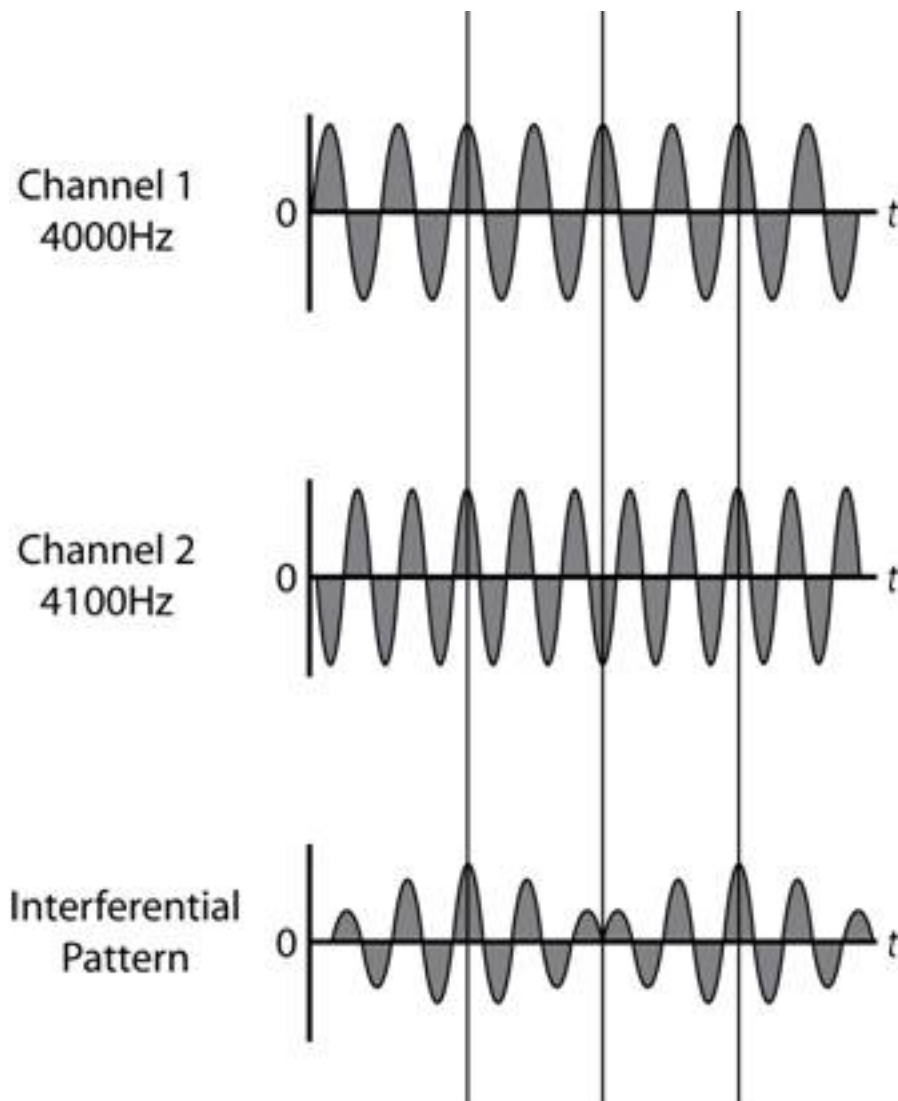


## Interferential Stimulators

Interferential electrical stimulation is used to control pain as an alternative to TENS units. This class of stimulators combines two higher-frequency waveforms in a crossed pattern. Electrical signals with the same waveform are administered so that they arrive at the point to be stimulated from two directions. The area where the currents overlap is called the interference pattern and therefore the name "interferential".



Example of Interferential Stimulation Pattern

Two channels and four electrodes are used with two electrodes set on each side of the area to be stimulated. High frequencies of about 4000 pps are used for both channels and the signal is sent diagonally between the electrodes. The "interference" of the waveforms crossing creates a cancellation/reinforcement phenomenon at or near the crossing point. Therefore, it is proposed that the two 4000 pps frequencies result in an output of approximately 100 pps. The high frequency is suggested to penetrate the skin more deeply with less user discomfort than TENS.

Interferential electrical stimulation consumes a large amount of energy due to the high frequencies, and the requirement of more electrodes or larger sized electrodes. These systems require large powerful batteries and are typically line powered.

### Two methods are utilized for interferential electrical stimulation:

1. Older method – Interference Current  
Channels are set with a slight variation between them (e.g. 4000 and 4100 pps).
2. Newer method – Full Field Technique  
Channels at same frequency (5000 pps) then burst modulated from 1-250 bps. The amplitude of each channel can be adjusted. This method is used to increase the volume of tissue exposed to the treatment.

### Waveforms

- Sinusoidal
- Symmetrical

### Pulse Frequency

- 2000 to 5000 pps on each channel

### Clinical Considerations

Research has shown that interferential electrical stimulation could not elicit a sustained contraction at even 10% of the maximum voluntary contraction (MVC). The use of interferential current stimulators for neuromuscular stimulation has not yet been demonstrated to be effective (Robinson, Snyder-Macklet, 2008).