QIOPTIQ
Photonics for Innovation
An Excelitas Technologies Company

d.fine HR Lenses

Extreme High Resolution
Inspection Lenses for Large Sensors

d.fine HR Lenses

Optimized for a magnification of 3.33X, the d.fine HR 2.4/128 lens delivers unparalleled imaging performance, achieving object side resolution of up to 300 lp/mm across image circle diameters as large as 82mm. With modular accessories, the d.fine HR 2.4/128 enables dual-support for both 12k/16k line sensors and large format area sensors, providing the versatility to handle countless imaging tasks. An aperture of 2.4 combined with an extremely low distortion of 0.1% make the d.fine HR 2.4/128 the perfect choice for the most demanding high throughput imaging applications.

Features

- Resolution up to 300 lp/mm (object side)
- Optimal for 12k and 16k line sensors and coaxial illumination
- As well suitable for large area sensors such as 150 MP
- Optimized for visible spectrum
- Small chromatic focal shift

Technical Data

- Focal length 128 mm
- Aperture 2.4 … 8
- Magnification: -3.33 (-3.2 … -3.5)
- Large image circle of 82 mm
- Total track length 694 mm (680 ... 715 mm)
- Working distance
  with prism module 59.9 mm (58 ... 61.4 mm)
  with area scan module 91 mm (89.2 ... 92.5 mm)
- Spectral range: 400 ... 750 nm
- Distortion < 0.1% (design value)
- V-Groove Ø 66 mm mounting interface
- Filter threads available

Typical Inspection Tasks Electronic Manufacturing

- FPD
- OLED
- PCB
- Flip Chip
- Semiconductor

High Resolution Inspection Lens d.fine HR 2.4/128

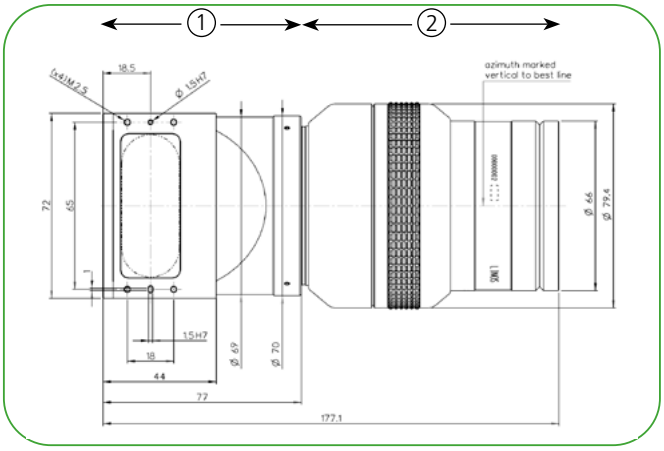
Product	Focal length (mm)	F-number	Magnification range	Image Circle (mm)	Interface	Part No.
d.fine HR 2.4/128*	128	2.4	3.2 ... 3.5	82	V-groove	0703-134-000-20

*d.fine HR 2.4/128 lens must be combined with either d.fine HR prism module or d.fine HR area scan module for proper operation

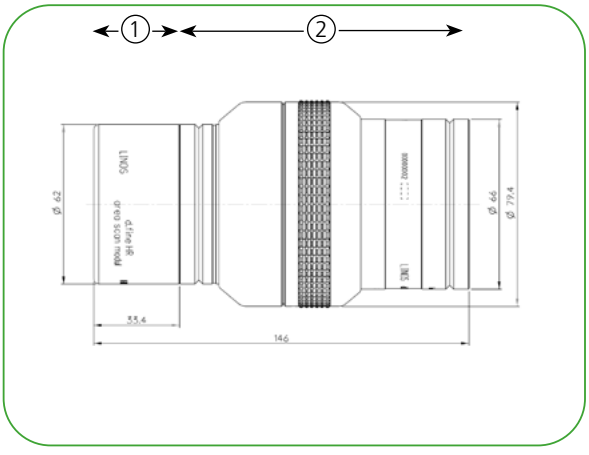
The d.fine HR 2.4/128 3.33x lens is a perfect match for modern, high resolution cameras supporting 3.5 and 5 µm pixel sensors. In line scan applications, the prism module accessory enables the addition of coaxial illumination alongside high performance imaging. For area scan applications, the compensating area scan module is compatible with the same lens. Mechanical focusing tubes are readily available to adapt the d.fine HR lens to M72, M90 or M95 camera mounts. The precision-engineered focusing tubes provide fast coarse alignment as well as exact fine tuning of the lens' focal position.

d.fine HR Essential Accessories

Product	Part No.
d.fine HR prism module	0703-130-823-00
d.fine HR area scan module	0703-130-825-00



1 d.fine HR prism module 2 d.fine HR 2.4/128 3.33x

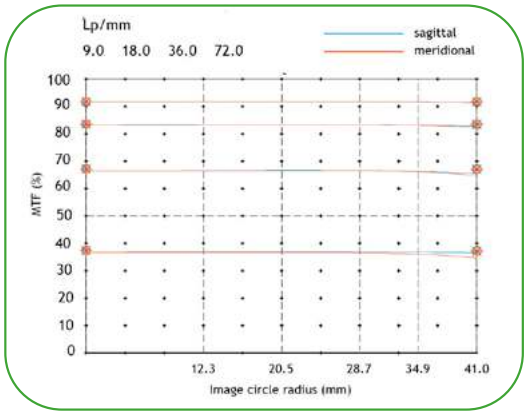


1 d.fine HR area scan module 2 d.fine HR 2.4/128 3.33x

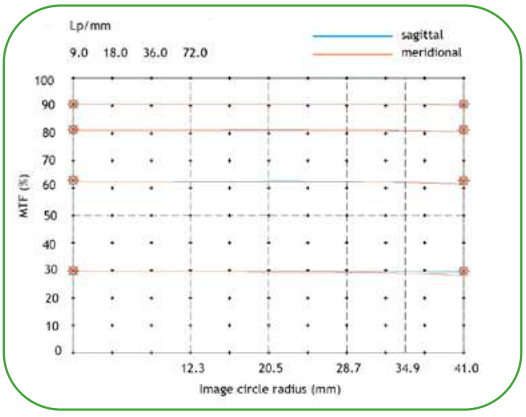
d.fine HR Focus Tubes

Camera mount	Part No.
d.fine HR focus tube M95x1	2408-012-000 -50
d.fine HR focus tube M90x1	2408-012-000 -51
d.fine HR focus tube M72x0.75	2408-012-000 -52

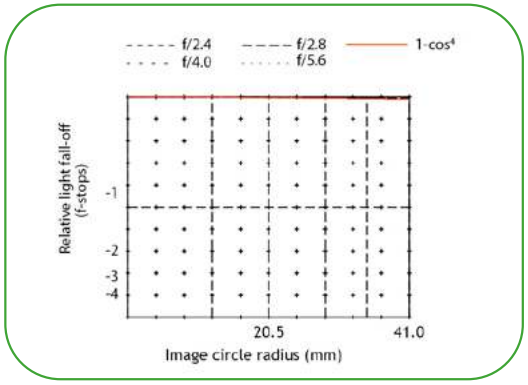
d.fine HR 2.4/128 Imaging Quality



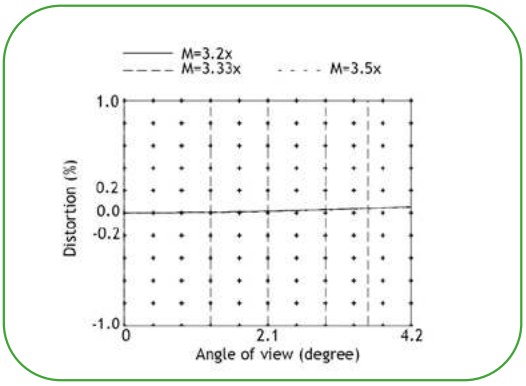
MTF at ratio 3.33 f/2.4



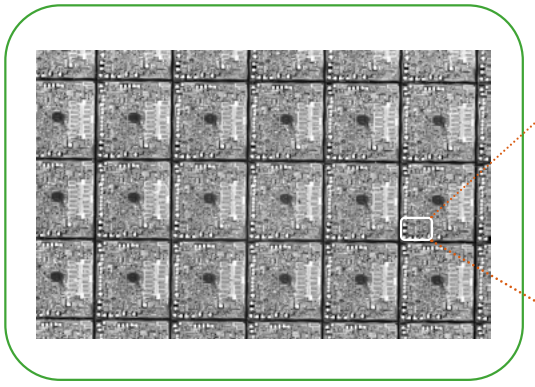
MTF at ratio 3.33 f/2.8



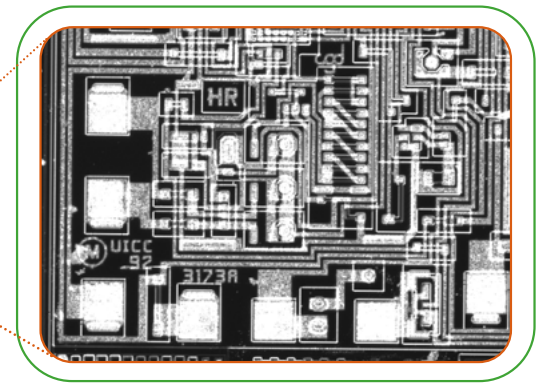
Relative light fall off at ratio 3.33



Distortion at ratio 3.2x to 3.5x



Circuits on silicon wafer grabbed with d.fine HR 3.33x lens + area scan module and a 86 MP camera



Detail of the same picture shows premium resolution quality of d.fine HR 3.33x lens

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