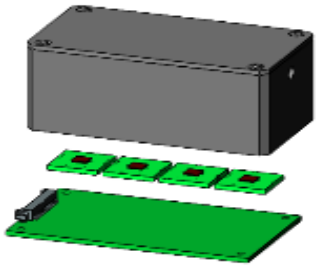
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Whisper QWDM®

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**

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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 SSD[1]

Parameters				Specifications Min.	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 FluorTM 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

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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 ℃		-	-	±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	Power GND
	2	GND	Power GND	Power GND
	3	GND	Vadj GND	Vadj GND
	4	GND	Vadj 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	Signal GND
	2	GND	Signal 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.

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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

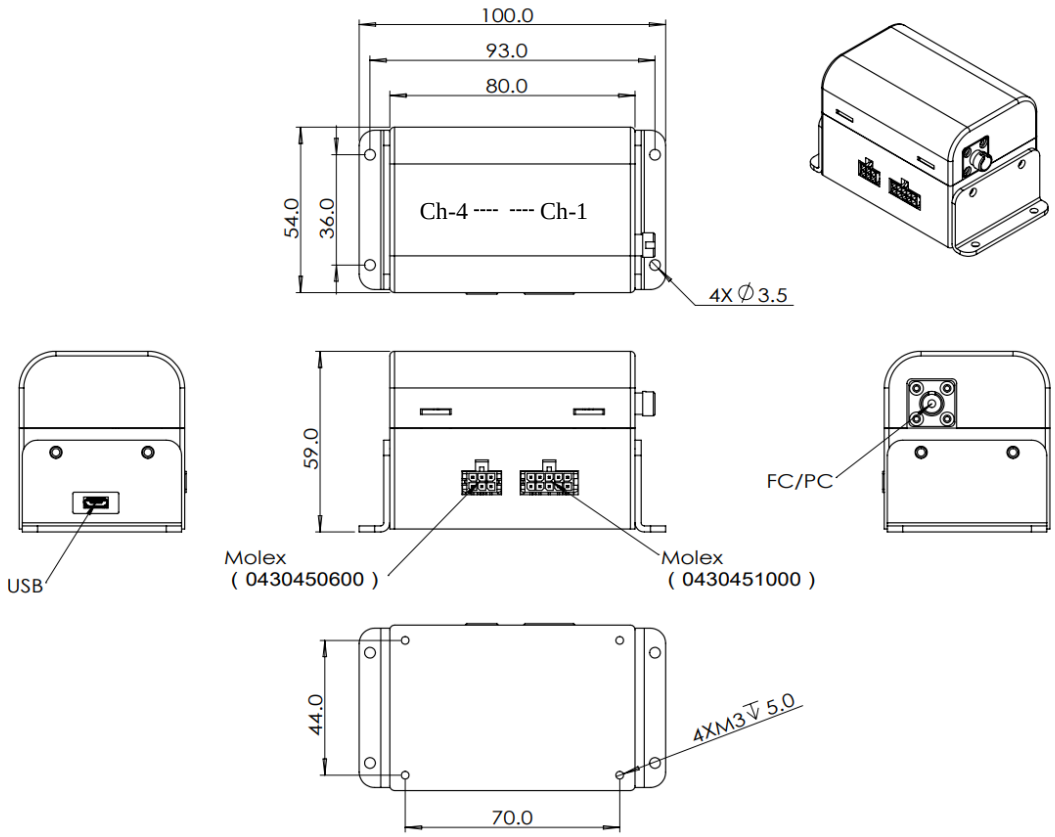
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*. When the actual occupied channels are less than the designed, the excess number of channels can be floating.
**. Channel 1 is the first detector following the optical entrance window.

Table 3: Mechanical

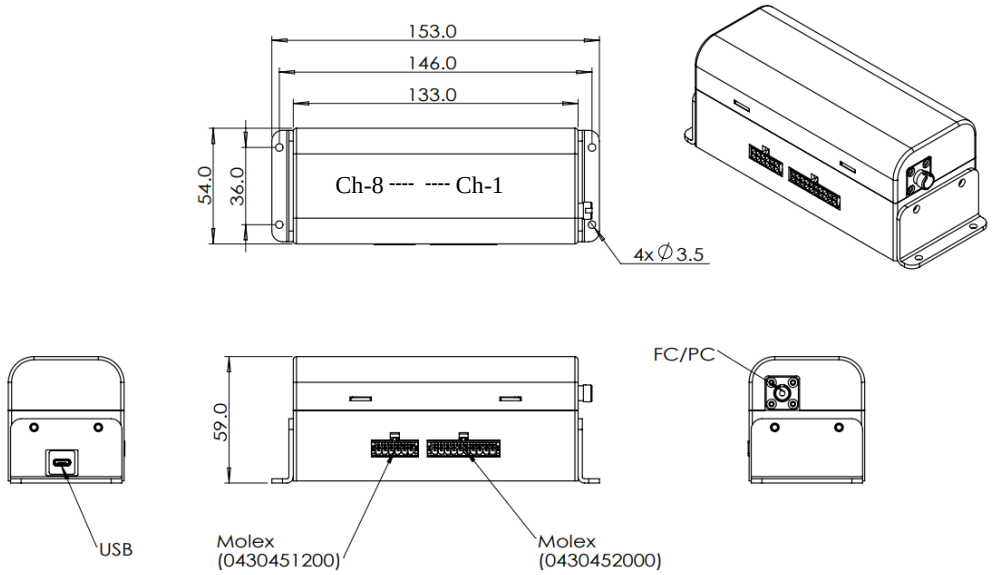
Parameters	Conditions	Specifications Typ.	Units
Dimension	L x W x H	4 channels: 100 x 54 x 59 8 channels: 153 x 54 x 59	mm

Mechanical Diagrams

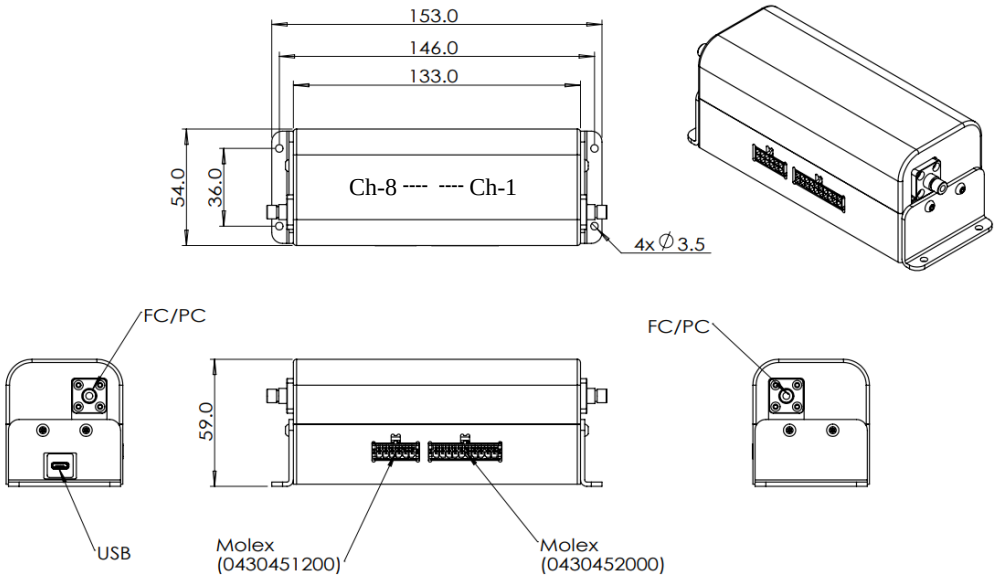


4 channels module dimension

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8 channels module dimension



Dual import 8 channels with inside beam block module dimension

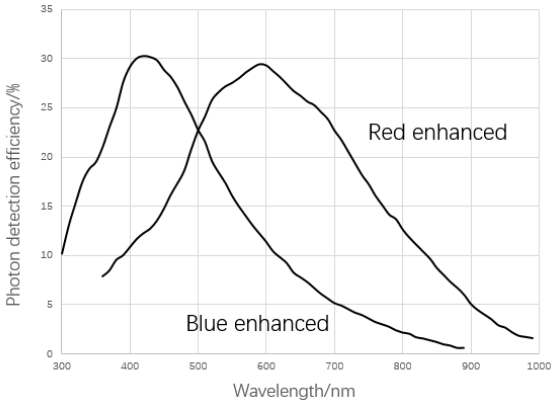
Note:

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

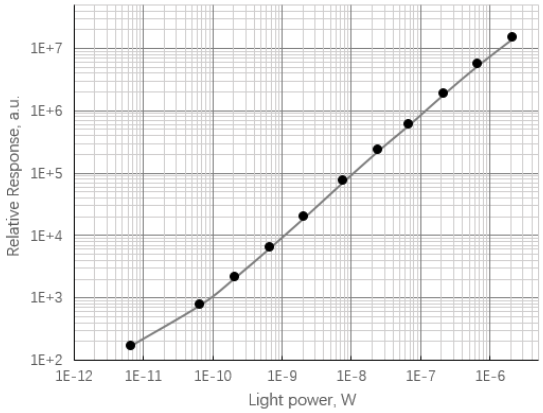
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Photon detection efficiency vs Wavelength



Photon response vs light power



Order Code

Example: QP080MA

Whisper QWDM®

QP	08	0	M	A

QWDM Photo Detector
Channel number
With cooler (1) or not (0)
Multi channels
Analogy output

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