These new Collins stereo audio consoles—the 212K-1 and 212L-1—offer more capability and versatility than any other in their price range... plus Collins quality and reliability.

**CAPABILITY**

These newly designed, fresh appearing, all solid-state audio control systems have more low level stereo input channels and line and program output channels than any other comparably priced consoles... and, both units have monaural reverse cue capability. Through switching, this reverse cue function enables personnel at the remote site to monitor program material originating in the studio.

High quality solid-state components, and advanced techniques in electronic, mechanical, and human engineering are employed in manufacture of these consoles. Front and top panels have full-length piano hinges allowing complete access to all terminal strips, circuit boards, and components. Front panels are the most functional in the broadcast industry. All controls are convenient, and the non-reflecting, baked enamel finish is easy on the eyes.

**VERSATILITY**

The 212L-1 has 8 stereo inputs, 6 of which will accept a mike, phono, or high level input. Mixers 7 and 8 are wired for 5
remote lines. The phono preamps are equalized for
RIAA reproducing characteristic and strappable
for 3-dB boost or cut. The mike preamps have a
flat response and use transformer input. Imped-
ances are easily selected by strapping. Both low
level and high level inputs are available. The
212L-1 also has a mono output that will drive an
AM transmitter while the stereo outputs are
driving an FM Multiplex transmitter. In addition
to mono and stereo program outputs, the 212L-1
has two stereo monitor output amplifiers plus the
mono reverse cue amplifier. Both consoles have low-
impedance stereo headphone outputs (4 to 16 ohms).
The 212K-1 has 4 stereo inputs. Mixers 1, 2, and
3 will accept a mike, phono, or high level input.
Mixer 4 is wired for 5 stereo remote lines.

Specifications 212K-1, 212L-1

Power Source
117 Vac ± 10%, 50 to 60 Hz, single phase
212K-1 Input Characteristics
Three stereo inputs for high level, phono, or
microphone.
Five stereo high level inputs to mixer 4.
212L-1 Input Characteristics
Six stereo inputs for high level, phono, or
microphone.
Ten stereo high level inputs, 5 to mixer 7 and
5 to mixer 8.
Input Impedances
High level ........ 600 ohms
Microphone .... 50, 150 ohms (factory strapped
for 150 ohms)
Phono ........... 50 K
Input Levels
High level ....... −10dBm to +10dBm
Microphone .... −65dBm to −50dBm
Phono ........... 7 mv nominal, 100 mv
maximum
Monitor .......... −22dBm
212K-1 Output Characteristics
One stereo program output
One stereo monitor output
One stereo headphone output (front panel)
212L-1 Output Characteristics
One monaural program output
One stereo program output
Two stereo monitor outputs
One stereo headphone jack output (front panel)
One monaural headphone jack output
(front panel)

Optimum Load Impedances
Program outputs: 600 ohms balanced
Monitor outputs: 4 to 16 ohms unbalanced
Headphone outputs: 8 ohms to 50 K
Output Levels
Program outputs: +8dBm nominal, +18dBm
maximum
Monitor outputs: 3 watts into 8 ohms maximum,
per channel per stereo output
Frequency Response
Program outputs:
±1 db from 1-kHz reference, 50Hz to 15kHz
on high level and microphone inputs. RIAA
equalization on phono inputs, or 3-dB boost
or cut at 15 kHz from RIAA equalization.
Monitor outputs:
±1.5 dB from 1-kHz reference, 50Hz to
15kHz on high level and microphone inputs.
Distortion Characteristics
Program outputs: Less than 0.75%
Noise: Program noise and crosstalk −120dBm
(EIA standard)
Monitor noise and crosstalk −110dBm
(EIA standard)
Gain: Low level program 100dB
Ambient Temperature: +15 to +40°C
(60 to 100°F)
Humidity: 0 to 95% relative humidity
Altitude: 10,000 feet maximum
Vibration and Shock: Normal handling and
shipping

Collins Radio Company, Dept. 400, Dallas, Texas 75207. Phone: (214) 235-7863 (Direct Line).
The Rock
1-KW AM Transmitter
Model 820D-2 with 125% Modulation
Superior sound and simplicity of operation make the Collins 820D-2 1-kW AM transmitter one of the most advanced transmitters on the market. The 820D-2 features straightforward circuitry and clean design to give you reliable, high fidelity broadcasting in any specified frequency from 535 kHz to 12 MHz. Collins tradition of engineering excellence, outstanding for over 4 decades, is built into this 1 kW transmitter. The 820D-2 is available for international broadcasting as the 820D-2HF.

Features
- Solid state power supplies
- Long life operation
- Compact packaging
- Low power consumption
- Clean design
- Safe, reliable control circuits
- Front panel monitoring
- Optional remote control
- 125% modulation capability
- Lowest distortion
- Ease of access
- Field-proven service
- 2 year warranty
- 24 hour service and parts
- Price and financing flexibility

Facts
Plug-in dual oscillator frequency source • Solid state RF driver with single transistor • Class C stage operation in a common emitter configuration • Power amplifier delivers 1100 watts at output terminal • Transformer-coupled modulator / modulation reactor conventionally modulates plates • Bridge neutralization reduces RF intermodulation products • Plate voltage reduction of power cutback to 550 or 275 watts • Bandpass filter output network design has 3-node filter with inductive coupling between nodes • Node Q distribution selection for proper bandpass response and essentially flat response of modulated transmitter output signal

Specifications
RF Output ......................... Power output capability is 1.1 kW into a 50-ohm unbalanced load. Facilities for reduced power operation are provided at either 550 or 275 watts. Other unbalanced output impedances can be supplied on special order.
Emission ......................... Amplitude modulation (A3)
Harmonics ......................... 73 db below carrier or better
Frequency Range ................... 535 kHz to 12 MHz
Frequency Stability ............... ±5 Hz, 0°C to +35°C
                                  ±10 Hz, -10°C to +45°C
                                  ±20 Hz, -25°C to +45°C
Audio Input ......................... ±10 dBm ±2 dB
Response ......................... ±1 dB from 50 to 10,000 Hz
Distortion ......................... Less than 2% from 50 to 10,000 Hz for 95% modulation
Carrier Shift ...................... Less than 3% from 0 to 100% modulation
Hum and Noise ...................... 60 db below 100% modulation
Type of Service .................... Continuous duty, attended or unattended, local or remote control.
Ambient Temperature Range ........ -25°C to +45°C
Ambient Humidity .................. Up to 95% R.H.
Altitude ........................... Up to 2286 m (7500 ft.)
Power Source ....................... 208/230/240 volts, 50/60 Hz, single phase.
Filaments ......................... 0.4 kW 90% PF
Carrier ............................ 2.2 kW 90% PF
30% Mod .......................... 2.5 kW 90% PF
100% Mod .......................... 3.4 kW 90% PF
Size ............................... 173.6 cm H x 91.1 cm W x 62.6 cm D
Weight ............................. Approx 500 kg (1100 lb)

Rockwell International

For detailed information contact your local Broadcast Salesman or Broadcast Marketing Collins Radio Group • Rockwell International • Dallas, Texas 75207 • (214) 690-5424/690-5574.
Collins Broadcast

Generation 4
22.5 KW and 20 KW
For Class B and C FM Coverage
Collins adds another generation in FM Transmitter Leadership with the 831G-2B and 831G-2 transmitters. Designed for Class B or Class C applications where a minimum of antenna gain is desired, the new transmitters can be operated down to 10 kW, if needed. Both transmitters are completely solid state except for two 4CX250B drivers and one 4CX15000A final amplifier. Also in the Collins transmitter package, at no charge, is a complete post installation checkout by a Collins field service engineer. The engineer is also available to help station personnel with the familiarization process of operating the equipment. This extra service, together with such other benefits as long-life, troublefree operation and a clear sound that adds to the personality of your station, are important reasons why so many businessmen-managers make Collins their transmitter choice. Engineers choose Collins for their engineering excellence; station owners choose Collins because it makes lasting dollars and cents.

Put field-proven features to work for you.

- Lowest Guaranteed Intermodulation Distortion
- Highest Stereo Separation
- Automatic Power Output Control
- Automatic Overload Recycling
- VSWR Protection
- Superior Frequency Stability
- Automatic Filament Voltage Regulation
- Overload Indicator Lights
- Front Panel Pushbutton Control
- Superior PA Stability
- Self-Contained Compact Design
- Time-Proven PA Designs
- Conservatively Stated Specifications
- Built-In Remote Facilities
- Access Ease
- Front Panel Monitoring
Generation 4

Specifications

**IM Distortion:** 0.25% maximum mono; 0.5% maximum stereo  
**Output Impedance:** 50 ohms vswr, 2:1 maximum  
**RF Power Output Control:** ±2% of nominal (automatic)  
**Frequency Range:** 88-108 MHz  
**Frequency Stability:** ±500 Hz  
**Modulation Capability:** ±100 kHz  
**Audio Input Level:** 10 dBm ±2 dB  
**Audio Frequency Response:** ±1 dB of preemphasis curve  

<table>
<thead>
<tr>
<th>Output Power</th>
<th>H (in)</th>
<th>W (in)</th>
<th>D (in)</th>
<th>Weight (lb)</th>
<th>Power Source 50/60 Hz</th>
<th>Maximum Power Consumption (kVA @ 0.97 pF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>831G-2B</td>
<td>175</td>
<td>183</td>
<td>71</td>
<td>1089</td>
<td>Transformer taps at 200, 210, 220, 230, 240, and 250 volts; 3φ</td>
<td>39</td>
</tr>
<tr>
<td>831G-2</td>
<td>175</td>
<td>183</td>
<td>71</td>
<td>1089</td>
<td>Transformer taps at 200, 210, 220, 230, 240, and 250 volts; 3φ</td>
<td>35</td>
</tr>
<tr>
<td>Phase 4 Exciter</td>
<td>28</td>
<td>48</td>
<td>38</td>
<td>15</td>
<td>117/234V; 1φ</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Collins Phase 4 exciter has the clearest stereo available plus built-in capability to accept discrete 4-channel broadcasting now

At the heart of Generation 4 transmitters is the finest exciter available today, the all solid state Phase 4. It produces a sound so clean that Collins guarantees specification on IM distortion of only 0.5% in stereo and half that in mono.

Phase 4, a direct FM exciter, uses a phase locked loop AFC to provide typical frequency stability of ±100 Hz at any modulation level regardless of program material. Complete front panel metering facilities include a peak reading meter to measure audio level. Field-proven plug-in modules facilitate servicing. Phase 4 accepts a composite STL input and any of the proposed discrete quad systems. The EIA supervised discrete 4-channel broadcast field tests used a Collins Phase 4 FM exciter. Make your own comparisons but we believe the clear choice is Collins Phase 4.
With Generation 4, you get...

**Superior Sound**
Collins new *Generation 4* transmitters provide a sound quality never heard before—a signal as clear and uncolored as the capability of most program sources. The *Phase 4* exciter ‘transparency’ is unequaled in the industry.

For the first time in FM Broadcasting, a manufacturer—Collins—is specifying IM distortion. Conservatively specified at 0.5% in stereo, typical performance is 0.25% and half that in mono.

**Quality, Reliability, Long Tube Life**
The new *Generation 4* transmitters are the latest editions to Collins 40-year history of quality. Collins trademark of conservative ratings and long life construction is imprinted on the 831G-2B and 831G-2. *Generation 4* features filtered cooling, advanced thermal design, human engineering, safety, rigid field testing, and extremely high inspection standards to produce the best value in broadcast equipment available today.

**Proven Field Experience**
Each feature of the *Generation 4* transmitters has been tested and proven in the field during actual operating conditions. The simplicity and clean design emphasize ease of operation.

**24-Hour Service and Parts**
Collins believes in the sales and service combination. When you own Collins equipment, you own 24-hour a day access to our service and parts staff. Our field engineers are ready to help you any time you need them, holidays included.

**2-Year Warranty**
Our new *Generation 4* transmitters, like all Collins transmitters, carry a 2-year written warranty. At Collins, we believe in the customer’s right to an effective warranty service. Our warranty is our pledge.

**Automatic Power Control and VSWR Protection**
Collins *Generation 4* transmitters monitor forward power and correct the ac input to compensate for any power output variation due to ac line voltage fluctuation. Reflected power is constantly monitored to provide constant vswr protection.

**Ease of Service**
Collins designed the *Generation 4* transmitters for ready access, plug-in modules, and complete front panel control and monitoring—features that add up to total maintenance ease.

**Price and Financing Flexibility**
You don’t have to wait for something better in the future, you can have something better right now. Collins Broadcast Equipment is priced competitively. You can have the best in *Generation 4* FM transmitters at prices that meet or better industry prices. We also offer you a full line of financing options, including: open account, modified cash purchase, 2- to 5-year note at attractive interest rates, and leasing. We’d like to help you put Collins equipment in your budget.

Contact your local Collins Broadcast Salesman today. For his location or further information call:
Broadcast Marketing  
Collins Radio Group  
Rockwell International  
Dallas, Texas 75207  
Telephone: (214) 690-5424  
(214) 690-5574  
Cable: COLINRAD, Dallas  

**Rockwell International**
Collins Broadcast Division Announces

Generation 4

the Fourth Generation in FM Transmitters
...and they are here

831H-2B (45 kw)
831H-2  (40 kw)
Features
Applicable to all Models

- Lowest Guaranteed Intermod Distortion
- Highest Stereo Separation
- Automatic Power Output Control (except on the 10 watt 831A-2)
- Automatic Overload Recycling
- VSWR Protection
- Superior Frequency Stability
- Automatic Filament Voltage Regulation
- Overload Indicator Lights
- Superior P A Stability
- Completely Self-Contained, compact design
- Time-Proven PA designs
- Conservatively Stated Specifications
- Remote Control Facilities Built In
- Ease of Accessibility
- Front Panel Monitoring
- Front Panel Push-Button Control

today!

831D-2 (2.5 kW)
831C-2 (1 kW)

831G-2B (22.5 kW)
831G-2 (20 kW)
831F-2 (10 kW)
831E-2 (5 kW)
The new 40 kW 831H-2 transmitter is the top of the line in Collins Generation 4 FM transmitters. The 831H-2 is recommended for Class B or Class C stations requiring solid close-in coverage combined with excellent fringe area reception. The 831H-2 allows a lower gain antenna to be utilized while still maintaining 50-100 kW ERP with circular polarization.

The 831H-2 is actually two 831G-2 20 kW transmitters combined and driven by a single Phase 4 exciter to give a 40 kW output. This dual transmitter design gives redundancy if a failure should occur.

Except for two drivers and one final tube in each PA, the 831H-2 is completely solid state and is type accepted for output powers from 20 to 40 kW. A higher power version, the 831H-2B is available also, on special order, to give a 45 kW output.

Collins will send a field service engineer, at no charge, to give each 831H-2 transmitter a complete check out upon completion of installation. This trained engineer can help familiarize station personnel with the equipment to assure that all systems are operating as designed.

The 831H-2 is available in four configurations:
No. 1 — Basic System (No Switching); one exciter
No. 2 — Basic System (Manual Switching); two exciters
No. 3 — Basic System (No Output Switching); two automatically switched exciters
No. 4 — Automatic Output Switching and two automatically switched exciters

The 831G-2 and 831G-2B Generation 4 transmitters are designed to be used in Class B or Class C applications where a minimum of antenna gain is desired. The 831G-2B is a 22.5 kW version of the 831G-2.

The 831G-2 and 831G-2B can be operated down to 10 kW if the need arises. Both transmitters are completely solid state except for the two 4CX250B drivers and one 4CX15000A final amplifier.

The 831G-2 contains the new Collins Phase 4 exciter as well as all of the latest Generation 4 field proven design improvements. Some of these features are:

- All solid-state automatic power control
- Extremely stable PA circuit design
- Automatic overload recycling
- Single cabinet design for space-saving installation

Every 831G-2 or 831G-2B transmitter customer will receive a Collins field engineer visit after installation is complete to assure accurate installation and checkout, at no charge of course.

The new Collins 831F-2 10 kW Generation 4 FM transmitter is designed to be used in the medium power class B station. Except for a 4CX250B driver and 4CX5000A PA, the 831F-2 is completely solid state. Power output is adjustable from 5 to 10 kW, with output maintained automatically. The 831F-2 is completely self-contained in one cabinet, including the harmonic filter. Front and back panels are removable giving maximum accessibility. All controls and circuit breakers are on the front panel for ease of operation. Lighted push buttons provide safe, logical control and fault monitoring for station personnel.
The Collins 831E-2 5KW **Generation 4** FM transmitter can be operated at power levels from 2.5 to 5 KW, and is completely self-contained, including the harmonic filter. Automatic VSWR protection is included as well as complete remote control capability. Filament voltage is held constant by an automatic regulator. The 831E-2 is contained in the same rugged cabinet that houses the entire high power transmitter line.

The **Generation 4** 831D-2 is an entirely new 2.5 KW FM transmitter. It provides higher performance, but still utilizes the proven design of its predecessor, the 831D-1B.

The 831D-2 is contained in a single 35" wide cabinet. Its compact design allows a saving on floor space, with even greater accessibility for maintenance than its predecessor. For a station requiring from 500 watts to 2.5 KW, the 831D-2 with the **Phase 4** exciter is the most advanced FM transmitter in existence. Except for the 5CX1500A PA tube, the 831D-2 is completely solid state, and uses IC logic for its control functions. A computer like memory restarts the transmitter after a power failure, eliminating the need for periodic checks of the power source. A built-in battery supply and charger enables the logic circuits to remember their state in the event of a power interruption.

For those stations requiring 1 KW of power, Collins has designed the all new **Generation 4** 831C-2. Driven by the 310Z-2 **Phase 4** exciter, the 831C-2 transmitter will deliver a signal that will stand out above the competition. The 831C-2 utilizes automatic filament voltage regulation and automatic power control for unattended operation. An LED display indicates any overload conditions that may occur, and an automatic recycle option gets the transmitter back on the air immediately after an overload interruption. Completely contained within a single 35" wide cabinet, the 831C-2 transmitter is another example of quality construction and dependable performance from Collins.

To meet the demands of the low power educational broadcaster, Collins has added a harmonic filter to the new **Phase 4** exciter to give the finest FM signal available at any price for this type of operation. The 831A-2 transmitter is completely solid state, and will provide up to 10 watts power output. Housed in an optional cabinet, or rack mounted, the 831A-2 will provide many years of trouble-free service.

### Transmitter Specifications
**Applicable to all Models**

- **IM Distortion:** 0.25% max Mono; 0.5% max Stereo
- **Output Impedance:** 50 Ohm, VSWR 2:1 maximum
- **RF Power Output Control:** ±2% of nominal (automatic)
- **Frequency Range:** 88-108 MHz
- **Frequency Stability:** ±500 Hz
- **Modulation Capability:** ±1400 KHz
- **Audio Input Level:** 10 dBm ±2 dB
- **Audio Frequency Response:** ±1 dB of preemphasis curve
- **Audio Frequency Distortion:** 0.25% max mono; 0.5% max stereo
- **Stereo Separation:** 50 Hz to 15000 Hz 35 dB minimum reaching 50 dB at mid range
- **Harmonic Attenuation:** Exceeds FCC requirements
- **FM Noise Level:** 65 dB below 100% modulation
- **AM Noise Level:** -55 dB rms
- **Filament Regulation:** ±1% of optimum
- **Permissible Line Voltage Variation:** ±5%

### Size, Weight, and Power Requirements

<table>
<thead>
<tr>
<th>Output Power</th>
<th>Size (Inches)</th>
<th>Weight (Lb)</th>
<th>Power Source 50/60 Hz</th>
<th>Max. Power Consumption (KVA @ .97 pf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>831H-2</td>
<td>40 KW</td>
<td>69 x 143 x 28</td>
<td>4800-5500</td>
<td>H2 thru E2</td>
</tr>
<tr>
<td>831G-2B</td>
<td>22.5 KW</td>
<td>69 x 72 x 28</td>
<td>2400</td>
<td>have transformer taps at 200, 210</td>
</tr>
<tr>
<td>831G-3</td>
<td>20 KW</td>
<td>69 x 72 x 28</td>
<td>2400</td>
<td>220, 230, 240</td>
</tr>
<tr>
<td>831F-2</td>
<td>10 KW</td>
<td>69 x 72 x 28</td>
<td>2300</td>
<td>and 250 Volts; 3 Phase</td>
</tr>
<tr>
<td>831E-2</td>
<td>5 KW</td>
<td>69 x 72 x 28</td>
<td>2200</td>
<td>200-250 V; 1 φ</td>
</tr>
<tr>
<td>831D-2</td>
<td>2.5 KW</td>
<td>69 x 35 x 24</td>
<td>750</td>
<td>200-250 V; 1 φ</td>
</tr>
<tr>
<td>831C-2</td>
<td>1 KW</td>
<td>69 x 35 x 24</td>
<td>700</td>
<td>200-250 V; 1 φ</td>
</tr>
<tr>
<td>831A-2</td>
<td>10 W</td>
<td>11 x 19 x 15</td>
<td>36</td>
<td>117/234 V; 1 φ</td>
</tr>
<tr>
<td>Phase 4</td>
<td>20 W</td>
<td>11 x 19 x 15</td>
<td>34</td>
<td>117/234 V; 1 φ</td>
</tr>
</tbody>
</table>

**Specifications**

- **Output Power:** 50 KW, 2.5 KW, 2.5 KW, 1 KW
- **Size (Inches):** 69 x 143 x 28, 69 x 72 x 28, 69 x 72 x 28, 69 x 35 x 24
- **Weight (Lb):** 4800-5500, 2400, 2200, 2200
- **Power Source:** 50/60 Hz
- **Max. Power Consumption (KVA):** 10, 39, 35, 21, 14, 4.9, 2, 0.08, 0.1
Superior Sound

The new Collins Generation 4 transmitter line provides a sound quality that has never been heard before—a signal that is as clean and uncolored as most program sources are capable of supplying. This "transparency" of the new Phase 4 exciter is unequaled in the industry.

For the first time in FM broadcasting, IM distortion is being specified by a manufacturer—Collins. Although conservatively specified at 0.5% in stereo, typical performance is on the order of 0.25% and half that in mono.

Quality Reliability Long Tube Life

The new Generation 4 transmitter line is the latest edition to the 40-year history of quality that Collins has established. The same conservative ratings and long life construction that have been Collins' trademark for 40 years are still being built with pride into the Generation 4 transmitter line. Filtered cooling air, advanced thermal design, human engineering, safety, rigid testing in the field, and extremely high inspection standards all make up the Collins method of building the best value broadcast equipment available today.

24 Hour Service and Parts

To back up its customers and equipment, Collins maintains a 24-hour parts and service staff. For as long as you own Collins equipment, our field engineers are available to you at any time—any day—holidays included.

Automatic Power Control and VSWR Protection

Because the primary cause of power output variation is due to AC line voltage fluctuation, all Generation 4 transmitters (except the 10 watt 831A-2) monitor forward power and correct the AC input to compensate accordingly. In addition, reflected power is constantly monitored, providing VSWR protection at all times.

Ease of Maintenance

Ready access, plug-in module construction and complete front panel control and monitoring add up to the greatest ease of maintenance in the industry.

Why Buy a Generation 4 Transmitter

Price and Financing Flexibility

If you are one of those people who has been saying, "I wish I could afford Collins equipment;"—then you are going to be pleasantly surprised when you talk to your Collins Broadcast Salesman. When we say "Collins Broadcast Equipment is priced competitively—and that's where the competition ends"—we mean it. Of course, Collins equipment has always been priced competitively when compared on a value-received basis—but now it's priced competitively period!

Collins has a full line of financing options including: open account, modified cash purchase, two to five year notes at attractive interest rates, and leasing. We will do our best to make owning Collins equipment compatible with your budget.

Proven Field Experience

Every single feature of the Generation 4 transmitter line has been tested and proven in the field under actual operating conditions. Designs are straightforward and easy to understand.

Two-Year Warranty

All Collins broadcast equipment including the new Generation 4 transmitter line carries a two-year written warranty. Collins has always considered warranty service a very important obligation to its customers. To talk about warranty is one thing—actual performance is another. When warranty service is required—Collins performs.
Introducing the Collins Phase 4 Exciter

with the clearest stereo available plus built in capability to accept discrete four channel broadcasting now.

At the heart of all Generation 4 transmitters is the finest exciter available today, the all solid-state Phase 4.

The Phase 4 exciter has sound so clean it is the only one that dares to give a guaranteed specification on IM distortion. Leading engineers recognize that IM distortion is the principal source of "muddy" sound but only Collins specifies that IM distortion in the new Phase 4 exciter will be 0.5% or less in stereo, and half that in mono. Harmonic distortion of the Phase 4 is normally less than 0.25% in stereo and 0.12% in mono. Stereo separation typically runs 50 dB or more at midband, when measured with a properly calibrated monitor such as a Collins 900C-3, Belar FMS-1, or equivalent.

The Phase 4 is a direct FM exciter that employs a phase locked loop AFC to provide typical frequency stability of ±100 Hz at any modulation level regardless of program material. It has complete metering facilities on the front panel, including a peak reading meter to measure audio level. Servicing is facilitated by plug-in modules that have been field proven in actual operating conditions. The Phase 4 will accept a composite STL input and will accept any of the proposed discrete quad systems. A Collins Phase 4 FM exciter was used in the discrete four channel broadcast field tests supervised by the EIA. Specifications are shown in the transmitter specifications table. Compare them with the competition and you'll see that there's only one to choose from—the Collins Phase 4.

Optional Automatic Exciter Control

and Automatic Combiner Control

The Collins 377C-1 Automatic Exciter Control provides monitoring and control for two Phase 4 or similar exciters. If one exciter fails, the 377C-1 automatically puts the standby unit on line. Indicator lamps show which exciter is operating. While in the hot standby mode, an exciter is maintained at 5 to 10% of normal power. When switched on the air it comes to full power in less than 100 milliseconds. Included in the 377C-1 are facilities to switch station monitors to the dummy load for servicing and testing the standby exciter.

The Collins 377D-1 Automatic Combiner Control provides automatic or manual control of two parallel FM transmitters and automatically assures maximum available power to the antenna at all times. If a failure occurs in either transmitter, the remaining transmitter is switched to the antenna, while the defective one is switched to the dummy load through a three-switch combiner. The 377D-1 provides all interlock and sequencing functions and is usable with any pair of Collins FM transmitters operating in a parallel configuration.

An alternate version of the automatic output switching control, the 377D-2, is available to switch any two non-parallel AM or FM transmitters, such as a hot standby or alternate main.
COLLINS BROADCAST DIVISION
DOMESTIC SALES OFFICES

DISTRICT 1
A. A. (Art) Silver
Box 223
Titusville, N.J. 08560
Telephone: 609-737-3691
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Cockeysville, Md. 21030
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Collins Broadcast

377C-1
Automatic Exciter Control

377D-1 and 377D-2
Automatic Combiner Control

Automatic switching for totally redundant operation.
RF Switching
The Collins 377C-1 exciter control and 377D-1/2 transmitter control are designed to provide both manual and automatic RF switching in both AM and FM transmitter plants. All three units were designed to complement the new Collins Generation 4 transmitter line, but will work equally well with any AM or FM transmitter that is currently on the market.

377C-1
The 377C-1 Automatic Exciter Control monitors and controls two exciters. In addition, the 377C-1 provides station monitor switching so that the standby exciter may be serviced.

Under typical operating conditions, the 377C-1 switches one exciter to the transmitter to be driven. The second exciter is operated into a self-contained dummy load. In the event of a failure of the primary exciter, the standby exciter is switched on the line in less than 100 milliseconds. When used with the Collins Phase Four exciters, the standby exciter is held at 5% of normal power by a bias voltage from the 377C-1 until full power is required.

Front panel controls include Operate/Standby push buttons for the two exciters and a Normal/Test switch for station monitors. The unit occupies 3 1/2" of rack space and uses BNC connectors for RF connections and a barrier strip for control connections.

377D-1
The 377D-1 Automatic Combiner Control provides control commands and monitoring for a pair of parallel transmitters and associated motor-driven coax switches. By monitoring a set of predetermined parameters, the 377D-1 can switch one transmitter directly to the antenna system, thus avoiding the normal 6 db loss of power experienced in a hybrid combiner. If failure in one PA does occur, the down unit is automatically switched to a dummy load for service.

To show system status, a series of 12 LED's and a flow chart provide a quick visual reference at a distance. Eight illuminated push buttons program the 377D-1 as desired. Operating modes include: combined power to load, combined power to antenna, transmitter 1 or 2 to antenna, transmitter 1 or 2 Plate On or Plate Off, and Manual or Automatic modes.

The 377D-1 uses IC logic to provide command and status functions, and contains its own ni-cad power supply across the DC lines to hold memory during a power failure. After a primary power outage, transmitter operation will automatically resume its last mode.

Designed primarily to be used with the Collins Generation 4 transmitter line, the unit may also be used to control any two parallel transmitters, either AM or FM. The unit occupies 5 1/4" of rack space and has standard BNC connectors on the back for RF connections, and barrier strips for control connections.

377D-2
The 377D-2 is similar to the 377D-1, except that it is designed to control two transmitters in an alternate/main or "hot standby" configuration. The LED flow chart shows RF routing to an antenna system and a dummy load. As in the 377D-1, the 377D-2 has a ni-cad power supply across the DC lines to hold memory during a primary power outage. Front panel controls include Transmitter 1, Transmitter 2, Plate On, Plate Off, Manual, Automatic.

The 377D-2 is designed to be used with any two AM or FM transmitters of any power level. It occupies 5 1/4" of rack space and has standard BNC connectors on the back for RF, and barrier strips for control connections.

Rockwell International

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