Colorado Video

Dynamic Video Noise Reduction System 449 Series

The Colorado Video Model 449 Dynamic Video Noise Filter / Reduction System or Video Noise Reducer can filter or reduce dynamic video noise (like "snow" or "static") out of a monochrome video signal by essentially averaging frames over time. This type of video noise filtering or reduction is best suited for signals with rapidly changing noise in pictures of relatively static (unchanging) subjects.

The Model 449 Dynamic Video Noise Reduction System provides a running quasi-average, or temporal filtering, of the video signal at its input. More precisely, the value for any given pixel in the unitÂ's output is determined by the equation:

$$P_n = \frac{1}{2^t} P_i + \left(1 - \frac{1}{2^t}\right) P_{n-1}$$

where Pn is the value of the pixel in the current output frame, Pi is the value of the pixel in the current input frame, Pn-1 is the value of the pixel in the previous output frame, and t is a user selected time constant. This equation is solved for each pixel at the normal video frame rate of 30 times per second. As the user selects larger values for t, the exponentially decaying influence of a given pixel's value in a particular input frame will persist over a longer period of time in subsequent output frames. The Model 449 allows values of t to range from zero (binary 0000) to 15 (binary 1111), making possible temporal filtering of from one to 32,768 (in steps of powers of two) frames on a running basis. The Model 449Â's 16-bit grayscale resolution provides 65,536 shades of gray for the filtering process.

Contrast & Brightness
Many applications with excessive dynamic video noise or snow suffer from low video signal levels. The Model 449 Video Noise Reduction system offers a 2x signal multiplier, thus doubling contrast, and a potentiometer controlled digital brightness adjustment.

Freeze Frame
The output signal can be frozen for continuous display and the filtering function halted.

Frame or Field Modes
The Model 449 Video Noise Reducer normally operates in a 30 frame per second mode with a resolution of 720H x 480V pixels. A field mode at 60 fields per second, with 720H x 240V pixels is selectable. Grayscale is always 16 bits providing 65534 shades of gray.

Features
All Units: Dynamic Video Noise Reduction, Video Noise Filter
 Filter Dynamic Noise
 Pseudo-Average Over 2,4,8,16,32...to 65536 Frames
 Field or Frame Mode
 2x Contrast Enhancement
 Black Level (Brightness) Control