

CPI C-band GEN IV klystron power amplifier for satellite uplink communications

Highly Efficient

Provides up to 2.88 kW of output power at the flange. Multi-stage depressed collector klystron allows the amplifier to use less power and produce less heat than other K-HPAs. Employs a power saver feature to optimize K-HPA efficiency to meet your operating condition.

Technologically Up to Date

Scopescreen provides a graphical log display. The Ethernet option provides higher speed connections, can update and coordinate all clock settings, and enables a snapshot feature where user can create a file containing all settings, alarms and faults at a single point in time.

Greater Reliability

Low temperatures are the key to longer lifetimes for klystrons and electronic parts. The CPI power supply design and high efficiency, multi-stage depressed collector klystron make these lower temperatures possible. K-HPA MTBF is nearly 90,000 hours.

Easy Maintenance, Easy Handling

All areas of the amplifier are easily accessible and there are no large harnesses to get in the way. Separate RF and power supply drawers slide out from a standard rack.

Useful Displays

Large, high quality, color, graphical display has a wide viewing angle and a sharp appearance. All important functions are clearly displayed, and an event log is included.



CPI GEN IV C-band KPA
Model K4C7 series

FEATURES:

- Motorized channel selector
- Remote control panel
- 45 MHz instantaneous bandwidth (with option for 80 MHz on some models)
- Meets international safety standard EN-60215, EMC compatibility 2014/30/EU and harmonic standard EN-61000-3-2
- L-Band block upconverter BUC - specifications for when BUC is included are not included in this document. Contact CPI for details.
- Ethernet interface
- External receive band reject filter
- Integral linearizer
- Worldwide 24 hour support, with more than 20 service centers around the globe

Quality Management
System - ISO 9001:2015



Specification	Model K4C7 Series C-band Gen IV		
Output Frequency Range	5.850 - 6.425 GHz	5.850 - 6.725 GHz	6.425 - 7.075 GHz
Output Power ¹ Klystron CW Power Flange CW Power (min.)	3.35 kW (65.2 dBm); 3.00 kW (64.8 dBm) with 80 MHz option 2.88 kW (64.6 dBm); 2.57 kW (64.1 dBm) with 80 MHz option		3.00 kW (64.8 dBm) 2.57 kW (64.1 dBm)
Instantaneous Bandwidth	45 MHz; 80 MHz optional		45 MHz
Gain at Rated Power	77 dB min.		
Gain Stability vs. Time	±0.25 dB/24hr max, at constant drive and temperature		
Gain Stability vs. Temp.	1 dB max. from 20°C to 40°C; ±2.5 dB max. from 0°C 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)	0.04 dB/MHz max over Fo ±13 MHz	
Gain Variation at Rated Power (dB)	0.4 dB pk-pk max. over Fo ±13 MHz (Fo ±18 MHz with 80 MHz option)		0.4 dB pk-pk max. over Fo ±13 MHz
Input / Output VSWR ¹	1.25:1 max. input; 1.30:1 max. output (1.25:1 max. without harmonic filter)		
Load VSWR	2.0:1 max. for full spec. compliance; any value for operation without damage		
AM/PM Conversion	4°/dB max. at rated power		
Harmonic Output ³	-80 dBc with filter, -35 dBc without filter		
Phase Noise ^{2, 3}	Exceeds requirements of INTELSAT Standard IESS-308/309 by -10 dB at 10 dB backoff		
Noise Density (at rated gain)	-135 dBW/4 kHz, 3.7 to 4.2 GHz; -70 dBW/4 kHz, passband; -65 dBW/4 kHz, passband with linearizer; -110 dBW/MHz, 4.2 to 40.0 GHz (excluding passband)		
Spurious (passband)	-70 dBc max; -65 dBc max. with linearizer option		
Intermodulation	-29 dBc with two equal carriers at total output 7 dB below rated single-carrier output		
Group Delay	Over 36 MHz (over 72 MHz with 80 MHz option): 0.25 ns/MHz linear max, 0.05 ns/MHz ² parabolic max, 2.0 ns pk-pk ripple max.		
Primary Power ²	All ratings are ±10%; Frequency: 47-63 Hz, 5 wire, 3 phase with ground; 208 VAC (with or without neutral); 380/415 VAC		
Power Consumption ⁴	9.5 kW max. Typical values for the following RF output backoffs with respect to rated (power saver off): 9.4 kW @ 0 dB (rated); 6.7 kW @ -4 dB OBO; 5.7 kW @ -7 dB OBO; 5.2 kW @ -10 dB OBO; 4.9 kW @ -13 dB OBO		
Power Factor	0.95 min.		
Inrush Current, peak	180% of normal line current peak max. (first half-cycle only)		
Ambient Temperature	-10°C to +50°C operating; -54°C to +71°C non-operating		
Relative Humidity	95% non-condensing		
Altitude	10,000 ft (3000 m) with std. adiabatic derating of 2.0°C/1000 ft, operating; 40,000 ft (12,000 m) non-operating		
Shock and Vibration	As normally encountered in satellite earth stations and shipping		
Cooling	Forced air with integral blower and fans; separate klystron collector cooling path		
Air Flow Rate, Klystron	175 cfm at sea level		
Acoustic Noise	63 dBA nominal, as measured 3 ft from front of equipment		
Klystron Heat Loss	5,300 W max.		
Heat Loss Into Room	Cabinet less klystron: 2,000 W max.		
RF Connections	RF Input: Type N Female; RF output: CPR137 waveguide flange, grooved; RF output monitors: Type N Female		
M&C Interface	RS422/485, RS232 serial interface; Ethernet interface optional		
Dimensions (W x H x D)	RF Drawer: 19 x 17.5 x 28 inches (483 x 445 x 711 mm); Power Supply: 19 x 8.75 x 24 in. (483 x 223 x 610 mm)		
Weight	RF Drawer: 220 lbs w/ klystron (100 kg); Power Supply Drawer: 100 lbs (45.4 kg)		

Note 1. Harmonic filter can be removed as an option. Add 0.25 dB to amplifier output for units ordered without harmonic filter.

Note 2. Prime power AC line unbalance not to exceed 3%. Excess imbalance may cause an increase in residual RF noise (AM, FM, and PM). Phase noise increase is typically 2.5 dB / % imbalance.

Note 3. AC current harmonic content: less than 20%, primarily fifth and seventh harmonics. Harmonics must be considered when choosing UPS sources.

Note 4. Lower power consumption can be achieved if power saver (included as standard) is employed when operating below rated output power.



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For more detailed information, please refer to the corresponding CPI technical description if one has been published, or contact CPI. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI before using this information for system design.

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