HORIBA Scientific

CoolOne™

Cooled PMT Detection System

ELEMENTAL ANALYSIS
FLUORESCENCE
GRATINGS & OEM SPECTROMETERS
OPTICAL COMPONENTS
FORENSICS
PARTICLE CHARACTERIZATION
RAMAN
SPECTROSCOPIC ELLIPSOMETRY
SPR IMAGING

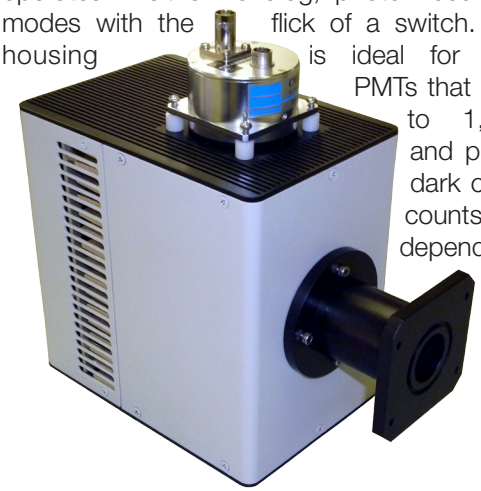
OBB Cooled PMT Housing

HORIBA PTI

For spectroscopy and microscopy experiments in the UV/Vis/NIR region of the spectrum, a photomultiplier tube (PMT) is the ideal detector for quantitative low light level measurements. A PMT is extremely sensitive, with very wide dynamic range so it can also measure high levels of light. PMTs are also very fast so rapid changes in optical signals can be reliably monitored. As a practical matter, PMTs are durable, long-lived, and economical.

Photomultiplier tubes can be cooled to reduce thermal background noise (also referred to as the dark count), and hence lower the detection limit of the PMT to very low levels for extreme low light level single photon counting detection. Cooling the PMT also allows for detection further into the NIR because NIR PMTs by their nature are much more thermally sensitive and are not suitable for use with non-cooled PMT housings.

Optical Building Blocks is pleased to introduce the CoolOne™ dual stage thermo-electrically cooled PMT housing that operates in either analog, photon counting or direct out modes with the flick of a switch. This cooled PMT housing is ideal for standard side-on PMTs that are used from 185 to 1,200 nanometers and provides a very low dark count of only a few counts per second (cps) depending on the PMT selected.



Features and Benefits

- Detect single photons (low dark count)
- NIR photon counting detection to 1,010 nm
- Inexpensive
- Operates in analog, photon counting, or direct out modes
- Compact size
- Complete detection sub system
- Easy to use

The OBB cooled PMT housing includes the following:

- CoolOne™ Housing
  - Two stage, thermo-electrically air cooled PMT housing
  - Internal socket for most 1 1/8-inch side-on PMT's
- CoolOne™ HV Supply
  - High voltage adjustment with LCD display of HV
  - Output switch to select analog, photon-counting or direct out detection modes
  - Indicator lights for In temperature range and Overheating
  - AC Adapter
- Optional CoolOne™ Multi Mode Electronics Module. This is an optional electronics module. If you already have detection electronics, you could use what you have instead of this module and feed the signal from the PMT housing into your own box.
  - CoolOne™ Multi Mode Electronics Module
  - Complete analog and photon counting circuitry
  - BNC connectors for PMT In, Analog Out, Photon-Counting Out

Specifications

CoolOne™ PMT Housing Specifications		
PMT socket	28 mm diameter side on PMT's	
Cooling type	Dual stage, thermo-electric cooler with air cooled heat sink	
Cooling temperature	-20 °C in the PMT chamber	
Settling time	Reaches desired temperature < 45 minutes	
Window and lenses	UV-grade synthetic silica 185-2,200 nm (heated to prevent condensation)	
Focal length from end of adapter	0.47 inches (12 mm)	
Numerical aperture	0.35	
Dimensions (WxDxH)	4.1 x 9.5 x 11.5 inches (105 x 240 x 290 mm)	
Weight	6 lbs (3 kg)	
CoolOne™ High Voltage Supply & Control Specifications		
Line voltage	100-240 V, 50 or 60 Hz	
Controls	HV Adjustment, 10 turns, linear 150 to -1250 V HV control switch (internal or external)	
Connections	Temperature monitor, banana socket Peltier cooling/control, 10-pin connector PMT HV control, 6-pin connector	HV monitoring, banana socket +/- 15 V output External HV control
Indicator lights	Red when Peltier heat sink overheats Green when PMT temperature in range -20 °C +/- 0.5 °C	
Dimensions (WxDxH)	10.9 x 12 x 4.5 inches (277 x 305 x 115 mm)	
Weight	5 lbs (2.3 kg)	
CoolOne™ Multi Mode Electronics Module Specifications		
Connections	PMT In (BNC), Analog Out (BNC), Digital Out (BNC) DC Power In, from AC adapter	
Dimensions (WxDxH)	10.9 x 12 x 4.5 inches (277 x 305 x 115 mm)	
Weight	5 lbs (2.3 kg)	
Photon Counting Mode Specifications		
Output	TTL, BNC connector	
Maximum count rate	10,000,000 cps	
Linear count rate (absolute)	3,000,000 cps	
Linear count rate (-5% deviation)	7,000,000 cps	
Pulse pair resolution	60 ns	
Analog Mode Specifications		
Bandwidth (low, medium)	10, 30 KHz (default is 30 KHz)	
Dead time	250 ns	
Signal Output	TTL, BNC connector	

OPTICAL BUILDING BLOCKS

HORIBA Scientific

contact@OBB1.com

www.obbcorp.com

USA: +1 732 494 8660
UK: +44 (0)20 8204 8142
China: +86 (0)21 6289 6060
France: +33 (0)1 69 74 72 00
Italy: +39 2 5760 3050
Brazil: +55 (0)11 5545 1500
Germany: +49 (0)89 4623 17-0
Japan: +81 (0)3 6206 4721
Other: +1 732 494 8660