

C-Band Gen III Klystron High Power Amplifier for Satellite Communications

The Gen III High Power Amplifier

C-Band Gen III—provides up to 3.35 kW of power in a single-rack package

A unique combination of power, performance and ease of use

The C-Band Gen III High Power Amplifier continues the CPI tradition of quality and reliability in satellite uplink communications performance. Its modular design employs a minimum of components for exceptional reliability. All system subassemblies are housed in a single, easily transportable cabinet.

More efficient. Easy to maintain.

CPI's C-Band amplifier provides up to 3.35 kW of power in a single-rack cabinet and delivers the best power/reliability ratio for its price on the market. Its easy maintenance features represent a lower than ever lifetime cost of ownership. And now, with the new Power Saver Option, customers can realize up to 45% in additional power savings.

Global applications

The Gen III accommodates all global power sources without the need for a separate line adapter transformer. It also meets the stringent International Transmitter Safety Standard EN60215 and International EMI Standard EMC 89/336. Since the introduction of the Gen III, thousands have been installed and are still running in earth stations around the world—more than any other brand.

C-Band



CPI Satcom Worldwide Support

CPI is renowned for its impressive reliability record and is the preferred choice of major video uplinkers worldwide. With over two decades of satellite communications experience, CPI's worldwide customer support can be relied upon 24 hours a day, 7 days a week. Customers can obtain technical assistance by phone from any of CPI's nine regional Factory Service Centers.

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C-Band

Gen III Klystron High Power Amplifier

SPECIFICATIONS, C-Band Gen III

Electrical

Frequency Ranges	5.85 - 6.425 GHz, others available as options
Klystron Power Output	3.35 kW min
Amplifier Output ¹ at flange with harmonic filter	34.6 dBW
Channel Selector Options	Standard (~15 seconds or less), Fast (~4 seconds or less). The Fast Channel Selector is available in 5.85-6.425 GHz and 5.85-6.725 GHz frequency ranges only.
Bandwidth	45 MHz; 80 MHz available for 5.85-6.425 GHz and 5.85-6.725 GHz frequency ranges.
Gain (at rated power) (at small signal)	77 dB min. 80 dB min.
Power Adjustability	0 to -23 dB of output with ±0.1 dB typical resolution
Gain Stability vs. Time	±0.25 dB/24 hr. max. at constant drive and temperature
Gain Stability vs. Temp.	1 dB max. from 20° to 40°C; ±2.5 dB max from 0° to 50°C (at constant drive)
Gain Slope (at rated power)	0.04 dB/MHz max. over Fo ±13 MHz (Fo ±18 MHz with 80 MHz option)
Gain Variation (at rated power)	0.4 dB pk-pk ±13 MHz (±18 MHz with 80 MHz option)
Input VSWR	1.2:1 maximum
Output VSWR	1.25:1 maximum
Load VSWR	2.0:1 max. for full spec. compliance; any value for operation without damage
Residual AM	-50 dBc maximum up to 400 Hz -60 dBc maximum, 400 Hz to 2 kHz -80 dBc maximum, 2 kHz to 500 kHz
Residual FM	90 dB below 4 MHz pk-pk deviation in any 5 MHz band
AM/PM Conversion (at rated power)	4°/dB maximum
Harmonic Output with filter: without filter:	-80 dBc -35 dBc, second
Noise and Spurious (at rated gain)	-135 dBW/4 kHz, 3.7 to 4.2 GHz -70 dBW/4 kHz, in passband -110 dBW/MHz, 4.2 to 40 GHz (excluding passband)
Phase Noise	Exceeds requirements of INTELSAT Standard IESS-308/309 by -3 dB. INMARSAT requirements optional.
Intermodulation	-29 dBc with two equal carriers at total output 7 dB below rated single-carrier output
Group Delay	In any 36 MHz band: 0.25 ns/MHz linear max. 0.05 ns/MHz ² parabolic max. 2.0 ns pk-pk ripple max.

OPTIONS:

- *Power Saver*
- *Motorized Channel Selector: Standard and fast versions*
- *Active Filter (for Inmarsat and similar requirements)*
- *Remote Control Panel*
- *Protection Switching*

Electrical (continued)

Primary Power	208/120 V ±10%, 50 or 60 Hz ±5%, 3-phase with neutral and ground. Other voltages available: 380/220 V, 400/230 V, 415/240 V
Power Consumption	11.0 kVA typical, 11.5 kVA maximum; Up to 45% less with power saver option, depending on usage.
Power Factor	0.9 minimum
Inrush Current, peak	180% of normal line current peak max. (first half cycle only)

Mechanical

RF Input Connection	Type N female
RF Output Connection	CPR137F cover flange
RF Power Monitors	Type N female
Dimension (W x H x D)	23.5 x 72.0 x 34 in. (597 x 1829 x 864 mm)
Weight	830 lbs (377 kg)
Cooling	Forced air with integral blower and fans; klystron collector cooling separated from cabinet ventilation and klystron body cooling
Air Flow Rate, Klystron	300 cfm nominal, at sea level
External Ducts Backpressure	0.5 inch water gauge total, maximum
Typical Klystron Heat Loss At rated RF output: At no RF output	6000 watts 9000 watts
Typical Cabinet Heat Loss	1000 watts
Acoustic Noise	68 dBA nominal, measured 3 ft. from front of equipment

Environmental

Ambient Temperature	-10° to +50° operating; -40° to +80° non-operating
Relative Humidity	95%, non-condensing
Altitude operating:	10,000 ft (3000 m) with standard adiabatic temp derating of 2°C/1000 ft. or 6.5°C/km
non-operating:	40,000 ft (12,000 m)
Shock and Vibration	As normally encountered in satellite earth stations and shipping

¹Harmonic filter can be removed as an option. Add 0.2 dB to amplifier output for units ordered without harmonic filter.



Please check CPI's web site to ensure most current data sheet.

For more detailed information, please refer to the corresponding CPI Technical Description.

Note: Specifications may change without notice as a result of additional data or product refinement.

Please contact CPI before using this information for system design.

