

- Locates and quantifies Pu, Am, and U in tissue
- Excellent energy and position resolution
- Provides lateral and depth location
- Lightweight
- Customer-responsive design
- Ergonomically engineered for easy handling in clinical situations

ORTEC's Model AWM-1 Actinide Wound Monitor is designed to accurately locate actinides embedded in body tissue, so that they may be removed surgically. The instrument's design is based on specific suggestions from a leading radioisotope fabricating and reprocessing facility.

Energy Resolution and Position Information

The instrument contains a rugged, reliable, 6-mm diameter, 5-mm deep HPGe planar detector which provides excellent energy resolution and position information. By using Ge rather than Si, the ratios of intensities of the gamma-ray lines can be compared to those of the L x-rays (13 to 17 keV) to obtain information on the depth of the actinides.

Ergonomic Design

The ergonomic design of the instrument ensures optimum convenience in clinical situations. The construction and placement of the handle permit the user to operate the instrument for extended periods of time with little hand or arm fatigue. The one-hour supply of liquid nitrogen in the 0.06-liter dewar provides ample time for completion of most clinical procedures.

Personnel Safety and Equipment Protection

Safety of the patient and the operator is assured by an all-attitude dewar. Liquid nitrogen cannot be released from the dewar regardless of its orientation. A red LED on the top of the instruments warns if the radiation level being measured is high enough to drive the preamplifier out of its linear range. If the liquid nitrogen supply is exhausted while the detector is operational, an internal sensor cuts off the high voltage supply to protect the instrument from damage.

Instant Operation

A special 25-liter storage fill dewar supplied with the AWM-1 keeps the instrument filled with liquid nitrogen and ready to use.

Specifications

Performance

WARRANTED ENERGY RESOLUTION* AT 5.9 keV 180 eV FWHM.

WARRANTED ENERGY RESOLUTION* AT 122 keV 599 eV FWHM.

DETECTOR ELEMENT ACTIVE DIAMETER 6 mm.

DETECTOR ELEMENT ACTIVE DEPTH 5 mm.

BERYLLIUM WINDOW THICKNESS 0.13 mm.

INSTRUMENT WEIGHT 4 pounds.

Electrical

TEST INPUT One 18-inch RG174 coax cable with female BNC connector.

HIGH VOLTAGE BIAS INPUT One 18-inch RG59 coax cable with female SHV connector.

OUTPUTS Two 18-inch RG174 coax cables with female BNC connectors.

CABLE DRIVE CAPABILITY AND TERMINATION

Test Input Terminated in 93 Ω .

Outputs Series terminated in 93 Ω .

Drive Capability May drive terminated or unterminated 93- Ω coax cables (RG62 recommended). Termination recommended for cable lengths greater than 50 feet.



AWM-1

Actinide Wound Monitor

CONVERSION GAIN Normally 1.7 mV/keV (Ge), negative output pulse signal.

MAXIMUM PULSE OUTPUT TO A SINGLE EVENT -10 V.

MAXIMUM ENERGY RATE 2500 MeV/s.

NONLINEARITIES Integral and differential, <0.05% over 90% of the dynamic range of the preamplifier.

BIAS ISOLATION High-voltage filter can supply detector up to 2500 V bias.

TEMPERATURE INSTABILITY 50 ppm/°C over 0 to +50°C recommended operating temperature range.

POWER REQUIREMENTS +24 V at 50 mA, typical; -24 V at 25 mA, typical.

CABLE PACK Standard cable pack contains signal, test pulse, high-voltage shut down, and preamplifier overrange cables (all RG59A/U, 93-Ω BNC); a high-voltage cable (RG59A/U, 75-Ω SHV female); and a preamplifier power cable (9-pin connector, male).

AUTOMATIC HIGH-VOLTAGE SHUT-DOWN Cryostat section contains a temperature-sensing element attached to the cooling path. The sensing element is connected to a hybrid monitoring circuit in the preamplifier. An output cable is connected to the remote shutdown input on the rear panel of the ORTEC Model 659 Detector Bias Supply.

*Energy resolution measured with an ORTEC Model 672 Amplifier at 6 μs shaping time constant.

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