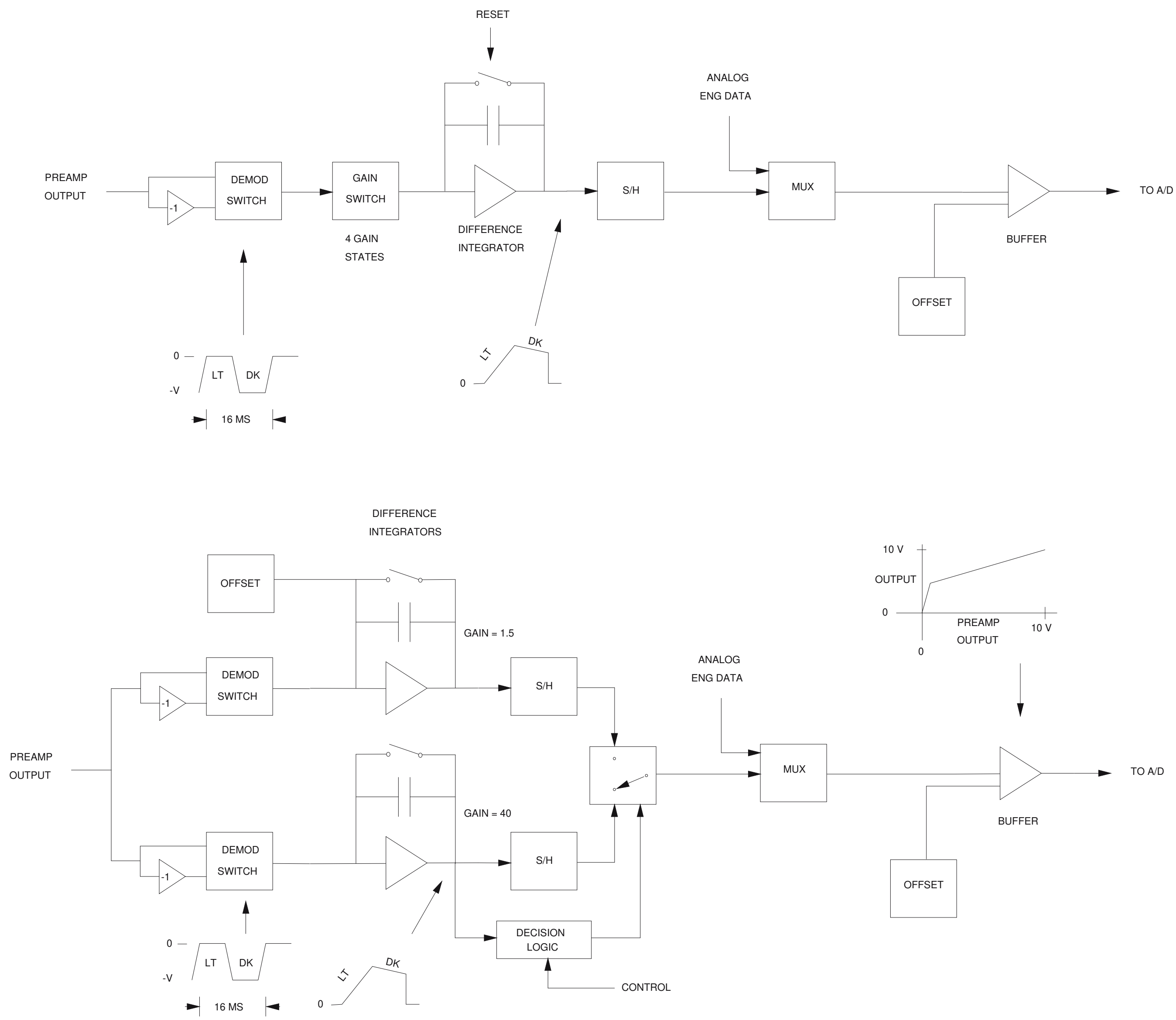

Fig. 9. Analog Signal Chain Electronics.

The upper diagram refers to detectors 1-14, termed the albedo channels, each of which has 4 commandable linear gain states. Preamplifier signals are synchronously demodulated and the current, which is determined by gain switched resistors, is integrated over one light/dark chopper cycle by the difference integrator. The integrated light-minus-dark signal is sampled at the end of each chopper cycle and stored by a sample-and-hold (S/H) circuit. It is then sequentially sampled by an analog multiplexer (MUX) andsent via an analog buffer to a 10-bit analog-to-digital converter (ADC). An offset is added in the buffer to ensure positive output values, > 0 DN. The signal path for each of the thermal channels, detectors 15-17, is shown below. The circuitry are similiar, but there are no commandable gain states. Instead, there are two independent paths, each with differing gains. The value sent to the MUX depends upon signal levels, yielding a large dynamic range.