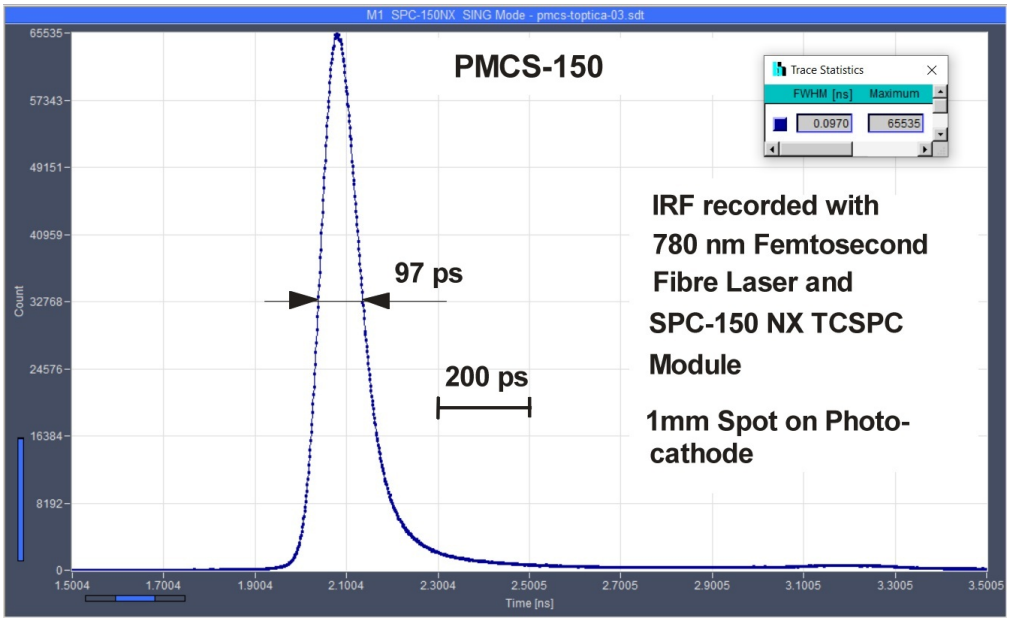
PMCS-150

Cooled High Speed PMT Module for TCSPC

Fast TCSPC Instrument Response: < 120 ps FWHM
Internal Cooler: Low Dark Count Rate
Internal GHz Preamplifier: High Output Amplitude
Internal Overload Protection
Internal High Voltage Generation
Simple +12V Power Supply
Direct Interfacing to all bh Photon Counting Devices
Standard C Mount Adapter
Small Size: 40 x 40 x 120 mm

The PMCS-150 is a cooled detector module for TCSPC applications. It contains a fast miniature PMT along with a Peltier cooler, a high voltage generator, a GHz pulse amplifier and a current sensing circuit. Due to the high gain and bandwidth of the device a single photon yields an output pulse with an amplitude in the range of 100 to 200 mV and a pulse width of 1.5 ns. The TCSPC instrument response function (IRF) has a width of less than 120 ps FWHM. It decreases to less than 100 ps for small sizes of the illuminated spot on the photocathode. The detector is operated with a fixed gain and from a single +12 V power supply. Overload conditions are internally detected by sensing the PMT output current. When overload occurs the PMT operating voltage is regulated down so that the output current remains on a safe level. Alternatively, the PMCS-150 can be operated from a bh DCU series detector controller module. In that case, the controller provides for power supply, gain control, and overload shutdown. The PMCS-150 interfaces directly to all bh SPC series time-correlated single photon (TCSPC) devices.



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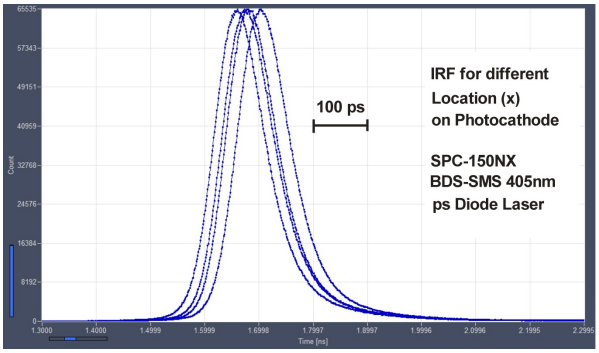
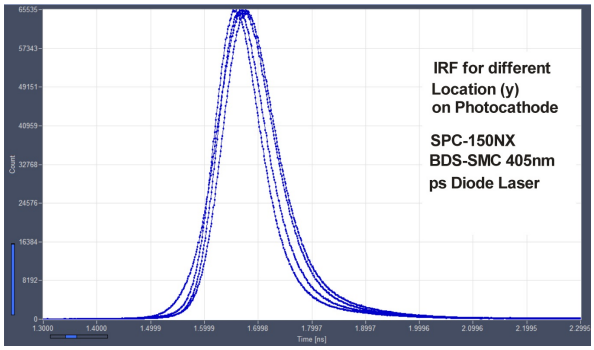
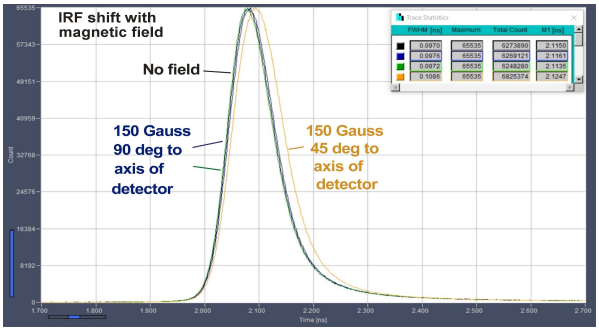
PMCS-150

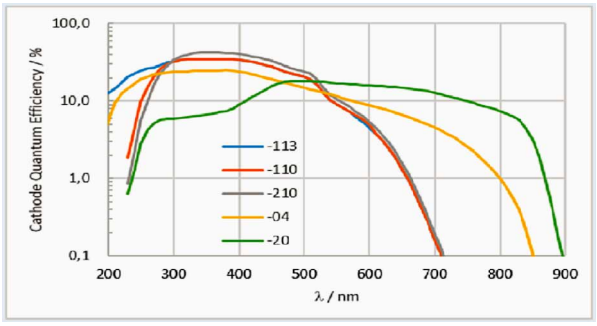
	PMCS-150-04	PMCS-150-110	PMCS-150-113	PMCS-150-210	PMCS-150-20
Cathode type	Multialkali, UV	Super Bialkali	Super Bialkali, UV	Ultra Bialkali	Extended Red
Wavelength Range (nm)	185 to 870	230-700	185 to 700	230 to 700	300 to 900
Dark Counts (with cooling enabled [1])	40	20	20	40	500
Cathode Diameter	8 mm				
IRF width, 1mm spot / full cathode area, typ., FWHM	100 ps / 120 ps				
IRF shift with x-y position on cathode, see diagrams	50 ps				
IRF shift with magnetic field (150 Gauss), see diagram	10 ps				
Single-Electron Response Width	1.5 ns, FWHM, typ. value				
Single-Electron Response Amplitude	-100 to -200 mV				
Count Rate (Continuous)	> 5 MHz				
Count Rate (Peak, < 1 us)	> 100 MHz				
Internal Overload Protection	Down-regulation of PMT voltage				
Recovery from overload	Automatically, when light intensity has returned to normal				
Overload Indicator	LED				
Overload Signal	TTL / CMOS, open drain, active low				
Detector Signal Output Connector	SMA				
Output Impedance	50 Ω				
Power Supply	+ 12 V, 300 mA[2]				
Dimensions (width x height x depth)	40 mm x 40 mm x 120 mm				
Optical Adapter	C-Mount female				
Fibre Coupling	SMA 905 or FC, on request				

1) Detector mounted on heat sink, temperature of detector base <25 °C
2) 100 mA when cooler is disabled









15 pin power-supply connector

1, 2	+12V	10, 11	not used
3	/Disable Cooler , leave open to enable	12	not used
4, 5	GND	13	Vgain, optional 0..1V from DCC
6	/Shutdwn, leave open to enable	14	not used
7, 8, 9	GND	15	/OVLD, optional, to DCC

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