# Nikon Rayfact

Tochigi Nikon Industrial Lens

**TOCHIGI NIKON CORPORATION** 

Marketing Sec. Industrial Equipment Dept.

# Nikon Rayfact Series

### Features

- Rayfact 2x and 1x: successor models to Printing Nikkor Lenses.
- No lens aberration (0.0%) at the standard magnification ratio.
- $\bullet$  Guarantee high resolution and uniformity from the center to the edge of the lens.
- Anti-reflection coating applied to minimize lens surface reflection.
- Rayfact 2x and 1x: Apochromatic lens with the best chromatic aberration correction in the wide-range of 400-800nm.
- Rayfact 7x and 3.5x : Image size  $\,\phi\,64\text{mm}$  has a high relative illumination.
- Rayfact 7x : Bilateral telecentric lenses.
- · RoHS compliant.

## Applications

- Inspection by high resolution line sensor cameras.
- $\boldsymbol{\cdot}$  FPD inspection.
- Fine pattern inspection e.g. PCB.
- Printed materials inspection.
- Reproduction of color and monochrome film in the same size or scaling and data fetch.
- 35mm format : Enlargement of half format sliding and reduction copy.



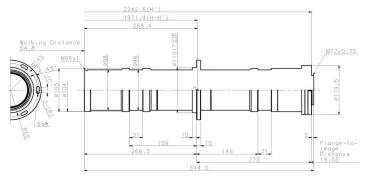


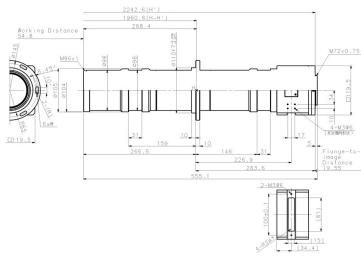
## **Specifications**

Model	OFM70350HN-TS	
Focal length	Both sides telecentric	
NA	0.35	
Magnification scale	−7.0x	
Reference wavelength	546.07nm(e-line)	
Wavelength range	510∼590nm	
Picture angle	_	
Image size	64mm $\phi$	
Object size	9.1 mm $\phi$	
Distortion	0.0%(at 64mm $\phi$ )	
Relative illumination	103% (at 64mm $\phi$ )	
Aperture scale	A fixed diaphragm	
Object-to-image distance	613.9mm	
Working distance	54.8mm	
Mount size	M72(P=0.75)	
Flange-to-image distance	19.55mm	
Back focus	81.17mm	
Attachment size	M96(P=1.0)	
Diameter/length	$145$ mm $\phi \times 544.5$ mm	
Weight	Approximately 7.4kg	
An option	_	

Model	OFM70350HN-TP	
Focal length	Both sides telecentric	
NA	0.35	
Magnification scale	−7.0x	
Reference wavelength	546.07nm(e-line)	
Wavelength range	510∼590nm	
Picture angle	_	
Image size	64mm $\phi$	
Object size	9.1mm $\phi$	
Distortion	0.0%(64mm)	
Relative illumination	103% (64mm)	
Aperture scale	Fixed diaphragm	
Object-to-image distance	624.5mm	
Working distance	54.8mm	
Mount size	M72(P=0.75)	
Flange-to-image distance	19.55mm	
Back focus	58.75mm	
Attachment size	M96(P=1.0)	
Diameter/length	145mm $\phi$ (partially $\square$ 119.5mm) $\times$ 555.1mm	
Weight	Approximately 8.9kg	
An option	_	

X Suitable for line sensor cameras.





- •Specifications unless any specific instructions are stated is at the standard magnification.
- •Specifications are subject to change without prior notice.



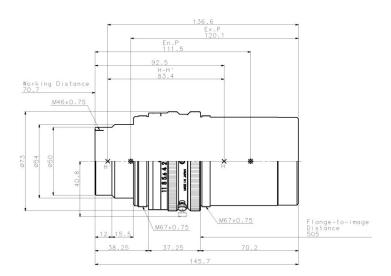


#### **Specifications**

Specifications		
Model	OFM35162MN	
Focal length	127.0mm	
F Number (∞)	F2.4	
NA (Diaphragm open)	0.162	
Magnification scale	−3.5x	
Reference wavelength	546.07nm(e-line)	
Wavelength range	400∼700nm	
Picture angle	5.7°	
Image size	64mm $\phi$	
Object size	18.3mm $\phi$	
Distortion	$0.0\%$ (at $64$ mm $\phi$ )	
Relative illumination	98%(at 64mm $\phi$ )	
Aperture scale	2.4,4,5.6,8,11	
	(9° interval $\%$ 1, 1/2 dials with a finger stop) $\%$ 2	
Object-to-image distance	651.3mm	
Working distance	70.8mm	
Mount size	M67(P=0.75)	
Flange-to-image distance	505.0mm	
Back focus	437.9mm	
Attachment size	M46(P=0.75)	
Diameter/length	73mm <i>φ</i> × 145.7mm <b>※</b> 3	
Weight	Approximately 1.1kg	
Option	Coaxial vertical tube	

Model	OFM24125MN	
Focal length	95.1mm	
F Number (∞)	F2.8	
NA (Diaphragm open)	0.125	
Magnification scale	−2.35x	
Reference wavelength	546.07nm(e-line)	
Wavelength range	400∼800nm	
Picture angle	11.4°	
Image size	64mm $\phi$	
Object size	27.24mm $\phi$	
Distortion	0.0%(at 64mm $\phi$ )	
Relative illumination	78.9%(at 64mm $\phi$ )	
Aperture scale	2.8,4,5.6,8,11	
	$(18^{\circ}$ interval, $1/2$ dials with a finger stop)	
Object-to-image distance	424.2mm	
Working distance	79.5mm	
Mount size	M45(P=0.75)	
Flange-to-image distance	254.5mm	
Back focus	255.4mm	
Attachment size		
Diameter/length	$57$ mm $\phi \times 94.2$ mm	
Weight	Approximately 420g	

- ※1 Aperture scale at 2.8 : Only lock-in position available. No numeric indication.
- $\divideontimes 2$  Lockable setting mechanism.
- 3 Dimension excludes protrusion of screws or other convex part.



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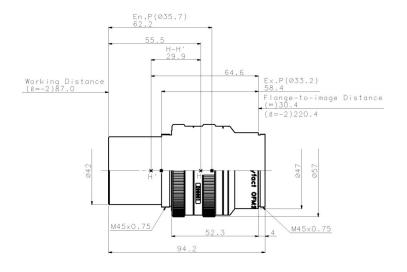




## **Specifications**

•		
Model	OFM20119MN	
	In use −2.0x	In use −0.5x
Focal length	95.0mm	
F Number (∞)	F2.8	
NA (Diaphragm open)	8.4 (at Standard magnification)	4.2 (at Standard magnification)
Magnification scale	-2.0x	−0.5x
Reference wavelength	546.07nn	n(e-line)
Wavelength range	400∼800nm	
Picture angle	12.8°	12.8°
Image size	64mm $\phi$	32mm $\phi$
Object size	32mm $\phi$	64mm $\phi$
Distortion	$0.0\%$ (at $64$ mm $\phi$ )	$0.0\%$ (at $32$ mm $\phi$ )
Relative illumination	74.6% (64mm $\phi$ )	$74.6\%$ ( $32$ mm $\phi$ )
Aperture scale	2.8,4,5.6,8,11 (18° interval, 1/2 dials with a finger stop)	
Object-to-image distance	397.6mm	
Working distance	87.0mm	212.4mm
Mount size	M45(P	=0.75)
Flange-to-image distance	220.4mm	124.9mm
Back focus	222.0mm	90.3mm
Attachment size	_	M43(P=0.5)
Diameter/length	$57$ mm $\phi \times 98.2$ mm	
Weight	Approximately 420g	

Model	L-OFM18113MN	
Focal length	100.2mm	
F Number (∞)	F2.8	
NA (Diaphragm open)	0.113	
Magnification scale	−1.75x	
Reference wavelength	546.07nm(e-line)	
Wavelength range	400∼800nm	
Picture angle	17.8°	
Image size	64mm $\phi$	
Object size	36.57mm $\phi$	
Distortion	0.1%(at 64mm $\phi$ )	
Relative illumination	65.2%(at 64mm $\phi$ )	
A marety was a sale	2.8,4,5.6,8,11	
Aperture scale	$(18^{\circ} $ interval, $1/2$ dials with a finger stop)	
Object-to-image distance	392.1mm	
Working distance	92.6mm	
Mount size	M45(P=0.75)	
Flange-to-image distance	203.2mm	
Back focus	200.4mm	
Attachment size	_	
Diameter/length	$57$ mm $\phi \times 100.3$ mm	
Weight	Approximately 430g	



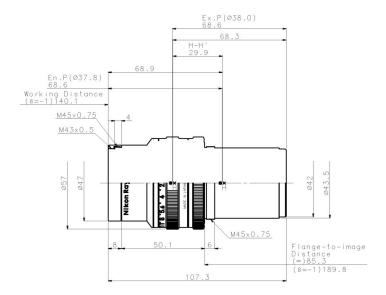
<sup>•</sup>Specifications unless any specific instructions are stated is at the standard magnification.

 $<sup>\</sup>mbox{-}\!\operatorname{Specifications}$  are subject to change without prior notice.

# NikonRayfact1x



Model	OFM10090MN	
Focal length	104.5mm	
F Number (∞)	F2.8	
NA (Diaphragm open)	0.089	
Magnification scale	-1.0x	
Reference wavelength	546.07nm(e-line)	
Wavelength range	400∼800nm	
Picture angle	16.3°	
Image size	60mm $\phi$	
Object size	$60$ mm $\phi$	
Distortion	$0.0\%$ (at $60$ mm $\phi$ )	
Relative illumination	62%(at 60mm $\phi$ )	
Aperture scale	2.8,4,5.6,8,11 (18° interval, 1/2 dials with a finger stop)	
Object-to-image distance	388.1mm	
Working distance	140.1mm	
Mount size	M45(P=0.75)	
Flange-to-image distance	189.8mm	
Back focus	147.7mm	
Attachment size	M43(P=0.5)	
Diameter/length	$57$ mm $\phi \times 107.3$ mm	
Weight	Approximately 400g	



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