

# iS9 Aversive Stimulator

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Hardware Reference



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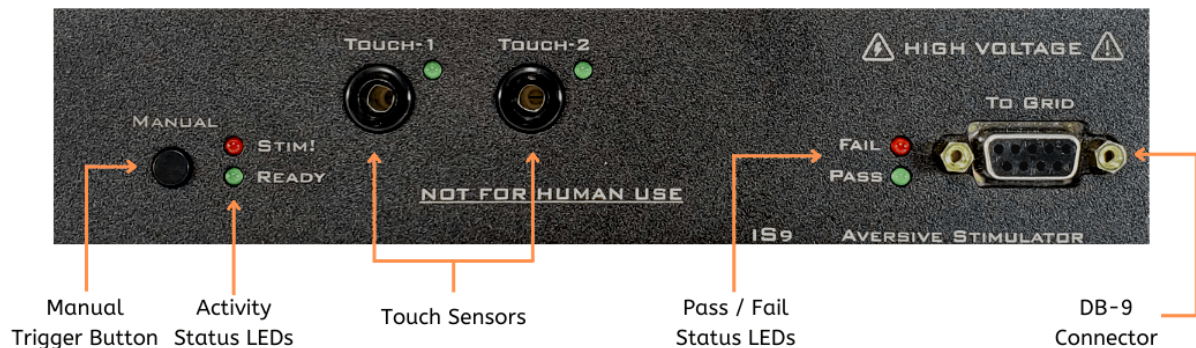
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**iS9 Aversive Stimulator**

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# iS9 Aversive Stimulator

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The iS9 generates small electrical currents for standard behavioral conditioning experiments, such as startle and Pavlovian fear response. Timing is precisely controlled for pairing the stim with other sensory cues or behavioral events. The iS9 is compatible with 3<sup>rd</sup> party behavioral boxes (Med Associates, Lafayette, and Harvard Apparatus).

- Deliver current from 0 mA – 2.5 mA in 0.01 mA steps to each of 9 metal floor grids in rapid succession.
- Detect spout licks with built-in touch sensors (decoupled at stimulation to avoid false responses).
- Detect null events when stimuli fail to reach the subject.
- Automatically time-stamp stimulus and behavioral event information for on- and off-line analysis.

For information on software control of the iS9 and all of its available features, see the [Synapse Manual](#).

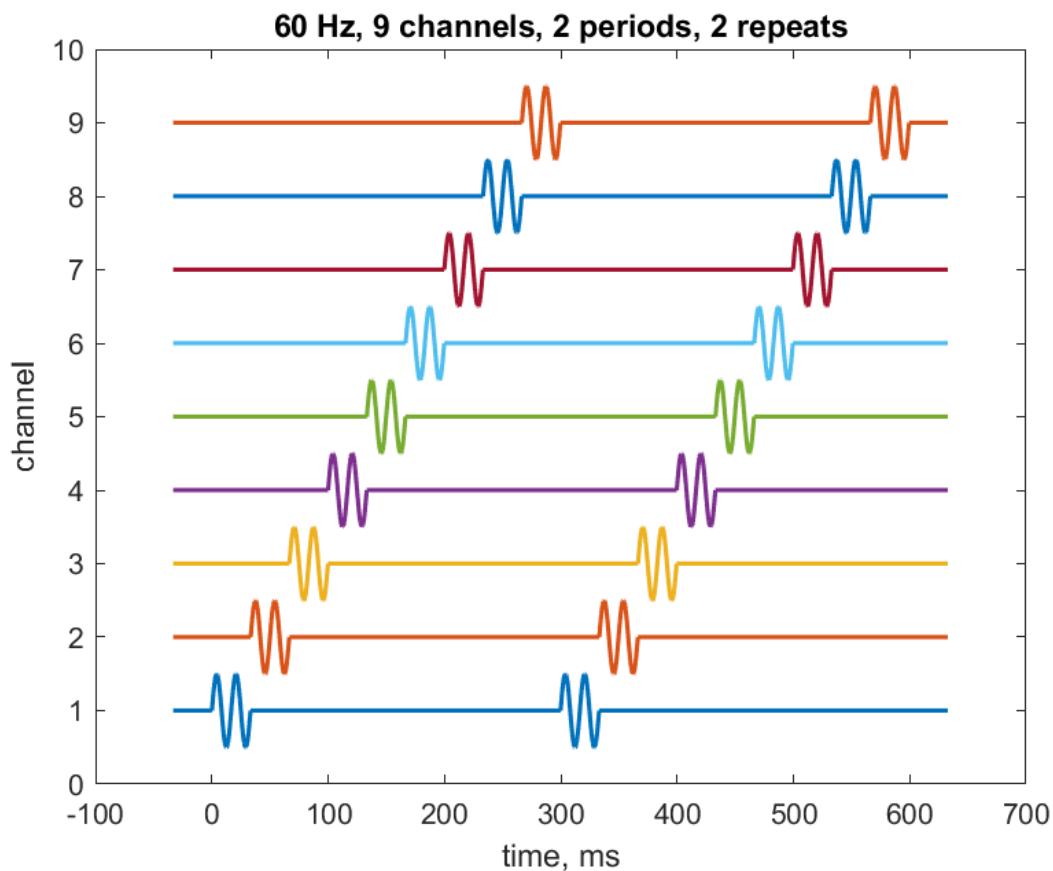
## iS9 Touch Inputs

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The iS9 has two banana jack touch sensor inputs. They use a 750 nA current and trigger if the measured impedance between the input and ground is  $\leq 10$  MOhm. The touch inputs are disabled during stimulation to avoid false detections.

## iS9 Outputs

The iS9 outputs a specified current at 50 Hz or 60 Hz on up to 9 channels sequentially. Specify the desired duration of the waveform on each channel (in periods of the sine wave) and the number of times to repeat the entire scan (or on/off continuous).



*Example stimulus output*

These settings are all controlled in Synapse software. See the [Synapse Manual](#) for the full list of options.

## Manual Operation

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By default, the "Manual" button on the face of the iS9 presents a 1 mA, 1 period waveform, cycling all 9 channels continuously while pressed. During an experiment, the iS9 uses the stimulus parameters defined within Synapse.

Maximum Current: 2.5 mA into 50 kOhm load

The Pass/Fail LEDs indicate whether a subject was detected during the stimulation.

### Important

The output currents are calibrated to a 50 Ohm grid rod. The output does not scale linearly, so using a lower load may cause false positives on the 'Pass' LED because the voltage output is small