

Introduction

The Redwave Labs Time Tagger Q420 is a single width PXIe module. It provides four count inputs and a fifth input for the frame counter, which can be used to extend long counts and to track an additional time base. The clock is locked to the 100MHz differential PXIe clock. The time-tags can be gated via the PXI trigger lines. Data are returned over the PCIe bus to the main system memory and are accessible via an API.



Specification

Features	Time Tagger Q420 provides timing resolution down to 31.25ps	
Applications	Photon Timing, QKD, Quantum computing, single-photon spectroscopy	
Specifications	Parameter	Value
Power	Triple	+3.3V, +5V +12 V from PXIe
	Voltage Type	0.5-5V threshold
	Resolution	31.25ps
	Total tag rate	500 Megatags/s
Time-tagger Inputs	Dead time	≤ 2 ns
	Differential non-linearity	$\leq 0.13 $ LSB
	Precision	11.2ps rms single channel
	Number	4 Continuous timing inputs and 1 synchronisation or frame counter for extending long counts
Clock Sources	Differential	100MHz PXIe bus clock
Trigger Input	PXIe trigger	Trigger 0-7 or can be star configuration
	External sync	SMB positive pin. Max 5V \leq 10MHz
Connectors	PCIe (XJ3 and XJ4)	8 lane gen 3 PCIe
	Clock	100MHz PXIe back plane clock
	Pulses	4x SMB 50 Ω terminated
Dimensions (WxHxD)	160 x 100 x 33 mm	
Weight	300 g	
Storage Temp	-55 to 100 C	
Operating Temp	-40 to 85 C	