



MODULATOR, A-F AND R-F POWER AMPLIFIER, OSCILLATOR
ENGINEERING INFORMATION

GENERAL RATINGS

Number of Electrodes 3
 Filament Voltage 10 volts
 Current 2 amperes
 Type Thoriated Tungsten

Average Characteristic Values Calculated at:

$E_b = 425$, $E_c = -35$, $E_f = 10$ D-C

Plate Current 0.020 amperes
 Amplification Factor 8
 Plate Resistance 4000 ohms
 Mutual Conductance 2000 micromhos

Average Direct Interelectrode Capacities:

Grid to Plate 9.9 uuf
 Grid to Filament 4.9 uuf
 Plate to Filament 2.2 uuf

Maximum Overall Dimensions

Length 5 7/8 inches
 Diameter 2 1/16 inches
 Bulb T-16
 Base Medium 4-Pin Ceramic Bayonet
 Type of Cooling Air
 Net Weight 4 oz.

MAXIMUM RATINGS

Maximum D-C Plate Voltage Modulated 600 volts
 Maximum D-C Plate Voltage Unmodulated.....750 volts
 Maximum A-C Plate Voltage R. M. S. 600 volts
 Maximum D-C Plate Current Modulated.....100 ma.
 Maximum D-C Plate Current Unmodulated.....110 ma.
 Maximum Plate Dissipation 40 watts
 Maximum D-C Grid Current 18 ma.
 Maximum R-F Grid Current 6 amp.

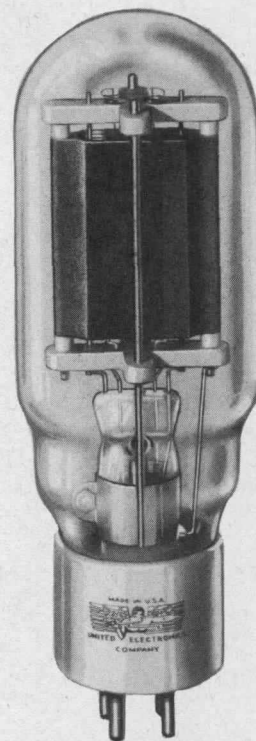
Frequency Rating for Operating Conditions with Maximum
 Rated Power Input and Nominal Output:

Below 15 megacycles
 Above 20 meters

*Maximum Frequency Rating with Reduced Power Input
 and Output:

Below*30 megacycles
 Above*10 meters

*For operation at the higher frequencies, the plate voltage, and plate input should not exceed 50% of the Maximum Ratings, and Typical Operating Conditions. The R-F grid current should never exceed the maximum rated value.



REPLACES UNITED TYPE 930

Plate dissipation of this small but sturdy triode is 40 watts for class C telegraph and class B service. A pair of these tubes in class B audio service will deliver over 100 watts output.

INSTALLATION

The base of the UNITED 830 is designed for mounting in a standard four-prong, bayonet type socket. The tube should always be mounted vertically with ample air space provided for ventilation.

The filament of the 830 should be operated at the rated value of 10 volts. Operation at other than rated value may result in loss of filament emission and short life.

The plate dissipation of the 830 should never exceed the values given under Maximum Ratings and Typical Operation Conditions.

GRAPHITE ANODE

A specially processed graphite anode is used in this tube type because of several specific advantages over metals such as tantalum, molybdenum, and nickel. The radiating area of graphite is approximately twice the projected anode area because of its surface porosity and it will dissipate at least four times more heat than metal.

Graphite, being infusible will not warp or twist. The exact form of graphite is maintained under all temperatures; hence constant inter-element relationships and uniform characteristics result. The inherent advantages of graphite over metal are of primary importance in designing tubes of this type for long and satisfactory service.

All ratings given are for continuous service. Higher ratings are permissible for intermittent operation. Additional data will be furnished upon request.

A-F POWER AMPLIFIER AND MODULATOR—CLASS A

Maximum D-C Plate Voltage.....	750	volts
Maximum Plate Dissipation.....	30	watts

Typical Operation:

Filament Voltage	10	10	10	a-c volts
D-C Plate Voltage	450	600	750	volts
Grid Voltage	-40	-55	-75	volts
Peak Grid Swing	35	50	70	volts
D-C Plate Current	30	43	40	ma.
Mutual Conductance	2850	2960	4000	umhos
Plate Resistance	2800	2900	2000	ohms
Load Resistance	8000	8500	9000	ohms
U. P. O. (5% 2nd harmonic).....	1.9	4.0	6.3	watts

A-F POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum D-C Plate Voltage	750	volts
Maximum D-C Plate Current } Averaged over any 110	ma.	
Maximum Plate Dissipation } audio freq. cycle.....	40	watts

Typical Operation (2 tubes):

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	600	750	volts
D-C Grid Voltage	-65	-85	volts
Zero-Sig. Plate Cur. (per tube)....	10	10	ma.
Max.-Sig. Plate Cur. (per tube)....	110	110	ma.
Load Res. (Plate to Plate).....	7000	9000	ohms
Power Output (2 tubes).....	80	102	approx. watts

R-F POWER AMPLIFIER—CLASS B TELEPHONY

(Carrier Conditions—Modulation Factor = 1.0)

Maximum D-C Plate Voltage	750	volts
Maximum D-C Plate Current	70	ma.
Maximum Plate Dissipation	40	watts
Maximum R-F Grid Current	6	amp.

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	600	750	volts
D-C Grid Voltage	-70	-100	volts
D-C Plate Current	70	70	ma.
Peak Power Output	42	52	approx. watts
Nominal Carrier Power Output....	10.5	13	approx. watts

PLATE MODULATED R-F POWER AMPLIFIER**CLASS C TELEPHONY**

(Carrier Conditions—Modulation Factor = 1.0)

Maximum D-C Plate Voltage	600	volts
Maximum D-C Plate Current	100	ma.
Maximum Plate Dissipation	30	watts
Maximum R-F Grid Current	5	amp.
Maximum D-C Grid Current	18	ma.

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	500	600	volts
D-C Grid Voltage	-180	-220	volts
D-C Plate Current	100	100	ma.
D-C Grid Current†	15	15	ma.
Driving Power†	5	6.5	approx. watts
Power Output	33	50	approx. watts

R-F POWER AMPLIFIER AND OSCILLATOR**CLASS C TELEGRAPHY**

(Key-down Conditions)

Maximum D-C Plate Voltage	750	volts
Maximum D-C Plate Current	110	ma.
Maximum Plate Dissipation	40	watts
Maximum R-F Grid Current	6	amp.
Maximum D-C Grid Current	18	ma.

Typical Operation:

Filament Voltage	10	10	a-c volts
D-C Plate Voltage	600	750	volts
D-C Grid Voltage	-150	-180	volts
D-C Plate Current	100	110	ma.
D-C Grid Current†	15	15	ma.
Driving Power†	4.5	5	approx. watts
Power Output	40	55	approx. watts

† Subject to wide variations depending on the impedance of the load circuit. The driver stage should have a tank circuit of good regulation and should be capable of delivering considerably more than the required driving power.

