



EYEBLINK CONDITIONING

SYSTEM COMPONENTS

Eyeblink Control Unit
Headband with sensor
Headphones
Software and all cables

ADD ON KITS

- Response Module-EMG
- Response Module-Heart Rate
- Digital I/O Module-three outputs and one input
- Portable Air Puff Unit
- Visual Indicator Unit

PART NUMBERS

- 2325-0418
Eyeblink Conditioning System
- 2325-0253
Portable Airpuff Unit
- 7500-0346
Digital I/O Module
- 7500-0220
Visual Indicator Unit



FEATURES & BENEFITS

Data Reduction software scores Alpha, Conditioned Response and Unconditioned Response

Protection circuits limit excessive sound

USB interface makes laptops available to run the system

Menu driven software sets up protocols without programming

System adapts for eyeblink conditioning in rabbits and sheep

PRODUCT OVERVIEW

SDI's Eyeblink Conditioning System is used widely in basic learning studies, psychopharmacology research and the examination of the behavioral consequences of Alzheimer's and other diseases. The system records Alpha, CR and UR data. Earphones and a headset with photoelectric cell (PEC) sensor and integrated air tube are used to deliver the stimuli and record the eyeblink response. The system uses an audio stimulus for the CS delivered via the earphones and air puff for the US delivered by a small tube mounted just below the PEC sensor. The PEC sensor is recording data at millisecond rate continuously.

The basic system includes an Integrated Control Circuit with external connector to control 12V devices, an auditory stimulus module (white noise, 1 kHz or 1.2 kHz) a PEC Response Module, and an integrated impedance meter (not used with PEC sensor). Additional modules for EMG Response, Heart Rate and Digital I/O can be added to the basic system. If multiple response modules are used each response is recorded on a separate channel with all timing aligned.

The auditory stimulus module is used to deliver the CS. Using the external connector of the Integrated Control Circuit either the SDI Tactile Kit (user air tank) or the SDI Portable Air Puff Unit (self-contained compressor) are used to deliver the air puff for the US.

The included software through a simple menu system allows the user to define a test protocol. A test protocol contains Trials (discrete tests) that are then put into the Session definition, listed in the order the researcher would like the Trials executed. Trials control the delivery of the auditory and air puff stimuli and control when and how much response data is to be recorded. After a Session is completed the Data Reduction feature will take the raw data and create a tabular scored data file. Several parameters that affect scoring are set by the user. The scored data can be exported for use in statistical packages. The raw data is available for viewing and exporting. The raw data provides the user a method to verify that the scored data is accurate.

Power. Flexibility. Ease of Use.

EYEBLINK CONDITIONING

EYEBLINK CONDITIONING SYSTEM COMPONENTS

- Calibrated headphones
- Stimulus Module
- Response Module – PEC
- Digital I/O Out
- Integrated Circuit to control external
- Tactile Kit- User must supply input air tank
- Software
- Headband with PEC sensor and Air Tube
- Integrated Impedance Meter
- All cables and connectors

EYEBLINK CONDITIONING SYSTEM DETAILS

Stimulus Module

The Stimulus Module provides the auditory stimulus. The user can choose between white noise, 1KHz or 1.2 kHz of pure tone. The Stimulus Module provides 1 ms resolution for the timing of all stimulus parameters. Sound is controlled by software to deliver stimulus to Left, Right or both ears. The hardware protection circuit limits excessive sound amplitude and sound duration to the subject. Calibration settings allow you to calibrate the sound level at the headphones.

Response Modules

These modules sense the voltage changes at the sensors and amplify the signal from the sensor. This is measured by the reflectivity off the eyeball surface. Data points are recorded at 1 millisecond rate. The only adjustment is a gain control. The PEC response module can be used with the PEC sensor or the Heart Rate sensor

Visual Indicator Unit

The Eyeblink Visual Indicator Unit was designed to complement the Eyeblink software for researchers who want to do video recording of the subject as the trials execute in order to actually see the subject's eyeblink response. During testing, the Visual Indicator Unit is placed close to the subject being recorded. The Eyeblink Visual Indicator Unit shows the Trial Number, and the Start/Stop of the conditioned (acoustic) and unconditioned (air puff) stimuli represented by a Blue LED and Yellow LED going on and off. The indicators are controlled using the Digital Out lines and the PORT command in the software.

Integrated Impedance Meter

The meter will check the impedance of all pairs of electrodes simultaneously. Connect the yoke cable to the impedance meter and read the results. The display will make it very easy to determine an electrode with poor impedance. Once all electrodes show good impedance re-connect the yoke cable to the EMG Response Module (not used with PEC sensor).

Integrated Control Circuit

The Integrated Control Circuit provides a method to control a device accepting a 12V signal to be turned on and off via Eyeblink Conditioning System software. San Diego Instruments provides several units that will work off this connector; Tactile Kit for air puff using an air tank for input, Portable Airpuff Unit a self-contained air puff kit with compressor and Slave Mouse (See Digital I/O for alternative control) to trigger picture changes on a separate computer. User supplied units meeting the 12 V signal requirement can also be controlled.

Digital I/O

Three digital output lines using 5V TTL signals are integrated into the system. If the Digital I/O module is included it provides the same three digital output lines and one input line using a switch closure signal. The output lines can control 5V TTL devices such as the SDI Slave Mouse to trigger pictures on a separate computer or the Visual Indicator Unit. The Input line can be used to execute a Trial in the Session list based on an external signal versus timing.

Tactile Kit

The Tactile Kit provides a control box with a regulator for the air out pressure and solenoids to turn the air on/off under software control. The maximum PSI should be set to 15 psi. The red tube from the headset is connected to the Tactile Kit air output for delivery of the air puff to the eye. The Tactile Kit connects to the external connector of the Integrated Control Circuit which is controlled by the software. The user must provide an input air source.

Portable Air Puff Unit

This is an optional Eyeblink Conditioning System unit and is purchased separately. If purchased, it replaces the included Tactile Kit. The unit contains a small compressor eliminating the need for an air tank. The red tube from the headset is connected to the Portable Air Puff Unit air output for delivery of the air puff to the eye. The Portable Air Puff Unit connects to the external connector of the Integrated Control Circuit which is controlled by the software. The air puff is limited to 15 psi and the maximum length of an air puff is 0.5 seconds.

EYEBLINK CONDITIONING SPECIFICATIONS

COMPUTER REQUIREMENTS

SDI offers high performance Configure Computers that are pre-installed with the Windows operating system, USB Drivers and applicable SDI software. Windows 10 compatible computer systems with one USB port.

ONSITE TRAINING

SDI offers onsite training to ensure understanding of how to operate the Eye Blink Conditioning System

For more information on any of our products or services please visit us on the Web at:

www.sandiegoinstruments.com

Or contact us via email at

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SERVICES AVAILABLE

Technical Support
Installation and Setup
Maintenance
Application Support
Hardware Support
Guaranteed Warranty

Box Dimensions	9" (W) x 9.5" (D) x 8.75" (H)
Weight	6 lbs
Maximum Stations	1
Head Band	3" H x 9" Diameter
Red Tygon Tubing	6'
Inside	1/32" Diameter
Outside	1/16" Diameter
Auditory Stimulus	White Noise, 1 KHz or 1.2 KHz
Head Phone	
Type	Closed, dynamic
Power	1,000mW
Sensitivity	106 dB/mW
Impedance	63Ω at 1 kHz
Frequency Response	10 Hz-20,000 Hz
Head Band Circumference	3" H x 9" D
Digital I/O	
Outputs	3
Inputs	1
TTL	5V
Integrated control circuit	
Power Source	12VDC (1000mA)
Tactile Kit	
Solenoid	1 per station
Yellow Tygon tubing	6 ft
Inside	1/16" Diameter
Outside	1/8" Diameter
Maximum psi	15psi
Visual Indicator	
Blue LED	On
Yellow Led	Off
Portable Air Puff	
Box Dimension	9"L x 9"D x 6"H
Weight	5lbs
PSI max	15 PSI
Maximum Length	0.5 seconds

