

## M-Scope type HS SOPHISTICATED OPTICAL BEAM NFP MEASUREMENT OPTICS FOR HIGH POWER LASER

Optical beam profile measurement optics, customized especially for output ~10W class high power laser.

**M-Scope type HS** is optics for beam profile measurement of output ~10W class high power lasers. After passing through the objective lens, the luminous flux from sample is 99.99% attenuated by two-stage beam sampler, and imaged on the detector.

### [Features]

- Attenuation of incident beam with two-stage beam sampler and ND filters
- Various objective lens can be selected (M-Plan Apo NUV/NIR series objective lens)
- 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 850-940nm **M-Scope type HS/NIR**
- for 400-450nm **M-Scope type HS/BL**

### [Summary of specification]

- Measurement method: dedicated 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: M-Plan Apo NUV, M-Plan Apo NIR
- Objective lens change: By manual revolver
- Intermediate lens: 1×
- Epi-illumination: Option
- Camera mount: C mount

### [Standard component]

- Main optics: 1
- Optics base: 1



### [Detector]

- Hi-resolution CMOS detector **ISA071/ISA071GL**, etc.

### [Option]

- Option for M-Scope type HS optics
  - 2× intermediate lens port **MS-OP016-RL2**  
Intermediate lens unit that doubles the overall magnification of the optical system. (up to 200× with 100× objective lens)
  - 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.
  - Dummy filters **MS-OP016-DF**  
wedge type dummy filters for pulse/low power measurement
- Accessories for optics
  - Objective lens, ND filter, coaxial epi-illumination light source, optics bench, etc.

## M-Scope type HL HIGH POWER LASER NFP MEASUREMENT OPTICS

Optical beam profile measurement optics, customized especially for high power laser.

**M-Scope type HL** is optimized especially for optical beam profile measurement of high power laser. Approximately 5% of the optical beam emitted from sample is reflected by beam sampler which is installed in front of objective lens. Reflected beam is introduced to imaging detector through NFP optics.

### [Features]

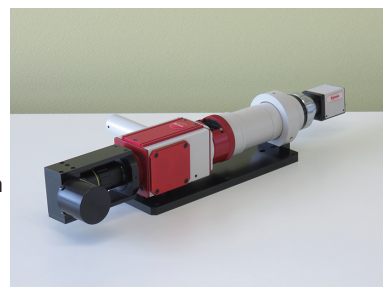
- Attenuation of incident beam with beam sampler before objective lens, and ND filter
- High-performance NFP measurement system can be constructed by using Synos' optical beam analysis module **AP013** together.
- Optical magnification is maximum 20x (option, 10x objective lens and 2x intermediate lens.)

### [Summary of specification]

- Measurement method: dedicated optics & image processing
- Attenuation method: Approx. 95% attenuated by beam sampler, and ND filter (combined)
- Measurement wavelength: Select one wavelength from the range of 400 nm to 1100 nm
- Target input power: Approx. ~10W
- Objective lens: M-plan 10x/N.A.0.28
- Intermediate lens: 1×
- Field of view: Approx. 706×529μm
- Pixels resolution: Approx. 0.345μm
- \* The value of field of view and pixel resolution is approximate value when using Hi-resolution CMOS detector **ISA071/ISA071GL**.
- Epi-illumination: Option
- Camera mount: C mount

### [Standard component]

- Main optics: 1
- Optics base: 1

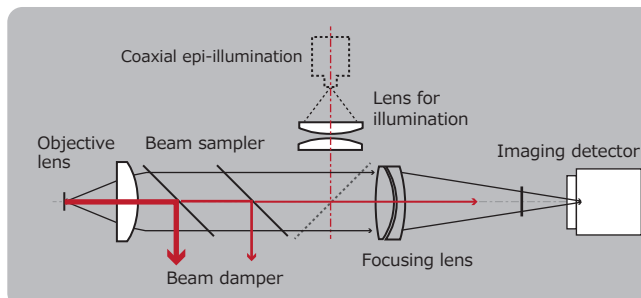


### [Detector]

- Hi-resolution CMOS detector **ISA071/ISA071GL**

### [Option]

- Option for M-Scope type HL optics
  - 2× intermediate lens port **MS-OP011-RL2**  
Intermediate lens unit that doubles the overall magnification of the optical system. (up to 20× with 10× objective lens)
  - 1/2× intermediate lens port **MS-OP011-RLH**  
Intermediate lens unit that halves the overall magnification of the optical system.
  - Coaxial epi-illumination port **MS-OP011-CEP**  
Coaxial epi-illumination port with removable half mirror.
- Accessories for optics
  - Objective lens, ND filter, coaxial epi-illumination light source, optics bench, etc.



### Technical information [Simple structure of M-Scope type HS]

The light flux emitted from the sample is attenuated to approximately 99.99% by two beam samplers installed in the latter stage of the objective lens. The beam reflected by the beam sampler is absorbed by the beam damper installed in the optical system. The beam that has passed through the beam sampler is further attenuated to an appropriate amount by ND filter and then introduced to image detector for image processing analysis.