

Tech Note

A-SE-100 Sleeve Type Stimulating Electrode

Overview

The A-SE-100 is a stimulating electrode assembly that can be placed on a nerve that is still located within the experimental animal. The probe, with its two silver wire electrodes, is held on the nerve by a soft plastic sleeve that presses the nerve against the electrodes for improved conductivity. This type of electrode allows studies involving nerves and muscles to be conducted on sensitive tissue without the need for traumatic removal of the tissue from the specimen.

How It Works

The A-SE-100 sleeve electrode assembly has two main components (Figure 1): an electrode assembly with a two silver electrodes that ring either end of the probe; and a sleeve that is placed around the nerve to hold the electrodes against the nerve when the sleeve is slid over the electrodes. The stimulating current easily flows from the electrode connected to the positive stimulator output to the electrode connected to the negative stimulator output. When the current flowing between the electrodes is high enough to raise the membrane potential of an axon above its threshold voltage, the axon will develop an action potential. Ultimately, the action potential moves down the axon and causes the release of neurotransmitter that causes a change in the membrane potential of the muscle cell on the other side of the synapse and a muscle fiber contraction. Put together a group of axons stimulated through the A-SE-100 at the same time, and more muscle fibers contract to create a larger muscle contraction.



Figure 1: The A-SE-100 sleeve electrode probe (left) and the sleeve (right).

Equipment Setup

When the A-SE-100 is used with an IX/214 data acquisition system:

1. Plug a BNC-male double banana adapter into the red (+) and black (-) banana jacks of the stimulator on the iWorx 214. Check the side of this adapter for a tab, often embossed with the letters GND. The side of adapter with the tab goes into the negative jack of the stimulator.
2. Attach the BNC connector of the A-SE-100 assembly to the BNC connector of the adapter on the IX/214 stimulator.
3. Slide the sleeve over sleeve electrode probe placed on the exposed section of the nerve.

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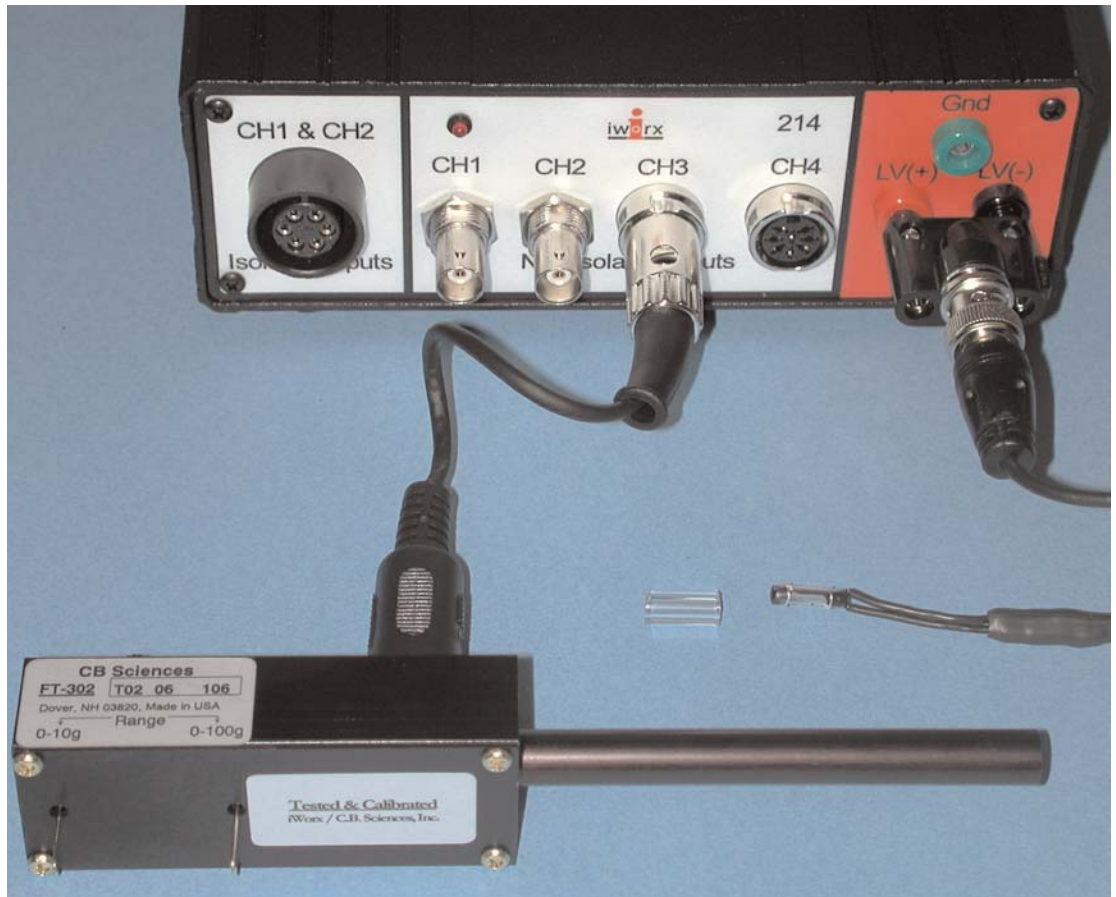


Figure 2: The A-SE-100 sleeve-type stimulation electrodes connected to the stimulator of an IX/214 data acquisition unit through a BNC-male double banana adapter. An FT-302 force transducer is connected to the IX/214 to measure the force developed by the muscle that is stimulated.

When the A-SE-100 is used with an IX/118 data acquisition system:

1. Attach the BNC connector of the A-SE-100 assembly to the BNC connector of one of the stimulator outputs on the IX/118.
2. Slide the sleeve over sleeve electrode probe placed on the exposed section of the nerve.

Experiments

Experiments using the A-SE-100 Sleeve-Type Stimulating Electrode can be downloaded by clicking on the following links:

[Print-disabled Summation, Tetanus, and Fatigue in an Intact Nerve-Muscle Preparation Experiment \(PDF file\).](#)

User Area (password protected)

[High resolution press optimized Summation, Tetanus, and Fatigue in an Intact Nerve-Muscle Preparation Experiment \(PDF file\).](#)

[Low resolution screen optimized Summation, Tetanus, and Fatigue in an Intact Nerve-Muscle Preparation Experiment \(PDF file\).](#)

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