



► ID Qube Ultra Low Noise

NIR Single Photon Detection
Compact, cost effective, noise < 200 Hz

Synchronous and Asynchronous Single-Photon Detection at Telecom Wavelengths

The ID Qube Ultra Low Noise is a cost-effective and compact solution delivering precise and reliable single photon detection, with high detection efficiency, precise timing jitter and low detector noise. Available in two models:

- **The ID Qube NIR Free-Running** model, for applications in which asynchronous photon detection is essential, such as photon correlation or time of flight measurements.
- **The ID Qube NIR Gated** model, for applications in which synchronous photon detection is essential, such as quantum communication and QKD.

All models offer a gate input port connector, dedicated to avoiding saturation or undesired detections. The cooled InGaAs/InP avalanche photodiode and associated electronics have been designed to achieve especially low afterpulsing and the lowest dark-count rate for such a package.

Get the best out of your photonic experiments and applications with the ID Qube NIR ULN!

KEY FEATURES

- **Compact, cost effective and dependable performance**
- **Fast gated** (up to 100 MHz) and **free-running**
- **Ultra-low noise** (<200 cps at 10%)
- **Low jitter** (<200 ps, typically <150 ps)
- **Fibre-coupled optical input**
- **Broadband detection** (900–1700 nm)

APPLICATIONS

- QKD and quantum communication
- Quantum optics and computing
- Single-photon source characterisation
- Fluorescence lifetime imaging
- Failure analysis of integrated circuits
- VIS, NIR and MIR spectroscopy

ID Qube-NIR-XX-YY-ULN

- **XX** : GAT (Gated model) or FR (Free running model)
- **YY** : FS (Freespace model) or MMF (Fibre coupled model, compatible with SMF and MMF FC/PC couplers)

SPECIFICATIONS

ID Qube NIR ULN				
Wavelength range	900 nm to 1700 nm			
Deadtime range	100 ns to 80 µs, in 100 ns steps			
Output pulse format	LVTTTL or NIM			
Output pulse width	10 ns			
Optical coupling	Optical fibre (MMF62.5)			
Efficiency range ⁽¹⁾ calibrated at $\lambda = 1550$ nm	10%, 15%, 20%, 25%			
Extended efficiency range ⁽²⁾	30%, 35%			
Timing jitter @ 25% efficiency level	Maximum 200 ps (150 ps typical)			
Noise performance @ efficiency level ⁽³⁾	10%	15%	20%	25%
ULN model (Max. dark count rate)	< 200 Hz	< 500 Hz	< 800 Hz	< 1'200 Hz
Gate-in max frequency	100 MHz (Gated model) / 1 MHz (Free-running model)			
Gate-in min pulse duration	3 ns (Gated model) / 500 ns (Free-running model)			
Gate-in voltage range	-2 V to 3 V			
Gate-in coupling	50 Ω DC			
Gate-in threshold voltage range	-2 V to 2 V, in 1 mV steps			
Output connector	SMA			
Operating temperature	+10°C to +35°C, max. 60% humidity			
Dimensions (W x H x L)	133 mm x 95 mm x 95 mm			
Weight	1 kg			
Cooling time @ power-on	< 5 minutes			
Power supply	100-240 VAC ; 1.4 A ; 50-60 Hz			
Storage temperature	+5°C to +50°C, max. 60% humidity			

Supplied Accessories:

- +12V, 60 W, AC/DC power adapter, with AC power cord
- Region adapted power cord
- 1.8 m USB cable
- Optical fibre cleaner
- Optical table mechanical adapter (M4 taps)
- 4 x Adhesive rubber feet

Notes:

(1) Additional efficiency levels can be calibrated on demand.

(2) The extended detection range is provided without guarantees of the device's noise performance. Above 25% efficiency, ID Qube devices start exhibiting non negligible afterpulsing, and detector dark counts can rise significantly. However, detector timing jitter has also been observed to improve with increasing detection efficiency.

(3) Dark count rate measured in free running mode with a 80 µs deadtime.



WORLD HEADQUARTERS

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