LabSmith SVM340

Synchronized Video Microscope

- **High-sensitivity video output**
- **Synchronous pulsed fluorescence illuminator**
- **Motorized x-y traverse and autofocus**
- **Real-time image processing probes**
- **Innovative software tailored for microfluidics**

The SVM340 is a research-grade, inverted fluorescence video microscope for imaging microfluidics and microbiology experiments. With a synchronously pulsed illuminator, sensitive camera, and powerful video analysis software, the SVM340 is a workhorse for microsystem research that's affordable enough to be dedicated to a single user or experiment—even in a crowded lab.

Publication-Ready Images

The compact SVM340 microscope excels at producing high quality images, video and data. Sensitive video cameras and a synchronous pulsed illuminator support low-light imaging and fight blur and photo-bleaching. Lossless data recording, comprehensive triggers, post-save and instant replay make sure you capture any key event, no matter how rare or brief.

Easy Microsystem Monitoring

Combining bottom-up viewing and illumination with a motionless sample stage, the SVM340 lets you view microsystems without perturbing the fluid flow. Access for external connections is simple and unhindered.

Full Microfluidic Automation

Combine the SVM340 with LabSmith's uProcess hardware and software suite for full experiment automation. uScope image probes can be used to trigger uProcess actions such as switching a valve or starting a syringe pump.

Flexibility - Designed for Research

The SVM's interchangeable optics modules and objectives let you configure for one or more fluorophores, with up to five channels of illumination. The EPI epifluorescence option improves signal-to-noise ratio and provides tighter wavelength selectivity.

Real-Time Image Processing Probes

The uScope software (included with SVM340 purchase) has sophisticated probe capabilities that allow users to monitor image properties. Measurements can be recorded to disk or used to trigger real-time actions.

- **Micro PIV** Easy-to-use Micro Particle Image Velocimetry (µPIV) probes with variable region size, shape, and more.
- **Particle Counting and Tracking** Analyze, count, and track particle movement in real-time. Includes filters for size and shape.
- **Intensity Probes.** Used to track the color spectrum or fluorescence intensity inside a defined region. Options for arbitrary shaped probes (to fit a region of interest), and multi-pixel arrays, to obtain spatially resolved intensity data.

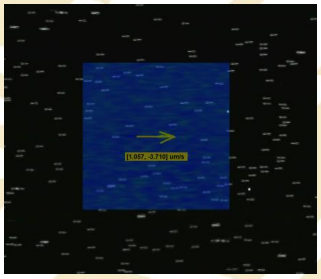
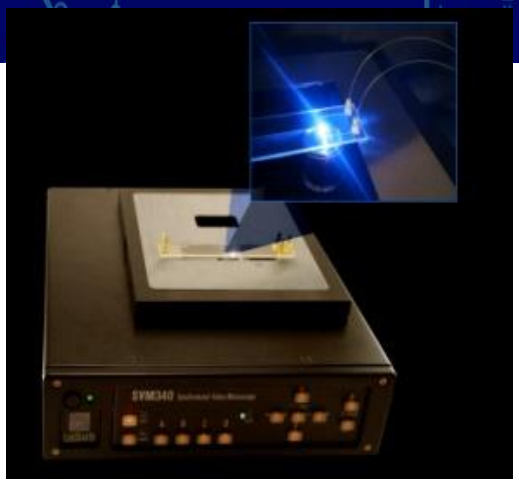


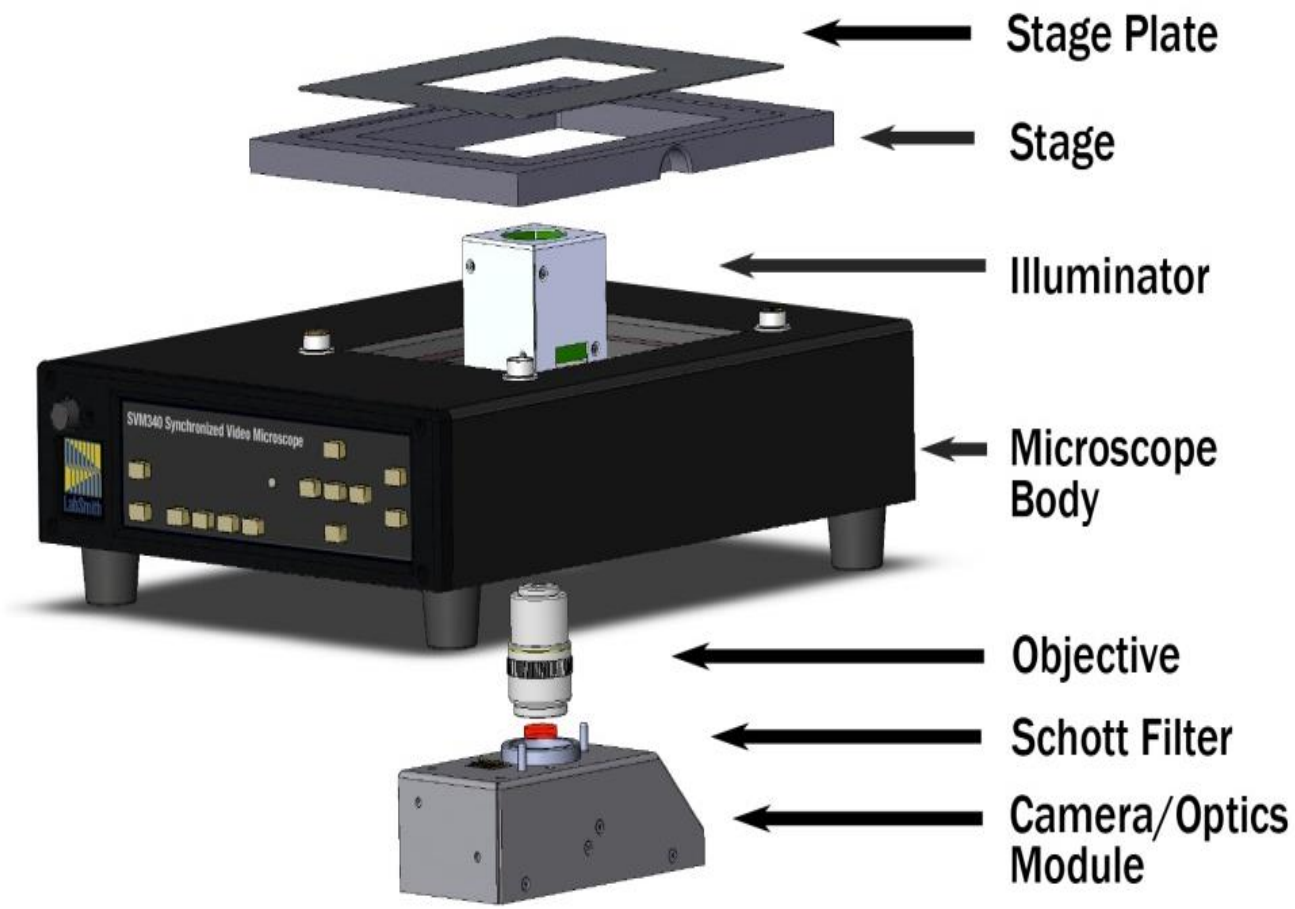
Image of a µPIV velocity probe of polystyrene beads in a microfluidic chip, moving under an applied electric field. Imaged using the SVM340 and LabSmith uScope software. Courtesy of Professor Blanca H. Lapizco-Encinas *et al*, Technológico de Monterrey (Monterrey, Mexico).

SVM340 Microscope



Modular Design for Customized Applications

The easily configurable SVM340 modules let you tailor the optics and illumination to your particular application. Choose from black, white, color, or epifluorescence camera modules. Select the illumination wavelengths for the 4-channel illuminator, the magnification objectives, and even customized stage plates.



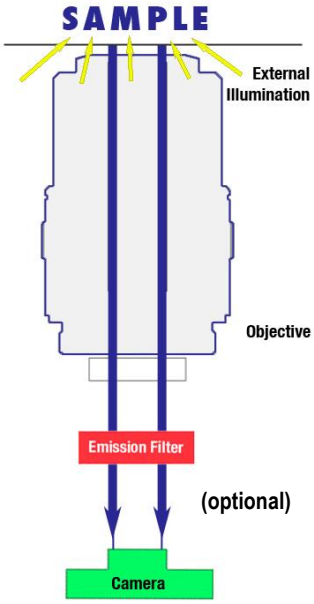
Optics Module and Illumination Options

When to Use Epifluorescence

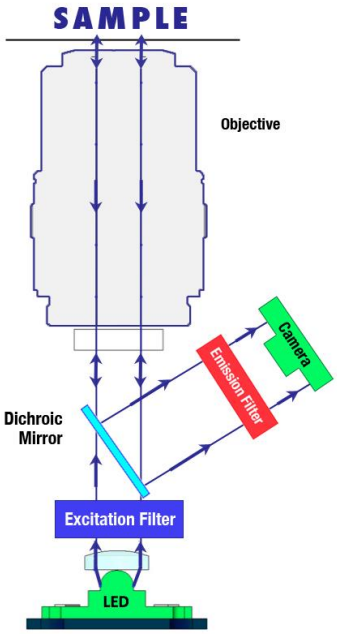
The modular design of the SVM340 lets you tailor the instrument for your application. The drawing below shows the basic configurations for the standard (B&W or COLOR) and epifluorescence (EPI) optics modules.

The B&W and COLOR optics modules coupled with an External Illuminator and optional Emission Filter can be used for fluorescence, color, or brightfield applications. Each sealed module includes the camera, alignment mirrors, and objective mount.

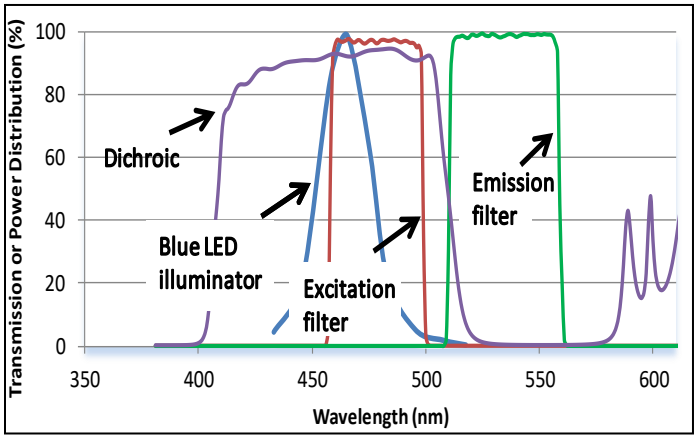
EPI modules are designed for fluorescence applications that require greater wavelength discrimination and increased signal-to-noise, such as cell imaging and Micro Particle Image Velocimetry (µPIV). EPI module includes a B&W camera, excitation filter, emission filter, a dichroic mirror, LED illuminator and objective mount. Use an EPI module's integral illuminator on its own or with the SVM ring illuminator for increased intensity. The graph below shows the spectral specifications graphically for the EPI-BLUE modules.



Light path for B&W or COLOR Optics Modules



Light path for EPI Optics Modules



SVM340 EPI Spectral Specifications. Light transmitted vs. wavelength for light source and filters for EPI-BLUE module.

OPTICS MODULES		
Snap-in modules with digital camera, optional fluorescence filter and threading for standard DIN microscope objective.		
Optics Module Options:	**DP1-B&W DP1-COLOR**	**DP5-B&W DP5-COLOR DP5-EPI**
Pixels	1296 x 966	2448 x 2048
Maximum Frame Rate	22 FPS	38 FPS @ 2448 x 2048 370 FPS @ 640 x 480
Interface	USB2.0	USB3.0
Gain Control	auto or manual	auto or manual
Scan	progressive	progressive
Sensor	Sony SXVGA CCD	Sony IMX264LQ Pregius CMOS
Thermal Management	n/a	integrated Peltier cooling (optional)

EXTERNAL ILLUMINATOR MODULES	
Four-channel array of 24 high brightness LEDs that are synchronized with camera frame rate.	
LED-B	3 blue channels (464 – 476 nm), one white channel
LED-G	3 green channels (520 – 535 nm), one white channel
LED-Y	3 yellow channels (590 nm), one white channel
LED-R	3 red channels (625 nm), one white channel
LED-W	4 white channels
LED-X	One channel each of blue, green, red and white
Custom modules also available.	
Trigger output available for driving external LED or laser illuminator.	

SVM340 Specifications

PHYSICAL		
Dimensions	21 x 27 x 10.3 cm (8.3 x 10.5 x 4.1") W x L x H	
Enclosure	Black enamel-coated, anti-RFI steel enclosure	
Weight	2.8 kg (6.2 lbs)	
Power	Voltage	90-264 VAC, 47-63 Hz
	Current	0.5 A
Mounting	Four 8-32 threaded holes on 17.8 x 22.9 cm (7.0 x 9.0") rectangle	

TRAVERSE - FOCUS		
Motorized traverse and focus controlled through software or front panel.		
	Range	Resolution
X-Y traverse	5 cm x 7.5 cm	10 µm
Z-traverse (Focus)	3 mm	1 µm

INPUTS AND OUTPUTS

Digital Communication (for synchronization and coordination):
- 4 programmable inputs
- 3 programmable outputs
- External LED/Laser illuminator trigger/driver
- RS232; optional USB adaptor sold separately

SAMPLE STAGE	
Black Delrin® sample stage with stainless steel stage plate.	
Dimensions	14 cm x 17.5 cm x 1.2 cm (5.5 x 7.0 x 0.5") W x L x H
Stage Plates	Standard plate has 55 x 80 mm opening; Optional A-SVM-Stage plate with two openings: 14 x 75 mm and 21 x 66 mm.
Light Shield	Optional A-SHIELD sits on top of SVM to block ambient light.

CONTROL AND ACQUISITION SOFTWARE

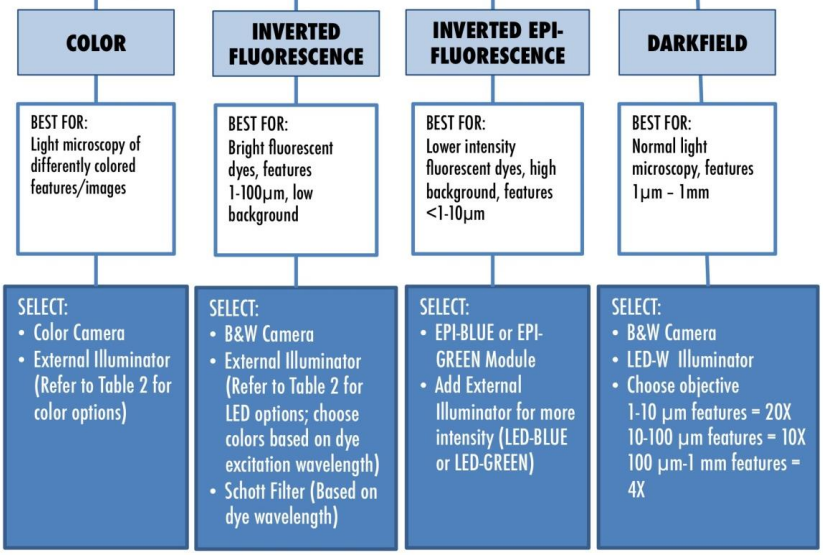
uScope™ software includes:
- Automated controls for illuminator, x-y traverse and focus
- Autofocus
- Save and process videos and images

Real-time image processing, including:
- Particle Image Velocimetry
- Intensity Probes
- Particle counting and tracking

LabVIEW™ drivers and Software Developers' Kit (C, C++) available

Computer requirements: Windows® 7, 8, 8.1, or 10; 1 GB RAM min (4-8 GB recommended); 100 GB hard disk min (500 GB recommended).

Configuration Selection Guide



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