

MAZDA

27M1

NINE STAGE PHOTO-ELECTRIC MULTIPLIER

27M1

RATING

Maximum Supply Voltage Secondary Cathode K.10 to Cathode K.1 (D.C. or Peak A.C.) (Volts)	950
Maximum Potential Anode/Secondary Cathode K.10 (Volts)	150
Maximum Anode Current (mA)	1.0
Cathode k1 sensitivity ($\mu\text{A}/\text{lumen}$) ($V_{k1} = 0$, all secondary cathodes joined at 100 volts)	† 20

† The sensitivity is on the basis of a lamp colour temperature of 2700°K and a light area of $5\text{mm.} \times 20\text{mm.}$

Note: It is recommended that the bleeder current in the potentiometer providing the secondary cathode voltages should be of the order of 10 times the maximum working current output of the tube.

GENERAL

The 27.M.1 is a high vacuum photo-cell with high response in the visible region. The photo electric current produced at the Cathode is multiplied many times by secondary emission occurring at successive cathodes within the valve.

It is capable of multiplying very small currents produced under weak illumination by an average value of one million times, when operated at 100 volts per stage.

The resultant output current is a linear function of the exciting illumination, under normal operating conditions. Since secondary emission occurs simultaneously, the frequency response is flat up to the frequencies at which transit time becomes a limiting factor.

Because of its great sensitivity, low noise level low dark current and freedom from distortion the 27.M.1 may be used for light operated relays, for film scanning, facsimile transmission and in scientific research involving low light levels; and in many applications its small size is an advantage.

It should be appreciated that with photo-electric multipliers, large variations in overall sensitivity may be present between individual valves.

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TYPICAL OPERATION

Voltage between anode and secondary cathode k10 (volts)	50
Voltage difference per stage (volts)	100
Anode dark current (max)(μ A)	¶ 0.25
Luminous sensitivity (amps/lumen)	‡ 20
Current amplification	§‡ 10 ⁶

‡ The sensitivity is on the basis of a lamp colour temperature of 2700°K and a light area of 5mm x 20mm.

§ Ratio of anode sensitivity/cathode sensitivity.

¶ With 100 volts between anode and secondary cathode k10.

INTER-ELECTRODE CAPACITANCES.

Anode to all other electrodes (μ F)	6.7
Anode to cathode k10 (μ f)	4.1

DIMENSIONS.

Maximum Overall Length (mm)	94.0
Maximum Bulb diameter (mm)	28.5
Maximum Base diameter (mm)	33.4
Light centre from seat (mm)	49.2 \pm 2.4
Cathode Length (mm)	24
Cathode Width (mm)	8

BASING. - Special 11 pin Sub Magal

CONNECTIONS.

Pin 1	Cathode 2
Pin 2	Cathode 3
Pin 3	Cathode 4
Pin 4	Cathode 5
Pin 5	Cathode 6
Pin 6	Cathode 7
Pin 7	Cathode 8
Pin 8	Cathode 9
Pin 9	Cathode 10
Pin 10	Anode
Pin 11	Cathode 1



↑
Direction of light.

Viewed from free end of pins.

Note: Pin 1 is taken as the first pin to the left of the keyway. Similarly pin 11 which is connected to the photo emitting cathode k1 is taken as the first pin to the right of the keyway.

Indicates a change ←

June 1954

VALVE & CRT DIVISION

Issue 2/6

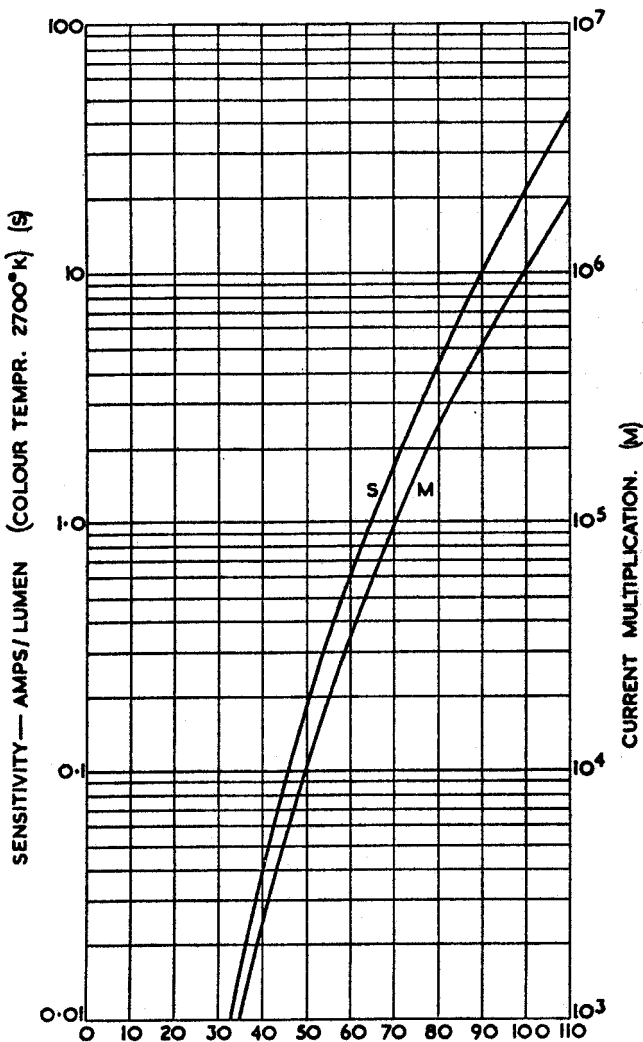
SIEMENS EDISON SWAN LIMITED

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NINE STAGE PHOTO-ELECTRIC MULTIPLIER
AVERAGE CHARACTERISTIC CURVES (D.C. Operation)



March 1956

SIEMENS

VOLTS PER STAGE

VALVE & CRT DIVISION

EDISON

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Issue 3/7

LIMITED

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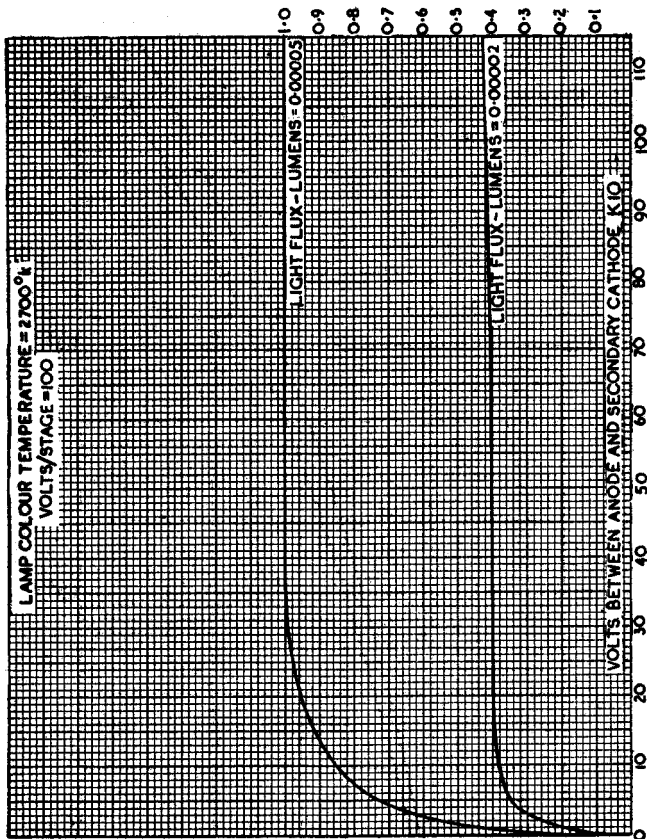
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NINE STAGE PHOTO-ELECTRIC MULTIPLIER

AVERAGE CHARACTERISTIC CURVES

ANODE CURRENT IN mA



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NINE STAGE PHOTO-ELECTRIC MULTIPLIER

AVERAGE CHARACTERISTIC CURVES

