OPTEM ZOOM 70XL
7:1 OPTICAL SYSTEM

EXCEPTIONAL RELIABILITY
250,000 Zoom Cycles Guaranteed

www.qioptiqimaging.com
Qioptiq Imaging Solutions
OPTOMECHANICAL RELIABILITY

The Zoom 70XL is specifically designed to stand up to the grueling conditions of today’s automated imaging.

“XL” Stands For Xtended Life

Backed by superior engineering and only the highest-quality components and materials, the Optem™ Zoom 70XL delivers a guaranteed 250,000 cycles without mechanical failure! This robust reliability makes the Zoom 70XL the ideal solution for demanding and mission critical applications.

NEW FOR ZOOM 70XL

NEW LED Coaxial Illuminators

Programmable 1-Watt white-light Coaxial LED Illuminators feature compact design and lightweight cable for streamlined OEM integration. PAGE 4

NEW Dual-Magnification Accessory

Now you can simultaneously integrate two upper lens modules with independent cameras over the same subject. Mix and match Zoom 70 and FMOS upper modules for added versatility. PAGE 4

NEW Long-Working Right Angle Module

Integrate a 90° turn in the optical path above the Lower Function Module. Unlike the below system right-angle adapter, this unique accessory affords configuration flexibility to integrate all lower functions without sacrificing any working distance. PAGE 4

NEW Optem M-Plan APO Objectives

Get the most from your high magnification imaging. Specify the newly expanded line of Optem Long-Working Distance Objectives, including the new M-Plan APO family for exceptional color accuracy and field-flatness. PAGE 4

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HOW TO SPECIFY YOUR ZOOM 70XL LENS SYSTEM

Follow the seven easy steps below to configure the Zoom 70XL Lens System that meets your optical, functional and physical configuration needs.

1. Referring to the Optical Performance Matrix for Substage or Oblique Illumination on the back cover, locate your desired performance parameters (typically field-of-view at high- and low-end zoom as relates to your intended camera format 1/4” – 1”). If you desire coaxial illumination, work from the Optical Performance Matrix for Coaxial illumination. PAGE 5

2. Cross reference your desired performance block and note the TV Tube magnification (TOP axis) and Auxiliary Lens magnification (LEFT axis) to arrive at the combination of magnification components needed to yield your desired field-of-view (FOV)... consider the varying resolution, depth of field and/or working distance factors that are dictated by the magnification components.

3. Once you have determined the TV Tube and Auxiliary Lens magnifications required, navigate down through the System Diagram (PAGE 6-7) starting from the camera. Select the physical shape of TV Tube and/or camera mount type desired.

4. Select the Upper Zoom Module with the functional features you require... Manual, Iris, detent and DC or Stepper motorized Zoom options are available.

5. Combine the Upper Zoom Module with one of the Lower Function Modules that incorporates manual or motorized fine focus and/or coaxial illumination options. If you have chosen both motorized zoom and focus, the compact frame constraints of Zoom 70XL require that you order a Dual-Motorized Non-Modular Lens - 7:1 zoom function.

6. Now Specify the correct Auxiliary Lens magnification to complete the optical components of your Zoom 70XL Lens System as dictated in step 1 above. By default, the Zoom 70XL yields a 1X configuration without an Auxiliary Lens.

7. Finally outfit your Zoom 70XL Lens System with the appropriate Coaxial or Ringlight Illumination accessories. If you chose motorized zoom or focus functions, select the appropriate DC or Stepper controller and power supply. You may also wish to specify mounting hardware to ease integration.

UPPER ZOOM MODULES

The specific Upper Zoom Module selected will determine the type of zoom operation for your Zoom 70XL System.

- Manual Module - Provides basic hand-driven 7:1 zoom function.

- Iris Diaphragm Module - Provides manual 7:1 zoom while also allowing better illumination control. With Iris, you can increase depth-of-field and/or maintain more consistent image brightness across your entire field.

- Detent Module - Obtain specific and repeatable magnification stops throughout the 7:1 zoom range without the complexity and cost of motorization. Detents are ideal for metrology applications where each position can be calibrated.

- Motorized Zoom Module - Provides programmable automated zoom in either DC or Stepper Motorized Versions. All Stepper Motorized Models come complete with programmable homing sensors.

LOWER FUNCTION MODULES

When configuring your Zoom 70XL Lens System, you may choose between the following Manual or motorized Lower Function Module options:

- Standard Module
- Internal Focus Module
- Coaxial Illumination Module
- Internal Focus with Coaxial Module

Variable Working Distance Auxiliary Lens - Intended for applications requiring working distances between 127mm (5”) and 432mm (17”). Covers magnification factors 0.288X at 127mm, and 0.109X at 432mm. See “Variable Working Distance Auxiliary Lens” Chart available as a download at www.qioptiqimaging.com.

Objective Modules - Incorporate Infinity-Corrected Objectives utilizing one of four Objective Lower Function Modules. All are equipped with M26 x 36T threads to accept Optem and Mitutoyo Objectives. An RMS thread adapter is available for use with Nikon and Olympus Objectives.

DUAL MOTORIZED NON-MODULAR MODELS

With its extremely space efficient design, the Zoom 70XL must be ordered in a non-modular configuration when both motorized zoom and focus functions are desired. Select from four single-bodied Dual-Motorized Zoom 70XLs in either DC or Stepper motorization with various illumination options.
ILLUMINATION OPTIONS

The Zoom 70XL Lens System offers a variety of illumination options to meet a variety of imaging requirements.

LED Coaxial Illuminators

Compatible with all Zoom 70XL Coaxial Lower Function Modules, new Programmable 1-Watt LED Coaxial illuminators offer reduced power requirement and heat generation with substantial service life gains.

Available in Straight and Right-angle configurations, Optem Coaxial LEDs feature compact designs and simplified cable management. Driven by a compact single-channel programmable controller, Optem Coaxial LEDs emit brilliant cool light in the visible spectrum and deliver virtually identical optical performance to our traditional Fiber Optic Coaxial illuminator.

Fiber Optic Coaxial Illuminators

Available with 40 and 60-inch flexible fiber bundles powered by 110V or 220V Optem VSI Fiber Optic Illuminators.

Polarized Light

When imaging highly reflective subjects, Polarizer Modules with built-in Analyzers are available to introduce polarization to both LED and Fiber Optic Coaxial Illumination paths.

Fiber Optic Ring Lights

Oblique ringlight illumination is ideal to better define features of dimension-rich subjects. Driven with the same VSI Fiber Optic Illuminator as conventional coaxial systems, Optem Ringlights feature optional horizontal, vertical and Objective configurations.

CONFIGURATION ACCESSORIES

Extend the versatility of your Zoom 70XL Lens System with two new innovations in form and function.

Long-Working, Right-Angle Module

This accessory allows the introduction of a 90° of your optical axis at the mid-body point of your Zoom 70XL Lens System. Users can now integrate any Zoom 70XL Lower Function Module below the right-angle turn maintaining full working distance and affording greater configuration flexibility.

NEW Dual-Magnification Module

Simultaneously integrate two Zoom 70 or Optem FMOS upper modules over one subject. Mix and match fixed and zoom magnifications, camera types/formats. Choose from the full range of Zoom 70XL Lower Function Modules or integrate compact Coaxial illumination through the coaxial block.

MOTORIZING ZOOM 70XL

The Zoom 70XL Optical System can be specified with motorized zoom and/or focus functions.

Stepper Motor Models

Stepper Motors feature Hall-Effect Sensors to ensure pinpoint mechanical accuracy and repeatability. Control and power are easily integrated through RS232 serial port interface with a Rocker Switch controller and Windows GUI. An OEM Board is available for more streamlined OEM integration. A Stepper Motor VI library is available for LabVIEW.

DC Motor Models

DC Motors allow continuous movement throughout either the zoom or focus range. Two RS232 Serial ports in the back of the joystick DC Motor Controller accept both zoom and focus motorized functions.

OPTEM LONG-WORKING DISTANCE OBJECTIVES

Achieve significantly higher magnifications and increased resolution. Combine your Zoom 70XL with the expanded line of Optem infinity-corrected objectives.

Optem M-Plan APO

Eliminate Chromatic aberration across exceptionally flat fields for the ultimate in high-magnification accuracy. Select from 2X, 5X, 10X, 20X and 50X Long-Working Distance Objectives. These objectives are exact replacements for Mitutoyo 378 series objectives and are ideal for metrology applications.

Optem High-Resolution

Specifically designed to capture maximum resolution at the high-end magnifications of Optem Zoom Lenses, the 5X, 10X and 20X Optem HR Objectives are ideal for applications where distinguishing every finite detail is critical.
For an online archive of nominal component dimensions, downloadable schematics, and optical performance specifications, visit the Zoom 70XL Section of our web site.
## Substage/Ringlight Illumination Zoom 70XL Optical Performance Matrix

### SPECIFICATIONS

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**Note:** Configuration not recommended for WD: 468 mm.