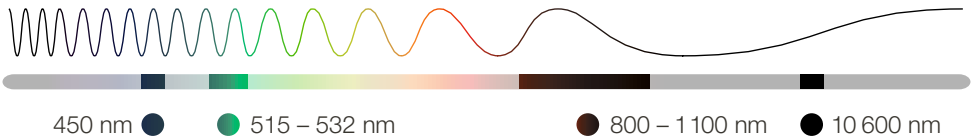


EC-PowerMonitor



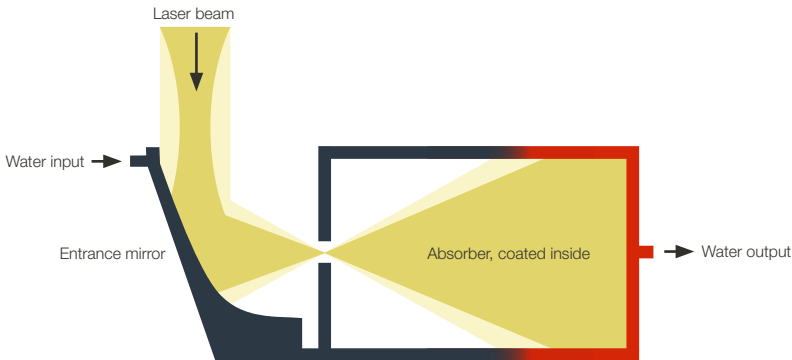
**Simply the royal class of power meters for high power lasers.
Unsurpassed in reliability and precision.**



POWER RANGE	200 W – 10 kW
BEAM QUALITY M ²	Single mode – Multi mode
BEAM DIAMETER	up to 32 mm
HIGHLIGHT	Gold standard with self calibration feature
INTERFACES	Serial / USB

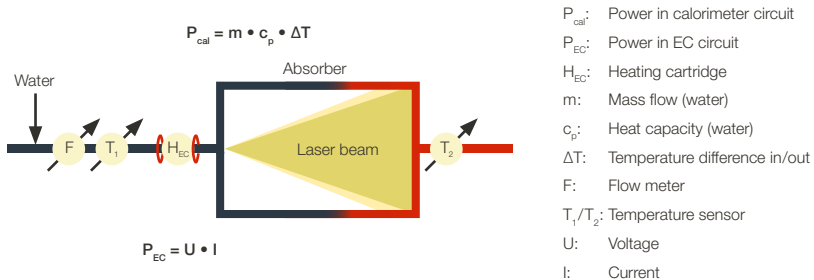
Tech Corner

Unlike standard power meters whose design is typically based on a flat absorber, the EC-PowerMonitor provides a water cooled cylindrical absorber. The Integrating-Spheres-like setup, combined with its entrance mirror, maximizes the wavelength independent absorption to over 99 %. Thanks to the innovative design, the absorber can allow very high degrees of absorption with very little back-reflection.



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

The laser power is measured calorimetrically. Two separate temperature sensors determine the temperature rise between water in- and outlet. Furthermore, the mass flow is measured using a highly accurate flow meter. The unique design and sophisticated calibration with production-proven laser sources, guarantees unrivaled accuracy and quality.



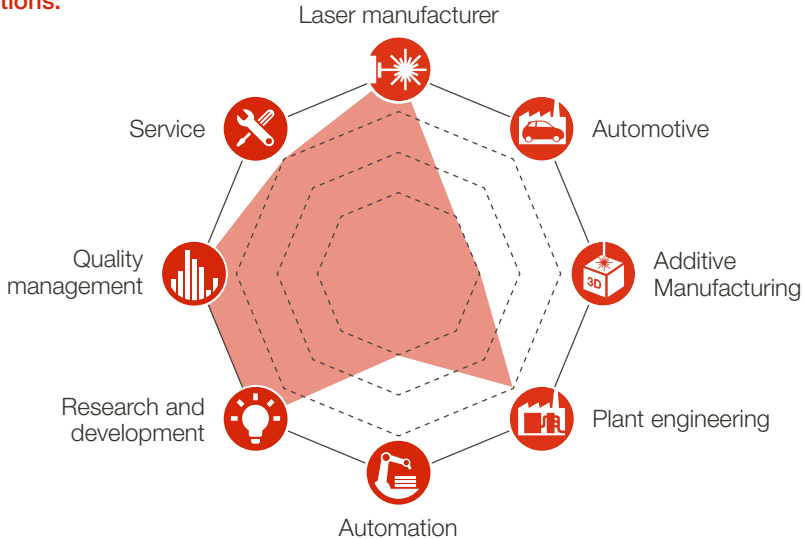
- P_{cal} : Power in calorimeter circuit
- P_{EC} : Power in EC circuit
- H_{EC} : Heating cartridge
- m : Mass flow (water)
- c_p : Heat capacity (water)
- ΔT : Temperature difference in/out
- F : Flow meter
- T_1/T_2 : Temperature sensor
- U : Voltage
- I : Current

The EC-PowerMonitor can be used as a stand-alone device, or in connection with one of our beam profiling devices like the FocusMonitor FM+. Its main use will often be the transfer of results to other calorimeters for calibration purposes. Measuring the nominal power directly out of a fiber is also possible, when the available fiber receivers such as LLK-D, QBH or HLC-16 are mounted.

Laser safety has always the top priority when working with high-power lasers. The integrated interlock prevents the device from getting damaged in case of a critical water flow status or a closed shutter.

MEASUREMENT PARAMETERS		EC-PM
Power range		0.2 kW – 10 kW
Wavelength range		450 nm, 515 – 532 nm, 800 – 1 100 nm and 10 600 nm
Irradiation time		Continuous
Max. power density at 450 nm, 515 - 532 nm at 800 – 1 100 nm, 10 600 nm		10 kW/cm ² 15 kW/cm ²
DEVICE PARAMETERS		
Entrance aperture		48 mm
Accuracy at 450 nm, 515 – 532 nm at 800 – 1 100 nm, 10 600 nm		± 2.5 % ± 2.0 %
Reproducibility		± 1 %
Time constant		15 s up to 99 % of final value
SUPPLY DATA		
Power Supply		24 V ± 5 %, max. 0.5 A
Water inlet pressure Recommended cooling water flow rate Cooling water stability Cooling water temperature T _{in}		Typical 2 – 4 bar > 5 l/min < 1 k/min or < 0.08 k/5 sec Dew point temperature < T _{in} < 30 °C
Compressed air for automatic operation of the shutter Pressure (min./max.) Specification according to		2 bar – 3 bar ISO 8573-1:2010 [7:4:4]
COMMUNICATION		
Interfaces		Serial/USB
DIMENSIONS AND WEIGHT		
Dimensions (L x W x H) (without connectors)		400 × 242 × 205 mm
Weight (approx.)		16 kg

Applications:



System description: Careful design and advancements in absorber- and electronics technology have made a power meter possible that is a gold standard in itself. Using the full potential of the calorimetric principle, the EC-PM is equipped with an internal heat source and precision power circuitry for electrical and calorimetric power metering. Being able to compare the amount of electrical power that flows into a heating cartridge, and at the same time comparing that to a calorimetric reading, the EC-PM can check its own precision. For the customer, this works like a self-calibration of the device, available at the click of a button. **Using our optional calibration software, these precise readings can be used to calibrate all other PRIMES calorimeters, especially the CPM and PM types.**

Your benefit: Have you ever dreamed of all the power meters in your company showing the same reading? Your dream has just come true. Transfer the precise readings of your gold standard EC-PM to all the other PRIMES calorimeters using our unique calibration software. And at the same time, save time and money on service costs. Enjoy using the instrument that gives you what you want from a measuring device: PRECISION!

CONCLUSION

Measuring the power of a laser has turned from a problem into a strength and an advantage. Combining the precision and self calibration function of the EC-PM with our calibration software to transfer the readings to other PRIMES power meters, a new era has begun. And finally, all your power meters show the same reading – the true laser power.



For further information please visit www.primes.de/ec-pm