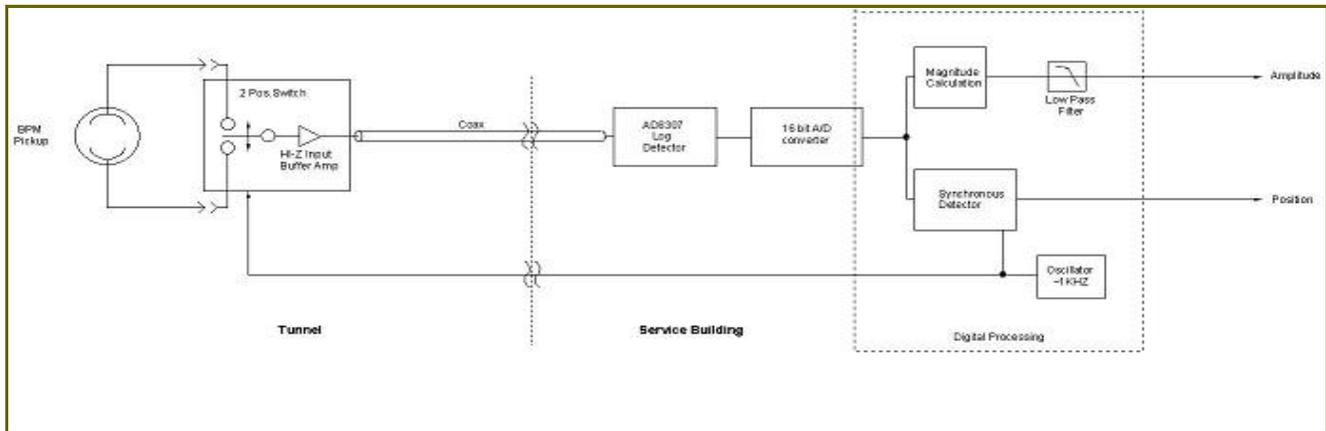


# Debuncher Beam Position Monitor

A new approach to a closed orbit system.



(Click on the drawing to see a larger version.)

The synchronous system eliminates the problems associated with calibrating two separate signal paths.

The Fermilab Antiproton Source Debuncher ring has 120 Beam Position Monitors (BPMs) divided into six "houses". Half of the pickups are sensitive to horizontal displacements of the beam and the other half measure vertical displacements. Each pickup houses a pair of plates whose signals are fed directly into a switching preamp. The output of the preamp is sent up to the service building over a 1/2" heliax coaxial cable. The signal from each preamp is received by an Analog Devices AD8307 Log amp. The outputs of all 20 log amps are digitized by an Acromag PMC330 32 channel, 16 bit A/D converter. The VME processor software then synchronously demodulates the data stream to derive the position information for each channel. The software also provides intensity information and allows the operator to select filter lengths.

The present implementation switches all preamps at the same time (utilizing existing cabling from the previous BPM system). The A/D card is fast enough to be able to scan all 20 channels in a house without excessive skew in the sample time relative to the switching time.

Calibrations signals are sent down to the preamps using existing heliax cables left over from the previous system. The calibration signal is modulated synchronously with the preamp switching signal to simulate any desired beam displacement.

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