



LEICA SUPER ELMAR-M 1:3,4/21mm ASPH.



With the LEICA SUPER-ELMAR 21 mm f/3.4 ASPH., Leica is extending the range of M lenses in the super wide angle range with a model that combines outstanding reproduction with a compact design.

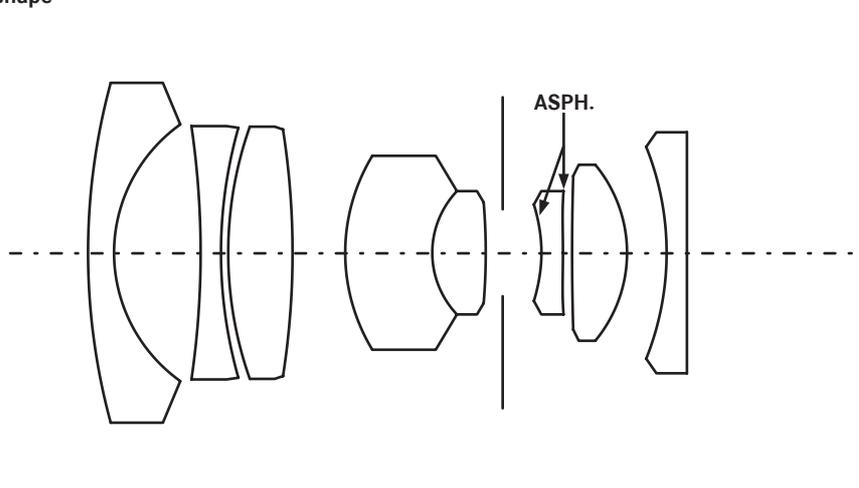
It delivers uniformly excellent reproduction quality over the entire field of view, with only a very slight deterioration at the edges in the close-up range. This performance can only be improved slightly by stopping down, which means that you can take photographs with full stop with no concerns, unless your compositional ideas call for a greater extension of the depth of field that can only be achieved with smaller apertures.

The vignetting characteristic of every optical system is more pronounced on a super wide-angle lens than on normal lenses and those with long focal lengths. At full stop in 35mm format it is a maximum, i.e. in the corners of the image, of around 2,1 stops, around 1,2 stops on Leica M8 models with their slightly smaller format. Stopping down to f/5.6 reduces this light falloff at the edge of the image - to 1.6 and 1.0 stops respectively. Stopping down further does not result in any further reduction as essentially only the natural vignetting remains. The maximum distortion of the lens of around 1.5 % is hardly perceptible.

The retrofocus-like construction is made up of a total of eight lens elements, and the use of a lens element with two aspherical surfaces and four lens elements made of glass types with anomalous color dispersion (partial dispersion) make a crucial contribution towards restricting aberrations to an absolute minimum.

Summary: The LEICA SUPER-ELMAR-M 21 mm f/3.4 ASPH. combines optimum reproduction with compact dimensions, offering all M users a wide range of options in the spontaneous super wide-angle photography that is typical of the Leica M.

— Lens shape



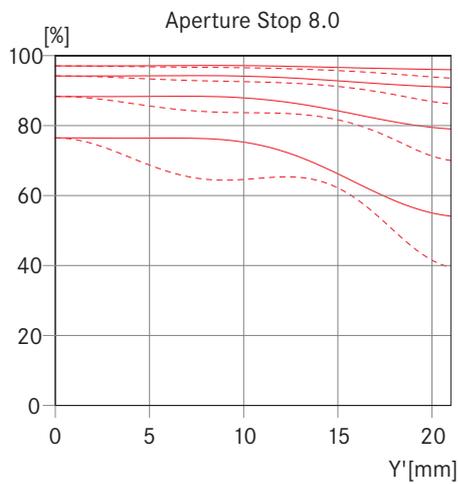
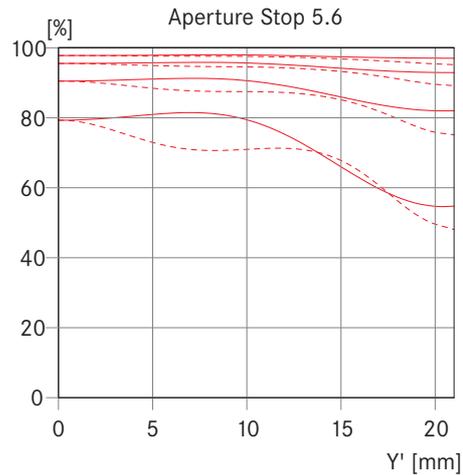
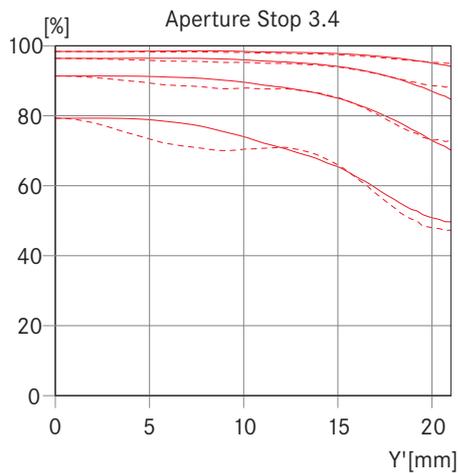


— Engineering drawing

Technical Data	
Angle of view (diagonal, horizontal, vertical)	for 35mm (24x36mm): 91°, 80°, 59° for M8 (18x27mm): 74°, 64°, 46° (Equivalent focal length : approx. 28mm)
Optical design	Number of lenses/groups: 8 / 7 Aspherical surface: 2 Position of entrance pupil: 15,6mm (related to the first lens surface in light direction)
Distance setting	Focus range: 0,7m - ∞ Scales: Combined meter/feet graduation Smallest object field: 706 mm x 1059 mm (35mm) / 530 mm x 795 mm (for M8) Largest reproduction ratio: 1:29,8
Aperture	Setting/Function: With click-stops, half values available, manual diaphragm Lowest value: 16
Bayonet	Leica M quick-change bayonet with 6 bit lens identification bar code for digital M models
Filter mount/Lens hood	Non-rotating Female thread for screw-on filters size E46 Male thread with stop for lens hood (included in delivery)
Dimension and weight	Length: ca. 43/55mm (with/without Lens hood) Largest diameter: approx. 53mm Weight: approx. 279g



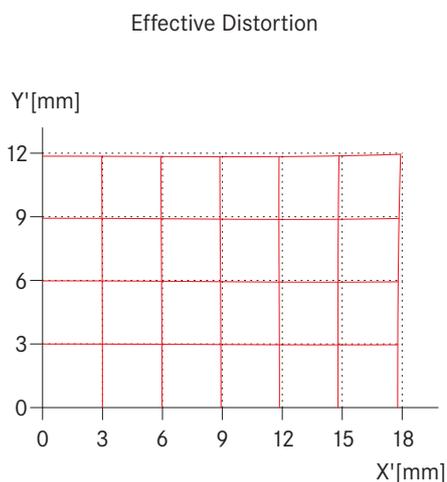
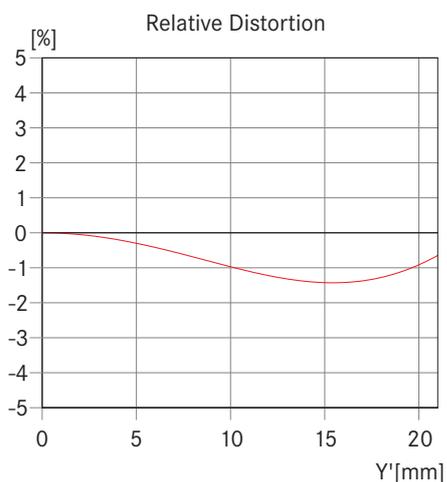
— MTF-graphs



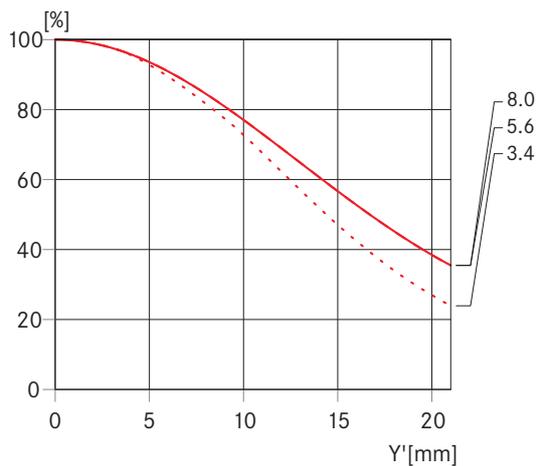
The MTF is indicated at full aperture, at aperture f/5,6 and at aperture f/8,0 at long taking distances (infinity). Shown is the contrast in percentage for 5, 10, 20 and 40 lp/mm across the height of the 35 mm film format, for tangential (dotted line) and sagittal (solid line) structures, in white light. The 5 and 10 lp/mm will give an indication regarding the contrast ratio for large object structures. The 20 and 40 lp/mm records the resolution of finer and finest object structures.

— sagittal structures
- - - tangential structures

— Distortion



— Vignetting



Distortion is the deviation of the real image height (in the picture) from the ideal image height. The relative distortion is the percentage deviation. The ideal image height results from the object height and the magnification. The image height of 21.6mm is the radial distance between the edge and the middle of the image field for the format 24mm x 36mm. The graph of the effective distortion illustrates the appearance of straight horizontal and vertical lines in the picture.

Vignetting is a continuous decrease of the illumination to the edges of the image field. The graph shows the percentage lost of illumination over the image height. 100% means no vignetting.



— Depth of field table

		Aperture Stop						Magnification
		3.4	4.0	5.6	8.0	11.0	16.0	
Distance Setting [m]	0.7	0.612 - 0.821	0.599 - 0.848	0.567 - 0.928	0.525 - 1.083	0.481 - 1.377	0.425 - 2.578	1/29.4
	0.8	0.685 - 0.967	0.668 - 1.004	0.628 - 1.121	0.576 - 1.362	0.523 - 1.878	0.455 - 5.359	1/34.1
	1	0.822 - 1.285	0.797 - 1.355	0.739 - 1.584	0.666 - 2.134	0.595 - 3.830	0.507 - ∞	1/43.5
	1.2	0.949 - 1.647	0.915 - 1.765	0.838 - 2.186	0.744 - 3.429	0.655 - 12.51	0.548 - ∞	1/52.8
	1.5	1.122 - 2.294	1.075 - 2.533	0.967 - 3.526	0.843 - 8.732	0.728 - ∞	0.596 - ∞	1/66.8
	2	1.372 - 3.774	1.301 - 4.486	1.144 - 9.113	0.971 - ∞	0.819 - ∞	0.654 - ∞	1/90.2
	3	1.765 - 10.64	1.647 - 19.57	1.400 - ∞	1.146 - ∞	0.937 - ∞	0.724 - ∞	1/136.9
	5	2.290 - ∞	2.093 - ∞	1.705 - ∞	1.338 - ∞	1.059 - ∞	0.792 - ∞	1/230.3
∞	4.136 - ∞	3.524 - ∞	2.532 - ∞	1.789 - ∞	1.316 - ∞	0.921 - ∞	1/∞	

