C-Band Compact Klystron High Power Amplifier

The Classic Space-Saving Alternative Solution

C-Band

The Compact High Power Amplifier

C-Band CKPA— provides up to 3.35 kW of power in a dual drawer package with power tracker/ power saver

Technology Reuse at its Best

Assures high reliability in a compact design based on field proven performance. Features classic klystron technology common to CPI's renowned generations of klystron high power amplifiers.

Installation Versatility

Racks and stacks two amplifiers into one cabinet in any configuration.

Useful Displays

Provides a clear, high quality, graphical display with a wide viewing angle and a sharp appearance. Clearly displays all critical functions including a comprehensive event log.

Easy Maintenance, Easy Handling

Offers easy access to all areas of the amplifier with no harness obstructions. Separate RF and Power Supply drawers slide out from a standard rack.

Worldwide Support

Backed by over three decades of satellite communications experience, and CPI's worldwide 24-hour customer support network that includes sixteen regional factory service centers.

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SPECIFICATIONS, Model K3C C-Band CKPA

Electrical

Frequency Ranges	5.850 -6.425 GHz; others available
Klystron Power Output	3.0/3.35 kW max. (64.77/65.44 dBm)
Amplifier Output at Flange[1]	2.6/2.9 kW (64.15/64.62 dBm)
Instantaneous Bandwidth	45 MHz; 80 MHz available as an option
Power Adjustability	0 to -20 dB of output with ±0.1 dB typical resolution
Gain at Rated Power	77 dB, min.
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 max. over Fo ±30 MHz (Fo ±18 MHz with 80 MHz option)
Input VSWR	1.25 max.
Output VSWR	1.30 max.
Load VSWR	2.0:1 max. for full spec. compliance; any value for operation without damage
Residual AM[2]	-50 dBc max., 20 to 400 Hz -60 dBc max., 400 Hz to 2 kHz -80 dBc max., 2 kHz to 500 kHz
AM/PM Conversion (at rated power)	4°/dB max.
Noise Density (at rated gain)	-135 dBW/4 kHz, 3.7 to 4.2 GHz; -70 dBW/4 kHz, in passband (-65 dBW/4 kHz, passband with linearizer) (-60 dBW/4 kHz, passband with BUC) -110 dBW/MHz, 4.2 to 40 GHz (excluding passband)
Phase Noise[2]	Exceeds requirements of INTELSAT Standard IESS-308/309 by -10 dB at -10 dB backoff
Intermodulation	-29 dBc with two equal carriers at total output 7 dB below rated single-carrier output
Group Delay	In any 36 MHz band 72 MHz band 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[3]	All ratings are ± 10%, 47-63 Hz 3-phase with neutral and ground: 200 VAC w/ neutral 208 VAC 380 to 415 VAC
Power Consumption[4]	11.0 kW max. Typical values for the following RF output backoffs with respect to rated (power saver on): 10.5 kW @ 0 dB (rated) 10.5 kW @ -4 dB 8.5 kW @ -7 dB 7.0 kW @ -10 dB 6.0 kW @ -13 dB

Electrical (continued)

Power Factor	0.95 min.
Inrush Current, peak	180% of normal line current peak max. (first half cycle only)

Mechanical

RF Input Connection	Type N female
RF Output Connection	CPR-137 F flange
RF Power Monitors	Type N female
Dimension (W x H x D without fans and handles)	
RF Drawer	19 x 21 x 28.75 in. (483 x 533 x 730 mm)
PS Drawer	19 x 8.75 x 24 in. (483 x 223 x 610 mm)
Weight	
RF Drawer	170 lbs w/klystron (77.3 kg)
PS Drawer	100 lbs (45.4 kg)
Cooling	Forced air with integral blower and fans; separate klystron collector cooling path
Air Flow Rate, Klystron	300 cfm min., at sea level
External Ducts Backpressure	0.5 inch water gauge total, maximum.
Klystron Heat Loss	9000 W typ.
Heat Loss in Room (cabinet less Klystron)	1500 W typ.
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

[1] Harmonic filter can be removed as an option. Add 0.25 dB to amplifier output for units without harmonic filter. Output VSWR without filter is 1.25:1 max.

[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.

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

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

OPTIONS:

- *Motorized Channel Selector: (<1 second)*
- *Remote Control Panel*
- *Protection Switching*
- *Low Phase Noise*
- *Linearizer*
- *L-Band Block Upconverter (BUC), see TD-107 or contact sales for specifications*
- *Ethernet Interface*
- *Variable Speed Blower*

ISO 9001 Certificate Number: 30515

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.

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