

TDA 200

Trigger Diode Assembly



- Compact design
- Fall time typ. 250 ps
- Pulse widths as short as 500 ps (FWHM)
- Spectral range from 350 to 1100 nm
- Pulse height indicator independent from laser repetition rate
- Integrated filter holder

Applications

- Synchronization with pulsed laser systems
- Ultra sensitive analysis
- Time-resolved fluorescence and luminescence spectroscopy
- Laser diagnostics
- General purpose photon counting and low light level detection



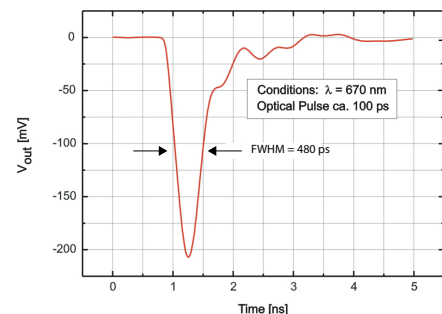
For Time-Correlated Single Photon Counting (TCSPC) measurements, a precise synchronization signal from the pulsed excitation system is crucial. PicoQuant excitation sources, such as the PDL Series driven laser or LED heads provide an electrical sync signal suitable for e.g. the TCSPC units HydraHarp 400, PicoHarp 300 or TimeHarp 260. For laser systems without an appropriate electrical sync signal, the TDA 200 photodiode is used to synchronize the timing electronics.

Built around a silicon pin photodiode

The TDA 200 is built around a silicon pin photodiode with an active area of 0.5 mm diameter and can be used from 350 nm to 1100 nm with peak sensitivity at around 800 nm. When a small fraction of the excitation beam is directed towards the TDA 200 unit, it responds to each excitation pulse with a fast (typ. 500 ps) negative output pulse, that can be directly coupled to the TCSPC device. Due to the principle of TCSPC, the timing accuracy is well below the detector pulse width / rise time, typically just a few tens of picoseconds.

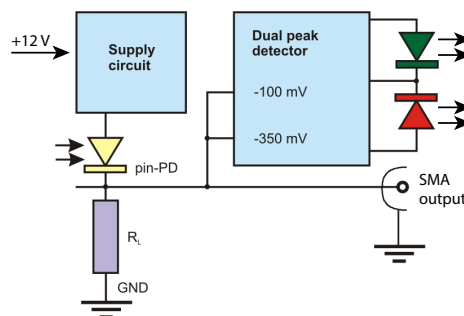
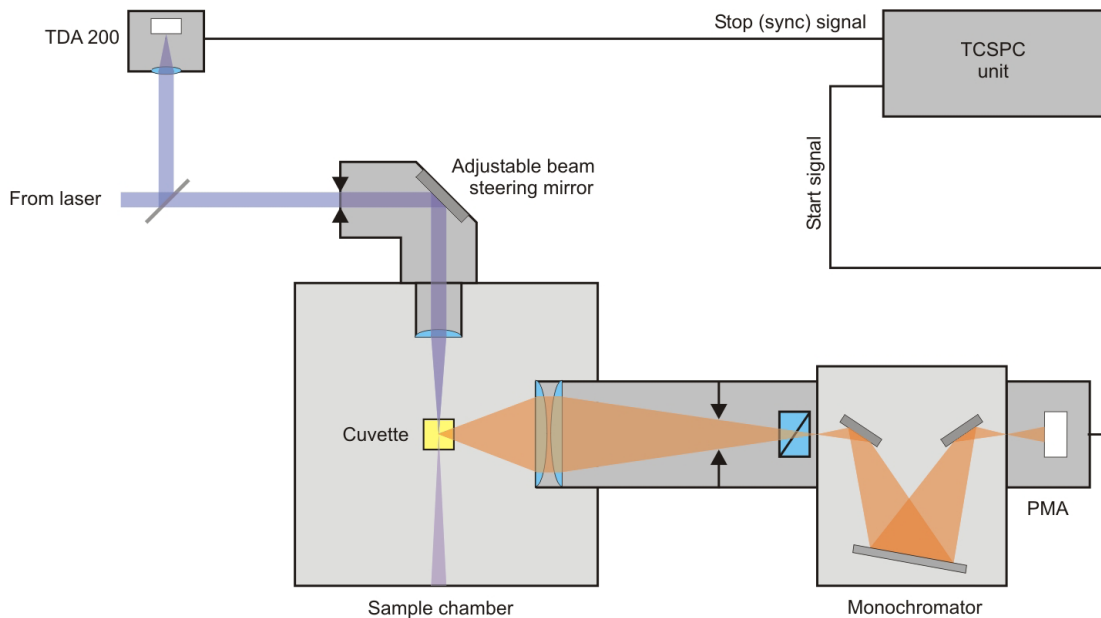
Multicolor LED signals pulse output amplitude

The multicolor LED indicator facilitates the adjustment of the light intensity to meet the requirements of the sync input of the TCSPC device. The green light turns on softly when the peak amplitude of the output pulse reaches -100 mV and turns to red if it exceeds -350 mV. If necessary, place a suitable filter into the holder in front of the sensor's entry port. Overexposure of the pin diode does not damage the TDA 200, but it may produce output pulses with more than -1 V peak amplitude, which is more than recommended for the TCSPC units. The required 12V DC power supply is shipped with the product.



Typical Set-up

Typical measurement set-up for time-resolved fluorescence spectroscopy with a mode-locked laser system for excitation: The TDA 200 is used to trigger the timing electronics. Spectral filtered by a monochromator, the light is detected by the PMA detector unit. The electrical signal is processed by a TCSPC unit.



Specifications

Electrical Parameters	
Rise time	typ. 250 ps
Pulse width (FWHM)	typ. 500 ps
Spectral range	350 to 1100 nm, peak at about 800 nm
Active area	0.5 mm × 0.5 mm
Supply	11 V to 13 V, 50 mA
Output	negative pulse, typ. 0 to -1 V, SMA socket, 50 Ohm matched
LED-monitoring	green at > 100 mV, red at > 350 mV
Dimensions	60 × 30 × 60 mm (w × d × h)

Further available are Fluorescence Lifetime Spectrometer; Time-resolved Fluorescence Microscopes; Upgrade kit for Laser Scanning Microscopes; Picosecond / Nanosecond Pulsed and Modulated Diode Lasers; PC Modules for TCSPC. Please call for detailed information and data sheets.