



Advanced Measurement Technology, Inc.

ORTEC®

Princeton Applied Research
SIGNAL RECOVERY

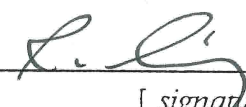
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Quality Assurance Data Sheet

ULTRA™ Alpha Detector

Performance Specifications

| | | | |
|---|----------------------|------------------|-----------------|
| Model No. | <u>BU-ON-100-300</u> | Serial No. | <u>46-009Q9</u> |
| Date Shipped | <u>4-19-06</u> | | |
| Bias Voltage | <u>30</u> | volts (positive) | |
| Noise | <u>2.3</u> | keV (FWHM) | |
| Warranted Alpha Resolution | <u>15</u> | keV (FWHM) | |
| Special Notes (if any) | <u></u> | | |
| Data Certified By: <u></u> [signature] | | | |

Handling

The ULTRA series detector has a thin (500 Å), ion-implanted contact immediately under the silicon surface. The contact is thus more rugged than that formed by an evaporated gold layer. If the silicon surface is scratched, however, the detector will be damaged. Reasonable precautions should, therefore, be taken when handling these detectors.

Application of Bias

The detector connector's central electrode is provided positive bias and produces a negative output signal. The recommended operating voltage is given in the performance specifications. This bias voltage is carefully selected to provide optimum field strength and should not be exceeded.

Environmental Considerations

Although there are no epoxies or rings to absorb moisture, it is essential that the detector be dry during operation. Moisture can cause both high leakage current and low breakdown voltage. To remove condensed water or condensed organic vapors, the detector should be placed in vacuum for a short time before applying bias.

Cleaning

If contaminated, the detector surface can be cleaned with a cotton swab moistened with acetone. Gently rub the detector surface with the swab. Repeat with fresh acetone. Blow dry with dry nitrogen gas. Before applying bias, leave the detector under vacuum for 30 minutes to remove all moisture from the surface.

Measurement of Alpha Resolution

The measurement of alpha particle resolution must be performed in vacuum with a uniform, ultra-thin source located at a source-to-detector distance of 1-1/2 times the detector diameter.



Ultra Detectors

Storage, Handling, and Cleaning Instructions

- Store the detectors at room temperature in clean air.
- Protect them from dust and corrosive fumes. The corrosive fumes will damage the external as well as the internal parts. Electrical contacts are very critical to the normal operation of the detector. Corrosion can form high-resistance paths in these contacts and ruin the detector.
- Avoid mechanical shocks and protect from mechanical damage.
- **Wear protective latex or polyethylene gloves when handling the detectors.** Finger grease and body salts can destroy the integrity of electrical contacts.
- **Keep the protective cap in place when the detector is not in use.** This will protect the fragile front surface from accidental damage. This is especially important when the detector is being installed, removed, or transported to other sites.
- After prolonged use, it is normal for the detector to require cleaning of the front, critical surface, especially if the detector surface is suspected of being contaminated, causing higher background. Use “fluffed” cotton swabs wetted with methanol to gently rub the surface. Change the swabs frequently to avoid redepositing the contaminants. **DO NOT FLOOD THE DETECTOR SURFACE WITH METHANOL. THE CONDUCTIVE ELASTOMER CAN SWELL AND ELECTRICAL CONTACT COULD BE LOST, RESULTING IN NOISE AND SEVERELY COMPROMISED RESOLUTION.**
- Blow clean, dry nitrogen to dry the surface. Do not use filter paper to dry the surface. Although the implanted contact is “buried” under the surface, it is very shallow and can be easily damaged. **The slightest damage to even a small area will ruin the detector.**

If a detector must be sent back to ORTEC, it should be properly packaged with the PROTECTIVE CAP installed. Use the packaging that the detector was shipped in, to avoid damage during transit. Improper handling or packaging may void the warranty.

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