

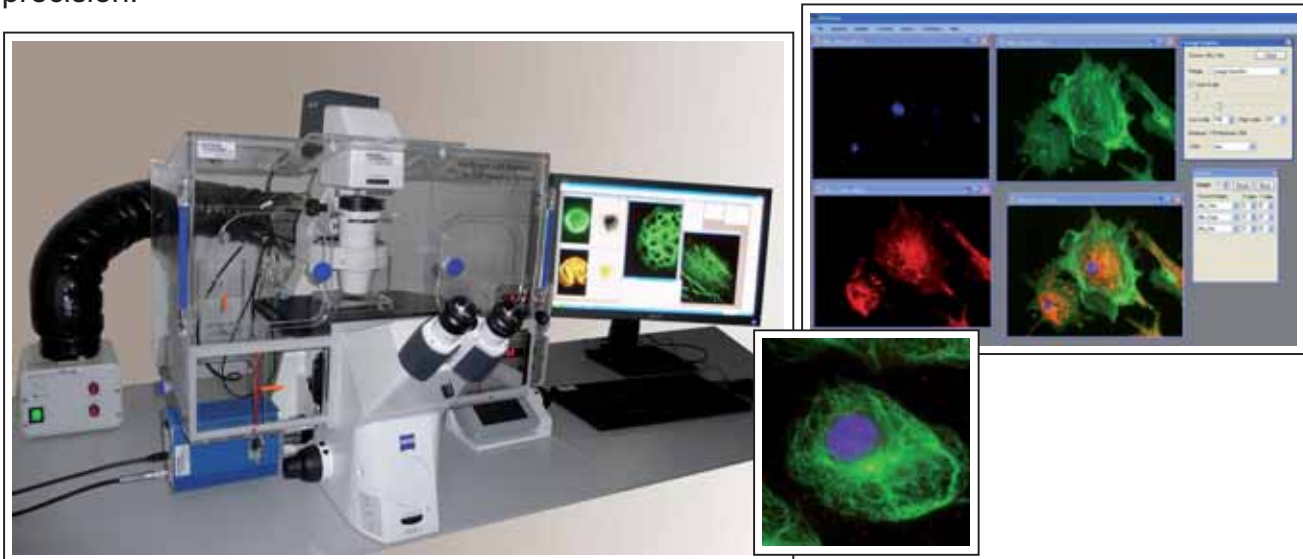
## VisiScope Imaging System

# VisiScope Cell Explorer Live Cell Imaging System

The New Challenge in Digital Fluorescence Microscopy:

### Multidimensional Acquisition and Analysis of Living Cells

Modern cell biology on living cells and tissues has reached revolutionary success in biological, medical and pharmacological research in recent years. With the VisiScope system you can reliably document living organisms and intracellular processes, even over a period of several days. While researchers had to work with none-automated microscopes resulting in restricted application possibilities in the past, nowadays fully automated fluorescence microscopes with multidimensional control have been established. The VisiScope Cell Explorer, based on Visitron imaging software, solves all these new challenges easily and user friendly with highest precision.



### VisiScope Cell Explorer – Overview of System Components

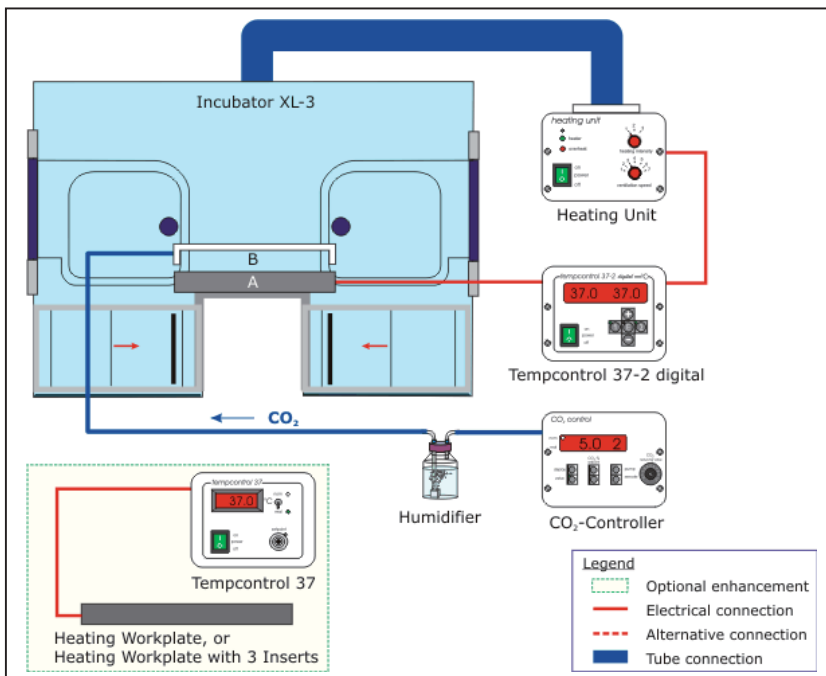
- High-performance microscope with superior optics and automation
- High resolution digital scientific camera with highest sensitivity and best cooling
- Fully automated XYZ-stage with best position accuracy and reproducibility
- Precise z-axis control and acquisition (optionally: piezo z-focus drive)
- Powerful Visitron imaging software including multidimensional control of all hardware / motorized components
- Incubation chambers controlling cell culture environment

# Cells Need Perfect Climatically Condition !

## The VisiScope Incubation System

The XL- series of large chamber incubation is a high performance solution for life cell applications over long time periods which are conducted at a constant temperature over the entire observation. It keeps high stabilized conditions after the warm-up phase of the internal components e.g. slide holder, objectives etc..

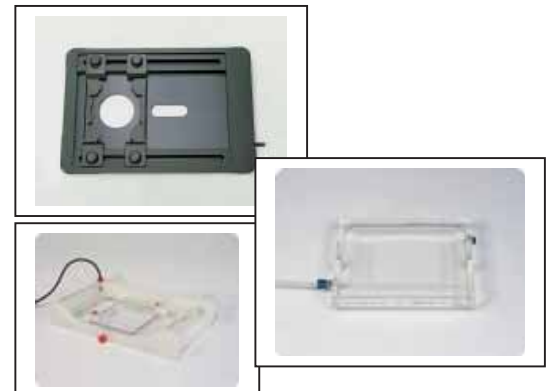
CO<sub>2</sub> and O<sub>2</sub> modules can be easily added with suitable CO<sub>2</sub> cover for corresponding sample holder e.g. for multiplates or universal slide holder. A special CO<sub>2</sub> controller controls the oxygen concentration besides the control of temperature and CO<sub>2</sub>-concentration. The O<sub>2</sub> content is reduced by displacement with nitrogen. Within the system the O<sub>2</sub>-concentration is monitored by a zirconiumoxide sensor, an analogue PID closed loop control adds nitrogen via a piezo controlled valve into the circulating air stream. This continuous nitrogen flow gives a very homogeneous oxygen distribution with lowest control tolerances.



Large XL incubator for e.g. Zeiss AxioObserver for various applications



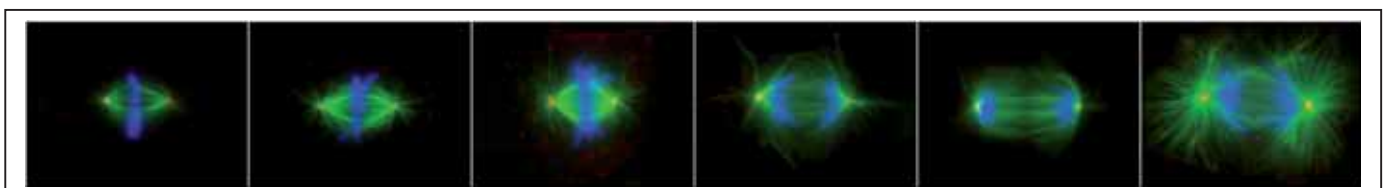
Figure 1 shows small incubation system



universal heating insert with CO<sub>2</sub> cover

## Incubators for every Field of Application

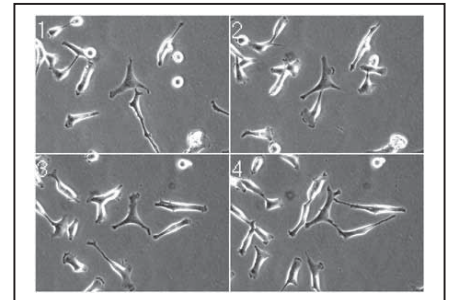
VisiScope offers also small incubators, which give you maximum handling space, which covers every requirement.



## 6D Multidimensional Microscope Control

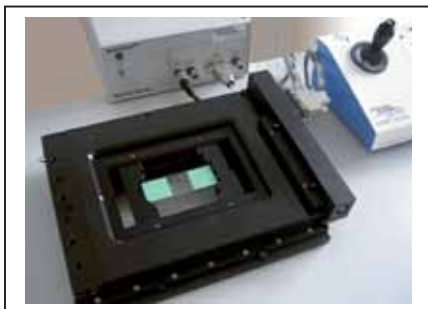
The VisiScope multi dimensional acquisition module guides the users through the setup of each acquisition dimension. Microscope and hardware controls are integrated within the Visitron imaging software. Illumination, magnification, and xyz location settings are easily accessed from the menu. The customizable auto-focus capabilities keep long lasting temporal events in focus.

- Z-series (z dimension - 3D)
- Time lapse (temporal dimension - 4D)
- Multiple fluorochromes (wavelength dimension - 5D)
- Multiple stage positions (stage point dimension - 6D)



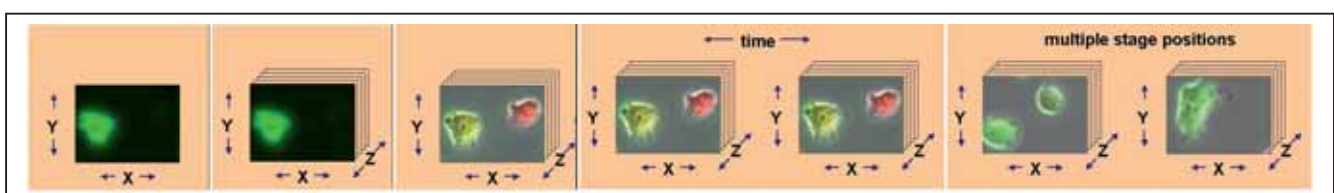
### Fast and precise xyz motorized stage and piezo focusing

VisiScope offers a selection of several motorized stage models. That will make it easy to achieve higher sample throughput and higher image resolution. The piezo based focus insert delivers precise 3D images and takes care that the sample stays in focus via the software autofocus function. The focus range can be selected from 100, 200 to 500µm. Depending on the scientific camera used e.g. up to 30 focus steps / second can be executed.



### High stable fluorescence illumination with Xcite/HXP or new LED systems

For long time experiments the stability of the light source is an important issue. Therefore the VisiScope is using a highly stabilized 120Watt mercury light source with 2000 hours life time and a fiber guide coupled to the microscope. In addition new high performance LED light sources are available for different fluorochromes. Both systems can be combined and are fully supported by the Visitron imaging software.

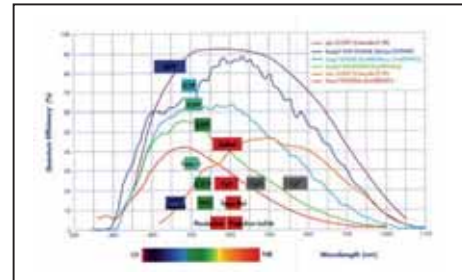


## Selection of Scientific CCD Cameras

### High Performance in Low Light

Imaging of fluorescently labeled samples has become a very widely used method in life science research. Therefore we offer a wide range of cameras for this technique.

Typical selection criteria are e.g. maximum speed (readout), sensitivity, quantum efficiency, resolution (pixel size), field of view (number of pixels), standard or EM technology, noise and cooling. Also high resolution RGB cameras are supported by the VisiScope software.

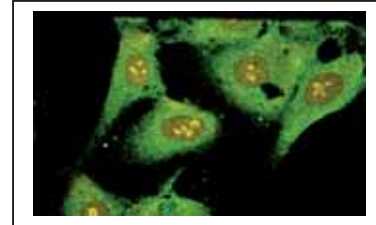
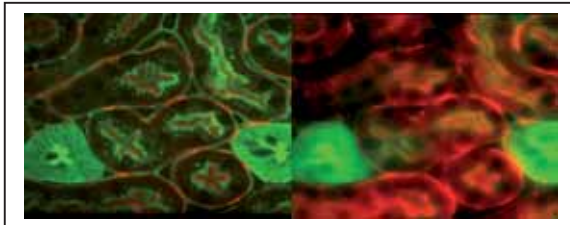


Quantum Efficiency of CCD

### Improvement of Image Quality and Resolution

Because of the flexibility of the VisiScope Explorer it is easy to extend optical system or accessories to improve image quality or optical resolution by adding e.g.

- VisiQuant deconvolution software
- VisiTIRF condenser to visualize rapid membrane processes with very weak signals in total internal reflection (TIRF) technology
- VisiGRID confocal based on structured light illumination
- Multipoint confocal systems based on spinning disc or 2D multi-point array



### Intelligent Imaging Software

The Visitron System GmbH VisiView<sup>®</sup> imaging software is a high performance software for Biolmaging applications. It is specially designed to meet the needs for high speed image acquisition and processing at a low cost, with ease of use. The full multi-tasking software supports parallel use of e.g. image acquisition and analysis at the same time. The basic package can be extended by a range of high performance applications and can be adapted to the customers need. A wide range of hardware support extends the software to a flexible tool.

