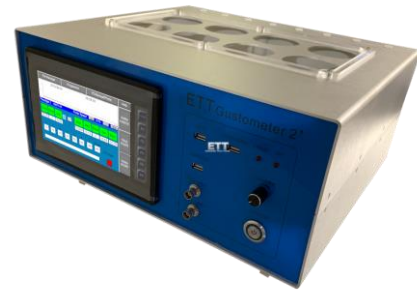


ETT Gustometer 2⁺

Touchscreen, variable rate, fully programmable 8-channel gustatory stimulator and millisecond data resolution for fMRI and EEG studies of the gustatory system



Overview

Emerging Tech Trans, LLC is excited to announce the ETT Gustometer 2⁺, our latest 8 channel gustatory stimulator. It can be flexibly used during both fMRI experiments inside a magnetic field as well as electrophysiological (EEG) experiments. This device features an intuitive, easy-to-use interface. All included peripherals are designed to be plug-and-play which offers the operator full control over all stages of the experiment. As a major upgrade to the previous version the ETT Gustometer 2⁺ supports full control via a connected PC from our included software ETTDirectControl or by most other typical control software via DLL import like Matlab, EPrime, Presentation, etc through our API.

The workflow and design of the device was adjusted to customer feedback.

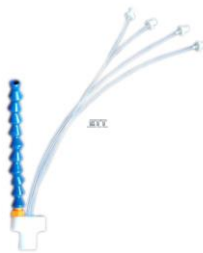
The touch-screen control system offers full feedback and control for any stimulus, trigger conditions and optional subject swallow function logging. The software includes a



Applicator mounted to an MRI RF receive coil



ETT Gustometer 2⁺



fMRI and EEG compatible Mouthpiece / Applicator

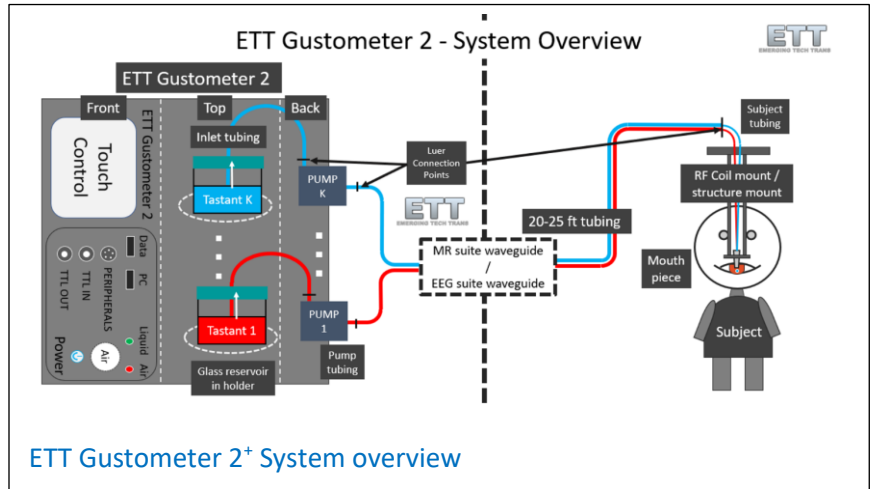
paradigm designer which accurately adjusts device

behavior to experimental design needs and allows the operator to reliably present stimuli at specific time points with the exact amounts desired. Paradigms can be triggered manually or through any standard pulse from an external source. Visual and auditory stimuli can seamlessly be integrated with the typical stimulus presentation tools like EPrime or Matlab. All information about each run, including subject feedback, all timing, and self-diagnostics, are stored by the software on a connected USB storage device at the end of the paradigm and on the connected laptop if controlled by ETTDirectControl software.

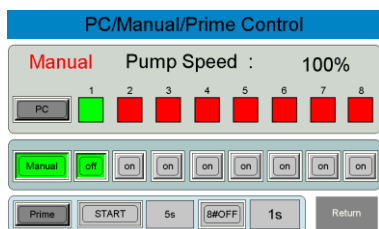
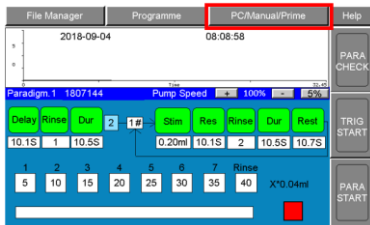
The system also includes a convenient air pump that can be connected to each channel during the cleaning procedure to fully dry tubing after an experiment.

Features and Performance

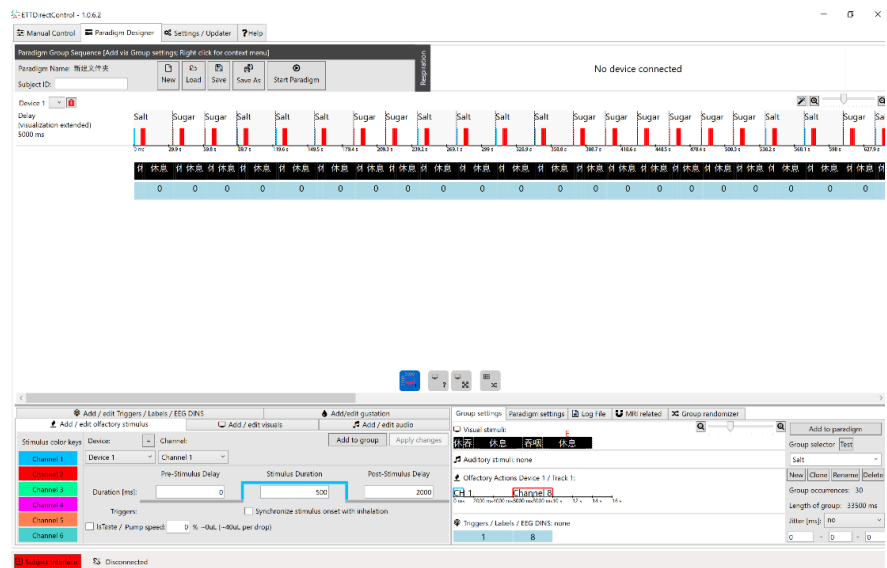
- Touchscreen control
- 8 independent highly precise pumps
- Tastant reservoir storage integrated into device case
- Stimulate, measure, and record in real-time
- Tastant applicator constructed from exclusively MRI compatible and inert materials (PTFE) – easily cleaned
- Long range PTFE tubing connects subject in fMRI or EEG
- Full flexibility in timing and volume delivery
- Paradigm trigger and stimulus onset delay via external pulse (like MRI RF trigger)
- Real-time automatic data recording
- Manual mode for fast and easy testing channel
- Automatic cleaning cycles
- Self-dry integrated air pump



ETT Gustometer 2+ System overview



Easy to use touch-screen paradigm designer and manual mode



Easy setup stimulus paradigms with our ETTDirectControl software

Specifications

In the box:

- ETT Gustatometer 2+
- Customized mouthpiece/applicator
- PTFE tubing set (8 m, all-channels) including all necessary connectors
- Optical trigger to electrical MR trigger converter (optional)
- Coaxial cable with connector (optional)
- Glassware
- Table / coil adapter

Compatible software/languages:

- ETTDirectControl
- Matlab
- PyschoPY/Python
- Eprime
- C#



Customizable Teflon tubing with Luer locks

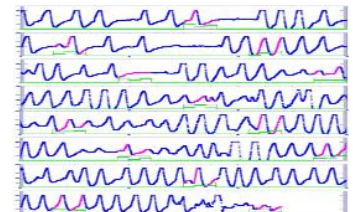
Ports and Details

Front panel:

- Touch-screen user interface for control autonomously of PC
- "TRIGGER IN" to commence paradigm on external pulse
- "TRIGGER OUT" to supply a pulse on each stimulation initiation
- USB Data Storage
- USB to PC Control
- Self-dry pump adjuster

Back Panel:

- Stimulant outlets for all channels
- Flush channel outlet
- Self-dry pump outlet
- AC input



Optional swallow sensor data logging

Configuration

Weights and Measurements

- 33lb / 15 kg
- 41.3 cm (W) x 36.9 cm (D) x 22.3 cm (H)

Color Options

- Blue front panel with gray aluminum body

Memory and Storage

- Within software

Power

- Input Voltage: 100-240VAC
- Power requirements: 150W

Sound

- Optional feedback sounds
- Less than 60 dB at 1 meter

Hardware

- 8 Stepper motor controlled peristaltic pumps
- 7 independently programmable tastant lines and 1 flush line
- Customizable mouthpiece/applicator
- 8 channel PTFE tubing set

Communications

- "TRIGGER IN" with a pulse (+5V, $\geq 1\text{ms}$)
- "TRIGGER OUT" with a pulse (+5V, $\geq 10\text{ms}$)
- Optional subject swallow monitoring with digital input

Display

- Touchscreen

Software and support

- Quick Start manual
- Manual



ETT Gustatometer front & back panel

Training

- Optional worldwide on-site training
- Optional Skype, Zoom and WeChat sessions
- 48-hour email support
- Best-practices
- Guidance on solutions to your specific problems

Customization

- Problem specific applicator
- Longer or custom diameter tubing upon request
- Support for your specific stimulus presentation software possible