

Movira 2.8

Statistical analysis

Control chart for individual measurements

Instructions for Use

This application produces a control chart from a series of numbers and analyzes the data in order to help you decide if these numbers have been generated from a process which is in a state of statistical control. The control chart indicates that the process is **not under control** when one of these criteria, specified by Walter Shewhart, is met :

- One dot is outside of the control limits ;
- Eight successive dots are on the same side of the average line.

Movira (abbreviation for Moving Range) analyzes the input and prepares a graph which displays the series of data points, the Upper Control Limit (UCL) and the Lower Control Limit (LCL). The statistical characteristics of the data (average value, virtual sigma, values for the UCL and LCL) are presented numerically. You can immediately see that the process is under control when there is no dot beyond the control limits and when there is no series of more than 7 dots on the same side of the average. Movira doesn't work when there are less than 10 data. It can process up to 45 registered data.

The virtual sigma is different from the standard sigma which would be displayed by a hand calculator. The control limits are calculated with the virtual sigma because the standard sigma can lead to wrong conclusions. By definition, the virtual sigma is equal to the average moving range multiplied by 0.886

To use Movira, type the data on the window, one entry at a time, with a "return" after each entry, including the last one. Then click **Go**. The graph and the results will immediately appear. The window can't display more than 32 dots, but you can graph up to 45 dots and view them by moving the slider at the bottom of the screen. You can also enter data by writing the series on a word processor, placing the numbers in a column at the left side of the page, each number being followed by a "return". Then copy the column of numbers to the clipboard and paste them on the window. Movira does not work with negative numbers ; so if all your data are not positive numbers, add a constant so that the smallest one is positive. Next you must subtract the same constant from the output.

You can save the input and the parameters in order to use them in another application. Go to the Menu : **Special > Data Card**. Assign a **title** to the untitled file (measure, date) and save it. The file type is **txt** under Windows, **TextEdit** under Mac OSX. You can also save the **control chart** and print it by going to the Menu : **Special > Control Chart**.

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Jean-Marie Gogue

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