

## 228A Integrating A to D Converter

*The 228A is an integrating analogue to digital converter which is used to digitise the output from dc or lock-in amplifiers and pass the result to a computer via the IEEE/488 interface bus (GP-IB).*

It uses a voltage to frequency converter followed by a counter. The count accumulated during the conversion period of 100ms represents the true average of the analogue input during that time.

The use of an output buffer, where the count from a single conversion is stored until the computer is ready to read it, allows multiple conversions to be made without any loss of signal information occurring between successive conversions.

The count accumulated from a number of conversions thus represents, after normalisation for total time, the true average of the signal over a longer period. The 228A therefore behaves as a digital signal averager with the averaging period programmable in 100ms increments.

The 228A has two other special features which enhance its usefulness in light measurement systems:

Firstly, the input to the ADC is offset, giving the unit a small negative range. This ensures that negative-going noise peaks, occurring in near zero signals, are correctly averaged while retaining most of the available resolution for positive-going signals.

Secondly, the ADC provides information to the computer, indicating that a transient overload has occurred at some point during the conversion period. This information is essential if accurate measurements are to be made on pulsed light sources such as CRT monitors.

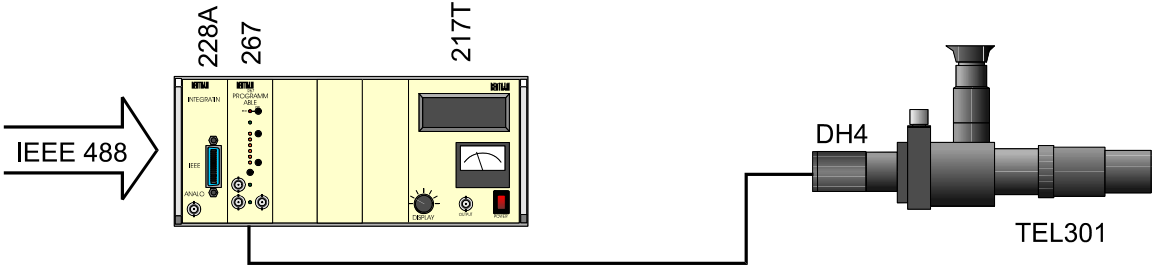


### Specification

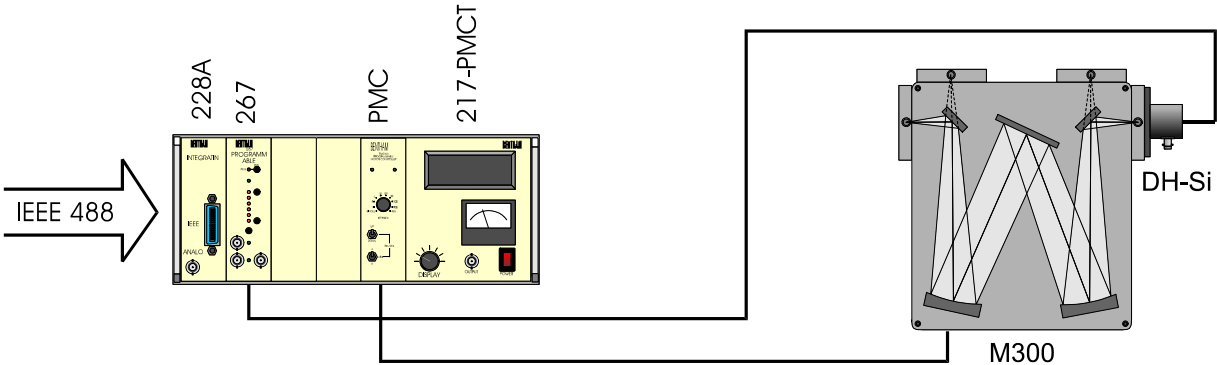
<b>Resolution</b>	4 ½ digit BCD (0 to 19999) i.e. > 14 bit resolution
<b>Conversion</b>	100ms
<b>Input Range</b>	-0.2V to 9.8V
<b>Linearity</b>	< 0.025% departure from linearity from zero to full scale

# 228A Integrating A-D Converter

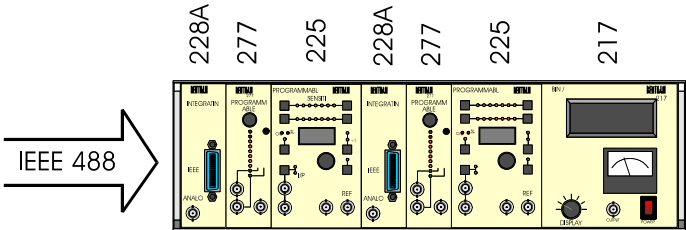
## Typical Applications



Spot Photometer interfaced to PC



Optical Spectrum Analyser System



Two channel lock-in system, providing simultaneous data acquisition from both channels (eg. used for testing WDM devices).