



E I M A C
Division of Varian
S A N C A R L O S
C A L I F O R N I A

Tentative Data

5KM1000SG
AMPLIFIER KLYSTRON
500 kW CW
2320-2456 MHz

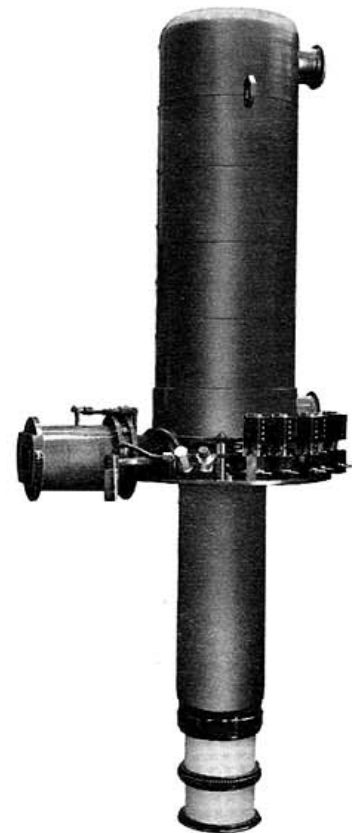
The EIMAC 5KM1000SG Power Amplifier Klystron was designed for use in the ground transmitters of spacecraft communications and tracking systems. Due to its high efficiency and gain, this klystron is also suitable for industrial microwave heating systems and CW linear accelerators demanding extremely high power levels at S-band.

The 5KM1000SG provides a minimum output power of 450 kW CW, with 50% minimum efficiency, 55 dB gain, and 20 MHz instantaneous bandwidth at the 1 dB points.

This klystron is extremely rugged and operable in any position, and is suitable for antenna mounting. The 5KM1000SG has five integral cavities, and features a unique half-wave beryllium oxide output window. The window is protected by an integral arc detector.

The 5KM1000SG is equipped with a modulating anode which should be connected to the body through a 20,000 ohm resistor to prevent damage to the klystron in the event of an arc between anode and cathode. A built-in VacIon® pump is supplied which maintains a low gas pressure and provides continuous indication of gas pressure during operation. The collector is rated at one megawatt, allowing amplitude modulation of the drive level or removal of drive power without overheating of the collector. Digital counters are provided to facilitate tuning.

The associated electromagnet, Catalog Number H-244, requires only a single power supply at fixed current for all operating conditions and power levels. In addition, an oil-filled tank including socket, high voltage cable-to-oil triaxial feedthrough, modulating anode connector and heater supply, is available as Catalog Number SK-131.





CHARACTERISTICS

ELECTRICAL

Cathode	- - - - -	Impregnated, Unipotential
Heater Voltage	- - - - -	12.5 Vac
Heater Current	- - - - -	16.5 Aac
Tuning Range	- - - - -	2320-2456 MHz
Output Power	- - - - -	450 kW
Bandwidth (Instantaneous 1 dB)	- - - - -	20 MHz
Efficiency	- - - - -	50 %
Gain	- - - - -	55 dB
VacIon® Power Supply:		
Voltage	- - - - -	3.5 kVdc
Current	- - - - -	300 μ Adc

MECHANICAL

Operating Position	- - - - -	Any between horizontal and vertical with collector up
Input rf Coupling	- - - - -	Type N
Output rf Coupling	- - - - -	WR-340 Waveguide
Water Cooling Requirements:		<i>Flow Rate Pressure Drop</i>
Collector	- - - - -	240 gpm 25 psi
Body	- - - - -	30 gpm 90 psi
Output Drift Tube	- - - - -	10 gpm 90 psi
Output Window	- - - - -	4 gpm 90 psi
Solenoid and Socket Tank	- - - - -	10 gpm 90 psi
Weights:		
5KM1000SG	- - - - -	450 lbs.
H-244 Electromagnet	- - - - -	300 lbs.
SK-131 Socket Tank	- - - - -	300 lbs.

ELECTROMAGNET POWER SUPPLY REQUIREMENTS

Voltage, adjustable to	- - - - -	450 Vdc
Current, adjustable to	- - - - -	25 Adc

**MAXIMUM RATINGS**

BEAM VOLTAGE	- - - - -	65 kVdc
BEAM CURRENT	- - - - -	16.5 Adc
BEAM INPUT POWER	- - - - -	1 MW
BODY CURRENT (WITHOUT DRIVE)	- - - - -	50 mAdc
BODY CURRENT (WITH DRIVE)	- - - - -	1.25 Adc
COLLECTOR DISSIPATION	- - - - -	1 MW
INLET COOLANT PRESSURE	- - - - -	125 psig
COOLANT OUTLET TEMPERATURE	- - - - -	76 °C
LOAD VSWR	- - - - -	1.2:1

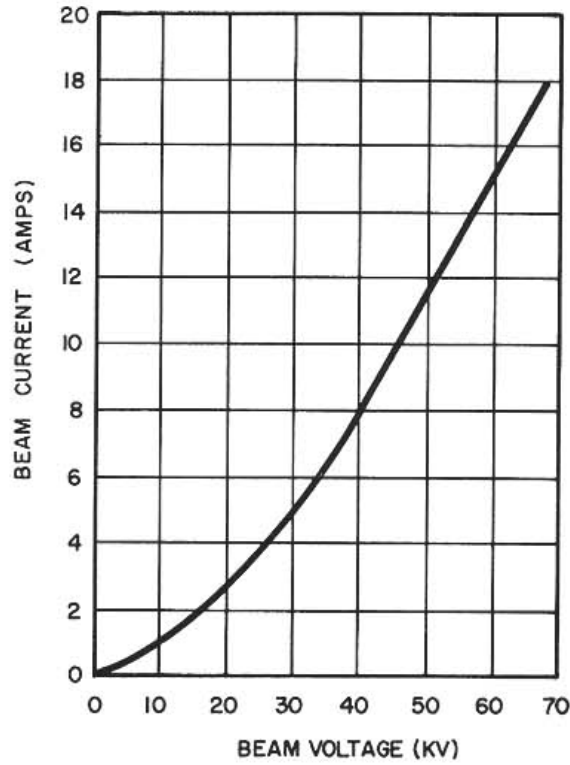
TYPICAL OPERATION
(Tuned for High Efficiency)

Frequency	- - - - -	2388 MHz
Output Power	- - - - -	500 kW
Driving Power	- - - - -	1 W
Power Gain	- - - - -	57 dB
Beam Voltage	- - - - -	63 kVdc
Beam Current	- - - - -	14.8 Adc
Body Current	- - - - -	1250 mAdc
Modulating Anode Voltage (with respect to cathode)	- - - - -	63 kVdc
1 dB Bandwidth	- - - - -	20 MHz
Efficiency	- - - - -	53 %
Electromagnet Current	- - - - -	20 Adc
Load VSWR	- - - - -	<1.1:1

For additional data or information regarding a specific application write to EIMAC Division of Varian, 301 Industrial Way, San Carlos, California 94070.

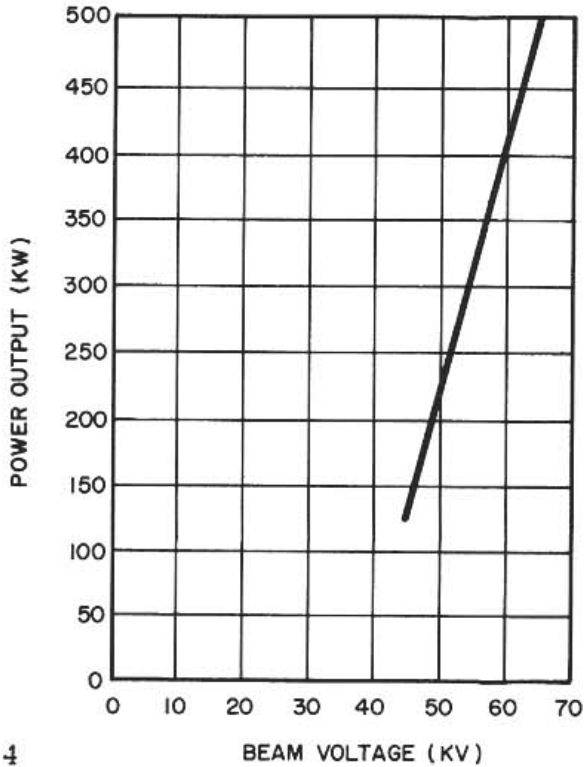


BEAM VOLTAGE VS. BEAM CURRENT

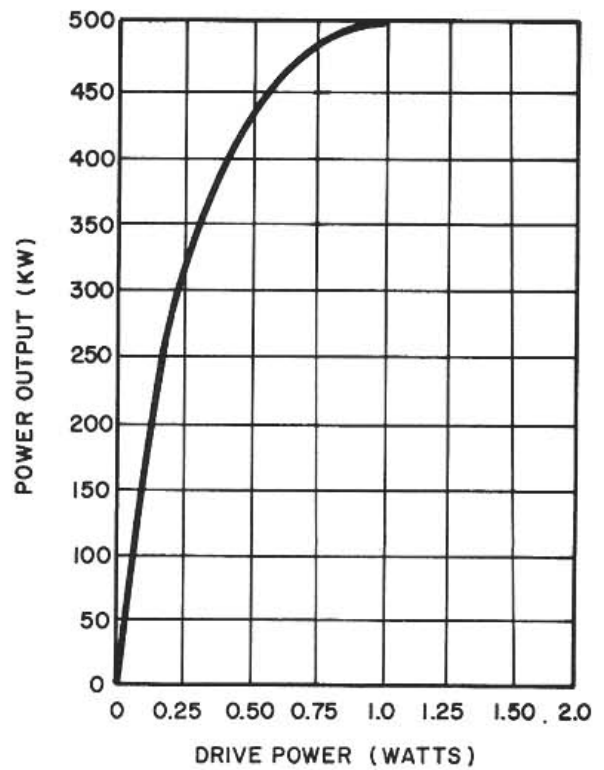


5KM1000SG KLYSTRON

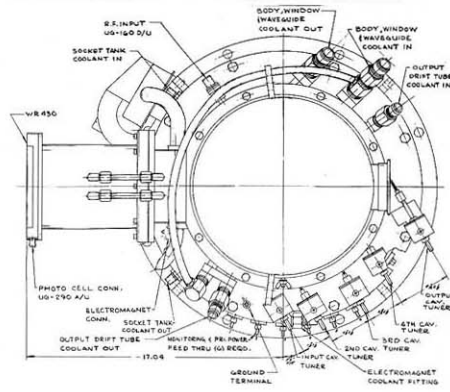
POWER OUTPUT VS. BEAM VOLTAGE



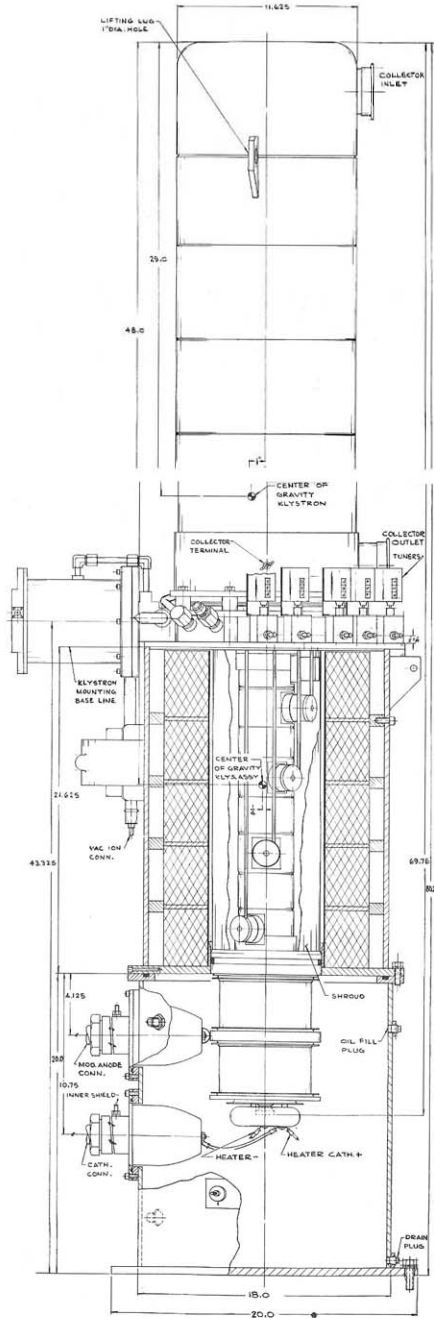
POWER OUTPUT VS. DRIVE POWER



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NOTE: ALL DIMS. SHOWN ARE NOMINAL
SKM1000SG KLYSTRON

 SKM1000SG

 SKM1000SG