



Annex B

DeltaVision OMX® Operational Specifications.

Resolution

Excitation Wavelength	3D-SIM XY Resolution	3D SIM Z resolution	Widefield XY resolution	Widefield Z resolution
405 nm	110 nm +/- 10 nm	340 nm +/-10	210 +/- 10 nm	400 +/-10 nm
488 nm	125 nm +/- 10 nm*	350 nm +/-10*	270 +/- 10 nm	550 +/-10 nm
568 nm	135 nm +/- 10 nm	350 nm +/-10	300 +/- 10 nm	600 +/-10 nm
647 nm	160 nm +/- 10 nm	380 nm +/-10	350 +/- 10 nm	680 +/-10 nm

*Green beads, system aligned at 561 or 591 laser

For comparison purposes below are the maximum resolution values possible as predicted by 3D-SIM theory.

Excitation	Emission	Max Theory Lateral Resolution
405	435.5	91.43
445	477.5	100.36
488	528	110.50
514	541	114.84
568	609	128.05
642	683	144.19

Laser Specifications

Wavelength	Nominal Power +/- 5%
405 nm	100 mW
440 nm	100 mW
488 nm	100 mW
514 nm	100 mW
568 nm	100 mW
642 nm for SI imaging	110 mW
642 nm for Localization	300 mW

Emission Filter Wavelength Ranges

"Name"	Color	Ex Lasers	EM
DAPI	Blue	405	420-451
CFP	Cyan	445	460-495
FITC/GFP	Green	488	504-552
YFP	Yellow	514	530-552
mCherry	Orange/Red	568	590.5-627.5
Texas Red	Red	568	590.5-627.5
Cy5/DIC	Far Red	642	663-703

SSI Operational Specifications (V4 systems only)

"Name"	Color	Wavelength Range (nm)	Center/Bandpass (nm)	Power (mW)	
				Min	Max
DAPI	Blue	381-410	395.5/29	80	140

CFP	Cyan	426-450	438/24	80	140
FITC/GFP	Green	461-493	477/32	55	110
YFP	Yellow	505-520	512.5/15	11	45
mCherry	Red	562-581	571.5/19	60	125
Cy5/DIC	Far Red	638-653	645.5/15	60	45

Operational Speed with sCMOS cameras

Parameter	Expected Value Range	Notes
Widefield imaging	-263 fps*	512 x 512, rolling shutter, 285 MHz readout, 1 ms exp, 0 sec delay, 0 z-step
SIM Imaging	1.5 sec per 1 um stack	515 x 512, 5 ms exp, 125 nm step, 8 slices, 15 images per slide (120 images total)
Stack reconstruction time	-24 sec per micron per channel. **	515 x 512, 5 ms exp, 125 nm step, 8 slices, 15 images per slide (120 images total), 1 color

*Fastest operational time is limited by system mechanics to approximately 3.8 ms per frame.

**Note this can be highly variable and is not considered a specification due to the rapidly changing nature of computer hardware and software configurations.

Operational Speed with EMCCD cameras

Parameter	Expected Value Range	Notes
Widefield imaging	-26 fps (Cascade II) -29 fps (Evolve) >50 fps	512 x 512, rolling shutter, 265 MHz readout, ms exp, 0 sec delay, 0 z-step
SIM Imaging	-4.2 sec per 1 um stack	515 x 512, 5 ms exp, 125 nm step, 8 slices, 15 images per slide (120 images total)
Stack reconstruction time	-24 sec per micron per channel**	515 x 512, 5 ms exp, 125 nm step, 8 slices, 15 images per slide (120 images total), 1 color

**Note this can be highly variable and is not considered a specification due to the rapidly changing nature of computer hardware and software configurations.

Stage Operation

Parameter	Expected Value Range	Notes
Y flatness	<10 um per 10 mm travel	Determined at factory and installation
X flatness	<10 um per 10 mm travel	Determined at factory and installation
Z piezo repeatability	+/- 10 nm	300 um total travel
XYZ Nanomover repeatability	+/- 150 nm	25 mm total travel
Z piezo step resolution	5 nm	
XYZ nanomover step resolution	10 nm	

Optical Cabinets

Component	Sizes (see install document for more details).	
	US Imperial	Metric
Main Optics Cabinet	72h x 46w x 48d inches,	183h x 117w x 123d cm
Electronics/Laser Cabinet	41h x 45w x 29d inches,	104h x 114w x 74d cm