

EAG SYSTEM

SYNTECH is an **Original Equipment Manufacturer** dedicated to the design and production of instruments for electrophysiological and behavioural research, particularly for the study of insect chemoreception and related fields. The current product range is rather broad and comprises instruments for electrophysiology, data-acquisition, biotectors for gas chromatography, activity and motion detectors, olfactometers, portable instrumentation for field research, multi-channel and multi-mode detectors, as well as software dedicated to ElectroAntennography (EAG), Single Sensillum Recording (SSR), coupled GC-EAD and GC-SSR, and for multichannel (up to 16) signal recording and analysis.

SIGNAL ACQUISITION SYSTEMS

The IDAC (Intelligent Data Acquisition Controller) systems are software controlled signal acquisition systems containing programmable amplifiers and filters, optimised for EAG, SSR, and GC-EAD/SSR recording. They all operate with the Syntech EAG, GC-EAD and AutoSpike software on Windows operating systems. The data transmission using the USB port offers high flexibility in the choice of PC or laptop for recording and/or analysis of the signals.

2-CHANNEL USB ACQUISITION CONTROLLER, IDAC-2 (replaces previous IDAC-232 for the serial port)

2-channel signal recording system optimised for EAG and GC-EAD signals Connects directly to the USB port of the PC; No external power needed.



Auto- and manual offset control and special EAG filter functions available through the software.

Compatible with Syntech EAG and GC-EAD software for Windows Suitable for application in the field (NOT suitable for SSR recording)

**4-CHANNEL USB ACQUISITION CONTROLLER , type IDAC-4
with direct control of external solenoids (valves) and actuators**

4-channel amplifier / data-acquisition system for the Universal Serial Bus (USB) For use with any PC (and portables) with USB port.

Real-time on screen display of all signals before and during recording Fully software programmable: Gain, Offset, Filters, Command inputs, etc.

50/60 Hz filter and zero offset control; special EAG filter

Sampling rate (1/s - 100k/s) adjustable for each channel individually

Powered inputs for active sensors and headstages (Probes)

Voice comments can be recorded with data

All inputs and outputs galvanically isolated

DIRECT OUTPUTS for up to 8 external solenoids (valves) and actuators

DIRECT OUTPUTS for 2 proportional actuators (lights, flow controllers, motors, etc.)

Programmable time sequence of actuator (solenoids and motors) outputs

Graphical time sequence actuator control program

Actuator sequence runs simultaneously with signal acquisition.

**4-CHANNEL USB ACQUISITION CONTROLLER , type IDAC-4
with direct control of external solenoids (valves) and actuators**

4-channel amplifier / data-acquisition system for the Universal Serial Bus (USB) For use with any PC (and portables) with USB port.

Real-time on screen display of all signals before and during recording

Fully software programmable: Gain, Offset, Filters, Command inputs, etc.

50/60 Hz filter and zero offset control; special EAG filter

Sampling rate (1/s - 100k/s) adjustable for each channel individually

Powered inputs for active sensors and headstages (Probes)

Voice comments can be recorded with data

All inputs and outputs galvanically isolated

DIRECT OUTPUTS for up to 8 external solenoids (valves) and actuators

DIRECT OUTPUTS for 2 proportional actuators (lights, flow controllers, motors, etc.)

Info:

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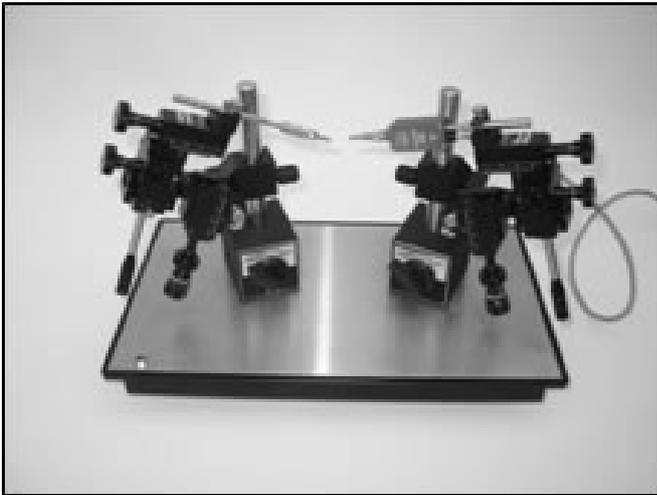
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Manipulators

Manipulators are necessary for making contact with small and delicate preparations. For relative large antennal preparations the EAG Probe and the use of electrically conductive gel is a good alternative.

The model MP-15 is designed for EAG recording; for SSR applications with glass pipettes or tungsten electrodes the INR-5 is the most suitable system. After contact is established with the preparation the whole manipulator unit can be moved towards the odour source or GC transfer outlet.



Micromanipulator, Type MP-15

Complete 'desktop-recording' configuration for EAG and GC/EAD

Two x-y-z positioners on magnetic bases

Stainless steel base plate 20 x 30 cm to hold positioners

Fine joystick control of right-hand positioner

Adjustable stimulus applicator with stainless steel tube on magnetic base

High impedance probe and electrode holder on left-hand side

Connects directly to Syntech IDAC computer interface

No amplifier needed if used in combination with IDAC computer interface

No Faraday shield required for EAG and GC/EAD recording

Micromanipulator, Type MP-22

Very compact integral universal recording module

Dual joystick type x-y-z micromanipulators

Suitable for glass pipette and tungsten electrode recording

Including High impedance input probe and different electrode holder

Indifferent electrode holder

Connects directly to Syntech IDAC computer interface

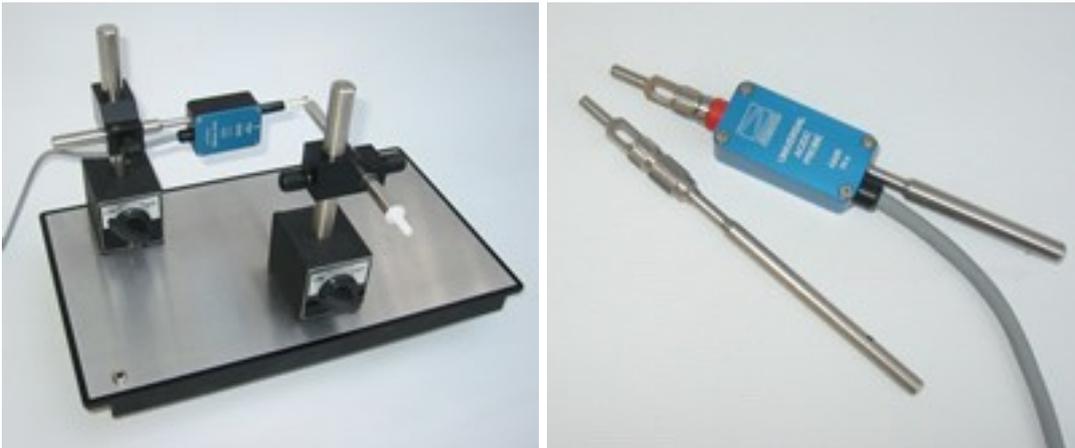
No amplifier needed if used in combination with IDAC computer interface

Adjustable preparation holder

air flow tube

PROBES and ELECTRODE HOLDERS

Headstages and probes are the interfaces between the signal source (insect preparation) and the IDAC acquisition system; they pick-up the delicate signals from the preparation and convert the high input resistance to a low resistance and robust output signal suitable for further processing by the IDAC under software control. The probes can be connected directly to the input of an IDAC system without the need for a separate power supply.



UNIVERSAL SINGLE ENDED PROBE - Electrode holders for glass pipette electrodes
- **Electrode holders (set of 2) for tungsten wire electrode - EAG PROBE, Type PRG-2**
- **ANTENNA HOLDER for EAG PROBE - EAG KOMBI-PROBE**

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Stimulus Controller CS 55 with built-in air pumps



Replaces previous model CS-05 Independent from laboratory air supply Internal vibration compensated air pumps Built-in activated carbon inlet filter.

Filter can be easily replaced

Delivers continuous and pulsed air flow

Graphic LCD display

Flow range 10 - 50 ml/s, non-calibrated

Pulse duration 0.1 - 60 s in 0.1s increments

Repeat function: interval range 1- 60 s.

Signal outputs compatible with Syntech recording systems

Suitable for EAG and GC/EAD and SSR procedure Including foot operated start switch

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Taste Probe



The Tasteprobe, Type DTP-1, is a further development of the prototype of the special amplifier described by Marion-Poll and Van der Pers (1996) that permits reliable DC recordings from insect taste receptors using the Hodgson (1955) technique. The present model can operate in DC or in AC mode. In DC mode the complete signal, slow (DC) and fast (AC) fluctuations are recorded and amplified. In AC mode the slow (DC) fluctuations are out-filtered and only the fast (AC) components of the signal (like Spikes) are amplified. In both recording modes the DC initial offset at the onset of the recording (before contact is made between the recording electrode and the preparation) is cancelled automatically.

Interface for Gas Chromatograph



Application of EAG and SSR signal recording as a detector for active fractions in the effluent of a gas chromatograph (GC) requires a suitable transfer device to apply part of the effluent to the insect preparation without the risk of condensation of compounds. The devices offered by SYNTECH are consisting of a heated transfer line (max. temp. 3000 C or resp.) supplied with an air mixing tube assembly and digital temperature controller with power supply. For maximum safety the heater is powered by 24V via an isolation transformer. Mounting plates are provided to attach the transfer line to any model of gas chromatograph.

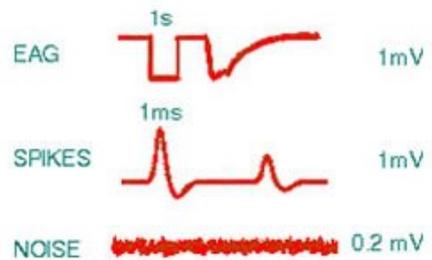
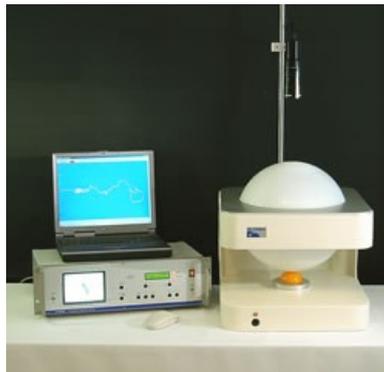
Tungsten Electrode Etching Device



Compact device with built-in power supply
Adjustable output voltage 1 - 12 V
Electrode clamp on vertical positioner
Adjustable clamp for carbon electrode
Carbon electrode and glass solution vial

Also

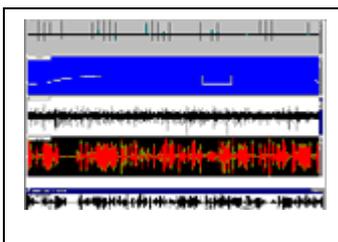
Micro Beveler - Signal Simulator - ServoSphere is functionally similar to the locomotion compensator for insects - Interface for Gas Chromatograph – Actometers – Olfactometers



And :

Syntech Software

The has been especially developed for recording signals from insect antennae (ElectroAntennoGraphy, EAG) and from olfactory and contact chemoreceptive neurons (Single Sensillum Recording, SSR) together with signals from other sensors and devices, like gas chromatographs and stimulus generators. The software runs with all Syntech IDAC systems using the appropriate driver. Upgrades of the software can be downloaded free from the Syntech website



GC-EAD / EAG
EAG and GC/EAD SIGNAL RECORDING and ANALYSIS PROGRAM

For use with Syntech IDAC data acquisition systems
Auto zero on trigger signal of base line and time base

Real-time recording and display of ElectroAntennogram signals (EAG)

Calculation and display of EAG maxima and Normalized values
Calculation and display of means and standard deviations
Dual trace real-time recording of combined Gas chromatography-Electro
Antennographic Detection (GC/EAD); max 5 hours continuous recording
Peak area calculation and retention time marking on GC and EAD trace
Amplitude and time-base zooming
Comments stored with data
Graphic output in Windows metafile format
Printing of all graphic and numeric data
ASCII data output
AUTOSPIKE©
PROGRAM for EAG and ACTIONPOTENTIAL RECORDING and ANALYSIS,
AUTOSPIKETM
For use with any Syntech IDAC data acquisition systems
Comfortable WINDOWS user interface
Real-time recording of action potential trains
Sampling rates 1 - 50.000 per s; Resolution 16 bits
Full wave capture; Spike capture up to 7 hours
Interactive spike extraction and classification
Amplitude drift correction function
Amplitude discrimination in 128 classes
Interval plot and interval histogram
Spikes/bin and frequency plot
Pre-and post trigger time settings; Auto-trigger on adjustable signal level
Dual real-time amplitude histogram calculation and display
Signal averaging by means of multiple alternating stimulation
Graphic output in Windows metafile format (copy/paste)
Extensive print options of all graphic output and numeric data
SAPID compatible file format
ASCII data input and output

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