1 Analog setup

Signals in the NE213 detector are copied in a fan in fan out module. Two of these signals will be used to acquire longgate and shortgate integrals of the pulses. The third signal from the FIFO module is sent into a constant fraction discriminator, which starts a 50 ns square wave pulse when the cfd threshold is surpassed.

This logic signal is then sent to a latch which switches state. For the next 10 μs, until the latch resets, no signals can pass through the latch. This way only one event is processed at a time. The downside to this is that a certain fraction of events a lost. scalers placed on either side of the latch make it possible to calculate this fraction for a given data set.

The signal is then copied again and reshaped. A 60 ns and a 500 ns square wave is used to define the qdc integration window for two copies of the analog NE213 signal mentioned above. A 150 ns square wave is used to define the integration window for the yap qdc, and another square wave triggers the start of a time of flight tdc.

The stop signal comes from the yap. The yap signals are sent into a linear fifo module, with one outgoing signal sent to a qdc, which triggers on the above mentioned NE213 signal. The other outgoing signal is sent to a cfd where a square pulse of 50 ns is produced. this pulse is then delayed by 300 ns and will act as the stop signal if a start signal is received from the NE213.

1.1 Schematic overview

1.2 QDC

1.3 CFD

1.4 TDC