

1.3 System Specifications

1.3.1 Operational / Functional Specifications

	Tower Mount	Primate Mount	Desktop and LCD Arm Mounts	
			Base System	Remote Option (license required)
Average Accuracy ¹	down to 0.15° (0.25° to 0.5° typical)		0.5° typical	
Sampling rate ²	Monocular: 250, 500,1000, 2000 Hz		Monocular: 250, 500 Hz	
		Binocular*: 250, 500, 1000 Hz		
End-to-End Sample Delay ³	M < 1.8 msec, SD < 0.6 msec @ 1000 Hz M < 1.4 msec, SD < 0.4 msec @ 2000 Hz		M < 3.0 msec, SD=1.11 msec	
Blink/Occlusion Recovery	M < 1.8 msec, SD < 0.6 msec @ 1000 Hz M < 1.4 msec, SD < 0.4 msec @ 2000 Hz		M < 3.0 msec, SD=1.11 msec	
Spatial Resolution ⁴	< 0.01° RMS @ 1000 Hz < 0.02° RMS @ 2000 Hz		< 0.1° RMS	
Eye Tracking Principle ⁵	Dark Pupil - Corneal Reflection			
Pupil Detection Models	Centroid or Ellipse Fitting		Ellipse Fitting	
Pupil Size Resolution	0.2% of diameter		TBD	
Gaze Tracking Range	60° horizontally, 40° vertically		32 ° horizontally, 25 ° vertically	
Allowed Head Movements Without Accuracy Reduction	±25 mm horizontal or vertical ⁶ , ±10 mm depth		22x18x20 cm (horizontal x vertical x depth)	
Optimal Camera-Eye Distance	Fixed at about 38 cm		Between 40 - 70 cm	
Glasses Compatibility	Good		Excellent	Good
On-line Event Parsing	Fixation / Saccade / Blink / Fixation Update			
EDF File and Link Data Types	• raw eye position • HREF position • gaze position • pupil size • buttons • messages • digital inputs			
Real-Time Operator Feedback	Eye position cursor or position traces. Camera images and tracking status.			

* Binocular Recording not available with the LCD Arm Mount

¹ Measured with real eye fixations at multiple screen positions on a per subject basis.

² Availability of some sampling rates depends on the camera licensing. Values in Table are Color Coded: EyeLink 1000 system; EyeLink 2000 system required

³ Time from physical event until first registered sample is available via Ethernet or Analog output. Optional data filter algorithm adds one sample delay for each filtering level.

⁴ Measured with an artificial pupil.

⁵ Pupil-Only tracking mode is available for use in head fixed conditions.

⁶ Binocular tracking with Desktop Mount can reduce allowed head movement to approx. 25 mm Horizontal and Vertical.