

M-Scope type F FFP (FAR FIELD PATTERN) MEASUREMENT OPTICS

Far-field pattern measurement optics using optical method. Realtime measurement in combination with dedicated optics and image analysis.

M-Scope type F is specially-designed optics for optical method FFP (Far-Field Pattern) measurement. It is possible to analyze beam divergence angle distribution in real time.

[Features]

- Specially designed optics for real-time observation and analysis of FFP
- Long working distance design of approx. 6 mm.
- Possible to measure in 400nm to 1700nm wavelength range by selecting detector.
- High-performance FFP measurement system can be constructed by using Synos' optical beam analysis module **AP013** together.

[Optics selection]

- for 650~1700nm **M-Scope type F**
- for 400~650nm **M-Scope type F/BL**

[Summary of specifications]

- Measurement method: Dedicated f-θ optics & image processing
- Measurement light flux diameter: Approx. 1mmφ
- W.D.: Approx. 6mm±0.8mm
- Attenuate: By neutral density filter
- Camera mount: C mount

[Standard component]

- Main optics: 1
- Optics base: 1

[Available detectors selection]

- for 400~1100nm: Hi-resolution CMOS detector **ISA071**, **ISA071GL**
- for 950~1700nm: InGaAs NIR detector **ISA041H2**
- for 400~1700nm: InGaAs NIR derector **ISA041HRA**
- ☞Regarding the measurement angle coverage and pixel resolution during FFP measurement by the detector used, please refer to P50 [Detector selection and FFP measurement specifications]

[Option]

- Accessories for optics
- ND filter, optics bench, etc.

**M-Scope type FW WIDE AREA FFP (FAR FIELD PATTERN) MEASUREMENT OPTICS**

Far-field pattern measurement optics for measurable beam diameter 3mmφ. Applicable to the device with large light emitting area.

M-Scope type FW is specially-designed wide area type FFP optics with measurable luminous flux diameter of approx. 3mm φ.

[Features]

- Covers a wide range of measurement luminous flux diameters of approx. 3mmφ
- Wide measurement angle coverage of approx. ±43°
- Specially designed optics for real-time observation and analysis of FFP
- Long working distance of approx. 4mm
- High-performance FFP measurement system can be constructed by using Synos' optical beam analysis module **AP013** together.

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

- for 650~1700nm **M-Scope type FW**
- for 400~650nm **M-Scope type FW/BL**

[Summary of specifications]

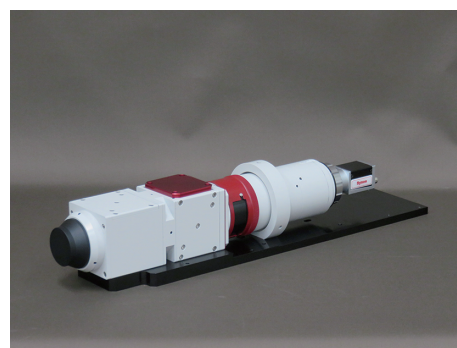
- Measurement method: Dedicated f-θ optics & image processing
- Measurement light flux diameter: Approx. 3mmφ
- W.D.: Approx. 4mm±0.4mm
- Attenuate: By neutral density filter (dedicated 35mmφ ND filter)
- Camera mount: C mount

[Standard component]

- Main optics: 1
- Optics base: 1

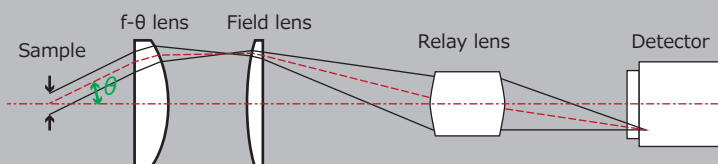
[Option]

- Accessories for optics
- ND filter (dedicated 35mmφ) , optics bench, etc.

**[Available detectors selection, measurement angle coverage, pixel resolution]**

Detector model	ISA061	ISA041VH
Detector name	1" Hi-resolution CMOS detector	VGA InGaAs high sensitivity NIR detector
Spectral range	400~1100nm	950~1700nm
Sensor size	1 inch	12.8mm×10.24mm
Total pixels	2048×2048	640×512
Pixels pitch	5.5μm	20μm
Measurement angle coverage	approx. ±43° / N.A. 0.68	approx. ±43°(H)×±40°(V)
Pixel angle resolution	approx. 0.05°	approx. 0.167°

*Pixel angle resolution: The measurement angle corresponding to 1 pixel of the detector, calculated from the measurement angle range and the pixel pitch of the detector.

☞Technical information [Principle of optical method (f-θ lens method) FFP measurement]

As shown in the figure on the left, the light flux, having incident angle θ from the sample, is focused at a point on the detector through f-θ lens, field lens and relay lens module. By this way, FFP image of the sample is formed and acquired by imaging detector, and analyzed directly and quickly by image processing method.