FocusTracker

PRIMES

Fiber and disc laser

Diode laser

High frequency pulse laser

CO_2 laser

● 510 – 540 nm   ● 1000 – 1100 nm
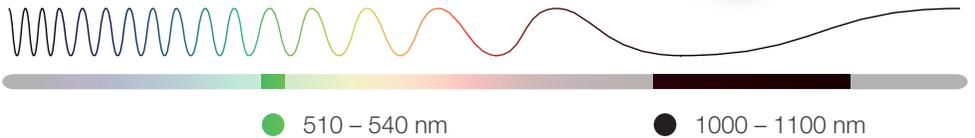
Determine the inherent focus shift of your process head in the most fast, easy and cost-effective way.

Caustic

Raw beam

Power

Beam profile

Pointing stability

Vector

Focus shift

POWER RANGE	< 1.0 mW – 12 kW
BEAM DIVERGENCE	30 – 120 mrad (full angle)
IRRADIATION TIME	Pulse > 50 ms up to cw
HIGHLIGHT	Up to 40 Hz time resolution
INTERFACES	Ethernet/PoE, Interlock

Tech Corner

The FocusTracker FT delivers the focus position with up to 40 Hz in real time. This enables deeper insight into the thermal behaviour of an optical setup than ever before. Due to increasingly narrow process-windows and highly sensitive components, like batteries or e-motors, it becomes more and more important to gain deep knowledge about the focus position at any time within the process.

The FocusTracker FT is aligned at 90° to the incoming beam. The main beam passes through the device. This allows maximum flexibility in terms of power and placement of the unit. A small portion of the laser is led into the device. The divergence of the beam is measured, allowing the exact position of the focus position to be calculated.
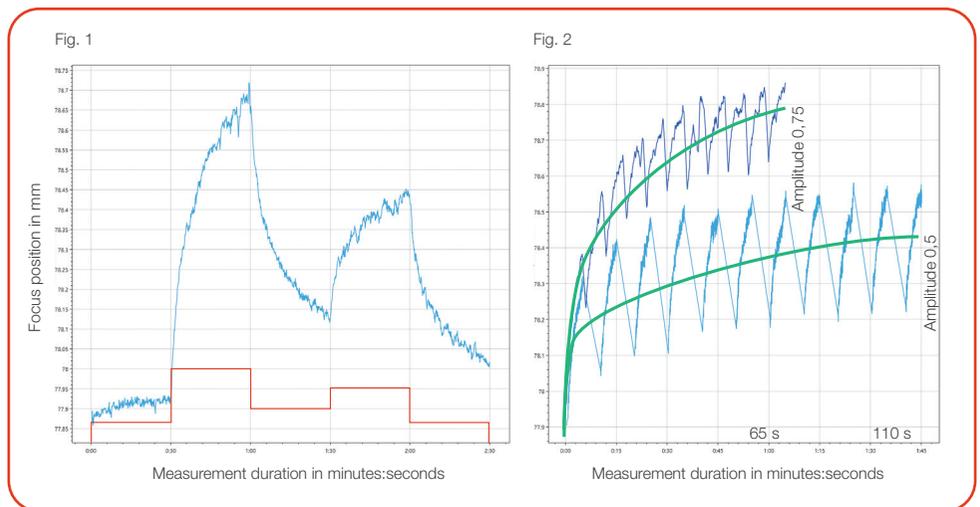
Fig 1 illustrates a dynamic process with changing power levels and the corresponding focus shift in this process. **Fig 2** shows the comparison of the same system but with different cooldown phases (5 s compared to 2 s) at 3 kW. Our LaserDiagnosticsSoftware LDS enables you to analyze the absolute focus shift (amplitude) as well as the three time constants (fast, medium and slow). Based on these values, the behaviour of an optical setup at different power levels or process parameters can be predicted. As a result, long test sessions with different beam sources and power levels can be shortened to a minimum.

Use the FocusTracker FT to choose the right parameters for your process – it has never been easier. By measuring regularly during production, you can also keep track of the focus shift to avoid quality losses and rejects. Irregularities in cooling or contamination of the optics can be detected and eliminated before they affect the part. The definition of limits in our innovative LaserDiagnosticsSoftware helps even infrequent users to fix a problem in the optical path before the process is affected.

MEASUREMENT PARAMETERS	FT NIR	FT GREEN
Power range	4 kW (air cooling) 12 kW (water cooling)	4 kW
Wavelength range	1 000 nm – 1 100 nm	~ 510 nm – 540 nm
Beam divergence	Depending on version, 30 mrad – 120 mrad	
Irradiation time (depending on laser power)	Depending on version, pulses > 50 ms to cw	
Nominal measuring frequency	Up to 40 Hz	
DETERMINED PARAMETERS		
Focus position z	yes	
Focus position x – y	yes	
DEVICE PARAMETERS		
Working range z	70 mm – 110 mm	
Working range x – y	2 mm x 2 mm	
Typical resolution	20 µm	
SUPPLY DATA		
Power supply	PoE Standard IEEE 802.3af-2003; Power class 3	

Only for devices with water cooling:
  Min. cooling water flow rate
  Cooling water pressure
	0.5 l/min
	2 – 4 bar	

COMMUNICATION		
Interfaces	Ethernet/PoE, Interlock	
DIMENSIONS AND WEIGHT		
Dimensions (L x W x H) (excluding connectors)	157 x 203 x 70 mm	
Weight (approx.)	3.2 kg	

Applications:

Laser manufacturer

Service

Automotive

Quality management

Additive Manufacturing

Research and development

Plant engineering

Automation
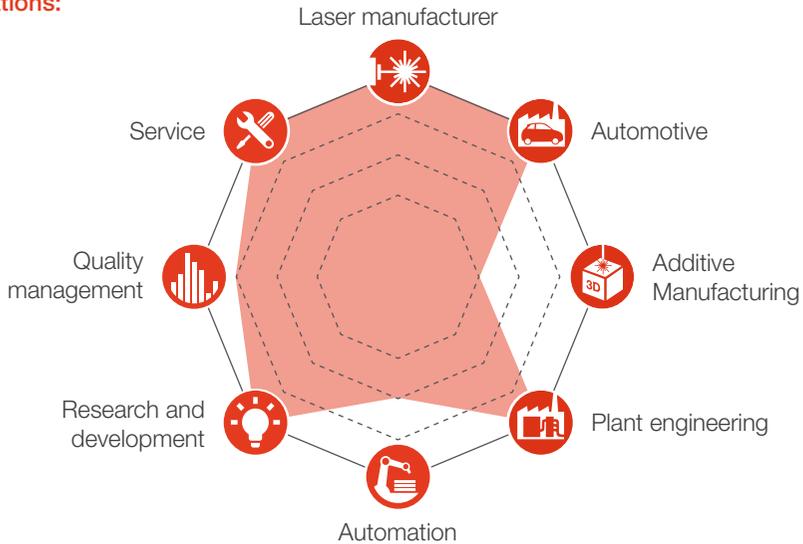
System description: The FocusTracker FT uses a novel measuring principle to measure the focus position in a fast and easy way. Time resolution is up to 40 Hz. The FocusTracker FT helps to better understand and monitor the thermal behavior of an optical setup at your process parameters. It is available as water- or air-cooled version, for both VIS or NIR wavelengths.

Your benefit: Learn more about your process and the inherent focus shift. Measure at your process parameters, CW and pulsed operation are possible. The FocusTracker FT can be very helpful to develop a process or optical setup. **Use it in your service for a quick and easy inspection and qualification of optical setups**. **Use it in your quality control** and integrate the device into a machine **to keep track of the performance of the optical setup.**

CONCLUSION

The FocusTracker FT is specifically developed to analyze the focus shift of your laser system. It is quick and easy to use while being versatile and capable of analyzing very high powers. The simple and robust design ensures longevity at a very reasonable price.

For further information please visit www.primes.de/ft