

Fixed Magnification Telecentric Lens

MML-HR Series

The MML-HR Series consists of highly versatile models that support mega pixel cameras with 1.3 million pixels or more (4.65 μ m/pixel).

The entire lineup features a high resolution and contrast design that realizes amazingly high image quality which cannot be shown by numbers alone. This series provides true imaging power in high end inspections and alignment applications.



- Supports mega pixel cameras, 1.3 million pixels or greater
- High resolution throughout the entire field of view
- High NA and contrast
- Most models compatible with 2/3" or smaller imaging sensors

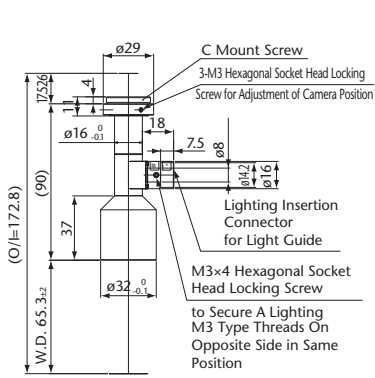
WD65mm

Model	Magnification	O/I	WD	Resolution	Depth of Field	NA	Effective FNo	TV Distortion	Largest Compatible Camera	Weight
MML05-HR65D	×0.5	172.8mm	65.3mm	12.8 μ m	3mm	0.026	9.5	-0.01% or less	2/3"	75g
MML08-HR65D	×0.8	172.3mm	65mm	8.4 μ m	1.2mm	0.04	9.9	0.02% or less	2/3"	64g
MML1-HR65D	×1	162.5mm	65mm	7.5 μ m	0.88mm	0.045	11	0.02% or less	2/3"	58g
MML1.5-HR65D	×1.5	157.2mm	65mm	5.4 μ m	0.42mm	0.063	12	-0.04% or less	1/2"	53g
MML2-HR65D	×2	162.6mm	65mm	4.5 μ m	0.27mm	0.074	13.5	0.02% or less	2/3"	52g
MML4-HR65D	×4	187.2mm	65mm	3 μ m	0.09mm	0.112	17.9	0.02% or less	2/3"	94g
MML6-HR65D	×6	202.1mm	65mm	3 μ m	0.06mm	0.112	26.7	0.01% or less	2/3"	102g
MML4-HR65D-VI	×4	187.2mm	65mm	3 μ m ~ 13.3 μ m	0.09mm ~ 0.53mm	0.112 ~ 0.025	17.9 ~ 79.2	0.02% or less	2/3"	95g
MML6-HR65D-VI	×6	202.1mm	65mm	3 μ m ~ 13.9 μ m	0.06mm ~ 0.58mm	0.112 ~ 0.024	26.7 ~ 124	0.01% or less	2/3"	102g

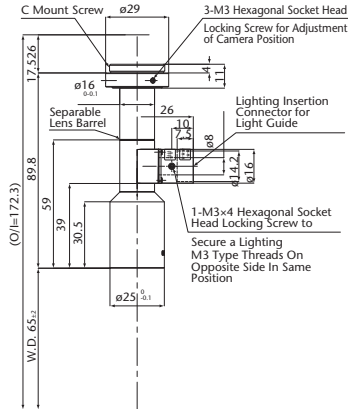
* Resolution values indicate the theoretical resolution at a wavelength of 550nm.

* Depth of field is calculated assuming a horizontal 240TV resolution using a 1/2 CCD camera. (Permissible circle of confusion on the image-formation side: 40 μ m)

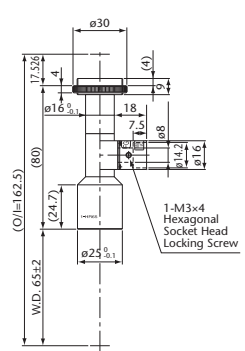
MML05-HR65D



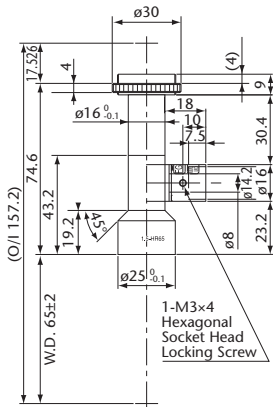
MML08-HR65D



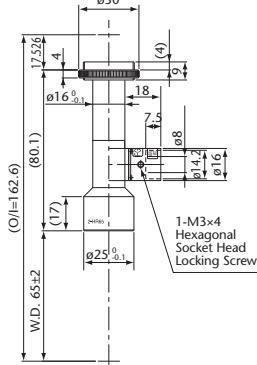
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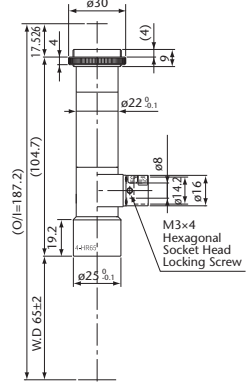
MML1.5-HR65D



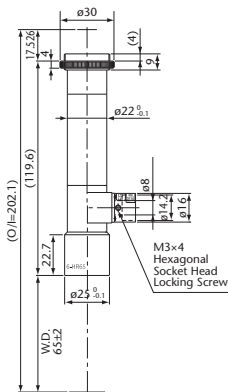
MML2-HR65D



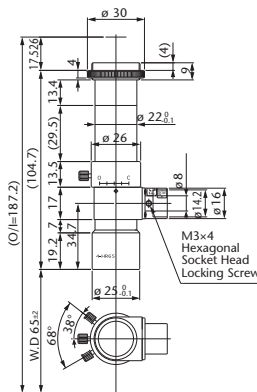
MML4-HR65D



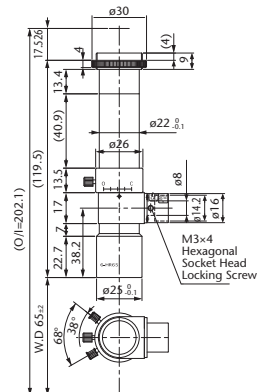
MML6-HR65D



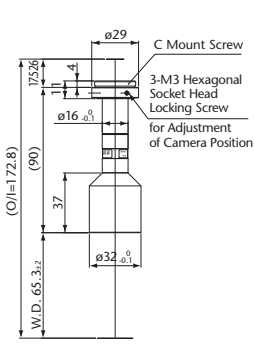
MML4-HR65D-VI



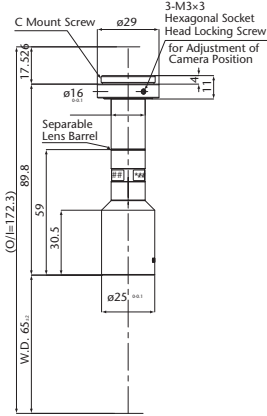
MML6-HR65D-VI



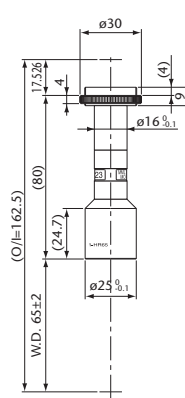
MML05-HR65



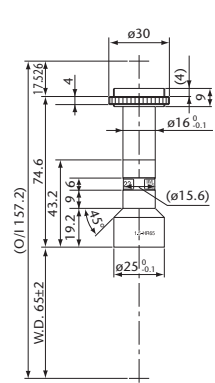
MML08-HR65



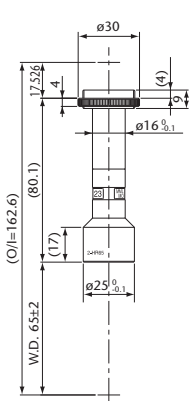
MML1-HR65



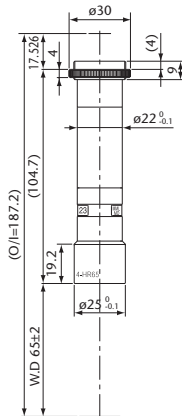
MML1.5-HR65



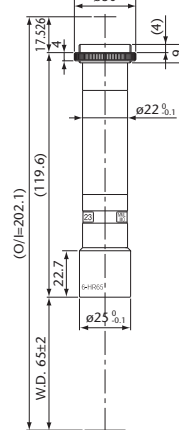
MML2-HR65



MML4-HR65



MML6-HR65



Model	Magnification	O/I	WD	Resolution	Depth of Field	NA	Effective FNo	TV Distortion	Largest Compatible Camera	Weight
MML05-HR65	×0.5	172.8mm	65.3mm	12.8µm	3mm	0.026	9.5	-0.01% or less	2/3"	70g
MML08-HR65	×0.8	172.3mm	65mm	8.4µm	1.2mm	0.04	9.9	0.02% or less	2/3"	60g
MML1-HR65	×1	162.5mm	65mm	7.5µm	0.88mm	0.045	11	0.02% or less	2/3"	50g
MML1.5-HR65	×1.5	157.2mm	65mm	5.4µm	0.42mm	0.063	12	-0.04% or less	1/2"	46g
MML2-HR65	×2	162.6mm	65mm	4.5µm	0.27mm	0.074	13.5	0.02% or less	2/3"	46g
MML4-HR65	×4	187.2mm	65mm	3µm	0.09mm	0.112	17.9	0.02% or less	2/3"	86g
MML6-HR65	×6	202.1mm	65mm	3µm	0.06mm	0.112	26.7	0.01% or less	2/3"	94g

* Resolution values indicate the theoretical resolution at a wavelength of 550nm.

* Depth of field is calculated assuming a horizontal 240TV resolution using a 1/2" CCD camera. (Permissible circle of confusion on the image-formation side: 40µm)



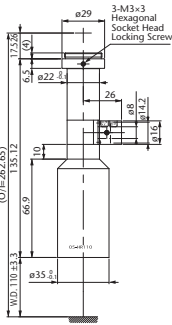
MML-PL25HR

Dedicated 90° prism for MML-HR. See page 48 for details.

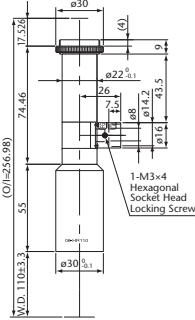
WD110mm



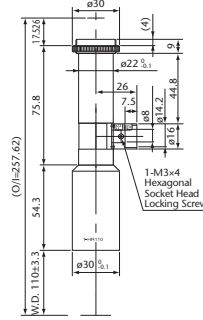
MML05-HR110D



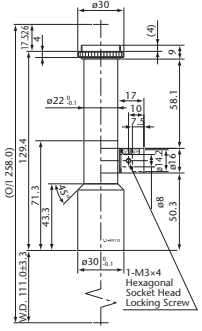
MML08-HR110D



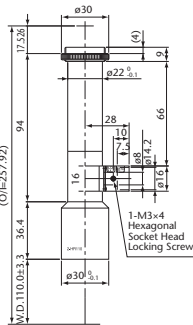
MML1-HR110D



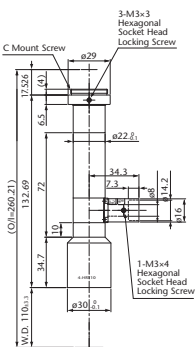
MML1.5-HR110D



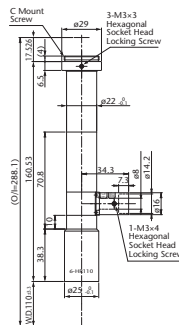
MML2-HR110D



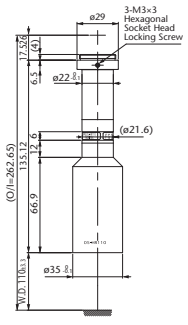
MML4-HR110D



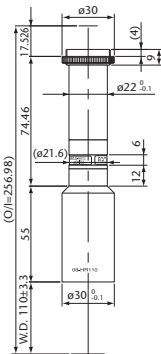
MML6-HR110D



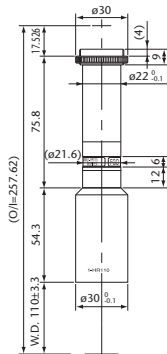
MML05-HR110



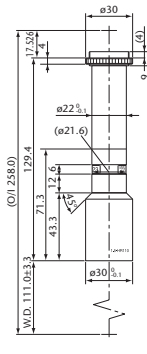
MML08-HR110



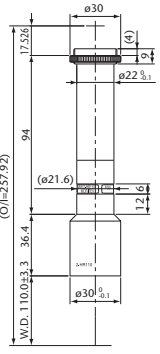
MML1-HR110



MML1.5-HR110



MML2-HR110



Model	Magnification	O/I	WD	Resolution	Depth of Field	NA	Effective FNo	TV Distortion	Largest Compatible Camera	Weight
MML05-HR110D	×0.5	262.6mm	110mm	12.8µm	3mm	0.026	9.5	0.02% or less	2/3"	142g
MML08-HR110D	×0.8	257mm	110mm	9.3µm	1.4mm	0.036	11	0.01% or less	2/3"	112g
MML1-HR110D	×1	257.6mm	110mm	7.4µm	0.88mm	0.045	11	0.01% or less	2/3"	115g
MML1.5-HR110D	×1.5	258mm	111mm	5.4µm	0.42mm	0.063	12	0.03% or less	2/3"	110g
MML2-HR110D	×2	257.9mm	110mm	4.5µm	0.27mm	0.074	13.5	0.02% or less	2/3"	110g
MML4-HR110D	×4	260.2mm	110mm	3.7µm	0.11mm	0.09	22.2	-0.01% or less	2/3"	125g
MML6-HR110D	×6	288.1mm	110mm	4.5µm	0.09mm	0.075	39.9	0.03% or less	2/3"	140g
MML05-HR110	×0.5	262.6mm	110mm	12.8µm	3mm	0.026	9.5	0.02% or less	2/3"	137g
MML08-HR110	×0.8	257mm	110mm	9.3µm	1.4mm	0.036	11	0.01% or less	2/3"	109g
MML1-HR110	×1	257.6mm	110mm	7.4µm	0.88mm	0.045	11	0.01% or less	2/3"	110g
MML1.5-HR110	×1.5	258mm	111mm	5.4µm	0.42mm	0.063	12	0.03% or less	2/3"	98g
MML2-HR110	×2	257.9mm	110mm	4.5µm	0.27mm	0.074	13.5	0.02% or less	2/3"	100g

* Resolution values indicate the theoretical resolution at a wavelength of 550nm.

* Depth of field is calculated assuming a horizontal 240TV resolution using a 1/2" CCD camera. (Permissible circle of confusion on the image-formation side: 40µm)

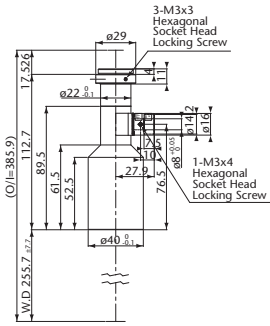
WD220mm NEW

Fixed Magnification Telecentric Lens

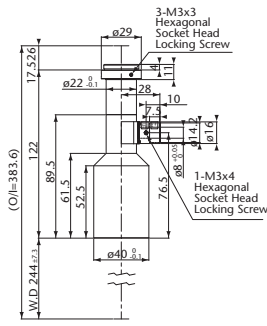
MML-HR Series



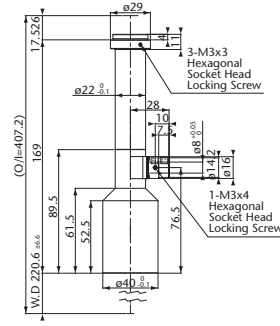
MML08-HR255D



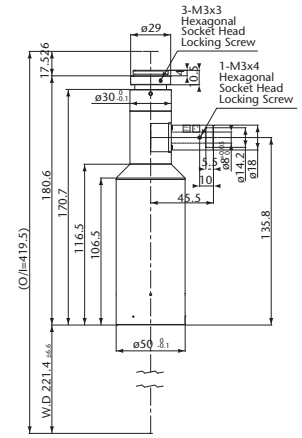
MML1-HR244D



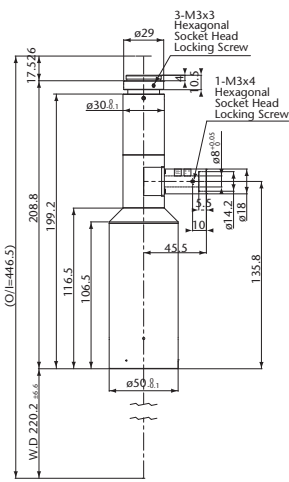
MML2-HR220D



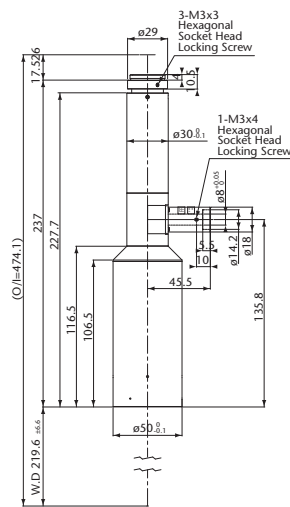
MML4-HR220D



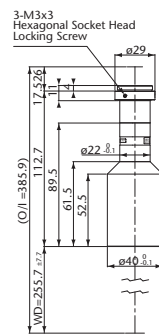
MML6-HR220D



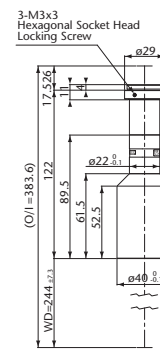
MML8-HR220D



MML08-HR255



MML1-HR244



Model	Magnification	O/I	WD	Resolution	Depth of Field	NA	Effective FNo	TV Distortion	Largest Compatible Camera	Weight
MML08-HR255D	×0.8	385.9mm	255.7mm	8.5μm	1.3mm	0.04	10.1	0.2% or less	2/3"	150g
MML1-HR244D	×1	383.6mm	244mm	8.4μm	1mm	0.04	12.6	0.1% or less	2/3"	155g
MML2-HR220D	×2	407.2mm	220.6mm	8.4μm	0.5mm	0.04	25	0.03% or less	2/3"	175g
MML4-HR220D	×4	419.5mm	221.4mm	4μm	0.12mm	0.08	24.3	0.04% or less	2/3"	490g
MML6-HR220D	×6	446.5mm	220.2mm	4μm	0.08mm	0.08	36.2	0.02% or less	2/3"	510g
MML8-HR220D	×8	474.1mm	219.6mm	4μm	0.06mm	0.08	48	0.01% or less	2/3"	530g
MML08-HR255	×0.8	385.9mm	255.7mm	8.5μm	1.3mm	0.04	10.1	0.2% or less	2/3"	145g
MML1-HR244	×1	383.6mm	244mm	8.4μm	1mm	0.04	12.6	0.1% or less	2/3"	150g

* Resolution values indicate the theoretical resolution at a wavelength of 550nm.
 * Depth of field is calculated assuming a horizontal 240TV resolution using a 1/2" CCD camera. (Permissible circle of confusion on the image-formation side: 40μm)