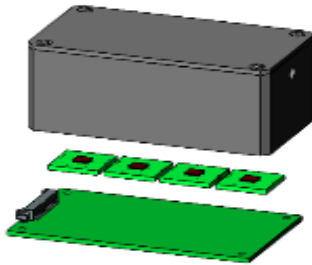


Whisper QWDM®

Multi-ch Solid-State Detector Modules for Life Science

Solid-State Detectors (SSD), including avalanche photodiodes (APD), silicon photomultipliers (SiPM), and other semiconductor photo-detectors are evolving rapidly (thanks to the semiconductor industry). They can be packaged with cooling options, PCB layers, special optics and other functional components in a modular format for life science instrumentation with excellent performance and reliability. Together with PIC's innovative, compact, low-noise direct-diode lasers, they drive towards smaller, reliable, and highly integrated systems in diagnostics, clinical, and point-of-care applications.



FEATURES

- High quantum efficiency
- Blue and Red shifted options from 300-1050nm
- Exact Form Fit Drop-in compatible replacement to PMT
- TE-cooled version available
- Built-in pre-amplifier
- Current or voltage output
- Standard 2, 3, up to 8-ch
- The 24, 32, 64, and 72-ch array upon request
- Cost-effective

APPLICATIONS

- Diagnostics
- Clinical
- Point-of-care
- Flow Cytometry
- Medical Imaging
- Confocal Microscopy
- Metrology

Multi-channel SSD Product Specifications

Multi-channel SSD array for detecting scattering and fluorescence signals, integrated with customer defined optical filters and fiber connector or collimated beam size in free space.
 Standard multi-ch SSD module will be covering 2, 3, up to 8-ch.

Product Specifications

Table 1: General spec of SSD¹

Parameters		Min.	Specifications Typ.	Max.	Units	
Power On requirements						
Input Positive Supplier Voltage ¹		+4.75	+5.0	+5.50	V	
Positive Current Dissipation ^{1,2}			100	250	mA	
Input Negative Supplier Voltage ¹		-4.75	-5.0	-5.50	V	
Negative Current Dissipation ^{1,2}			15	25	mA	
Operating temperature		+15	-	+40	°C	
Storage temperature		-20	-	+60	°C	
Input Optics requirements						
Optical input	Fiber input	Fiber Core	0.2,0.4, 0.6, up to 0.8	-	mm	
		Fiber NA	0.11,0.22,0.37, up to 0.6	-	-	
		Fiber Connector Type	FC-PC; FC-APC; SMA	-	-	
	Collimated beam in free space input	Beam diameter	Up to 7.0mm	-	mm	
Working Wavelength ³	Blue	SSC	-	488/10	-	nm
		FITC, Aleax Fluor TM 488	-	525/40	-	nm
		PE, PI	-	585/20	-	nm
		ECD	-	620/20	-	nm
		PC5,PerCP	-	675/20	-	nm
		PE-Cy7	-	780/50	-	nm
	Red	APC, Cy5	-	660/10	-	nm
		APC-A700, Cy5.5	-	720/30	-	nm
		APC-Cy7	-	780/60	-	nm
Peak wavelength ⁴		-	430 ; 600;	-	nm	
Effective sensing area		-	3x3	-	mm	
Bandwidth		1.5	2	-	MHz	

Max output voltage		-	4.75	5	V
Photo-electric sensitivity ⁵	Current output	3.5x10 ⁴	5.0x10 ⁴	-	A/W
	Voltage output @TIA: 2000V/A	0.7x10 ⁸	1.0x10 ⁸	-	V/W
Temperature stability at 15-40 °C		-	-	±5	%
Detection limit power ⁶		-	5	10	pW

1. For each detection channel.
2. Typ: tested at supply voltage = +/-5V, Vadj = 1.2V.
3. Other working wavelength and bandwidth are available upon request.
4. Refer to photon detection efficiency vs wavelength.
5. Tested at Vadj = 0.6V.
6. Tested at Vadj = 0.6V, in darkness.

Table 2-1: Interface Definition of connectors for 4 channels module*

Pin No.	Name	I/O	Function description	
Power input connector: Molex 0430451000	1	GND	Power GND	
	2	GND	Power GND	
	3	GND	Vadj GND	
	4	GND	Vadj GND	
	5	Vadj_1**	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	6	+5.0V	Power supply	Analog positive power supply
	7	-5.0V	Power supply	Analog negative power supply
	8	Vadj_4	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	9	Vadj_3	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	10	Vadj_2	Analog input	External voltage in for gain adjustment. (0~1.2 V)
Signal output connector: Molex 0430450600	1	GND	Signal GND	
	2	GND	Signal GND	
	3	Signal_1	Analog output	Analog voltage or current output
	4	Signal_4	Analog output	Analog voltage or current output
	5	Signal_3	Analog output	Analog voltage or current output
	6	Signal_2	Analog output	Analog voltage or current output

*. When the actual occupied channels are less than the designed, the excess number of channels can be floating.

**.. Channel 1 is the first detector following the optical entrance window.

Table 2-2: Interface Definition of connector for 8 channels module*

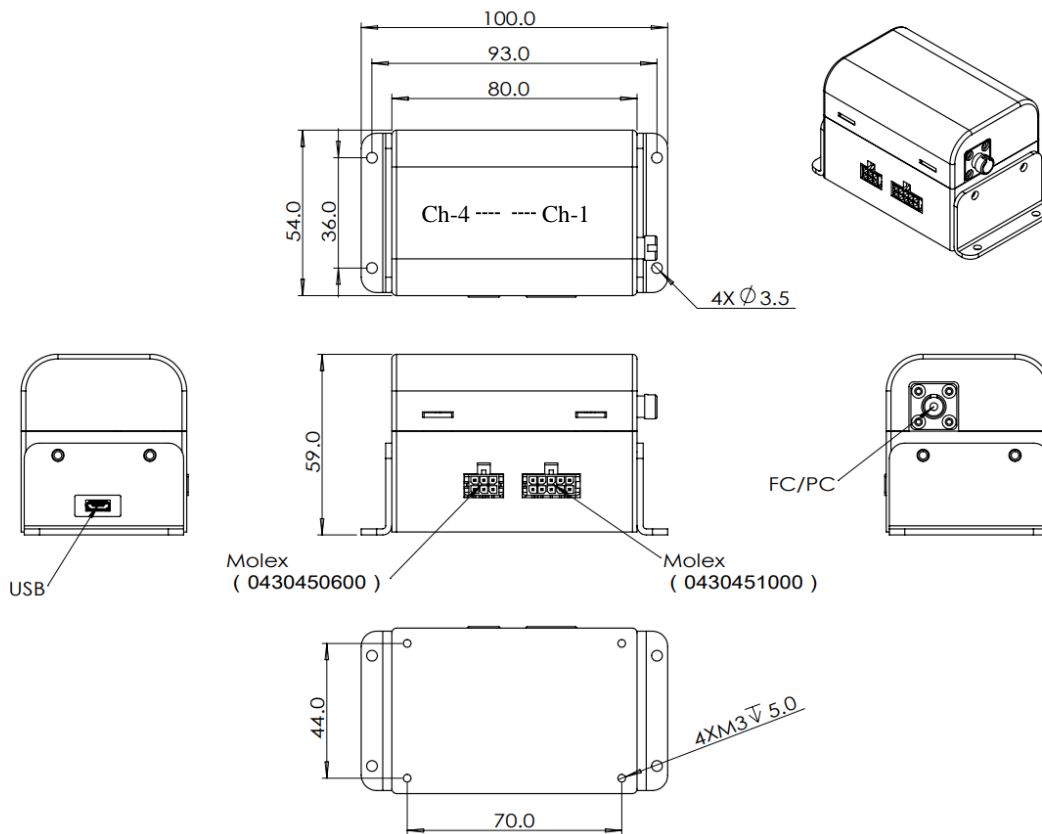
	Pin No.	Name	I/O	Function description
Power input connector: Molex 0430452000	1	GND	Power GND	Power GND
	2	GND	Power GND	Power GND
	3	GND	Power GND	Power GND
	4	GND	Power GND	Power GND
	5	GND	Vadj GND	Vadj GND
	6	GND	Vadj GND	Vadj GND
	7	GND	Vadj GND	Vadj GND
	8	GND	Vadj GND	Vadj GND
	9	Vadj_1**	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	10	Vadj_2	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	11	+5.0V	Power supply	Analog positive power supply
	12	+5.0V	Power supply	Analog positive power supply
	13	-5.0V	Power supply	Analog negative power supply
	14	-5.0V	Power supply	Analog negative power supply
	15	Vadj_8	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	16	Vadj_7	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	17	Vadj_6	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	18	Vadj_5	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	19	Vadj_4	Analog input	External voltage in for gain adjustment. (0~1.2 V)
	20	Vadj_3	Analog input	External voltage in for gain adjustment. (0~1.2 V)
Signal output connector: Molex 0430451200	1	GND	Signal GND	Signal GND
	2	GND	Signal GND	Signal GND
	3	GND	Signal GND	Signal GND
	4	GND	Signal GND	Signal GND
	5	Signal_1	Analog output	Analog voltage or current output
	6	Signal_2	Analog output	Analog voltage or current output
	7	Signal_8	Analog output	Analog voltage or current output
	8	Signal_7	Analog output	Analog voltage or current output
	9	Signal_6	Analog output	Analog voltage or current output
	10	Signal_5	Analog output	Analog voltage or current output
	11	Signal_4	Analog output	Analog voltage or current output
	12	Signal_3	Analog output	Analog voltage or current output

- *. When the actual occupied channels are less than the designed, the excess number of channels can be floating.
- ** . Channel 1 is the first detector following the optical entrance window.

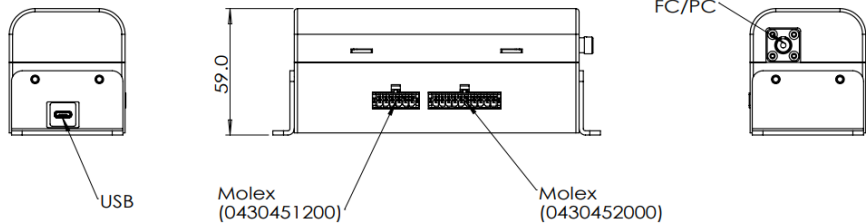
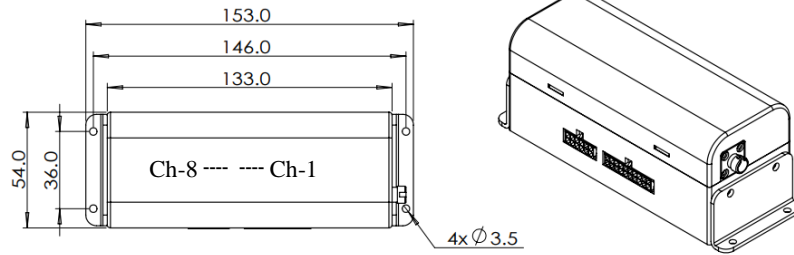
Table 3: Mechanical

Parameters	Conditions	Specifications Typ.	Units
Dimension	L x W x H	4 channels: 100 x 54 x 59 8 channels: 153 x 54 x 59	mm

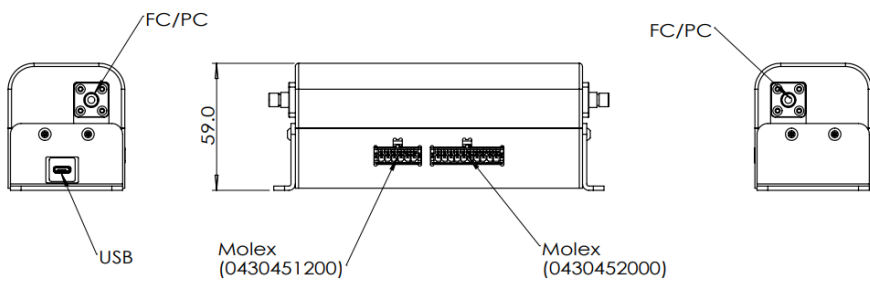
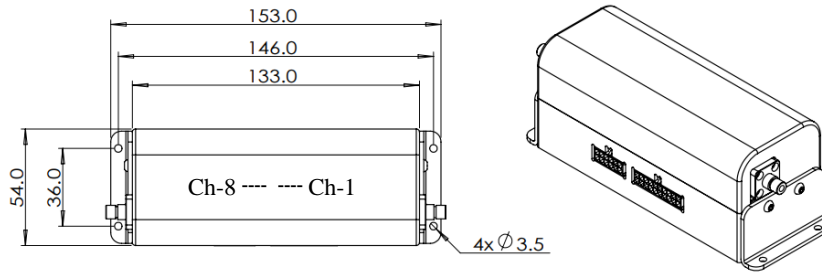
Mechanical Diagrams



4 channels module dimension



8 channels module dimension

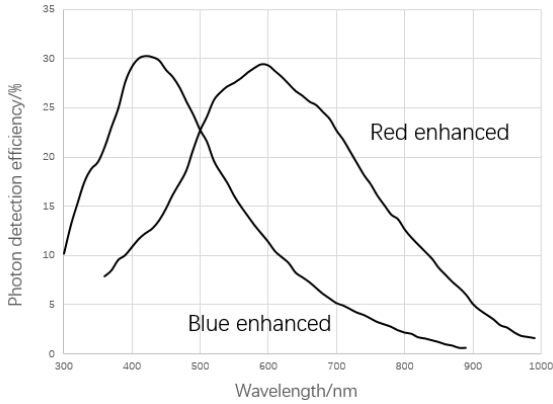


Dual import 8 channels with inside beam block module dimension

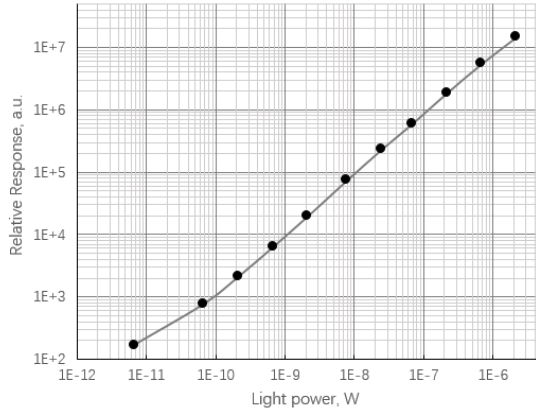
Note:

1. We reserves the right to make cosmetic minor changes that do not affect the finnal use.
2. USB is for internal use.

Photon detection efficiency vs Wavelength



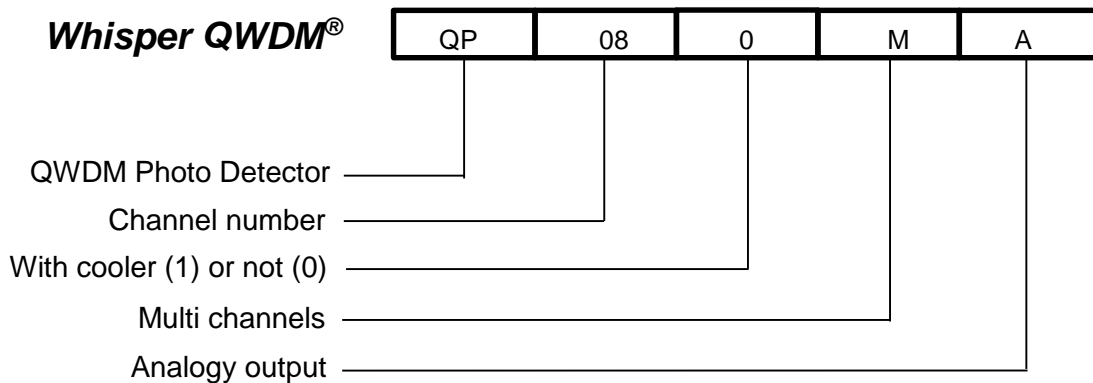
Photon response vs light power



Order Code

Example: QP080MA

Whisper QWDM®



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