

# Model 2200 & Model 2300 Stimulus Isolation Units



## Model 2200 Analog Stimulus Isolator

The Model 2200 Analog Stimulus Isolator is designed to electrically isolate any waveform shape generated by an external signal source. The signal is DC-coupled, and can take on any waveshape within its wide bandwidth, including pulses. Six output scaling options are available, covering a wide range of constant current and constant voltage levels. For a given change in the input signal, the Model 2200 output would scale according to the front panel settings. If for any reason the instrument cannot follow the input signal, an error indicator lights.



## Model 2300 Digital Stimulus Isolator

The Model 2300 Digital Stimulus Isolator is designed for applications which require electrical isolation of pulsatile waveforms used in stimulation protocols. TTL control signals from your computer control the timing and generation of pulses whose amplitudes are determined by 10-turn potentiometers on the unit's front panel. Five output ranges are available: two ranges for constant voltage stimulation, and four for constant current stimulation. If for any reason the instrument cannot deliver the requested pulses, an error indicator lights.

For both units, the isolated output section is battery-powered and optically-coupled to the input section, for the ultimate in clean isolation. Two rechargeable batteries are utilized: a 9V battery that powers the control circuitry, and a 12V battery that provides the signal power. Both rechargeable batteries provides full function for at least 8 hours of continuous use. During non-use periods, it is recommended that the unit remain on a trickle charge by connection to the provided external battery charger.

- Constant current or constant voltage output
- Can isolate any waveform shape
- Output scaled proportionally to input
- 100 V compliance voltage
- Low noise
- Optically isolated output
- Built-in battery test circuit
- Built-in battery recharger
- 3-year warranty

- Constant current or constant voltage output
- Mono- or biphasic pulse waveforms
- Output amplitude set by front-panel controls
- 50 V compliance voltage
- Low noise
- Optically isolated output
- Built-in battery test circuit
- Built-in battery recharger
- 3-year warranty

# Stimulus Isolation Units



## Model 2200

### Analog Stimulus Isolator

#### Specifications

Input (max)	$\pm 10$ V	
Output (max)	100 V monopolar output voltage $\pm 50$ V bipolar output voltage $\pm 5$ mA output current	
Gain	Within 0.3% of setting	
Bandwidth	DC to 40 kHz	
Noise	Mode	RMS Noise
	10 V/V	<10mV
	1 V/V	<3mV
	1 mA/V	<1 $\mu$ A
	0.1 mA/V	<100 nA
	10 $\mu$ A/V	<10 nA
	1 $\mu$ A/V	<2 nA

## Model 2300

### Digital Stimulus Isolator

Output (max)	$\pm 50$ V output voltage $\pm 5$ mA output current	
Accuracy	Within 0.15% of range	
Slew Rate	At least 2V/microsecond	
Bandwidth	DC to 40 kHz, < 10 $\mu$ sec rise time (resistive loads)	
Noise	Mode	RMS Noise
	100 V	<1mV
	10 V	<1mV
	10 $\mu$ A	<5 nA
	100 $\mu$ A	<5 nA
	1 mA	<5 nA
	10 mA	<30 nA

#### References

Carlson BA (2009) Temporal-Pattern recognition by single neurons in a sensory pathway devoted to social communication behavior. *J Neuroscience* 29(30):9417-9428

Donnelly, D. (2007) Orthodromic spike generation from electrical stimuli in the rat carotid body: implications for the afferent spike generation process. *J Physiology* 580:275-284

Moretti P, et al. (2006) Learning and memory and synaptic plasticity are impaired in a mouse model of Rett Syndrome. *J Neuroscience* 26(1):319-327

Jensen AL and Durand DM, (2009) High frequency stimulation can block axonal conduction. *Exp Neurology* 220(1):57-70

Antonsen BL and Edwards DH (2007) Mechanisms of Serotonergic Facilitation of a Command Neuron. *J Neurophysiology* 98:3494-3504

Belluzzi O et al., (2003) Electrophysiological Differentiation of New Neurons in the Olfactory Bulb. *J Neuroscience* 23(32):10411-10418

#### Ordering Information

For 220 V / 50 Hz power systems: Product #850005  
*Country-specific power cords are not supplied.*  
For 110 V / 60 Hz power systems: Product #850000

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*All units include a product manual.*

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