



## ORDELA MODEL 1128N

### POSITION-SENSITIVE PROPORTIONAL COUNTER SYSTEM

#### DESCRIPTION

The ORDELA Model 1128N is a gas-filled, multi-anode proportional neutron counter designed and manufactured by ORDELA, Inc. for applications in neutron scattering and diffraction research requiring high count-rate capability and good spatial resolution.

The counting gas is  $^3\text{He-CF}_4$  at 550 kPa absolute pressure for optimum detection efficiency and uniformity, low gamma cross-section, and high count-rate capability. A set of 128 anodes on a 1 mm pitch covers a neutron-sensitive scattering area of 128 mm x 50 mm. The counting volume is 5 cm high and 2.5 cm deep.

The PSPC is capable of operation in a vacuum environment. All PSPC electronics circuits are contained in a sealed enclosure below the detector active volume. The electronics enclosure contains a port for venting to atmosphere to allow operation of the electronics in air.

The position decoder consists of one preamplifier, shaping amplifier, and discriminator connected to each of the 128 anode outputs. Every detected neutron event is stored in its corresponding memory bin. The discriminators are interconnected and their levels are set so that multiple counting of single neutrons is avoided. The overall detection-time resolution is . 500 ns; therefore, the detector can operate at count rates .  $2 \times 10^5$  neutrons per second per anode (pixel) with 10% coincidence losses. At these rates, the count rate detected on any anode is independent of the count rate detected at adjacent anodes.

The Data Acquisition System (DAS) is a micro-processor based system. Each of its 128 memory bins are polled and cleared through the system communication bus without interruption of the counting process.

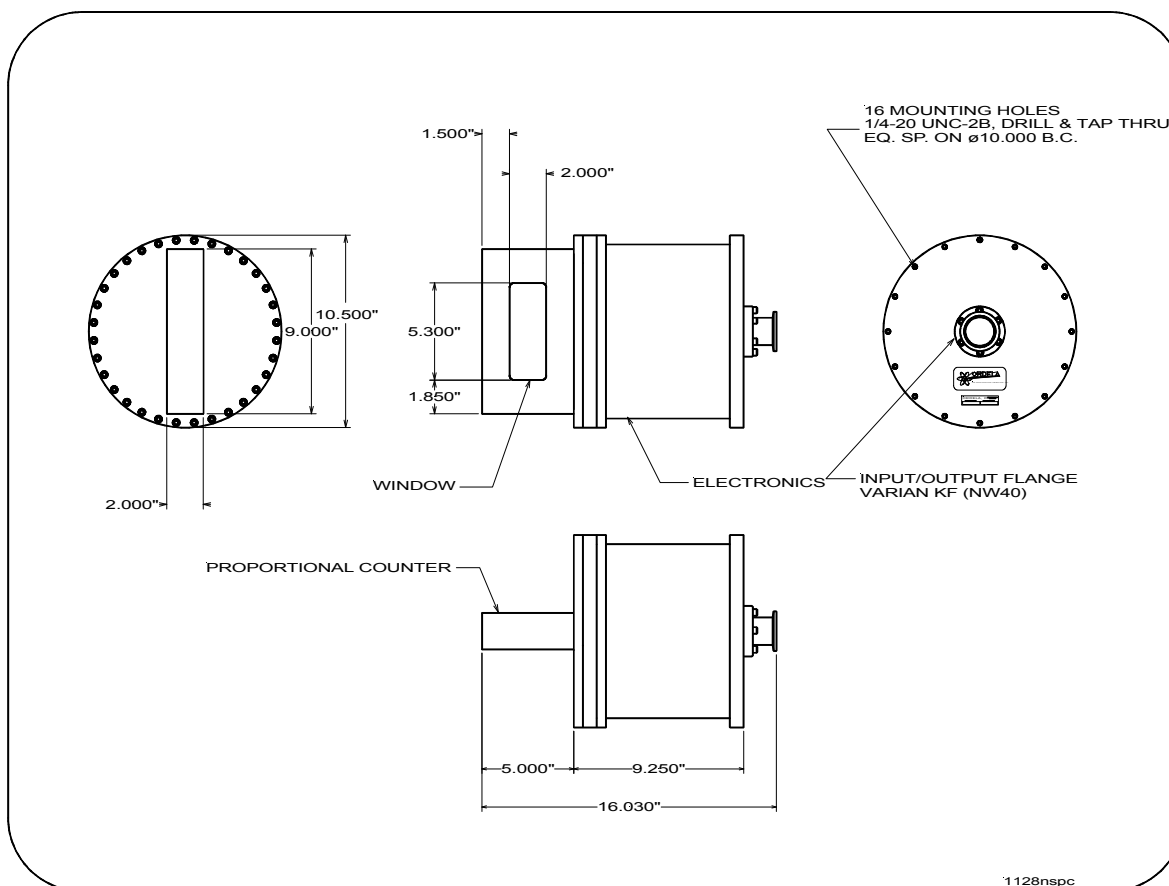
The DAS provides control of all essential PSPC operations including acquire, stop, clear, time slicing, data storage and display. This data acquisition system is controlled by a type P5 personal computer running Win98 or NT. Amplifier gains are remotely adjusted from the DAS. The DAS includes the capability to be remotely controlled via an IEEE-488 control bus. All system electronics, including H.V. Bias, power supplies, and interface cables are included as standard options.

#### SPECIFICATIONS

ACTIVE LENGTH:	128 mm
SPATIAL RESOLUTION:	128 pixels
PIXEL SIZE:	1 mm (fwhm)
THERMAL NOISE:	0.5 mm (fwhm) for an avalanche charge of 100 pC
DETECTION EFFICIENCY:	52% for 1 Å neutrons, 78% for 2 Å neutrons, and 90% for 3 Å neutrons
COUNT-RATE CAPABILITY:	$10^5$ neutrons per second per pixel (10% coincidence) $10^6$ counts per second overall)
BIAS VOLTAGE:	. 2.5 kV

## COUNTER CONSTRUCTION

BODY MATERIAL:	Aluminum 6061-T6
WINDOW MATERIAL:	6.3-mm-thick aluminum 6061-T6
COUNTING VOLUME:	12.8 cm long, 5 cm high, 2.5 cm deep
COUNTING GAS:	$^3\text{He-CF}_4$ at 550 kPa absolute pressure
OVERALL DIMENSIONS:	23 cm long, 20 cm wide, 30.5 cm deep



**ORDELA Model 1128N 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.