

For Photon Counting 5mm × 8mm Bialkali Photocathode 51mm(2 Inch) Diameter, Head — On Type

GENERAL

Parameter		R464	R585	Unit
Spectral Response		300 to 650	160 to 650	nm
Wavelength of Maximum Response		420		nm
Photocathode	Material	Bialkali		—
	Minimum Effective Area	5 × 8		mm
Window Material		Borosilicate glass	Synthetic silica	—
Dynode	Structure	Box and Grid		—
	Number of Stages	12		—
Base		21 pin glass base		—
Suitable Socket		E678–21A(supplied)		—

MAXIMUM RATINGS (Absolute Maximum Values)

Parameter		Value	Unit
Supply Voltage	Between Anode and Cathode	1500	Vdc
Avarage Anode Current		0.01	mA
Ambient Temperature		-80 to +50	°C

CHARACTERISTICS (at 25°C)

Parameter		Min.	Typ.	Max.	Unit
Cathode	Luminous(2856K)	30	50	—	μA/lm
Sensitivity	Radiant at 420nm	—	50	—	mA/W
Anode	Luminous(2856K)	100	300	—	A/lm
Sensitivity	Radiant at 420nm	—	3.0 × 10 ⁵	—	A/W
Gain		—	6.0 × 10 ⁶	—	—
Anode Dark Counts		—	5	15	cps
Time Response	Anode Pulse Rise Time	—	13	—	ns
	Electron Transit Time	—	70	—	ns

NOTE: Anode characteristics are measured with the voltage distribution ratio shown below.

VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

Electrode	K	G	Dy1	Dy2	Dy3	Dy4	Dy5	Dy6	Dy7	Dy8	Dy9	Dy10	Dy11	Dy12	P
Ratio	4	0	2.5	1.5	1	1	1	1	1	1	1	1	1	1	

Supply Voltage:1000Vdc, K:Cathode, Dy:Dynode, G:Grid, P:Anode

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TPMHB0347EA

CATHODE RADIANT SENSITIVITY

QUANTUM EFFICIENCY

R585

R464

WAVELENGTH (nm)

Detailed description: This is a semi-logarithmic graph showing the performance of two phototubes, R585 and R464. The x-axis represents Wavelength in nanometers (nm), ranging from 100 to 800 nm. The left y-axis represents Cathode Radiant Sensitivity in milliwatts per square meter (mAW), ranging from 0.01 to 100. The right y-axis represents Quantum Efficiency in percent (%), ranging from 0.01 to 100. For each phototube, there are two curves: a solid line for Cathode Radiant Sensitivity and a dashed line for Quantum Efficiency. R585 (solid lines) has a peak sensitivity of approximately 40 mAW at 400 nm and a quantum efficiency peak of about 15% at 350 nm. R464 (dashed lines) has a peak sensitivity of approximately 15 mAW at 400 nm and a quantum efficiency peak of about 15% at 350 nm. Both phototubes show a sharp decline in performance as the wavelength increases beyond 500 nm.

Wavelength (nm)	R585 Sensitivity (mAW)	R585 Quantum Efficiency (%)	R464 Sensitivity (mAW)	R464 Quantum Efficiency (%)
150	~4	~4	~0.5	~0.5
200	~15	~10	~1	~10
300	~35	~15	~10	~15
400	~40	~15	~15	~15
500	~35	~10	~10	~10
600	~10	~2	~3	~3
700	~0.1	~0.01	~0.01	~0.01

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TUBE TYPE: R464, R585

GAIN

SUPPLY VOLTAGE (V)

Supply Voltage (V)	Gain
500	1.5×10^4
600	1×10^5
700	3×10^5
800	1×10^6
900	3×10^6
1000	1×10^7
1100	3×10^7
1200	1×10^8
1300	3×10^8
1400	1×10^9
1500	3×10^9

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COUNT PER CHANNEL
 FULL SCALE (PHOTON + DARK) : 1×10^4
 FULL SCALE (DARK) : 1×10^2

DISCRIMINATION LEVEL

SIGNAL+DARK

DARK

WAVELENGTH OF INCIDENT LIGHT : 400nm
 SUPPLY VOLTAGE : 790V
 LOWER LEVEL DISCRIMINATION : 74ch
 PHOTON+DARK COUNTS : 5000cps
 DARK COUNTS : 5cps
 AMBIENT TEMPERATURE : 25°C

CHANNEL NUMBER [ch]

Technical Drawing of TPMHA0216EB Vacuum Tube

Top View (Left): Shows the side profile of the tube. Dimensions include a top diameter of $\phi 52.0 \pm 1.5$, a top width of 5×8 , a total height of 126 ± 2 , and a base height of 13 MAX. . Labels include FACEPLATE, PHOTO-CATHODE, HA COATING, and 21 PIN BASE.

Top View (Right): Shows the top of the tube. Dimensions include an outer diameter of $\phi 51$, an inner diameter of $\phi 19$, and a total diameter of $\phi 56.8$. A label R5 points to a specific feature.

Bottom View (Left): Shows the base of the tube with 21 pins. The pinout is as follows: 1 (DY1), 2 (DY3), 3 (DY5), 4 (DY7), 5 (DY9), 6 (DY11), 7 (DY12), 8 (P), 9 (IC), 10 (IC), 11 (DY10), 12 (DY8), 13 (DY6), 14 (DY4), 15 (DY2), 16 (G), 17 (IC), 18 (IC), 19 (IC), 20 (K), 21 (DY1).

Bottom View (Right): Shows the side profile of the base. Dimensions include a total height of 5, a base height of 13, and a pin height of 4. A label TACCA points to a specific feature.

Bottom View (Bottom): Labeled **BOTTOM VIEW (BASING DIAGRAM)**.

Part Number: TPMHA0216EB

TACCA0011FA

TPMHA0216EB

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