

# Stimulus Detection

## for Monitoring Animal Performance on Exer-3/6 & Modular Treadmills

The Columbus Instruments Stimulus Detection option provides a means of monitoring and/or controlling the electrical stimulus activity on any electrical stimulus equipped model Exer-3/6 or Modular treadmill. This option can time the duration of stimulus delivered (excitation) or count the amount of seconds the animal is resident upon the stimulus assembly. It can also be employed as a mechanism for controlling the stimulus by terminating delivery in accordance with a user set criteria. These features are supported in "stand-alone" operation or can be implemented via connection to a PC by RS-232.



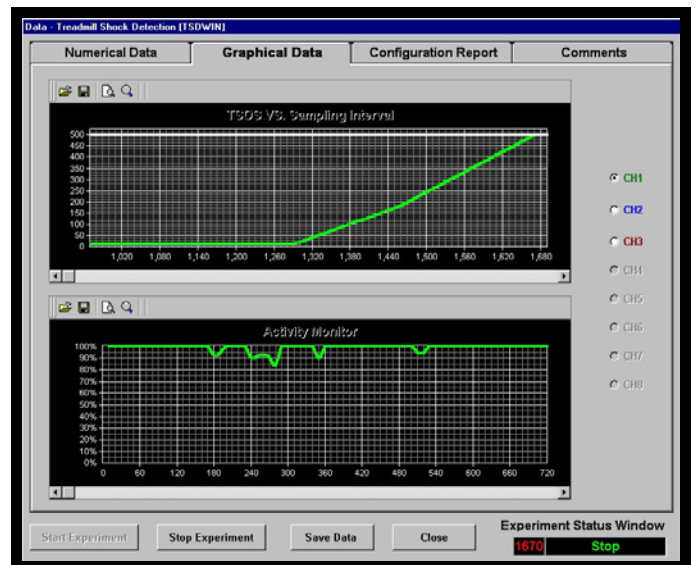
Data - Treadmill Shock Detection [ISDWIN]

Numerical Data    Graphical Data    Configuration Report    Comments

CH #	Sample #	Accu. NOS	Accu. NOV	Accu. ISDS	CH Status	Activity%
CH 3	160	999	040	499.5	OFF	-
CH 1	161	822	019	411	ON	0%
CH 2	161	999	031	499.5	OFF	-
CH 3	161	999	040	499.5	OFF	-
CH 1	162	852	019	426	ON	0%
CH 2	162	999	031	499.5	OFF	-
CH 3	162	999	040	499.5	OFF	-
CH 1	163	882	019	441	ON	0%
CH 2	163	999	031	499.5	OFF	-
CH 3	163	999	040	499.5	OFF	-
CH 1	164	912	019	456	ON	0%
CH 2	164	999	031	499.5	OFF	-
CH 3	164	999	040	499.5	OFF	-
CH 1	165	942	019	471	ON	0%
CH 2	165	999	031	499.5	OFF	-
CH 3	165	999	040	499.5	OFF	-
CH 1	166	972	019	486	ON	0%
CH 2	166	999	031	499.5	OFF	-
CH 3	166	999	040	499.5	OFF	-
CH 1	167	999	019	499.5	OFF	-

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Start Experiment    Stop Experiment    Save Data    Close    Experiment Status Window    1670    Stop



Columbus Instruments

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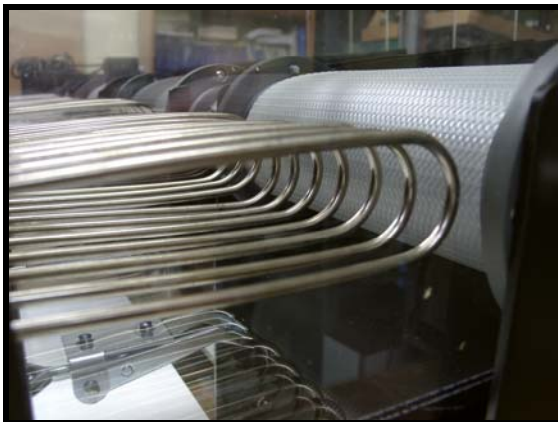
Email: sales@colinst.com WebSite: www.colinst.com

## Stimulus Specifications

Optional stimulus grids are offered to promote running. A scrambled electrical stimulus is presented as a series of 200 millisecond (mS) pulses with a user adjustable pulse repetition rate of 1 to 4 per second. The intensity is also user adjustable from 0.35mA to 3.4mA. LED lamps indicate stimulus grid excitation and switches are provided to engage or terminate stimulus presentation to each lane.

The stimulus grid assembly is constructed as a series of parallel bars running front to rear. The bars measure 0.125" (0.3175 cm) in diameter and are on 0.4375" (1.11 cm) centers. The bars protrude from the rear wall of the enclosure and approach the rear roller of the treadmill leaving a gap of 0.3125" (0.794 cm). The top surface of the stimulus grid assembly is 0.875" (2.22 cm) below the tread surface. It is the low location of the stimulus grid assembly relative to the tread surface that provides the animal with an indication and opportunity to avert contacting the stimulus grid assembly. The animals are provided tactile input that indicates proximity to the shocker assembly and will, often, advance their position without the need to contact the shocker.

The edge of the stimulus assembly bars proximal to the tread are curved downward and are re-secured to the rear wall of the treadmill. The bars have lateral flex to reduce wedging of animal limbs and allow easy extrication by the animal should entanglement occur. The vertical support afforded by the stimulus grid assembly and the associated lateral flexure is a special property of Columbus Instruments treadmills.



## Stimulus Detection Option

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Columbus Instruments treadmills present electrical stimuli as a series of pulses, taking the form of 200 mS pulses delivered at a user alterable rate (1-4 pulses per second) with 2pps being typical. Presentation in this fashion helps prevent the animal from freezing on the stimulus assembly (allowing escape). The use of the term 'time' can take on two meanings under this method of delivery:

- A) The time during which the animal receives stimulus (200mS/event)
- B) The time the animal remains on the stimulus assembly (Seconds)

When employed as a **counter**, the Stimulus Detection option has two sub-modes of operation:

- A) Accumulate- Count number of seconds on the stimulus assembly.  
e.g.: Accumulate time, advancing 1 second for each second on the stimulus assembly (this is monitor mode).
- B) Control- Terminate after a preset time on the stimulus assembly.  
e.g.: A setting of "5" (seconds) will terminate the stimulus after the animal has accumulated 5 seconds on the stimulus assembly (this is control mode).

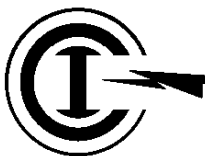
The Stimulus Detector option differentiates between these two definitions by operating as a timer, when recording the time during which the animal receives stimulus and as a counter when scoring the duration of time the animal remains on an active stimulus assembly.

When employed as a **timer**, the Stimulus Detection option has two sub-modes of operation:

- A) Accumulate- Sum the episodes of delivery  
e.g.: 14 episodes of 200 mS stimulus delivery will be scored as 2 seconds (14x200 mS = 2.8 Seconds). Note, increments occur only after whole seconds have accrued. This is a function of the display. Internally, the stimulus Detection option maintains time to 10mS resolution. In the case of the above example, the animal need only incur one more 200mS episode to accumulate 3 seconds of exposure (this monitor mode).
- B) Control- Terminate stimulus after a preset amount of delivery  
e.g.: A setting of "5" (seconds) will terminate the stimulus after 25 episodes of stimulus exposure (this is control mode).  
(5 seconds = 25x200mS)

## Ordering Information

1004SDC Treadmill Shock Detection Controller  
1004SD Treadmill Shock Detection Per Lane  
1004SDS Treadmill Shock Detection Software



**C o l u m b u s I n s t r u m e n t s**

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