



quEDU

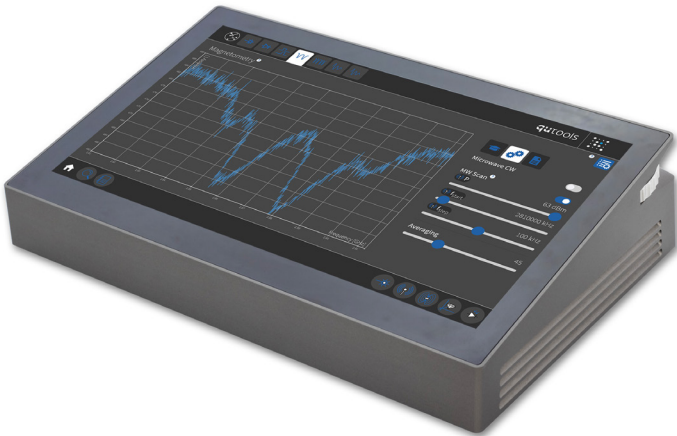
The Science Kit for Quantum Education Control & Detection Unit

Key Features

- Hands-on study of fundamental quantum concepts
- High-precision detection and control
- Stand-alone system with modularity through add-ons
- User-friendly, compact and easy to transport

Detection and Analysis

- 4 temperature controlled APD/PDs with fiber port
- Time tagging electronics with picosecond jitter
- Singles & coincidence events counting
- Pattern generator for variable pulse sequences



quEDU Specifications

Photodetectors

Fiber input	4x FC/PC MM
Detector Types	0-4 APD count, 0-2 APD cw
Operating temperature	-10°C
APD / PD gain	Fixed / adjustable
APD dark counts	< 3 kCounts/s
PD rise time	< 10 ns

Digital Pattern Generator

Min. Pulse Duration	5 ns
Min. Increment	5 ns
Pattern Length	5120 ns ... 50 μ s
Incrementing Steps	1024

Operation

Display, Port	Full HD 13" touch, HDMI
Rotary wheels	2x massive & motorized
Add-On ports	6x DisplayPort for quADDs
Control	Touch display, wheels, USB
Remote control	Ethernet
Data export	USB port, remote
Supplied software	GUI, Python, DLL
Dimensions (in mm)	330 x 220 x 86
Weight	9 kg
Power consumption	< 50 W at 100 to 230 VAC

Time Tagging

Digital resolution	1 ps
Delay range	-50 ... + 50 ns
Delay resolution	1 ps

Add-On Experiment Boards

quADD-NV	Nitrogen Vacancy Centers
quADD-ED	Entanglement Demonstrator
	Multiple Sub-Add-Ons



The quEDU controls the quADD experiment boards with their actuators and sensors like lasers, MW generators and motors. The 4 cooled APD/PDs detect the fiber coupled photons from the external boards or its sub-boards and processes the data by time tagging or patterning. All experiments are controlled via the touch screen or Ethernet connection.

