

VS-LMS

Laser Illuminator and Laser Combiner

VS-SLS Single-Laser-System

Visitron System GmbH is offering several laser systems for realtime confocals, photoactivation, FRAP and TIRF technology. All common solid state lasers or laser diodes can be coupled and aligned to one FC fiber output by special micro lens optics. The system includes a 2 meter single mode fiber cable appropriate to the used laser wavelength.

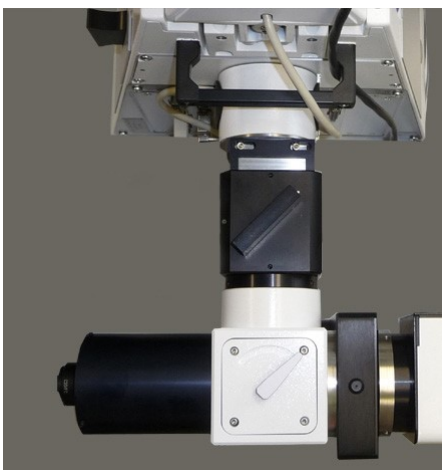


Compact and reliable design

- » Typically used for 405 nm, 445 nm, 473 nm, 488 nm, 515 nm, 532 nm, 561 nm, 594 nm and 640 nm
- » Power from 25mW to 250mW depending on wavelength
- » High speed TTL Trigger for diode laser
- » High speed AOM Trigger for solid state laser
- » Micro lens fiber adapter
- » Standard FC fiber guide connector
- » Easy adjustment of the fiber guide

Microscope Laser Illumination

Visitron offers an own microscope condenser for coupling laser illumination directly on the standard EPI fluorescence port of the microscope. A dual lamp adapter allows the use of laser illumination and epi illumination with HBO lamp.



Axio-Observer with VS-Laser condenser and dual lamp adapter.

VS-LMS3 Laser-Merge-System based on Solid State and Diode Lasers and AOTF- AOM Technology

Visitron Systems is offering several LMS laser merge systems for realtime confocals, photoactivation, FRAP and TIRF technology. The latest development is a compact and easy to use laser merge system including an AOTF or AOM. All common solid state lasers or laser diodes can be coupled and aligned to one fiber output. Also future extensions with additional lasers are easily possible.

VS-LMS

Laser Illuminator
and
Laser Combiner



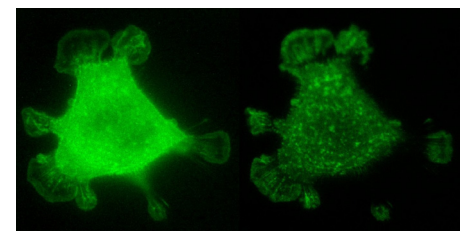
VS-LMS3 with dual laser output, VS-AOTF and VS-Laser control.

Smooth Illumination

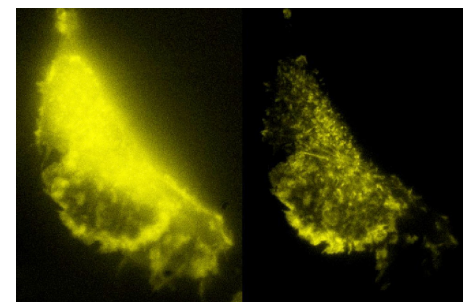
The AOTF or AOM controller allows manual or programmable selection of single laser lines. The laser power and selection of the channels can be controlled by our VisiView® imaging software.

VS Smear Buster

Visitron's "SBT-smear buster technology" for laser systems and AOTF is blanking the laser between the frame transfer of scientific grade CCD cameras. This technique inhibits the smearing of image information during CCD readout.



Widefield and TIRF comparison with Visi-TIRF laser illumination of GFP actin.



Widefield and TIRF comparison with Visi-TIRF laser illumination of YFP actin.

VS-LMS

Laser Illuminator
and
Laser Combiner

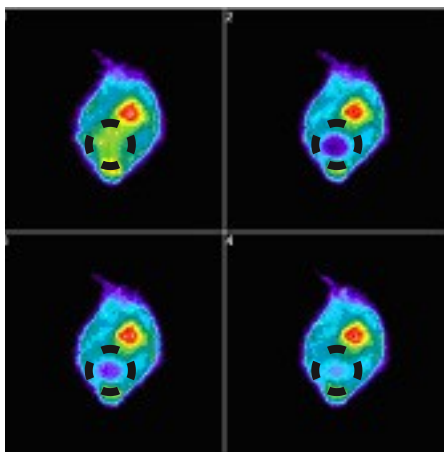
VS-LMS7 Laser-Merge-System based on Solid State and Diode Lasers and AOTF- AOM Technology

The unique design of our VS-LMS7 system combines the beams of up to seven solid state or laser diodes to a single collinear laser beam. This beam can be channelled to two different outputs for simultaneous laser application. This allows one laser merge module to be used for two different laser applications like confocal/FRAP, confocal/TIRF or FRAP/TIRF.

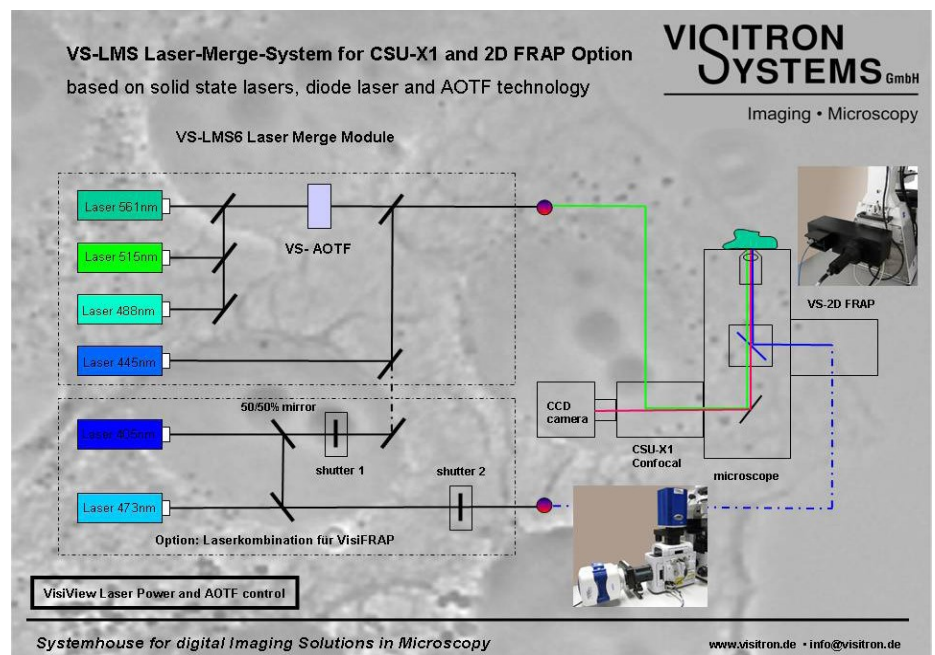


Typically used laser lines

405 nm, 445 nm, 473 nm, 488 nm, 515 nm, 532 nm, 561 nm, 594 nm and 640 nm



Example of VisiFRAP 2D scanner:
Image montage of HEK293 cells after
FRAP activation with round scanning
area.



Additional Laser Output with high speed Galvanometer Scanner

The VS-DOL dual output laser option can be configured by using a dichroic beamsplitter with e.g. 50/50 %, 30/70% or 80/20% for separation of the laser into two simultaneous laser outputs.

The VS-DOL high speed galvanometer scanner option allows the laser separation with full 100% laser power to up to three laser outputs. The switching between the laser outputs happens in a few milliseconds.

VS-LMS DOL Option

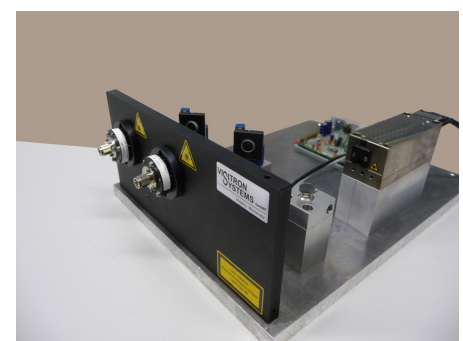
Laser Illuminator
and
Laser Combiner



VS-LMS3 with triple laser output for TIRF, FRAP and Confocal or Epi-laser illumination.

Compact, flexible and robust

- » Multiple ports for all laser lines – CSU confocal, VisiFRAP and VisiTIRF
- » Delivers 100% of laser power to one of each outputs
- » Fast galvanometer switching of up to 3 channels
- » Switching between outputs in few milliseconds
- » Standard FC fiber guide connector
- » High stability



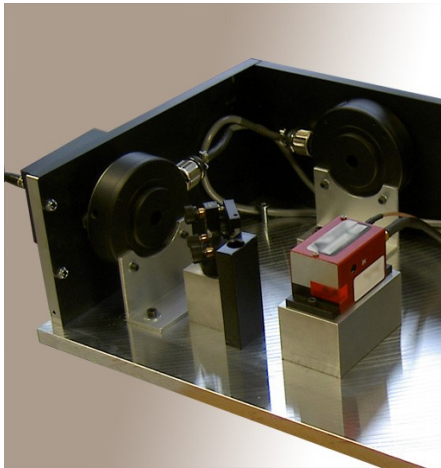
VS-LMS2 with dual galvo output.

VS-AOTF

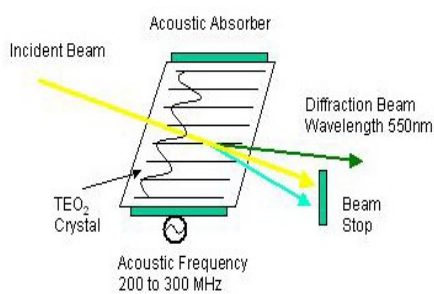
Laser Illuminator and Laser Combiner

VS-AOTF Unit

The Visitron Systems GmbH VS-AOTF unit allows the selection of an individual laser line, or several laser lines from a multi-line gas laser or multiple solid state / diode lasers in a laser combiner module. The VisiView® software provides individual intensity control for each selected laser line, interlock safety for output blanking and high speed automated shuttering of the illumination.



AOTF with dual laser output and high speed laser shutter.



General principle of AOTF modulator.

Interfacing of VS-AOTF Controller

There are different ways of software support for the VS-AOTF or solid state laser systems. At the VS-AOTF, the control and the fast switching of different laser channels are done by TTL signals.

The laser power can be controlled by analog voltage input for each channel. Typically, the analog voltage is provided by a DAC "Digital-to-Analog Converter" board.

Features

- » Control of up to four AOTF channels, optional: up to eight channels
- » Standard from 450 to 700 nm
- » Selection of active AOTF channels via PC (TTL) or manual switches
- » Control of AOTF laser power via analog voltage
- » New SBT technology, blanking of laser during frame transfer of CCD camera
- » Supported by VisiView® imaging software

VS-AOTF and AOM

The VS-AOTF controller allows manual or programmable selection of single laser lines. For manual intensity control of laser power, potentiometers are available as an option. A new "SBT - Smear Buster Technology" has been developed by Visitron Systems GmbH for blanking the laser e.g. during the frame transfer of scientific grade CCD cameras.

VS-AOTF and AOM

Laser Illuminator and Laser Combiner

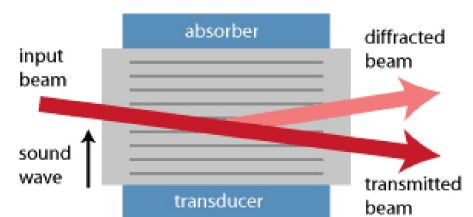


AOM Acousto Optical Modulator - High Speed Optical Shutter

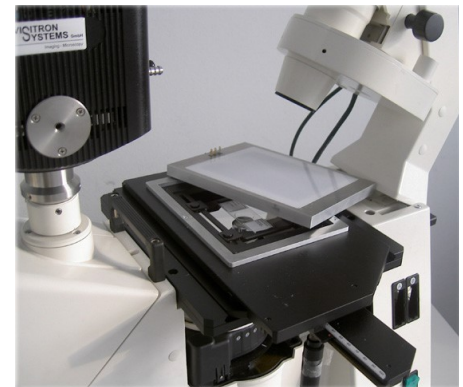
An acousto-optic-modulator (AOM) is a device which can be used for controlling the power, frequency or spatial direction of a laser beam with an electrical drive signal. It is based on the acousto-optic effect, i.e. the modification of the refractive index by the oscillating mechanical pressure of a sound wave. The AOM will be used at the VS-LMS for high speed switching and intensity control if only one solid state laser is used.

Laser Safety on Microscope

The Visitron laser safety can be used for incubation chambers or moveable microscope parts like transmitted light arm, eye-piece selector etc.. Also sample covers with micro switches are available to safeguard the users eye from wrong usage. The laser safety switches off the VS-LMS laser or VS-AOTF system if laser safety is activated.



General principle of AOM modulator.



Axio-Observer with laser safety sample cover for TIRF illumination.