

# cronologic

xTDC4-PCIe  
Product Brief



# xTDC4-PCIe

## Introduction

The xTDC4-PCle is based on a classic common-start architecture yielding high data throughput. In a common-start scenario, the arrival times of pulses on the "stop"-inputs are measured relative to a signal on the "start"-input. The xTDC4-PCle is ideally suited for a multitude of time-of-flight applications such as TOF mass spectrometry (TOF-MS), time-correlated single photon counting (TCSPC), and LIDAR.

The xTDC4-PCle's four-stop channels allow, for example, to use segmented detectors or measure pulses from a single detector channel at multiple thresholds to obtain rudimentary pulse height information. Such features are beneficial in many TOF-MS applications and LIDAR light detection and ranging. Fluorescence lifetime imaging microscopes (FLIM) benefit strongly from the high timing resolution of the xTDC4-PCle.

The integration of an xTC4-PCle in applications your data acquisition application is easy. The board provides a stream of simple data structures as a ring buffer, containing a list of relative time stamps for all stop events.

Technical Data	
Optimized for	common start
TDC channels @ bin size	1 AC-coupled start channel @13 ps 4 AC-coupled stop channels
Additional inputs	-
Connectors	5x LEMO 00
Bin size	13 ps
Double pulse resolution	5 ns
TDC timing resolution	8 ps
Multihit	15
Dead time between groups	parameter dependent
Readout rate	30 MHits/s total; 11,6 MHits/s per channel
Range	218 $\mu$ s default, 14 ms extended
Common start/stop	yes / no
Max. start frequency	4 Mhz
L0 FIFO	16 words/channel
L2 FIFO	10000 words
number of boards that can be synced	0
Readout interface	PCIe x1 @ 200MB/s
Time base	50 ppb on board

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