

M-Scope type HD/BL

NFP/FFP SIMULTANEOUS MEASUREMENT OPTICS FOR BLUE HIGH POWER LASER

NFP/FFP simultaneous measurement optics, customized especially for output ~10W class high power blue laser.

**M-Scope type HD** is the optics for simultaneous measurement of NFP and FFP for output 1~10W class high power blue lasers by single optical unit. After passing through the objective lens, the luminous flux emitted from the sample is 99.99% attenuated by two-stage beam sampler unit, and imaged on the detector. The optical system is equipped with an NFP measurement port and an FFP measurement port. Luminous flux incident on the optical system is branched to each measurement port. In this way, NFP measurement and FFP measurement can be performed simultaneously with a single optical system.



**[Features]**

- Simultaneous NFP and FFP measurement of high power blue laser by single optical unit
- Attenuation of incident beam with two-stage beam sampler and ND filters
- In combination with a coaxial epi-illumination, alignment by microscopic image is possible.
- High-performance NFP measurement system can be constructed by using Synos' optical beam analysis module AP013 together.

**[Optics selection]** \* Please contact us regarding the measurement wavelength.

- for 400-460nm **M-Scope type HF/BL**

**[Summary of specification]**

- Measurement method: Dedicated NFP/FFP simultaneous measurement optics & image processing
- Attenuation method: Approx. 99.99% attenuated by two-stage beam sampler, and ND filter (combined)
- Polarization dependent compensation: Compensated by 2-stage orthogonal arrangement of attenuation mirrors in beam sampler
- Target input power: Approx. ~10W
- Objective lens: 50× (fixed, NUV objective lens M-Plan Apo NUV 50×)
- N.A.: 0.42
- W.D.: Approx. 15mm
- Epi-illumination: Option
- Intermediate lens: 1×
- Camera mount: C mount

**[Available detector, field of view, measurement angle, pixel resolution]**

Detector	High resolution CMOS detector ISA071/ISA071GL			
Spectral range	400~1100nm			
Total pixels	2048×1536 pixels			
Pixels pitch	3.45μm sq.			
Objective lens	M-Plan Apo NUV 50×			
Meas. flux diameter	Approx. 0.1mm			
Measurement item	FFP (unit:degree)		NFP (unit:μm)	
Meas. angle/field of view/resolution	Meas. angle	Resolution	Field of view	Resolution
	Approx.±24°	Approx.0.037°	Approx. 140×100	Approx. 0.069

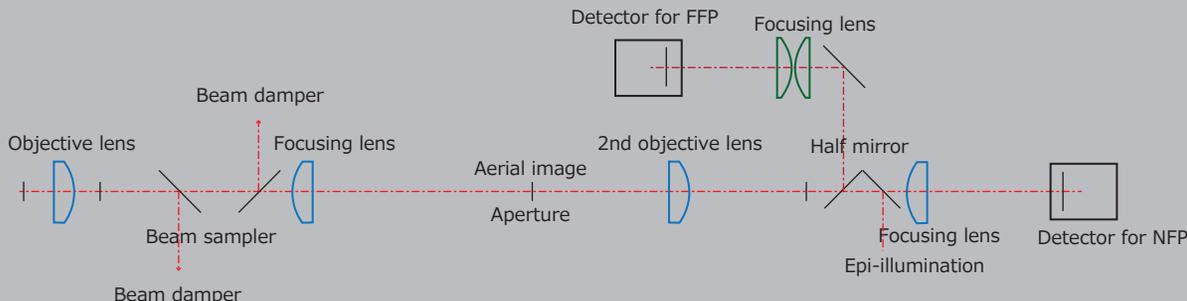
**[Option]**

- Objective lens (for NFP/image observation)
  - NUV objective lens M-Plan Apo NUV 50
- ● 2× intermediate lens port MS-OP016-RL2  
Intermediate lens unit that doubles the overall magnification of the optical system.
- ● 1/2× intermediate lens port MS-OP016-RLH  
Intermediate lens unit that halves the overall magnification of the optical system.
- ● Coaxial epi-illumination port MS-OP016-CEP  
Coaxial epi-illumination port with removable half mirror.
- Accessories for optics
  - Objective lens, ND filter, coaxial epi-illumination light source, etc.

**[Standard component]**

- Main optics: 1
- Optics base: 1

**Technical information [Simple structure of M-Scope type HD/BL]**



The light flux emitted from the sample is attenuated to approximately 99.99% by two beam samplers installed in the latter stage of 1st objective lens. The beam reflected by the beam sampler is absorbed by the beam damper installed in the optical system. The light flux that has passed through the beam sampler forms an aerial image through the imaging lens. After that, the light flux is split by the half mirror after the second objective lens, the transmitted light flux is relayed to the NFP detector, and the reflected light flux is relayed to the FFP detector. The image formed on the image detector for NFP/FFP is subjected to each NFP/FFP analysis by image processing analysis. An aperture can be inserted in the aerial image part in the middle of the optical path.