

ORDELA MODEL 1600N

POSITION-SENSITIVE PROPORTIONAL COUNTER

DESCRIPTION

The ORDELA Model 1600N 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 extended life-time, reliability, and simplicity of operation.¹ The active volume is 60 cm long, 2.5 cm wide, and 2.9 cm deep. The counting gas is $^3\text{He-CF}_4$ at 400 kPa absolute pressure for high detection efficiency, good spatial resolution, and low gamma-radiation cross-section. The window is 2.5-mm-thick aluminum for low scattering cross-section. All-metal, multi-wire electrodes are used to increase count-rate capability and life-time.

The Model 1600N includes two low-noise preamplifiers, a high-voltage filtering circuit, and interconnection cables. In addition to these standard accessories, 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 1600N, 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 +5 kV adjustable NIM high-voltage power supply for biasing, and a 1024-channel MCA for display and imaging.

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

SPECIFICATIONS

ACTIVE LENGTH:	600 mm
SPATIAL RESOLUTION:	300 pixels (picture elements)
PIXEL SIZE:	2 mm (fwhm)
THERMAL NOISE:	1.5 mm (fwhm) for an avalanche charge of 1 pC, measured with the Model AIM-206
DETECTION EFFICIENCY:	43% for 1 Å neutrons, 68% for 2 Å neutrons, and 94% for 5 Å neutrons
COUNT-RATE CAPABILITY:	10^4 neutrons per second for 10% coincidence losses, maximum count rate 10^5 neutrons per second
LINEARITY:	2% integral, 15% differential
BIAS VOLTAGE:	≈3.8 kV
PREAMPLIFIER POWER:	±12 V at 20 mA

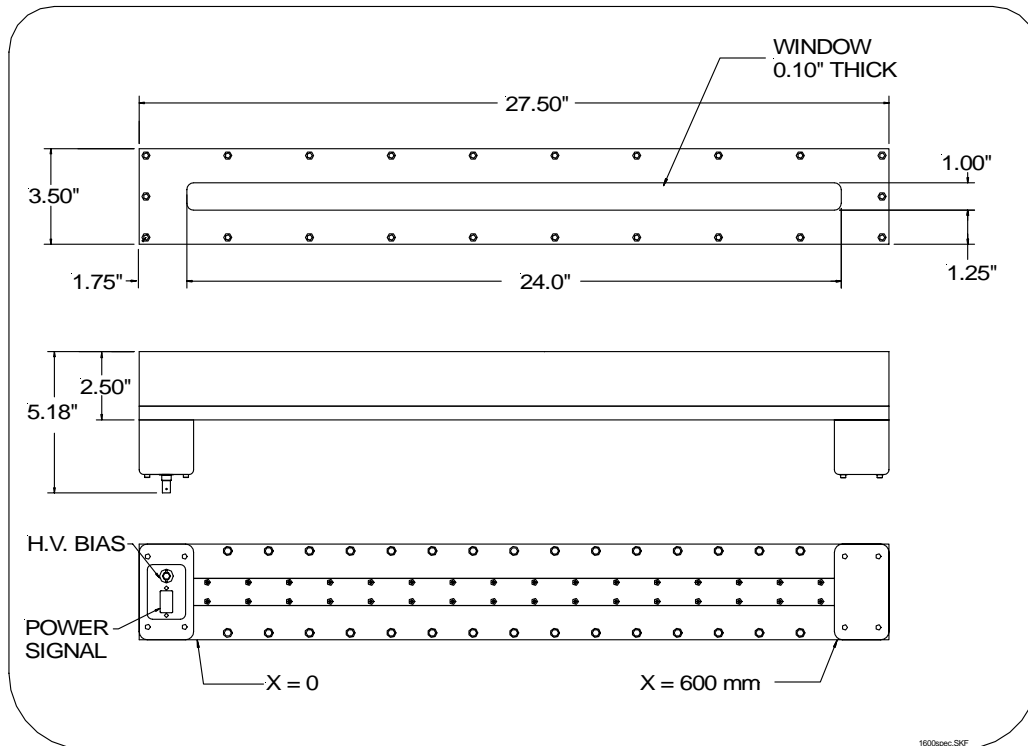
COUNTER CONSTRUCTION

BODY MATERIAL:	Aluminum 6061
WINDOW MATERIAL:	2.5-mm-thick aluminum 6061
COUNTER VOLUME:	60 cm long, 2.5 cm wide, 2.9 cm deep
COUNTING GAS:	$^3\text{He-CF}_4$ at 400 kPa absolute pressure
OVERALL DIMENSIONS:	71.1 cm long, 8.9 cm wide, 12.7 cm high

ACCESSORIES

Standard accessories, delivered with the Model 1600N 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 1600N with an ORDELA Model AIM-206 or AIM-204A and the high-voltage power supply.

Optional accessories are: (1) A complete package of position decoding electronics for the Model 1600N. 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 inter-connection of the Model 1600N with other than ORDELA's time decoding instruments.



ORDELA MODEL 1600N 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.