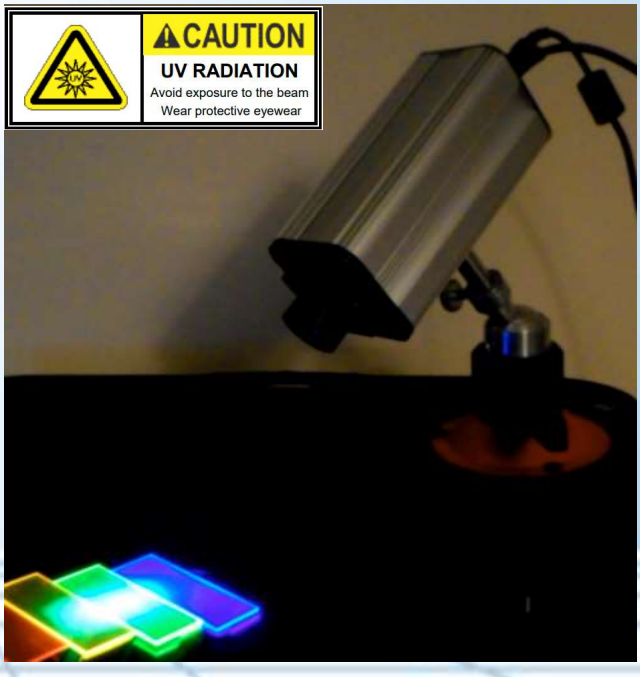
PRSL-500U

TTL-Modulated High Power UV LED Lightsource

Technical Datasheet

The PRSL-500U is a TTL-modulated High Power UV LED light source designed for time-gated fluorescence and phosphorescence measurements with gated detectors such as the *Imagex*™ Time-Gated CCD Imaging system, Gated Intensifiers and Gated photomultiplier tubes.



The PRSL series of LED light sources are designed to be simple to use with no adjustment or other setup procedures required. PRSL light sources are supplied complete with a universal 12V power supply and feature a front plate that is compatible with popular 30mm cage mounting systems. This facilitates mounting of the lamp with a wide range of Optical Cage accessories for optical breadboarding, prototyping and microscopy.

Product Features

- High Intensity 365nm UV LED Light Source
- Fast Turn-ON/Turn-OFF times
- Cage Mounting Compatibility for system integration
- Additional Industry Standard Tripod Mounting (1/4” 20 UNC) on Lamp Base
- TTL Modulation to over 1MHz (0V-OFF 5V-ON)
- Simple to set up. No Voltage or Current Adjustments required.
- Removable Lens and Filter Tube-User Customisable Beam
- Designed for use with Time-Resolved Detectors and Imaging Systems
- 30mm lens mounting tube included for standard 1” or 25mm optics
- Supplied compete with universal 12V DC 2 Amp PSU

Emitter Characteristics (Excluding PRSL-500B Optical Train and Filter)

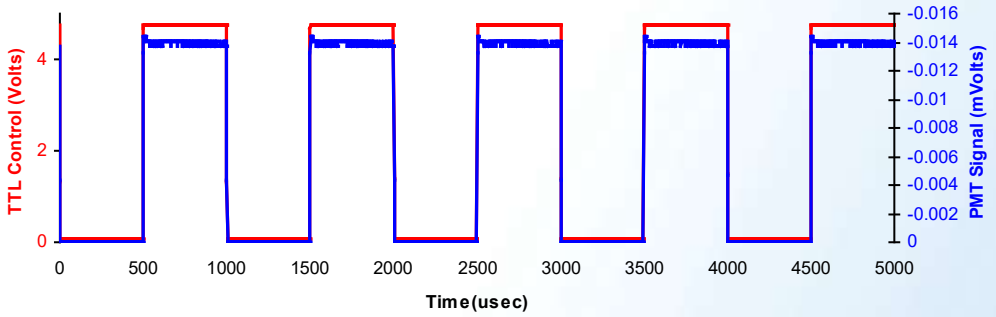
•Typical Peak Wavelength	**365nm**
•Typical Spectral Half Width	**12.5nm**
•Emitter Beam Divergence (without optics)	**105º**
•Output power when switched on with 100% duty cycle	**1000mW**.

Applications

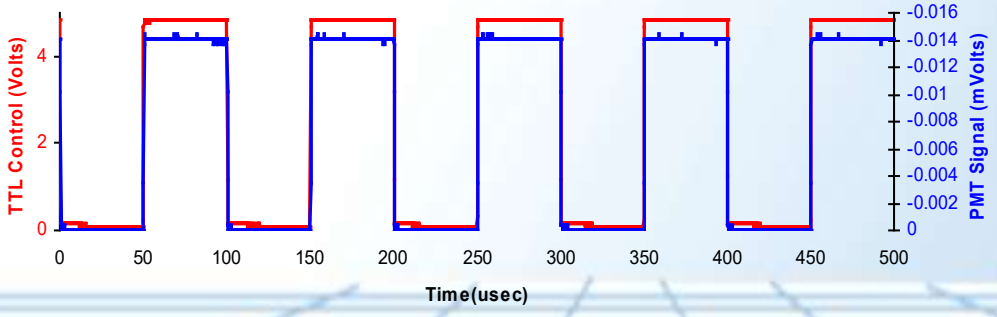
- Time-Gated Imaging of Long Lifetime Fluorescence Probes
- Fluorescence Lifetime Imaging
- Forensics.

Photonic Research Systems, Newhaven Enterprise Centre,Denton Island, Newhaven, BN9 9BA, UK
email: info@prsbio.com

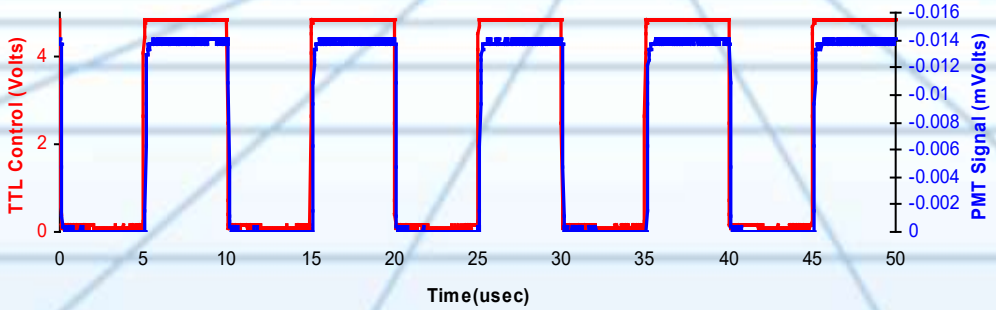
PRSL-500U 1:1 Duty Cycle Modulation Performance 1kHz to 5MHz



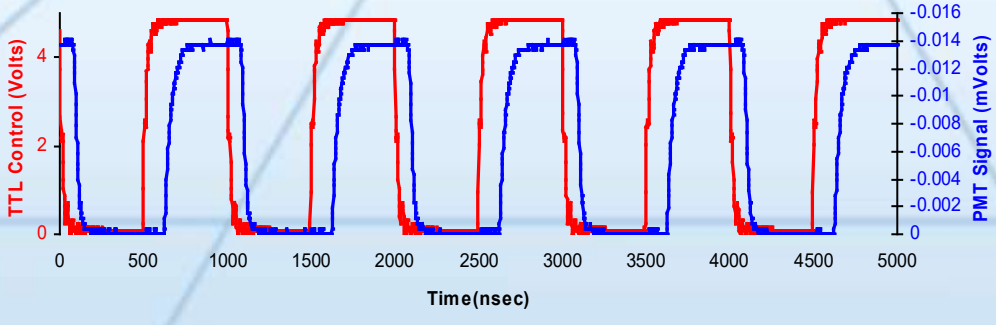
1kHz TTL Modulation



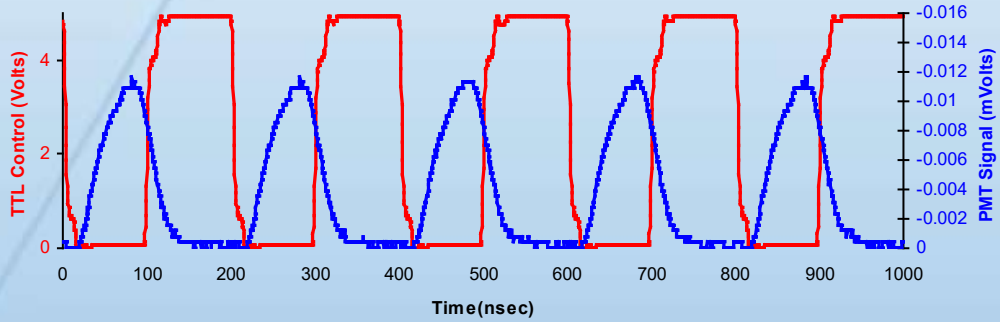
10kHz TTL Modulation



100kHz TTL Modulation



1MHz TTL Modulation



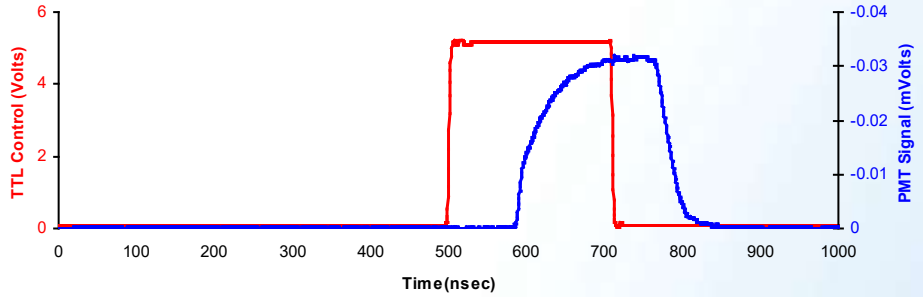
5MHz TTL Modulation

0-5 Volt TTL Drive Signal

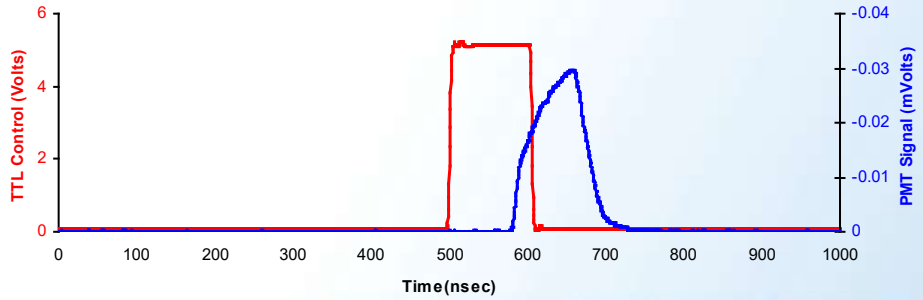
Photomultiplier Response* into 50Ω load

*Light output was studied using a 600psec Hamamatsu Photomultiplier module fibre whose output was fed into a Tektronix TDS224 100MHz Digital Sampling Oscilloscope via a 50ohm coupling load.

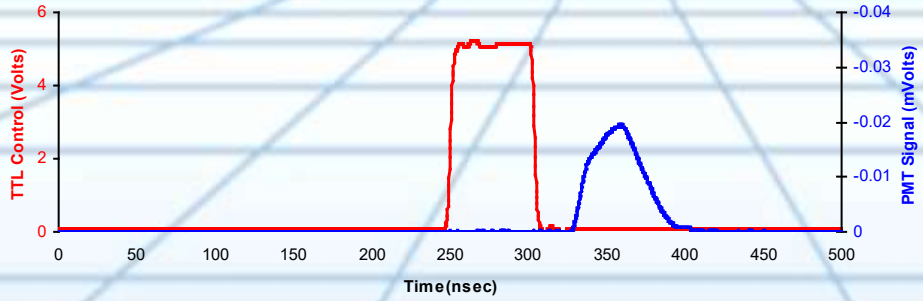
PRSL-500U Low Duty Cycle Modulation Performance at 1MHz repetition rate



200nsec TTL Pulse at 1MHz



100nsec TTL Pulse at 1MHz



50nsec TTL Pulse at 1MHz

0-5 Volt TTL Drive Signal

Photomultiplier Response* into 50Ω load

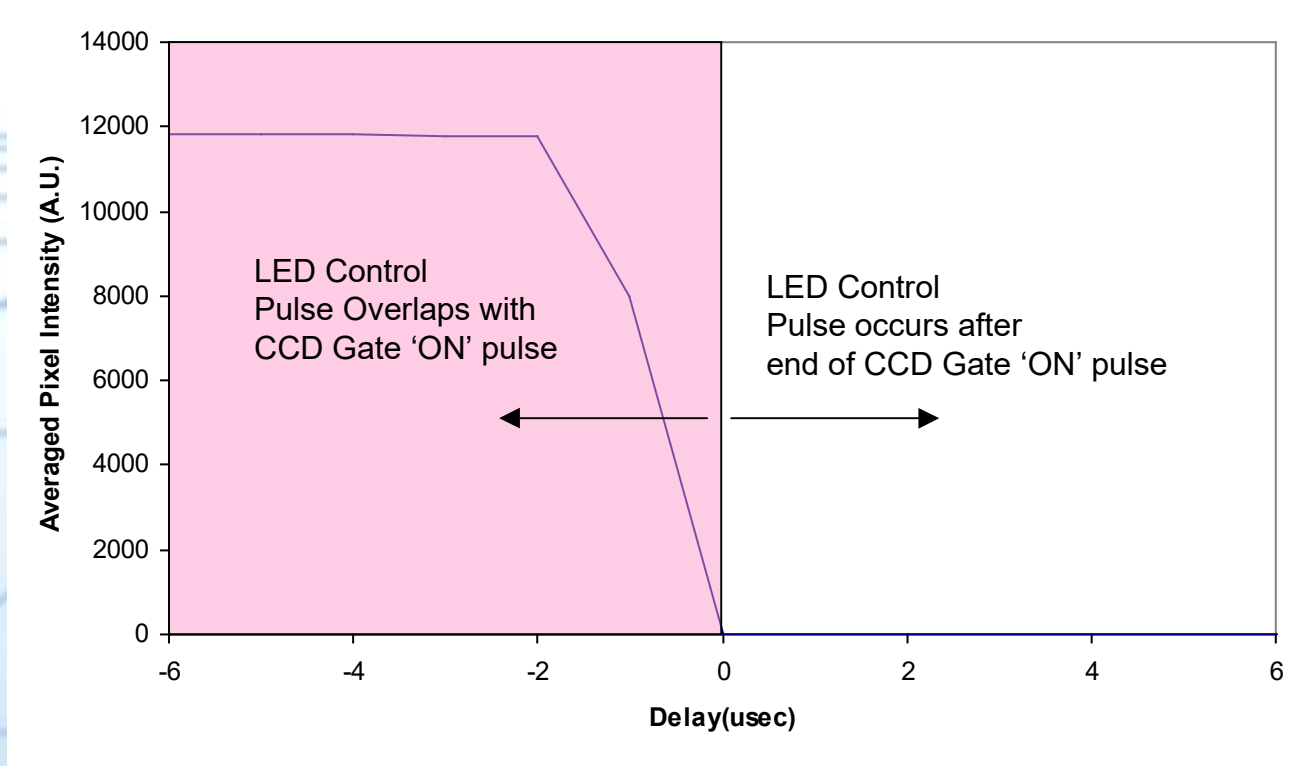
*Light output was studied using a 600psec Hamamatsu Photomultiplier module fibre whose output was fed into a Tektronix TDS224 100MHz Digital Sampling Oscilloscope via a 50ohm coupling load.

How OFF is OFF? PRSL-500U Emission Extinction Performance

For some imaging applications it is important to know how well the LED emission has been extinguished after the TTL control level has dropped to LOW (0V).

This is particularly important when studying low levels of long-lifetime fluorophores in the presence of interfering short lifetime 'background' fluorescence. Emission from the light source during the OFF period of the lamp can severely limit sensitivity of detection for the the long-lifetime species.

The measurements shown in the previous pages captured using a digital oscilloscope do not have the resolution to adequately measure this vital characteristic. Therefore we have made an additional set of measurements using the *Imagex*™ Time-Gated camera as a detector.



At 0 nsec delay The falling edge of the Gate Pulse coincides with the rising edge of the LED control pulse. However various delays within different system components may result in an additional relative delay of +/- 100nsecs.

Our measurements suggest that the PRSL-500U has an emission:extinction ratio of **>10,000:1 within 1usec** of the falling edge of the falling edge of the TTL control signal.

Photonic Research Systems, Newhaven Enterprise Centre,Denton Island, Newhaven, BN9 9BA, UK
email: info@prsbio.com