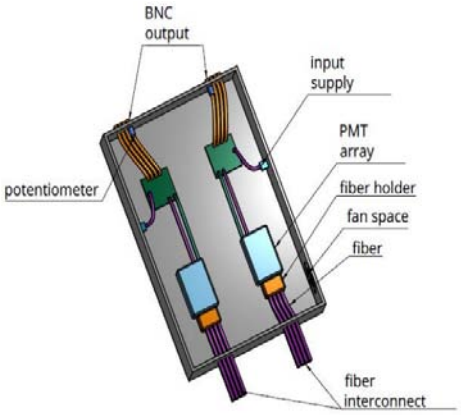
PMT Array

Optical Assembly based on fibers for plasma Emission measurement

Model: SM-PMT-8/16

The SM-PMT-8/16 optical assembly couples 16 optical fibers to two 8-channel PMT arrays for spatial emission profiling from plasma devices like tokamaks. It operates within the visible spectrum for precise light detection with PMT Wavelength Range from 400 to 900nm with DC to 1MHz bandwidth.

- Ensured minimal noise in input and output signals (1.2 mV≤).
- Low signal intensity at the PMT window with <2% cross-talk, ensured by compliant mechanical design.
- No light leakage into the mechanical enclosure.



Assembly and PMT specifications

No of channel in single PMT	8
Effective area of a channel and channel pitch	2.0 x2.5 mm &<3.0
Wavelength range	400to900nm
Cathode Type	Multialkali
Window Material	Borosilicate Glass
Peak Wavelength	Within 620 to 640nm
Dark current per channel	<1.2nA
Pre-amplifier current to voltage conversion	>0.1V/μA
Output feature	Included pre-amplifier and HV power supply
Bandwidth	DC to 1MHz
Ripple noise(peak to peak)	Typically,<1.2mV
Cross talk between channels(typical)	<0.3%
Anode luminous(typical)	>1x108V/lumen
Fiber Type	Fused silica core, multimode & step index
Each fiber length:	Minimum 0.3 m for enabling tension free coupling of these with end connectors and PMT arrays
Numerical Aperture	0.22
Core diameter	1.0to1.2mm

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Enclosure/box material	Aluminum, black anodized
Input power supply	DC power supply having voltage rating of ±15V
Potentiometer	Potentiometer with knobs for input voltage variation and having display features for set voltage
Output	16 lemo/BNC connectors for signal outs from PMT array and mounted on the enclosure
Buffer and outer Jacket	fiber have buffer to give it strength and jacketed with PVC/ Nylon
End Connector	One end flat polished with SMA 905 connector ,another end is stripped & flat polished tip for Mounting inside the fiber holding

Applications

- Plasma Emission detection
- Laser scanning detection
- Spectroscopy and Radiation measurement and more

Tests and Qualifications

- Opto-Mechanical Design: Approved and validated by the Institute of Plasma Research, India.
- Assembly: Rigorously tested and certified by the Institute of Plasma Research, India.
- Calibration: Currently calibrated with the ADITYA Tokamak for precise spatial emission profiling and advanced research applications.

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