



# HPM-100-06/07

## Ultra-High Speed Hybrid Detectors for TCSPC

Ultra fast instrument response function: <20 ps FWHM with SPC-150NX

HPM-100-06: 290 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

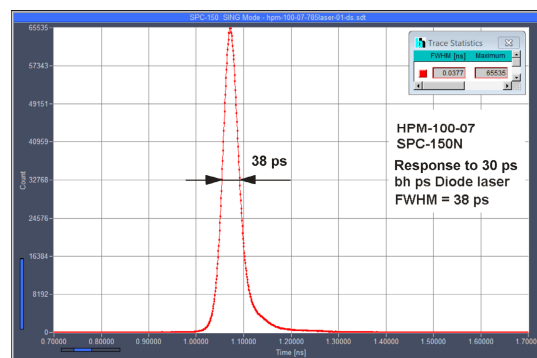
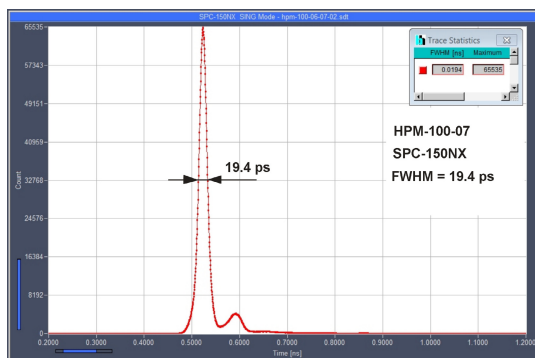
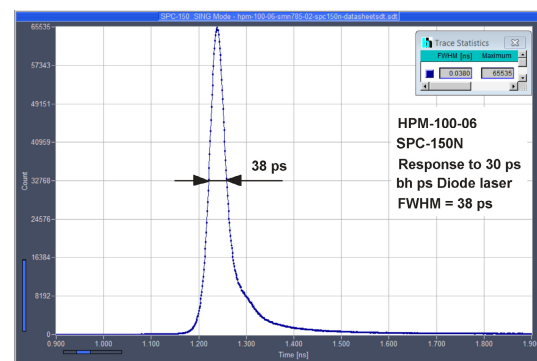
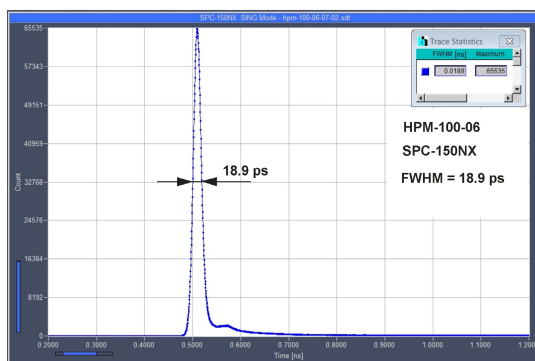
Overload shutdown

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.



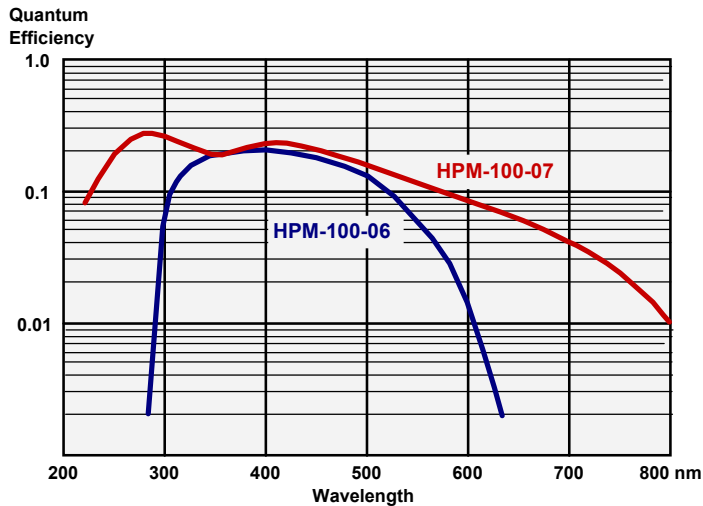
Left: Instrument response function, measured with 100-fs fibre laser. Recorded with SPC-150NX TCSPC module. Right: Response to pulses from bh picosecond diode laser, 30 ps pulse width. Recorded with SPC-150N TCSPC module.

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	290 nm to 600 nm	220 to 850 nm <sup>1)</sup>
Peak detection Quantum efficiency	20 % (at 400nm)	26% at 290 nm, 22% at 400nm <sup>1)</sup>
Dark Count rate, Tcase = 22°C, 3mm version	100 to 400 s <sup>-1</sup>	100 to 1000 s <sup>-1</sup>
Cathode Diameter		3 mm
TCSPC IRF width (Transit Time Spread, with SPC-150NX)		<20 ps, FWHM
Single Electron Response Width		850 ps, FWHM
Single Electron Response Amplitude	50 to 150 mV, -8000 V, V <sub>apd</sub> 95% of V <sub>breakdown</sub>	
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 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, 6th edition, Becker & Hickl GmbH. Printed copies or electronic version on [www.becker-hickl.com](http://www.becker-hickl.com)  
Sub-20ps IRF Width from Hybrid Detectors and MCP-PMTs. Application note, available from [www.becker-hickl.com](http://www.becker-hickl.com)



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## International Sales Representatives



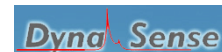
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