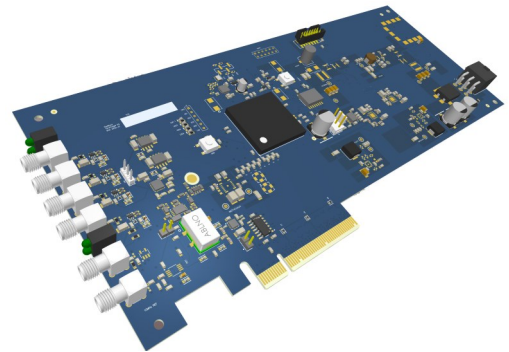


Introduction

The Redwave Labs Time Tagger Q400 is a PCIe $\frac{3}{4}$ length card that works within an x64 Linux computer. It provides four count inputs and a fifth input for a frame or synchronisation input. External clocks can be provided as either a 10MHz single ended or 100MHz differential signal. An additional input is provided to gate the counts. Counts are returned over the PCIe bus to the main system memory and is accessible via an API.



Specification

Features	Time Tagger Q400 provides timing resolution to 125ps.	
Applications	Photon Timing, QKD, Quantum computing, single-photon spectroscopy	
Specifications	Parameter	Value
Power	Single	+12 V, 2x 3A from PCIe extension power
	Voltage Type	3V to 5V TTL type pulse
Laser Current Control	Resolution	125 /62/32ps peak to peak
	Number	4 Continuous timing inputs 1 Slow synchronisation or framing count
Clock Sources	Single-ended	10MHz e.g. from GPS or atomic standard
	Differential	100MHz or custom
Gate Input	Internal clock	100MHz derived from 25MHz crystal
	Type	3V3 CMOS logic
Connectors	Connection	0.1 Inch header internal
	Timing	SMA positive pin. Max 5V 10GHz
Connectors	Power	Molex Jnr PCI express power
	Clock	SMA positive pin. 10MHz sinusoidal. Max 13dBm
Connectors	Gate	Molex 0.1 inch header
	Dimensions (WxHxD)	248 x 111 x 33 mm
Weight	300 g	
Storage Temp	-20 to 85 C	
Operating Temp	-20 to 60 C	

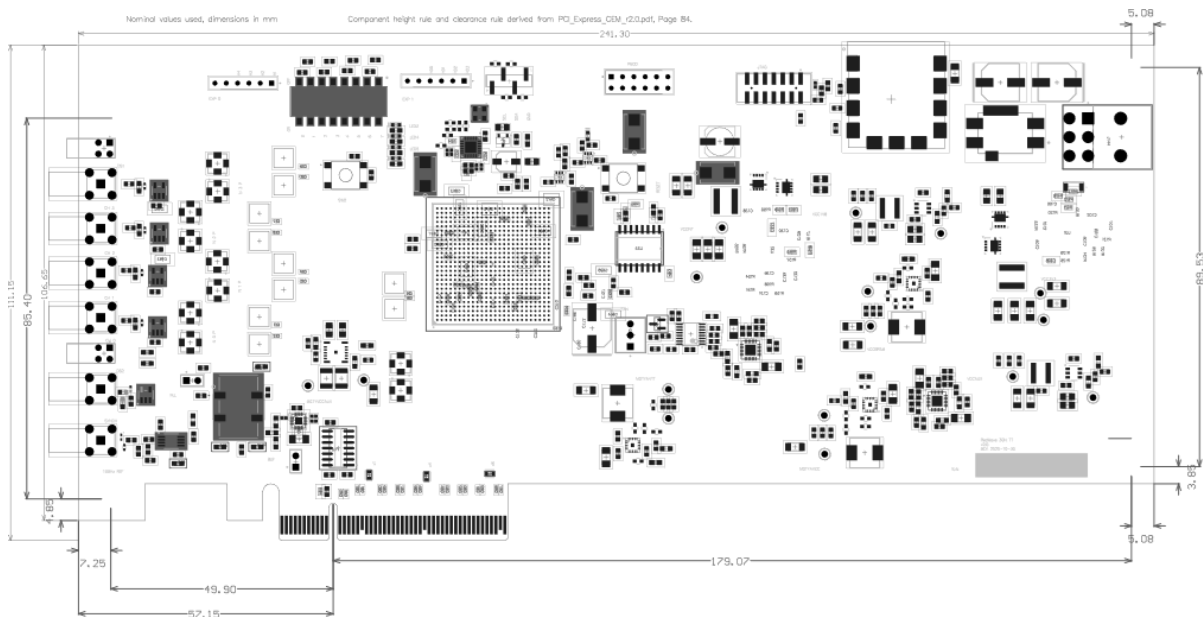
Setting Up

Important! Before powering on the PC, place on a flat surface, open the chassis lid and check the liquid cooling system inside for leaks. The rack should remain horizontal in normal use. Also ensure the PCIe card is firmly seated and no cables are loose. Any queries, please contact RedWave Labs.

Absolute Maximum Ratings

Symbol	Parameter	Ratings	Unit
V_{dd}	Supply voltage	+12	Volt
T_{op}	Operational Temperature	-40 to 85	C
T_{st}	Storage Temperature	-55 to 100	C
P_t	Heat dissipation	120	W

Mechanical Information



Eight lane PCI Express card as per CEM specification v2.0. Note reverse side of board has MCMX connectors that must have sufficient clearance from other cards and PC case.