

住所:京都市下京区烏丸通四条下ル水銀屋町637番地 第5長谷ビル2階

Email: info@symphotony.com TEL: 070 - 6925 - 5558

Web: https://www.symphotony.com/ FAX: 075 - 320 - 1604

PowerMonitor PM



The PowerMonitor (PM) uses the same calorimetric principle as the CompactPowerMonitor. In contrast to the flat absorber of the CompactPowerMonitor, the laser beam entering the PowerMonitor is guided into a cylindrical absorber via a focussing mirror. A highly absorbing coating is applied on the inside of the water-cooled absorber. The cylindrical absorber enables very high absorption levels at very low back reflection.

This procedure is suitable for highest power levels. All parts that come into contact with the cooling water are made of copper or brass. This effectively prevents stress corrosion in the coolingcircuit. A pneumatic shutter protects the PowerMonitor from contamination.

The development of the PowerMonitor was centred around the following requirements:

- Absorption of radiation with high power density
- High absorption level
- Long term stability
- Accuracy
- Reproducibility
- · Short measuring times
- Reliable operation in rough environments

In Practice

The PowerMonitor is intended for both laser source manufacturers and plant manufacturers for the measurement of high laser beam powers. The relatively high mobility of the device enables an application at different systems within a company. However, the PowerMonitor is also suitable for process control when it comes to system integration.

Measured Beam Parameters

Beam power of continuous wave laser sources in the wavelength range of solid-state lasers (NIR) or $\rm CO_2$ lasers, depending on the calibration. The different models cover power ranges from 300 W up to 25 kW. A system for even 50 kW will soon be available.

Data Transfer and Display

The PowerMonitor displays the measurement values on an integrated LCD-screen. Furthermore, it can be operated via a PC using the graphical user interface of the PowerMonitorSoftware. It enables the analog display of the current laser power as well as the recording of data over time.

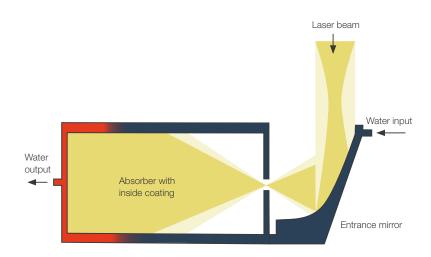
An output signal that is proportional to the power (0 - 10V) is available as well.

In addition to the incident laser power, the current flow rate, the water temperature as well as the temperature increase of the cooling water can be displayed.

1



PowerMonitor PM



Schematic beam path in the PowerMonitor with cylindrical absorber and entrance mirror

Technical Data

	PM48	PM100	
Measurement Parameters			
Power range	300W - 8kW	1kW - 25kW	
Irradiation time	continuous	continuous	
Wavelength range	800 – 1100 nm, 10600 nm	800 – 1100 nm, 10600 nm	
Entrance aperture	48 mm	100 mm	
Max. power density	15 kW/cm ²	5kW/cm ²	
Accuracy	± 2%	± 2 %	
Reproducibility	± 1%	± 1 %	
Time constant	15s up to 99% of final value	60s up to 99% of final value	
Supply Data			
Power supply	24 V DC ± 5 %, max. 0.5 A	24 V DC ± 5%, max. 0.5 A	
Compressed air (clean, oil-free, dry, particles < 10 nm)	for shutter mechanism	for shutter mechanism	
Min. air pressure	2 bar	2 bar	
Max. air pressure	3 bar	3 bar	
Cooling water flow rate	> 51/min	> 121/min	
Cooling water stability	< 1 K/min	< 1 K/min	
Maximum water inlet pressure	6.5 bar	6.5 bar	
Communication			
Interfaces	serial/USB		
Dimensions and Weight			
Dimensions (L \times W \times H) (excl. connectors)	354x243x125mm	540x330x210mm	
Weight (approx.)	10kg	50 kg	
Mounts for connection of a FocusMonitor	optional	optional	
Environmental Conditions			
Operating temperature range	+1	+10 °C up to +40 °C	
Permissible relative humidity (non-condensing)		10 – 80 %	

2