

## PHOTON PAIR SOURCE

### ID350-PPLN PERIODICALLY POLED LITHIUM NIOBATE

IDQ's ID350 series consists of a packaged Periodically Poled Lithium Niobate (PPLN) crystal designed to generate photon pairs at telecom wavelengths using spontaneous parametric down-conversion (SPDC), where a single photon at 775nm generates a pair of photons at 1550nm. The ID350 can also be used for Second Harmonic Generation (SHG) or Sum Frequency Generation (SFG). The crystal comes fiber-coupled to provide minimal insertion losses. It contains an internal temperature controller able to adjust wavelength (phase matching) through a USB connection and GUI software (Labview VI also delivered).



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#### KEY FEATURES

- Type 0 SPDC from 775nm to 1550nm or from 780nm to 1560nm (contact ID Quantique for other wavelength options)
- Temperature tuning range 5nm (e.g. SHG can be obtained with 1550-1555nm pump)
- Total insertion Loss @ 1550nm: ~4 dB
- SHG Conversion Efficiency: ~25%/W (1550 → 775nm)
- SHG Sidelobe Suppression: <15% of peak (1550 → 775nm)
- Heralding efficiency: ~60% (775 → 1550nm)
- SPDC Efficiency: ~ $10^{-7}$  (775 → 1550nm)
- PPLN length: 35mm typ.
- Bandwidth: ~0.04nm typ.

#### FUNCTIONALITIES

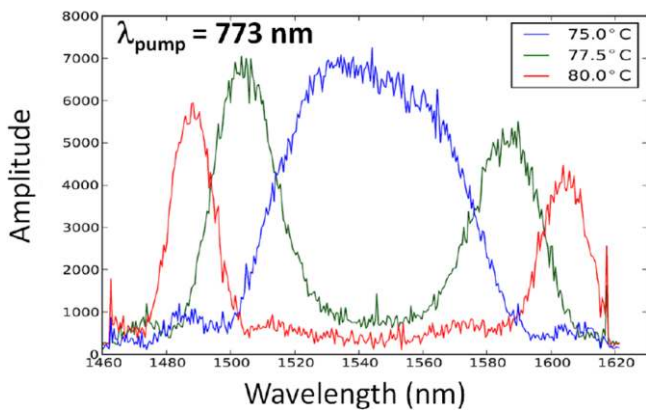
- USB connection
- GUI software included
- Labview VI included
- FC/PC connectors with 1550nm SM fiber on both ends standard (other on request)

#### APPLICATIONS

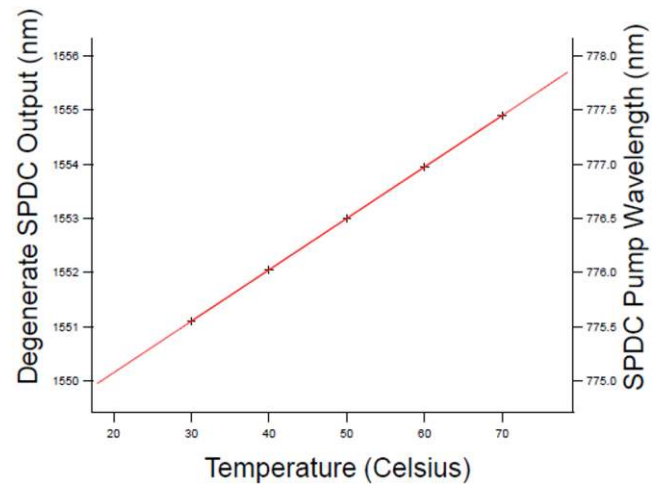
- Spontaneous down-conversion
- Entangled photon source
- Heralded photon source
- Second Harmonic Generation
- Sum Frequency Generation

# PHOTON PAIR SOURCE

**$\lambda_I/\lambda_S$  VS  $\lambda_{PUMP}$  AT FIXED TEMPERATURE, TYPICAL SHAPE**

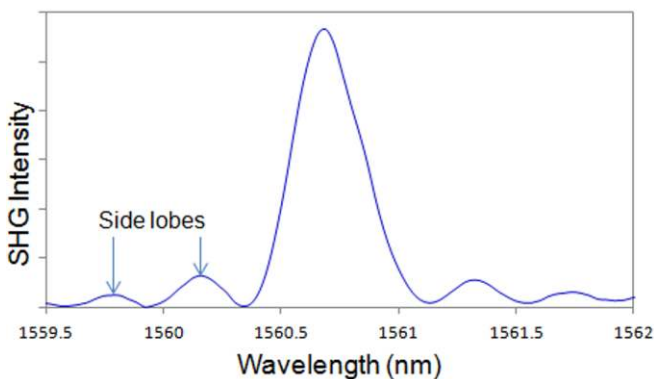


**$\lambda_I/\lambda_S$  VS TEMPERATURE AT FIXED  $\lambda_{PUMP}$ , TYPICAL SHAPE**

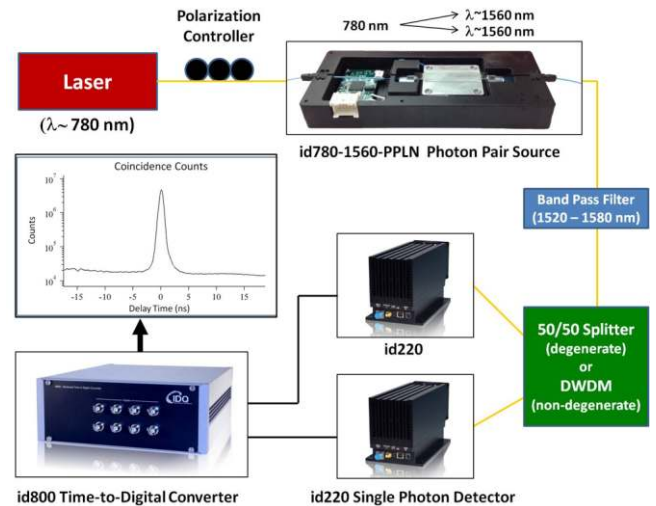


**SECOND HARMONIC GENERATION (SHG) OUTPUT AS A FUNCTION OF WAVELENGTH**

Constructed from high quality PPLN gratings with sufficient length and built-in temperature stabilization, the device generates an output with a sharp main spectral peak and minimal side lobes.



**PHOTON PAIR COUNT EXPERIMENT**



**ORDERING INFORMATION**

ID350-PPLN-775-1550:

Type 0 SPDC from 775nm to 1550nm with FC/PC connectors and 1550nm SM fiber on both ends

ID350-PPLN-780-1560:

Type 0 SPDC from 780nm to 1560nm with FC/PC connectors and 1550nm SM fiber on both ends

Supplied accessories: Power supply, USB cable, GUI software and Labview VI