# Schneider-Kreuznach

# Industrial lenses and filters for highest quality built to last !


Schneider KREUZNACH

Photo: NASA Mission Hubble

# Schneider-Kreuznach

Jos. Schneider Optische Werke GmbH is a worldwide recognized manufacturer of high-performance lenses and filters as well as optical and mechanical components for industrial applications. The headquarters are located in Bad Kreuznach/Germany with subsidiaries in Germany, Asia and the US.
More than 100 years of experience in optical design and manufacturing with modern production processes enable Schneider-Kreuznach to offer top-quality products. Furthermore the competent expert consultation and support contribute to our customer's success.

The core competences of Schneider-Kreuznach are:

- Optical and mechanical design
- Modern optical manufacturing incl. aspherical and cylindrical optics
- Precision engineering
- Application know-how
- Hard filter coatings

The standard product range includes:

- C-mount lenses
- Compact lenses
- Lenses for large sensors
- Industrial filters
- LED illumination

Schneider-Kreuznach also provides customized solutions for OEM projects. The understanding of our customer's demands and the in-depth expert knowledge lead to excellent opto-mechanical systems.

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# Industrial Lenses

Jos. Schneider Optische Werke GmbH designs, manufactures and markets optical and precision components and assemblies for machine vision and other image processing applications. Our high-quality, robust optical solutions for image processing help system integrators and machine manufacturers improve their image processing systems. In addition to our standard product range Schneider-Kreuznach offers customized solutions. A large number of technical applications require highly specialized lenses. Schneider-Kreuznach customized lenses provide tailored solutions for a wide range of applications, for example image capturing and projection.

## Compact Lenses

The 2/3" compact lenses are corrected and broadband coated for the spectral range of 400-1000nm (VIS+NIR) and intended for sensors of 3 megapixels and higher. These sturdy lenses are designed for 2/3 inch CCD cameras. Largely insensitive to vibrations and other environmental influences, these lenses are ideal for use in demanding applications such as 3D measurement, quality inspection, traffic and other machine vision applications in rough industrial environments. All lenses are equipped with securely lockable iris and focus settings.

**2/3" ( Ø 11mm ) 3 Megapixel Compact Lenses**

| product | focal length (F) in mm | aperture (f) | working distance / MOD in mm | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|
| Cinegon 1.8/4.8 | 4.8 | 1.8 - 11 | ∞ - 0.0 | 47.6 | 37.3 | M 62 x 0.75 *** | 90 | 1001955 |
| Cinegon 2.1/6 | 6 | 2.1 - 16 | ∞ - 0.0 | 49.5 | 37.3 | M 62 x 0.75 *** | 110 | 1055691 |
| Cinegon 1.4/8 | 8 | 1.4 - 11 | ∞ - 0.0 | 37.5 | 34 | M 30.5 x 0.5 | 90 | 1001919 |
| Cinegon 1.4/12 | 12 | 1.4 - 11 | ∞ - 12 | 48.5 | 34 | M 30.5 x 0.5 | 99 | 1001951 |
| Xenoplan 1.4/17 | 17 | 1.4 - 11 | ∞ - 42 | 37.8 | 34 | M 30.5 x 0.5 | 85 | 1001957 |
| Xenoplan 1.4/23 | 23 | 1.4 - 11 | ∞ - 82 | 40.4 | 34 | M 30.5 x 0.5 | 94 | 1001917 |
| Xenoplan 1.9/35 | 35 | 1.9 - 16 | ∞ - 246 | 38.5 | 34 | M 30.5 x 0.5 | 92 | 1001960 |
| Tele-Xenar 2.2/70 | 70 | 2.2 - 32 | ∞ - 560 | 77.8 | 42 | M 40.5 x 0.5 | 200 | 1014593 |

Camera mount: C-mount • Image circle in mm / (Sensor): 11 / (2/3") • Resolution in Mpixel at max. sensor size: 3 - 5 • Min. pixel size In µm at 30% contrast: 3.5

## 2/3" ( Ø 11mm ) 5 Megapixel Compact Lenses

| product | focal length (F) in mm | aperture (f) | image circle in mm / (Sensor ) | working distance / MOD in mm | length in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|
| Apo-Xenoplan 1.4/23 | 23 | 1.4 - 11 | 90 | ∞ - 86 | 44.2 | M 30.5 x 0.5 | 115 | 1012344 |
| Apo-Xenoplan 1.8/35 | 35 | 1.8 - 16 | 11 / ( 2/3" ) | ∞ - 160 | 64 | M 30.5 x 0.5 | 150 | 1057564 |

Camera mount: C-mount • Resolution in Mpixel at max. sensor size: 3-5 • Min. pixel size In µm at 30% contrast: 3-5

## 1" ( Ø 16mm ) Lenses

| product | focal length (F) in mm | aperture (f) | working distance / MOD in mm | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|
| Cinegon 1.9/10 | 10 | 1.9 - 22 | ∞ - 0.0 | 50.2 | 37.3 | M 62 x 0.75 *** | 136 | 1001978 |
| Cinegon 1.9/16 | 16 | 1.8 - 22 | ∞ - 20 | 44.8 | 34 | M 30.5 x 0.5 | 102 | 1001482 |

Camera mount: C-mount • Image circle in mm / (Sensor): 16 / (1") • Resolution in Mpixel at max. sensor size: 3 - 5 • Min. pixel size In µm at 30% contrast: 3.5

## 1.3" ( Ø 22mm ) Lenses

| product | focal length (F) in mm | working distance / MOD in mm | length in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|
| Xenoplan 2.0/28 | 28 | ∞ - 174 | 38 | M 30.5 x 0.5 | 78 | 1001972 |
| Xenoplan 2.0/35 | 35 | ∞ - 252 | 40.8 | M 30.5 x 0.5 | 90 | 1075451 |

Camera mount: C-mount • Aperture 2.0 - 16 • Image circle in mm / (Sensor): 24 / (1.3") • Resolution in Mpixel at max. sensor size: 5 • Min. pixel size In µm at 30% contrast: 2.5 • Lens Ø max: 34 mm

## Antishading Lenses

| product | focal length (F) in mm | aperture (f) | min. pixel size In µm at 30% contrast | working distance / MOD in mm | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|
| Apo-Xenoplan 2.0/20 | 20 | 2.0 - 16 | 2.5 | ∞ - 165 | 62.9 | 48 | M 35.5 x 0.5 | 450 | 1056472 |
| Apo-Xenoplan 2.0/24 | 24 | 2.0 - 16 | 2.5 | ∞ - 76 | 41.7 | 40 | M 37 x 0.75 | 80 | 1006215 |
| Apo-Xenoplan 2.0/35 | 35 | 2.0 - 22 | 2.5 | ∞ - 388 | 55.8 | 41 | M37 x 0.75 | 160 | 1006219 |
| Xenoplan 2.8/50 | 50 | 2.8 - 22 | 3.5 | ∞ - 530 | 52.7 | 34 | M 30.5 x 0.5 | 135 | 1001976 |

Camera mount: C-mount • Image circle in mm / (Sensor): 24 / (1.3") • Resolution in Mpixel at max. sensor size: 12

## Xenon Topaz

The Xenon-TOPAZ lenses are designed for modern CCD and CMOS sensors up to 1.1" and 12 megapixel resolution. They are coated and optimized (VIS and NIR: 400-1000nm) which makes them perfectly suited for applications like traffic, surveillance and long range machine vision setups.

**Xenon Topaz**

| product | focal length (F) in mm | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|
| Xenon-TOPAZ 2.0/30 | 30 | 40.5 | 34 | M 30.5 x 0.5 | 90 | 1078946 |
| Xenon-TOPAZ 2.0/38 | 38 | 48.2 | 39 | M 30.5 x 0.5 | 140 | 1076930 |
| Xenon-TOPAZ 2.0/50 | 50 | 56.9 | 39 | M 30.5 x 0.5 | 160 | 1079220 |

Camera mount: C-mount • Aperture (f): 2.0 - 16 • Image circle in mm / (Sensor): 17.5 / (1.1") • Resolution in Mpixel at max. sensor size: 12 • Min. pixel size In µm at 30% contrast: 2.5 • Working distance / MOD in mm: ∞ - 500

## Xenon Ruby

These cost efficient lenses are designed for sensors with an image circle diameter of 1/1.8" (9 mm). The robust mechanical design with lockable iris and focus is resistant to vibrations and guarantees an extremely high and uniform image quality over the entire sensor. With a magnification range from ß´ = 0.1 to infinite, the lenses can resolve a pixel size of 2.5 µm on the camera with a 1/1.8" sensor. The broadband transmission covers the range from 400 to 1000 nm. Xenon-Ruby lenses are available in four focal lengths (aperture/focal length in mm): 2.2/10, 2.3/16, 2.2/25 and 2.3/35. The compact lenses can be used in a wide range of applications, such as robotics, 2D/3D measurement, surveillance systems and machine vision.

**Xenon Ruby**

| product | focal length (F) in mm | aperture (f) | working distance / MOD in mm | length in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|
| Xenon-RUBY 2.2/10 | 10 | 2.2 - 16 | ∞ - 50 | 38.3 | M25.5 x 0.5 | 50 | 1074625 |
| Xenon-RUBY 2.3/16 | 16 | 2.3 - 16 | ∞ - 70 | 46.6 | M25.5 x 0.5 | 60 | 1074626 |
| Xenon-RUBY 2.2/25 | 25 | 2.2 - 16 | ∞ - 145 | 29.5 | M25.5 x 0.5 | 30 | 1068908 |
| Xenon-RUBY 2.3/35 | 35 | 2.3 - 16 | ∞ - 250 | 51.2 | M25.5 x 0.5 | 55 | 1074627 |

Camera mount: C-mount • Image circle in mm / (Sensor): 9 / (1/1.8") • Resolution in Mpixel at max. sensor size: 10 • Min. pixel size in µm at 30% contrast: 2.5 • Lens Ø max: 27 mm

# Fast Lenses

The fast lenses feature an extremely high relative aperture of 0.95, making them perfectly suitable for low light applications. The lenses are corrected and coated for the visible range from 400 to 700 nm. Even under production extreme production conditions, the robust mechanical design with lockable focus and iris setting mechanism guarantees reliable continuous use in which the set optical parameters remain in place.

**Fast Lenses**

| product | focal length (F) in mm | working distance / MOD in mm | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|
| Xenon 0.95/17 | 17 | ∞ - 150 | 45 | 48 | M 39 x 0.75 | 250 | 12101 |
| Xenon 0.95/25 | 25 | ∞ - 200 | 33 | 41 | M 35.5 x 0.75 | 160 | 10456 |

Camera mount: C-mount • Aperture (f): 0.95 - 11 • Image circle in mm / (Sensor): 16 / (1“) • Resolution in Mpixel at max. sensor size: 3 • Min. pixel size in µm at 30% contrast: 7

# Unifoc System

The helical focusing mounts UNIFOC 58 and UNIFOC 76 are especially designed for the use of Schneider-Kreuznach enlarging lenses in combination with linear and area CCD cameras. This combination allows the imaging of small objects with an extraordinary high image quality.Many machine vision applications require the imaging of small objects from distances of only a few centimeters. Schneider-Kreuznach enlarging lenses are perfectly suited for this applications by their high optical performance at small imaging distances, combined with a very low distortion. Due to the large image circle diameter the lenses can also be used for linear CCD and CMOS cameras with sensors up to 86mm.
The helical mounts UNIFOC 58 and UNIFOC 76 are used for focusing the enlarging lenses, which do not contain any internal focusing mechanism. Both offer a total focus range (Z-axis travel) of 25.7 mm and differ only by their rear mount. The UNIFOC 58 has a "male" T2 thread (M42 x 0.75) while the UNIFOC 76 has a "male" M58 x 0.75 thread. The UNIFOC 76 is the best choice for cameras with long linear CCD and CMOS sensors.

Each UNIFOC has an internal „female" Leica mounting thread (Ø39 x 26 Gg. 60°). The final focus setting can be locked by a knurled locking thumb screw and additionally secured by an opposite Allen screw. The helical mounts can be adapted easily with extension tubes and adapters to a wide range of imaging applications.

**Unifoc 58/76-System**

| product | mount | focal length (F) in mm | aperture (f) | image circle in mm / (Sensor ) | recommended magnification range | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|---|
| Componon 4.0/28 | Leica (*) | 28 | 4.0 - 22 | 32 | 0.5X - 0.04X | 35 | 46 | M 43 x 0.75 | 90 | 37275 |
| Componon 4.0/35 | Leica (*) | 35 | 4.0 - 22 | 32.5 | 0.5X - 0.04X | 37.8 | 46 | M 43 x 0.75 | 110 | 37277 |
| Apo-Componon 2.8/40 | Leica (*) | 40 | 2.8 - 16 | 43.2 | 0.5X - 0.05X | 40.5 | 46 | M 43 x 0.75 | 90 | 19746 |
| Apo-Componon 4.0/45 | Leica (*) | 45 | 4.0 - 22 | 43.2 | 0.5X - 0.04X | 37.9 | 46 | M 43 x 0.75 | 81 | 39256 |
| Componon-S 2.8/50 | Leica (*) | 50 | 2.8 - 16 | 43.2 | 0.5X - 0.05X | 40.8 | 46 | M 43 x 0.75 | 105 | 16828 |
| Apo-Componon 4.0/60 | Leica (*) | 60 | 4.0 - 22 | 60 | 0.5X - 0.04X | 43.2 | 46 | M 43 x 0.75 | 90 | 18928 |
| Componon-S 4.0/80 | Leica (*) | 80 | 4.0 - 22 | 81 | 0.5X - 0.04X | 43.3 | 46 | M 43 x 0.75 | 130 | 14850 |
| Apo-Componon 4.5/90 | Leica (*) | 90 | 4.5 - 22 | 90 | 0.5X - 0.04X | 49.4 | 46 | M 43 x 0.75 | 81 | 1070287 |
| Componon-S 5.6/100 | Leica (*) | 100 | 5.6 - 32 | 108 | 0.5X - 0.04X | 41.5 | 46 | M 43 x 0.75 | 121 | 14022 |
| Componon-S 5.6/135 | M50 x 0.75 (**) | 135 | 5.6 - 45 | 150 | 0.5X - 0.04X | 50.6 | 59 | M 49 x 0.75 | 197 | 39569 |
| Componon-S 5.6/150 | M50 x 0.75 (**) | 150 | 5.6 - 45 | 153 | 0.5X - 0.04X | 52.8 | 59 | M 52 x 0.75 | 217 | 39570 |

## Unifoc 58/76 accessories

| product | mount | stroke in mm | length in mm | lens Ø max in mm | weight in grams | code no. |
|---|---|---|---|---|---|---|
| UNIFOC 58 | Leica / M58 x 0.75 | 25.7 | 18.8 - 44.5 | 66 | 16 | 13048 |
| UNIFOC 76 | Leica / M58 x 0.75 | 25.7 | 18.8 - 44.5 | 66 | 16 | 13048 |
| Ext. Tube 25mm | T2 / T2 | | 25 | 46 | 33 | 41643 |
| Ext. Tube 10mm | M58 x 0.75 | | 10 | 60 | 11 | 13051 |
| Ext. Tube 25mm | M58 x 0.75 | | 25 | 60 | 30 | 13050 |
| Ext. Tube 25mm | M72 x 0.75 | | 25 | 74 | 38 | 26406 |
| Ext. Tube 50mm | M72 x 0.75 | | 50 | 74 | 75 | 1054733 |
| Ext. Tube 25mm | M95 x 1.0 | | 25 | 98 | 64 | 1062892 |
| Ext. Tube 50mm | M95 x 1.0 | | 50 | 98 | 133 | 1062893 |
| Ext. Tube 100mm | M95 x 1.0 | | 100 | 98 | 266 | 1062894 |
| C-Mount Adapter/Adapterring | T2 / C-Mount | | 5.5 | 46 | 29 | 41629 |
| Adapter for | T2 / Nikon | | 9.5 | 55 | 22 | 21591 |
| Adapter for | T2 / M42 x 1.0 | | 9.5 | 54.6 | 23 | 21592 |
| Adapter for | M58x0.75 / M72x0.75 | | 4.5 | 75 | 18 | 13052 |
| Adapter for | M50 x 0.75 / Leica | | 23 | 55 | 29 | 17231 |
| Adapter for | M95 / M58 | | 4 | 109 | 131 | 1062891 |

# V-mount Lenses

Componon, Componon-S and APO-Componon are product names which have had an almost legendary reputation worldwide for excellent quality over decades. Unlike conventional cameras lenses where the optical performance decreases as the magnification increases, Schneider-Kreuznach macro lenses have been developed and corrected for the close-up range of 1:20 to 1:1. The lenses are suitable for sensor sizes up to 100mm. Due to its mechanical stability and the robust V-mount interface enabling simpler adjustment of the best azimuth position, the system is exceptionally well suited to demanding, continuous industrial use.

**V-mount Macro Lenses**

| product | focal length (F) in mm | aperture (f) | image circle in mm / (Sensor ) | recommended magnification range | length in mm | weight in grams | code no. |
|---|---|---|---|---|---|---|---|
| Componon 2.8/28 | 28 | 2.8 - 16 | 30.0 | 0.5X - 0.04X | 33.1 | 105 | 14794 |
| Componon 2.8/35 | 35 | 2.8 - 16 | 32.5 | 0.5X - 0.04X | 36.5 | 105 | 14792 |
| Apo-Componon 2.8/40 | 40 | 2.8 - 16 | 43.2 | 0.5X - 0.04X | 39.1 | 108 | 14798 |
| Apo-Componon 4.0/45 | 45 | 4.0 - 22 | 43.2 | 0.5X - 0.04X | 36.5 | 100 | 14783 |

Camera mount: V38-Mount • Lens Ø max: 47 mm • Filter thread: M 37 x 0.75

**V-mount macro Lenses**

| product | focal length (F) in mm" | aperture (f) | image circle in mm / (Sensor ) | recommended magnification range | length in mm | weight in grams | code no. |
|---|---|---|---|---|---|---|---|
| Componon-S 2.8/50 | 50 | 2.8 - 16 | 43.2 | 0.5X - 0.04X | 39.3 | 113 | 14796 |
| Apo-Componon 4.0/60 | 60 | 4.0 - 22 | 60 | 0.5X - 0.04X | 41.8 | 120 | 14802 |
| Componon-S 4.0/80 | 80 | 4.0 - 22 | 81 | 0.5X - 0.04X | 39.6 | 115 | 14780 |
| Makro-Symmar 5.6/80 | 80 | 5.6 - 32 | 142 | 4X - 0.25X | 47.1 | 136 | 1070160 |
| Apo-Componon 4.5/90 | 90 | 4.5 - 22 | 90 | 0.5X - 0.04X | 48 | 135 | 1070213 |
| Componon-S 5.6/100 | 100 | 5.6 - 32 | 108 | 0.5X - 0.04X | 40.1 | 140 | 35142 |

# V-mount Line Scan Lenses

Makro-Symmar, Micro-Symmar and Apo-Componon lenses are designed for industrial machine vision applications and satisfy even the most stringent requirements of next generation 12k/16k line scan applications. Identification of the best azimuth and application in reverse position means that they can be deployed in a customer-oriented way. The different lens versions of Makro-Symmar, Micro-Symmar and Apo-Componon cover practically all industrial application areas with the specially defined and optimized imaging areas.

**V-mount Line Scan Lenses**

| product | focal length (F) in mm | aperture (f) | image circle in mm / (Sensor ) | resolution in Mpixel at max. sensor size | recommended magnification range | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|---|
| Micro Symmar 2.8/50-3.5x | 50 | 2.8 - 5.6 | 62 | 12k Zeile / 5µ² | 3.0X - 4.0X | 49.1 | 46 | M 30.5 x 0.5 | 370 | 1012492 |
| Apo-Componon 4.5/90 | 90 | 4.5 - 22 | 86 | 12k u.16k Zeile / 5µ² | 0.20X - 0.40X | 52 | 47 | M 40.5 x 0.5 | 140 | 1004531 |
| Makro-Symmar 5.6/120 | 120 | 5.9 - 32 | 86 | 12k u.16k Zeile / 5µ² | 0.88X - 1.13X | 54.7 | 46 | M 40.5 x 0.5 | 170 | 1002647 |
| Makro-Symmar 5.6/120 | 120 | 5.9 - 32 | 86 | 12k u.16k Zeile / 5µ² | 0.63X - 0.88X | 54.7 | 46 | M 40.5 x 0.5 | 170 | 1002648 |
| Makro-Symmar 5.6/120 | 120 | 5.9 - 32 | 86 | 12k u.16k Zeile / 5µ² | 0.38X - 0.63X | 54.7 | 46 | M 40.5 x 0.5 | 170 | 1002650 |
| Makro-Symmar 5.6/120 | 120 | 5.9 - 32 | 86 | 12k u.16k Zeile / 5µ² | 0.26X - 0.38X | 54.7 | 46 | M 40.5 x 0.5 | 170 | 1004611 |

Camera Mount: V38-Mount

# Macro Varon Line Scan Lenses

The Macro Varon lenses, especially designed for the highest requirements of web and surface inspections, are the first choice for FPD and PCB inspection systems. These applications require line scan lenses with very high resolution in order to guarantee cost-efficient error detection in manufacturing and the associated quality assurance processes. The lenses are optimized for 12k and 16k line scan sensors.The special design feature of the Macro Varon is the innovative, continuous aberration suppression (CAS). This ensures uniformly high imaging performance across the entire magnification range. A precise gear set continuously corrects minimal aberrations using floating elements – flexibly arrayed lenses inside the lens – and thus guarantees the exact observance of the focal length and optimal adjustment to the desired magnification setting. The alignment of the best azimuth position is also possible here via the V-mount interface.

**Macro Varon Line Scan Lenses**

| product | aperture (f) | recommended magnification range | length in mm | lens Ø max in mm | weight in grams | code no. |
|---|---|---|---|---|---|---|
| Macro Varon CAS 4.5/85 | 4.5 - 8 | 0.5X - 3.5X | 48 | 48.5 | 270 | 1072517 |
| Macro Varon with Beamsplitter | 4.5 | 3.5x | 79.5 | 75 | 410 | 1069837 |

Camera mount: V38-mount • Focal length (f): 85 mm • Image circle in mm / (Sensor): 62 • Resolution in Mpixel at max. sensor size: 16k Zeile / 3.5µ² • Filter thread: M 37 x 0.75

## V-Mount-System Accessories

| product | mount | stroke | length in mm | lens Ø max in mm | weight in grams | code no. |
|---|---|---|---|---|---|---|
| UNIFOC 12 | V / V | 12 | 17.4 - 29.4 | 47 | 45 | 11726 |
| UNIFOC 7 | V / V | 7 | 20.0 - 27.0 | 44 | 27 | 1001041 |
| UNIFOC 7/M58 | V/M58x0.75 | 7 | 20.0 - 27.0 | 60 | 29 | 1054532 |
| adjustable Adapter V / C-Mount | V / C-Mount | 5 | 19.2 - 24.2 | 44 | 42 | 1011634 |
| UNIFOC 100/77 D02 | V / 4 x M3 | 102 | 136.0 - 238.0 | 77 | 782 | 1004157 |
| Ext. Tube 6 mm | V / V | | 6 | 44 | 9 | 20176 |
| Ext. Tube 8 mm | V / V | | 8 | 44 | 13 | 20177 |
| Ext. Tube 10 mm | V / V | | 10 | 44 | 17 | 20178 |
| Ext. Tube 25 mm | V / V | | 25 | 44 | 29 | 20179 |
| Ext. Tube 50 mm | V / V | | 50 | 44 | 73 | 20154 |
| Ext. Tube 75 mm | V / V | | 75 | 44 | 117 | 20155 |
| Adapter V / C-Mount | V / C-Mount | | 6.5 | 44 | 33 | 20052 |
| Adapter V / Leica (M39 x 26 Gg.) | V / Leica | | 6.5 | 44 | 27 | 20054 |
| Adapter V / T2 (M42 x 0.75) | V / T2 | | 6.5 | 44 | 28 | 20053 |
| Adapter V / M42 x 1 | V / M42 x 1 | | 6.5 | 44 | 28 | 20059 |
| Adapter V / M42 x 1 | V / M42 x 1 | | 35 | 44 | 38 | 1001692 |
| Adapter V / M58 x 0.75 | V / M58 x 0.75 | | 10 | 60 | 20 | 1018385 |
| Adapter V / Nikon F-Mount | V / F-Mount | | 9.3 | 59.6 | 55 | 21610 |

# Xenon-Sapphire

These high-resolution, high-speed lenses are optimized for the use of 16k pixel line scan sensors. There are several lens types each optimized for a certain magnification range. The image circles of up to 62 mm meet the length of currently available 16k CCD /CMOS lines and will cover at the same time 12k image heights as well. The high resolution of these lenses make full use of the sensor's pixel size of 3.5µm and fully exploits all possibilities of the latest sensor generation. As usual they are compact, robust and lockable in distance and apertures. The 400 - 1000 nm broadband coating makes it suitable for applications in the visible and the near infrared spectrum. The V-mount makes it easy to install and rotate into the desired azimuth position for a wide range of high resolution applications where existing 12k lenses (with approx. 5µm pixel sizes) are not sufficient anymore.

**Xenon-Sapphire**

| product | focal length (F) in mm | aperture (f) | image circle in mm / (Sensor ) | resolution in Mpixel at max. sensor size | recommended magnification range | length in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|
| XENON-SAPPHIRE 4.7/95 | 95 | 4.7 - 8 | 57.3 (16k) / 62.5 (12k) | 3.5µm (16k) / 5µm (12k) | 0.02X (±10%) | 102.8 | M 52 x 0.75 | ca. 700 | 1071824 |
| XENON-SAPPHIRE 4.5/95 | 95 | 4.5 - 8 | 57.3 (16k) / 62.5 (12k) | 3.5µm (16k) / 5µm (12k) | 0.07X (±10%) | 102.8 | M 52 x 0.75 | 765 | 1068013 |
| XENON-SAPPHIRE 3.9/95 | 95 | 3.9 - 8 | 57.3 (16k) / 62.5 (12k) | 3.5µm (16k) / 5µm (12k) | 0.23X (±10%) | 98.3 | M 52 x 0.75 | ca. 700 | 1071819 |
| XENON-SAPPHIRE 3.7/96 | 96 | 3.7 - 8 | 57.3 (16k) / 62.5 (12k) | 3.5µm (16k) / 5µm (12k) | 0.29X (±10%) | 98.3 | M 52 x 0.75 | ca. 700 | 1071818 |
| XENON-SAPPHIRE 3.5/96 | 96 | 3.5 - 8 | 57.3 (16k) / 62.5 (12k) | 3.5µm (16k) / 5µm (12k) | 0.35X (±10%) | 97.3 | M 52 x 0.75 | 755 | 1068012 |
| XENON-SAPPHIRE 3.2/96 | 96 | 3.2 - 11.3 | 57.3 (16k) / 62.5 (12k) | 3.5µm (16k) / 5µm (12k) | 0.5X (±10%) | 99.9 | M 52 x 0.75 | ca. 700 | 1071189 |
| XENON-SAPPHIRE 3.2/97 | 97 | 3.2 - 11.3 | 57.3 (16k) / 62.5 (12k) | 3.5µm (16k) / 5µm (12k) | 0.7X (±10%) | 98.1 | M 52 x 0.75 | ca. 700 | 1071190 |
| XENON-SAPPHIRE 2.8/98 | 98 | 2.8 - 8 | 57.3 (16k) / 62.5 (12k) | 3.5µm (16k) / 5µm (12k) | 0.875X (±10%) | 98 | M 52 x 0.75 | 720 | 1076452 |
| XENON-SAPPHIRE 2.8/98 | 98 | 2.8 - 8 | 57.3 (16k) / 82 (16k) | 3.5µm (16k) / 5µm (16k) | 1.143X (±10%) | 150.8 | - | 750 | 1076453 |
| XENON-SAPPHIRE 3.2/97 | 97 | 3.2 - 11.3 | 57.3 (16k) / 82 (16k) | 3.5µm (16k) / 5µm (16k) | 1.43X (±10%) | 149.8 | M58 x 0.75 | 840 | 1076096 |
| XENON-SAPPHIRE 3.2/88 | 88 | 3.2 - 8 | 57.3 (16k) / 82 (16k) | 3.5µm (16k) / 5µm (16k) | 1.75X (±10%) | 91.5 | M40.5 x 0.5 | 765 | 1068014 |
| XENON-SAPPHIRE 3.2/88 | 88 | 3.2 - 8 | 57.3 (16k) / 82 (16k) | 3.5µm (16k) / 5µm (16k) | 1.75X with beam splitter | 122 | M40.5 x 0.5 | ca. 1000 | 1073347 |
| XENON-SAPPHIRE 3.2/96 | 96 | 3.2 - 8 | 57.3 (16k) / 82 (16k) | 3.5µm (16k) / 5µm (16k) | -2.0X (±10%) | 149 | M58 x 0.75 | 840 | 1076451 |

Camera mount: V70-Mount • Lens Ø max: 75 mm


-SAPPHIRE 3.2/97-0011
4.1 3.6 3.2
XENON-SAPPHIRE 3.2/88-0002

# Xenon-Diamond

Schneider offers a highly sophisticated, new family of line scan lenses, called Diamond lenses for large magnifications such as -2.6x, -3.5x or -5.2x. They are optimized for highest resolution and very high image quality when used with 12K scan lines with 5 µm pixel size (pitch) which means MTF@72 lp/mm > 0.40 on the image side for an image size of 62.5 mm. Actually Diamond lenses can also be used for image sizes as large as 82 mm to also cover 16 K/5 µm-pitch lines.As usual Diamond lenses are compact, robust and lockable in distance and apertures. The 400 - 1000 nm broadband coating makes it suitable for applications in the visible and the near infrared spectrum. The V-mount makes it easy to install and rotate into the desired azimuth position. For each magnification there are two lens versions: one regular type for use without beam splitter or with pellicle and one for use with a beam splitter prism made of BK 7 and a thickness of 25 mm.

**Xenon-Diamond**

| product | mount | focal length (F) in mm | aperture (f) | recommended magnification range | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|
| XENON-DIAMOND 2.7/111 | V70-Mount | 111 | 2.7 - 8 | 2.6X (±5%) | 132.4 | 75 | M 40.5 x 0.5 | ca. 950 | 1078039 |
| XENON-DIAMOND 2.9/106 | V70-Mount | 105 | 2.9 - 8 | 2.6X with beam splitter | 127 | 75 / 95 | M 40.5 x 0.5 | ca. 1200 | 1076949 |
| XENON-DIAMOND 2.2/117 | V90-Mount | 117 | 2.2 - 11.3 | 3.5X (±5%) | 174 | 95.6 | M 40.5 x 0.5 | ca. 1920 | 1076963 |
| XENON-DIAMOND 2.3/116 | V90-Mount | 116 | 2.3 - 11.3 | 3.5X with beam splitter | 174 | 95.6 / 95 | M 40.5 x 0.5 | ca. 2160 | 1079718 |
| XENON-DIAMOND 1.5/82 | V70-Mount | 82 | 1.5 - 11 | 5.2X (±3%) | 140 | 75 | M58 x 0.75 | ca. 1040 | 1079320 |
| XENON-DIAMOND 1.6/80 | V70-Mount | 80 | 1.5 - 11 | 5.2X with beam splitter | 166.1 | 75 / 95 | M58 x 0.75 | ca. 1290 | 1081873 |

Image circle in mm / (Sensor): 62.5 (12k) / 82 (16k) • Resolution in Mpixel at max. sensor size: 5µm (12k) / 5µm (16k)

# Xenon-Zirconia

This lens family is optimized for pixel size 5µm for the use with 12k (62.5mm) line scan sensors but can also be used with 16k (82mm) lines. The maximum aperture of the lenses is considerably larger than in the Sapphire lens family which allows to use the lenses under sparse light conditions. The lenses are designed in a manner that even with fastest F-number, the full resolution, albeit with a diminished contrast, is attained. The Xenon Zirconia lens for the largest magnification of -2x is also available with beam splitter for coupling in illumination. Zirconia lenses are broadband coated and can be used in the spectral range of 400 – 1000 nm. The V-mount makes them easy to install and rotate into the desired azimuth position for a wide range of line scan applications.

**Xenon-Zirconia**

| product | focal length (F) in mm | aperture (f) | image circle in mm / (Sensor ) | resolution in Mpixel at max. sensor size | recommended magnification range | length in mm | lens Ø max in mm | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|
| XENON-ZIRCONIA 3.3/92 | 92 | 3.3 - 11 | 62.5 (12k) | 5µm (12k) | 0.2X (±10%) | 63 | 55 | ca. 250 | 1073622 |
| XENON-ZIRCONIA 4.0/104 XL | 104 | 4.0 - 11 | 57.3(16k) / 62.5(12k) / 82(16k) | 3.5µm (16k) / 5µm (12k) / 5µm (16k) | 0.33X (±10%) | 85 | 60.5 | ca. 250 | 1079651 |
| XENON-ZIRCONIA 3.2/91 | 92 | 3.2 - 11 | 57.3(16k) / 62.5(12k) / 82(16k) | 3.5µm (16k) / 5µm (12k) / 5µm (16k) | 0.5X (±10%) | 64 | 55 | ca. 250 | 1076966 |
| XENON-ZIRCONIA 3.1/91 | 91 | 3.1 - 11 | 57.3(16k) / 62.5(12k) / 82(16k) | 3.5µm (16k) / 5µm (12k) / 5µm (16k) | 0.7X (±10%) | 71.7 | 55 | ca. 250 | 1078947 |
| XENON-ZIRCONIA 2.8/89 | 89 | 2.8 - 11 | 62.5 (12k) / 82 (16k) | 5µm (12k) / 5µm (16k) | 1.0X (±10%) | 64 | 55 | ca. 250 | 1078948 |
| XENON-ZIRCONIA 4.0/92 | 92 | 3.2 - 11 | 62.5 (12k) / 82 (16k) | 5µm (12k) / 5µm (16k) | 2.0X (±10%) | 64.3 | 55 | ca. 250 | 1078872 |
| XENON-ZIRCONIA 4.0/92 | 92 | 3.2 - 11 | 62.5 (12k) / 82 (16k) | 5µm (12k) / 5µm (16k) | 2.0X with beam splitter | 104.1 | 55 = 95 | ca. 500 | 1078988 |

Camera mount: V48-Mount • Filter thread: M 46 x 0.75

## Xenon-Sapphire/-Diamond/-Zirconia / V48, V 70 and V 90 accessories

| product | mount | length in mm | lens Ø max in mm | weight in grams | code no. |
|---|---|---|---|---|---|
| Adapter | V 70 / M72 x 0.75 | 10 | 78 | 100 | 1072419 |
| Tilt Adatper | M72x0.75 / 4 x M3 (M4) | 35 | 80 x 82 | 190 | 1071925 |
| Ext. Tube 5 mm | M72 x 0.75 | 5 | 74 | 10 | 1072420 |
| Ext. Tube 10 mm | M72 x 0.75 | 10 | 74 | 20 | 1072421 |
| Ext. Tube 25 mm | M72 x 0.75 | 25 | 74 | 45 | 26406 |
| Ext. Tube 50 mm | M72 x 0.75 | 50 | 74 | 85 | 1054733 |
| Ext. Tube 100 mm | M72 x 0.75 | 100 | 74 | 165 | 1079483 |
| Ext. Tube 200 mm | M72 x 0.75 | 200 | 74 | 330 | 1079484 |
| Adapter with focussing | V48 / V70 | 14.6 - 35 | 75 | 210 | 1075304 |
| Adapter | M72x0.75 / M95x1 | 4 | 98 | 75 | 1077013 |
| Adapter | M72x0.75 / M58x0.75 | 6 | 74 | 15 | 1075556 |
| Adapter | M72x0.75 / M42x1 | 6 | 74 | 15 | 1079515 |
| Adapter | V90 / M95x1 | 10 | 98 | 110 | 1077293 |
| Adapter | M95x1 / M72x0.75 | 6.6 | 98 | 30 | 1077295 |
| Ext. Tube 10 mm | M95 x 1 | 10 | 98 | 30 | 1077290 |
| Ext. Tube 25 mm | M95 x 1 | 25 | 98 | 70 | 1062892 |
| Ext. Tube 50 mm | M95 x 1 | 50 | 98 | 145 | 1062893 |
| Ext. Tube 100 mm | M95 x 1 | 100 | 98 | 285 | 1062894 |
| Ext. Tube 200 mm | M95 x 1 | 200 | 98 | 230 | 1077291 |

# Xenon-Emerald

Many camera manufacturers are using the F-Mount bayonet, the V48 or the Canon bayonet as the camera/lens interface of their high resolution area and line scan cameras.
Schneider-Kreuznach has addressed these topics with the new lens series Xenon-EMERALD. The low distortion lenses with an image circle diameter of 43.2mm are compact, robust and lockable in distance and aperture. They are designed for close up range (S) and long range (L) and optimized for a uniform image quality over the whole sensor area.

The 400-1000nm broadband coating makes them suitable for applications in the visible and near infrared spectrum. The variety of alternative mounts makes them even more flexible for a wide range of applications in machine vision, quality control, web inspection and other image processing applications.

**Xenon-Emerald**

| product | mount | focal length (F) in mm | aperture (f) | image circle in mm / (Sensor ) | recommended magnification range | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|---|
| XENON-Emerald 2.8/28-L | F-Mount | 28 | 2.8 - 22 | 43.2 | -0.02 - (-0.05) | 101.8 | 65 | M 62 x 0.75 | 516 | 1071606 |
| XENON Emerald 2.8/28-S | F-Mount | 28 | 2.8 - 22 | 43.2 | -0.03 - (-0.08) | 102.2 | 65 | M 62 x 0.75 | 517 | 1071609 |
| XENON Emerald 2.8/28-L | V48-Mount | 28 | 2.8 - 22 | 43.2 | -0.02 - (-0.05) | 101.8 | 65 | M 62 x 0.75 | 522 | 1071610 |
| XENON Emerald 2.8/28-S | V48-Mount | 28 | 2.8 - 22 | 43.2 | -0.03 - (-0.08) | 102.2 | 65 | M 62 x 0.75 | 523 | 1071611 |
| XENON Emerald 2.8/28-L | Canon-Mount | 28 | 2.8 - 22 | 43.2 | -0.02 - (-0.05) | 101.8 | 65 | M 62 x 0.75 | 522 | 1071610 |
| XENON Emerald 2.8/28-S | Canon-Mount | 28 | 2.8 - 22 | 43.2 | -0.03 - (-0.08) | 102.2 | 65 | M 62 x 0.75 | 523 | 1071611 |
| XENON Emerald 2.2/50 | F-Mount | 50 | 2.2 - 16 | 43.2 | 0 - 0.2X | 43.2 | 59.6 | M 43 x 0.75 | 203 | 1062672 |
| XENON Emerald 2.2/50 | V48-Mount | 50 | 2.2 - 16 | 43.2 | 0 - 0.2X | 43.2 | 55 | M 43 x 0.75 | 207 | 1070074 |
| XENON Emerald 2.2/50 | Canon-Mount | 50 | 2.2 - 16 | 43.2 | 0 - 0.2X | 43.2 | 55 | M 43 x 0.75 | 207 | 1070074 |
| XENON Emerald 4.0/60 -0033 | F-Mount | 60 | 4.0 - 16 | 60 | 0 - 0.33 | 43.2 | 59.6 | M 43 x 0.75 | ca. 250 | 1085115 |
| XENON Emerald 2.8/100 | F-Mount | 100 | 2.8 - 22 | 43.2 | 0.05X - 0.17X | 98.2 | 60 | M 43 x 0.75 | 463 | 1064881 |
| XENON Emerald 2.9/100 | F-Mount | 100 | 2.9 - 22 | 43.2 | 0X - 0.05X | 102.2 | 60 | M 43 x 0.75 | 442 | 1070506 |
| XENON Emerald 2.8/100 | V48-Mount | 100 | 2.8 - 22 | 43.2 | 0.05X - 0.17X | 98.2 | 60 | M 43 x 0.75 | 463 | 1064881 |
| XENON Emerald 2.9/100 | V48-Mount | 100 | 2.9 - 22 | 43.2 | 0X - 0.05X | 102.2 | 60 | M 43 x 0.75 | 442 | 1070506 |

## Xenon-Emerald

| product | mount | focal length (F) in mm | aperture (f) | image circle in mm / (Sensor ) | recommended magnification range | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|---|
| XENON Emerald 2.8/100 | Canon-Mount | 100 | 2.8 - 22 | 43.2 | 0.05X - 0.17X | 98.2 | 60 | M 43 x 0.75 | 463 | 1064881 |
| XENON Emerald 2.9/100 | Canon-Mount | 100 | 2.9 - 22 | 43.2 | 0X - 0.05X | 102.2 | 60 | M 43 x 0.75 | 442 | 1070506 |

Resolution in Mpixel at max. sensor size: 29

## Xenon-Emerald / V 48 Accessories

| product | mount | length in mm | lens Ø max in mm | code no. |
|---|---|---|---|---|
| Adapter V 48 / C-Mount | V 48 / C-Mount | 8.5 | 56 | 1072650 |
| Adapter V 48 / M 42 x 1 | V 48 / M 42 x 1 | 8.5 | 56 | 1072660 |
| Adapter V 48 / M 42 x 0.75 | V 48 / M 42 x 0.75 | 8.5 | 56 | 1072652 |
| Adapter V 48 / M 58 x 0.75 | V 48/ M 58 x 0.75 | 10 | 62 | 1072659 |
| V 48 - Ext. Tube 10 mm | V 48 / V 48 | 10 | 56 | 1072661 |
| V 48 - Ext. Tube 25 mm | V 48 / V 48 | 25 | 56 | 1072651 |
| V 48 - Ext. Tube 50 mm | V 48 / V 48 | 50 | 56 | 1072662 |


# SWIR Lenses

The SWIRON high-performance lenses of the C-Mount and V-Mount compact series are extremely robust and insensitive to rough ambient conditions. The secure locking of the iris and focus settings and the SWIR coating of 800 – 1800 nm is standard for all these lenses.

**SWIR Lenses**

| product | mount | focal length (F) in mm | aperture (f) | image circle in mm / (Sen-sor ) | resolution in Mpixel at max. sensor size | min. pixel size In µm at 30% contrast | working distance / MOD in mm | length in mm | lens Ø max in mm | Filter-thread | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWIRON 1.4/23 | C-Mount | 23 | 1.4 - 11 | 90 | 5 | 2.5 | ∞ - 86 | 44.2 | 34 | M 30.5 x 0.5 | 115 | 1012344 |
| SWIRON 2.8/40 | V38-Mount | 40 | 2.8 - 16 | 43.2 | - | 0.5X - 0.04X | - | 39.1 | 47 | M 37 x 0.75 | 108 | 14798 |


# Telecentric Lenses

The bilateral telecentric lenses for 2/3" C-mount cameras set a new standard of lens performance for optical metrology. The absolute distortion in the image plane of these lenses is only a few micrometers. The lenses can be focused on the image side in a range of +/- 3mm which means that the working distance can be adjusted within the defined limits without any change in the lens magnification. Thus the lenses can easily be adjusted to fit the space conditions in the application. Due to the high numerical aperture of 0.14 or 0.13 the lenses can be used in measurements with challenging lighting situations.. The integrated iris allows easy setting and locking for individual demands. lenses.

**Telecentric Lenses**

| product | object size 1/2" " sensor in mm | object size 2/3" " sensor in mm | length from C-mount in mm | working distance in mm | num. aperture | distor-sion at image plane (%) | tele-centric depth in mm | weight in grams | Filter-thread | code no. | weight in grams | code no. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Xenoplan 1:1 | 6.4 x 4.8 | 8.8 x 6.6 | 220 | 47 ± 3 | 0.14 | < 0.1 | ± 2 | 1490 | M58 x 0.75 | 35850 | 115 | 1012344 |
| Xenoplan 1:2 | 12.8 x 9.6 | 17.6 x 13.2 | 264 | 195 ± 12 | 0.14 | < 0.7 | ± 4 | 2150 | M58 x 0.75 | 35851 | 115 | 1012344 |
| Xenoplan 1:3 | 19.2 x 14.4 | 26.4 x 19.8 | 224 | 161 ± 27 | 0.14 | < 1.5 | ± 6 | 1600 | M58 x 0.75 | 35852 | 115 | 1012344 |
| Xenoplan 1:4 | 25.6 x 19.2 | 35.2 x 26.4 | 250 | 176 ± 48 | 0.13 | < 0.5 | ± 8 | 2000 | M62 x 0.75 | 35853 | 115 | 1012344 |
| Xenoplan 1:5 | 32.0 x 24.0 | 44.0 x 33.0 | 286 | 269 ± 75 | 0.13 | < 0.3 | ± 10 | 2600 | M77 x 0.75 | 35854 | 108 | 14798 |

Working Distance = Distance between mechanical front of the lens and the object. All lenses with lockable iris and focus adjustment.

# Motorized Lenses

As further option for our successful compact lens series Cinegon, Xenoplan and Tele-Xenar Schneider-Kreuznach attached a motorized iris to the optics without changing the benefits of the superior and well-known lenses.The stepper motor with the industrial P-Iris connector enables the use of the existing well-proven optical designs and the lockable focus mechanism with a variable iris control for perfect use of light even under rough conditions. High guaranteed reliability with over 100,000 cycles fulfils the demand of industrial applications

### Technical Specification

| | |
|---|---|
| Motor type | 2 phase, bipolar stepper motor |
| Coil resistance | 21 Ohm |
| Current | ≤143 mA / Phase |
| Max. apply voltage | 5V |
| Coil inductivity | 1.8 mH / Phase at 1 kHz |
| Max. Step frequency | 400 Hz |
| Cable type | Lemo Santoprene 2x2x0.14mm² |
| Connector | P-Iris / JEITA E4-191J-100 |
| Operating temperature | 0°C to +50°C |
| Storage temperature range | -20°C to +75°C |
| Mtbf | > 100,000 cycles |
| Order no. | 1076107 |

### Available

| lenses for 2/3" (11mm) | Code No. |
|---|---|
| Cinegon-M 1.8/4.8-1902 | 21 Ohm |
| Cinegon-M 2.1/6-1901 | ≤143 mA / Phase |
| Cinegon-M 1.4/8-1902 | 5V |
| Cinegon-M 1.4/12-1906 | 1.8 mH / Phase at 1 kHz |
| Xenoplan-M 1.4/17-1903 | 400 Hz |
| Xenoplan-M 1.4/23-1902 | Lemo Santoprene 2x2x0.14mm² |
| Xenoplan-M 1.9/35-1901 | P-Iris / JEITA E4-191J-100 |
| Tele-Xenar-M 2.2/70-1902 | 0°C to +50°C |
| APO-Xenoplan-M 1.4/23-1903 | -20°C to +75°C |
| APO-Xenoplan-M 1.8/35-1902 | > 100,000 cycles |

| lenses for 1" (16mm) | Code No. |
|---|---|
| Cinegon-M 1.9/10-1901 | 1061374 |
| Cinegon-M 1.8/16-1901 | 1061375 |
| Tele-Xenar-M 2.2/70-1902 | 1061457 |

| lenses for 1.3" (22mm) | Code No. |
|---|---|
| Apo-Xenoplan-M 2.0/24-1901 | 1076613 |
| Xenoplan-M 2.0/28-1902 | 1061456 |
| Xenoplan-M 2.0/35-1903 | t.b.d. |
| Apo-Xenoplan-M 2.0/35-1901 | 1076612 |
| Xenoplan-M 2.8/50-1902 | 1076611 |

| TOPAZ lenses for 1.1" (17.5mm) | Code No. |
|---|---|
| Xenon-TOPAZ 2,0/30 | 1084646 |
| Xenon-TOPAZ 2,0/38 | 1084666 |
| Xenon-TOPAZ 2,0/50 | 1084649 |

# Industrial Filters

Schneider Kreuznach Industrial Filters are high performance technical filters that have been adapted to the requirement of industrial users in research, engineering and production. These filters feature improved optical quality, are provided with detailed technical parameters, and have passed a strict quality assurance process.
Schneider Kreuznach has the capability for coating and mechanic design and production, giving the advantage of providing customized filters. A µ micro water jet enables to cut each thinkable shape.

Schneider-Kreuznach industrial filters are characterized by the following key features:

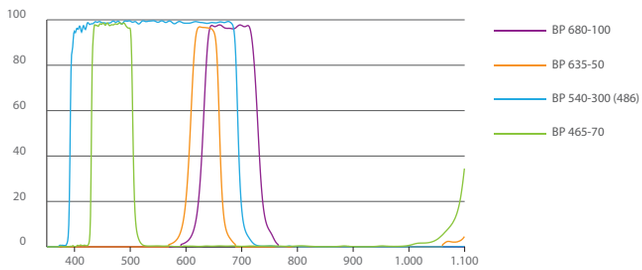
- Reproducibility and reliability
- Top flatness and wavefront distortion guarantees no influence on image
- Broad range of filter types and coatings
- Broad range of diameters
- Robust mechanics: metal mounts

Magnetron sputtered industrial  filters impress with steep slopes and high transmission at stable cut-on and cut-off wavelengths. The very flat surface makes them ideal for high end inspection systems.  95 % Ave Transmission Schneider-Kreuznach bandpass filters are RoHS conform. Custom sizes are available on request.
Bandpass filters transmit light of a defined wavelength range, while blocking all others. Multiple thin layer coatings achieve the designed wavelength range at a high optical quality. High transmission of 95 % ave and steep slopes with small tolerances  make those bandpass filters ideal for Metrology, 3D-measurement, Food and Beverage Inspection, Ophthalmology and many more sofisticated Automation systems.

# Filter Types

## Bandpass Filters

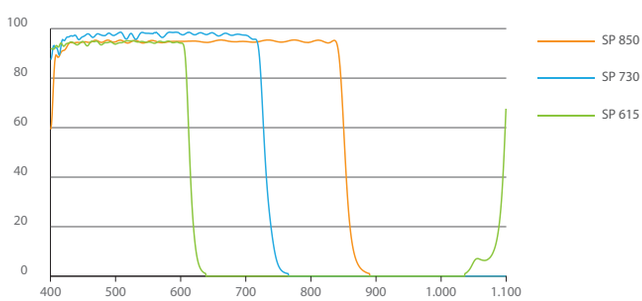
Bandpass filters transmit light of a defined wavelength range, while blocking all others. Multiple thin layer coatings achieve the designed wavelength range at a high optical quality. High transmission of 95 % ave and steep slopes with small tolerances make those bandpass filters ideal for Metrology, 3D-measurement, Food and Beverage Inspection, Ophthalmology and many more sofisticated Automation systems.




| Filter | Range | AR Coating | ø (mm) | SH (30,5 n/a) | SN1 | CMT |
|---|---|---|---|---|---|---|
| BP 465-70 HT | Bandpass 430 - 500 nm | ULR | 19 - 64 | 25.5 - 67 | 30.5 | x |
| BP 490 -180 HT | Bandpass 400 - 580 nm | ULR | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 540-80 HT | Bandpass 495 - 580 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 575-170 HT | Bandpass 495 - 660 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 590-50 HT | Bandpass 565 - 615 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 590-200 HT | Bandpass 595 - 690 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 635-50 HT | Bandpass 610 - 660 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 640-100 HT | Bandpass 590 - 590 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 660-60 HT | Bandpass 630 - 690 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 680-100 HT | Bandpass 630 - 730 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |

## Shortpass Filters

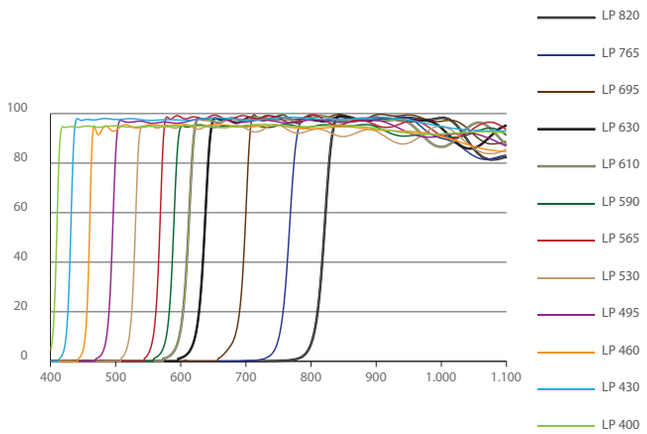
Schneider Kreuznach shortpass filters are designed with sharp cut-off wavelength from 615 nm to 850 nm. Anti reflection coatings avoids troublesome light. Schneider Kreuznach longpass filters are designed with sharp cut-off wavelength from 400 nm to 820 nm.Shorpass and Longpass Filters are ideal for fluorescence and wavelength sorting applications.




| Filter | Range | AR Coating | ø (mm) | SH (30,5 n/a) | SN1 | CMT |
|---|---|---|---|---|---|---|
| SP 615 HT | Shortpass < 615 nm | ULR | 19 - 64 | 25.5-67 | 30.5 | x |
| SP 730 HT | Shortpass < 730 nm | ULR | 19 - 64 | 25.5 - 52 | 30.5 | x |
| SP 850 HT | Shortpass < 850 nm | MCXL | 19 - 64 | 25.5 - 52 | 30.5 | x |

# Longpass Filters

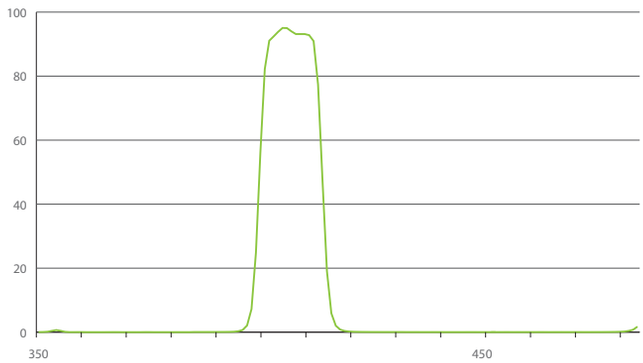
Schneider Kreuznach longpass filters are designed with sharp cut-off wavelength from 400 nm to 820 nm. Longpass Filters are ideal for fluorescence and wavelength sorting applications. A broad-band anti reflection coating avoids troublesome light.
All filters are available mounted (M25.5 to M67) and unmounted in 10.0 mm to 74.0 mm size. Combined with shortpass fitler available as filter kit.




| Filter | Range | AR Coating | ø (mm) | SH (30,5 n/a) | SN1 | CMT |
|---|---|---|---|---|---|---|
| LP 400 HT | Longpass > 400 nm | MCXL | 19 - 64 | 25.5 - 67 | 30.5 | x |
| LP 430 HT | Longpass > 430 nm | MCXL | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 460 HT | Longpass > 460 nm | MCXL | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 495 HT | Longpass > 495 nm | MCXL | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 515 HT | Longpass > 515 nm | MCXL | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 530 HT | Longpass > 530 nm | MCXL | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 565 HT | Longpass > 565 nm | ULR-IR | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 590 HT | Longpass > 590 nm | ULR-IR | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 610 HT | Longpass > 610 nm | ULR-IR | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 630 HT | Longpass > 630 nm | ULR-IR | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 695 HT | Longpass > 695 nm | ULR-IR | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 765 HT | Longpass > 765 nm | ULR-IR | 19 - 64 | 25.5 - 52 | 30.5 | x |
| LP 820 HT | Longpass > 820 nm | ULR-IR | 19 - 64 | 25.5 - 52 | 30.5 | x |

## Narrow Bandpass Filters

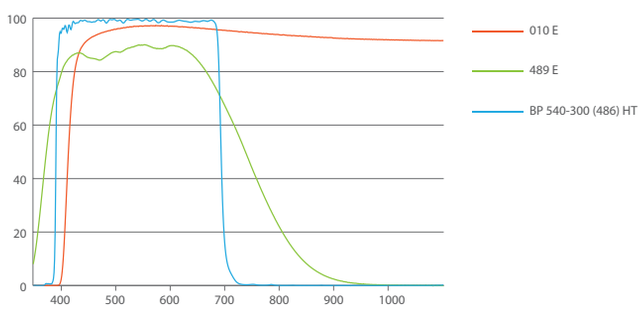
Narrow bandpass filters impresses with steep slopes and high transmission at stable cut on and cut off wavelengths. Ideal for laser applications using any popular laser wavelength.




| Filter | Range | AR Coating | ø (mm) | SH (30,5 n/a) | SN1 | CMT |
|---|---|---|---|---|---|---|
| NBP 405-15 HT | Narrow Bandpass 397.5 - 412.5 nm | - | 19 - 64 | 25.5 - 67 | 30.5 | x |
| NBP 457-20 HT | Narrow Bandpass 447 - 467 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| NBP 476-20 HT | Narrow Bandpass 466 - 486 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| NBP 488-20 HT | Narrow Bandpass 478 - 498 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| NBP 532-20 HT | Narrow Bandpass 522 - 542 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| NBP 635-20 HT | Narrow Bandpass 625 - 645 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| NBP 810-45 HT | Narrow Bandpass 787.5 - 832.5 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| NBP 830-20 HT | Narrow Bandpass 820 - 840 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |

## UV & IR Cut Filters

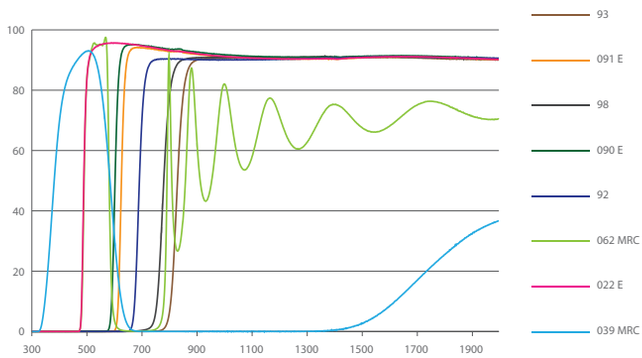
UV & IR cut filters block troublesome UV/ VIS or NIR light. They are robust, cost-effective and insensitive to angle of incidence. Additional to their filter function they are also a protective window in imaging systems.




| Filter | Range | AR Coating | ø (mm) | SH (30,5 n/a) | SN1 | CMT |
|---|---|---|---|---|---|---|
| 010 | UV-Cut >365nm | E | 27 - 74 | 25.5 - 67 | 30.5 | x |
| BP 515-270 HT | UV/IR Cut 380 - 650 nm former UI 515 | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 520-280 HT | UV/IR Cut 380 - 660 nm | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| BP 540-300 HT | UV/IR Cut 390 - 690 nm former 486 | - | 19 - 64 | 25.5 - 52 | 30.5 | x |
| 489 | IR Cut < 750 nm | E / MRC | 27 - 74 | 25.5 - 67 | 30.5 | x |

# Color Filters

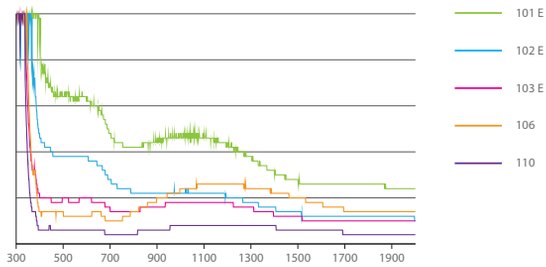
Color filters are absorptive filter that are used to increase contrast of a monochrome image, by isolating spectral regions and lighting colors. IR filters are absorptive filters, too. They are used in front of a NIR sensor or an image sensor for NIR imaging where IR spectrum only is needed.




| Filter | Range | AR Coating | ø (mm) | SH (30,5 n/a) | SN1 | CMT |
|---|---|---|---|---|---|---|
| 007 | Protective Window 2mm | E | 1/2" - 74 | on request | on request | x |
| 007 | Protective Window 1.3mm | E | 1/2" - 75 | - | - | - |
| 062 | Green | MRC | 27 - 74 | 25.5 - 67 | 30.5 | x |
| 022 | Yellow | E / MRC | 27 - 74 | 25.5 - 67 | 30.5 | x |
| 090 | Light Red | E / MRC | 27 - 74 | 25.5 - 67 | 30.5 | x |
| 091 | Red | E / MRC | 27 - 74 | 25.5 - 67 | 30.5 | x |
| 092 | Dark Red | - | 27 - 74 | 25.5 - 67 | 30.5 | x |
| 093 | Black Red | - / MRCIR | 27 - 74 | 25.5 - 67 | 30.5 | x |
| 098 | NIR Pass | - / MRCIR | 27 - 74 | 25.5 - 67 | 30.5 | x |

## Neutral Density Filters

Neutral density (ND) filters reduce evenly the transmittance of light over the entire VIS spectrum. They decrease the brightness of an image without changing the depth of field (DoF). They attenuate light by ab-sorbing a part of the energy of the VIS wavelength, without influence on the color balance. ND filters are used to control the intensity of light going through an optical system to avoid over-exposure, blooming on imaging sensors and prevent damages on light sensitive measuring sensors.




| Filter | Range | AR Coating | ø (mm) | SH (30,5 n/a) | SN1 | CMT |
|---|---|---|---|---|---|---|
| 101 | Neutral Density OD 0,3 | E | 27 - 74 | 25,5 - 67 | 30,5 | x |
| 102 | Neutral Density OD 0,6 | E | 27 - 74 | 25,5 - 67 | 30,5 | x |
| 103 | Neutral Density OD 0,9 | E | 27 - 74 | 25,5 - 67 | 30,5 | x |
| 106 | Neutral Density OD 1,8 | - | 27 - 74 | 25,5 - 67 | 30,5 | x |
| 110 | Neutral Density OD 3,0 | - | 27 - 74 | 25,5 - 67 | 30,5 | x |

## Polarizers

Natural light and most light sources emit unpolarized light. Polarizers are an excellent solution in applications that require glare reduction due to reflected light. They are also used in several optical instruments.Unpolarized light passing a linear polarizing filter will be linear polarized afterwards in the orientation of the polarizing axis of the filter.Crossing the axes blocks nearly all light.

| Filter | Type | AR Coating | ø (mm) | SH (30,5 n/a) | SN1 | CMT |
|---|---|---|---|---|---|---|
| AUF | Linear Polarizing Filter | - / MRC | 27 - 74 | - | - | x |
| IFK P-W 76 | Linear Polarizing Film 0.3 mm | - | max. 425 x 1270 | - | - | - |
| IFK P-W 76 | Linear Polarizing Film 0.8 mm | - | max. 431 x 1270 | - | - | - |
| IFK P-W 64 | Linear Polarizing Film 0.4 mm | - | max. 559 x 914 | - | - | - |
| IFK ZN/L | Ciruclar Polarizing Film 0.3 mm | - | max. 625 x 615 | - | - | - |
| IFK ZN/L | Ciruclar Polarizing Film 0.9 mm | - | max. 420 x 600 | - | - | - |

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