

**Таблица сравнения систем оптической визуализации  
“VISQUE™ InVivo” (Vieworks Co., Ltd, Южная Корея)**

	VISQUE™ InVivo Elite	VISQUE™ InVivo Smart	VISQUE™ InVivo Smart-LF
Appearance			
Dimension (W x D x H)	56 x 56 x 90 cm	40 x 40 x 57 cm	40 x 40 x 57 cm
Weight	> 100 kg	17 kg	22 kg
Imaging Chamber Size (W x D x H)			
Imaging Bed Size (H x V)			
Display	7" color LCD touch screen		
Power Requirements		100 - 240 V AC, 50/60 Hz, max. 0.5 A at 220 V AC	100 - 240 V AC, 50/60 Hz, max. 0.5 A at 220 V AC
Operating Temperature	10 ~ 30 °C	10 ~ 27 °C	10 ~ 27 °C
Environment		1) Storage and Moving Temperature : 1 ~ 55 °C 2) Operating Humidity : 30 ~ 70 % (Non-condensing) 3) Storage and Moving Humidity : 10 ~ 90 % (Non-condensing)	1) Storage and Moving Temperature : 1 ~ 55 °C 2) Operating Humidity : 30 ~ 70 % (Non-condensing) 3) Storage and Moving Humidity : 10 ~ 90 % (Non-condensing)
Detector			
Camera	VP-8MC		VSP-4MU
Sensor	interline CCD (KAI-08050)	scientific CMOS (2MP)	1.2" backside illuminated sCMOS (4MP)
Cooling	-10 °C ( $\Delta T = -20$ °C)		-50 °C below ambient temperature thermoelectric peltier cooling
Sensor Pixel	1600 x 1200 (3296 x 2472)	1024 x 1024 (2048 x 1152)	1824 x 1824 (2048 x 2048)
Sensor Size	18.13 x 13.60 mm	13.3 x 7.5 mm	13.3 x 13.3 mm
Pixel Size	5.5 x 5.5 $\mu\text{m}$	6.5 x 6.5 $\mu\text{m}$	6.5 x 6.5 $\mu\text{m}$
Frame Rate	up to 24 fps	30 fps	37 fps
Min. Image Pixel Resolution	33 $\mu\text{m}$ (at 6x)	20 $\mu\text{m}$ (at 7.5x)	
Full Well Capacity	20,000 e-	45,000 e-	54,000 e-
Quantum Efficiency	43 % at 470 nm (blue) 42 % at 540 nm (green) 31 % at 620 nm (red)	72 % at 595 nm	94 % at 550 nm 60 % at 800 nm
Dark Current	7 e/s/pixel (40 °C)	< 10 e/s/pixel (@ 30 °C)	100 e/s/pixel (@ 35 °C) 0.2 e/s/pixel (@ -20 °C)
Min. Detectable Radiance			
Binning	1x1 ; 2x2 ; 4x4	1x1 ; 2x2	1x1 ; 2x2 ; 4x4
Read Noise	12 e- rms (f = 40 MHz)	< 2 e-	
Dynamic Range	64 dB	87.5 dB	90 dB

	VISQUE™ InVivo Elite	VISQUE™ InVivo Smart	VISQUE™ InVivo Smart-LF
Grayscale	4096	16384	65536
Detection Spectral Range	350 - 900 nm (> 5 %)	500 ~ 900 nm	300 ~ 920 nm
Lens	max. <i>f</i> /1.8, 10 steps zoom (motorized zooming lens)	zoom range : 1x ~ 7.5x	max. <i>f</i> /1.8, 5 steps zoom motorized zoom lens
Field of View (H x V)	28 x 21 cm ~ 5 x 4 cm (10 steps)	Max. 15 x 15 cm Min. 2 x 2 cm	Max. 15 x 15 cm Min. 5 x 5 cm
Sensor Bit Depth	12bit	14bit	16bit
File Bit Depth (A/D)			
Excitation and Filter			
Source	LED	LED	LED
Excitation Filters	4 sets	4 sets (optional)	4 sets (optional)
Excitation Filter Positions		8	8
Excitation Wavelength Range	470 nm (blue) 540 nm (green) 620 nm (red) nm (far-red) nm (NIR)	390 - 490 nm (blue) 530 - 570 nm (green) 620 - 650 nm (red) 630 - 680 nm (hyperred) 740 - 790 nm (NIR)	390 - 490 nm (blue) 530 - 570 nm (green) 620 - 650 nm (red) 630 - 680 nm (hyperred) 740 - 790 nm (NIR)
White Light	epi white LED	epi white LED	epi white LED
Emission and Filter			
Filter Selection	automated	automated	automated
Emission Filters	4	1 included	1 included
Emission Filter Positions	10	10 (8 optional)	10 (8 optional)
Emission Filter Wavelength Range		500 - 550 nm (GFP) 575 - 640 nm (PE) 690 - 740 nm (Cy5.5) 810 - 860 nm (ICG)	500 - 550 nm (GFP) 575 - 640 nm (PE) 690 - 740 nm (Cy5.5) 810 - 860 nm (ICG)
Dyes	GFP, EGFP, Alexa448, FITC, Fluorescein (Ex: 440 - 490 nm, Em: 515 - 575 nm) RFP, DsRed, PE, Alexa 568, mCherry (Ex: 500 - 545 nm, Em: 575 - 650 nm) Cy5.5, PKE680, Alexa 660 (Ex: 620 - 650 nm / 640 - 680 nm, Em: 700 - 770 nm) ICG, QD800 (Ex: 760 - 780 nm, Em: 810 - 870 nm)	GFP / EGFP / Alexa 448 / FITC / QD 525 RFP / DsRed / PE / Alexa 568 / TRITC / QD 585 / QD 605 / QD 625 Cy5.5 / PKE680 / Alexa 680 / Alexa 700 / QD 705 ICG / QD 800	GFP / EGFP / Alexa 448 / FITC / QD 525 RFP / DsRed / PE / Alexa 568 / TRITC / QD 585 / QD 605 / QD 625 Cy5.5 / PKE680 / Alexa 680 / Alexa 700 / QD 705 ICG / QD 800
Imaging Stage & Anesthesia			
Animal Capacity	5 mice 1 mouse 1 rat	up to 3 mice	up to 3 mice
Heating Module	Yes	No	Yes (optional)

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Imaging Bed Temperature Range	Off, 25 °C, 36 °C		Off, 36 °C
Gas Anesthesia	Yes	Yes (optional)	Yes (optional)
Additional Features	1) Kinetics Analysis : duplicate (inner & outer) doors and Y axis sliding stage system 2) Stage Types : 3-type stages (5-mice / 1-mouse / 1-rat)	1) Anesthesia Ventilator Adapter, Heating Stage : Desinged to work together with third-party equipment	
<b>Application</b>			
Applications	fluorescence bioluminescence real-time imaging preview capture	oncology infectious diseases stem cell biology neuroscience cardiovascular metabolic diseases gene therapy inflammation research immunology	fluorescence luminescence  pharmacology toxicology oncology cardiovascular function photo-stability test of molecules cell therapy test biodistribution of nanoparticle
<b>Acquisition</b>			
Min. Exposure time	1 ms	13 ms	25ms
Max. Exposure time	50 min	3 s	15 min
Kinetic Imaging	Yes	Yes	Yes
Exposure Modes	single frame time lapse accumulation	single frame time lapse	single frame time lapse accumulation
<b>Control &amp; Analysis</b>			
Analysis Tool	VISQUE CleVue™	VISQUE CleVue™ 2.0	VISQUE CleVue™ 3.0
Web Site	<a href="http://www.vieworks.com/product.html?pid=47">http://www.vieworks.com/product.html?pid=47</a>	<a href="http://www.vieworks.com/product.html?pid=47">http://www.vieworks.com/product.html?pid=47</a>	<a href="http://www.vieworks.com/product.html?pid=47">http://www.vieworks.com/product.html?pid=47</a>
License	2 copies included	2 licenses included	2 licenses included
<b>Spectral Unmixing</b>			
Features	kinetics and radiance analysis	kinetics and radiance analysis	kinetics and radiance analysis
Computer Requirements		1) OS : Windows 7 Professional 64bit, Windows 10 Professional 64bit 2) CPU : Intel Core i7-6700K CPU @ 4.0 GHz 3) SSD : Write speed above 400 MB/s 4) Memory : Above 16 GB 5) USB expansion card : NETmate U-1130 USB3.1 Dual Type-A PCIe card (dedicated for InVivo Smart communication, provided by Vieworks)	1) OS : Windows 7 Professional 64bit, Windows 10 Professional 64bit 2) CPU : Intel Core i7-6700K CPU @ 4.0 GHz 3) SSD : Write speed above 400 MB/s 4) Memory : Above 16 GB 5) USB expansion card : NETmate U-1130 USB3.1 Dual Type-A PCIe card (dedicated for InVivo Smart communication, provided by Vieworks)
Computer Interface	ethernet	USB 3.0	USB 3.0
Computer Supplied	Yes	Yes	Yes