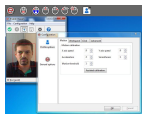
Comparisons for 6 Families of Hands-Free Mice

	Lip/chin Joysticks	Wearable Sensors	Wearable Target Trackers	Webcam Face Trackers	Eye Trackers	Speech Recognition
						
Considerations	IntegraMouse+ Jouse3 QuadJoy BJOY Chin TetraMouse XA2	GlassOuse 1.2 Quha Zono EnPathia eeZee Switch ED Air Mouse	TrackerPro HeadMouse Nano SmartNAV 4:AT AccuPoint	SmyleMouse ViVo Mouse Camera Mouse Enable Viacam iTracker	Tobii PCEye Plus Tobii PCEye Mini Tobii 4C	Dragon NaturallySpeaking Windows Speech Recognition Mac OS X Dictation
1. Cursor Control	Joystick controlled with chin or lips	User-worn sensor	User-worn target tracked by optical sensor unit	Face or facial feature tracked with computer's webcam	Eyegaze control	Spoken commands
Typical body site used	Chin or lips	Head	Head	Head	Eye	Speech
2. Mouse Buttons						
Built-in switches	✔	Varies	✘	Varies	✘	✔ spoken commands
External switch support	✔ interface varies	✔ interface varies	✔ jacks on sensor unit	✔ with add'l switch interface	Varies	✔ with add'l switch interface
Button software included	Varies	Varies	Varies	✔	✔	✔
Built-in dwell support	Varies	Varies	✘	✔	✔	✘
3. Required Components	Joystick unit	User-worn sensor	User-worn reflective dot	Computer webcam	Eyetracker unit	Microphone
	Some require software	Some require software	Some require software	Software driver	Software driver	Software driver
	Some require additional desktop unit	Some require additional desktop unit	Optical sensor unit			
4. Connections						
Wireless from user to control unit	✔	Varies	✔	✔	✔	✔ with desktop microphone
Free from line-of-sight	✔	✔	✘	✘	✘	✔
5. Wearable-free	✔	✘	✘	✔	✔	✔ with desktop microphone
6. Away from face	✘	Varies	✔	✔	✔	✔ with desktop microphone
7. Mounting	Joystick mount required	Varies	Bracket for mounting sensor unit included	None with built-in webcam	Bracket for mounting eyetracker included	For microphone
8. Compatibility	USB Plug and Play	Varies	Varies	Varies	Windows	Varies
9. Tasks						
Precise control/drawing*				Harder	Harder	Not suitable
10. Potential for Independent Use	✔	Varies	✔	✔	✔	✔
11. Portable / Transferable	✔	✔	✔	Varies	✔	Varies
12. Robustness						
Independent of lighting conditions	✔	✔	✘	✘	✘	✔
Independent of acoustic conditions	✔	✔	✔	✔	✔	✘
Battery-free	Varies	Varies	✔	✔	✔	✘
13. Cognitive Load*				Harder	Harder	Harder

* Subjective impressions of how a typical user might experience this type of device.
"Varies" means that specific devices within this family vary on whether or not they support the feature.

From kpronline.com/blog/your-guide-to-25-hands-free-mice/

Prepared by Heidi Koester, Nov 2018. Koester Performance Research, www.kpronline.com

Hands-free Mice: Lip/chin Joysticks

Differences between Lip/chin Joysticks		IntegraMouse+	Jouse3	QuadJoy	BJOY Chin	TetraMouse XA2
						
		$2,496	$1,495	$1,400	$465	$449
		Info page	Info page	Info page	Info page	Info page
Consideration	**Feature**	Manual	Manual			Manual
Cursor Control	Customizable cursor control	OS mouse settings	OS mouse settings	OS mouse settings	OS mouse settings	OS mouse settings
			Hardware controls		Hardware controls	Hardware controls
				Setup software	Setup software	
Mouse Buttons	Built-in switches	Sip/puff	Sip/puff	Sip/puff	Chin buttons	2nd joystick
	Joystick unit includes jacks for external switches		✔		optional	
	Button software included			✔	✔	✔
	Built-in dwell support		✔			
Components	Required components	Joystick unit	Joystick unit	Joystick unit	Joystick unit	Joystick unit
		USB receiver	Control unit			
Connections	Wireless between joystick and target device	✔		✔ (with power cable)		✔ (with Bluetooth adapter)
Mounting	Mounting hardware included		✔	✔		
Compatibility	Bluetooth			✔ (optional)		✔ (optional)
	Software for setup	n/a	n/a	Windows	Windows Linux	n/a
Portability	Settings stored in sensor unit for easy portability		✔	✔	✔	✔
Robustness	Battery-free		✔	✔	✔	✔
	Battery life (hrs)	48 hrs				

All 5 Lip/chin Joysticks have these features in common:

- Lip/chin cursor control
- Built-in switches (but varying activation methods)
- Compatible with 3rd party button software and switch interfaces
- Wireless connection between user and device
- Joystick is near face, but no wearable or line-of-sight required
- Joystick mount required
- USB Plug and Play
- Potential for precise control/drawing
- Potential for 100% independent use
- Portable/Transferable
- Independent of lighting and acoustic conditions

Hands-free Mice: Wearable Sensor Systems

Differences between Wearable Sensor Systems		GlassOuse 1.2	Quha Zono	EnPathia	eeZee Switch	ED Air Mouse
						
		$499	$999	$295	$827	$150
		Info page	Info page	Info page	Info page	Info page
Consideration	**Feature**	Manual	Manual	Manual	Manual	Manual
Cursor Control	Sensor must be tilted (not rotated) to move cursor				✔	
	Customizable cursor control	OS mouse settings	OS mouse settings	OS mouse settings	OS mouse settings	OS mouse settings
			Setup software	Setup software		
		Hardware controls			Hardware controls	
Mouse Buttons	Sensor unit includes jack for a single switch	✔	✔			✔
	Sensor unit includes jacks for 2 switches		✔			✔
	USB unit includes jacks for 2 switches		✔	✔	✔	
	Button software included		✔	✔		
	Built-in dwell support		✔	✔		
Components	Required components	User-worn sensor	User-worn sensor	User-worn sensor	User-worn sensor	User-worn sensor
			USB unit	USB unit	USB unit	
				Software driver		
Connections	Wireless connection between sensor and computer	✔	✔			✔
Mounting	Sensor mounting designed into system	✔	✔	✔		✔
Compatibility	USB Plug and Play		✔		✔	✔
	Bluetooth	✔				
	Software	n/a	Windows (optional, for setup only)	Windows MacOS X Linux	n/a	n/a
Independent Use	Potential to begin and end session without assistance	✔	✔ (esp. with Nemo model)			
Portability	Settings stored in sensor unit for easy portability	✔	✔		✔	
	Software must be installed on each system (allowed by license)			✔		
Robustness	Battery-free			✔	✔	
	Battery life (hrs)	15	30			unknown

All 5 Wearable Sensor Systems have these features in common:

User-worn sensor (typically head-controlled)
Compatible with 3rd party button software and switch interfaces
Free from line-of-sight
Requires wearable
Potential for precise control/drawing
Portable/Transferable
Independent of lighting conditions
Independent of acoustic conditions

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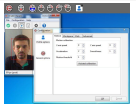
Hands-free Mice: Wearable Target Trackers

Differences between Wearable Target Trackers		TrackerPro	HeadMouse Nano	SmartNAV 4:AT	AccuPoint
					
		$995	$990	$499	$1,995
		Info page	Info page	Info page	Info page
Consideration	**Feature**	Manual	Manual		
Cursor Control	Customizable cursor control	OS mouse settings	OS mouse settings	Software driver	Software driver
Mouse Buttons	Button software included			✔	✔
	Built-in dwell support			✔	✔
	Option for voice clicking			✔	
Components	Required components	User-worn dot	User-worn dot	User-worn dot	User-worn dots
		Sensor unit	Sensor unit	Sensor unit	Sensor unit
				Software driver	Software driver
Connections	Includes wireless receiver for switches		✔		
Mounting	Sensor mounting designed into system	✔	✔	✔	
Compatibility	USB Plug and Play	✔	✔		
	Software driver	n/a	n/a	Windows	Windows
Portability	Software required on each computer (allowed by license)			✔	✔

All 4 Wearable Target Trackers have these features in common:

User-worn sensor tracked by sensor unit (typically head-controlled)
Sensor unit has jacks for switches
Compatible with 3rd party button software and switch interfaces
Wireless between user and sensor unit
Wired between sensor unit and computer
Requires line-of-sight
Requires wearable
Nothing in front of face
Potential for precise control/drawing
Potential for independent use
Portable/Transferable
Some dependence on lighting conditions
Independent of acoustic conditions
Battery-free

Hands-free Mice: Webcam Face Trackers

Differences between Webcam Face Trackers		SmyleMouse	ViVo Mouse	Camera Mouse	Enable Viacam	iTracker
						
		$499	$100 (Lite)	Free	Free	$35
		Info page	Info page	Info page	Info page	Info page
Consideration	**Feature**	Manual	Manual	Manual	Manual	
Cursor Control	Customizable cursor control	Software driver	Software driver	Software driver	Software driver	Software driver
Mouse Buttons	Option for gesture clicking	✔				
	Option for voice clicking		✔ (Std or Pro models)			
Components	Required components	Webcam	Webcam	Webcam	Webcam	Webcam
		Software driver	Software driver	Software driver	Software driver	Software driver
Compatibility		Windows	Windows	Windows	Windows	Mac OS X
Portability	Software must be purchased for each computer	✔	✔			

All 5 Webcam Face Trackers have these features in common:

Face or facial features tracked with computer's webcam
Built-in dwell support
Compatible with 3rd party button software and switch interfaces
Wireless between user and webcam
Software driver required
Requires line-of-sight
Nothing in front of face
No mounting required
Ill-suited for precise control/drawing
Potential for independent use
Some dependence on lighting conditions
Independent of acoustic conditions
Battery-free

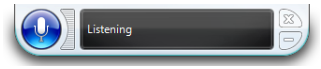
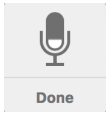
Hands-free Mice: Eye Trackers

Differences between Eye Trackers		Tobii PCEye Plus	Tobii PCEye Mini	Tobii 4C
				
		$1,699	$1,199	$169
		Info page	Info page	Info page
		Manual	Manual	Manual
Cursor Control	Adjustable zoom for more precise targetting	✔	✔	
Mouse Buttons	Built-in OS desktop shortcuts	✔	✔	
	Physical switch can be used for button activation	✔	✔	
	Tracker unit includes jack for switch	✔		
Components	Hardware	Eyetracker	Eyetracker	Eyetracker
	Software	Tobii Windows Control	Tobii Windows Control	Tobii eyetracking core driver
Compatibility		Windows 7+	Windows 7+	Windows 10
Tasks	Integrated microphone for speech recognition	✔		
	Environmental control with included IR remote	✔		
Independent Use	Gaze-enabled configuration	✔	✔	
Portability	Software required on each computer (allowed by license)	✔ (3 devices)	✔ (3 devices)	✔

All 3 Eye Trackers have these features in common:

- Eyegaze tracked by sensor unit
- Built-in dwell support
- Wireless between user and eyetracker
- Software driver required
- Requires line-of-sight
- Nothing in front of face
- Integrated gaze keyboard for text entry
- Ill-suited for precise control/drawing
- Potential for independent use
- Some dependence on lighting conditions
- Independent of acoustic conditions
- Battery-free

Hands-free Mice: Speech Recognition Systems

Differences between Speech Recognition Systems		Dragon NaturallySpeaking Home	Windows Speech Recognition	Mac OS Dictation + Siri
				
		$150	Free	Free
		Info page	Info page	Info page
		Manual	Manual	Manual
Cursor Control	Control mouse cursor with speech commands	✔	✔	
Mouse Buttons	Voice commands to click anywhere	✔	✔	
	"Show Numbers" to click on clickable items	✔ (with add-on)	✔	✔
Components	Required components	Microphone	Microphone	Microphone
		Dragon software		
Compatibility		Windows	Windows	Mac OS X
Portability	Install software on each computer (allowed by license)	✔ (limited installs)		

All 3 Speech Recognition Systems have these features in common:

Spoken commands
Various built-in speech-enabled tasks available
Compatible with 3rd party button software and switch interfaces
Wireless between user and computer*
Free from line-of-sight
Nothing to wear or in front of face*
Ill-suited for precise control/drawing
Potential for independent use*
Independent of lighting conditions
Some dependence on acoustic conditions
Battery-free*

* with appropriate microphone