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New WA Lens for Digital Professional Photography

Apo-Sironar digital HR 28 mm f/4.5

The new Rodenstock Apo-Sironar digital HR 28 mm f/4.5 is an extremely powerful 101° wide-angle lens carefully optimized for the special demands of digital photography. It meets all expectations of professional photographers who need a shorter focal length for digital camera backs with a sensor size up to 37x49 mm for taking dynamic product shots, interior design, architectural, industrial or fashion photography.

Lens aberrations increase rapidly as the image angle increases, and the digital sensor responds to very large incident angles of short focal length lenses with increased light fall-off and often with color shift, too. Designing high-quality wide-angle lenses for digital photography is therefore a painstaking process.

However, with a complex optical design with 14 elements in 10 groups LINOS provides you with top performance – as is offered by all lenses of the Apo-Sironar digital HR series:

- Highest resolution close to the limit of diffraction.
- Due to an excellent chromatic correction color fringes remain far below the pixel size and thus remain invisible.
- Distortion is very low – below 0.7%.
- The angle of incidence at the corners of the sensor is much smaller than usual for an image angle of 101° in order to counteract the light fall-off and color fringes.
- In addition, image brightness at the margin is improved by an entrance pupil that increases with the angle of view in such a way that (except for full aperture f/4.5) the curve of the total fall-off in illumination, including vignetting, runs higher than the curve of the natural light fall-off according to the \cos^4 law.
- Finally, the flange focal length is equal to that of the Apo-Sironar digital HR 35 mm f/4 despite the shorter focal length!

In order to take advantage of the extremely high resolution optimized for the very small pixels of modern digital backs also when shooting on film or on sensors without protective glass, the optional 1.9 mm thick clear glass plate has to be screwed into the rear filter thread. The MTF curves given on the following page apply only to systems including such a glass plate.

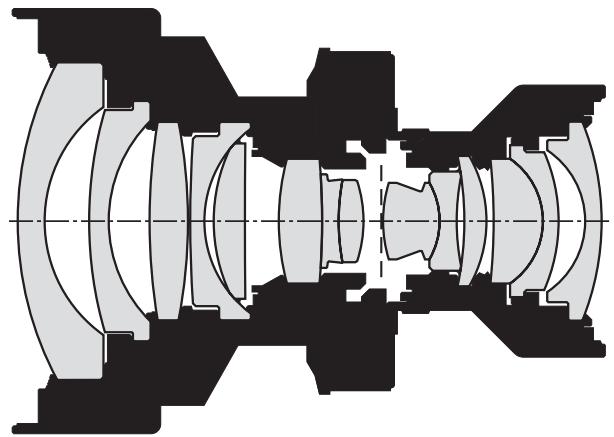
The Apo-Sironar digital HR 28 mm f/4.5 is also available in the Focus-Mount helical device (only with Copal 0 shutter).



Data sheets

► [Formats, dimensions, shutter data, image circles, movement ranges](#)

► [Performance data 28 mm f/4.5 mm](#)



Finally there is a non-compromise 28 mm wide-angle lens even for professional digital photography

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Apo-Sironar digital HR

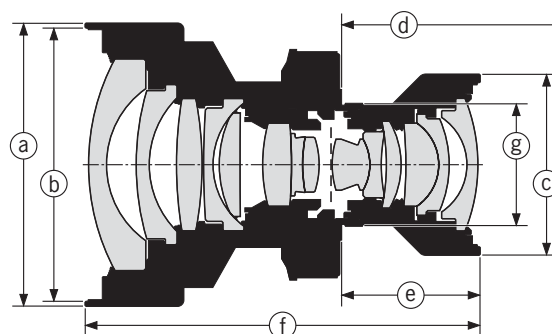
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Formats, shutter sizes, dimensions, weight

| Lens | Maximum recomm. sensor size | Shutter size | Push-on mount Ø (a) | Filter thread (b) | Rear barrel Ø (c) | Flange foc. length ¹⁾ (d) | Flange to lens end (e) | Overall length (f) | Weight with Copal |
|-------------------------|-----------------------------|--------------|---------------------|-------------------|-------------------|--------------------------------------|------------------------|--------------------|-------------------|
| New: 28 mm f/4.5 | 37×49 mm | 0 | 75 mm | M 72×0.75 | 48.0 mm | 53.1 mm | 36.7 mm | 105.5 mm | 830 g |
| 35 mm f/4 | 37×49 mm | 0 | 70 mm | M 67×0.75 | 48.0 mm | 53.5 mm | 29.2 mm | 80.4 mm | 480 g |
| 60 mm f/4 | 37×49 mm | 0 | 51 mm | M 49×0.75 | 42.0 mm | 64.3 mm | 24.0 mm | 57.6 mm | 240 g |
| 100 mm f/4 | 37×49 mm | 0 | 60 mm | M 58×0.75 | 42.0 mm | 98.8 mm | 22.1 mm | 73.4 mm | 370 g |
| 180 mm f/5.6 | 37×49 mm | 0 | 70 mm | M 67×0,75 | 60.0 mm | 177.4 mm | 40.6 mm | 90,3 mm | 425 g |

¹⁾ With Copal shutter for scale 1:∞

All lenses of the Apo-Sironar digital HR series are available not only with the shutters given in the following table, but also with a normal mount (with 39 mm Leica thread) or alternatively with the "Focus-Mount" helical focuser.



Focusing range and flange focal length with Focus-Mount

| Lens | Focusing range | Flange foc. length (d) | Max. flange to lens end (e) | |
|-------------------------|---------------------|------------------------|-----------------------------|---|
| New: 28 mm f/4.5 | ∞ – 0.3 m / 1.0 ft | 34.4 mm | 18.0 mm | Using digital lenses on cameras without bellows such as shift or panoramic cameras requires the use of a focusing facility. For this purpose, the Focus-Mount can be combined with all Rodenstock lenses in Copal shutter size 0. Existing lenses can be installed at a later date by the manufacturer. |
| 35 mm f/4 | ∞ – 0.4 m / 1.3 ft | 34.8 mm | 10.5 mm | |
| 60 mm f/4 | ∞ – 0.7 m / 2.0 ft | 45.6 mm | 5.3 mm | |
| 100 mm f/4 | ∞ – 1.8 m / 6.0 ft | 80.1 mm | 3.4 mm | |
| 180 mm f/5.6 | ∞ – 4.0 m / 13.0 ft | 158.7 mm | 21.9 mm | |

Shutter data

| Shutter type and size | Shutter speeds range | Manual cocking | Self cocking | Mechanical | Electronic | X-synchronized | Smallest f-stop increments | Screw thread (g) | Lens board opening | Lens board thickness | Accessories required |
|-----------------------|-----------------------|----------------|--------------|------------|------------|----------------|----------------------------|------------------|--------------------|----------------------|----------------------|
| Copal 0 | B, T, 1/500 s ... 1 s | • | • | • | • | • | | M 32.5×0.5 | 34.8 mm | 1.5 ... 4 mm | |
| Copal Press 0 | B, 1/125 s ... 1 s | | • | • | • | • | | M 32.5×0.5 | 34.8 mm | 1.5 ... 3 mm | |
| Prontor Magn. 0 | B, 1/125 s ... 32 s | | | | • | • | | M 32.5×0.5 | 34.8 mm | 1.5 ... 4 mm | Control Unit |
| Rollei Electron. 0 | B, 1/500 s ... 30 s | | | | • | • | 1/10 | M 39×0.75 | 41.8 mm | 1.5 ... 3 mm | Control Unit |
| Horseman ISS 0 | B, 1/125 s ... 32 s | | | | • | • | 1/10 | M 62×0.75 | 65.3 mm | 1.5 ... 5 mm | Control Unit |

Superior performance necessitated special glass types, sophisticated centering and assembling techniques as well as a centerable double rear lens mount.

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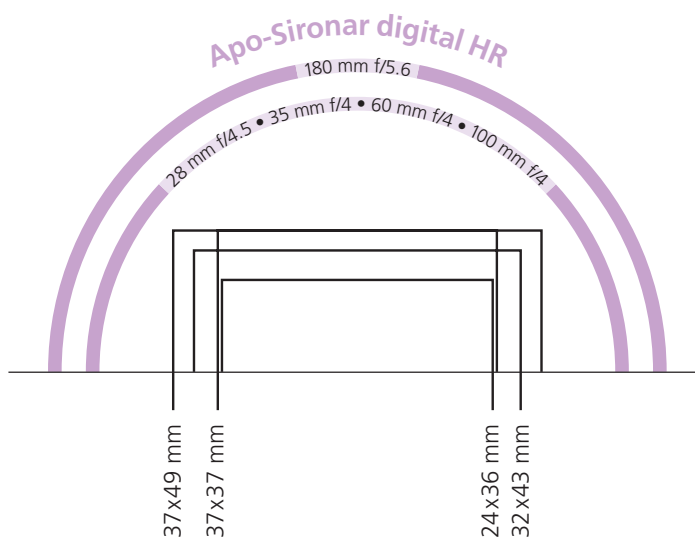
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Working apertures, image angles, image circles and movement ranges

| Lens | Ref. image scale | Recomm. working f-stop | Image angle | Image circle diameter | Movement range [mm] ²⁾ vertical/horizontal (landscape format) | | | |
|-------------------------|------------------|------------------------|-------------|-----------------------|--|----------------|---------------|--------------|
| | | | | | 24×36 mm | 37×37 mm | 32×43 mm | 37×49 mm |
| New: 28 mm f/4.5 | 1:∞ | 5.6-8 | 101° | 70 mm | 18 / 15 | 11 / 11 | 11 / 9 | 6 / 5 |
| 35 mm f/4 | 1:∞ | 5.6-8 | 90° | 70 mm | 18 / 15 | 11 / 11 | 11 / 9 | 6 / 5 |
| 60 mm f/4 | 1:∞ | 5.6-8 | 60° | 70 mm | 18 / 15 | 11 / 11 | 11 / 9 | 6 / 5 |
| 100 mm f/4 | 1:∞ | 5.6-8 | 39° | 70 mm | 18 / 15 | 11 / 11 | 11 / 9 | 6 / 5 |
| 180 mm f/5.6 | 1:∞ | 5.6-8 | 25° | 80 mm | 24 / 20 | 17 / 17 | 18 / 15 | 13 / 11 |

²⁾ These values apply to the recommended working aperture at the given scale; with increasing scale image circle and movement ranges increase

Image circles (original size)

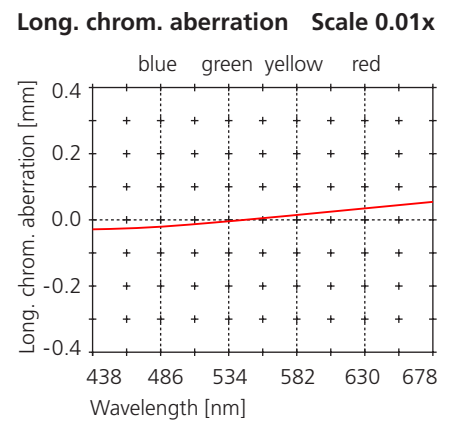
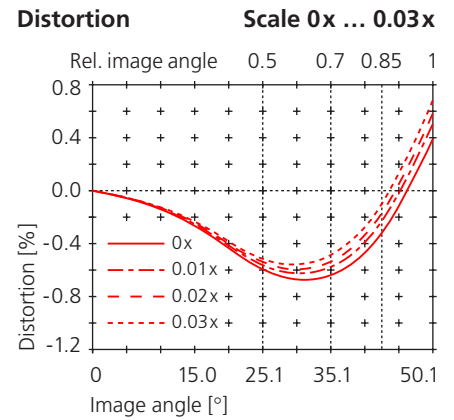
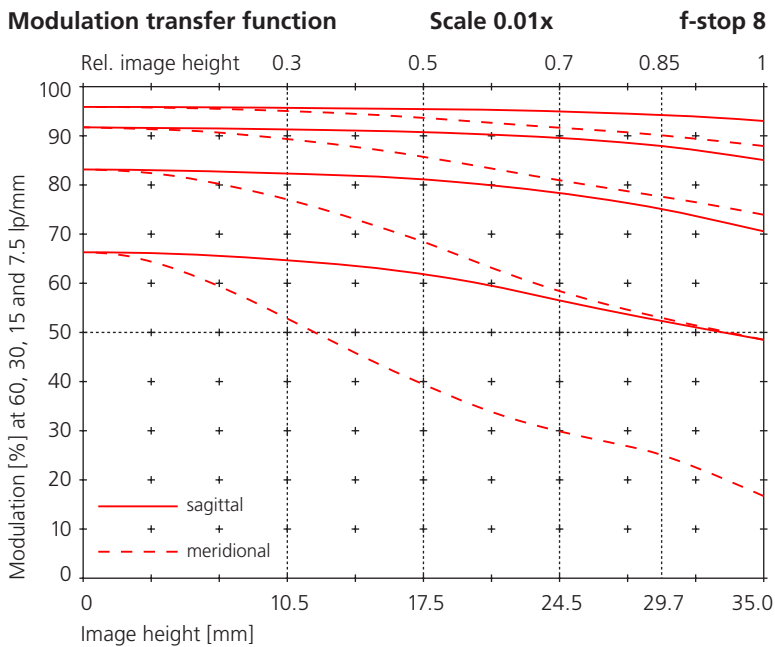
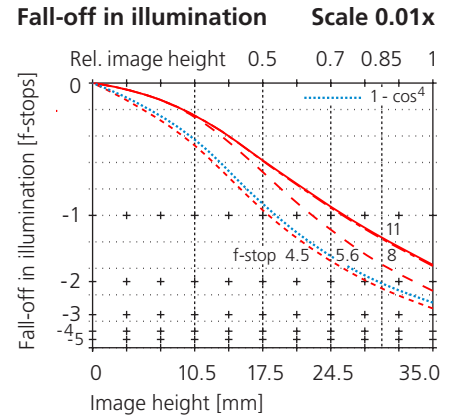
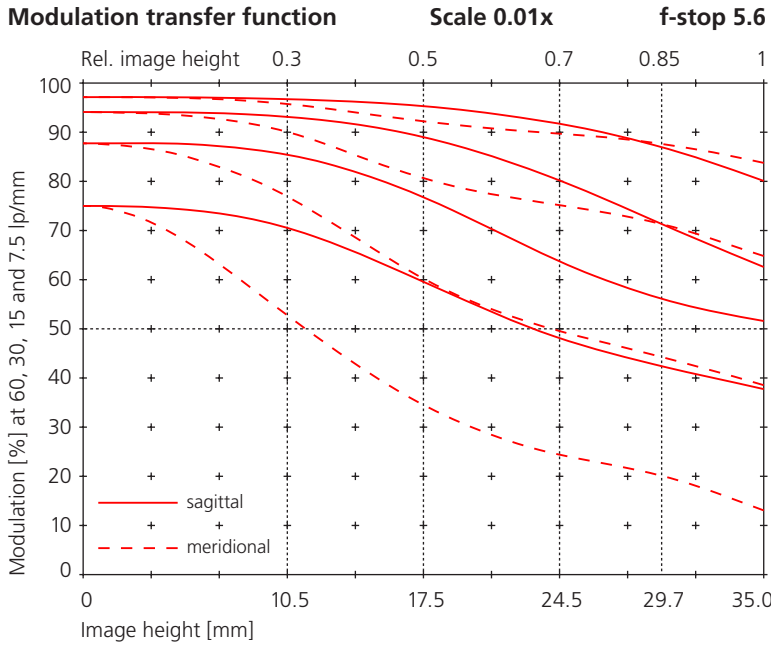


With its unbeatable large image angle of 101°, the new Rodenstock lens Apo-Sironar digital HR 28 mm f/4.5 allows camera movements even with the largest sensors

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All spatial frequencies [line pairs/mm],
image heights [mm] and scales
are related to the film or sensor side