

ORDELA MODEL 1204N

POSITION-SENSITIVE PROPORTIONAL COUNTER

DESCRIPTION

The ORDELA Model 1204N is a linear, position-sensitive proportional counter (PSPC) designed and manufactured by ORDELA, Inc. for applications in small-angle scattering experiments with thermal neutrons.

This PSPC uses an improved version of resistance-capacitance position encoding, a method known for its reliability and simplicity of operation.¹ The active volume is only 2.5 cm deep to reduce parallax distortion. The counting gas is $^3\text{He-CF}_4$ at 3420 torr pressure.² The window is 3.8 mm-thick aluminum to reduce window absorption and scattering.

The Model 1204N 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. We recommend the ORDELA Model AIM-206 Position Decoder, a 0 to +3 kV adjustable NIM high-voltage power supply, and a 1024-channel MCA for pulse shaping, timing, pulse-height discrimination, and imaging with the ORDELA Model 1204N PSPC.

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1. C. J. Borkowski and M. K. Kopp, J. Appl. Crystallogr. 11, 430 (1978).
 2. M. K. Kopp et al., Nucl. Instrum. Methods 201, 395 (1982).

SPECIFICATIONS

ACTIVE LENGTH:	200 mm
SPATIAL RESOLUTION:	100 pixels (picture elements)
PIXEL SIZE:	2 mm
THERMAL NOISE:	1.3 mm (fwhm) for an avalanche charge of 0.5 pC, measured with the Model AIM-206
DETECTION EFFICIENCY:	45% for 1 Å neutrons, 70% for 2 Å neutrons, and 83% for 3 Å neutrons
COUNT-RATE CAPABILITY:	2×10^4 neutrons per second for 10% coincidence losses, maximum count rate 10^5 neutrons per second
LINEARITY:	2% integral, 15% differential
PARALLAX ERROR:	1 mm at 2.3° beam incidence angle
BIAS VOLTAGE:	. 2 kV
PREAMPLIFIER POWER:	±12 V at 40 mA.

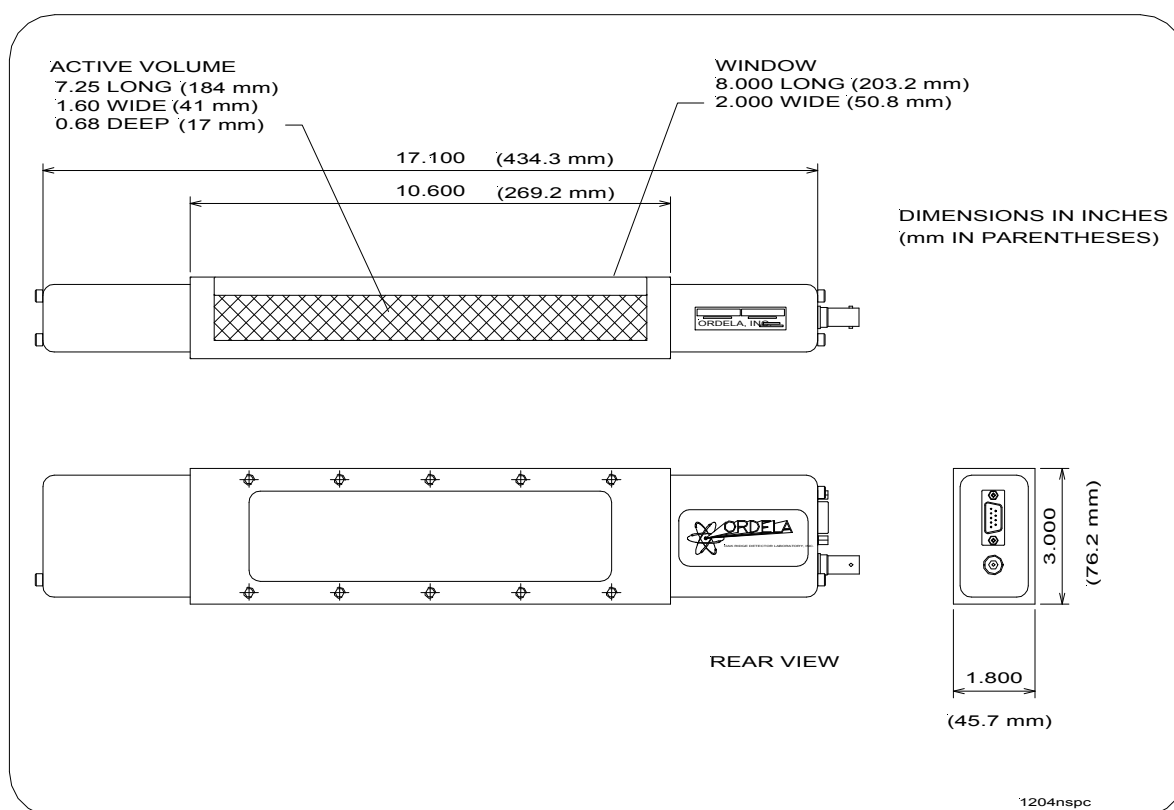
COUNTER CONSTRUCTION

BODY MATERIAL:	Aluminum 6061
WINDOW MATERIAL:	3.8-mm-thick aluminum
COUNTER VOLUME:	20 cm long, 5.0 cm wide, 2.5 cm deep
COUNTING GAS:	$^3\text{He-CF}_4$ at 3420 torr
OVERALL DIMENSIONS:	43.4 cm long, 7 cm wide, 4.6 cm high.

ACCESSORIES

Standard accessories, delivered with the Model 1204N at no extra cost 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) 10-m-long (30 ft) cables for interconnection of the Model 1204N with an ORDELA Model AIM-206 or AIM-204 Position Decoder Module.

Optional accessories are: (1) A complete package of position decoding electronics for the Model 1204N. This package may be designed to customer specifications and will be shipped as a factory tested and calibrated system. (2) other lengths interconnection cables for the Model AIM-206 or AIM-204. (3) adapter cables and connectors permitting inter-connection of the Model 1204N with other than ORDELA's time decoding instruments.



ORDELA MODEL 1204N, 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.