

ORDELA MODEL 1020X POSITION-SENSITIVE PROPORTIONAL COUNTER

DESCRIPTION

The ORDELA Model 1020X is a linear, position-sensitive proportional counter (PSPC) designed and manufactured by ORDELA, Inc. for applications in small-angle scattering experiments with low-energy (4 to 20 keV) x-rays.

This PSPC uses resistance-capacitance position encoding, a method known for its reliability and simplicity of operation.¹ The active volume is only 8 mm deep to reduce parallax distortion. The counting gas is Xe-CH₄ at 1500 torr pressure for high detection efficiency and good spatial resolution. The window is 0.5 mm thick beryllium to increase x-ray transmission and provide a vacuum interface.

The Model 1020X includes two low-noise preamplifiers and a high-voltage filtering circuit. Analog and digital data processing instrumentation for position decoding and background discrimination are available from ORDELA, Inc. upon request. For best signal processing with the Model 1020X, we recommend the ORDELA Model AIM-206 Position Decoder for pulse shaping, timing, and pulse-height discrimination, a NIM/BIN power supply and a 0 to 3 kV adjustable NIM high-voltage power supply for biasing, and a 4096-channel MCA for display and imaging.

1. C. J. Borkowski and M. K. Kopp, J. Appl. Crystallogr. 11, 430 (1978).

SPECIFICATIONS

ACTIVE LENGTH:	20 mm
SPATIAL RESOLUTION:	400 pixels (picture elements)
PIXEL SIZE:	50 μ m
THERMAL NOISE:	30 μ m (fwhm) for an avalanche charge of 1 pC, measured with the Model AIM-206 Position Decoder
DETECTION EFFICIENCY:	90% for 8 keV x-rays, 50% for 17 keV x-rays
WINDOW ABSORPTION:	50% for 4 keV x-rays, 20% for 6 keV x-rays, <10% for >8 keV x-rays
COUNT-RATE CAPABILITY:	10 ⁴ x-rays per second for 10% coincidence losses, maximum count rate 10 ⁵ x-rays per second
LINEARITY:	2% integral, 15% differential
BIAS VOLTAGE:	\approx 2 kV
PREAMPLIFIER POWER:	\pm 12 V at 40 mA

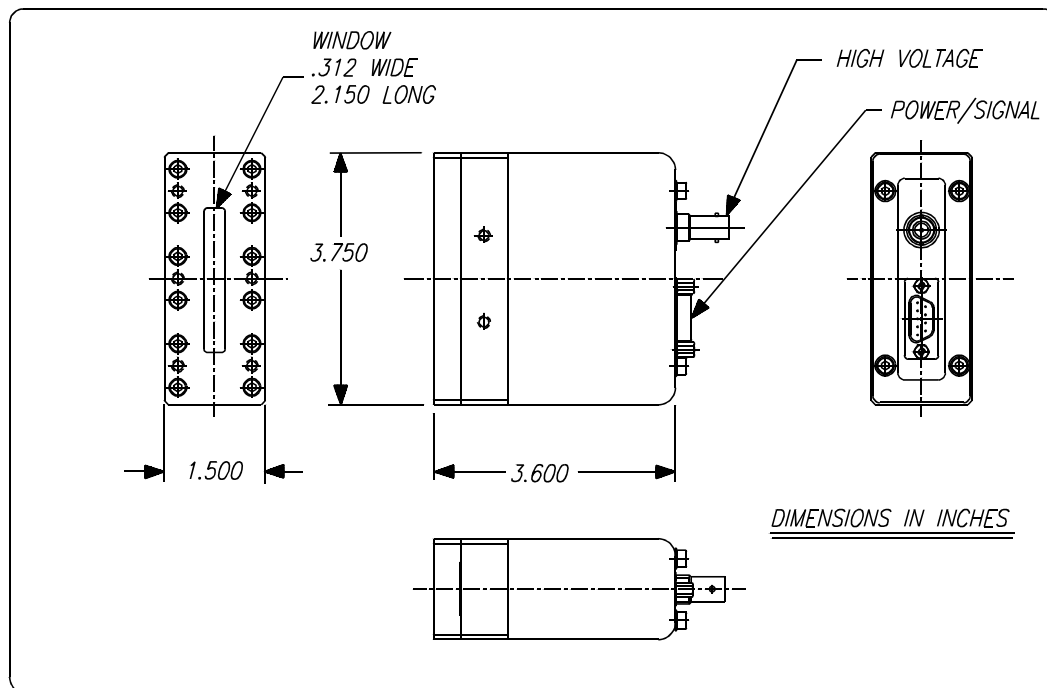
COUNTER CONSTRUCTION

BODY MATERIAL:	Aluminum 6061
WINDOW MATERIAL:	0.50-mm-thick, hot-rolled beryllium
COUNTER VOLUME:	2 cm x 0.8 cm x 0.8 cm
COUNTING GAS:	Xe-CH ₄ at 1500 torr
OVERALL DIMENSIONS:	9 cm long, 4 cm high, 9 cm thick

ACCESSORIES

Standard accessories, delivered with the Model 1020X are: (1) Two low-noise preamplifiers (ORDELA Model VS-03) and a high-voltage filter and distribution network which are installed and interconnected at the factory. (2) 3-m-long (10 ft) cables for interconnection of the Model 1020X with an ORDELA Model AIM-206 and the high-voltage power supply.

Optional accessories are: (1) A complete package of position decoding electronics for the Model 1020X. This package may be designed to customer specifications and will be shipped as a factory tested and calibrated system. (2) other lengths interconnection cables. (3) adapter cables and connectors permitting interconnection of the Model 1020X with other than ORDELA's time decoding instruments.



ORDELA MODEL 1020X OUTLINE AND DIMENSIONS

WARRANTY

ORDELA, Inc. warrants its products to be free from defects in materials and workmanship for 12 months after shipment. No other warranty is included. Specifically, no warranty of merchantability or fitness for a particular purpose is implied. ORDELA's liability under this warranty is limited to repairing or replacing the product at ORDELA's option. This warranty is void if the product is operated improperly, disassembled, or modified other than in the ORDELA laboratory.