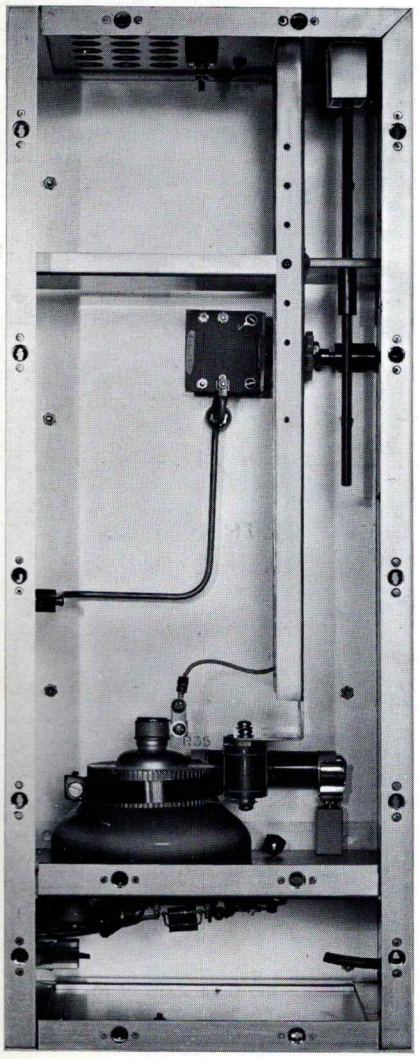
GATES

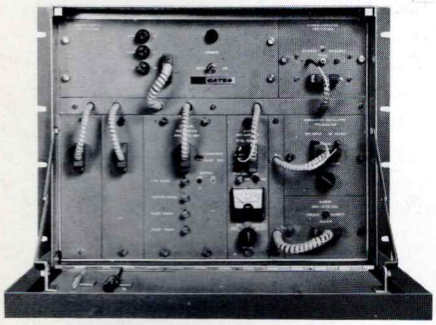
A DIVISION OF HARRIS-INTERTYPE

FM-1H3
ONE TUBE
1000 WATT
FM TRANSMITTER

GATES' FM-1H3 ONE-TUBE 1000 WATT FM TRANSMITTER .



Ample drive from the TE-3 Exciter assures high efficiency and long tube life of the final amplifiers.



Gates TE-3 solid state 10 watt exciter.

ADVANCED ENGINEERING: For the finest in stereo, monaural and SCA broadcasting the one-tube, 1,000-watt FM-1H3 transmitter employs Gates' solid-state TE-3 Exciter with Direct Carrier FM, and Digital AFC, both developments pioneered by Gates.

Only one tube . . . a Type 4CX1000A as a single-ended final power amplifier . . . is all that is required for 1,000 watts output. Driven by the 10-watt TE-3 Exciter, the tube is operated well within its ratings for longer service life and greater on-the-air reliability.

Sophisticated grid circuitry assures a proper match to the exciter, thus providing excellent overall efficiency. In addition, the FM-1H3 has a regulated filament supply which adds even more to tube life.

STABLE, EASY OUTPUT TUNING: Plate tuning of the final amplifier is stable and easily adjusted. The plate circuit is a shorted, one-quarter wavelength configuration, with the plate-line operated at DC ground potential. Coarse plate tuning is pre-set for the operating frequency on the quarter wave tank circuit. Fine adjustment is made with the plate tuning knob on the front panel. Amplifier loading is changed by a variable output loading control.

POWER OUTPUT CONTROL: The transmitter's output loading control is motor-driven for smooth power adjustments, either locally or from a remote point. This feature allows the screen voltage of the 4CX1000A to be Zener-diode regulated for exceptional operating stability and tube life.

HARMONIC FILTERS STANDARD: Supplied with a Gates-designed multi-section harmonic filter the transmitter fully meets FCC requirements for spurious radiation. The second harmonic shorting stub is mounted inside the transmitter cabinet, leaving an easy-to-install low-pass in-line filter as the only external component.

PUSH-BUTTON OPERATION: Manual operation of the transmitter is simple. On-Off functions are controlled by lighted, dual push-buttons at the top left of the cabinet. They are clearly marked Filament On and Off, Plate On and Off. After the filaments of the tubes are turned on, a time-delay relay allows the cathode to reach operating temperature before the Plate power can be turned on.

AUTOMATIC RECYCLING: In case of momentary overload, the transmitter will recycle automatically. If the overload repeats more than the desired number of times preset in the transmitter, the transmitter will stay off the air until it is reset locally or by remote control.

REMOTE CONTROL: All necessary operating functions can be remote controlled. No additional equipment is required to adapt a Gates Remote Control System to the transmitter. Connections are easily and simply made at a terminal strip in the cabinet.

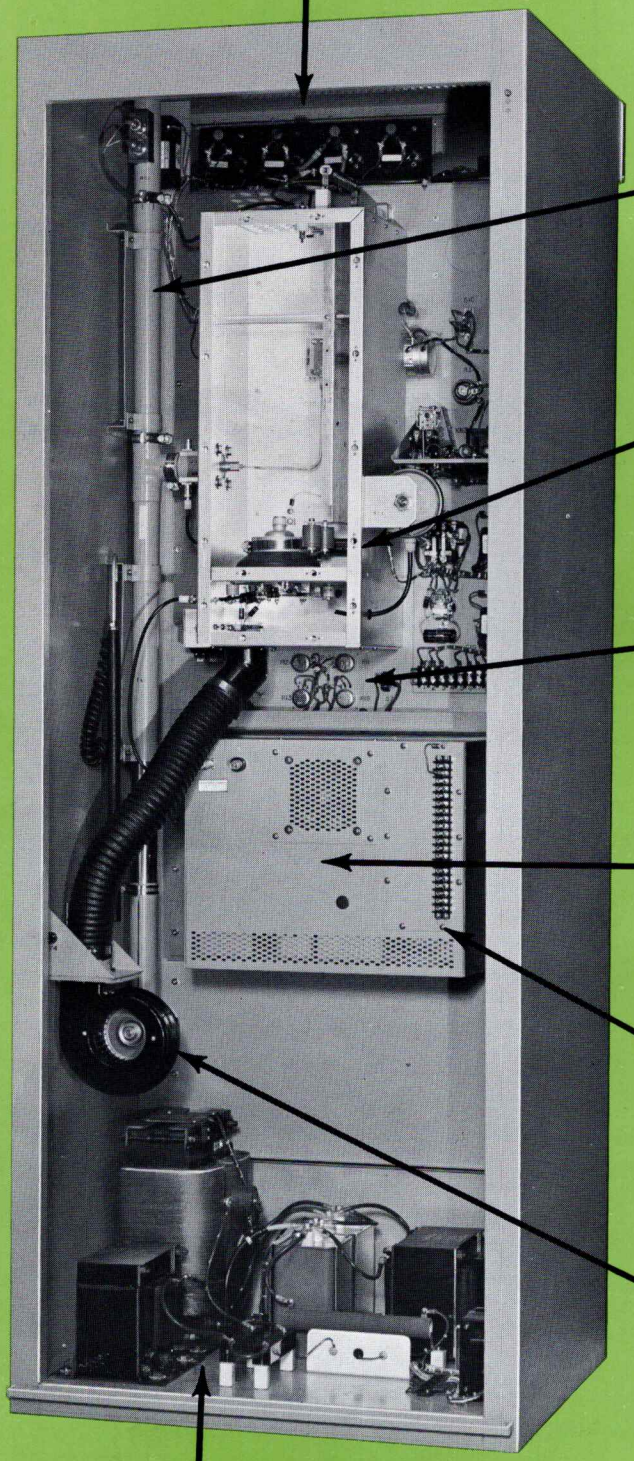
PLUG-IN STEREO AND SCA: A station engineer can equip the transmitter for stereo and/or SCA operation within minutes. Gates' unique modular design of the TE-3 solid-state exciter makes this possible using plug-in units.

Initially, the transmitter can be ordered for monophonic service. Later, plug-in stereo and/or SCA channels can be added.

Stereo separation of 35 dB minimum from 50 to 15,000 Hz makes the FM-1H3 outstanding for stereophonic broadcasting.

QUALITY COMPONENTS: Every transmitter component is conservatively operated and chosen to give optimum performance in continuous duty service. In Gates' TE-3 Exciter, only performance-proven solid-state devices and precision, temperature compensated components are used throughout.

. . FOR UNSURPASSED MONO AND STEREO TRANSMISSION



COMPLETE METERING: Eleven different operating functions of the transmitter are fully monitored by five easy-to-read meters on the cabinet meter panel and exciter.

INTERNALLY MOUNTED SECOND HARMONIC FILTER makes transmitter installation easier and saves space.

ZENER-DIODE REGULATED SCREEN VOLTAGE gives exceptional operating stability and tube life.

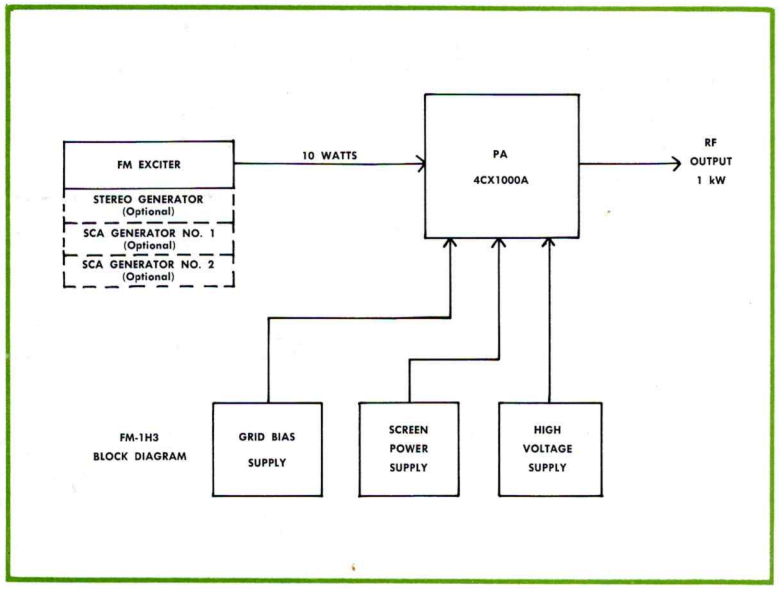
FOUR FRONT-PANEL TEST POINTS permit fast checking of transmitter circuit conditions.

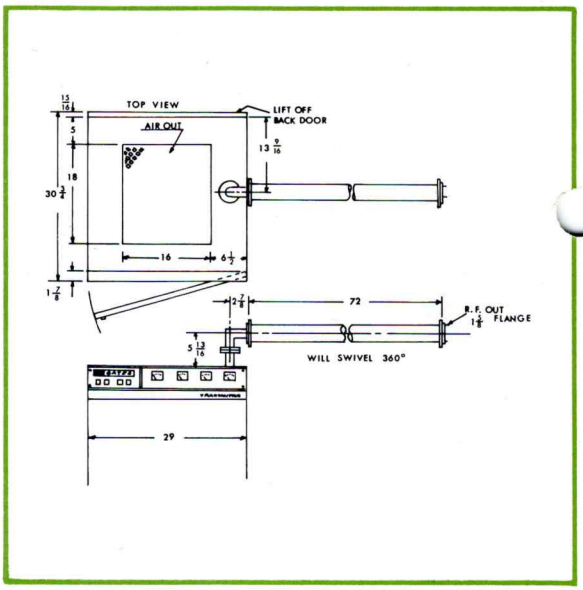
GATES TE-3 SOLID-STATE EXCITER employs direct carrier frequency modulation (DCFM), and Digital AFC for the finest fidelity and maximum stability.

STRAIGHTFORWARD DESIGN allows easy accessibility to connections for program circuits.

HIGH-CAPACITY BLOWER backed up by a precision air-pressure switch gives complete protection to the final amplifier tube.

SOLID-STATE POWER SUPPLIES use long-life silicon rectifiers having ample voltage and current safety factors.





SPECIFICATIONS

GENERAL:

POWER OUTPUT: 1 kW.

FREQUENCY RANGE: 87.5 to 108 MHz, tuned to specified operating frequency.

RF OUTPUT IMPEDANCE: 50 ohms.

OUTPUT TERMINATION: 1⅝" EIA flange.

FREQUENCY STABILITY: .001% or better.

TYPE OF MODULATION: Direct Carrier Frequency Modulation.

MODULATION CAPABILITY: ±100 kHz.

AC INPUT POWER: 208/240 V., 50/60 Hz, single phase, 3 wire. Power consumption: 2100 watts (approx.).

RF HARMONICS: Suppression meets all FCC requirements.

POWER SUPPLY RECTIFIERS: Silicon.

ALTITUDE: 7500 feet.

AMBIENT TEMPERATURE RANGE: −20°C to +45°C.

MAXIMUM VSWR: 1.7 to 1.

OVERALL CABINET SIZE: 29" W. x 78" H. x 32¾" D.

FRONT DOOR SWING: 29".

FINISH: Two-tone, beige-gray.

WEIGHT & CUBAGE: Export: 900 lbs. Domestic: 750 lbs. 72 cu. ft.

MONAURAL MODE:

AUDIO INPUT IMPEDANCE: 600 ohms balanced.

AUDIO INPUT LEVEL: +10 dBm ±2 dB for 100% modulation at 400 Hz.

AUDIO FREQUENCY RESPONSE: Standard 75 microsecond, FCC pre-emphasis curve ±1 dB, 30-15,000 Hz.

DISTORTION: 0.5% or less, 30-15,000 Hz.

FM NOISE: 65 dB below 100% modulation (ref. 400 Hz).

AM NOISE: 50 dB below reference carrier AM modulation 100%.

STEREOPHONIC MODE:

PILOT OSCILLATOR: Crystal controlled.

PILOT STABILITY: 19 kHz ±1 Hz.

AUDIO INPUT IMPEDANCE: (left and right) 600 ohms balanced.

AUDIO INPUT LEVEL: (left and right) +10 dBm ±1 dB for 100% modulation at 400 Hz.

AUDIO FREQUENCY RESPONSE: (left and right) Standard 75 microsecond, FCC pre-emphasis curve ±1 dB, 50-15,000 Hz.

DISTORTION: (left or right) 1% or less, 50-15,000 Hz.

FM NOISE: (left or right) 60 dB minimum below 100% modulation. Reference 400 Hz.

STEREO SEPARATION: 35 dB minimum 50-15,000 Hz.

SUB-CARRIER SUPPRESSION: 42 dB below 90% modulation.

CROSSTALK: (main to sub-channel or sub-to main channel) 42 dB below 90% modulation.

SCA SPECIFICATIONS:

FREQUENCY STABILITY: ±500 Hz.

FREQUENCY: Between 25 and 75 kHz.

OSCILLATOR TYPE: Two Colpitts heterodyned to produce desired output frequency.

MODULATION: Direct FM.

MODULATION CAPABILITY: ±7.5 kHz.

AUDIO INPUT IMPEDANCE: 600 ohms balanced.

AUDIO INPUT LEVEL: +8 dBm, ±3 dB for 100% modulation at 400 Hz.

AUDIO FREQUENCY RESPONSE: 41 kHz and 67 kHz, 50 microsecond, modified pre-emphasis. 67 kHz response modified for proper operation when used with stereo to conform to FCC specifications.

DISTORTION: Less than 1.5% 30-7000 Hz.

FM NOISE: (main channel not modulated) 55 dB minimum (ref. 100% modulation 400 Hz).

CROSSTALK: (sub-channel to main channel): −60 dB or better.

CROSSTALK: (main channel to sub-channel): 50 dB below 100% modulation (ref. 400 Hz).

AUTOMATIC MUTE LEVEL: Variable from 0 to −40 dB below 100% modulation.

ORDERING INFORMATION

FM-1H3 1000 watt FM broadcast transmitter with TE-3 exciter ---------- 994-6740

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