% at 400 Hz, 90% modulation (linear phase mode).

**Squarewave Overshoot (Stereo):** Less than 1.0% at 400 Hz, 50% single channel modulation (linear phase mode).

**Squarewave Tilt:** Less than 1% at 40 Hz, less than 1.5% at 20 Hz, 90% negative modulation.

**Noise (Mono):** Better than 65 dB below a reference level equivalent to 100% negative modulation in a 22 Hz to 30 kHz bandwidth, unweighted.

**Noise (Stereo):** Better than 55 dB below a reference level equivalent to 100% negative modulation of either Left or Right channel in a 22 Hz to 30 kHz bandwidth, unweighted.

**AC Input Voltage:** 196 - 252 VAC, 50/60 Hz, single phase standard. Capability for: 339 - 437 VAC, 50/60 Hz, three phase 4 wire WYE or 196 - 252 VAC, 50/60 Hz WYE or DELTA three phase. The transmitter has built-in MOV's for surge suppression per IEEE C62.41-1991 Level B3 standard.

**Output Power Regulation:** Less than 1% change in output power with variation of AC line input voltage from 196 to 252 VAC.

**AC Power Consumption:** 8 kW, no modulation of 6 kW carrier. 12 kW, 100% sinusoidal modulation of 6 kW carrier.

**Overall Efficiency:** 75% or better, 100% sinusoidal modulation of 6 kW carrier (AC line input to RF output).

**Cooling:** Low velocity air (720 CFM), with cleanable filters. Filters can be changed with transmitter running.

**Metering:** Output Forward Power (High Scale 0-7000 watts, Low Scale 0-1750 watts); Output Reflected Power (High 0-600 watts, Low Scale 0-150 watts); AC Line Input Voltage (150-300 volts).

**RF Monitoring Provisions:** 2 volts RMS nominal RF output sample into 50 ohms input of the modulation monitor, adjustable from the transmitter front panel for each of the five power levels.

**Remote Interface:** Built-in simple interface for most remote control and monitoring systems.

**Remote Control:**

Transmitter OFF

Power Level Control 1, 2, 3, 4, 5

Power Raise and Lower

Mode Control (Stereo, Mono L+R, L, R),  
(Stereo, Mono L+R, L, R)

Antenna Interlocks (A, B, C)

External Transmitter Mute

Remote Failsafe

External Interlock

Alarm Reset

**Remote Monitoring:**

Transmitter OFF Status

Power Level Status 1, 2, 3, 4, 5

Mode Status (Stereo, Mono L+R, L, R)

Forward and Reflected Power Outputs,

(0-2.5 or 0-5.0 volts, jumper selectable)

Remote Enabled Status

Antenna Conflict

Maintenance

Lightning

1.2:1 VSWR

Reflected Power High, (>240 watts)AM-6A

Reflected Power Emergency (>1620 watts)

Foldback (Output Power)

Exciter Fault

Overtemperature

Power Module Fault

Power Supply Fault

Alarm Status

**Operating Temperature:** 0 to 50 degrees, centigrade.

**Operating Humidity:** 0 to 95% (non-condensing).

**Operating Altitude (AMSL):** 10,000 feet (3,048 meters)

at 60 Hz or 7,500 feet (2,286 meters) at 50 Hz.

**Size:** 27.3 in. wide x 37.0 in. deep x 73.5 in. high.  
(69.3 cm wide x 94.0 cm deep x 186.7 cm high.)

**Weight:** 442 lbs; 201 kg.

**Cubage:** 42.5 cu. ft. (1.2 cu. m.) domestic packed.

All specifications measured with Broadcast Electronics Model AS-10 modulation monitor while transmitting at 6 kW into a 50 ohm resistive load. Audio performance may be degraded should the transmitter be operated into a bandwidth restricted antenna system.

C-QUAM is the registered trademark of Motorola, Inc.