Introduction

The Redwave Labs Time Tagger Q420 is a single width PXIe module. It provides four count inputs and a fifth input for synchronisation, which can be used to extend long counts by marking frame boundaries. The module uses the 100MHz differential chassis clock, normally an OCXO, lockable to 10MHz source1 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. Multiple modules can be synchronised together in a chassis to provide 64 or more channels.



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
Time-tagger Inputs	Voltage Type	0.5-5V threshold
	Digital Resolution	31.25ps
	Total tag rate	500 Megatags/s
	Dead time	≤ 2ns
	Differential non-linearity	≤|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 backplane clock
Trigger Input	PXIe trigger	PXI Trigger 0-7 or PXIe star trigger
Connectors	External sync	SMB positive pin. LVTTL 3.3V
	PCIe (XJ3 and XJ4)	8 lane gen 3 PCIe
	Clock	100MHz PXIe backplane clock
	Pulses	4x SMB 50Ω terminated
Dimensions	WxHxD	160 x 100 x 33 mm
Weight		300 g
Storage Temp		-55 to 100 C
Operating Temp		-40 to 85 C

* RedWave Labs Ltd keeps improving its products and therefore some specifications can vary.

©2026 REDWAVE LABS LTD. ALL RIGHTS RESERVED. Q420 REV 5