IP21
MULTIPLIER PHOTOTUBE
9-STAGE TYPE WITH S-4 RESPONSE

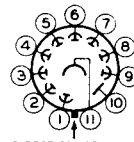
For applications involving very low light levels◆

DATA

General:

Spectral Response	S-4
Wavelength of Maximum Response	4000 ± 500 angstroms
Cathode:	
Minimum Projected Length*	15/16"
Minimum Projected Width*	5/16"
Direct Interelectrode Capacitances:	
Anode to Dynode No.9	4 μμf
Anode to All Other Electrodes	6.5 μμf
Maximum Overall Length	3-11/16"
Maximum Seated Length	3-1/8"
Seated Length to Center of Cathode	1-15/16" ± 3/32"
Maximum Diameter	1-5/16"
Bulb	T-9
Mounting Position	Any
Base	Small-Shell Submagnal 11-Pin, Non-Hygroscopic
Basing Designation for BOTTOM VIEW	11K

Pin 1 – Dynode No.1
Pin 2 – Dynode No.2
Pin 3 – Dynode No.3
Pin 4 – Dynode No.4
Pin 5 – Dynode No.5
Pin 6 – Dynode No.6



DIRECTION OF LIGHT

Pin 7 – Dynode No.7
Pin 8 – Dynode No.8
Pin 9 – Dynode No.9
Pin 10 – Anode
Pin 11 – Cathode

Maximum Ratings, *Absolute Values*:

ANODE-SUPPLY VOLTAGE (DC or Peak AC)□	1250 max.	volts
SUPPLY VOLTAGE BETWEEN DYNODE No.9 and ANODE (DC or Peak AC)	250 max.	volts
PEAK ANODE CURRENT	1 max.	ma
AVERAGE ANODE CURRENT○	0.1 max.	ma
AMBIENT TEMPERATURE	75 max.	°C

Characteristics: ←

With 100 volts per dynode stage and 100 volts between dynode No.9 and anode◆

	Min.	Av.	Max.	
Anode Dark Current#●	–	–	0.1	μamp
Sensitivity:				
At 4000 Angstroms	–	74000	–	μamp/μwatt
Luminous▲	40	80	–	amp/lumen
Current Amplification■	–	2000000	–	
Equivalent Noise Input★	–	5×10^{-13}	–	lumen

◆ For the more usual applications, the 931-A is recommended.

⊕ The use of about 50 volts between dynode No.9 and anode will give improved operating stability without sacrifice in sensitivity as explained in note under Type 931-A.

* On plane perpendicular to indicated direction of incident light.

□,○,#,●,▲,■,★: See next page. ←Indicates a change.

RCA

1P21

MULTIPLIER PHOTOTUBE

→ **Characteristics:**

With 75 volts per dynode stage and 50 volts between dynode No.9 and anode

	Av.	
Sensitivity:		
At 4000 Angstroms.	11000	μamp/μwatt
Luminous▲.	12	amp/lumen
Current Amplification■	300000	

□ Referred to cathode.

○ Averaged over any interval of 30 seconds maximum.

Dark current due to thermionic emission and ion feedback may be reduced by the use of refrigerants.

● For maximum signal-to-noise ratio, operation below 1000 volts is recommended.

▲ Measured under conditions specified on sheet "PHOTOTUBE SENSITIVITY and MEASUREMENTS" at the front of this Section.

■ Ratio of anode sensitivity to cathode sensitivity.

★ Defined as the value where the rms output current is equal to the rms noise current determined under the following conditions: 100 volts per stage, 25°C tube temperature, bandwidth of 1 cycle per second, tungsten light source at 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.

OUTLINE DIMENSIONS for Type 1P21
are the same as those for Type 931-A

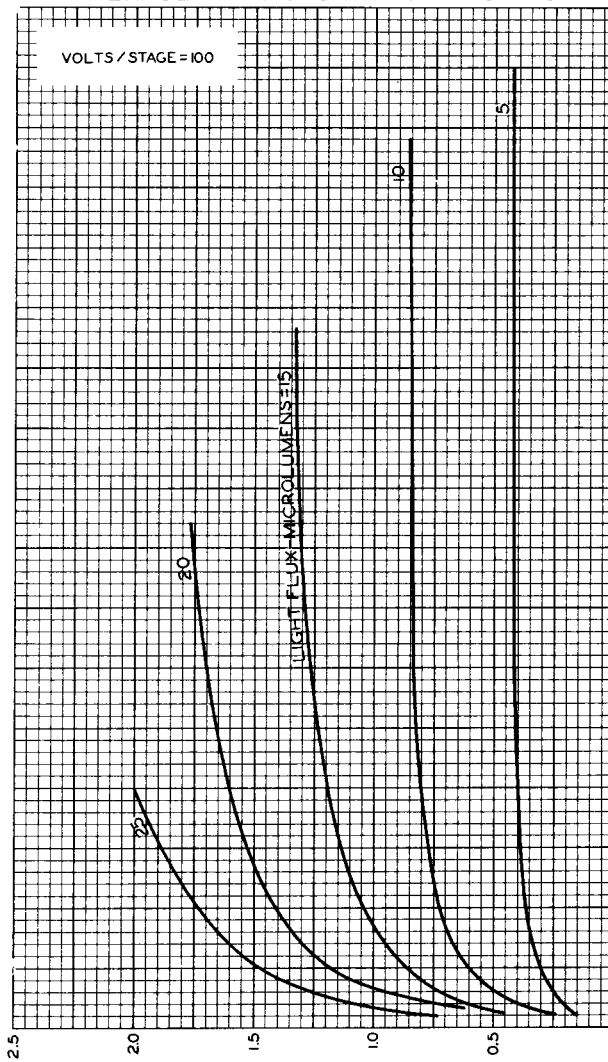
SPECTRAL-SENSITIVITY CHARACTERISTIC
of Phototube having S-4 Response
is shown at the front of this Section

→ Indicates a change.

RCA

IP21

AVERAGE ANODE CHARACTERISTICS



OCT. 26, 1949

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

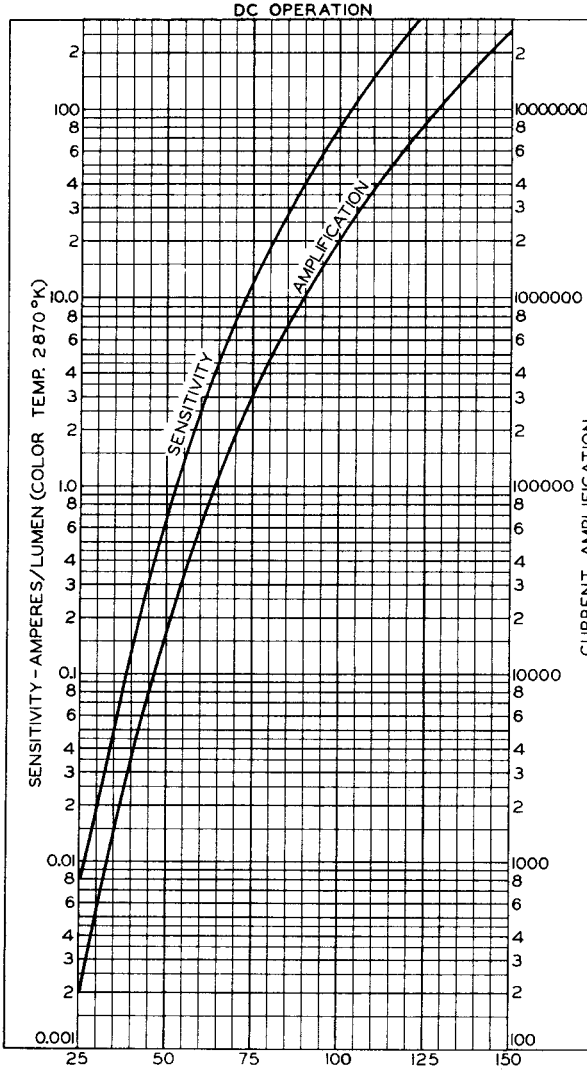
92CM-6456R3

RCA

1P21

AVERAGE CHARACTERISTICS

DC OPERATION



1P21

EQUIVALENT-NOISE-INPUT CHARACTERISTIC