PowerMonitor

Connector panel of the PM 48

Shutter and entrance aperture

The Superstar for your Light Power Measurements

More than just monitoring: Designed for a very high degree of absorption with minimal back reflection, the PowerMonitor is our best in class for all laser power measurements.
Prevent unnecessary idle periods, sorting out, or production losses and ensure the quality of your laser system, in short: Put your company's trust in the capacity and reliability of the PowerMonitor.

The PowerMonitor (PM) is the perfect match for each and every laser manufacturer as well as production equipment manufacturer who needs to measure high-power laser beams. Its attractive qualities include flexibility in the area of use: Thanks to its great degree of mobility, the device can also be used on a wide variety of machines within your factory. It can be permanently installed, so integrated into the industrial production system, as a fixed component of your laser machine.

The Principle

Laser power is measured calorimetrically. The laser is guided into a cylindrical absorber via a focusing mirror.
A highly absorbent coating has been applied to the inside of the water-cooled absorber, which produces a very high degree of absorption with very little back reflection.

This procedure works even at the highest powers. All parts that come in contact with the cooling water are made of copper or brass, thus effectively preventing voltage corrosion in the cooling circuit. A pneumatic shutter protects the PowerMonitor against the soiling that is ultimately a tough reality in many production environments.

Impressive Beam Parameters

The PowerMonitor measures the beam parameters of continuous wave lasers in the wavelength range of solid-state lasers (NIR) or CO_2 lasers, depending on design and calibration.

Choose one of a variety of models covering power ranges from 300 W to 25 kW in order to meet your needs. PRIMES even offers a powerful 75 kW variant for unique areas of application.

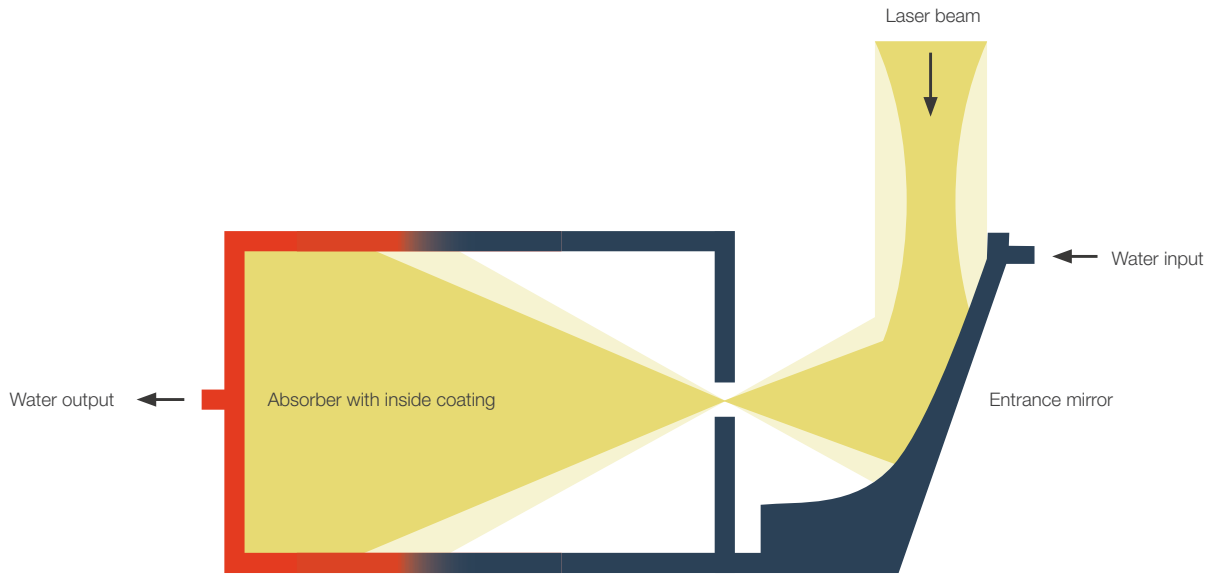
Display and Data Communication

All measurement data can be shown on the integrated LCD display of the PowerMonitor. It is also possible to operate the PowerMonitor on a PC using the graphic user interface of the new LaserDiagnosticsSoftware.

This facilitates analog display of current power as well as the recording of development over time. An output signal proportional to power (0 – 10 V) is also available. In addition to the irradiated power, the current flow rate, water temperature, and temperature increase at the water intake and output are also displayed.

The Key Benefits

1. Absorption of high-intensity radiation
2. Highest degree of absorption
3. Long-term stability
4. Precision
5. Reproducibility
6. Short measuring time



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

Technical Data

	PM 48	PM 100
MEASUREMENT PARAMETERS		
Power range	300 W – 8 kW	1 kW – 25 kW
Wavelength range	800 – 1 100 nm or 10 600 nm	800 – 1 100 nm or 10 600 nm
Irradiation time	continuous	continuous
Max. power density	15 kW/cm²	5 kW/cm²
DEVICE PARAMETERS		
Entrance aperture	48 mm	100 mm
Accuracy	± 2 %	± 2 %
Reproducibility	± 1 %	± 1 %
Time constant	15 s up to 99 % of final value	60 s 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
Cooling water flow rate	> 5 l/min	> 5 l/min
Minimum cooling water flow rate (load limit)	0,8 l/min/kW	0,8 l/min/kW
Cooling water stability	< 1 k/min	< 1 k/min
Maximum water inlet pressure	6 bar	6 bar
Cooling water temperature T_{in} [1)]	Dew point temperatur < T_{in} < 30 °C	Dew point temperatur < T_{in} < 30 °C
COMMUNICATION		
Interfaces	serial/RS485/USB	serial/RS485/USB
DIMENSIONS AND WEIGHT		
Dimensions (L x W x H) (without connectors)	405 x 242 x 125 mm	580 x 330 x 215 mm
Water connection, diameter	12 mm	16 mm
Weight (approx.)	10 kg	50 kg
Mounts for connection of a FocusMonitor	optional	optional
Fiber adapter	optional	optional
ENVIRONMENTAL CONDITIONS		
Operating temperature range	10 – 45 °C	10 – 40 °C
Storage temperature range	5 – 50 °C	5 – 50 °C
Reference temperature	22 °C	22 °C
Permissible relative humidity (non-condensing)	10 – 80 %	10 – 80 %

[1)] Please consult with PRIMES before doing anything that does not comply with this specification.