

M-Scope type J SIMPLIFIED OPTICAL MEASUREMENT OPTICS

Synos' original and specially-designed multi-purpose optics for optical beam irradiation & detection, beam profile measurement.

M-Scope type J is a compact and simplified optical system designed to correspond with various requirements in optical measurement. **M-Scope type J** has two functional ports, optical fiber connect port and imaging detector port. It is available for multi purpose optical measurement application such as optical irradiation, optical beam observation and image observation at the same time. It is monocular type and compact optical unit, suitable for embedding in equipment.

[Features]

- Optical fiber connect port is equipped.
 - Optical beam irradiation: Pinpoint irradiation of measurement beam onto the target sample precisely and easily.
 - Light detection measurement: Pinpoint detection of measurement light from the target sample and relay to the optical fiber. Best for optical power measurement, wavelength measurement, optical alignment, etc.
- Imaging port for imaging detector is equipped.
 - Direct observation of beam irradiating and detecting position.
 - It is also possible to apply for NFP/beam profile measurement.
- Compact optical unit, suitable for embedding in equipment

[Summary of specifications]

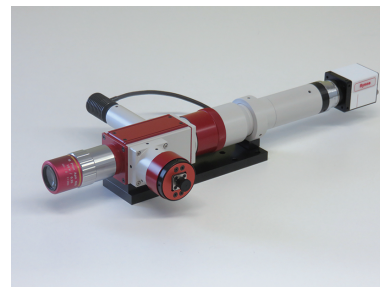
- Optical fiber connect port
 - Relay magnification: 1:1(when using 10x objective lens)
 - Irradiation and detection beam diameter:

Obj. lens	Irradiation and detection beam diameter
10× (std)	1:1 of core diameter of connected optical fiber
20×	1/2 of core diameter of connected optical fiber
50×	1/5 of core diameter of connected optical fiber

- Objective lens change: By re-mounting objective lens
- Objective lens: Mitsutoyo M-Plan Apo series
- Imaging port
 - Intermediate lens: 1×
 - Maximum optical magnification: 100× (100× objective lens)
- Epi-illumination port: Standard (Outer diameter: 8mmφ)
- Epi-illumination system: Option
- Attenuate: By neutral density filter
- Camera mount: C mount

[Standard component]

- Main optics: 1
 - Fiber connect port: 1
 - Imaging port (1×): 1
 - Epi-illumination port: 1
- Optics base: 1



[Available detectors selection]

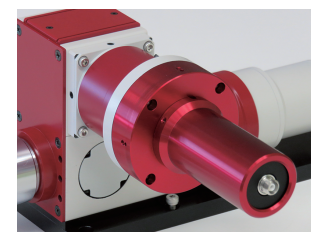
- for 400~1100nm: Hi-resolution CMOS detector **ISA071**, etc.
- for 950~1700nm: InGaAs NIR detector **ISA041H2**, etc.
- for 400~1700nm: InGaAs NIR derector **ISA041HRA**, etc.

[Option]

- Variable spot size converter unit **MS-OP012-VFPJ**
Fiber port that can continuously change irradiation and receiving diameters.

Obj. lens	Continuous variable range
10× (std)	1.11~3.33× of core diameter of connected optical fiber
20×	0.55~1.66× of core diameter of connected optical fiber
50×	0.22~0.66× of core diameter of connected optical fiber

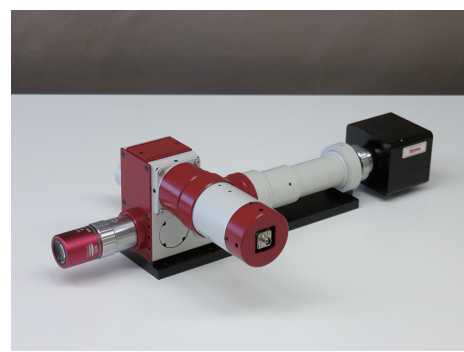
- Accessories
 - Objective lens, ND filter, coaxial epi-illumination system, optics bench, etc.



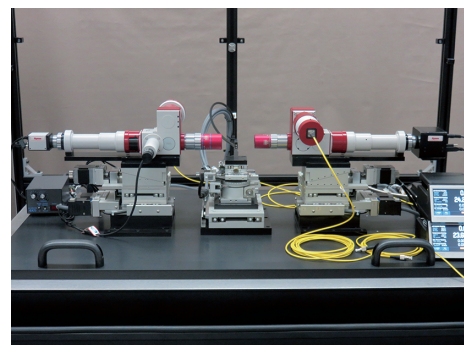
Variable spot size converter unit
MS-OP012-VFPJ

M-Scope type J/PF POLARIZATION COMPENSATION SIMPLIFIED OPTICAL MEASUREMENT OPTICS

Improves measurement stability by polarization compensation by arrangement of half mirror



○Polarization compensation simplified optical measurement optics **M-Scope type J/PF**
When using single mode optical fiber for introducing measurement light, polarization state may changes inside the single mode fiber due to the influence of stress such as bending applied to the optical fiber due to the influence of the external environment. For this reason, the measurement accuracy of the entire system may become unstable due to the polarization dependence of half mirror for splitter. **M-Scope type J/PF** is the optics that realizes stable and highly accurate measurement by removing the influence of polarization by arrangement of half mirror.



[Applied system of M-Scope type J/PF] Optical method insertion loss measurement system for micro structural waveguide device
This is the system for insertion loss measurement of micro structural waveguide device using **M-Scope type J/PF**. It realizes high-speed and accurate insertion loss measurement of micro structural waveguide such as silicon photonics waveguides. By combining optical fiber and coaxial observation imaging detector mounted on **M-Scope type J/PF**, and motorized stage system, you can directly observe input and output face and core of optical waveguide to be measured, and at the same time perform power alignment by optical fiber. By using coarse alignment by image processing and fine alignment by optical fiber (optical power alignment), insertion loss measurement of micro structural waveguide can be performed at high speed and high reproducibility.
☞About optical method insertion loss measurement system in detail, please refer to P30.