

EIMAC

A Division of Varian Associates
SAN CARLOS, CALIFORNIA

Tentative Data

5K50CB

10 KW CW
POWER AMPLIFIER
C-BAND KLYSTRON

The Eimac 5K50CB power-amplifier klystron operates at frequencies from 4.4-5.0 kilomegacycles with a rated output power of 10 kilowatts and a minimum gain of 60 decibels. This klystron is intended primarily for use in tropospheric scatter communications systems.

A confined flow configuration is used in the electron gun of the 5K50CB to minimize focusing adjustments and to provide a thoroughly stable beam.

This electron gun is completely enclosed in a metal shield with integral shielded connecting leads to reduce the high voltage hazard to a minimum.

The small size and light weight of the 5K50CB make it suitable, where necessary, for mounting on the antenna structure of the system in which it is used.

Five integral cavities are used in the 5K50CB. Both input and output couplings are fixed. Unusual stability, for this power and frequency, is achieved through the use of improved body cooling.

The 5K50CB incorporates a built-in vacuum pump in the form of a titanium getter which should be energized whenever heater power is applied.

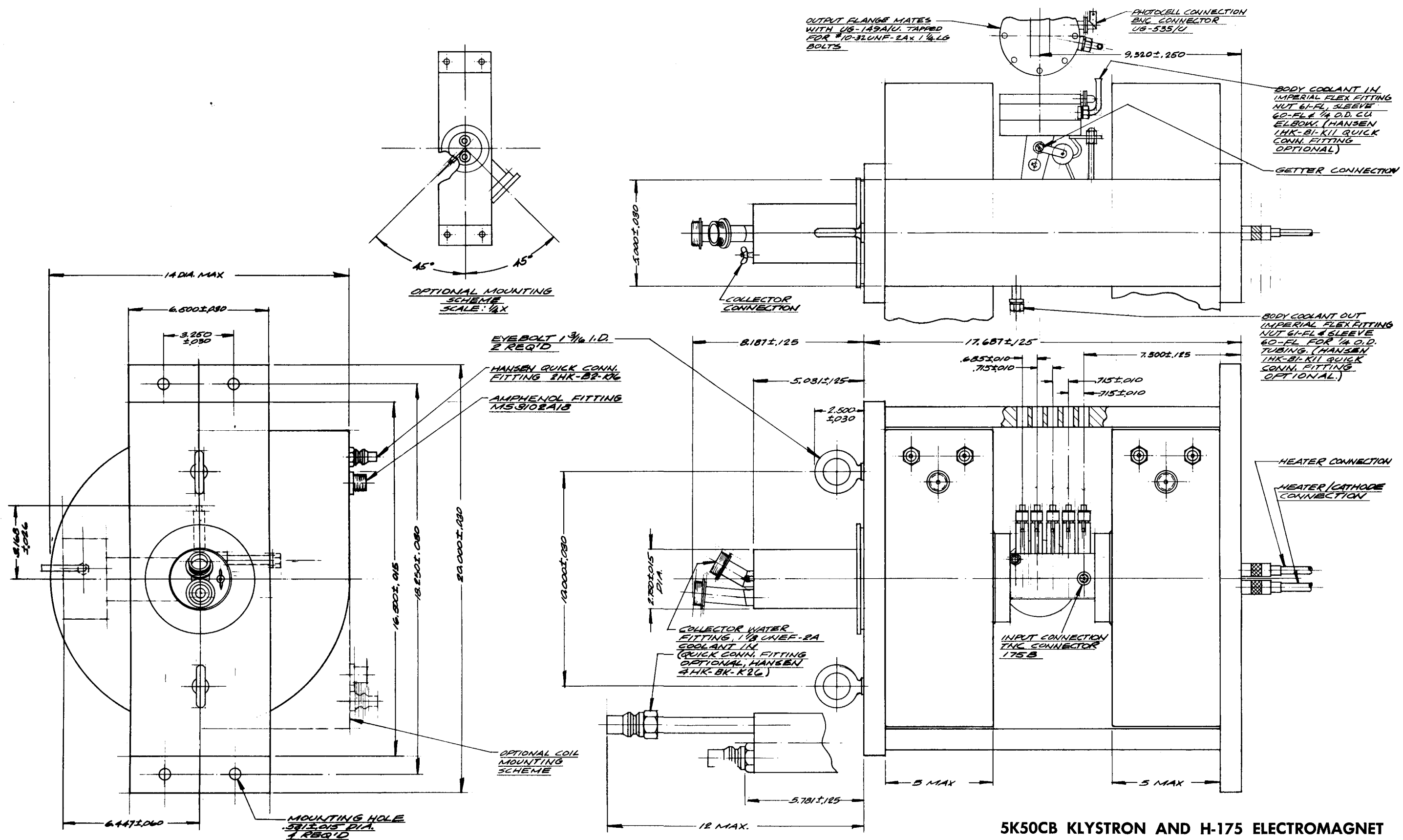
A focusing electromagnet and klystron supporting structure, Catalog Number H-175, has been designed for use with the 5K50CB.



CHARACTERISTICS

ELECTRICAL

| | | |
|------------------------------------|-----------|------------------------|
| Heater: Voltage | - - - - - | 10 volts |
| Current | - - - - - | 3.0 amperes |
| Cathode: Impregnated, Unipotential | | |
| Heating Time | - - - - - | 5 minutes |
| Getter: Voltage | - - - - - | 4.0 volts |
| Current | - - - - - | 25 amperes |
| Power Gain | - - - - - | 60 decibels |
| Output Power | - - - - - | 10 kilowatts |
| Frequency Range | - - - - - | 4.4-5.0 kilomegacycles |
| Phase sensitivity to beam voltage | - - - - - | 0.06 degrees/volt |



5K50CB KLYSTRON AND H-175 ELECTROMAGNET

MECHANICAL

| | | |
|--|-----------|---------------------------------------|
| Operating Position | - - - - - | Axis Vertical, Cathode Down |
| Output rf Coupling | - - - - - | RG49/U Waveguide |
| Input rf Coupling | - - - - - | TNC |
| Dimensions: Klystron only | - - - - - | 6 x 7 x 26½ inches |
| Electromagnet: | | |
| Height | - - - - - | 18.5 inches |
| Width | - - - - - | 15.5 inches |
| Depth | - - - - - | 20 inches |
| Weight: Klystron only | - - - - - | 30 lbs |
| Electromagnet | - - - - - | 270 lbs |
| Cooling: 52.5/47.5 Solution, Ethylene Glycol and Water | | |
| | | <i>Flow Rate</i> <i>Pressure Drop</i> |
| Body | - - - - - | 1.5 gpm 50 psi |
| Collector | - - - - - | 9 gpm 50 psi |
| Electromagnet | - - - - - | 2 gpm 50 psi |

ELECTROMAGNET POWER-SUPPLY REQUIREMENTS

| | | |
|---------|-----------|------------|
| Voltage | - - - - - | 170 volts |
| Current | - - - - - | 10 amperes |

MAXIMUM RATINGS

| | | |
|---------------------------------|-----------|-----------------|
| DC BEAM VOLTAGE | - - - - - | 17.5 KILOVOLTS |
| DC BEAM CURRENT | - - - - - | 2.5 AMPERES |
| DC BEAM INPUT POWER | - - - - - | 50 KILOWATTS |
| DC BODY CURRENT (with rf drive) | - - - - - | 80 MILLIAMPERES |
| COLLECTOR DISSIPATION | - - - - - | 50 KILOWATTS |
| INLET WATER PRESSURE | - - - - - | 120 PSI |
| OUTLET WATER TEMPERATURE | - - - - - | 80 DEGREES C |
| LOAD VSWR | - - - - - | 1.2:1 |

TYPICAL OPERATION — TUNED FOR HIGH EFFICIENCY

| | | |
|-----------------------|-----------|-----------------|
| Frequency | - - - - - | 4700 megacycles |
| Output Power | - - - - - | 10 kilowatts |
| Driving Power | - - - - - | 10 milliwatts |
| Power Gain | - - - - - | 60 decibels |
| DC Beam Voltage | - - - - - | 15 kilovolts |
| DC Beam Current | - - - - - | 2.0 amperes |
| Beam Power Efficiency | - - - - - | 33 percent |
| DC Body Current | - - - - - | 40 milliamperes |
| 3 db Bandwidth | - - - - - | 15 megacycles |
| Electromagnet Current | - - - - - | 9.5 amperes |

For additional information or information regarding a specific application, write to Eimac Division, Varian Associates, 301 Industrial Way, San Carlos, California