ORDELA INC.
OAK RIDGE DETECTOR LABORATORY

Revised 5/2/95

ORDELA MODEL 2250N

POSITION-SENSITIVE PROPORTIONAL COUNTER

DESCRIPTION

The ORDELA Model 2250N is a two-dimensional, position-sensitive proportional counter (PSPC) developed and manufactured by ORDELA, Inc. for applications in small-angle neutron scattering.

The Model 2250N PSPC uses all-metal anode and cathode wire planes for resistance-capacitance position encoding and counting of thermal neutrons.[1] The active counting volume has a square area of 25 cm x 25 cm and is 2.5 cm deep. The counting gas is ^{3}He-CF_4 at 500 kPa absolute pressure for high neutron detection efficiency, good spatial resolution, and low gamma-radiation cross-section.[2]

The counter is equipped with four low-noise preamplifiers and a high-voltage distribution and filtering circuit. Analog and digital data processing systems for position decoding and background discrimination are available from ORDELA, Inc. upon request. For data processing, we recommend the ORDELA Models AIM-206 Position Decoder and AIM-312 Dual Parameter Analyzer. The Model AIM-312 acquires, digitizes, stores, and generates two-dimensional histograms from the Model AIM-206 outputs. Histograms acquired with the Model AIM-312 may be stored, transferred, displayed, and analyzed with the ORDELA Model OP-312 Dataview software on a desktop PC. The Model AIM-312 interfaces through an IEEE-488 GPIB to the PC. A 0 to 5 kV adjustable NIM high-voltage power supply and an optional tail-pulse generator complete this system.

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

SPECIFICATIONS

ACTIVE AREA:	25 cm x 25 cm
SPATIAL RESOLUTION:	100 x 100 pixels (picture elements)
PIXEL SIZE:	2.5 mm x 2.5 mm
THERMAL NOISE:	2.5 mm (fwhm) for an avalanche charge of 1 pC
DETECTION EFFICIENCY:	70% for 3 Å neutrons, 35% for 1 Å neutrons
COUNT-RATE CAPABILITY:	10^4 neutrons per second for 10% coincidence losses (10^5 neutrons per second maximum)
LINEARITY:	2% integral, 15% differential
BIAS VOLTAGE:	~4500 V
PREAMPLIFIER:	±24 V at 50 mA

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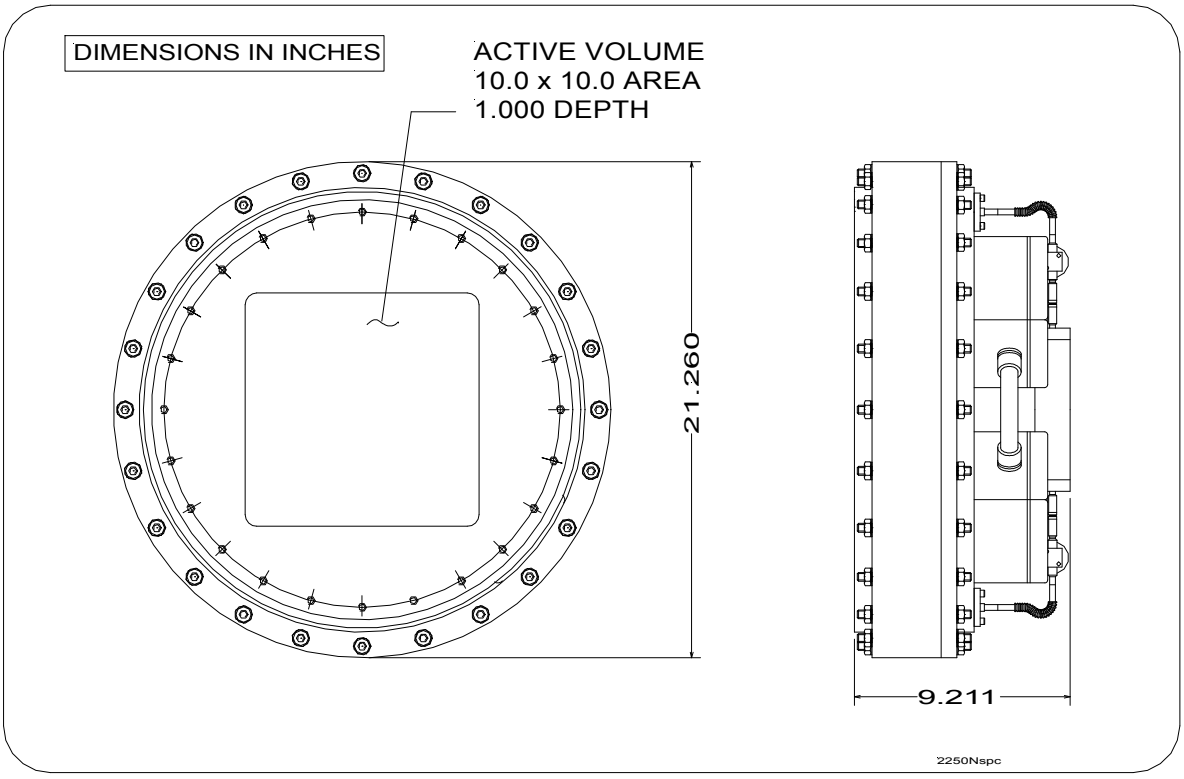
COUNTER CONSTRUCTION

BODY AND WINDOW:	Aluminum 6061-T6
WINDOW THICKNESS:	1 cm
COUNTING GAS:	^{3}He-CF_4 at 500 kPa absolute pressure
OVERALL DIMENSIONS:	54 cm diameter, 23.4 cm height
SHIPPING WEIGHT:	~150 kg

ACCESSORIES

Standard accessories, delivered with the Model 2250N at no extra cost are: (1) Four low-noise preamplifiers 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 2250N with two ORDELA Models AIM-206 and the high-voltage power supply.

Optional accessories are: (1) A complete package of position decoding electronics for the Model 2250N. 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. (3) adapter cables and connectors permitting interconnection of the Model 2250N with other than ORDELA's time decoding instruments. (4) acrylic mounting flange.



ORDELA MODEL 2250N 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.

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