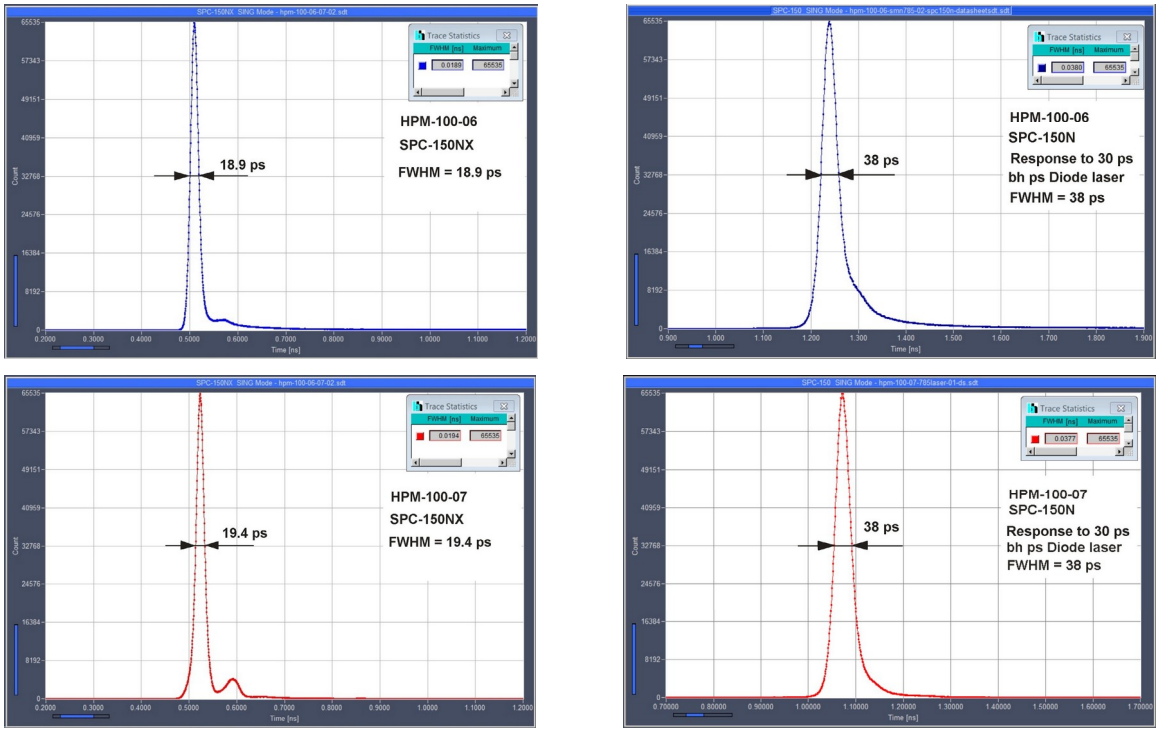
HPM-100-06/07

Ultra-High Speed Hybrid Detectors for TCSPC

Ultra fast instrument response function: <20 ps FWHM with SPC-180NX
HPM-100-06: 220 to 600 nm (Bialkali)
HPM-100-07: 220 to 850 nm (Multialkali)
No afterpulsing background
Excellent dynamic range of TCSPC measurements
Internal generators for PMT operating voltages
Power supply and control via bh DCC-100 card
Overload shutdown
Direct interfacing to all bh TCSPC systems

The HPM-100 module combines a Hamamatsu R10467 hybrid detector tube with a preamplifier and the generators for the tube operating voltages in one compact housing. The principle of the hybrid detector yields excellent timing resolution, a clean TCSPC instrument response function, high detection quantum efficiency, and extremely low afterpulsing probability. The absence of afterpulsing results in a substantially increased dynamic range of TCSPC measurements.

The HPM-100 module is operated via the bh DCC-100 detector controller of the bh TCSPC systems. The DCC-100 provides for power supply, gain control, and overload shutdown. The HPM-100 interfaces directly to all bh SPC or Simple Tau TCSPC systems. It is available with standard C-mount adapters, adapters for the bh DCS-120 confocal scanning FLIM system, and adapters for the NDD and BIG ports of the Zeiss LSM 710/780/880 NLO multiphoton laser scanning microscopes.

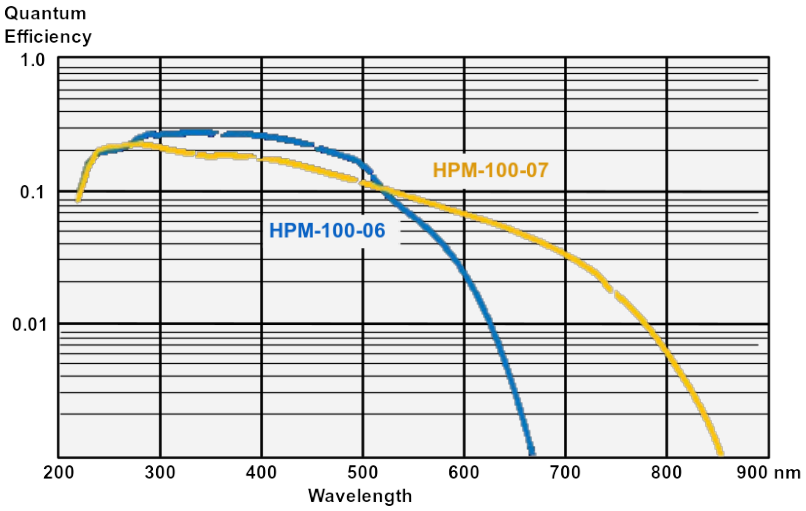


Left: Intrument response function, measured with 100-fs fibre laser. Recorded with SPC-150NX TCSPC module. Right: Response to pulses from bh picosecond diode laser, 30 ps pulse width. Recorded with SPC-150N TCSPC module.

Technology Leader in TCSPC

HPM-100-06/07

Detection quantum efficiency vs. wavelength



(after Hamamatsu Specifications)

Specifications, typical values

	-06 version	-07 version
Wavelength Range	220 nm to 650 nm	220 to 850 nm [1]
Peak detection Quantum efficiency	28 % (at 350 nm)	16% at 400nm [1]
Dark Count rate, Tcase = 22°C	100 to 400 s^{-1}	100 to 1000 s^{-1}
Cathode Diameter	6 mm	3 mm
TCSPC IRF width (Transit Time Spread, with SPC-180NX)	<20 ps, FWHM	
Single Electron Response Width	850 ps, FWHM	
Single Electron Response Amplitude	50 to 150 mV, -8000 V, V_{apd} 95% of $V_{breakdown}$	
Output Polarity	negative	
Output Impedance	50 Ω	
Max. Count Rate (Continuous)	10 MHz	
Overload shutdown at	>15 MHz	
Detector Signal Output Connector	SMA	
Power Supply (from DCC-100 Card)	+ 12 V, +5 V, -12V	
Dimensions (width x height x depth)	60 mm x 90 mm x 170 mm	
Optical Adapters	C-Mount, DCS-120, LSM 710/780/880/980 NDD and BIG ports	

1) according to Hamamatsu specifications

Related products: HPM-100-40/42 GaAsP and HPM-100-50 GaAs hybrid detector modules
Literature: The bh TCSPC Handbook, 9th edition, Becker & Hickl GmbH. Printed copies or electronic version on www.becker-hickl.com
Sub-20ps IRF Width from Hybrid Detectors and MCP-PMTs. Application note, available from www.becker-hickl.com

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