



EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

X700

PULSE AMPLIFIER

S-BAND KLYSTRON

The Eimac X700 is a four cavity, magnetically focused, pulse amplifier klystron designed for use under severe environmental conditions. This klystron will deliver a peak output power of 20 kilowatts, at 1 kilowatt average power, at frequencies from 2400 to 2900 megacycles. Typical power gain is 40 decibels.

This klystron employs the Eimac Modulating Anode which provides an effective means of pulse modulating the output power without changing the beam voltage. The electron-gun geometry is such that the modulating anode voltage is only 50% as great as the beam voltage.

The resonant cavities of the X700 are an integral part of the klystron but are completed and tuned outside the vacuum envelope.

Waveguide output coupling for the X700 is achieved by means of an adjustable iris in the output cavity.

The associated magnetic circuitry for the X700 includes a supporting structure, focusing coils, extension tuning controls, and a waveguide transition.

CHARACTERISTICS

ELECTRICAL

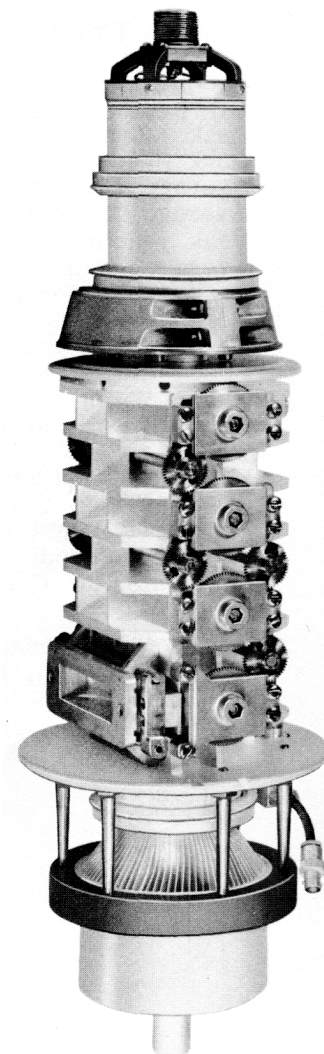
Cathode: Oxide Coated, Unipotential				
Minimum Heating Time	-	-	-	5 minutes
Heater: Voltage ($\pm 5\%$)	-	-	-	7.5 volts
Current	-	-	-	5.5 amperes
Maximum Starting Current	-	-	-	11 amperes
Typical Power Gain	-	-	-	40 decibels
Peak Output Power	-	-	-	20 kilowatts
Average Output Power	-	-	-	1.0 kilowatt
Frequency Range	-	-	-	2400 to 2900 megacycles

MECHANICAL

Operating Position	-	-	-	-	-	-	-	Vertical, Cathode up
RF Input Coupling	-	-	-	-	-	-	-	50-ohm TNC
RF Output Coupling	-	-	-	-	-	-	-	WR-284 Waveguide
Weight (X700)	-	-	-	-	-	-	-	39 pounds
Weight (Circuit Assembly)	-	-	-	-	-	-	-	160 pounds
Maximum Dimensions (X700)								
Length	-	-	-	-	-	-	-	24 inches
Diameter	-	-	-	-	-	-	-	7 inches
Maximum Dimensions (X700 and circuit assembly)								
Length	-	-	-	-	-	-	-	24 inches
Diameter	-	-	-	-	-	-	-	17 inches
Cooling: Forced Air								
Body	-	-	-	-	-	-	-	Flow Rate 100 cfm
Collector	-	-	-	-	-	-	-	Pressure Drop 1.5 inches H ₂ O

MAGNETIC-COIL POWER-SUPPLY REQUIREMENTS

Prefocus Coil: Voltage	-	-	-	-	-	-	-	-	-	0 to 40	volts
Current	-	-	-	-	-	-	-	-	-	0 to 2	amperes
Each of Two Body Coils:											
Voltage	-	-	-	-	-	-	-	-	-	0 to 40	volts
Current	-	-	-	-	-	-	-	-	-	0 to 10	amperes
Collector Coil: Voltage	-	-	-	-	-	-	-	-	-	0 to 50	volts
Current	-	-	-	-	-	-	-	-	-	0 to 5	amperes



MAXIMUM RATINGS

DC BEAM VOLTAGE - - - - -	28	KILOVOLTS
PEAK BEAM CURRENT - - - - -	36.5	AMPERES
PEAK MODULATING-ANODE VOLTAGE - - - - -	14	KILOVOLTS
AVERAGE DC BODY CURRENT - - - - -	50	MILLIAMPERES
COLLECTOR DISSIPATION - - - - -	2500	WATTS
DC FOCUS-ELECTRODE VOLTAGE - - - - -	-500	VOLTS

TYPICAL OPERATION, NARROW-BAND, PULSE AMPLIFIER

Frequency - - - - -	2500	megacycles
DC Beam Voltage - - - - -	21	kilovolts
Peak Modulating-Anode Voltage - - - - -	10.5	kilovolts
Peak Beam Current - - - - -	2.77	amperes
Average DC Beam Current - - - - -	0.138	ampere
Average DC Body Current - - - - -	25	milliamperes
Peak Output Power - - - - -	21.5	kilowatts
Average Output Power - - - - -	1.07	kilowatts
Peak Drive Power - - - - -	2	watts
Power Gain - - - - -	40.2	decibels
Peak Beam Power Efficiency - - - - -	37	percent
Focus-Electrode Voltage - - - - -	-100	volts
Pulse Width - - - - -	50	microseconds
Pulse Repetition Rate - - - - -	1000	pulses/second
Duty - - - - -	0.05	
Magnetic Coil Currents:		
Prefocus Coil - - - - -	1.2	amperes
First Body Coil - - - - -	7.0	amperes
Second Body Coil - - - - -	7.0	amperes
Collector Coil - - - - -	3.2	amperes

For additional information or information regarding a specific application write to Eitel-McCullough, Inc., 301 Industrial Way, San Carlos, California.