

# Model 2100

## Isolated Pulse Stimulator



The Model 2100 Isolated Pulse Stimulator is designed for a wide variety of physiological stimulation requirements. It is a highly flexible instrument able to deliver single pulses, biphasic pairs, or bursts of pulses. Pulse sequences from the Model 2100 may be started manually or triggered by another instrument or computer. Two sync outputs are available for triggering additional instruments.

Four sets of timing controls provide the researcher with comprehensive control over all aspects of pulse generation. Three digit accuracy is available over a 7 decade range for each timing function. Pulse widths can be set over more than a 9 decade range, from 0.5  $\mu$ s to 999 seconds. Timing accuracy is assured through the use of a 10 MHz base rate crystal-controlled clock, digitally divided to provide accurate timing over the entire range. A timing overlap indicator will light if the timing controls are set incorrectly.

The output of the Model 2100 may be switched between constant current and constant voltage modes. The output signal is conveniently isolated using both a transformer and optical isolation components, thereby eliminating the need to purchase expensive external stimulus isolation units. Pulse and baseline amplitudes are independently controlled. An error indicator will light if the Model 2100 cannot deliver the desired signal.

Common applications for the Model 2100 Isolated Pulse Stimulator include, but are not limited to:

- long-term potentiation (LTP)
- classical conditioning
- kindling / seizure models
- nerve conduction
- evoked potentials
- lesions

The Model 2100 Isolated Pulse Stimulator is a flexible stimulator suitable for the most exacting laboratory requirements.

- Long timing range: 1 microsecond to over 15 minutes
- Easy-to-use front panel interface featuring simple leverwheel switches for all timing functions
- Excellent timing accuracy: < 0.02%
- Monophasic output current up to  $\pm 10$  mA or output voltage up to  $\pm 100$  V
- Optical isolator coupled output control
- Short-circuit protected output
- Mono- or biphasic pulse outputs
- Free-run, Manual, or External triggering
- Status lights indicate operational state and setup/control errors
- Sync outputs for individual pulses and the entire train duration
- No battery required. Isolation generated by transformer powered output
- Includes rack mount hardware
- Includes instruction manual
- 3-year warranty

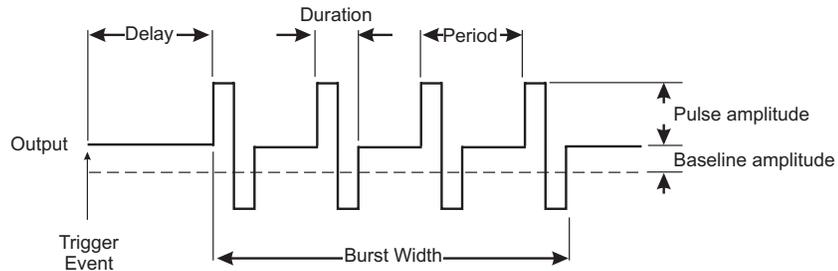
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## Timing Considerations

The easy-to-use front panel interface on the Model 2100 Isolated Pulse Stimulator allows the user to control the major parameters that define a pulse train. Users can generate a train of isolated constant current or constant voltage biphasic or monophasic pulses of specific duration and amplitude, and deliver them for a specific length of time. All of this without the use of an expensive external isolation unit.



## Specifications

Delay:	0 to 999 seconds
Burst Width	1 microsecond to 999 seconds
Pulse Duration	0.5 microseconds to 999 seconds
Pulse Period	1 microsecond to 999 seconds
Baseline Amplitude	-10 V to 10 V or -5 mA to 5 mA (biphasic) 0 V to 10 V or 0 to 10 mA (monophasic positive) 0 V to -10 V or 0 to -10 mA (monophasic negative)
Pulse Amplitude	-50 V to 50 V or -5 mA to 5 mA (biphasic) 0 V to 100 V or 0 to 10 mA (monophasic positive) 0 V to -100 V or 0 to -10 mA (monophasic negative)
Trigger Options	Manual, External, or Free-Run
Other Features	Built-In Isolation, Gate, Sync Outputs, and Error LEDs

## References

- Lu et al. (2007) Synchronized delta oscillations correlate with the resting-state functional MRI signal. *PNAS* 104 (46): 18265-18269
- Cho et al. (2009) The ratio of NR<sub>2</sub>A/B NMDA receptor subunits determines the qualities of ocular dominance plasticity in visual cortex. *PNAS* 106(13):5377-5382
- Englot et al. (2009) Cortical deactivation induced by subcortical network dysfunction in limbic seizures. *J Neuroscience* 29(41):13006-13018

## Ordering Information

For use on 220 V / 50 Hz power systems	Product #720005	Country-specific power cords are not supplied.
For use on 110 V / 60 Hz power systems	Product #720000	
Optional AC Filter	Product #721000	

All units include a product manual and rack mounts.

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