

Redefining Measurement

# ID120 Visible Single-Photon Detector

High Quantum Efficiency at 800 nm Large Active Area 500  $\mu\text{m}$

IDQ's ID120 series consists of compact and affordable single-photon detector modules based on a reliable silicon avalanche photodiode sensitive in the visible spectral range. Up to now, the ID100 series was limited to detectors with high efficiency values in the green region (around 500 nm). The new detector of the ID120 series has high efficiency values in the red region of the visible spectrum and a ultra high active area. This new detector comes as free-space module, passive quenching, maximal efficiency value around 800 nm.

This detection module is highly versatile thanks to an USB connection and a Labview interface allowing the user to change the bias voltage and the temperature of the diode.



The module is equipped with a dual universal output signal port which can be set through the software interface. The module is compatible with C-mount, SM1 and cage technologies from Thorlabs. This allows an easy coupling of the light beam onto the active area of the detectors.

## Key Features

- ▶ 60% quantum efficiency at 650 nm
- ▶ 80% quantum efficiency at 800 nm
- ▶ Tunable quantum efficiency
- ▶ Tunable temperature of the diode
- ▶ Adjustable deadtime
- ▶ Universal dual output
- ▶ Labview interface
- ▶ C-mount, SM1, cage compatible
- ▶ Integrated electronic counter

## Applications

- ▶ Time correlated single-photon counting (TCSPC)
- ▶ Fluorescence and luminescence detection
- ▶ Single molecule detection, DNA sequencing
- ▶ Fluorescence correlation spectroscopy
- ▶ Spectrophotometry
- ▶ Laser scanning microscopy
- ▶ Adaptive optics
- ▶ Particle physics
- ▶ Dynamic light scattering (DLS)

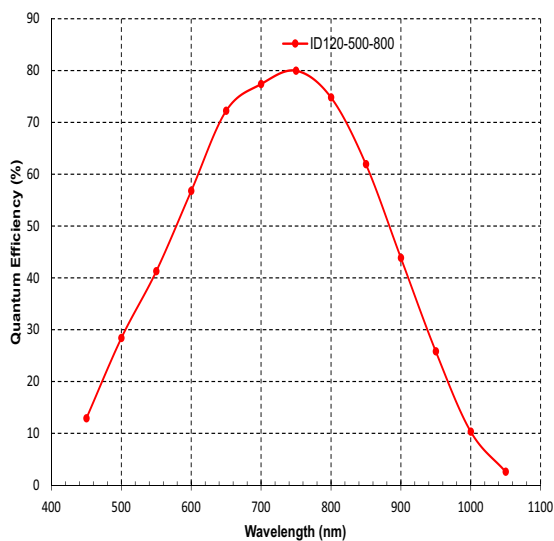
## VISIBLE SINGLE-PHOTON DETECTOR

### Specifications

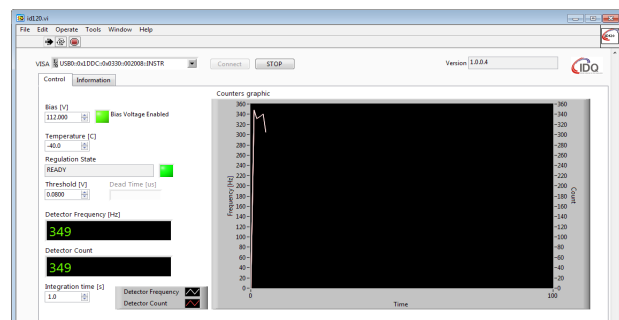
### ID120-500-800nm

| Parameter                                                     | Min      | Typical     | Max  | Units |
|---------------------------------------------------------------|----------|-------------|------|-------|
| Wavelength range                                              | 350      |             | 1000 | nm    |
| Active area                                                   | 500      |             |      | μm    |
| Single-photon detection probability (SPDE)                    |          |             |      |       |
| at 650 nm (at max. excess bias)                               | <b>1</b> |             | 60   | %     |
| at 800 nm (at max. excess bias)                               |          |             | 80   | %     |
| Dark Count Rate (at -40°C, $V_{bias} = V_{breakdown} + 30V$ ) |          |             | <200 | Hz    |
| Timing resolution (at max. excess bias)                       | 200      | 400         | 1000 | ps    |
| Deadtime                                                      |          | 1           |      | μs    |
| Output pulse                                                  |          | NIM & LVTTL |      |       |
| Output pulse width                                            |          | 25          |      | ns    |
| Storage temperature                                           | -40      |             | 70   | °C    |

#### 1 Quantum efficiency vs lambda



#### 2 Software



Delivered with software to:

- display count rate
- control quantum efficiency
- control deadtime
- control temperature

### Ordering Information

ID120-500-800nm-STD

Photon counter with 500 μm active area for 800 nm with DCR < 3000 Hz

ID120-500-800nm-ULN

Photon counter with 500 μm active area for 800 nm with DCR < 200 Hz

Supplied accessories: USB cable, power supply, USB memory stick including software, adapter to mount Thorlabs components.

Disclaimer - The information and specification set forth in this document are subject to change at any time by ID Quantique without prior notice. Copyright© 2019 ID Quantique SA - All rights reserved -ID120 v2019 01 10 - Specifications as of January 2019