

## PHI OPTICS SPATIAL LIGHT INTERFERENCE MICROSCOPY (SLIM) CELLVISTA SLIM SYSTEM

### Microscope configuration

#### Minimal for manual ROI imaging (SLIM Basic)

- Inverted microscope stand (Zeiss, Nikon, Leica, Olympus)
- Phase Contrast illumination, including Phase Contrast objectives (10X to 100X, dry or oil immersion), and condenser turret (Ph1 to Ph3 rings)

#### Recommended for multiple ROI, 2D/3D scanning, multichannel imaging (SLIM Pro)

- Inverted Zeiss AXIO Observer 7, Nikon ECLIPSE Ti2, Leica DMI8, Olympus IX83 stands with motorized Z-drive and motorized XY stage
- Phase Contrast illumination, including Phase Contrast objectives (10X to 100X, dry or oil immersion), and condenser turret (Ph1 to Ph3 rings)
- Fluorescence illumination including light source and filters, automated fluorescence turret

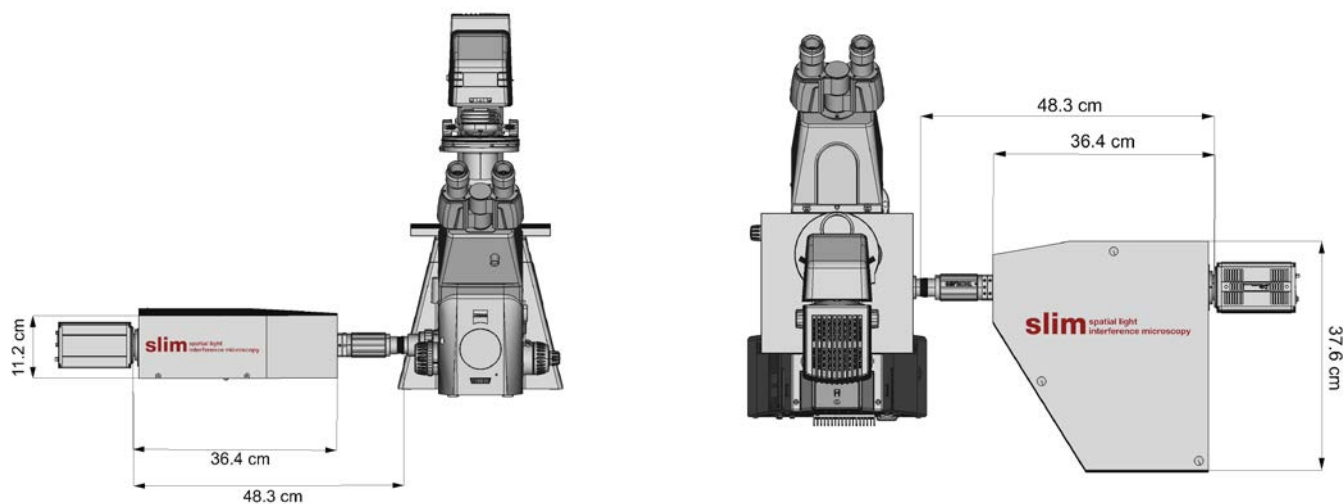
### CellVista SLIM Basic configuration (standard)

- SLIM Basic **HARDWARE MODULE** with standard SLM unit for up to 5 fps live SLIM images at full camera resolution
- CellVista Basic **SOFTWARE PLATFORM** for manual ROI acquisition including timelapse and fluorescence channels
- SLIM-compatible desktop **COMPUTER** incl. monitor, accessories (cables, keyboard/mouse), MS Windows 11
- USB sCMOS Camera

### CellVista SLIM Pro configuration (standard)

- SLIM Pro **HARDWARE MODULE** with high-speed SLM unit for up to 15 fps live SLIM images at full camera resolution
- CellVista Pro **SOFTWARE PLATFORM** for 2D and 3D automated scanning and acquisition, including timelapse and fluorescence channels
- SLIM-compatible desktop **COMPUTER** incl. monitor, accessories (cables, keyboard/mouse), MS Windows 11
- high speed (CameraLink or CoaXPress) and high QE (>80%) sCMOS Camera

## SLIM hardware module dimensions



L x W x H : 48.3 x 37.6 x 11.2 cm / 19.0 x 14.8 x 4.4 in (without camera)

- Height adjustment pins are used to align the optical axis of SLIM module with that of microscope camera port. Pins are connected to the optical table with clamps. Pin height varies with microscope make/model and is not included in dimensions above.
- Length of ribbon cable from SLIM module to SLM controller: 61 cm (24 inches)

## Environmental specifications

- Operating Ambient Temperatures: +10°C to +40°C
- Storage/Transport: -30°C to +60°C
- Vibration: low-vibration, passive damping optical table, 4 x 3 feet, metric or imperial taps
- Power requirements: 100-240 VAC, 50/60Hz

## Microscope camera port connection

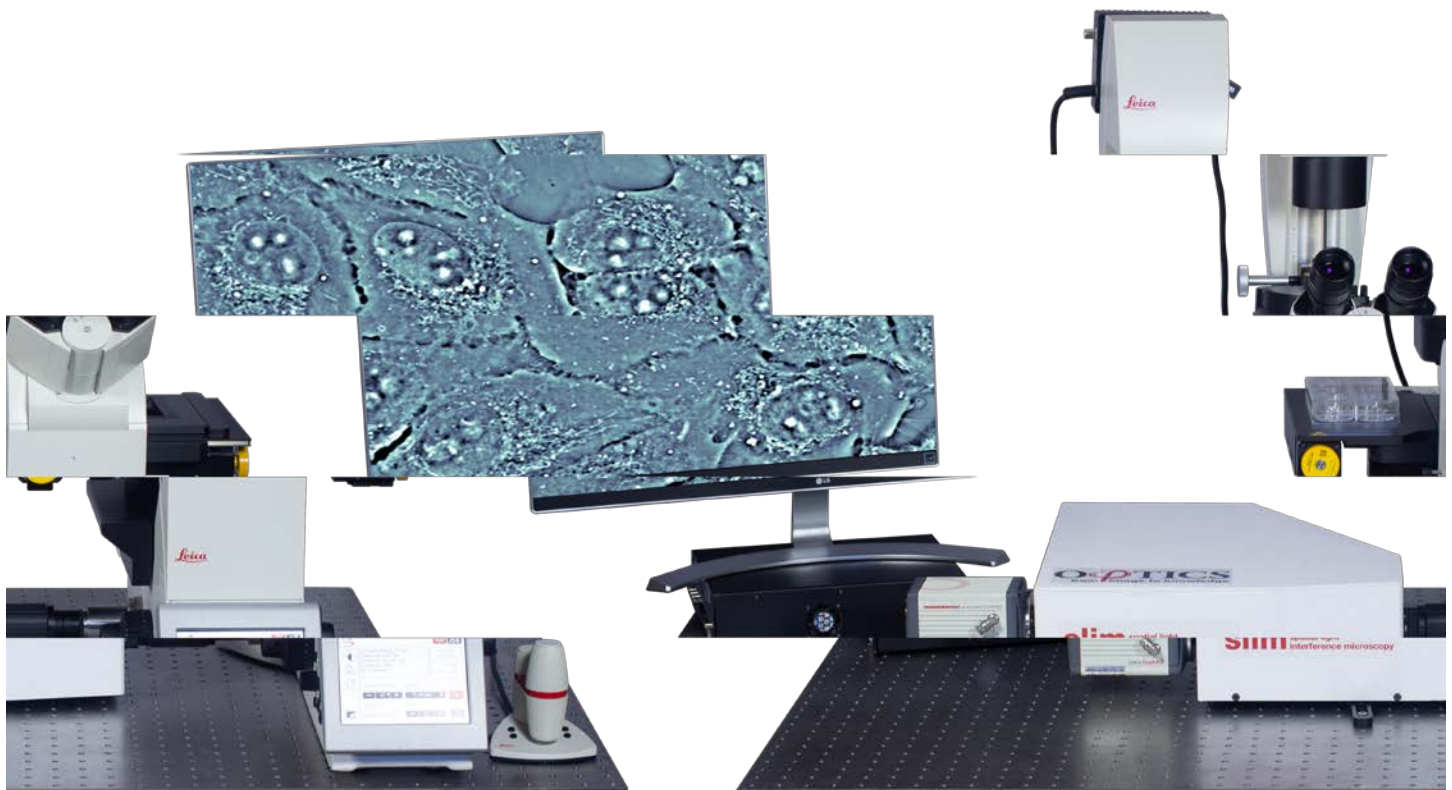
Use regular (1x) C-mount adapter (no magnification)

## Cameras currently compatible with CellVista software

- HAMAMATSU ORCA-Flash 4.0 and ORCA-Fusion
- ANDOR Zyla and Neo
- TELEDYNE Photometrics Prime BSI
- EXCELITAS PCO Panda and Edge
- Other cameras can be integrated upon request



*CELLVISTA SLIM PRO module connected to a NIKON Eclipse Ti2 microscope*



*CELLVISTA SLIM PRO module connected to a LEICA DMI8 microscope*

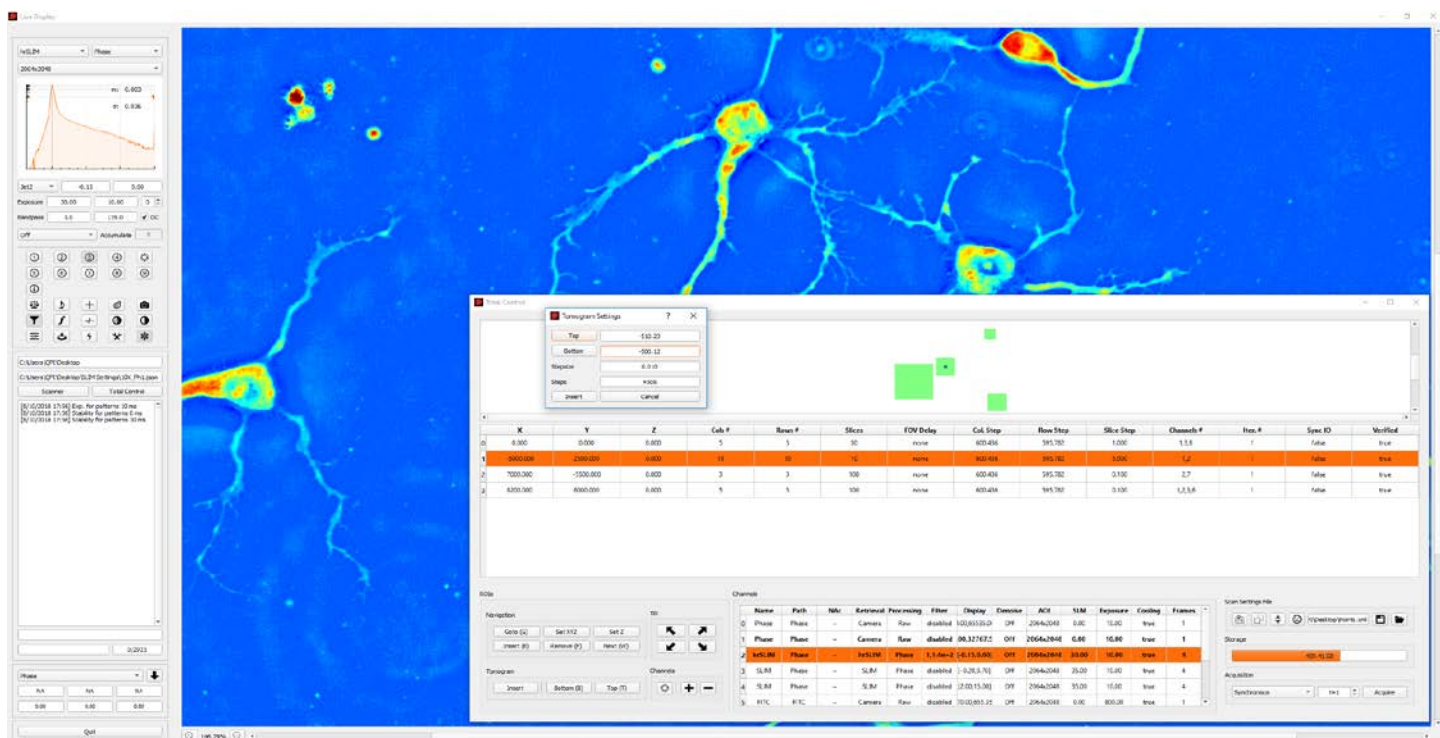
## Image processing and display

### Image Display / Acquisition Speed

- **SLIM:** Up to 15 frames per second (fps) at full camera resolution with Phi Optics CellVista Pro software and SLIM-compatible desktop PC
- **Regular microscope output** (fluorescence, phase contrast, brightfield): up to 100 frames per second for standard configuration

### Image Acquisition software: PHI OPTICS CELLVISTA platform

- Includes **Live Display** of user configurable channels (SLIM, fluorescence, brightfield, phase contrast) and manual ROI acquisition (snapshots)
- **SLIM maps:** direct measurement of phase, dry mass, height or refractive index of the sample
- **AUTOMATED SCANNING** module for programmable acquisition capabilities including:
  - control of the microscope motorization components (PRO version only): illumination shutters, condenser control, fluorescence turret, Z-drive, XY-stage
  - **TOMOGRAM** operation (PRO version only) for automated Z-stack acquisition (step size resolution defined by motorized focus Z-drive)
  - **GRIDSCAN** operation (PRO version only) for programmed scanning of predefined sample area, with focus correction maps, stitching and background correction
  - **TIMELAPSE** operation (BASIC and PRO versions) for automated time series acquisition (defined timesteps and cycles)
  - **4D operation** (depending on software version) to customize your advanced experiment with multiple ROI list and combined operations for each ROI: multichannel acquisition (SLIM, fluorescence, brightfield, phase contrast), GRIDSCAN, TOMOGRAM, TIMELAPSE.
  - **Output:** Tagged Image File Format (TIFF), no compression, up to full camera resolution (e.g. 2048 x 2048 pixels for ORCA-Flash 4.0), 32-bit floating point format

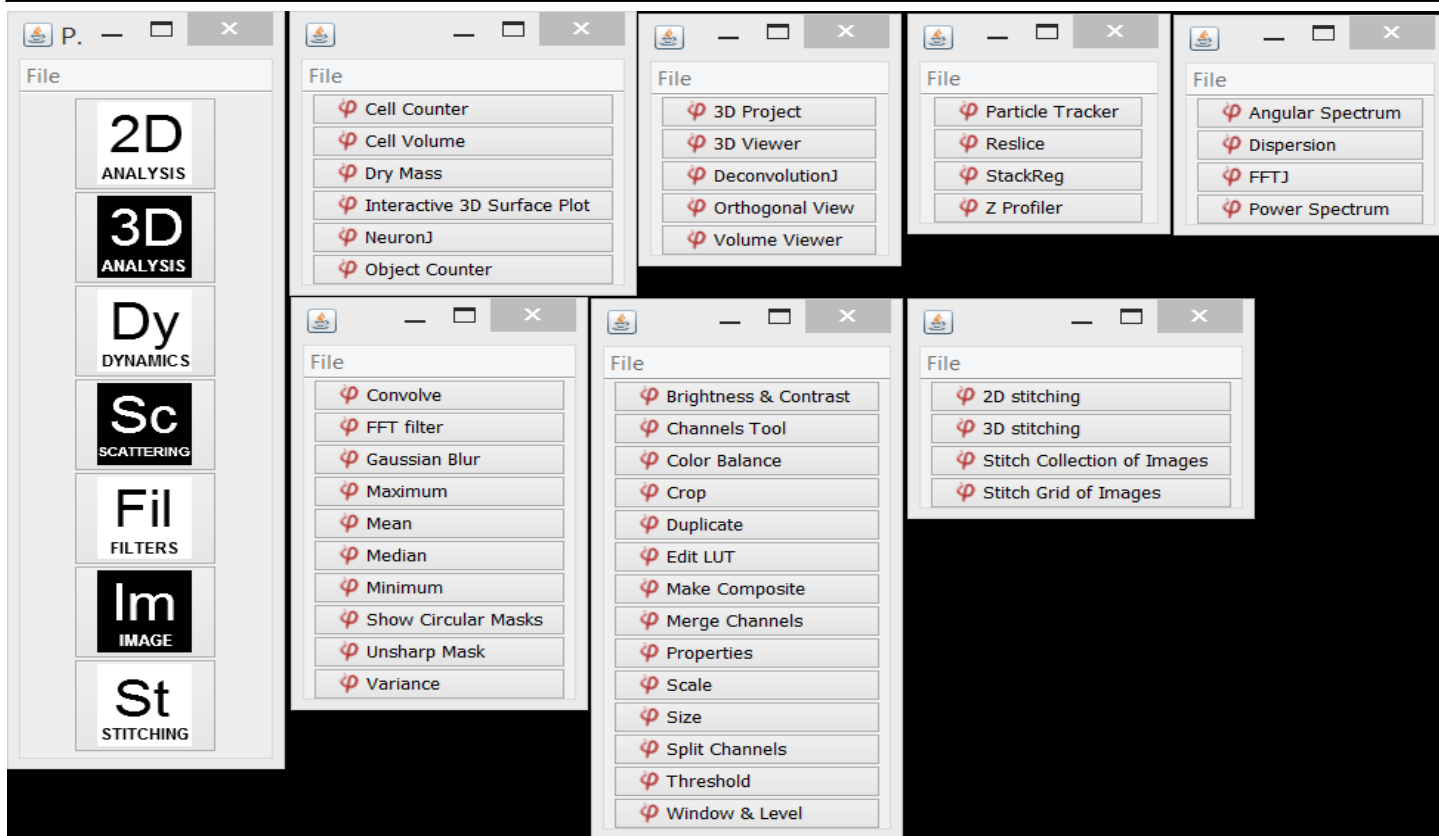


*CELLVISTA PRO software platform for 4D multi-ROI, multi-channel image acquisition*



## Image Analysis Software

- SLIM output is compatible with all major image-processing software: ImageJ (NIH), CellProfiler (MIT), IMARIS (Bitplane), MetaMorph (Molecular Devices), ZEN (Zeiss), NIS Elements (Nikon), MATLAB (MathWorks)
- Phi Optics provides an ImageJ Plugin Toolkit for image and data processing of 2D, 3D and time lapse series: open access ImageJ / FIJI based analysis pipelines for assay data analysis:
  - Data assembly:
    - stitching/mosaic of full well fields of view (any microscope channel)
    - 3D assembly of Z-stacks (any microscope channel)
    - Object (organelle, cell, spheroid, protein particle) counting, size, and 3D morphology, dry mass per object and population, including time dependent statistics per cell and population in Microsoft Excel format



*Plugin toolkit for image analysis using ImageJ / FIJI platform*

## Measurement resolution

- Transverse resolution - diffraction limited (e.g .250 nanometers with 63x/1.4NA objective)
- Axial optical sectioning - up to 1 micron for 1.4NA objective