

M-Scope type D NFP & FFP SIMULTANEOUS MEASUREMENT OPTICS

Realize simultaneous observation and analysis of NFP and FFP by a single optical unit.

[Product overview]

M-Scope type D realizes simultaneous observation and analysis of NFP and FFP by a single optical unit. Previously, for measurement and analysis of NFP and FFP by optical method, dedicated two kinds of optics, NFP measurement optics and FFP measurement optics, are needed each. M-Scope type D realized simultaneous observation and analysis of NFP and FFP without changing optics by using specially designed single optical unit.

[Feature]

- * Simultaneous analysis of NFP (near field pattern) and FFP (far field pattern) by a single optical unit.
- * Realtime observation and analysis with special optics and image processing
- * By selecting detector, it will be applicable for optical beam profile observation and analysis from visible to NIR wavelength.
- * In combination with SYNOS' Optical beam analysis module AP013, it will be applicable to various optical beam profile analysis application.

[Summary of specification]**<NFP measurement port / function>**

- * Objective lens switching: Manual revolver (Mounting maximum 4 objective lenses)
- * Objective lens for NFP/FFP simultaneous measurement:
 - M-Plan Apo NIR 50x (fixed)
 - ☞ Various objective lens can be used only for NFP measurement
- * Intermediate lens: 1x (standard), 2x (option)
- * Total magnification for NFP/FFP simultaneous measurement:
 - Standard: 50x (with 50x objective lens)
 - Option: 100x (Using optional 2x intermediate magnification lens and objective lens with 50x)
- * Extinction method: Neutral Density Filter
- * Coaxial epi-illumination: Port : $\phi 8\text{mm}$ (external diameter) port for coaxial epi-illumination light unit
 - Option : Coaxial epi-illumination unit
- * Camera mount: C mount

<FFP measurement port / function>

- * Objective lens available: M-Plan Apo NIR 50x (fixed)
- * W.D. : approx. 17mm
- * Extinction method: Neutral Density Filter
- * Detector and angle coverage, resolution:
 - High resolution digital CCD detector **ISA011**
 - Wavelength: visible -1100nm
 - Angle coverage: approx. $\pm 24.5^\circ$
 - Pixel resolution: approx. 0.05°
 - InGaAs high sensitivity NIR detector **ISA041H2**
 - Wavelength: 950 - 1700nm
 - Angle coverage: approx. $\pm 24.5^\circ$
 - Pixel resolution: approx. 0.2°

Note) Pixel Resolution : calculated value, means angle value equivalent to 1pixel of image sensor.

[Standard component]

- * Main optics: 1unit
- * Optics base: 1

[Option]

- * Accessory
- **About accessory in details, please refer to P31-32.**

**M-Scope type E NFP & COLLIMATED BEAM SIMULTANEOUS MEASUREMENT OPTICS**

Realizes simultaneous observation and analysis of NFP and collimated beam by a single optical unit.

[Product overview]

M-Scope type E realizes simultaneous observation and analysis of NFP and collimated beam condition by a single optical unit without changing optics by using specially designed single optical unit. Best suited for position adjustment between optical beam and collimator lens in manufacturing process of various collimator module .

[Feature]

- * Realizes simultaneous analysis of NFP and collimated beam by a single optical unit.
- * Realtime observation and analysis with special optics and image processing
- * By selecting detector, it will be applicable for optical beam profile observation and analysis from visible to NIR wavelength range.
- * In combination with Synos' Optical beam analysis module AP013, it will be applicable to various optical beam profile analysis application.

[Summary of specification]**<NFP measurement port / function>**

- * Optical magnification: 2x
- * Extinction method: Neutral Density Filter
- * Camera mount: C mount

<Collimated beam measurement port / function>

- * W.D.: approx. 85mm
- * Extinction method: Neutral Density Filter
- * Detector and angle coverage, resolution:
 - High resolution digital CCD detector **ISA011**
 - Wavelength: visible -1100nm
 - View (NFP): approx. 3.2mm x 2.4mm
 - Angle coverage: approx. $1.23^\circ \times 0.92^\circ$
 - Pixel resolution: approx. 0.0018°
 - InGaAs high sensitivity NIR detector **ISA041H2**
 - Wavelength: 950 - 1700nm
 - View (NFP): approx. 3.2mm x 2.56mm
 - Angle coverage: approx. $1.22^\circ \times 0.97^\circ$
 - Pixel resolution: approx. 0.008°

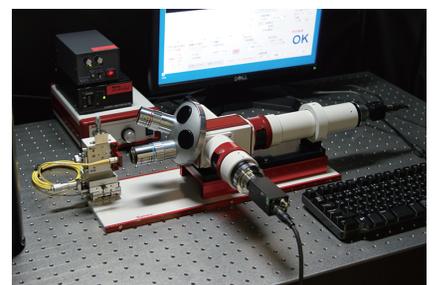
Note) Pixel Resolution : calculated value, means angle value equivalent to 1pixel of image sensor.

[Standard component]

- * Main optics: 1unit
- * Optics base: 1

[Option]

- * Accessory
- **About accessory in details, please refer to P31-32.**

**[Application of M-Scope type D, M-Scope type E]**

- * Lens position, angle alignment and evaluation of various visible - NIR LD module
- * Beam pattern and emitted beam angular evaluation of various LD, fiber, waveguide, etc.
- * Collimator and focusing lens alignment and evaluation of various butterfly package device and module
- * Evaluation of various waveguide of OPCB substrate
- * Optical characteristic analysis of various light emitted device, module, connector, etc.
- * Optical characteristic analysis of various optical fibers such as SMF, MFF, POF, etc.