AMS Electronic Noise Reduction

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Summary

• Reduction of electronic noise by insertion of smoothing capacitors into AMS detection and signal pre-amplification system
• Involves addition of a 4.7nF / 6kV Capacitor to the multiplier HV supply line (2 possible positions)
• Also involves adding a 47pF / 25V Capacitor to circuit-board of PMT-5 Pre-Amp on Signal O/P line
• Detailed instructions available on ARI FTP Site
• Only applies to instruments with S/N below 016
Capacitor Addition to Multiplier HV Supply - 1

Addition to Earlier Instruments

- Applies to instruments with Electronics Box containing main circuit-boards with revision numbers of 1.06 or lower
- Involves addition of a 4.7nF / 6kV capacitor to the multiplier HV supply line within cylindrical metal shield of the multiplier feed-through housing on the quadrupole (see diagram below)

Capacitor Addition to Multiplier HV Supply - 2

Addition to Later Instruments

- Applies to instruments with Electronics Box containing main circuit-boards with revision numbers of 1.07 or higher
- Involves addition of a 4.7nF / 6kV Capacitor to the multiplier HV supply line on the main circuit-board within the electronics box.
Capacitor Addition to PMT-5 Pre-Amp

- Applies to all instruments
- Involves addition of a 47pF / 25V Capacitor to the circuit-board of the PMT-5 Pre-Amp
- Connect between Pre-Amp Signal O/P (on O/P BNC) and Chassis Ground (on Ground side of R18) - Ensure insulated sheath placed on long leg of capacitor to prevent short circuits

Final Points

- With multiplier switched on and filament witched off - should be able to achieve electrical noise threshold of ~ 0.2 - 0.3b
- See diagram below