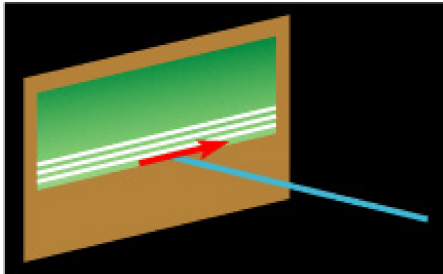


VisiScope Confocal

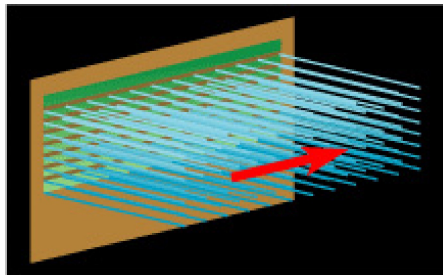
Spinning Disk CSU-X1

VisiScope Real-Time Confocal System based on CSU-X1 with Dual-Disk Technology

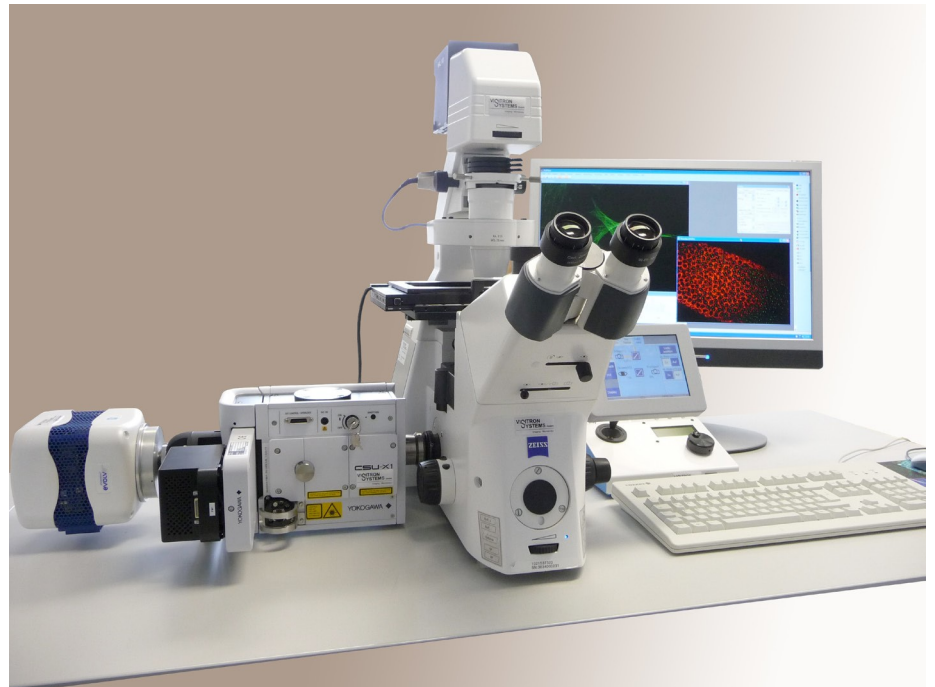
The CSU-X1 is the advanced model of our CSU-series of spinning disk confocals. It is widely recognized as the most powerful tool for live cell imaging. A Nipkow spinning disk containing about 20,000 pinholes and a second disk containing the same number of microlenses to focus the excitation laser light into each corresponding pinhole. This allows a very rapid raster scan of the field of view with about 1,000 laser beams when rotated.



Conventional single beam scanner.

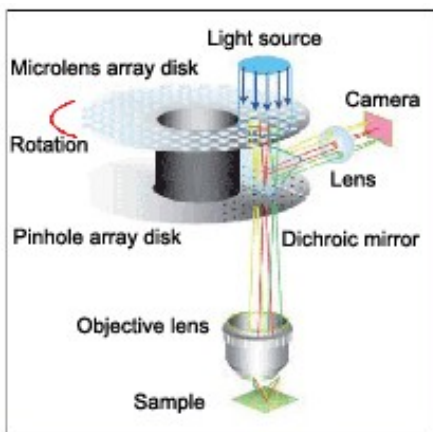


Multi-point scanning with the CSU.



Zeiss Axio-Observer with CSU-X1, Evolve camera and VisiView® Imaging Software.

More Flexibility: CSU models and options



CSU-X1 diagram with Dual-Disk.

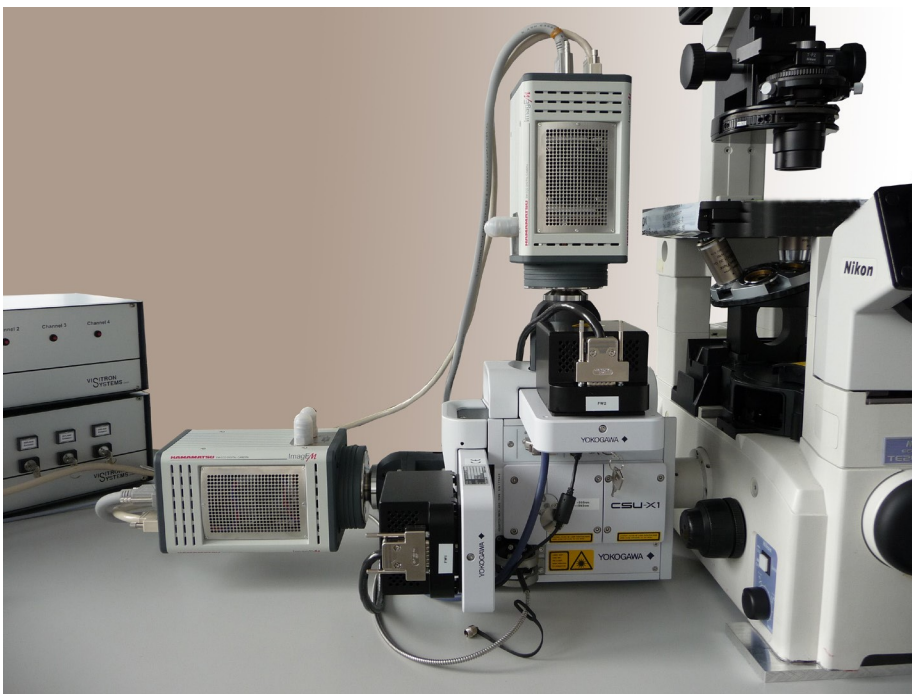
Model	CSU-X1-M basic manual version	CSU-X1-A high end motorized version
Image speed frames/sec.	360 standard 1000 option	1000 standard 2000 option
Dual camera option	manual	manual or motorized
Emission filter	manual slider or motorized filter wheel 6 / 10 position	motorized filter wheel 6-position
Bright Field Path Option	manual	manual or motorized

VisiScope Real-Time Confocal System based on CSU-X1 with Dual-Disk Technology

The CSU-X1 pinhole and microlens pattern are arranged in the Yokogawa proprietary design to optimize raster scan. Multi-beam scanning with the CSU-X1 not only increases scanning speed, but also results in significantly lower photobleaching and phototoxicity, because multiple excitation needs only a low level of spot laser power at the specimen to fully excite fluorescence.

VisiScope Confocal

Spinning Disk CSU-X1



Nikon TE with CSU-X1 and dualcam option with ORCA-EM camera and VS-LMS.

Second Camera Port for Simultaneous Image Acquisition

You can either simultaneously image two different emission ranges with two cameras, or selectively use one of the two cameras you installed depending on what is most suitable for your current experimental requirement. For each camera port, you can select to install a high-speed filter wheel (option). In addition to standard C-mount adapter, adapters for 8x8 mm EMCCD cameras and F-mount cameras are available.

Bright Field Path Option

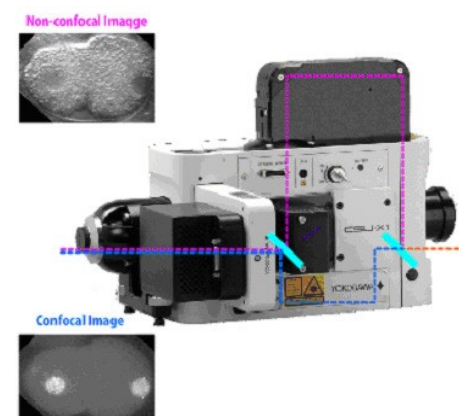
It allows you to use one camera for both confocal imaging with the CSU-X1 and bright-field (non-confocal) imaging through the bypass light path.



Olympus IX with CSU-X1 and Evolve.



CSU-X1 confocal with VS filter wheel.

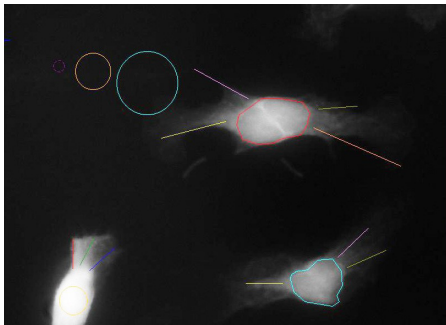


VisiScope Confocal FRAP

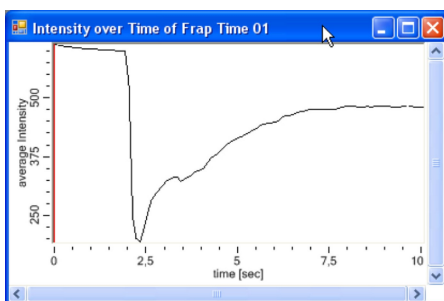
Spinning Disk
CSU-X1

VisiScope Confocal with 2D-VisiFRAP Scanner

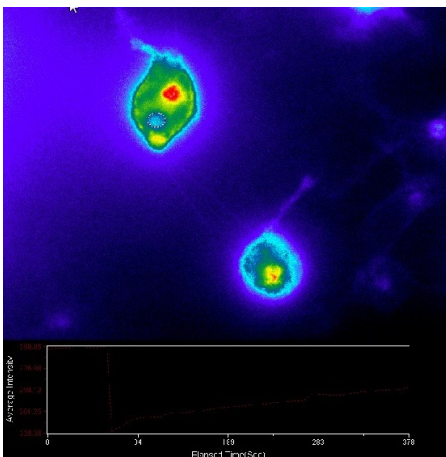
A compact and easy to handle system with simultaneous laser illumination for FRAP scanner and CSU confocal allows the simultaneous acquisition and display of confocal image with the FRAP bleaching as on-line overlay. No moving parts or optics are necessary because of a special optical design in the microscope.



GFP labeled cells with multiple selected regions



Measured intensity/time recovery



Zeiss Axio-Observer with 2D FRAP, CSU-X1 with dualcam.

Custom Imaging Solution

Our experience allows a flexible configuration of VisiScope Confocal FRAP based on our customer demands. This is useful because every application requires tailored lasers combinations, scientific grade cameras, microscopes and special optics.

Features

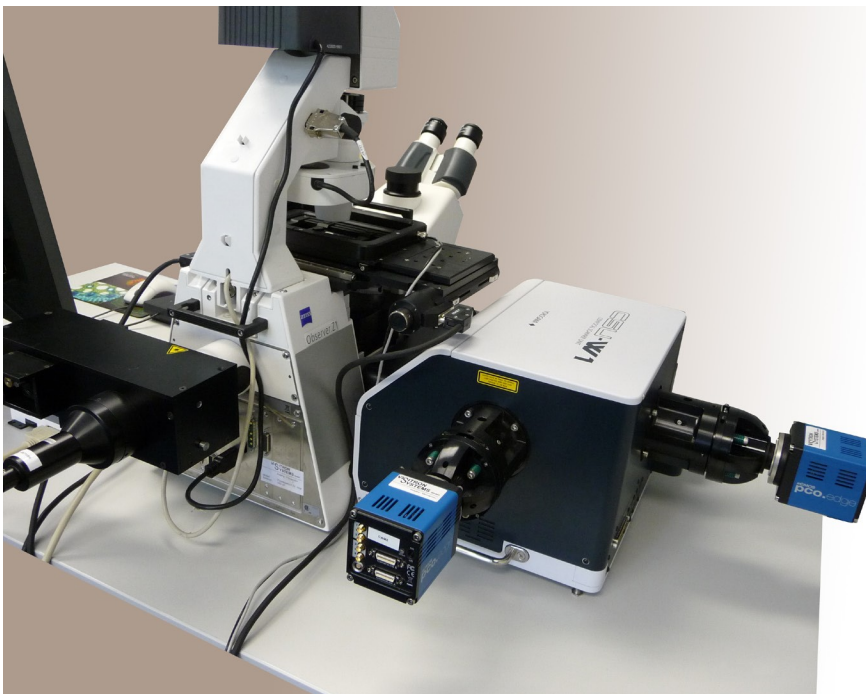
- » Support for Zeiss, Leica, Olympus and Nikon
- » Configuration for upright or inverted microscopes
- » Hardware autofocus support of Nikon PFS perfect focus, Zeiss definite focus, Olympus ZDC/ZDC2 and Leica AFC autofocus for drift compensation
- » Complete control of microscope motorization
- » Support of Photometrics, QImaging, Hamamatsu, PCO, DI-Spot scientific grade CCD cameras (Andor on request)
- » Microscope vibration free isolation tables

VisiScope-W1 Real-Time Confocal System for Wide Field of View and improved image quality

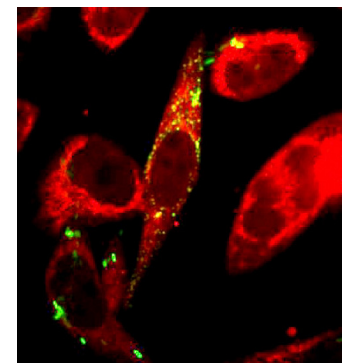
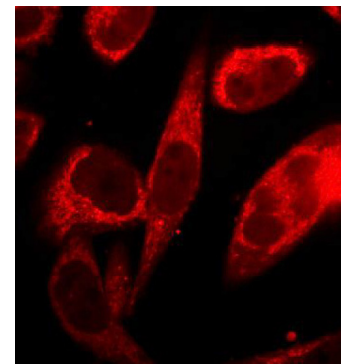
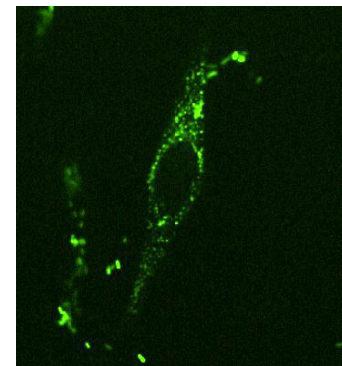
Visitron Systems GmbH has established a global distribution agreement with Yokogawa Corp. Japan. Visitron's market presence over the last 20 years and more than 10 years Spinning Disk Confocal experience show the customer our product understanding and support. The new CSU-W1 Confocal design for wide field of view (17 x 16 mm) and clearer images offers superior performance and functionality that researchers require in life cell research.

VisiScope Confocal

Spinning Disk CSU-W1

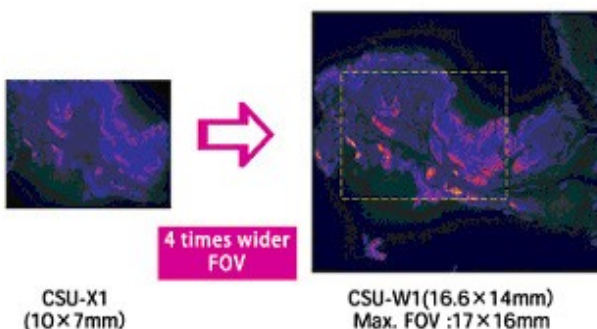


Zeiss Axio-Observer, VS-2D FRAP Scanner, CSU-W1 and two sCMOS Edge cameras.



Wide and Clear

The CSU-W1 system employs a newly designed large diameter spinning disk, which gives wide and clear images with significantly reduced crosstalk. Now, you can image whole mount specimen at high magnification.



VisiScope Confocal

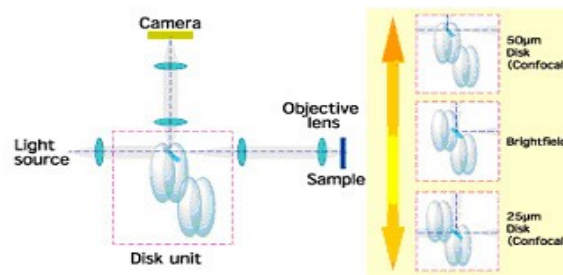
Spinning Disk CSU-W1

VisiScope-W1 Real-Time Confocal System for Wide field of View and improved image quality

The CSU-W1 confocal scanner unit, a high-end model that follows the previously released CSU-X1, offers the superior performance and functionality that researchers require. With its significantly larger field of view, decreased crosstalk, and extended near-infrared spectral range, it can obtain sharper images of regions deeper inside live cells.

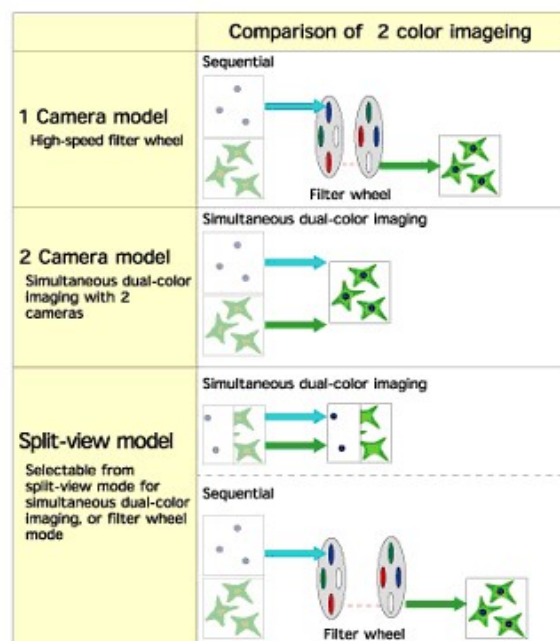
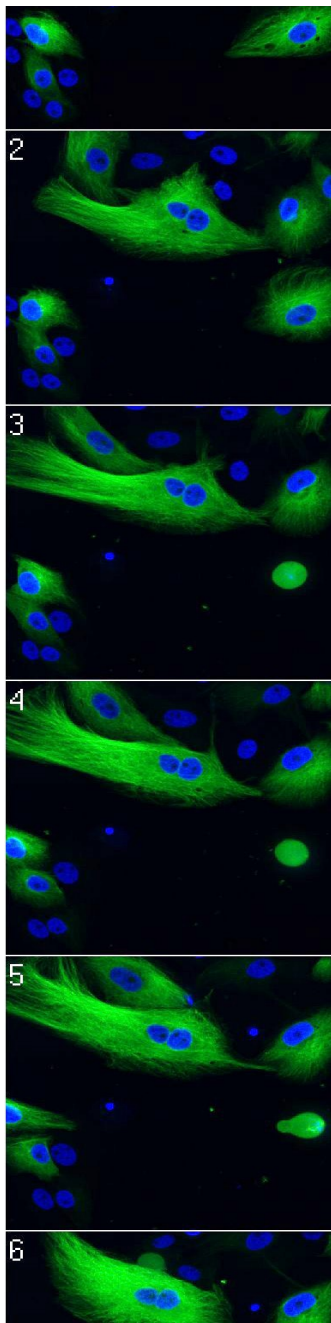
Selectable Pinhole Size

Now, you can select 25 μm pinhole in addition to the conventional 50 μm pinhole. Moreover, CSU-W1 provides motorized switching among the confocal paths and the brightfield path which allows direct brightfield imaging without light loss at the pinhole disk.



Provide many models to meet versatile applications

You can select from many models and options to meet various research demands.

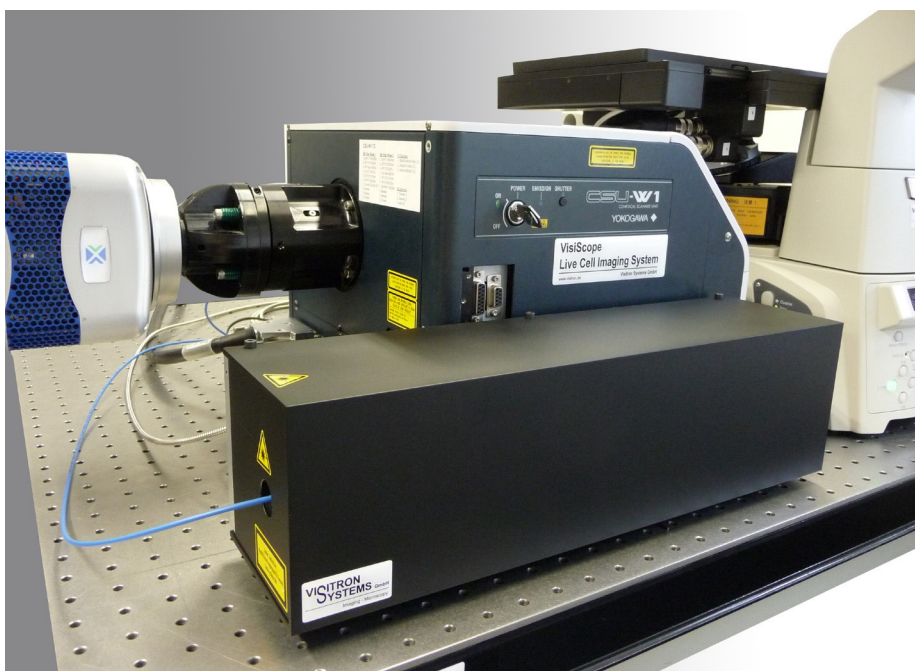


VS-Homogenizer Optics

The new Visitron Systems GmbH “VS-Homogenizer” optics are designed to enhance the laser illumination of Spinning Disk Confocal CSU-W1. This optical component can be easily added to already installed CSU-W1 confocal scan heads. The existing functionality of the original CSU confocal head remains. This enhancement offers even illumination of large cell areas and allows high-sensitivity imaging of living cells without the need for mathematical shading correction.

VS-Homogenizer

Improve Uniformity



Nikon-Ti with VisiScope Confocal-W1 and VS-Homogenizer.

Technical Background

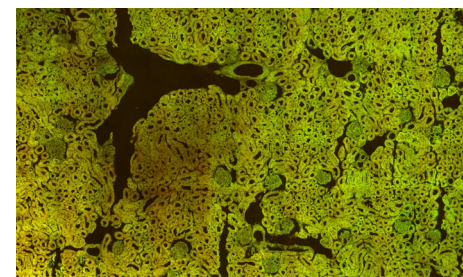
Laser-based Microscopy generally uses gaussian beams to achieve optimal focusing of the excitation light in the sample plane. However, this requires making a trade-off between excitation uniformity and intensity. The new Visitron VS-Homogenizer tackles this challenge by providing a flat intensity profile whilst maintaining optimal focusing of the laser beam in the sample plane.

Application: Confocal Spinning Disk Imaging

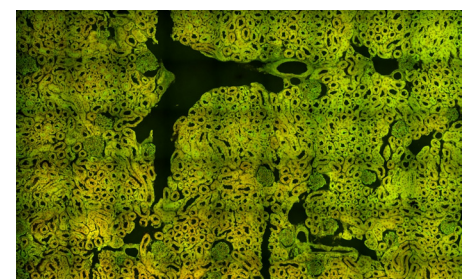
An increasing number of live cell imaging applications requires the acquisition of large sample areas. Quantitative measurements over complete Slide Scans or Multi-Well Experiments benefit strongly from a uniform excitation intensity profile. The Visitron Homogenizer achieves this with minimal beam modifications for optimal light efficiency and signal-to-noise ratio.

Result of Minimized Stitching Artifacts

13x13mm Field of a sCMOS camera and 63x/1.4 Oil Objective



Scan Slide Acquisition of 6x8 images with Visitron Homogenizer



Scan Slide Acquisition of 6x8 images with a standard Yokogawa CSU-W1 System

Note: Patent pending

VS- Homogenizer

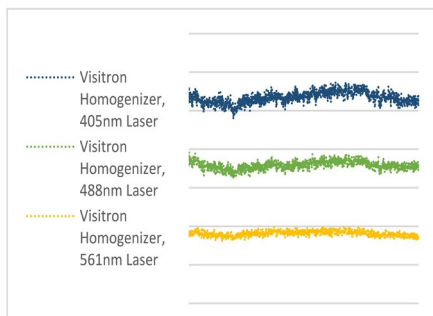
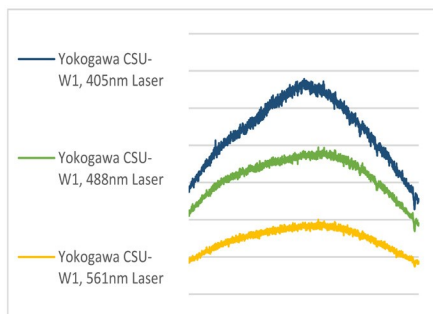
Optimal Light Efficiency

VS-Homogenizer Optics

Application: Confocal Spinning Disk Imaging

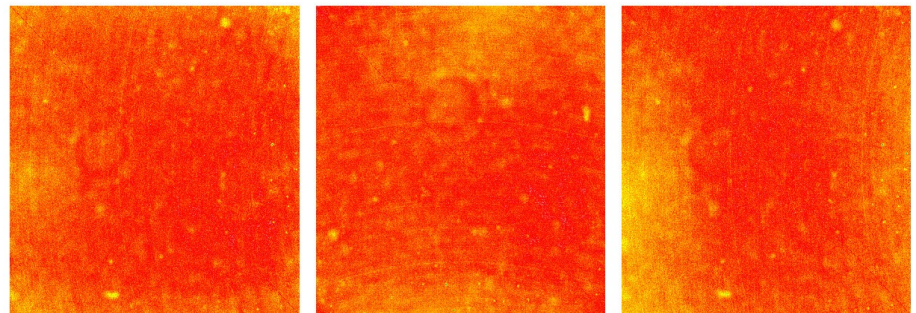
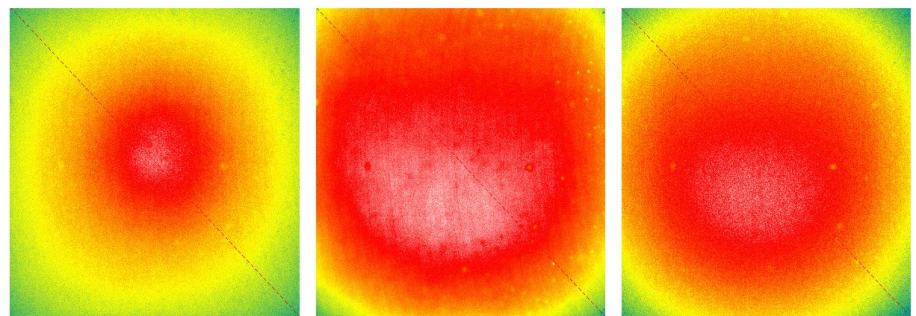
An increasing number of live cell imaging applications requires the acquisition of large sample areas. Quantitative measurements over complete Slide Scans or Multi-Well Experiments benefit strongly from a uniform excitation intensity profile. The Visitron Homogenizer achieves this with minimal beam modifications for optimal light efficiency and signal-to-noise ratio.

Comparison of Diagonal Line Scans



Increase Field Uniformity

Standard CSU-W1 13x13mm sCMOS



405nm Laser

488nm Laser

561nm Laser

Visitron Homogenizer 13x13mm sCMOS

Features and Benefits:

- » Uniformity improvement to 3-5% deviation, guaranteed 5%
- » Single mode fiber coupling with minimal power loss at pinhole
- » Maintains high signal to noise ratio of standard Yokogawa CSU-W1
- » No beam conditioning unit required

Typical Applications:

- » Flat Intensity Profile
- » Optimal Light Efficiency
- » Minimal Background