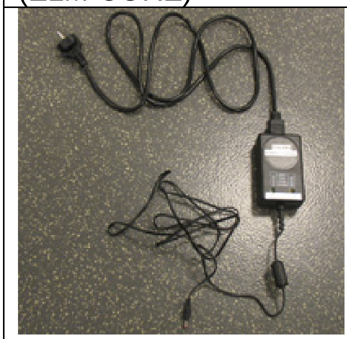
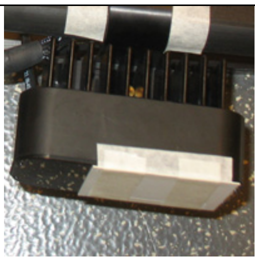
EyeLink 1000 eye tracker in AMI Centre

This page provides the essential information and documents to work with the SR Research Eye-Link1000 eye tracking system. Further helpful information can be found at the SR Research Support Sites (https://www.sr-support.com/). There you can also find a forum, example experiments and download the documents and software packages.

1 System setup

This chapter explains the EyeLink 1000 setup and the basic settings needed to run the experiment.

Table 1: Components

 Eye Link 1000 Core unit, PC (ELM-CORE)	 Eye Link Base Box (CL-BOC)	 Eye Link CL Battery Box
 Battery charger (AC Adapter)	 IR illuminator (Eye Link FL-890)	 Eye Tracking Camera (Eye Link CL-OC) and 50mm lens (SR-MRI-50)
 Camera mount (+camera and IR)	 Power cable inside the MSR	

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1.1) Wiring of the Eye Link system

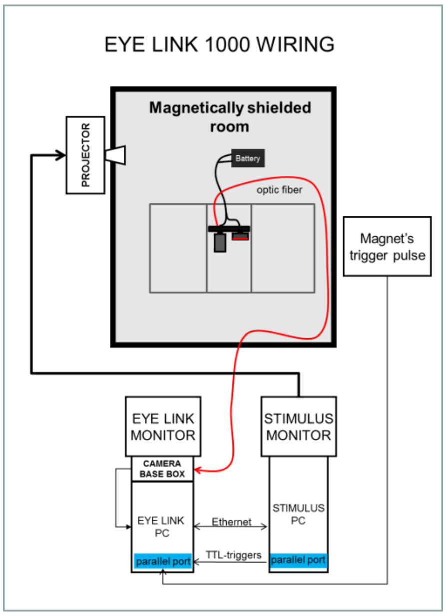


Image 1: Eye Link 1000 wiring in AMI Centre

The Eye Tracker is installed in the AMI-Centre. This means that eye tracking Host PC and all the eye tracking components in the control room are installed and fixed to their place. Still one should make sure before experiment that everything is connected and the proper settings are set. The components inside the shielded room instead are removable.

The following connections are connected when the system is normally set, please check the following.

1. Check that the Eye Link cable is connected between camera base box and Eye Link PC.
2. Check and plug in all the power cables.
    a. Eye Link PC
    b. Eye Link Monitor
    c. Eye Link Camera Base Box
3. Connect optic fiber to the camera base box.
4. Connect the blue cross wired Ethernet cable: other end to the Eye Link PC and the other to the PCI-Ethernet card on the Stimulus PC.

INSIDE THE SHIELDED ROOM

1. Make sure the camera is on its place and fixed properly. Place the infrared-illuminator and the camera between the tape-markers.
2. Connect an optic fiber to the eye link camera.
3. Connect two power cables with the camera power and IR-light power.

Image 2: Power and fiber optic connectors

4. Connect two power cables to the battery and switch the battery on.

Image 3: Battery connections

Check the following settings from the STIMULUS and HOST PC before experiment.

1.2) Stimulus PC

The system includes a Ethernet connection between the Stimulus PC and Host PC. Make sure, the Ethernet is connected (blue cross wired cable) between the computers and set the following settings for Ethernet card of the stimulus PC:

IP - 100.1.1.4 Subnet mask 255.255.255.0

Notice! To change these settings, you need to be logged in as administrator.

1.3) Host PC

Check out the system settings. The detailed system settings are defined the INI-files, which can be found under the c:\elcl\exe directory on Eye Link Host PC.

PHYSICAL.INI The file contains the physical characteristics of the setup.

The default settings:

```
screen_phys_coords = -168.0, 105.0, 168.0, -105.0
;;(millimeters from the center of the screen)

screen_pixel_coords = 0.0, 0.0, 1920.0, 1200.0
;;(upper left and bottom right corners in pixels)
screen_distance = 440 430;; (distance from the eye to the top
;;and to the bottom of the screen, in millimeters)
```

NOTICE: These parameters shouldn't be changed directly in physical.ini, but you must send them from Stimulus PC by using a stimulus software (Presentation/E-Prime/Experiment Builder) to a Host PC, as parameters which are altered remotely won't change the INI-files permanently. Otherwise there is a possibility of forgetting to change these parameters back to defaults, causing harm to other users.

Measure the current parameters of your setup and send them remotely.

For example in Presentation (PresLink):

```
tracker.set_parameter("screen_pixel_coords = 0, 0, 1920,1200")
```

It's important that these parameters are properly set, though they'll effect on fixation and saccade detection. For more details, see EL1000_InstallationGuide, 8.4 Customizing Your PHYSICAL.INI settings.

2 Experiment

2.1) Subject preparation

When recording single eye only, the eye movements should be measured from the subject's dominant eye. The dominant eye can be measured:

- With a simple "two finger" method: Place your both index fingers in line onto front you. Look at the fingers and close your eyes in turns. If the view doesn't change (you still see the fingers in same angle) while closing your eye, the current watching eye is the dominant one.
- With two hands, make a small hole with your thumbs and index fingers and raise them at your eye sight level, while keeping your hands extended. No focus on certain small object (egde, pin or such) through this hole. Next bring the arm closer to your eyes while still looking at the object through your fingers. Finally your hands will follow to your dominant eye.

BEFORE EXPERIMENT

1. Make sure the camera and IR-illuminator are connected to the battery via power cord and optic fiber is connected to camera.
2. Make sure that the physical dimensions are set correctly on physical.ini file.
3. Turn on the Eye Link PC. Choose option “Eye Link” from the startup menu and press enter.
4. Turn on the Stimulus PC.
5. Turn on the projector.
6. Set on the eye camera scene on the projector (i.e. run the track.exe –file on Stimulus PC)
7. Adjust the eye properly on the screen. Change the pupil- and CR-threshold levels if needed. See Eye Link 1000 Installation guide, chapter 7.5 Long range mount camera setup
8. Calibrate.
9. Validate, to check if the calibration is good enough.
10. If the calibration and validation succeeded, you may proceed to running the experiment.

AFTER THE EXPERIMENT

1. Close Eye Link software on Eye Link PC
2. Unplug and switch off the battery box.
3. Remove the Camera and IR-illuminator
4. Shut down the Eye Link PC and the Stimulus PC.

3 Stimulus PC

A separate stimulus PC is needed for the stimulus presentation with the EyeLink PC. The stimulus PC is used via video projector for showing the eye image, the calibration and the stimuli presentation, whereas Eye Link Host PC controls the eye tracking. These two PCs are connected with a cross wired Ethernet cable (blue).

3.1) Experiment Builder

The Experiment Builder is a visual experiment creation tool for use with the EyeLink eye tracker. While a primary goal of the Experiment Builder has been to create a tool that allows to easily creating EyeLink experiments; the Experiment Builder can also be used to create non EyeLink experiments that do not need eye tracking functionality.

3.2) Presentation software

In AMI, Presentation software is installed on the stimulus PC and is often used for stimulus presentation in fMRI measurements. Basically there are two provided ways to communicate with Presentation software in AMI-centre.

- PCL code with PresLink using Ethernet connection
- TTL- triggers using parallel port

You can combine these two methods to get the benefits from each. If you like to have a flexible remote connection to Host PC and still very accurate triggering, you can use PresLink interface for calibration, start tracking and such, and to addition use the port_code triggers for precise synchronization.

3.2.1 PresLink -extension

For remote controlling the Eye Link Host from the Presentation software on Stimulus PC, there exists a Presentation extension called PresLink. PresLink extension enables the “eye_tracker” -library, which commands can be used from the PCL-file. The connection works through Ethernet cable.

Presentation Help : Help Guide : References : PCL Reference : Eye Tracking Types
http://www.neurobs.com/presentation/docs/index_html

When using the PresLink commands, the Presentation basically controls the eye tracker remotely. All needed procedures are available through the Presentation extension, including calibration, recording, marker sending, data saving, etc.

3.2.1.1 Tool manager

To enable the “PresLink” -extension, go to Extension Manager under Tools-menu and add a new extension. Click “Add new file” and search for “PresLink.dll”. The current dll-file is in folder: ”C:\Program_Files\SR-research\EyeLink\lib\”. Save the extension with a name “PresLink”.

This procedure needs to be done only once for each user and there should already exist “PresLink” extension.

3.2.2 Presentation-script

In the Presentation, define the trials in the SCE-file and the executive commands in the PCL-file. Also include the eye tracking commands into PCL. In the example code, we create eye_tracker object “tracker”, which is afterwards called with “eye_tracker” library commands. The synchronization is achieved by using the send_messages()-commands before “present()” commands. See the experiment file from stimPC folder.

Example code: sce-file:

```
trial {
    picture {
      box { height = 10; width = 10; color = 0,0,0; };
      x = 0; y = 0;
    } pic1;
 }trial1;

 trial {
    picture {
      box { height = 10; width = 10; color = 255,0,0; };
      x = 0; y = 0;
    } pic1;
```

```
 }trial2;

 begin_pcl;
 eye_tracker tracker = new eye_tracker( "PresLink" ); # initialize PresLink.
 tracker.start_tracking() ;#connect to Eyelink tracker.

 #open edf file on the tracker.
 string edf_name = "track.edf"; #8 letters maxixum without ".edf"
 tracker.set_parameter("open_edf_file",edf_name);
 tracker.set_recording(true); #start recording.

 main_trials[1].present();  #present the stimulus

 tracker.send_message("SYNCTIME");#mark the time we presented the stimulus

 main_trials[2];#present the other stimulus

 tracker.set_recording(false); #stop recording.
 #transfer the edf file. Note Presentation places files specified
 #without a path in the user's home directory.
 #in this example track.edf will be placed in your home directory.
 #(eg. in xp #C:\documents and settings\<username>
 string edf_fname = logfile_directory + edf_name;
 # string edf_fname = logfile_directory + logfile.subject() + edf_name; # when using "prompt sub-
ject" feature

 #gets the edf-file to the stimulus PC, on defined locations
 tracker.set_parameter("get_edf_file",edf_fname);
 tracker.stop_tracking();
```

3.2.3 USAGE WITH DATAVIEWER

When analyzing data with DataViewer made by SR-Research, to automatize the procedure, you should set certain parameters on the code. Then the data viewer can sparse the data, according to those parameters.

Example:

```
string msg= "TRIALID ";
msg.append(string(i));
tracker.send_message(msg);

# put tracker into idle mode
# tracker.set_parameter("set_idle_mode");
# send TRIAL ID message
tracker.send_message("TRIALID");

msg= "!V TRIAL_VAR trial ";
msg.append(string(i+2));
tracker.send_message(msg);

msg = "!V TRIAL_VAR TRIAL_IMAGE ";
msg.append(graphics[i].filename());
tracker.send_message(msg);

msg = "!V IMGLOAD FILL ";
msg.append(graphics[i].filename());
tracker.send_message(msg);


# start recording
tracker.set_recording(true);

tracker.send_message("SYNCTIME");
image_trials[i].present();   # present the trials

tracker.set_recording(false); #stop recording.

msg= "TRIAL_RESULT ";
msg.append(string(0));
tracker.send_message(msg);
```

3.2.4 Parallel port triggers

The parallel port interface enables to receive TTL pulses. TLL-pulses from parallel port are automatically stored in to the Eye tracking Data File (EDF) in Host PC.

Instead of using the PCL-script, more simple approach is to synchronize stimuli presentation and eye tracking data by sending TTL-triggers. In this, TTL triggers are sent from Stimulus PC to the Host PC via parallel ports. These triggers/markers are shown directly in the data file. When exact timing is required, we recommend using these parallel port triggers.

All the eye tracking procedures needs to be done separately from the Host PC, including calibration, recording, saving, etc.. Only the markers are shown in data and are sent from the Stimulus PC. See more information about using the Host PC as data recording from “recording from HOST PC”.

This is the simplest way to synchronize your presentation with the eye trackers. The approach alone doesn't allow any other interaction between the computers or sending any other parameters other than the plain trigger pulses.

Cabling

Connect the parallel port from the Stimulus PC to the parallel port of Host PC via parallel cable. In AMI, the parallel port for eye tracker is "LPT3" in the Stimulus PC.

Presentation settings

Settings menu, create new output port in "Output port"-> Add-> new port (1). Choose the port LPT3. In here you can also choose the length of pulse.

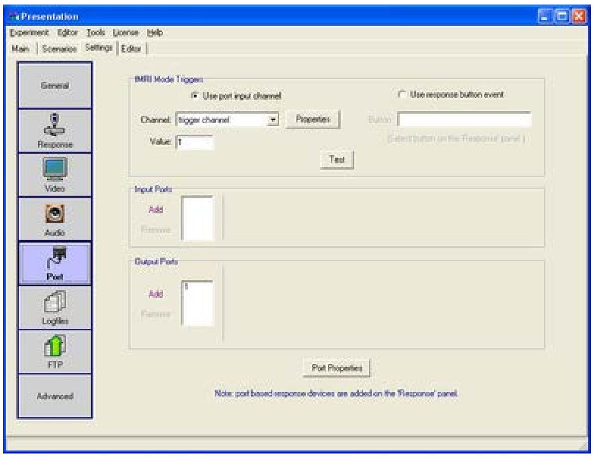


Image 4: Port settings window

Presentation script for parallel port triggers

In the SCE-file, use port-triggers inside the trial as following: port = "1" # if you have defined only one output port, then this is optional. Otherwise you need to define which port to use. port_code =2; # Defines what is send to the port. You can send numbers between 0-255. They will show in the eye tracking data file as such. In the data file, two events can be seen, the trigger onset and trigger off-set.

```
trial {
 picture {
      box { height = 10; width = 10; color = 0,0,0; };
       x = 0; y = 0;
    } pic1;
  port_code = 2; #this code is send at the time "trial1" is presented
  }trial1;
```

Output data file will include the following lines

```
INPUT    155462    2 ## this is the same as number in the "port_code"
INPUT    155472    0 ## indicates the trigger off-set.  Occurs 10ms later as the pulse length is set
to 10ms
```

Host PC settings

Parallel port is set in the host PC on default, so the parallel interface works automatically. Check that the following lines in the final.ini file.

```
write_ioport 0x37A 0x20 ;; enables the bidirectional function for the current parallel port
input_data_ports 0x378 ;; set the input ports to the data register
```

Now, by the default, all the triggers received via parallel port are marked to EDF-file and INPUT-lines.

3.3) Using parallel port triggers as buttons

Optionally, the parallel input triggers can be used as buttons. This way, we are able to use additional information to data file, besides the INPUT lines. The buttons need to be first defined in button.ini file (see below). In host PC, the different pins (1-8) works as separate triggers and those needs to be define. This is little bit complicated approach, because the input parallel port on the Host PC understands the separate pins only and the output from Stimulus PC is sending the decimal numbers in 8bit mode.

This approach let you have proper messages into the EDF-data file, without using the PresLink interface. Notice that you will only have 8 different buttons available in total.

So we add lines into buttons.ini file, which creates buttons for pins 1-8:

```
create_button 1 0x378 0x01 0;; Button 1
create_button 2 0x378 0x02 0;; Button 2
create_button 3 0x378 0x04 0;; Button 3
create_button 4 0x378 0x08 0;; Button 4
create_button 5 0x378 0x10 0;; Button 5
create_button 6 0x378 0x20 0;; Button 6
create_button 7 0x378 0x40 0;; Button 7
create_button 8 0x378 0x80 0;; Button 8
```

After that, we define the buttons’ actions into the same buttons.ini file:

```
## button_function <button_number> <press_command> <release_command>
 button_function 1 "data_message 'BUTTON_1_PRESSED'" "data_message 'BUT
TON_1_RELEASED'"

 button_function 2 "data_message 'BUTTON_2_PRESSED'" "data_message 'BUT-
TON_2_RELEASED'"
```

When calling these pins from Presentation software, by using decimal numbers in the port_code, you need to keep in mind the following.

port_code	binary	channels
1	0000 0001	1
2	0000 0010	2
4	0000 0100	3
8	0000 1000	4
16	0001 0000	5
32	0010 0000	6
64	0100 0000	7
128	1000 0000	8

When using the single pins, it’s rather easy to find the correct port_code, i.e. we want to trigger the channel 5, then port_code = 16 (look at the table above). But when several simultaneous triggers are needed, then it gets more complex. If you want simultaneous triggers on channels 1 and 3, you basically want to send a binary code 0000 0101. This binary code equals to 5, because the 0000 1000 equals to 4 and the 0000 0001 = 1 and the sum of those is 5. So in this case we would send the port_code = 5.

If we send the port_code = 2, in the presentation, it will show on data file as:

```
MSG 52999 BUTTON_2_PRESSED
MSG 52999 BUTTON_2_RELEASED,
```

where the “52999” is the time (ms), when the action occurred. HOST PC – running the experiment, saving the data If you are not using any remote control from the Stimulus PC, you need record the data manually from the Host PC. In such case, do the following:

1. Go to output/record window
2. Open file
3. Enter the name
4. Press record
5. Press stop record
6. Close file

Repeat the phases 4 and 5 when recording more than one set into one data file. The experiment will be saved on the Host Pc under folder C:\ELCL\DATA\ After the experiment, run GetFile.exe from the Stimulus PC to transfer the data-file to Stimulus PC.

4 Subject preparation

When running the experiment, check the followings:

1. Find out the dominant eye and choose the eye to follow.
2. Put the subject on its place on the bed.
3. Run the track.exe on Stimulus PC and click the “enter” twice to see the eye image on Stimulus PC and on the back projection screen
4. Uncheck the threshold coloring from Host PC.
5. Adjust the mirrors on top of the coil, so that eye is visible for the camera.
6. Place the subject inside the bore.
7. Adjust camera, so that the eye is shown for the camera. Focus the lens if needed. This adjusting is easier to do from the head end of the bore.
8. Check the threshold coloring from Host PC.
9. Change the pupil and CR threshold levels if needed. See Eye Link 1000 Installation guide, chapter 7.5 Long range mount camera setup
    a. Pupil threshold: Idea is to fill the dark pupil with blue color. If there isn’t enough color inside the pupil, adjust the pupil threshold level up. If there is too much blue color around the pupil, change the threshold level down.
    b. Cornea reflections: Idea is to have as small CR as possible. If there is a white halo around the turquoise reflections, adjust the CR-threshold level down.
10. Calibrate (see Calibration)
11. Validate and check if the calibration is good enough. If not, go to -->10.

4.1) Subject

Things that need to noticed with the subject. Always check that you are not wearing anything ferromagnetic inside the scanner.

4.1.1 Mascara

Eye lashes will get very dark on eye image, when having mascara on them, which can effect negatively on the pupil detection. Mascara shouldn’t be used in the scanner anyways, because of their metal particles.

4.1.2 Eye Glasses

Special glasses (corrective lens set) can be used inside the bore, which includes no ferromagnetic parts.

When using glasses with the eye tracker, the lenses may reflect infra-red light, which can disturb the eye tracking. Eye tracker may work with glasses, but it needs to be adjusted very carefully. Also the successful rate is lower with the glasses than without.

4.1.3 Contact Lenses

There are two types of contact lenses: hard and soft.

Soft lenses
Soft contact lenses works normally quite well. The edge of lens can be seen from the eye image as pale ring, but it usually doesn't effect on the eye tracking. Lenses can also create an extra reflection point, which is very close to 1st Purkinje image, but is normally visible only on certain angles.

Hard lenses
Hard lenses don't usually work with the eye trackers. They tend to be less stable than soft lenses and can slide partly off the center of the eye. This will produce and eye image, where the pupil is cut off partly.

4.2) Calibration

Few things that need to be noticed when doing the calibration:

1. Choosing the eye to track. In AMI, the eye tracker is fixed to follow the right eye, which is the more common dominant eye. If you want to track the other eye, i.e. there is squint in the right eye; the whole camera need to be repositioned and this may take several minutes.
2. The background's brightness of the calibration shouldn't differ much from the brightness used in the actual experiment. If there are dramatic changes in pupil size, it may affect to track abilities. This is due to the pupil reactions to the brightness. Black background in the calibration enlarges the pupil and if the experiment itself is very bright: the pupil will shrink to small. The different sizes of the pupil may cause inaccuracy to the tracking.
3. When calibrating, it's crucial to ask the subject to focus on the center of the calibration ring, not just to the "ring" itself. This way, you get much more accurate calibration, and the "calibration grid" will appear straight.
4. Automatic vs. Manual calibration. The guideline is to use manual calibration when possible. In the manual calibration, with training, the operator easily learns to see when then gaze has positioned to its place and when to clarify the point. As opposite, the automatic calibration calculates the first steady state, even though the gaze isn't centered to the calibration point yet. In manual calibration: operator checks the calibration point manually by pressing the space bar when the eye focused on the point.
5. Pupil size is known to effect on level of illumination. Differences in pupil sizes also effect on the accuracy of the calibration. The SR-Research recommends to keep the luminance level approximately same throughout the experiment.

4.2.1 Changing the calibration background color

The calibration can be done by running Track.exe file on the Stimulus PC, but notice that the background and foreground colors are set in this file. The file can be modified with the Experiment Builder -software to change the colors (you need to create your own exe-file and it requires a license dongle to run it.

In the Stimulus PC of AMI-Centre, there exists Track_ReadCallInfo.exe –file, which reads calibration parameters from the txt-file, and uses those in the calibration. The txt-file can be found from: F:\users\V_M\Track_ReadCalibrationParameters\myfiles\CallInfo.txt.

The CallInfo.txt file consists of:

```
# Calibration type - H3, HV3, HV5, HV9, HV13
HV9
# Background color - (0-255,0-255,0-255)
127
127
127
# Foreground color - (0-255,0-255,0-255)
0
0
0
# Calibration_area_proportion 0.88 0.83
0.88
0.83
```

In here you can change “Calibration Type”, “Background color”, “Foreground color” and “Calibration area”.

Open the CallInfo.txt file with the notepad, change the parameters, save and exit the notepad.

You can run the this ExperimentBuilder file from F:\users\V_M\Track_ReadCalibrationParameters\Track_ReadCallInfo.exe. There also exists a shortcut on the desktop (Track_ReadCalibrationInfo).

4.2.2 Pupil Calibration

EyeLink system records either pupil "diameter" or "area". This can be set in the setup window of EyeLink. The units will vary between different subjects, so the pupil size needs to be calibrated. Otherwise the output unit is "arbitrary".

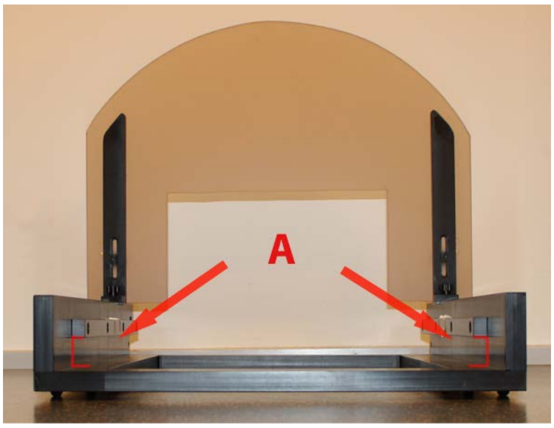
There exists no calibration procedure in EyeLink, but each user has to calibrate on their own. When subject is the on the bed, put "a fake eye" on top of the subjects eye. Now track the fake eye. Change the tracking mode to "pupil" and record few seconds of data. After that, you should change to "pupil-CR" -mode again.

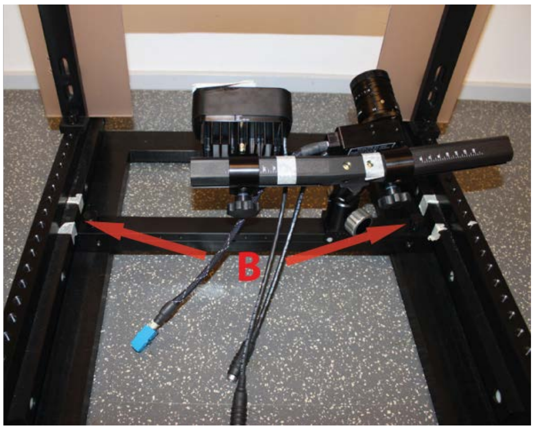
When you know the size of your fake eye, you can calculate the conversion factor between mm:s and eyelink-units.

5 Setting the camera

1. Slide the bed inside the bore.
   The camera and the infrared light source are attached to its mount. Their positions are calibrated and directed to a single point, and normally you shouldn’t touch their positions on the bar. Tighten all the screws (IR-light source adapter screw, camera adapter screw and ball joint screw of the mount). Take the lens cover off.

The system should be put onto the sled from the head end of the bore. Place the bar into the slots on the sides of sled (A) and slide it to the correct positions between the tape markers (B). Tighten the two screws on the side, so that the whole mount is firmly fixed.





Connect all cables (battery and optic fiber) and switch the battery on.

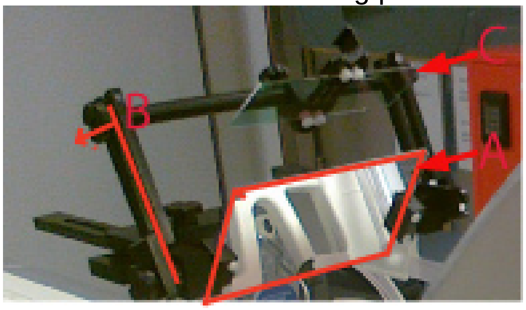
2. Take the bed out of the bore. Place the subject on the bed.

3. Show the eye image (the overview scene image) on the back projection screen and turn off the “coloring threshold”. See EyeLink manual for further help.

4. Mirrors adjustments

   Adjust the normal mirror (A), which is for user to see the back projection screen. Then place the see through mirror with its holdings, onto its place on the mirror mount. The holding bars should be as far from the bore as possible, so that it is “resting” on the mount (B). Tighten the screws from the side.

   Now adjust the see-through mirror (C), so that camera can see the eye. If needed, adjust the eye camera (this is easiest to do when the bed is inside the bore).
   When the eye is visible in the image, switch the camera view for the closer eye image. Now slide the bed into measuring position.



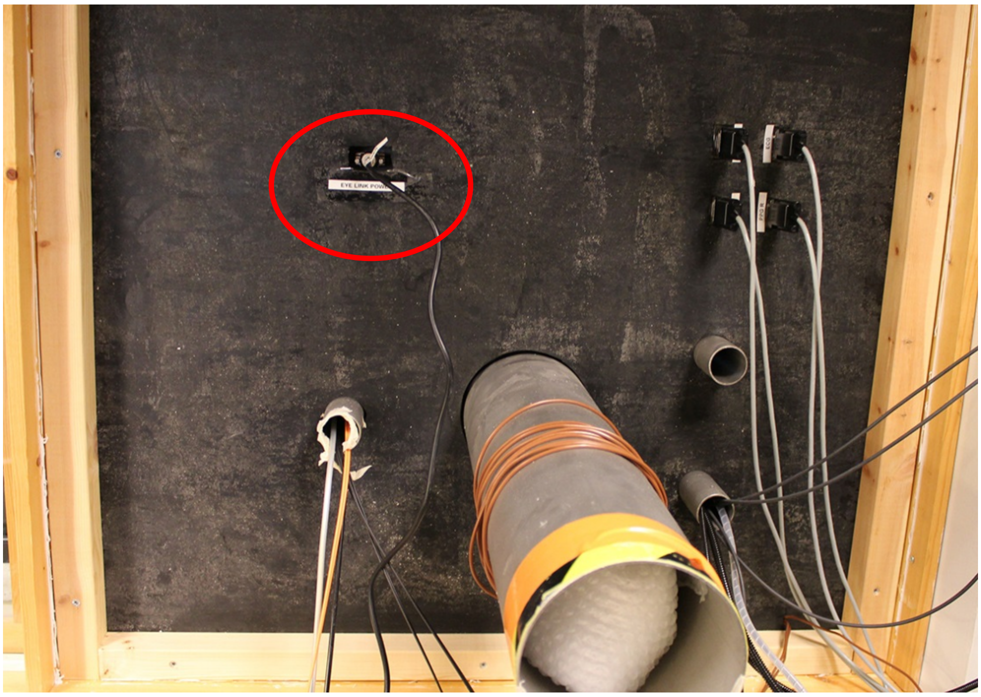
5. Focus the camera lens, so that the image is sharp. The easiest way to see this is when the cornea reflection is as small as possible. The “focus ring” is the closest to the camera head, with 3 similar screws on it. Other rings don’t have any effect.

6. Turn on the “threshold coloring”. Adjust the proper threshold limits for pupil and cornea reflection. After that you can proceed to the calibration.

5.1) Setting camera power cable

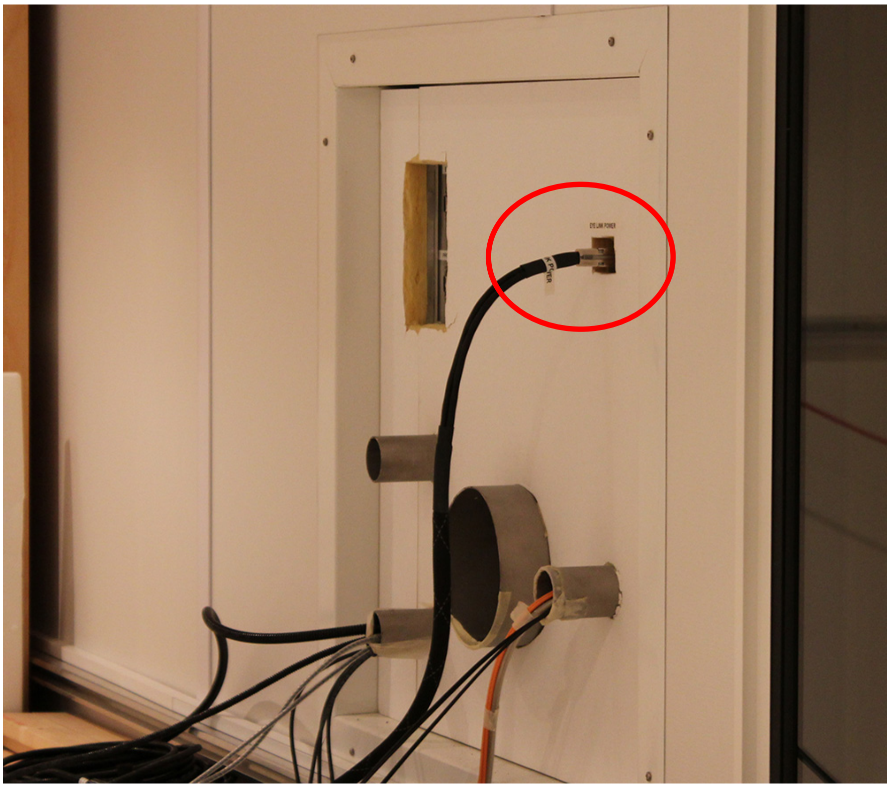
The camera system of EyeLink1000 in AMI Centre can be either powered with the batteries (inside the MSR) or with cable attached to mains electricity (in the control room). If you are using the mains electricity, do the following:

1. Inside the control room: Connect the 9-pin D-shaped connector of the power cable to the “Eye Link Power” adapter on the penetration panel. Plug the other end to any power socket.



2. Inside the shielded room: Take the long power cable to the shielded room, but **notice** that the 9 pin D-shaped connector has some ferromagnetic parts, so **keep that end away from the bore**.

Attach D-shaped connector to the “Eye Link Power” adapter on the penetration panel. Make sure that the cable is firmly attached.



Attach the other end of the cable to the camera and infrared light source from the head end of the bore.

After the usage

Remove the cable inside the shielded room, and bring it to its place into the white locker in the control room.

6 Mouse stimulation mode

In testing, mouse simulation mode can be used instead of real subject. This can be very useful when running pilot runs of an experiment. Mouse mode is identical to the camera mode, but instead of eye coordinates, we get mouse coordinates, which show normally in the data file. Mouse simulation mode can be switched on from “setup-> simulation mode -> mouse simulation.

Notice that the camera needs to be on, even though you are using just the “mouse simulation” - mode. The reason is that the EyeLink - software won’t start unless the camera is connected and powered.

Work around: start the Eye Link software from DOS command line with command "t -x".

7 Data analysis

Eye link system creates an EDF-file which consist the recorded data. To read the file, you need to have some converter. The options are:

- EDF2ASC – converter
- DataViewer – software
- Matlab
  - Matlab m-scripts
  - EDF-reader
- OGAMA

7.1) EDF2ASC – Converter

EDF-files can be converted to ASCII format with EDF2ASC-converter. https://www.sr-support.com/forums/showthread.php?t=17

7.2) Data Viewer

The EyeLink Data Viewer is an intuitive tool that is intended for viewing, filtering, and outputting EyeLink 1000 data. The Data Viewer supports EDF files recorded by EyeLink 1000. Detailed information can be found in the Data Viewer manual. Dataviewer software can be downloaded from the forum of SR-research (notice that the dongle is needed)

https://www.sr-support.com/forums/showthread.php?t=10