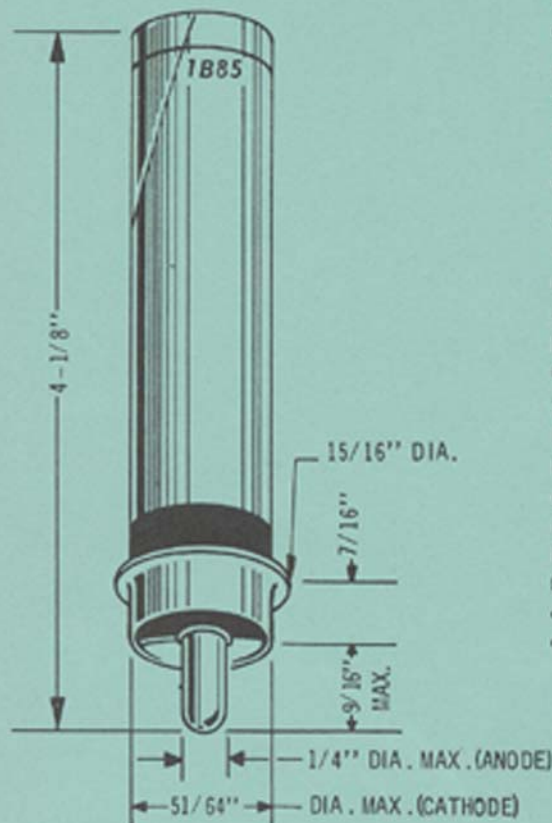


BETA GAMMA COUNTER TUBE



SYMBOL



RATINGS

OPERATING VOLTAGE (MIN)	850	VOLTS
	(MAX)	950
AMBIENT TEMPERATURE (MIN)	-30	°C
	(MAX)	80
RELATIVE HUMIDITY (MAX)	100	%
BETA ENERGY (MIN)	160	K α V

The 1B85 is a widely used metal wall, beta-gamma counter tube skillfully designed and constructed to provide consistent high performance. This general purpose tube is designed to replace most thin-walled glass tubes. Recent improvements have resulted in better low temperature performance and reduced temperature coefficients of threshold voltage.

Shock and vibration resistance is substantially greater than for glass-walled tubes. The aluminum shell, although thin, resists implosion, and even if dented the 1B85 counter will continue to operate satisfactorily.

Reliability, owing to high uniformity of construction, is an outstanding feature. Fill gas is of the self-quenching type; hence, the useful life is a function of voltage, counting rate, and life-test end point. The 1B85 is interchangeable with nearly all 900 volt counter tubes.

Simple mounting and replacement of tubes is achieved through the use of a standard RETMA type A1-82 coaxial base. Water-tight mounting is easy to obtain with the coaxial base. Several standard mountings are available: Victoreen 380-26 probe socket, 389-4 probe assembly, 631-56 probe assembly and the 5100-81-S18 Tru-arc ring for chassis mounting.

The extremely consistent uniformity and rugged construction, coupled with the simple coaxial base mounting, are features which have contributed to selection of the 1B85 counter tube as first choice for use in portable survey instruments, area monitoring instruments, and precision laboratory measuring equipment. The 1B85s are ideally suited for multiple tube counters which compare favorably with scintillation counters in cost and performance. Decoupling networks are unnecessary. The tubes are also well suited for coincidence and anti-coincidence circuits.

CHARACTERISTICS

THRESHOLD VOLTAGE* (MAX)	800	VOLTS
PLATEAU LENGTH* (MIN)	200	VOLTS
PLATEAU SLOPE*	3	%/100 VOLTS
($V_0 = 800$ TO 1000 V)		
RECOVERY TIME	100	μ SEC
BACKGROUND ($V_0 = 900$ V)	40	C/M
LIFE (AT 6000 C/M, $V_0 = 900$ V)	10^8	COUNTS
LIFE TEST END POINT, SLOPE	10	%/100 VOLTS
($V_0 = 850$ TO 950 V)		
ACTIVE LENGTH	2.75	INCHES
WALL (ALUMINUM)	30	MG/CM ²
ELECTRODE CAPACITANCE	2	μ MF

* NEW TUBES



THE VICTOREEN INSTRUMENT CO.

COMPONENTS DIVISION

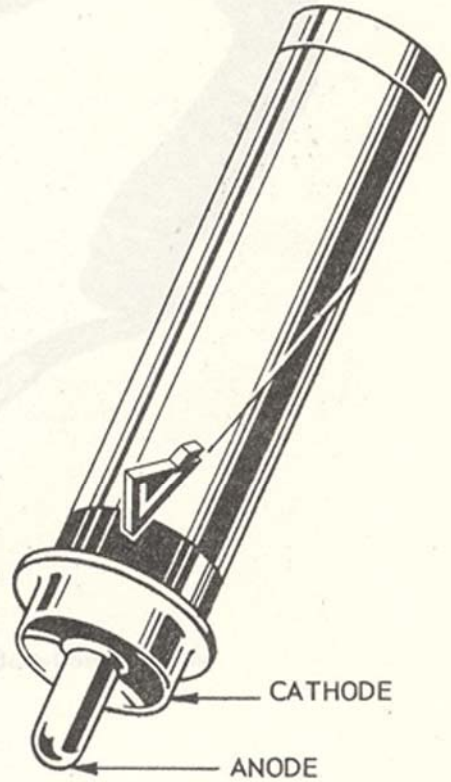
3800 PERKINS AVENUE, CLEVELAND 14, OHIO

CHARACTERISTICS

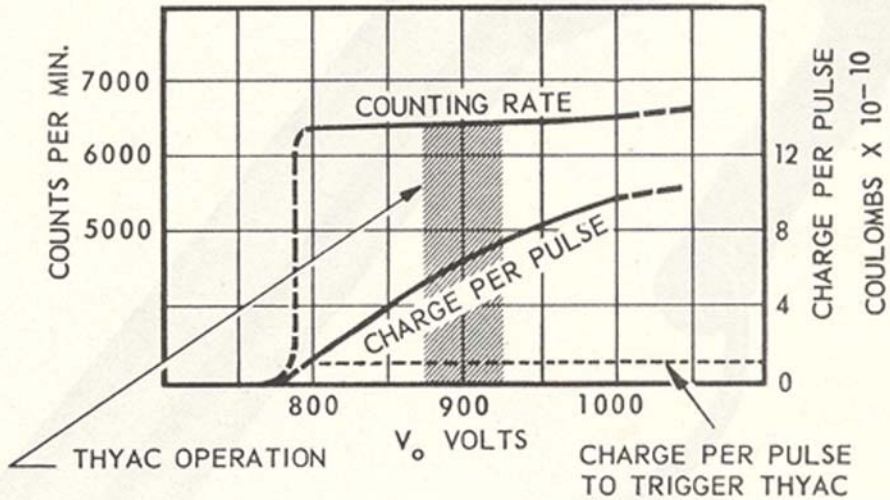
THRESHOLD VOLTAGE*	..... (MAX) 800	VOLTS
PLATEAU LENGTH*	..... (MIN) 200	VOLTS
PLATEAU SLOPE*	..... 5	%/100 VOLTS
	($V_0 = 800$ TO 1000 V)	
RECOVERY TIME	..... 100	μ SEC
BACKGROUND	..... 40	C/M
	($V_0 = 900$ V)	
LIFE	..... 10^8	COUNTS
	(AT 6000 C/M, $V_0 = 900$ V)	
LIFE TEST END POINT, SLOPE	..... 10	%/100 VOLTS
	($V_0 = 850$ TO 950 V)	
ACTIVE LENGTH	..... 2.75	INCHES
WALL (ALUMINUM)	..... 30	MG/CM ²
ELECTRODE CAPACITANCE	..... 2	μ MF
*NEW TUBES		

RATINGS

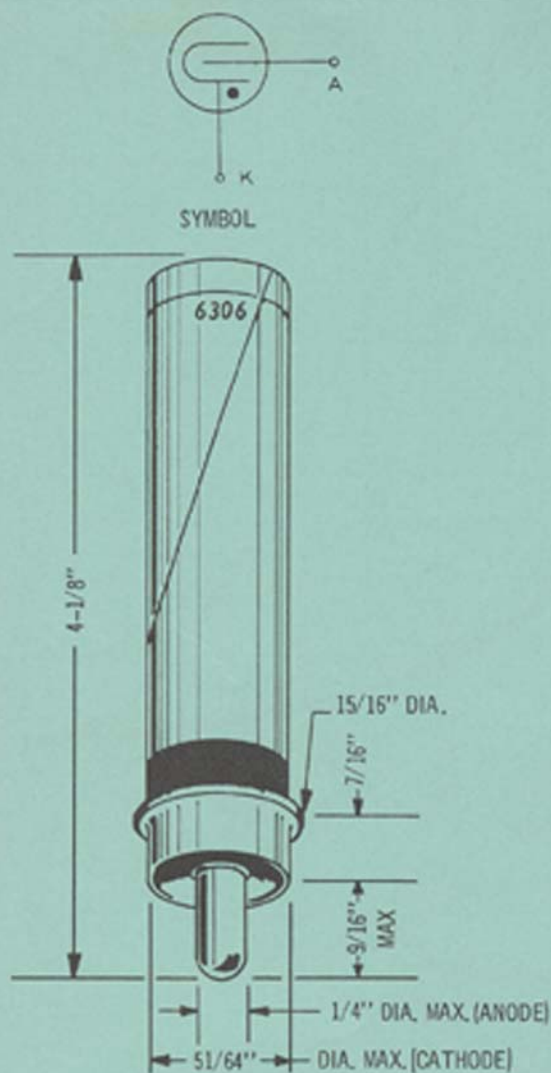
OPERATING VOLTAGE	..... (MIN) 850	VOLTS
	..... (MAX) 950	VOLTS
AMBIENT TEMPERATURE	..... (MIN) -10°	C
	..... (MAX) 100°	C
RELATIVE HUMIDITY	..... (MAX) 95	%
BETA ENERGY	..... (MIN) 160	KEV



TUBE CHARACTERISTICS



HIGH-EFFICIENCY COUNTER TUBE



RATINGS

OPERATING VOLTAGE (MIN)	850	VOLTS
	(MAX)	950
AMBIENT TEMPERATURE (MIN)	-30	°C
	(MAX)	75
RELATIVE HUMIDITY (MAX)	95	%

The 6306 is a high-efficiency, self quenching type gamma counter tube similar to the widely used 1B85 but having a bismuth coated cathode, giving better sensitivity to gamma rays under 1 MEV. It is not recommended as a replacement for 1B85 for counting betas.

The 6306 is designed for portable survey instruments, area monitoring devices, and precision laboratory measuring equipment. It is ideally suited for parallel operation requiring no decoupling networks. When used in clusters, these tubes compare favorably in cost and performance with scintillation counters.

It is interchangeable mechanically and electrically with the 1B85 counter tube. Unusual uniformity and close tolerances are maintained on the 6306 to give greater reliability. The quench gas is partially organic; hence, its useful life is a function of voltage, counting rate and desired life-test end point. The copper screen also serves to make the tube resist accidental denting.

Simple mounting and replacement are facilitated by using the standard RTMA Type A1-82 coaxial base. Water-tight mounting is easily obtained with the simple construction. Four standard mountings are available; the 380-26 probe socket, the Model 500 chassis socket, the 389-4 probe assembly and the 5100-81-S18 Truarc ring for chassis mounting. The shock and vibration resistance is substantially greater than for glass tubes.

CHARACTERISTICS

THRESHOLD VOLTAGE* (MAX)	825	VOLTS
PLATEAU LENGTH* (MIN)	150	VOLTS
PLATEAU SLOPE* (MAX)	5	%/100 VOLTS
	($V_0 = 875-975$ V)	
RECOVERY TIME	100	μSEC
BACKGROUND	80	C/M
	($V_0 = 900$ V)	
LIFE	10^8	COUNTS
	(AT 6000 C/M, $V_0 = 900$ V)	
LIFE TEST END POINT, SLOPE	20	%/100 VOLTS
	($V_0 = 850$ TO 925 V)	
ACTIVE LENGTH	2.75	INCHES
WALL (ALUMINUM)	30	MG/CM ²
SCREEN (COPPER)	100	MESH
PLATING (BISMUTH)	105	MG/CM ²
ELECTRODE CAPACITANCE	2	μF

*NEW TUBES



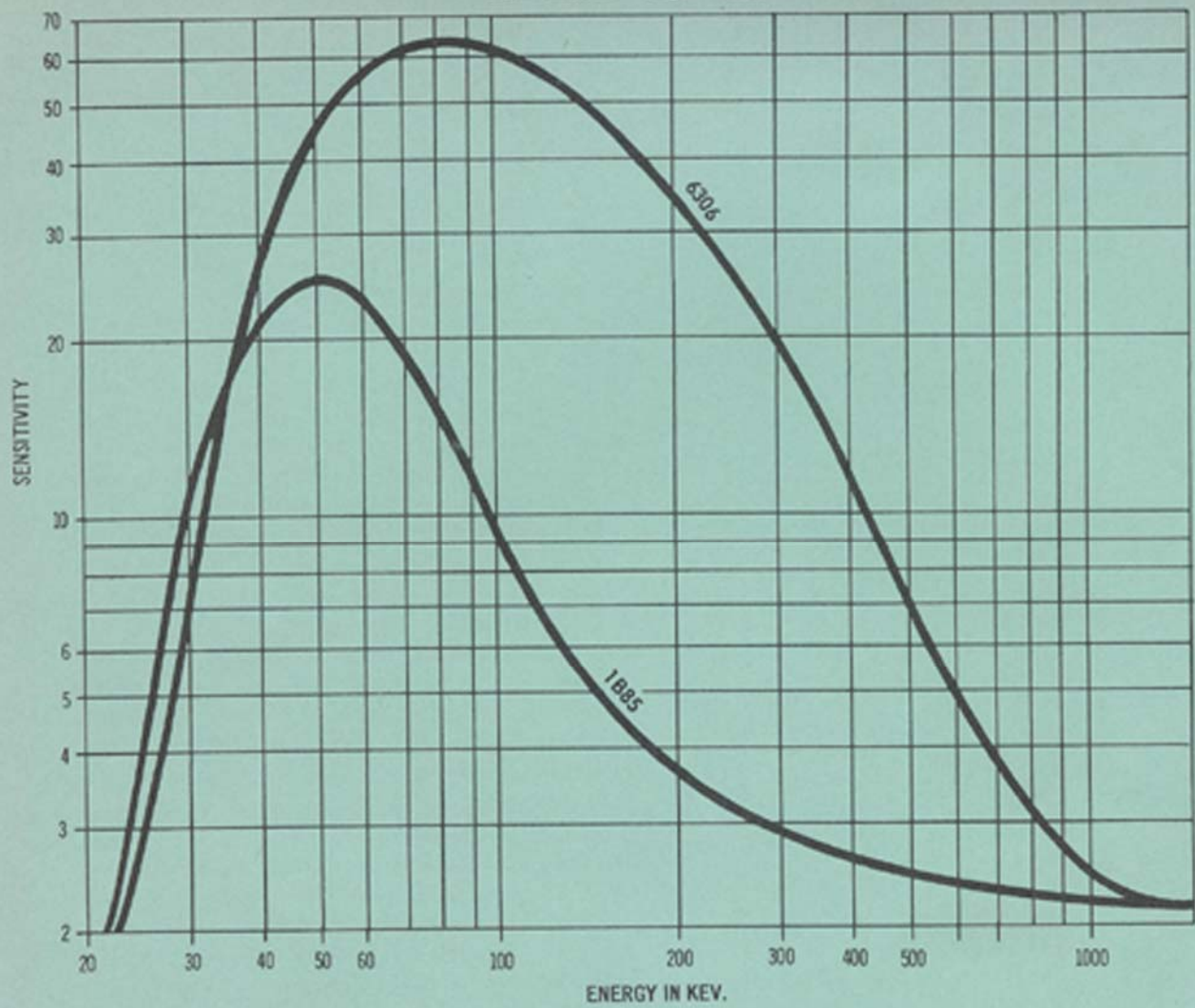
THE VICTOREEN INSTRUMENT CO.

COMPONENTS DIVISION

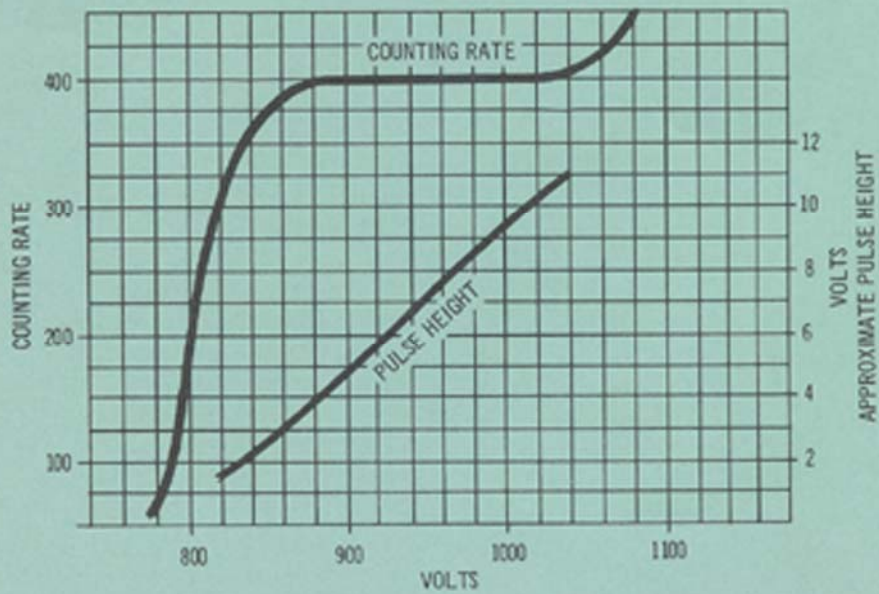
3800 PERKINS AVENUE, CLEVELAND 14, OHIO

Litho in U.S.A.

COMPARISON 1B85 - 6306



6306 TYPICAL TUBE OPERATION



THE VICTOREEN INSTRUMENT CO.

Victoreen



GEIGER - MUELLER TUBES

TYPES

EP70G/5980

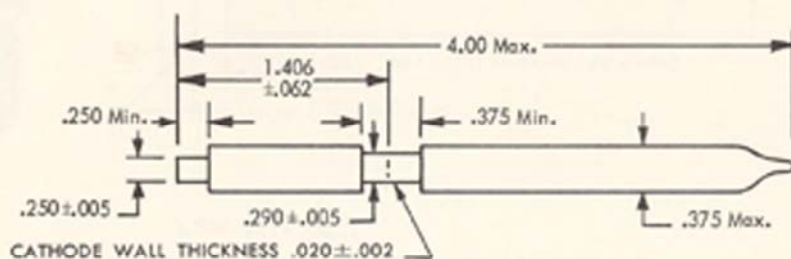
EP72M/7616

EP70M/5979

EP74

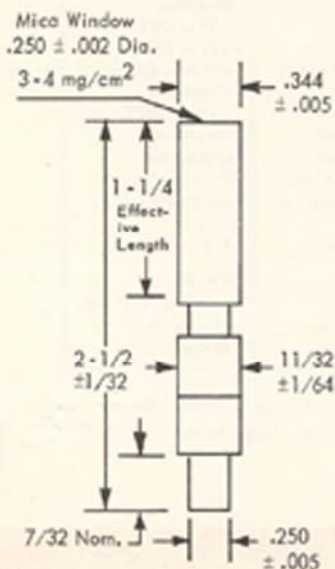
TUBE TYPE EP70G/5980

The type EP70G/5980 is a halogen-filled gamma detector. It is approximately 4" long and $\frac{3}{8}$ " in diameter. It is recommended for high level gamma detection. It has been type approved under MIL-E-1/973.



TUBE TYPE EP72M/7616

The type EP72M/7616 is expressly designed for "pulsed geiger tube" operation. It is an effective gamma detector although the mica window permits beta detection. It is 2½" long and .344" in diameter. The Military designation is EP72M/7616 covered by MIL-E-1/986C (Navy). The type EP72M/7616 is available on special order with a 1.4-2.0 mg/cm² window and/or for 900V operation.



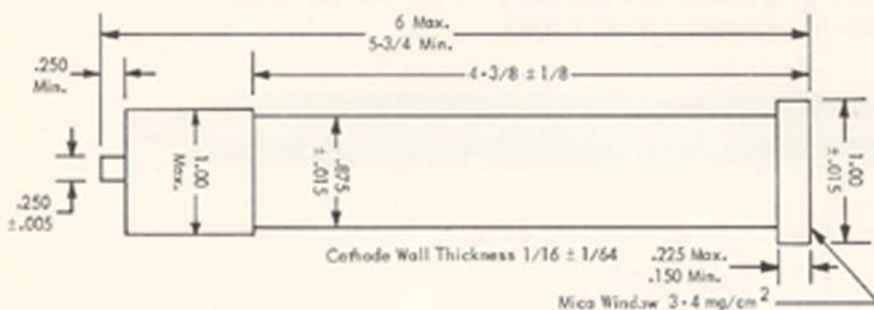
SPECIFICATIONS

CHARACTERISTICS	TYPE EP70G/5980	TYPE EP72M/7616
Operating Voltage	700V dc	800V dc
Plateau Length	150V Min.	200V dc
Relative Plateau Slope (at 100 Nps)	20%/100V	20%/100V
Starting Voltage (1 volt pulse)	640V Max.	Not Appl.
Starting Voltage (2 volt pulse), RP = 1 Meg.	Not Appl.	710V dc Min.
Anode Voltage for 50V pulse, RP = 1 Meg.	Not Appl.	760V Max.
Pulse Amplitude	>2.5V at 675V < 65V at 725V	Not Appl.
Recovery Time	130 μsec.App.	Not Appl.
Background	10 Npm Max.	10 Npm Max.
Operating Temperature Range	-55°C to +75°C	-20°C to +55°C
Life	Not Affected	Not Affected
Life Typical Pulsed Operation, Count Rate 500 Nps	Not Appl.	by Operation 1000 hrs. Min.
Active Area	½ lg. X ¼" dia.	1-½ lg. X ¼" dia.
Cathode Material	446 Stainless Steel	
Window Material	Not Appl.	Mica
Window Thickness	Not Appl.	3-4 mg/cm ²
Fill Gas	C1+Ne+A	C1+Ne+A
Nominal Count Rate in 50 mr/hr Field	200 Nps	400 Nps
Holding Period	30 Days Min.	30 days Min.



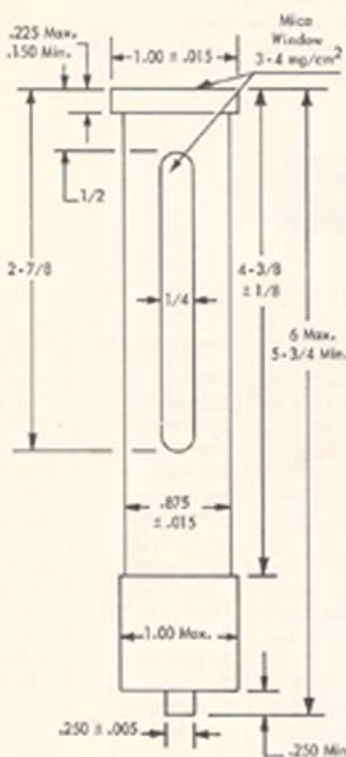
TUBE TYPE EP70M/5979

The type EP70M/5979 is a mica end-window beta-gamma, halogen-filled detector. It is approximately 6" long and 1" in diameter. It has been type approved under MIL-E-1/906A. The type EP70M/5979 is available on special order with a 1.4-2.0 mg/cm² window and/or for 900V operation. A RETMA 4-pin base can also be furnished.



TUBE TYPE EP74

The type EP74 is an end and side-window, halogen-filled, beta-gamma detector. It is approximately 6" long and 1" in diameter. It is covered by MIL-E-1/1019 (Navy).



SPECIFICATIONS

CHARACTERISTICS	TYPE EP70M/5979	TUBE TYPE EP74
Operating Voltage	700V dc	700V dc
Plateau Length	200V Min.	200V Min.
Relative Plateau Slope (at 100 Nps)	20%/100V	20%/100V
Starting Voltage (1 volt pulse)	640V Max.	640V Max.
Pulse Amplitude	>2.5V at 675V < 65V at 725V	>2.5V at 675V < 65V at 725V
Recovery Time	200 μsec. Approx.	200 μsec. Approx.
Background	60 Npm Max.	60 Npm Max.
Operating Temperature Range	-55°C to +75°C	-60°C to +75°C
Life	Not affected by Operation	Not affected by Operation
Active Area	4" lg. X 3/4" dia.	4" lg. X 3/4" dia.
Cathode Material	446 Stainless Steel	446 Stainless Steel
Window Material	Mica	Mica
Window Thickness	3-4 mg/cm ²	3-4 mg/cm ²
Window Size:		
End	3/4" Dia.	3/4" Dia.
Side	—	2-7/8" lg. X 1/4" wide
Fill Gas	C1 + Ne + A	C1 + Ne + A
Nominal Count Rate in 1 m ² /hr Field	70 Nps	70 Nps

For applications requiring special halogen-filled geiger tubes contact Victoreen's Application Engineering Dept.



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