**VisiFRAP-Ultra**
**„the worldwide fastest 2D-FRAP Scanner"**

For over 15 years, Visitron Systems has been offering a wide range of high-performance 2D-FRAP scanner combinations, specifically designed for demanding applications such as optical stimulation, fluorescence recovery after photobleaching, photo-activation (PA), uncaging, photo-manipulation, ablation, and even microsurgery. Especially in fields like neuroscience research, speed is becoming an increasingly critical factor for example, in optogenetics, where fast and precise light manipulation is essential. Our scanner solutions offer the ideal platform for cutting-edge experiments and highly reproducible results.

Preliminary 09-2025

**Technical Note:**

VisiFRAP-Ultra 2D-Scanner Technology

# VisiFRAP-Ultra

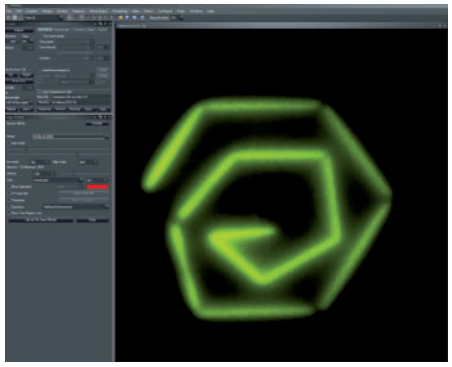
## „the worldwide fastest 2D-FRAP Scanner"

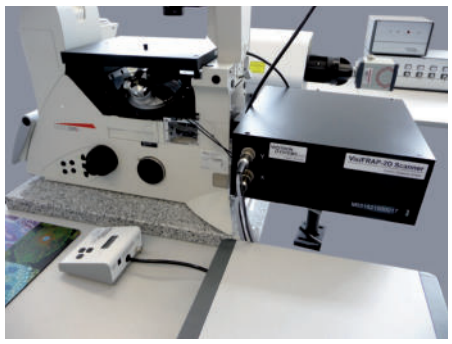
### Revolutionizing FRAP with Our Cutting-Edge ViRTEx Controller

We are thrilled to announce a breakthrough in FRAP technology with our innovative ViRTEx Controller. By optimizing galvo control, we've achieved an astonishing 20-fold increase in scanning speed, reaching an unprecedented 40 kHz.

In the blink of an eye, large areas can now be selectively illuminated with remarkable precision. Our system rivals the capabilities of digital mirror devices (DMDs) while offering superior flexibility and enhanced light efficiency through single-mode, high-power laser illumination.

Experience the future of FRAP scanning faster, more efficient, and more versatile than ever before!





### Key System Requirements and Confocal / TIRF Combination

- 40 kHz Scan Rate
- Diffraction limited laser spot size (typically <1µm)
- Spot Size adjustable - free ROI selection - auto-calibration
- Simultaneous Scanning and Imaging with TIRF/Spinning Disk/Widefield (requires dedicated FRAP lasers)
- Smallest delay (<5ms) between Bleach and Post-Bleach imaging in sequential mode (same laser for imaging and FRAP).
- Combined with our new IsoTIRF in the Orbital-200 it occupies just a single microscope port!
- Fully integrated in VisiView®: create custom FRAP workflows and analyse particle dynamics with the new graph fitting tools.

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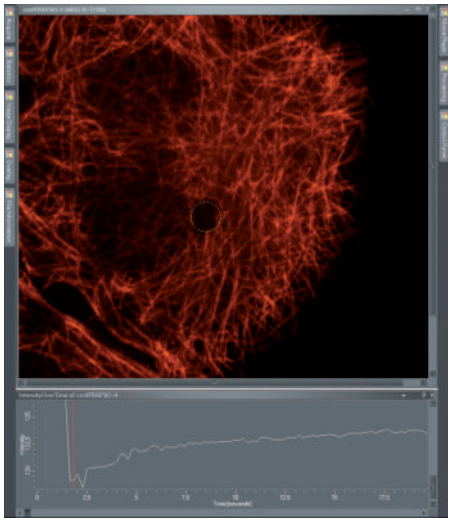
# Technical Note:

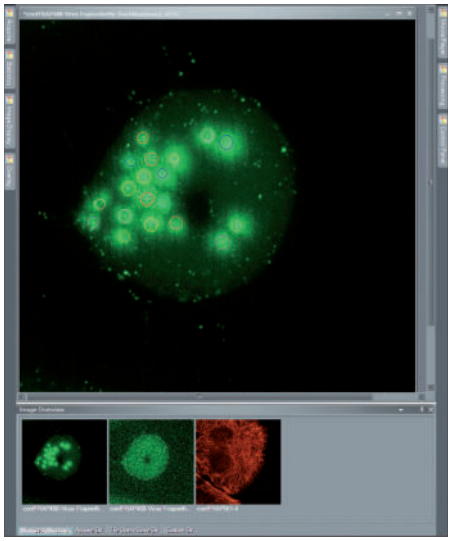
# VisiFRAP-Ultra 2D-Scanner Technology

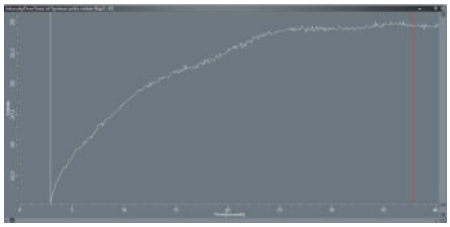
## VisiView® FRAP - Software Module

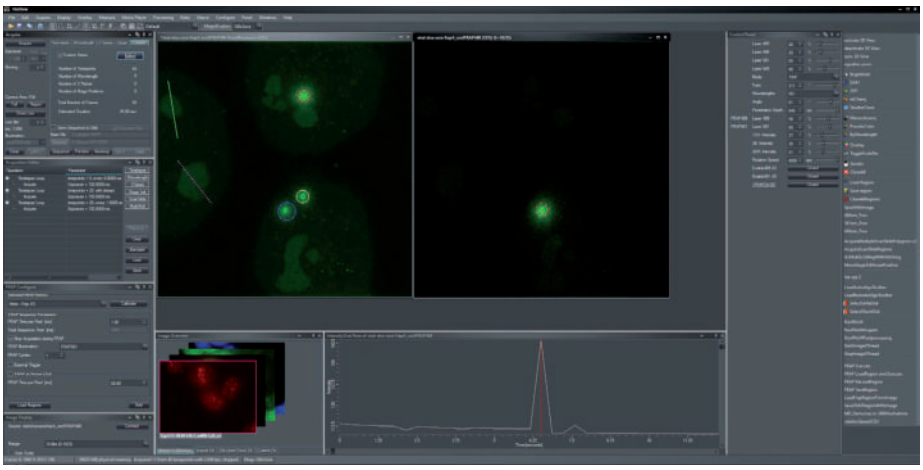
Easy to use FRAP Scanner

The VisiView® FRAP option, used alongside the 2D-VisiFRAP, enables you to control high-power lasers focused down to the µm scale. The co-evolution of software and 2D-VisiFRAP results in perfect interplay and high time resolution when switching lasers. Furthermore, flexible ROI selection and rapid laser deflection enable you to selectively excite multiple regions of your sample almost simultaneously.









VisiView acquired COS cells with 405nm laser in frap on the fly mode

## FRAP Acquisition Dialog

The FRAP configuration dialog can be accessed directly from the Time Lapse tab of the Clear-Cut VisiView® Acquire dialog. It gives you control over the FRAP parameters (laser selection, dwell time, cycles, target region selection and more) and access to the simple auto-calibration procedure. You can also easily test the FRAP parameters using a live preview before starting the real experiment

## FRAP on the Fly Function

For highly dynamic objects, the FRAP on the Fly mode can be used. During a continuous acquisition sequence, objects can be laser-activated by clicking with the mouse pointer into the image. This way even fast moving objects are specifically targeted and recorded in real time.

## VisiFRAP typical Applications:

- Cell membrane analysis
- Monitoring of surface trafficking
- Nucleocytoplasmic shuttling
- Protein diffusion studies
- Region-specific Photoactivation
- Acceptor photobleaching
- Photoconversion studies

**Please contact our Application Support Team** to discuss your specific requirements and find out how the new UltraFRAP can support your next scientific breakthrough.

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