

ORDELA MODEL 2650N

POSITION-SENSITIVE PROPORTIONAL COUNTER

DESCRIPTION

The ORDELA Model 2650N is a large-area, two-dimensional, position-sensitive proportional counter (PSPC) designed and manufactured by ORDELA, Inc. for applications in small-angle neutron scattering.

The Model 2650N 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 64 cm x 64 cm. It is 2.5 cm deep to reduce parallax distortion. The counting gas is $^3\text{He-CF}_4$ at 270 kPa for high neutron detection efficiency, good spatial resolution, and low gamma-radiation cross-section.² The Model 2650N is designed for operation in a vacuum flight path.

The counter is equipped with four low-noise preamplifiers, a high-voltage distribution and filtering circuit, and a gas purifier for extended lifetime. 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 interfaces through an IEEE-488 GPIB for computer data display. 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:	64 cm x 64 cm
SPATIAL RESOLUTION:	64 x 64 pixels (picture elements)
PIXEL SIZE:	1 cm x 1 cm
SPATIAL UNCERTAINTY:	1 cm (fwhm)
DETECTION EFFICIENCY:	80% for 5 Å neutrons, 65% for 3 Å neutrons, 50% for 2 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:	-4000 V
PREAMPLIFIER POWER:	±24 V at 100 mA

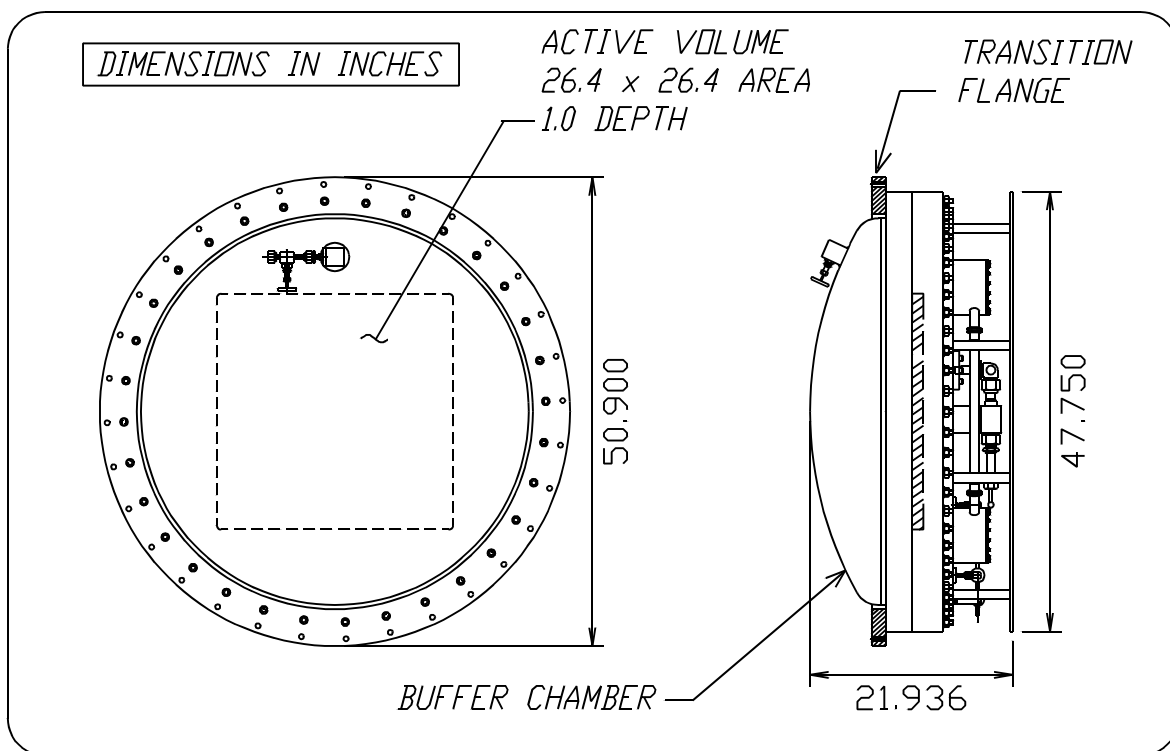
COUNTER CONSTRUCTION

BODY AND WINDOW:	aluminum 6061-T6
WINDOW THICKNESS:	buffer chamber 0.95 cm, counter volume 0.76 cm (1.71 cm total)
OVERALL DIMENSIONS:	121.2 cm diameter, 55.7 cm height
SHIPPING WEIGHT:	-800 kg

ACCESSORIES

Four low-noise preamplifiers (ORDELA Model VS-01) and a high-voltage filter and distribution circuit are installed and interconnected at the factory. A molecular sieve gas purifier is an integral part of the PSPC for extended lifetime and improved gas purity. All cables necessary for interconnection of the Model 2650N to the AIM-206 (or similar signal processing modules) are provided. Standard cable length is 15 m (50 ft), other length cables provided upon request.

ORDELA, Inc. offers a complete package of position-decoding electronics for the Model 2650N PSPC. This package may be designed to customer specifications and will be shipped as a factory tested and aligned system.

**ORDELA MODEL 2650N 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.