sensL

PCDMini

High Performance
Photon Counting Device

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Overview

USB Miniature Photon Counting Device

SensL's PCDMini Photon Counting Device is the first miniature photon counting system on the market. The PCDMini sensing performance exceeds typical Photomultiplier Tubes (PMT) values for key photon counting parameters such as Photon Detection Probability, Dark Count, Timing-Jitter and After-Pulsing. SensL have included an easy to use USB interface board integrated into the module which enables the detectors count rate to be easily monitored with the SensL Integrated Environment software included.

The miniature size of the PCDMini is the perfect solution for applications where portability, power supply and power consumption are critical. The USB interface board, integrated counter, DLLs, LabVIEW drivers and SensL's Integrated Environment software simplify system integration.

On-board unique identifier chip allows multiple devices to be deployed and managed in large-scale systems.

Features

- Miniaturized photon counting solution for OEM and Researchers.
- Not damaged by excess / ambient light.
- Controlled thermoelectric cooling for applications that require cooling for extremely low dark count
- USB 2.0 (full-speed) interface board.
  - Integrated USB counting with 100ms resolution
  - Full system monitoring via USB
  - Sample SensL Integrated Environment (GUI software)
  - DLL drivers and LabVIEW Drivers
- Power supply board and included wall mount supply provide all power required by the PCDMini.

Applications

- Point-of-Use and Point-of-Care Sensors
- Photon Correlation Spectroscopy
- Confocal Microscopy
- Fluorescence Lifetime Measurement
- Biological Sensors
- Microarray Scanning
- DNA Biochips/Sequencing
- Bio/Chemical Sensors
- Scientific Instrumentation
- Proteomics/Protein Biochips
- Flow Cytometry
- Capillary Electrophoresis

General Specifications

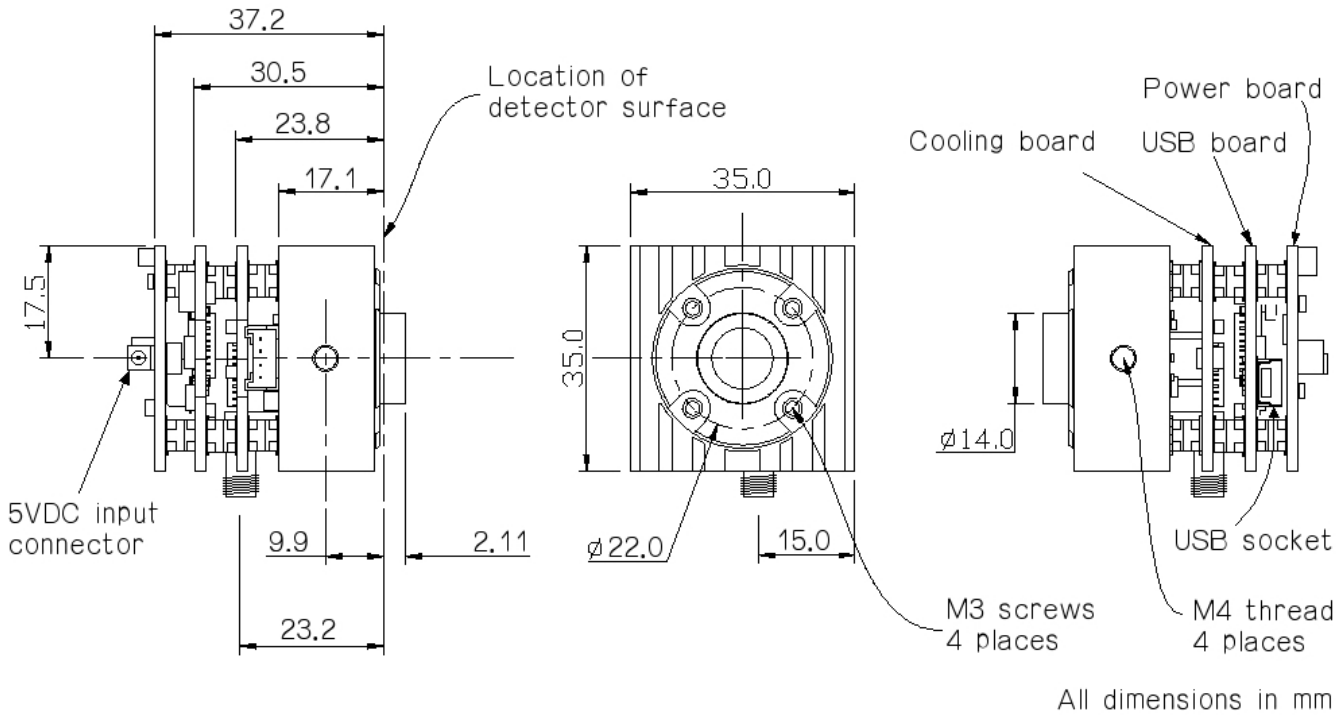
Parameter	Min	Typical	Max	Units	Test Conditions
Inputs					
Detector Module DC Input Voltage	4.9	5.0	5.1	V	Typical current: 200mA at normal operation 700mA at startup
AC Mains Adapter Supply Voltage	100		240	V	UK, Europe, USA
AC Mains Adapter Supply Frequency	47		63	Hz	UK, Europe, USA
Outputs					
Output Amplitude	2.2	2.4	2.9	V	50Ω load
Output Pulse Width		70		ns	
Performance					
Breakdown Voltage (V_{br})		27.0		V	
Dead Time		100		ns	Typical value
Maximum Count Rate		10		Mcps	Continuous light
Spectral Range	400		1100	nm	
Cooling Time		10		sec	Cooling from room temperature
Setpoint Temperature		-20		°C	Cooling Controller Board
Temperature Setpoint Stability		±0.1		°C	Cooling Controller Board
Timing Resolution / Time-Bins		200		µs	USB Interface Board (Max)

Module Specifications

Typical Values	Part Number		Units	Test Conditions
	PCDMini0020	PCDMini0100		
Active Area Diameter	20	100	µm	
Dark Count	50	1000	cps	Cooling at -20°C
Peak Detection Efficiency	33	18	%	Typical V_{bias}, λ = 480nm
Peak After-Pulse Probability	1	2	%	Typical V_{bias}, Mean Count Rate=100kcps
FWHM Jitter	200	600	ps	Typical V_{bias}, Mean Count Rate=100kcps

Note: SensL reserves the right to change all product specification and functionality without notification. Information on this datasheet is believed to be accurate, however, no responsibility is assumed for any inaccuracies or omissions.

Mechanical Information

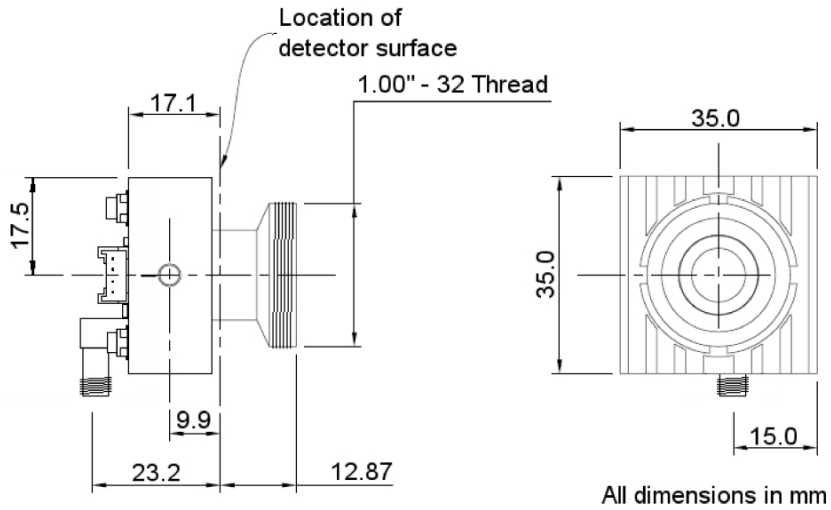


All dimensions in mm

Ordering Information

Product Code	Description	
PCDMini0020	PCDMini High Performance Photon Counting Device with 20µm sensor	includes Peltier Cooling, Power Supply Board and USB Interface Board (with Correlation software and LabVIEW drivers)
PCDMini0100	PCDMini High Performance Photon Counting Device with 100µm sensor	
Options		
CMNT1	Option: C-Mount Adapter (male)	
PCDF5	Option: PCDMini0100 Fiber Coupler (FC, 100µm core) only available with PCDMini0100 module	
W-PCDMini	Option: 3 Year Extended Warranty	

C Mount Adapter Option

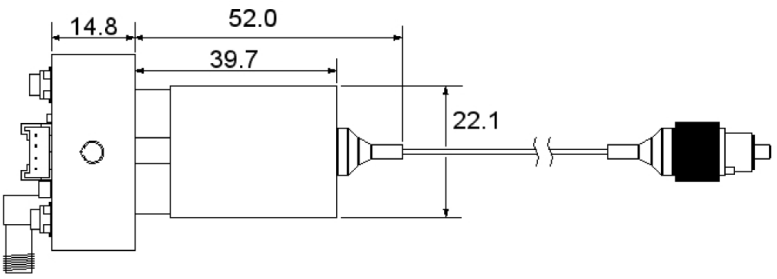


All dimensions in mm

A male-threaded C Mount Adapter option is available, which attaches to the collar around the T08 can. This facilitates the attachment of various standard C Mount fittings, including filters and lenses and is an ideal solution for attaching light collection lenses.

Integrated Fiber Coupling Option

An alternative version of the base module, which has a fiber attached directly to the sensor (pigtail lens style), Presently a 100µm core onto a 100µm sensor. The fiber used is a 3mm OD jacketed is produced m multimode fiber (NA = 0.22) with a -25dB return loss, a flat FC/PC connector and is 0.5m long. The standard option is optimized for broadband response between 400nm and 700nm. Typical Coupling Efficiency is 45%. This option is only available with the PCDMini0100 module.



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