

# BeamMonitor BM+



Fiber and disc laser



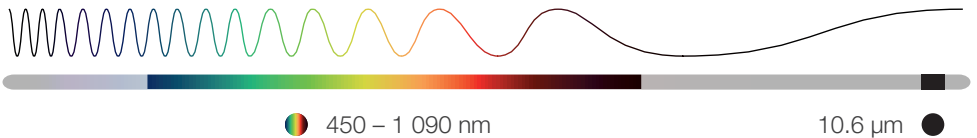
Diode laser



Ultrashort pulse laser



CO<sub>2</sub> laser



Analyzing collimated CO<sub>2</sub> lasers or process-critical power density distributions of solid state lasers used in electronics production.



Caustic



Raw beam



Power



Beam profile



Pointing stability



Vector



Focus shift

POWER RANGE	50 W – 25 kW
MAX. BEAM DIVERGENCE	100 mrad
BEAM DIAMETER	5 – 70 mm
SPECIAL FEATURE	Analysis of unique beam shapes
INTERFACES	Ethernet

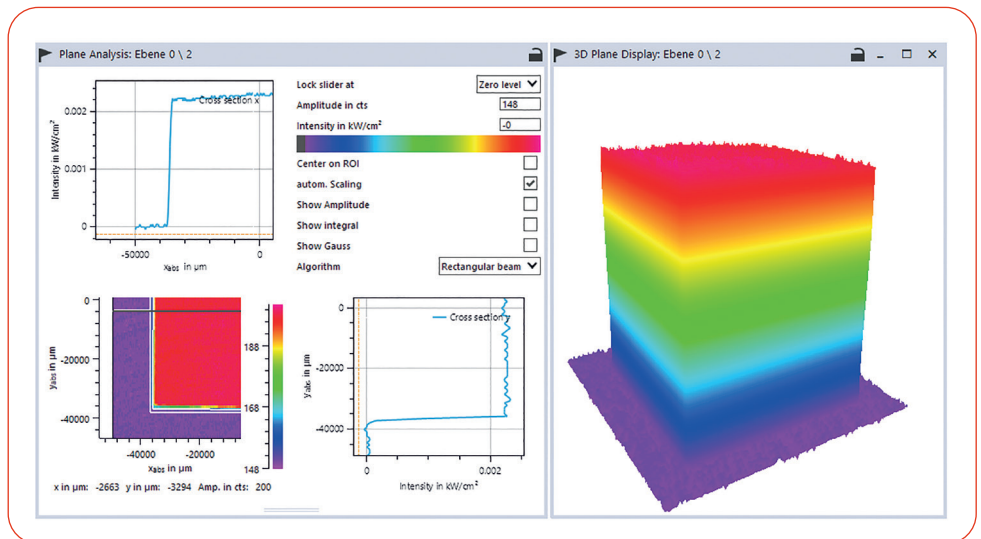
# Tech Corner

The BeamMonitor BM+ is an opto-mechanically scanning measuring system that scans the laser beam with a special measuring tip. This is equipped with a small pinhole or reflecting mirror that collects a small section of the laser beam. Another reflecting mirror guides this portion of the laser light to a detector selected and configured depending on the used wavelength.

By moving the rotary disk forth a power density distribution is created. The high orbital velocity of the rotating measuring tip facilitates analysis of high power densities. A very high signal-to-noise ratio is achieved thanks to the dynamics of the analog-digital converter used. Very low intensities are shown with equal precision next to the high peak intensities.

Using the new LaserDiagnosticsSoftware LDS you can set up the BM+ to automatically repeat measurements in a predefined interval. Accumulate unlimited measurements and check how the beam profile or location changes over a long time. For the consideration of shorter time intervals the established Linescan can be used up to a frequency of 25 Hz.

With a newly developed algorithm, the automatic recognition and analysis of rectangular beams becomes quite straightforward. Besides the lateral length, many unique parameters like the azimuth angle, flank steepness, flatness and uniformity are precisely calculated.

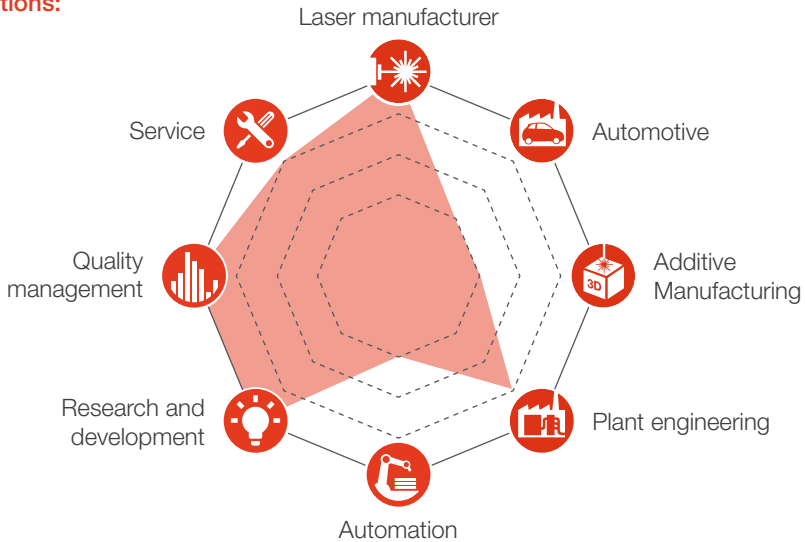


Plane analysis of a square beam measurement

MEASUREMENT PARAMETERS	BM+ 60	BM+ 100S
Power range <sup>1)</sup>	50 – 25 000 W	50 – 25 000 W
Wavelength range	450 – 1 090 or 10 600 nm	450 – 1 090 or 10 600 nm
Beam diameter	5 – 42 mm (450 – 1 090 nm) 10 – 42 mm (CO <sub>2</sub> )	10 – 70 mm
Min. power density (CO <sub>2</sub> only) <sup>1)</sup>	0.1 kW/cm <sup>2</sup>	0.2 kW/cm <sup>2</sup>
Max. power density <sup>1)</sup>	10 kW/cm <sup>2</sup>	10 kW/cm <sup>2</sup>
Max. beam divergence	100 mrad	100 mrad
Irradiation time	2 s – infinity	2 s – infinity
A/D conversion	16 bit	16 bit
Nominal measuring frequency	Linescan 25 Hz	Linescan 30 Hz
DETERMINED PARAMETERS		
Beam position x, y	yes	yes
Beam dimensions x, y	yes	yes
Power density distribution	2D, 3D	2D, 3D
Linescan	yes	yes
DEVICE PARAMETERS		
Working range x-y	60 x 60 mm	100 x 100 mm
Measurement window sizes	0.1 x 0.1 mm – 60 x 60 mm	0.1 x 0.1 mm – 100 x 100 mm
Resolution	32 x 32 – 1 024 x 1 024 px	32 x 32 – 1 024 x 1 024 px
Rotation speed of the measuring tip	1 562 min <sup>-1</sup>	1 562 min <sup>-1</sup>
Accuracy (beam diameter)	± 5 %	± 5 %
Reproducibility (beam diameter)	± 3 %	± 3 %
SUPPLY DATA		
Power supply	24 V DC ± 5 %, max. 1.8 A	24 V DC ± 5 %, max. 1.8 A
COMMUNICATION		
Interfaces	Ethernet, RS485	Ethernet, RS485
DIMENSIONS AND WEIGHT		
Dimensions (L x W x H)	316 x 212 x 83 mm	436 x 292 x 83 mm
Weight (approx.)	9 kg	10 kg

<sup>1)</sup> Lower/higher powers and power densities on request.

## Applications:



**System Description:** The BeamMonitor BM+ is a measuring device equipped with the latest electronics to perform laser beam diagnostics on unfocused and continuous wave lasers ranging from the visible spectrum up to the mid IR. **The essential beam parameters like beam position, beam dimensions, beam symmetry, and power density distribution can be measured quickly and reliably.**

**Your Benefit:** Well selected measuring tips and detectors that automatically adapt to the current power density will allow you to **measure a variety of different laser types and beam shapes**. Measuring rectangular beams used for heat treatment or other more individual beam shapes used in various different high power applications is possible. The powerful PRIMES LaserDiagnosticsSoftware LDS grants you a convenient operation and trusty measurement results.

## CONCLUSION

The BM+ measures the beam quality of unfocused, relatively big sized laser beams. It is a necessary tool for scientific research and industrial high-power laser measurement. Especially developed for the use in harsh industrial environments, the device can be adapted to all kinds of spacial conditions.

For further information please visit [www.primes.de/bm+](http://www.primes.de/bm+)

