S-Band

Compact Klystron High Power Amplifier

Technology Reuse at its Best

Assures high reliability in a compact design based on field proven performance. Features Power Saver and Power Tracker optimizing K-HPA efficiency to meet your operating condition.

User Friendly Features and Options

Scopescreen provides 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.

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.

Integrated Protection Switching

Redundant switch controller eliminates the cost of external controllers. System status is shown on the display and switch controls are implemented locally on the front panel touch-pad, or remotely via the digital serial interface.

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-size, non-magnetic rack.

Worldwide Support

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

Model K3S

S-band compact klystron high power amplifier for **satellite, troposcatter, terrestrial gapfiller and test applications**

OPTIONS

- Motorized Channel Selector: (<10 seconds typ.)
- Remote Control Panel
- Ethernet Interface
- Power Combined Option

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Compact Klystron High Power Amplifier

Specification	Model K3S
Frequency[1]	Various bands within the 1.7 to 3.0 GHz frequency range, including a 2.0 to 2.6 GHz wideband option[1]
Klystron Power Output[1]	Up to 2.50 kW min. (63.0 dBm), depending on klystron[1,2]
Bandwidth	8 MHz (P1dB)
Power Adjustability	0 to -20 dB of output with ±0.1 dB typical resolution
Gain at Rated Power	74 dB min.
Gain Stability	±0.25 dB/24hr max, at constant drive and temperature 1.0 dB max. from 20˚C to 40˚C; ±2.5 dB max from 0˚ to 50˚C, at constant drive
Gain Slope at Rated Power	0.02 dB/MHz max. over Fo ±2.5 MHz (0.5 dB/MHz max. wide freq. range option)
Gain Variation at Rated Power	0.5 dB pk-pk max. over Fo ±2.5 MHz, where Fo is the center freq. of the selected channel
VSWR	Input: 1.25:1 max. (1.35:1 max. with wide freq. range option) Output: 1.35:1 max. (1.5:1 max. from 2.0 to 2.5 GHz and 1.65:1 from 2.5 to 2.6 GHz with wide band freq. option) Load: 2.0:1 max. for full spec compliance; any value for operation without damage
AM/PM Conversion	3˚/dB max. at rated power
Harmonic Output	-80 dBc
Noise Density	-145 dBW/4 kHz, receive band (2.2 to 2.3 GHz, except for when the klystron is tuned at CF 2.13 to 2.37 GHz -60 dBW/4 kHz, in passband (-55 dBW/4 kHz in passband with lin) (-50 dBW/4 kHz in passband with BUC) -110 dBW/MHz, outside passband
Phase Noise[3,4]	Exceeds requirements of INTELSAT. Standard IESS-308/309 by 10 dB at 10 dB backoff.
Intermodulation	-29 dBc max. with two equal carriers at total output 7 dB below rated single-carrier output
Group Delay	3.0 ns/MHz linear max; 2.0 ns/MHz^2 parabolic max; 5.0 ns pk-pk ripple max. (the above group delay specs are typical for the wide freq. range option)
Primary Power[4]	All ratings are ± 10%, 47-63 Hz 3-phase with neutral and ground: 208 VAC, 380 to 415 VAC, 200 VAC (without neutral)
Power Consumption[5]	10 kW max.
Power Factor	0.95 min.
RF Connection	Input: Type N Female; Output: CPR-430 G flange (CPR-340 G flange for 2.6 - 2.7 GHz)
RF Power Monitors	Type N Female
Ambient Temperature	-10˚C to +50˚C operating; -40˚ to +80˚C non-operating
Relative Humidity	95% condensing, non-condensing
Altitude	5,000 ft. (1525 m) with standard adiabatic temp derating of 2.5˚C/1000 ft. or 8.125C/km 40,000 ft. (12,000 m) non-operating
Shock and Vibration	As normally encountered in satellite earth stations and shipping
Acoustic Noise	68 dBA nominal @ 3 ft. from amplifier (quieter with variable fan speed control option)
Cooling	Forced air with integral blowed and fans; separate klystron collector cooling path
Air Flow Rate, Klystron	450 cfm min, at sea level (300 cfm at 10,000 feet)
Dimensions and Weight RF Drawer[6] PS Drawer	(W x H x D without fans and handles) 19 x 24.5 x 33 in. (483 x 623 x 838 mm), 280 lbs with klystron (127 kg) 19 x 8.75 x 24 in. (483 x 223 x 610 mm), 92 lbs (41.8 kg)
External Ducts Backpressure	0.5 inch water gauge total, maximum.
Klystron Heat Loss	8,000 W typ.
Heat Loss in Room	2000 W max (cabinet less Klystron)
Acoustic Noise	68 dBA nominal, measured 3 ft. from front of equipment (quieter with variable fan speed control option)
Ambient Temperature	10˚ to 50˚C operating -40˚ to +80˚C non-operating

[1]Frequency ranges and output power levels are klystron dependent. For a complete list of the klystrons available, please refer to CPI technical description TD-143
[2]External harmonic filter may be removed as an option. Ass 0.25 dB to amplifier output for units ordered without harmonic filter, and raise harmonic output to -39 dBc.
[3]Prime power AC line imbalance not to exceed 3%. Excess imbalance may cause an increase in residual RF noise (AM, FM, PM). Phase noise increase is typically 2.5 dB / % imbalance.
[4]AC current harmonic content: less than 20%, primarily fifth and seventh harmonics. Harmonics must be considered when choosing UPS sources.
[5]Lower Power consumption can be achieved if power saved (included as standard is employed when operating below rated output power.
[6]Wideband version (2.0 - 2.6 GHz) has a height of 28.0" (712 mm)

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CE

Quality Management System - ISO 9001:2008

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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