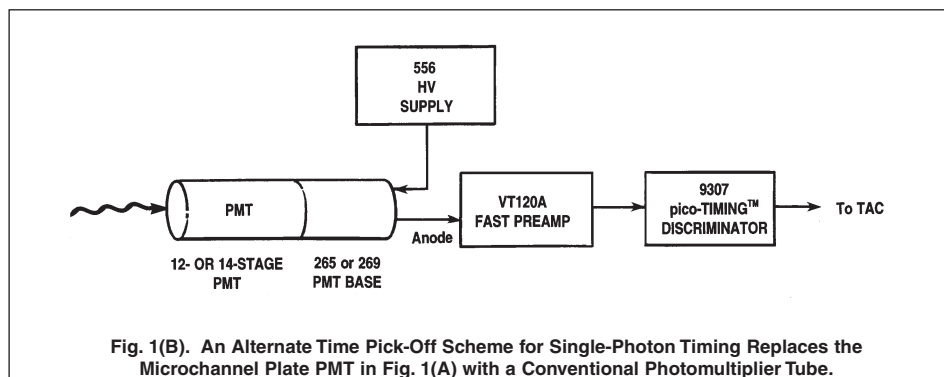
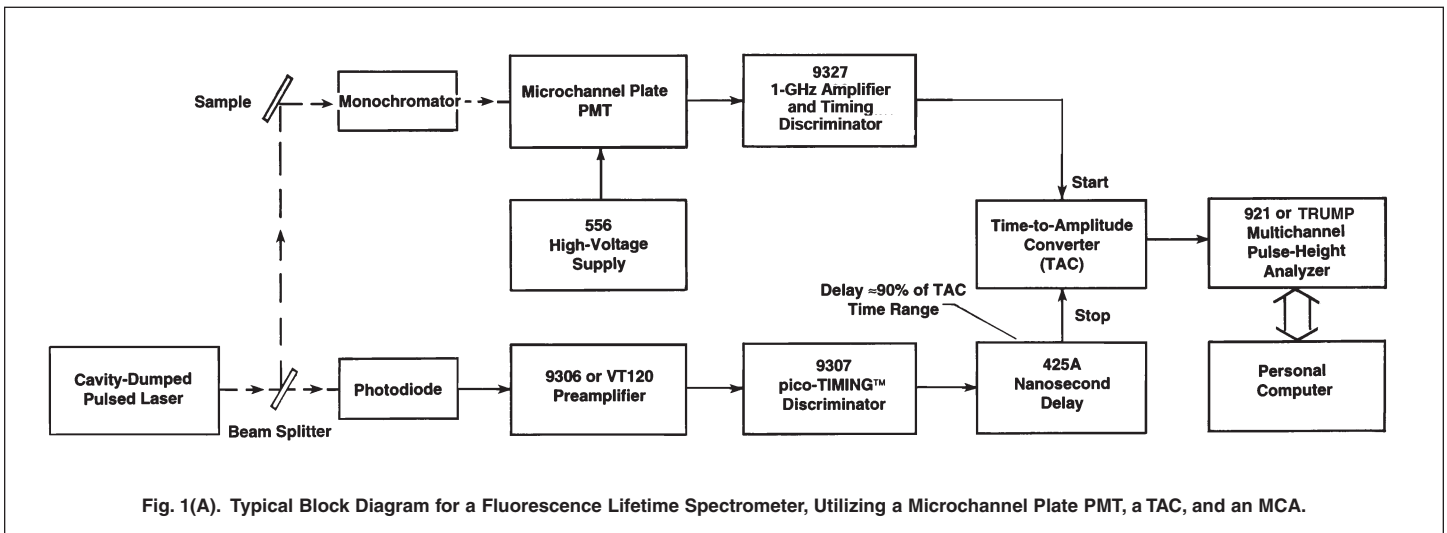


Picosecond Time Resolution with Single Photons

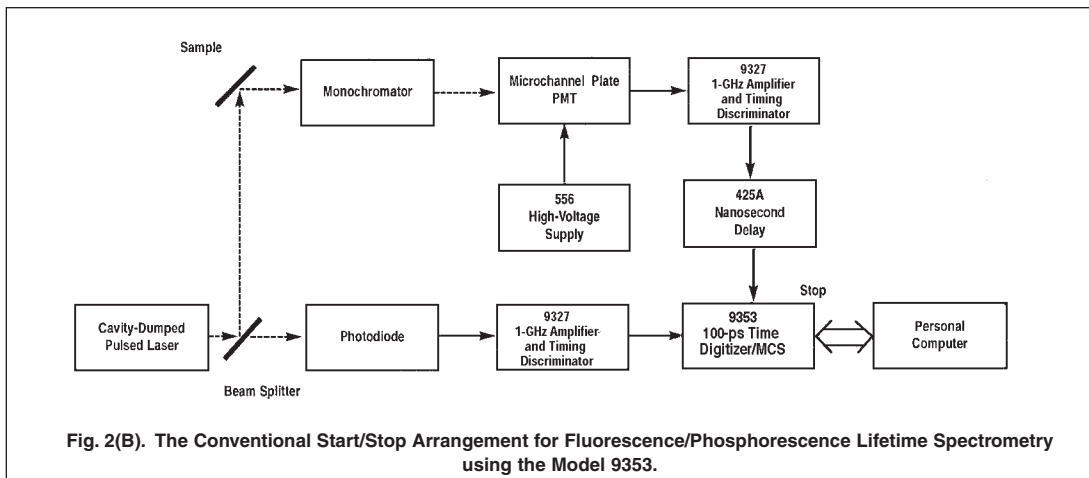
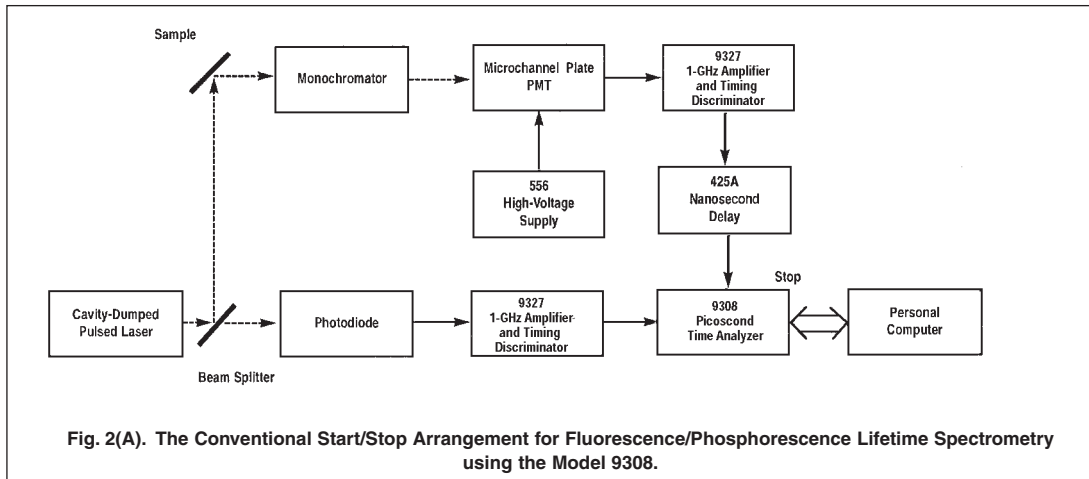
Figure 1(A) illustrates a system for obtaining picosecond time resolution in Fluorescence Lifetime measurements. A pulsed laser excites fluorescence in the sample, and individual fluoresced photons are detected by the microchannel plate photomultiplier tube. The time spectrometer records the profile of fluorescence decay by measuring the time interval between the laser pulse (sensed by the photodiode) and the fluoresced photon detected in the microchannel plate PMT. [See the TAC information for the benefit of the reversed start and stop inputs in Fig. 1(A).] Fluorescence lifetimes from tens of picoseconds to tens of nanoseconds can be measured. For longer lifetimes, the microchannel plate detector can be replaced with a conventional photomultiplier tube, as shown in Fig. 1(B), and a nanosecond flashlamp can be substituted for the laser. If the entire range of lifetimes from picoseconds to microseconds must be measured, the Model 9308 picosecond TIME ANALYZER can be used [see Fig. 2(A). For the 9308, the Start/Stop connections in Figure 1A should be interchanged to achieve the conventional Start/Stop configuration, and the Model 425A should be moved to the conventional Stop input as shown in Figure 2 (A & B). The model 9353 gives greater range and the model 9308 provides the best precision.

See Application Notes AN50 and AN52 for more information.



Research Applications

Fluorescence Lifetime/Phosphorescence Lifetime Spectroscopy



Specifications subject to change
010408

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