



Characteristic Curves in the MDA

PROBLEM DESCRIPTION

It is not discernable by intuition, how recorded characteristic curves are displayed in the one dimensional space of an MDA oscilloscope.

CAUSE

Displaying a characteristic curves requires not only displaying the adjusted value in the oscilloscope, as is the case with scalar calibration variables, but the position where the value was changed also has to be displayed and whether that value was a curve value or an axis point. Compared to displaying a scalar variable, displaying a change in a curve requires at least 2 values.

SOLUTION

	Index 1	Index 2	Index 3	Index 4	Index 5	Index 6
x	1. Axis-Point	2. Axis-Point	3. Axis-Point	4. Axis-Point	5. Axis-Point	6. Axis-Point
y	1. Value	2. Value	3. Value	4. Value	5. Value	6. Value

In a characteristic curve, changes can be made to axis values as well as to curve values. For this reason, to display these changes in an oscilloscope, a method has to be chosen by means of which the change and its position will be made visible. Therefore, to display **one** change in an oscilloscope, three characteristic values (including one for time) are required. Since the MDA offers only two-dimensional displays, 3 characteristic values require 2 signals. If we take into consideration that changes can be made to curve values and to axis point values, we need 4 signals for a complete display of the characteristic curve. These 4 signals are supposed to reflect the name and the device of the original characteristic curve, for which reason, the following naming convention had to be devised:





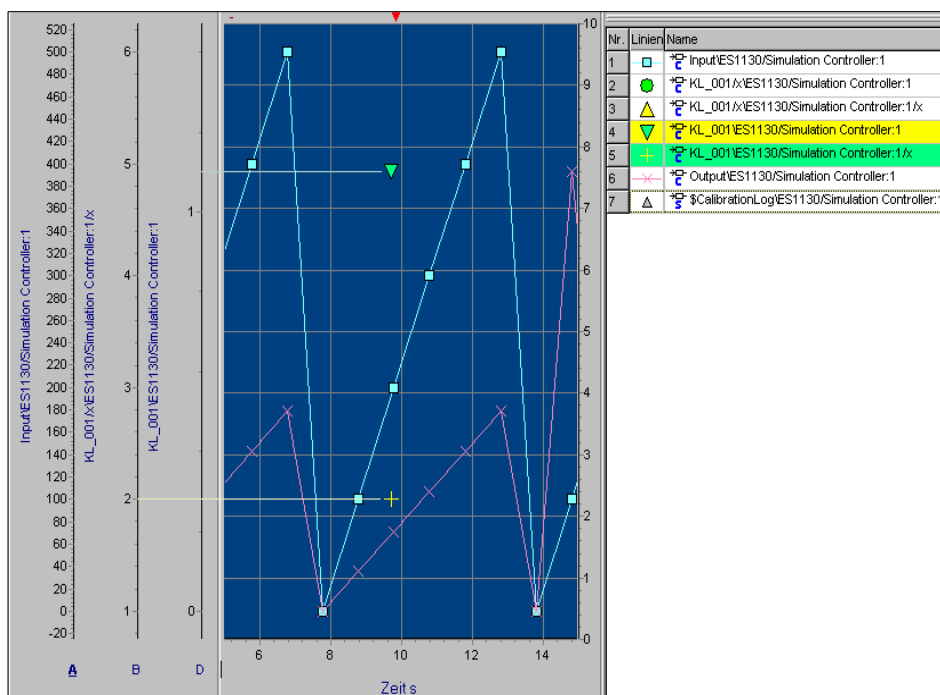
1. If the **name** of the characteristic curve is extended by an **"/x"**, the information refers to the appropriate axis point; if not, the information refers to the curve value.
2. If the **Device** is extended by an **"/x"**, then the index of the position in the curve is referenced to which the change was made.

EXAMPLE

In an Experimental-Target project, a characteristic curve by the name "KL_001" is driven. At the start of the measurement, this curve looks as follows:

	Index 1	Index 2	Index 3	Index 4	Index 5	Index 6
x	0	100	200	300	400	500
y	0.0	0.1	0.2	0.3	0.4	0.5

1. Display of changes to a value

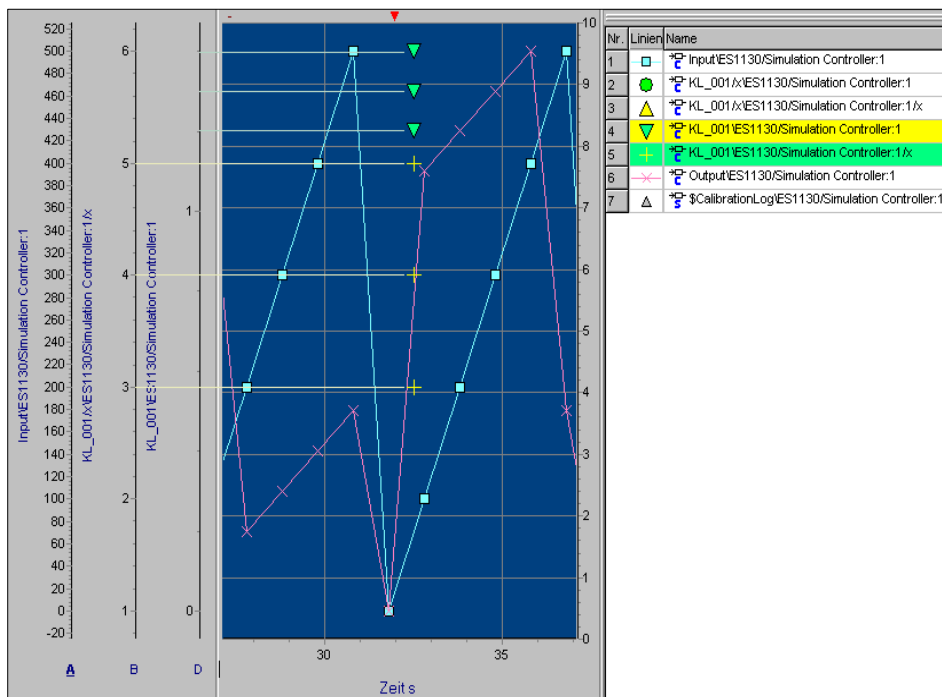


If at the axis point 100 the value is increased from 0.1 to 1.1, the value 1.1 is displayed for the signal **KL_001\ES1130/Simulation Controller:1** and a position of 2 is displayed for the signal **KL_001\ES1130/Simulation Controller:1/x**.





2. Display of a change to several values



If several values are changed at once, all new values and all changed axis points are displayed at the same time. This means that the signals **KL_001\ES1130/Simulation Controller:1** and **KL_001\ES1130/Simulation Controller:1/x** have several values at one point in time. The problem with this view is that a curve value cannot be assigned clearly to one position.

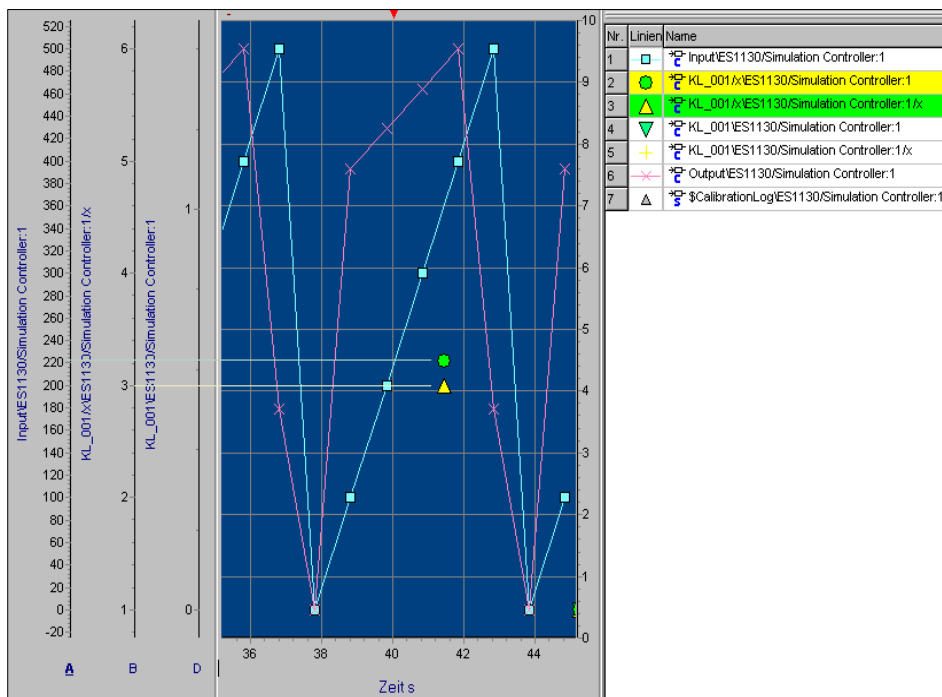
In this example, the axis points with the indexes 3, 4, and 5 were changed. If it is not known that these axis points were increased by an offset value of 1, it is impossible to say to what axis points the values 1.2, 1.3 and 1.4 are assigned.

When the signal **\$CalibrationLog** is displayed in the table view, the assignment is clearly visible.





3. Display of a change to an axis point value



This change to an axis point involves the signals that we have not yet examined. In this example, the 3rd axis point was increased from 200 to 222. Therefore, Signal

KL_001/x\ES1130/Simulation Controller:1/x displays a value of 3 at this position and signal **KL_001/x\ES1130/Simulation Controller:1** has a value of 222.

APPLIES TO PRODUCTS

INCA, MDA

ADDITIONAL SEARCH TERMS

Characteristic curves, calibration variables

