MULTIPLIER PHOTOTUBE
10-STAGE TYPE WITH
4-1/8" x 3" SEMITRANSSPARENT CATHODE AND S-11 RESPONSE

DATA

General:
Spectral Response ................................ S-11
Wavelength of Maximum Response ............ 4400 ± 500 angstroms
Cathode, Semit transparent:
Shape .................................................. Semicylindrical
Window:
Minimum length .................................. 4-1/8 in.
Minimum width (Along
circumference of bulb) ............. 3 in.
Minimum area ................................... 12-3/8 sq. in.
Index of refraction ............................ 1.48
Direct Interelectrode Capacitances (Approx.):
Anode to dynode No.10 ....................... 5 \( \mu \)f
Anode to all other electrodes .......... 6.5 \( \mu \)f
Maximum Overall Length ................... 7-3/4"
Maximum Seated Length ................. 7-1/4"
Length from Base Seat to Center
of Useful Cathode Area ................. 3-5/8" ± 1/8"
Maximum Diameter ................................ 2-9/16"
Mounting Position .......................... Any
Weight (Approx.) .............................. 9 oz
Bulb ................................................. T-20
Base ................................ Small-Button Twentyninar 22-Pin (JETEC No.E22-16)

BOTTOM VIEW

Pin 1 - Anode
Pin 2 - Dynode No.10
Pin 3 - Dynode No.9
Pin 4 - Dynode No.8
Pin 5 - Dynode No.7
Pin 6 - Dynode No.6
Pin 7 - Dynode No.5
Pin 8 - Dynode No.4
Pin 9 - Dynode No.3
Pin 10 - Dynode No.2
Pin 11 - Dynode No.1
Pin 12 - Internal Connection-Do Not Use
Pin 13 - Focusing Electrode
Pin 14 - Same as Pin 12
Pin 15 - Same as Pin 12
Pin 16 - Cathode
Pin 17 - Same as Pin 12
Pin 18 - Same as Pin 12
Pin 19 - Same as Pin 12
Pin 21 - Same as Pin 12
Pin 25 - Same as Pin 12
Pin 28 - Same as Pin 12

SEPT. 1, 1955

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
## Multiplier Phototube

### Maximum Ratings, Absolute Values:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min.</th>
<th>Median</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anode-Supply Voltage (DC or Peak AC)</td>
<td>1200</td>
<td>10000</td>
<td>15000</td>
</tr>
<tr>
<td>Supply Voltage Between Dynode No.10 and Anode</td>
<td>180</td>
<td>0.26</td>
<td>0.50</td>
</tr>
<tr>
<td>Dynode-No.1 Supply Voltage (DC or Peak AC)</td>
<td>300</td>
<td>0.26</td>
<td>0.50</td>
</tr>
<tr>
<td>Focusing-Electrode Voltage (DC or Peak AC)</td>
<td>300</td>
<td>0.26</td>
<td>0.50</td>
</tr>
<tr>
<td>Average Anode Current</td>
<td>0.75</td>
<td>0.26</td>
<td>0.50</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>75</td>
<td>0.26</td>
<td>0.50</td>
</tr>
</tbody>
</table>

### Characteristics Range Values for Equipment Design:

Under conditions with supply voltage (E) across a voltage divider providing 1/12 of E between cathode and focusing electrode; 1/12 of E between focusing electrode and dynode No.1; 1/12 of E for each succeeding dynode stage; and 1/12 of E between dynode No.10 and anode.

With E=1000 volts (except as noted)

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Median</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity: Radiant, at 4400 Angstroms</td>
<td>-</td>
<td>16000</td>
<td>-</td>
</tr>
<tr>
<td>Cathode Radiant, at 4400 Angstroms</td>
<td>-</td>
<td>0.026</td>
<td>-</td>
</tr>
<tr>
<td>Luminous:</td>
<td>5</td>
<td>20</td>
<td>33</td>
</tr>
<tr>
<td>At 0 Cps.</td>
<td>-</td>
<td>1.9</td>
<td>-</td>
</tr>
<tr>
<td>At 100 Mc</td>
<td>-</td>
<td>1.9</td>
<td>-</td>
</tr>
<tr>
<td>Cathode Luminous: With tungsten light source</td>
<td>20</td>
<td>33</td>
<td>-</td>
</tr>
<tr>
<td>With blue light source</td>
<td>0.026</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Current Amplification</td>
<td>-</td>
<td>600000</td>
<td>-</td>
</tr>
<tr>
<td>Equivalent Anode-Dark-Current Input</td>
<td>5 x 10^-9</td>
<td>1 x 10^-8</td>
<td>-</td>
</tr>
<tr>
<td>Equivalent Noise</td>
<td>1 x 10^-10</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- Averaged over any interval of 30 seconds maximum.
- For conditions when the light source is a tungsten-filament lamp operated at a color temperature of 2870 K. A light input of 10 microlumens is used. The load resistor has a value of 0.01 megohm.
- For conditions the same as shown under (†) except that the value of light flux is 0.01 lumens and 150 volts are applied between cathode and all other dynodes connected together as anode.
- Under the following conditions: Light incident on the cathode is transmitted through a blue filter (Corning, Glass Code No.511) polished to 1/2 stock thickness from a tungsten-filament lamp operated at a color temperature of 2870 K. The value of light flux on the filter is 0.01 lumens. The load resistor has a value of 0.01 megohm, and 150 volts are applied between cathode and all other dynodes connected together as anode.

See next page. Indicates a change.

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MULTIPLIER PHOTOTUBE

For Spectral Characteristic of this source, see sheet SPECTRAL CHARACTERISTIC OF 2870°K LIGHT SOURCE AND SPECTRAL CHARACTERISTIC OF LIGHT FROM 2870°K SOURCE AFTER PASSING THROUGH INDICATED BLUE FILTER at front of this section.

Measured at a tube temperature of 25°C and with the supply voltage (E) adjusted to give a luminous sensitivity of 20 amperes per lumen. Dark current caused by thermionic emission and ion feedback may be reduced by the use of a refrigerant.

Under the following conditions: Supply voltage (E) is 1000 volts, 25°C tube temperature, ac-amplifier bandwidth of 1 cycle per second, tungsten light source of 2870°K interrupted at a low audio frequency to produce incident radiation pulses alternating between zero and the value stated. The "on" period of the pulse is equal to the "off" period. The output current is measured through a filter which passes only the fundamental frequency of the pulses.

For maximum signal-to-noise ratio, operation with a supply voltage (E) below 1000 volts is recommended.

OPERATING CONSIDERATIONS

The operating stability of the 6372 is dependent on the magnitude of the anode current and its duration. When the 6372 is operated at high values of anode current, a drop in sensitivity (sometimes called fatigue) may be expected. The extent of the drop below the tabulated sensitivity values depends on the severity of the operating conditions. After a period of idleness, the 6372 usually recovers a substantial percentage of such loss in sensitivity.

The use of an average anode current well below the maximum rated value of 0.75 milliamperes is recommended when stability of operation is important. When maximum stability is required, the anode current should not exceed 100 microamperes.

Electrostatic and/or magnetic shielding of the 6372 may be necessary.

SPECTRAL-SENSITIVITY CHARACTERISTIC of Phototube having S-11 Response is shown at the front of this Section.
MULTIPLIER PHOTOTUBE

T20 BULB

4 1/8" MIN.

7 3/4" MAX.

7 1/16" MIN.

2 9/16" MAX.

SMALL-BUTTON TWENTYNINAR 22-PIN BASE JETEC No. E22-16

PHOTOCATHODE

3" MIN.

DIRECTION OF INCIDENT RADIATION

92CM-8238R1

SEPT. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
AVERAGE ANODE CHARACTERISTICS

CATHODE-TO-FOCUSING-ELECTRODE VOLTS = 83
FOCUSING-ELECTRODE-TO-DYNOE-NO.1 VOLTS = 83
EACH-SUCCEEDING-DYNOE-STAGE VOLTS = 83

FEB. 26, 1954  TUBE DIVISION  92CM-8258
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
AVERAGE CHARACTERISTICS

SUPPLY VOLTAGE (E) ACROSS VOLTAGE DIVIDER PROVIDING
\( \frac{1}{4} \) OF E BETWEEN CATHODE AND FOCUSING ELECTRODE;
\( \frac{1}{4} \) OF E BETWEEN FOCUSING ELECTRODE AND DYNODE NO. 1;
\( \frac{1}{4} \) OF E FOR EACH SUCCEEDING
DYNODE STAGE; AND \( \frac{1}{4} \) OF E BETWEEN DYNODE NO. 10 & ANODE

SENSITIVITY - AMPERES/LUMEN (COLOR TEMP. 2870°K)

CURRENT AMPLIFICATION

FEB. 26, 1954

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CL-8257
VARIATION IN SENSITIVITY

LIGHT SPOT: \( \frac{1}{2} \) INCH DIA. APPROX. POSITIONED MIDWAY ALONG LENGTH OF PHOTOCATHODE
VARIATIONS CAUSED BY INTERCEPTION OF LIGHT BY GRILL HAVE BEEN IGNORED
VARIATION IN SENSITIVITY

LIGHT SPOT: ½ INCH DIA. APPROX.
VARIATIONS CAUSED BY INTERCEPTION OF LIGHT BY GRILL HAVE BEEN IGNORED

RELATIVE SENSITIVITY

DISTANCE ALONG MIDDLE OF CATHODE FROM BASE END TO TIP END—INCHES

APRIL 9, 1954
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY