

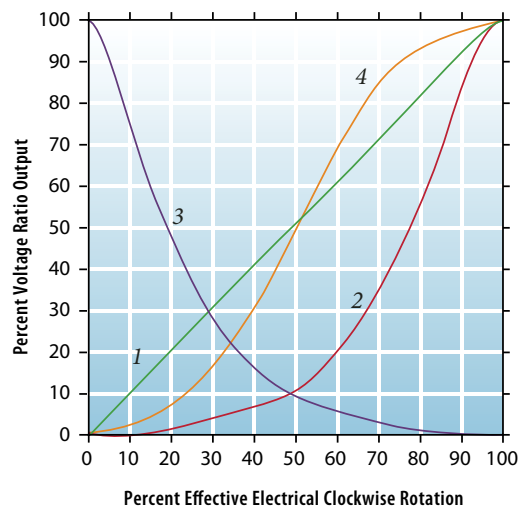
Panel Controls TAPER

TECHNICAL NOTE

An important consideration in selecting a panel control is the type of taper needed for the application. Taper is defined as the output curve of the voltage ratio measured between one end of the element and the wiper. It is expressed in percent of total resistance versus percent of effective electrical rotation.

Four standard tapers have been established as shown in the Figure:

1. Linear
(aka B-taper)
2. Clockwise audio
(aka A-taper)
3. Counter-clockwise audio
(aka C-taper)
4. Modified linear
(aka S-taper)



Linear tapers provide a rate of voltage ratio (VR) output which is directly proportional to shaft rotation as illustrated by curve 1. Audio tapers have a VR output that simulates a logarithmic curve where the initial 50 % of the mechanical rotation produces only 10 % change in VR, and the final 50 % of mechanical rotation produces 90 % change in VR as illustrated by curve 2.

What is an audio taper? To answer this question, one must understand how the human ear senses sound.

The human being experiences loudness as a sensation in the brain. The physical measure of loudness is known as intensity. Intensity is expressed in Watts/meter² (W/m²) or decibels (dB). The human ear responds to sound in a logarithmic fashion. The smallest change in sound that the human ear can detect is 1 dB. For this reason, the dB scale, which is based on a logarithmic scale, is used. The audio taper panel control produces a change in output on a logarithmic scale giving the human ear the perception of sound intensity increasing in a linear fashion.

Audio tapers are typically used in volume control applications. Modified linear tapers are used in lighting control applications.

Bourns® panel controls are available with the standard tapers. Requests for custom tapers are reviewed on an individual basis.

For further technical support and for complete panel control solutions, please visit www.bourns.com

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