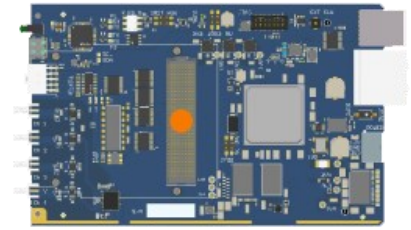


The Redwave Labs RF Generator Q210 is a PXIe format card that generates three channels of RF output from 1-400MHz using DDS. An additional envelope shaper with >70dB dynamic range uses feedback to ensure transform limited pulses can be obtained.

The system is driven from a state machine inside an FPGA allowing for time-synchronous pulse sequences to be emitted.

It contains a dual-arm processor and DRAM allowing it to be used as a stand-alone device

Multiple devices are synchronised with a common clock and trigger lines. Extra isolated GPIO allows control and triggering by external devices.



Specification

Features	<ul style="list-style-type: none"> RF output from 1-400MHz DDS generation using the AD9910 Feedback loop at 500kHz ideal for AO control Sequencer with 4ns resolution Sequencer can hold up to 1024 instructions On-board 1GHz clock 74 dB output range using ADL5330 VGA PXIe trigger single and star configuration Eight GPIO for synchronisation of other devices Zynq dual arm processor and USB allows stand-alone mode
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Applications	<ul style="list-style-type: none"> Acousto-Optical modulation (AOM/AOD) for switching Quantum Key Distribution (QKD) Quantum computing Quantum sensing Optical communications Software Defined Radio (SDR) Advanced Radar applications
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Specifications	Parameter	Value
Power	Dual	+12 V, 1A from PXIe or external +3V3 2A from PXIe or external
	Clock Sources	Single-ended
RF Outputs	Frequency Range	1-400MHz
	RF Output Power	0dBm max
	Amplitude Range	-30dBm to 0dBm logarithmic
DDS Clock	External Clock	Single-ended 1GHz
	Internal Clock	1GHz derived from 25MHz crystal or PXIe 10MHz
Trigger and GPIO	Triggers	PXIe triggers 0-7 or star trigger
	GPIO	Molex Microfit 10x isolated upto 8 input or 8 output
Connections Back Panel	PXI XJ4 power, trigger and GA	1x Gen 2 PCIe
	PXI XJ3 PCIe, SMBus, and clocks	1x 10MHz Clock Trigger to synchronise state-machine
	Power	Molex microfit or power from backplane
Connections Front Panel	USB C	Programmable side commands or JTAG connection.
	Clock	1x SMB. 1GHz sinusoidal. Max 3dBm
	RF Out	3x SMB
	DAC out	MMCX spare DAC on PCB
	ADC In	4x SMB 1MSPS max 0-5V
Dimensions	W x H x D	160 x 100 x 60mm (2 slot PXIe 3U)
	Weight	300 g
	Storage Temp	-40 to 85 C
	Operating Temp	-20 to 85 C

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	20	W

Mechanical Information

Dual-width PXIe 3U peripheral module. It meets PXIe specifications below, non-hot-swappable, low power.

PXI-1 Hardware Specification Rev. 2.3

PXI-5 PXI Express Hardware Specification Rev. 1.1

