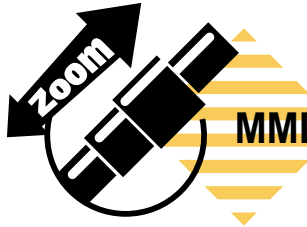


MML Zoom Lens Series



MML Zoom Lens Series



MML Zoom Lens Series



MML Zoom Lenses are high-performance lenses with integrated coaxial episcopic illumination designed based on telecentric optics. Multiple zooming, long working distance, and an integrated coaxial episcopic illumination system that covers the entire view allow for recognition of all types of objects. Manual type products and electric zoom type ones with a stepping motor are available.

Model explanation

ML-Z

Magnification

Illumination

Zooming method

Nothing: None Nothing: Manual

D: Coaxial

M: Electric motorized

High-resolution super low magnification motor zoom lens

ML-Z01515DM

Made to order

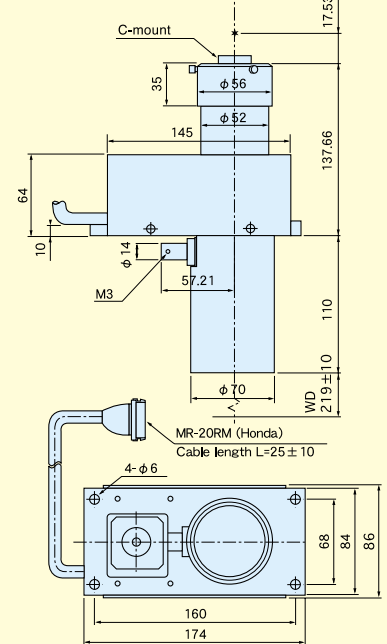
Telecentric



Features

- Magnification range: 0.15X to 1.5X (zoom ratio of 10:1)
- WD=219mm
- Includes integrated coaxial episcopic illumination system that covers the entire view.

ML-Z01515DM

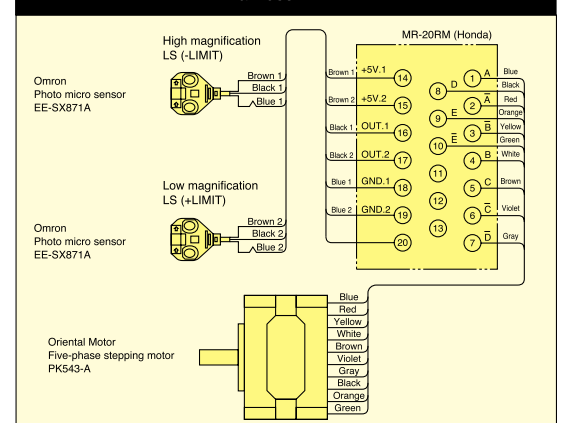


Item/model	ML-Z01515DM		
Optical magnification	0.15X to 1.5X (zoom ratio of 10:1)		
WD	219 \pm 10mm		
	at 0.15X	at 0.47X	at 1.5X
Effective FNO	6	9.9	16
Depth of field	21.3mm	3.5mm	0.6mm
Resolution	27 μ m	14 μ m	7.5 μ m
NA	0.01	0.02	0.05
TV distortion	-0.15% or less	-0.02% or less	+0.06% or less
Operation method	Electric motorized (pulse control) zoom		
Weight	About 1,900g		
Largest compatible camera	1/2"		
Mount	C-mount		

* Depth of field is calculated assuming a horizontal 320 TV resolution using a 1/2" CCD camera. (Permissible circle of confusion on the image-formation side: 40 μ m)

* Resolution indicates a theoretical resolution at a wavelength of 550nm.

ML-Z01515DM harness



High-resolution low magnification zoom lens

Telecentric

Manual type

ML-Z0220D

Electric motorized type

ML-Z0220DM

Features

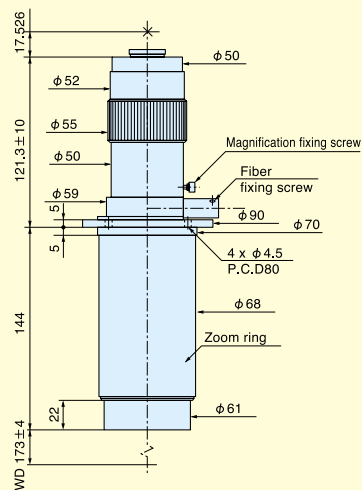
- Magnification range: 0.2X to 2X (zoom ratio of 10:1)
 - WD=173mm
 - Includes integrated coaxial episcopic illumination system that covers the entire view.
 - A special light is attached.
- Coaxial light guide (super random specification) L=800mm
Color filters (red, green) are attached.



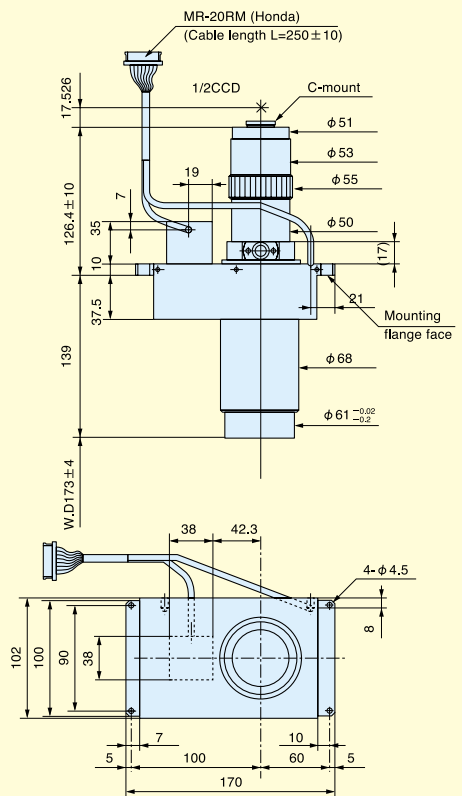
MML Zoom Lens Series



ML-Z0220D



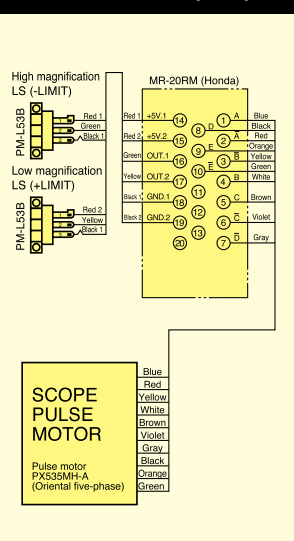
ML-Z0220DM



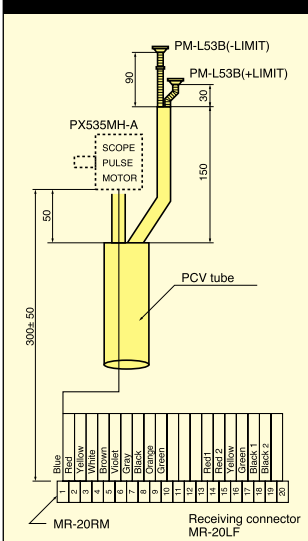
Item/model	ML-Z0220D		ML-Z0220DM	
Optical magnification	0.2X to 2X (zoom ratio of 10:1)			
WD	173± 4mm			
	at 0.2X	at 1X	at 2X	
Effective FNO	3.6	11.5	20	
Depth of field	7mm	0.9mm	0.4mm	
Resolution	12μm	7.8μm	7μm	
NA	0.03	0.04	0.05	
TV distortion	0.03% or less	0.15% or less	0.13% or less	
Operation method	Manual zoom		Electric motorized (pulse control) zoom	
Weight	About 1,100g		About 1,900g	
Largest compatible camera	1/2"			
Mount	C-mount			

* Depth of field is calculated assuming a horizontal 320 TV resolution using a 1/2" CCD camera.
(Permissible circle of confusion on the image-formation side: 40μm)
* Resolution indicates a theoretical resolution at a wavelength of 550nm.

ML-Z0220DM Wiring arrangement



ML-Z0220DM harness



* Contact us if you need a motor drive or controller.

ML-Z07545 Series

Telecentric

Functional, standard zoom lenses. Using optional adapter lenses can change the magnification range and working distance.

Features

- Magnification range: 0.75X to 4.5X (zoom ratio of 6:1)
- WD=90mm
- Integrated coaxial episcopic illumination system that covers the entire view.
- Focus adjustment function is mounted. (WD can be changed to -6mm.)

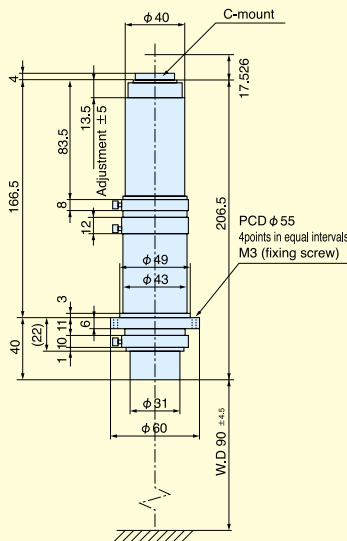


MML Zoom Lens Series



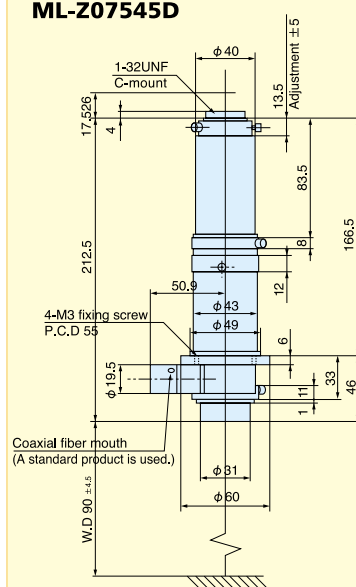
Manual zoom lens

ML-Z07545



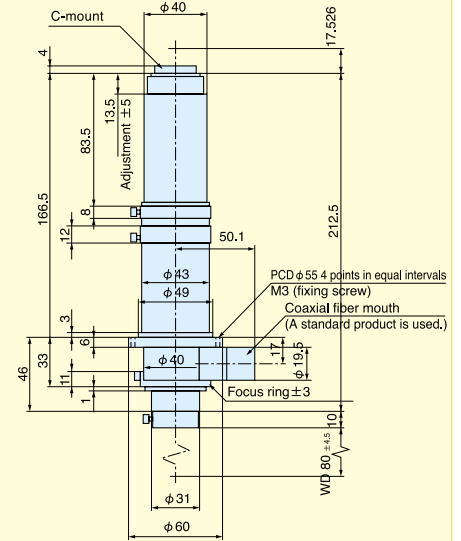
Coaxial episcopic zoom lens

ML-Z07545D



Coaxial episcopic zoom lens with polarizing function

ML-Z07545D-PL



Item/model	ML-Z07545	ML-Z07545D	ML-Z07545D-PL	ML-Z07545DM
Optical magnification	0.75X to 4.5X (zoom ratio of 6:1)			
WD	90± 4.5mm	80± 4.5mm	90± 4.5mm	
Focus adjustment	0 to -6mm			
	x 0.75	x 2		x 4.5
Effective FNO	11	16		28
Depth of field	1.6mm	0.3mm		0.1mm
Resolution	9.9μm	5.4μm		4.2μm
NA	0.03	0.06		0.08
TV distortion	0.02% or less	0.01% or less		-0.02% or less
Operation method	All models have focus, iris, and zoom. ML-Z07545D-PL contains an internal polarizing filter. ML-Z07545DM has an electric motorized zoom (pulse control).			
Weight	About 440g	About 470g	About 490g	About 1100g
Largest compatible camera	1/2"			
Mount	C-mount			

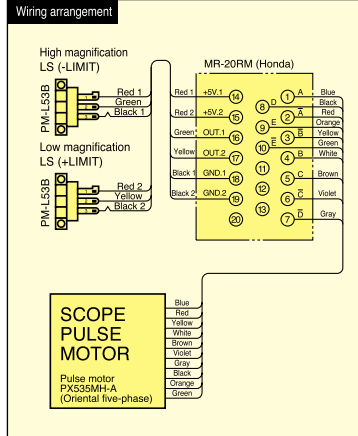
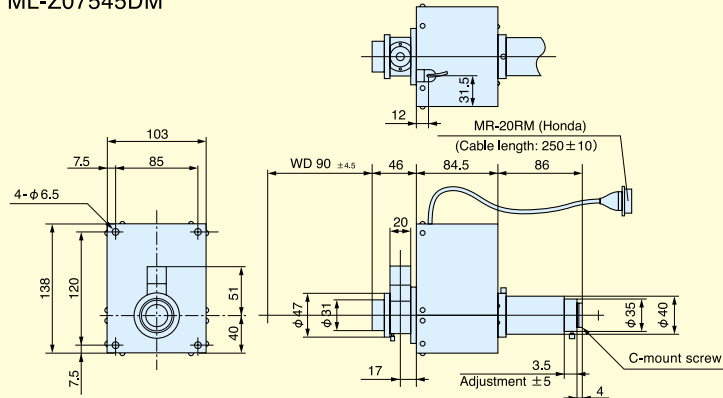
* Depth of field is calculated assuming a horizontal 320 TV resolution using a 1/2" CCD camera. (Permissible circle of confusion on the image-formation side: 40μm)

* Resolution indicates a theoretical resolution at a wavelength of 550nm.

* Effective FNO indicates a value when the iris is open.

Motor zoom lens

ML-Z07545DM



Options Sold separately

Proxar lens

ML-Z Series

Attach on the tip of a lens to change magnification and working distance.



Model	Focus position	ML-Z07545				ML-Z07545D/DM			
		MIN Magnification	MAX	WD	Matching	MIN Magnification	MAX	WD	Matching
ML-Z03	Near	x 0.24	to x 1.43	255mm	○	x 0.23	to x 1.4	263mm	▲ Coaxial illumination cannot cover the entire view.
	Middle	x 0.23	to x 1.36	283mm		x 0.22	to x 1.33	292mm	
	Far	x 0.21	to x 1.28	315mm		x 0.21	to x 1.25	325mm	
ML-Z04	Near	x 0.31	to x 1.87	195mm	○	x 0.31	to x 1.84	200mm	▲ Coaxial illumination cannot cover the entire view.
	Middle	x 0.3	to x 1.81	211mm		x 0.3	to x 1.81	216mm	
	Far	x 0.29	to x 1.72	229mm		x 0.29	to x 1.72	234mm	
ML-Z05	Near	x 0.38	to x 2.27	160mm	○	x 0.37	to x 2.25	163mm	▲ Coaxial illumination cannot cover the entire view.
	Middle	x 0.37	to x 2.24	170mm		x 0.37	to x 2.21	174mm	
	Far	x 0.36	to x 2.2	181mm		x 0.36	to x 2.17	185mm	
ML-Z07	Near	x 0.52	to x 3.17	114mm	○	x 0.52	to x 3.16	115mm	▲ Coaxial illumination cannot cover the entire view.
	Middle	x 0.53	to x 3.16	119mm		x 0.52	to x 3.16	121mm	
	Far	x 0.53	to x 3.17	125mm		x 0.52	to x 3.16	126mm	
ML-Z14	Near	x 1.03	to x 6.21	53.4mm	○	x 1.03	to x 6.21	53.8mm	○
	Middle	x 1.05	to x 6.33	54.7mm		x 1.06	to x 6.37	55.1mm	
	Far	x 1.08	to x 6.49	56.1mm		x 1.08	to x 6.49	56.5mm	
ML-Z20	Near	x 1.45	to x 8.77	32.1mm	○	x 1.46	to x 8.77	32.3mm	○
	Middle	x 1.49	to x 9.01	32.7mm		x 1.5	to x 9.09	32.9mm	
	Far	x 1.54	to x 9.26	33.4mm		x 1.54	to x 9.35	33.6mm	

*Magnification and working distance can be slightly changed by turning the focus adjuster ring (N←→F). Indicated values are based on calculation formulas. Actual measurement may be different because of tolerance. They cannot be mounted on ML-Z07545D-PL.

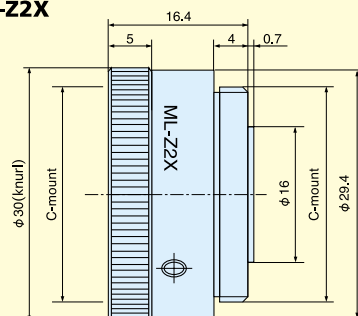
Rear converter lens

ML-Z2X

A specially designed 2X rear converter. Mounting this between a lens and CCD camera can double the magnification without changing working distance. *May decrease the resolution.



ML-Z2X



Telecentric

A manual click system allows for $\pm 0.5\%$ magnification repeatability. Magnification can be adjusted between five different levels.

- Magnification range: 0.3X to 1.5X (click one of five levels)
- WD=151.2mm
- Integrated coaxial episcopic illumination system that covers the entire view.



* Depth of field is calculated assuming a horizontal 320 TV resolution using a 1/2" CCD camera. (Permissible circle of confusion on the image-formation side: 40 μ m)
* Resolution indicates a theoretical resolution at a wavelength of 550nm.

