



## Ion Chambers

These general-purpose intensity monitors consist of electroless nickel-plated 6061-T6 aluminum housings, 6061-T6 electrodes, SHV and BNC electrical connectors, "CPC" gas connectors, and an electrically-isolating quick-release mounting bracket.



105-0000-0



105-0000-1



105-0000-2



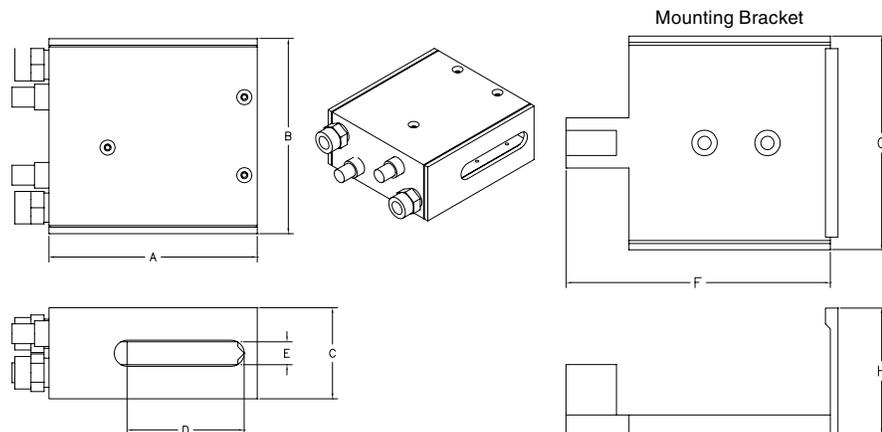
Mounting Bracket

Part Number	Electrode (HV) in. (mm)	Electrode (Collector) in. (mm)	Electrode Width in. (mm)	Electrode Separation in. (mm)
105-0000-0	1.50 (38.10)	0.875 (22.22)	2.50 (63.50)	0.438 (11.11)
105-0000-1	3.00 (76.20)	2.375 (60.32)	2.50 (63.50)	0.438 (11.11)
105-0000-2	11.25 (285.75)	10.62 (269.87)	2.50 (63.50)	0.438 (11.11)

## Ion Chamber Operation

As x-rays pass through a gas, a certain fraction of the incident photons will be absorbed, ionizing the gas to some extent. This results in some equilibrium density of electron-ion pairs in the gas, which depends on the beam intensity and recombination rate of the electron-ion pairs. If a strong electric field is applied perpendicular to the beam direction, the electrons and ions can be swept out of the beam path before they

recombine. The electrons and ions are collected on detector biasing plates, and the collected current is the detector signal. A high negative voltage (approx. -300V) is applied to the detector, and the positive ion current is collected. This current is usually in the microamp to nanoamp range, and is amplified by a low noise current to voltage amplifier to produce a signal of a few volts. This signal is proportional to the photon flux through the detector.



Part Number	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)
105-0000-0	4.00 (101.60)	1.75 (44.45)	3.75 (95.25)	2.25 (57.15)	0.50 (12.70)	5.40 (137.16)	2.25 (57.15)	4.50 (114.30)
105-0000-1	4.00 (101.60)	3.750 (95.25)	1.75 (44.45)	2.25 (57.15)	0.50 (12.70)	5.40 (137.16)	4.25 (107.95)	2.50 (63.5)
105-0000-2	4.00 (101.60)	12.00 (304.80)	1.75 (44.45)	2.25 (57.15)	0.50 (12.70)	5.40 (137.16)	4.25 (107.95)	2.50 (63.5)

For conversion charts from ion chamber counts to number of x-ray photons see page 7-1 to 7-11.