ALL THE FUNCTIONS NECESSARY FOR IMAGING / ELECTROPHYSIOLOGY EXPERIMENTS

NEW

MULTI-DEVICE SYNCHRONIZER

ESTM10

⚡ STIMULUS PULSE | SIGNAL RECORDING | 📷 FRAME TIMING | 💡 LIGHTING CONTROL | OSCILLO SCOPE

What's ESTM10?

ESTM10 is an all-in-one system with built-in functions often used in biological imaging experiments and electrophysiology experiments, such as stimulus pulse output, acquisition timing control for camera, lighting control for LED light sources, biological signal recording, and digital oscilloscope, etc.

All built-in functions work in sync, so you can connect your peripherals to ESTM10 and have them fully synchronized without any special programming or hardware knowledge.

Multifunctional despite its small body. With this one unit, you can handle everything from student training in physiology to academic research.
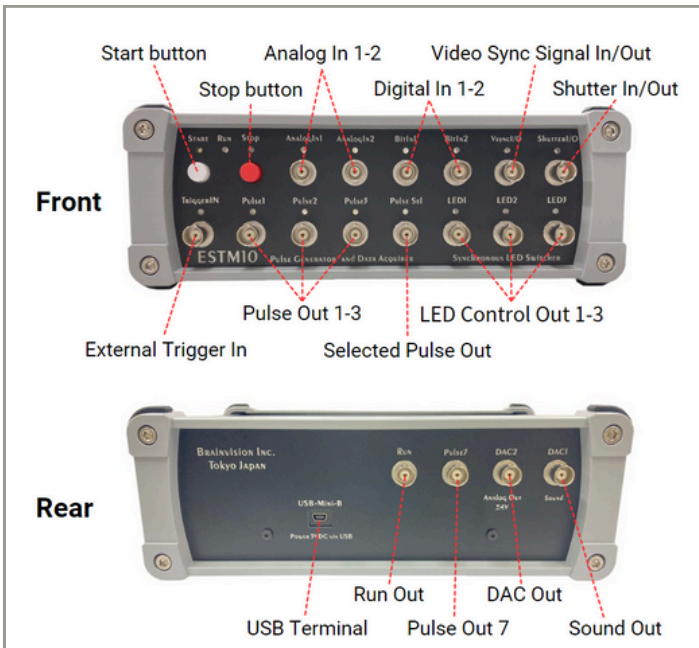
List of Functions

1.	Pulse output [*1)]	5ch output (from 8ch)
2.	Analog output	1ch
3.	Analog signal recording [*2)]	2ch
4.	Digital signal recording	2ch
5.	Camera frame sync signal input/output	1ch
6.	LED light source signal output in synchronization with TTL signal input/output	3ch
7.	Light source signal input/output at any timing	1ch
8.	Digital oscilloscope [*2)]	
9.	Sound monitor output [*3)]	1ch
10.	Supports multiple trigger sources (external TTL signal, button, external analog signal, software, internal repeat trigger)	
11.	Powered by USB connection, operation and pulse settings are programmable from software	

*1) If necessary, Isolator is sold separately   *2) Amplifier is sold separately
*3) Speaker with amplifier is sold separately.

Areas of Application

1. Electrophysiology experiments using brain/neurons or isolated heart and cultured cardiomyocytes
2. Physiology student practical training using animal samples such as frogs
3. GCaMP imaging for in vivo brain
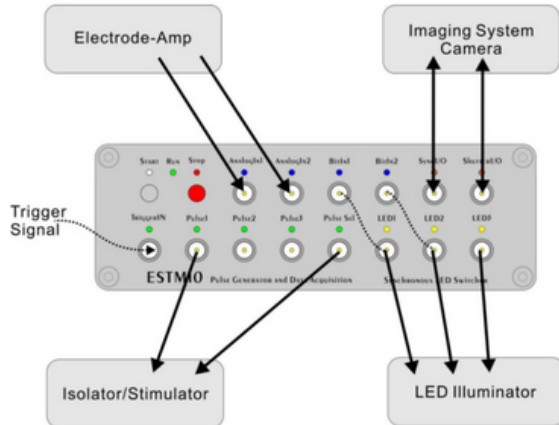4. Voltage imaging and calcium imaging using neuronal and cardiac samples

Example of Use

Multi-device synchronization

Perform imaging and electrical signal recording in synchronization with camera, light sources, isolator, and electrophysiological amplifier
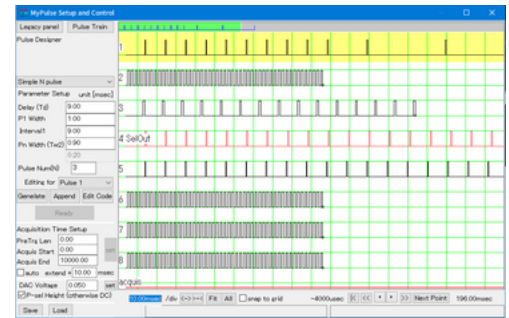

An example of an experimental setup combining an electrical recording with a recording electrode, electrical stimulation with a stimulation electrode, and 3-wavelength excitation fluorescence imaging that alternately switches 3 color LED light sources in synchronization with frames of a high-speed camera.

Camera/LED timing synchronization

Perform multi-wavelength excitation fluorescence imaging by connecting a camera and a light source with 2 to 3 wavelengths and turning on the light source alternately for each camera frame

Example of LED lighting program

Peripheral device control

Connect to an external device driven by TTL signals and turns on/off at any timing.

Oscilloscope

Monitor bioelectrical signals passed through an electrophysiological amplifier

Sound monitor

Monitor resistance values of an electrode inserted into a cell

Window discriminator

inputs an analog signal and outputs a pulse when input signal reaches a certain amplitude range in a certain time range.

Electrical stimulation

Stimulate sample in combination with an isolator

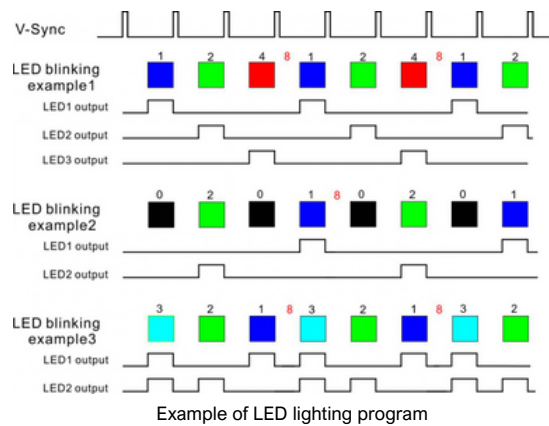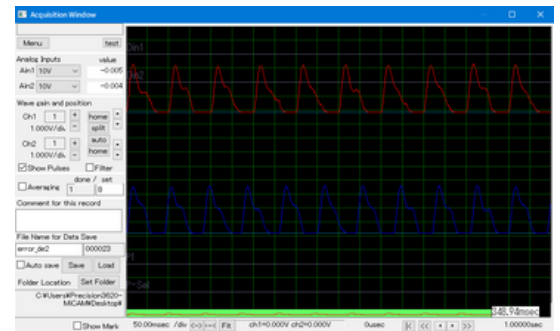This device can generate 8 channels of independent pulse trains in any pattern.

Stimulation protocols used in cardiac research that require varied pulse intervals are also possible (e.g. S1-S2-S3).

Data logging

Record bioelectrical signals through an electrophysiological amplifier.

10 minutes recording at 100kHz and 1 hour recording at 10kHz are possible. Recorded data can be saved to a file and displayed and analyzed using dedicated viewer software, and can also be exported in CSV format.

Specifications

Item	Specifications
Dimensions / weight	245mm (W) x 90mm (H) x 180mm (D) / 1.3kg
Interface	USB2.0
Environmental specifications/safety	RoHS3 compliant CE (LVD, EMC) standard compliant
Input terminal	Analog (2ch), Bit (2ch), Trigger (1ch)
Output terminal	Pulse (5ch), Run (1ch), LED (3ch), Analog (1ch), Sound (1ch)
I/O terminal	V-sync (1ch), Shutter (1ch)

* Specifications and appearance are subject to change without prior notice due to continuous improvements. * This product is made in Japan. * This product is for research purposes only.