Block STDEV

The STDEV block calculates the standard deviation of its input signal over a complete simulation run.



Name	STDEV
Function	fb0021
Inputs	1 . . . [50]
Outputs	1 . . . [50]
Parameters	0
Strings	0
Group	I

Inputs

i Any signal x_i

Outputs

i Standard deviation σ over all x_i

Parameters

None

Strings

None

Description

For the standard deviation σ of a set of numbers $x_i, i = 1 \ldots N$ two slightly different definitions exist in literature.

$$\sigma = \left(\frac{1}{N-1} \sum_{i=1}^{N} (x_i - \bar{x})^2 \right)^{1/2}$$

and

$$\sigma = \left(\frac{1}{N} \sum_{i=1}^{N} (x_i - \bar{x})^2 \right)^{1/2}$$

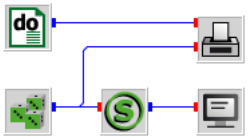
where $\bar{x}$ denotes the average

$$\bar{x} = \frac{1}{N} \sum_{i=1}^{N} x_i$$

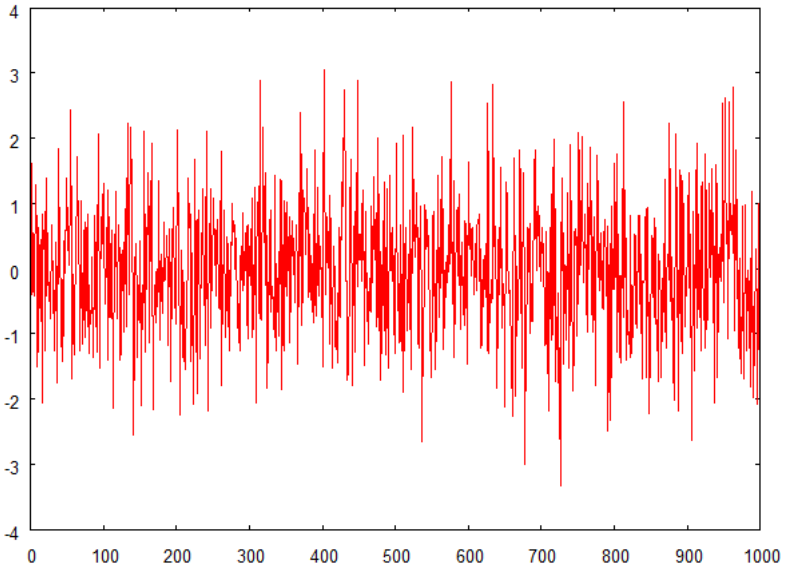
and N the number of elements in the sample.

The first equation is used by the STDEV block.

stdev.vseit



A DO block provides 1000 clicks, so that the GASDEV block generates 1000 normaly distributed random numbers which are displayed by a PLOT block.



As expected, the standard deviation turns out to be close to one, as displayed by the SCREEN block.

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0.10018E+01
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See also Blocks STDEVC and STDEVP.