

H6-BN Optics

Head Mounted Eye Tracking System



The H6-BN module connects to the EYE-TRAC^{®6} Control unit for a lightweight head mounted eyetracker. It is designed to quickly and accurately track gaze position of all participants, including young children. Head mounted optics are recommended in situations where it is important for participants to have freedom of movement and/or where gaze must be measured over an unrestricted field of view.

The advantages of the H6-BN head mounted solution are many:

- A comfortable but secure adjustable headband.
- A flexible choice of methods for capturing the scene image including a head mounted scene camera, scan converter (from computer image) or a remote (room fixed) scene camera if EYEHEAD[™] Integration option is used.
- Constant visual feedback throughout entire tracking sessions.
- Automated features with manual overrides for challenging participants.

- A method for directing the eye image to the camera with a small monocular beam splitter mounted to a flexible boom arm, providing the adjustability needed to capture a wide variety of participants over multiple viewing areas and conditions.
- A software Development Kit (SDK), which provides access to the eye tracker controller



port, serial out port, and to data files recorded by ASL interface program.

- A standard 15 foot cable connecting the optics to the control unit, with custom configuration available up to 50 feet.

The eye tracker provides constant feedback indicators superimposed on both the eye and scene images, allowing the operator to monitor the status and quality of the measurement.

The gaze point can be displayed as a cursor or a cross hairs on the scene image. A videotape or digital

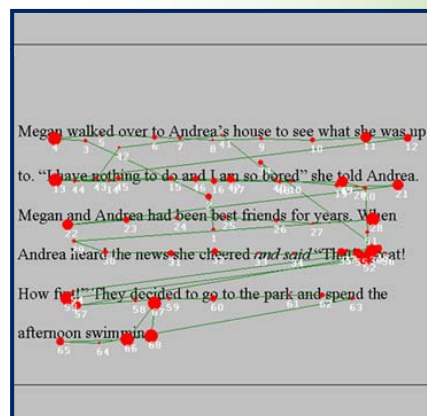
recording of the scene image can be created as a permanent record.

Recorded data include time, horizontal and vertical eye position in relation to the head, and pupil diameter. External events-marks can be recorded along with eye tracking data.

Data recorded with the EYE-TRAC^{®6} operating software automatically includes subject calibration data as well as all eye tracker set-up, parameter, and configuration information. The user is allowed to enter descriptive information if desired.

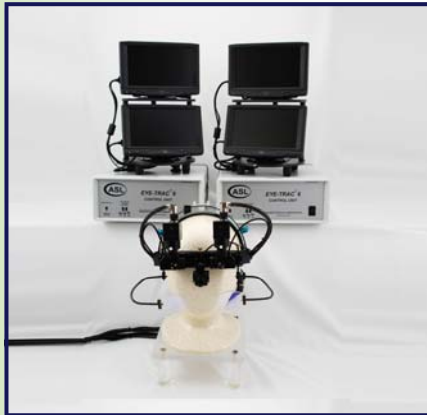
EYEHEAD[™] integration

When combined H6-BN optics with an optional head tracking device and ASL's EYEHEAD[™] software package, provides participant's gaze with respect to stationary surfaces in the environment. Recorded EYEHEAD[™] data files report the identification number of the surface being viewed, point-of-gaze



H6 EYEHEAD[™] package data

H6-BN Optics



coordinates on the surface, distance from the eye to the surface being viewed, and pupil diameter. A maximum of 20 surfaces can be defined. If desired, other data can be included as well, such as position of the eye in space, and the direction of gaze with respect to room coordinates. Data is also available to external devices from the real time digital output port.

The head tracking device for EYE-HEAD™ integration can be any of several commercially available 6 degree of freedom position tracking devices.

Optional Equipment

The H6B-N Optics is part of the ASL EYE-TRAC®6 Series. The ASL



EYE-TRAC®6 Series offers the most eye tracking configuration options. This provides the greatest flexibility for your research requirements today and tomorrow.

- The H6-BN Optics can be configured with a multi-speed high speed camera; with two optics modules for binocular tracking; and can also be mounted to a chinrest head restraint.
- H6-BN Optics can be upgraded to incorporate remote optics, long range optics for fMRI, optics for virtual reality HMD's, etc
- System components and software can be shared among collaborators for greater allocation of time, funding, and resources.

H6-BN optics are portable and can be configured with a laptop as well as a PC.

Training & Technical Support

ASL is committed to assisting researchers before, during and after the eye tracking data acquisition.

We offer unlimited technical support, free access to interface and analysis software at all times. Multiple copies of the interface program and the ASL Results analysis software are available at no additional charge.

Customized on site training is also available.

Data Analysis Tools

ASL Results

A comprehensive eye tracking data analysis package included with each EYE-TRAC 6 series. ASL Results quickly reduces raw data to user definable fixations and matches those fixations with Areas of Interest (AOI). Includes several statistical parameters as well as creative meaningful visualization of data.

Sample Parameters

HeatMaps

Fixation Sequence Analysis, AOI Summary, Transition Table, Conditional Probability, Joint Probability

Dwell Analysis

Interact

INTERACT 8-ASL Edition streamlines frame by frame video analysis providing meaningful eye tracking data. This software solution is consistent with ASL's commitment to expand and enhance the use of eye tracking.

Technical Specs

Head Tracker	6 DOF Head Tracking
Sampling Rate:	120/240/360Hz
Gaze Position Accuracy:	0.5° to 1°
Tracking Range:	50° Horizontal, 45° Vertical or more
System Accuracy:	0.5° visual angle or less
Resolution:	0.1° of visual angle
Technology:	Video based Eye Tracking with Bright Pupil illumination
Operating System:	Windows XP or later version
System Calibration:	Automatic and with 5 to 9 points