



UHF Solid State Transmitters 835A-3, 835A-4, 835A-5, 835A-6



The 835A represents the state of the art in solid state UHF transmitters. High performance, redundancy, and simplicity are combined in a very reliable unit.

Using parallel high gain amplifiers, the 835A can be configured for 3kW, 4kW, 5kW, or 6kW operation. Combined aural/visual amplification is achieved with very good intermodulation performance, thanks to highly linear amplifiers and extensive correction capability.

Front panel samples, status, and metering, most of which are remote controllable, allow for convenient system monitoring. As with all Axcera products, servicing is made easy with slide out assemblies that require no extender cards. This allows the circuits to be accessed for maintenance or adjustments even while on the air.



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High Performance Exciter

The exciter, designed and built by Axcera, contains the circuitry to convert the input video and audio signals to a combined, modulated RF signal which drives two very linear phase and gain modules. An optional second exciter with automatic exciter switcher is available for added redundancy.

Video/Visual Modulation

The video signal is processed in several ways prior to modulation. Sync tip clamping is provided to restore proper DC level. Sync and white clipping are also included to limit video transient faults. Back porch clamping is also available for some scrambling systems.

The video signal is then applied to a double balanced diode modulator, providing modulation

capability to 1% at standard intermediate frequency (IF). A SAW filter is employed for precise sideband filtering with minimal group delay error.

Audio/Aural Modulation

The audio signal is applied to a very wideband, linear FM modulator which operates at intercarrier frequency (4.5 MHz for system M). The high performance modulator accepts a full range of multichannel audio including stereo, mono, and second audio programming (SAP). Standard aural IF is achieved by heterodyne conversion of the modulated intercarrier signal with the visual IF.

IF Processing

The visual and aural modulated IF signals are combined and applied to IF processing stages. These stages provide outstanding signal precorrection to yield a very linear transmitter output. Amplitude linearity, incidental carrier phase modulation (ICPM), and frequency response correction are all adjustable.

Upconversion

The IF signal is upconverted to final channel frequency through heterodyning with a very stable local oscillator. The oscillator is crystal and oven temperature controlled for excellent frequency stability. The exciter is controlled with an Automatic Level Control (ALC) loop which ensures stable signal

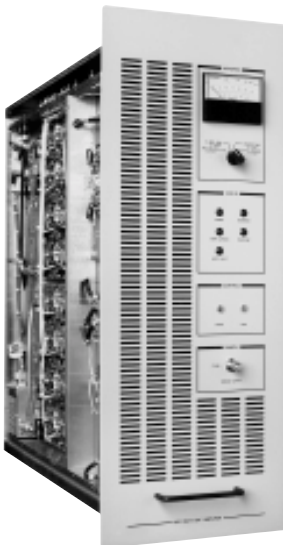
levels. After upconversion the signal is amplified to provide the exciter output.

Power Amplifiers

The parallel 600 watt power amplifiers are high gain units (45-50 dB), which provide redundant paths from the exciter to the output. Redundancy is enhanced with independent power supplies and cooling for each amplifier assembly. The output stage of each amplifier module utilizes eight transistors in parallel for added redundancy and on-air reliability.

A high degree of protection is provided with each amplifier. Individual circulators, overdrive protection, VSWR cutback, and overtemperature protection are all included. Automatic Gain Control around each amplifier ensures that the transmitter output remains stable.

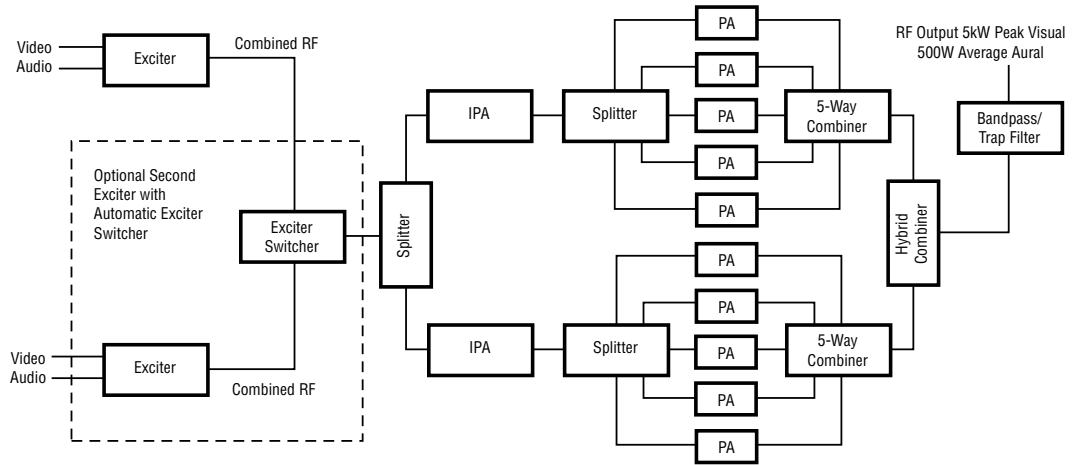
The output of each RF cabinet is fed into a low loss hybrid combiner. Output bandpass and trap filtering is included to provide superior out of band rejection.





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Block Diagram - 835A UHF 5kW Transmitter



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Features and Benefits

- Utilizes 100% solid state circuitry for high reliability and low maintenance costs
- Configured with parallel high gain amplifiers for total system redundancy and maximum on-air reliability, including driver stages
- Provides standard ± 1 kHz frequency stability for stations with an offset frequency
- Independent power supplies and cooling for cost-effective and reliable operation
- Configured with broadcast quality exciter that includes full BTSC sound capability
- Provides output circulator amplifier protection and isolation for high VSWR conditions
- Experienced field service/support team is ready to help you 24 hours a day, 7 days a week

24 Hour Field Support

Standard with all Axcera products is 24 hour/day, 7 day/week field support. This service operates as a direct telephone line during business hours, and on a pager system at all other times. Since all our products are designed and built at our facility just south of Pittsburgh, Pennsylvania, we are able to offer quick turnaround on most replacement modules, and timely shipping from the Pittsburgh International Airport.

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Visual Performance

Power Output (Peak)	3000, 4000, 5000, or 6000 watts
Output Impedance	50 ohms
Output Connector	3 1/8" EIA
Frequency Range	470 to 860 MHz
Carrier Stability	±1 kHz (standard) ±350 Hz (optional)
Regulation of RF Output Power	3%
Output Variation (over 1 frame)	2%
Sideband Response (System M/N-others on request)	
-3.58 MHz	-42 dB
-1.25 MHz and below	-20 dB
-0.5 to +3.58 MHz	±0.5 dB
3.58 MHz to 4.18 MHz	+0.5, -1.0 dB
Freq Response vs. Brightness	±0.5 dB
Visual Modulation Capability	1%
Differential Gain	5%
Incidental Phase Modulation	±3°
Linearity (Low Frequency)	5%
Differential Phase	±3°
Signal-to-Noise Ratio	55 dB
2t K-Factor	2%
Env. Delay	Per CCIR or FCC Standard
Video Input	75 ohms (loop through)
Video AGC Range	1V, ±6 dB
Harmonics	-60 dB or better
Intermodulation Products	-52 dB or better
Spurious	-60 dB or better (>3 MHz from channel edge)

Aural Performance

Power Output (Average)	300, 400, 500, or 600 W
Frequency Deviation Capability	±75 kHz
Distortion	0.5%
FM Noise	-60 dB
AM Noise	-50 dB
Aural to Visual Separation	4.5 MHz, ±100 Hz

Composite Audio Input (multi-channel sound)

Input Level	1V peak, nominal
Input Impedance	75 ohms, unbalanced
Frequency Range	
±0.1 dB response	50 Hz to 50 kHz
±0.5 dB response	30 Hz to 120 kHz

Monaural Audio Input

Input Level	0 to +10 dBm
Input	600 ohms, balanced
Freq Range (±0.5 dB resp.)	30 Hz to 15 kHz
Pre-emphasis	75µs

Subcarrier Input

Input Level	1V peak, nominal
Input Impedance	75 ohms, unbalanced
Freq Range (±0.5 dB resp.)	20 kHz to 120 kHz

General

Operational Temperature Range	0°C to +50°C
Operational Humidity Range	0% to 95%
Altitude	8,500 feet
Line Voltage	230V, ±10%, 1 phase or 3 phase, 50/60 Hz
Power Factor	0.95
835A-3	
Size (H x W x D)	80" x 44" x 34"
Weight	1150 lbs
Power Consumption	10,300 W (50% APL)
835A-4	
Size (H x W x D)	80" x 66" x 34"
Weight	1350 lbs
Power Consumption	13,700 W (50% APL)
835A-5	
Size (H x W x D)	80" x 66" x 34"
Weight	1500 lbs
Power Consumption	17,000 W (50% APL)
835A-6	
Size (H x W x D)	80" x 66" x 34"
Weight	1650 lbs
Power Consumption	20,200 W (50% APL)



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