

# Varifocal 960H Lenses

[www.boschsecurity.com](http://www.boschsecurity.com)**BOSCH**  
Invented for life

- ▶ Varifocal lenses with 960H optical resolution
- ▶ High-quality optics
- ▶ 1/3-inch formats
- ▶ Reliable, robust construction
- ▶ DC-iris models

This family of 960H lenses comprises varifocal lenses with DC-iris control. They are compact, rugged lenses in 1/3-inch image formats. The lenses range from wide-angle to telephoto to cover virtually all applications in CCTV observation systems.

The lenses deliver impressive optical quality due to their 960H resolution, contrast reproduction, and coating.

## System overview

Higher resolution sensors, with even smaller pixel sizes, require higher resolution lenses to deliver their full potential. The lenses in this family are specifically designed for the Bosch range of 960H DINION cameras. To get the maximum resolution from a 960H camera, you need to select a lens which can match sensor resolution not only at the center, but also at the edges and at different iris openings.

The Modulation Transfer Function (MTF) specification is an indication of the resolution, contrast, and sharpness performance of a lens. Lens resolution is normally measured in line pairs per millimeter (lp/mm). The MTF of each lens gives the maximum resolution in terms of lp/mm for a given scene. Both the LVF-4000C and LVF-5000C range have excellent daytime resolution. The LVF-5000C range is best suited to wide dynamic range (WDR) cameras and

cameras that are used to capture more details at night. The LTC 3664/31 lens offers excellent performance in low-light scenes with an aperture of F1.0.

The measured MTF specifications are only one aspect of a lens's quality. Special anti-reflective coatings to reduce flare, better aberration performance and lower distortion also contribute to their suitability for different cameras.

## Functions

### DC iris control

For auto iris control, all lenses use the standard four-pin EIAJ connector, which fits directly into the camera's iris output.

### Wide range

The extent of the range means that an installer is always able to select the most appropriate lens for both camera and application. For optimizing angular fields right on site, varifocal lenses are the most versatile and practical solution available. These lenses allow for setting virtually any angle of field, which maximizes surveillance effects. Installers do not need to carry several different focal length lenses – and installation is more efficient because they can find the right angles of field without

moving the camera set-up. If the field-of-view requirements change after installation, modification is simple by just altering the lens' focal length settings.

**IR corrected**

All lenses in this range are IR corrected to match the wide range of light conditions covered by our cameras. Infrared corrected lenses provide fully adjusted and sharp focused images in daylight and at night when used in conjunction with IR illuminators. This makes IR lenses the best choice for high performance day/night cameras.

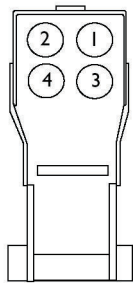
**Robust**

The mechanical construction is designed to withstand both frequent iris control operations and the environmental stress of security installations. For flexible, high-quality, reliable lenses that match a 960H camera's performance, this family is the ideal solution.

**Certifications and approvals**

Region	Certification
Europe	CE

**Installation/configuration notes**



4-pin DC-iris connector (front view)

- Pin 1: Damping coil -
- Pin 2: Damping coil +
- Pin 3: Driving coil + (open)
- Pin 4: Driving coil -

**Technical specifications**

**Electrical/mechanical**

See comparison table at the end of this datasheet.

**Environmental**

Operating Humidity	Up to 93% non-condensing
Certification	CE

**Ordering information**

**LVF-4000C-D0550 Varifocal Lens**

960H varifocal IR-corrected lens. 1/3" sensor; CS-mount; 4-pin DC-iris; F1.4-360; 5 to 50 mm  
Order number **LVF-4000C-D0550**

**LVF-4000C-D2812 Varifocal Lens**

960H varifocal IR-corrected lens. 1/3" sensor; CS-mount; 4-pin DC-iris; F1.3-360; 2.8 to 12 mm  
Order number **LVF-4000C-D2812**

**LVF-5000C-D0550 Varifocal Lens**

960H varifocal IR-corrected lens. 1/3" sensor; CS-mount; 4-pin DC-iris; F1.6-360; 5 to 50 mm; high resolution; low distortion  
Order number **LVF-5000C-D0550**






**LVF-5000C-D2811 Varifocal Lens**

960H varifocal IR-corrected lens. 1/3" sensor; CS-mount; 4-pin DC-iris; F1.4-360; 2.8 to 11 mm  
Order number **LVF-5000C-D2811**

**LTC 3664/31 Varifocal Lens**

960H varifocal IR-corrected lens. 1/3" sensor; CS-mount; 4-pin DC-iris; F1.0-360; 3 to 8 mm  
Order number **LTC 3664/31**

### 960H Lenses

	LVF-4000C-D2812 Varifocal Lens	LVF-4000C-D0550 Varifocal Lens	LVF-5000C-D2811 Varifocal Lens	LVF-5000C-D0550 Varifocal Lens	LTC 3664/31 Varifocal Lens
					
<b>Max. sensor format</b>	1/3 inch	1/3 inch	1/3 inch	1/3 inch	1/3 inch
<b>Focal length</b>	2.8 – 12 mm	5.0 – 50 mm	2.8 – 11 mm	5.0 – 50 mm	3.0 – 8 mm
<b>Iris range</b>	F1.3 - 360	F1.4 - 360	F1.4 - 360	F1.6 - 360	F1.0 - 360
<b>Min object distance</b>	0.3 m (1.0 ft)	0.5 m (1.6 ft)	0.3 m (1.0 ft)	0.3 m (1.0 ft)	0.2 m (0.7 ft)
<b>Weight</b>	71 g (0.16 lb)	118 g (0.1 lb)	79 g (0.17 lb)	85 g (0.1 lb)	45 g (0.1 lb)
<b>Dimensions (approx.)</b>	Ø38 x 48 x 56 mm Ø1.5 x 1.9 x 2.2 in	Ø37 x 64 x 49 mm Ø1.5 x 2.5 x 1.9 in	Ø40 x 59 x 46 mm Ø1.6 x 2.3 x 1.8 in	Ø41 x 59 x 55 mm Ø1.6 x 2.3 x 2.2 in	Ø33 x 43 x 48 mm Ø1.3 x 1.7 x 1.9 in
<b>Lens mount</b>	CS	CS	CS	CS	CS
<b>Angle of view (HxV)</b>	W: 102.2 x 74.2 T: 23.7 x 17.8	W: 49 x 36.7 T: 5.47 x 4.1	W: 97.4 x 72.4 T: 26.2 x 19.7	W: 51.2 x 39.4 T: 5.3 x 4.1	W: 92.5 x 68 T: 35.7 x 26.8
<b>MTF on-axis (lp/mm)</b>	>178 >146 (IR)	>145 >119 (IR)	>250 >223 (IR)	>165 >144 (IR)	>178 >58 (IR)
<b>MTF off-axis (lp/mm)</b>	>123 >79 (IR)	>71 >30 (IR)	>145 >131 (IR)	>81 >30 (IR)	>77 >55 (IR)
<b>Iris control</b>	4-pin, DC control	4-pin, DC control	4-pin, DC control	4-pin, DC control	4-pin, DC control
<b>Focus control</b>	manual	manual	manual	manual	manual
<b>Zoom control</b>	manual	manual	manual	manual	manual
<b>IR corrected</b>	yes	yes	yes	yes	yes
<b>Operating temperature</b>	-10°C to +50°C (+14°F to +122°F)	-20°C to +50°C (-4°F to +122°F)	-20°C to +60°C (-4°F to +140°F)	-10°C to +50°C (+14°F to +122°F)	-20°C to +60°C (-4°F to +140°F)

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