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Saia PCD®

Internal

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Concerns: **Use of special Temperature sensors in Fupla**

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General

There are different temperature sensors on the market available with different temperature curves. Because of that we started to calculate the values and put them into tables in Excel sheets. These tables are defined with the used analog input card, the resolution and the sensor. Important is not to use an additional recalculation in the media mapping or in the Fbox. These tables you can find on our intranet in the folder "Miscellaneous". Also the saiadbe files for the method 2 are now in this folder.

Method 1 with PG5 2.0 or older:

With the Fbox "Conversion 20 points" from the heavac library we can calculate from the raw value the calculated value with a curve with max 20 different points.

NTC10k with PCD2.W340 (parallel Resistance, Jumper on Pt/Ni)

By adapting the parameters the same table can be used for all analogue modules with a constant reference voltage and a fixed resistance in series to the resistance to be measured

Reference Voltage		Fixed resistance	(7.5kOhm for W340)
10	Volt	7500 Ohm	

Range of the A/D converter, 0 to (2.5V for W340)		Resolution of the A/D converter, 0 to (4095 for the W340)	
2.5	Volt	4095 Counts	

Parallel resistance			
2430 Ohm		recommended +/- 0.1% or better	

Temperature	Resistance (Probe)	effective Resistance	Digital Value
-5	42330.0	2298.1	3842
0	32650.0	2261.7	3795
5	25390.0	2217.7	3738
10	19990.0	2166.6	3671
15	15710.0	2104.5	3589
20	12490.0	2034.2	3495
25	10000.0	1954.9	3387
30	8057.0	1866.9	3265
35	6530.0	1771.0	3129
40	5327.0	1668.8	2981
45	4370.0	1561.6	2823
50	3603.0	1451.2	2656

The resistor must be in parallel to the sensor. This is because of we get the best range for the input card.

Values for the conversion 20 points of the heavac library (1:1 mode of the W340 analogue FBox)
Simple ADD Fboxes of the integer library can be used to compensate offsets after the conversion FBox, numeric editors are handy to be able to change the offset online
As the standard analogue Fboxes don't contain a filter, it is recommended to add T1 filters after the converter, to get more stable values

265.6	50.0
282.3	45.0
298.1	40.0
312.9	35.0
326.5	30.0
338.7	25.0
349.5	20.0
358.9	15.0
367.1	10.0
373.8	5.0
379.5	0.0
384.2	-5.0

This table gives now the values x and y for the "Conversion 20 points" Fbox. The first point has on the x-axis the value 265.6 and on the y-axis the value 50.

These values you have to put in the Fbox conversion 20 values.
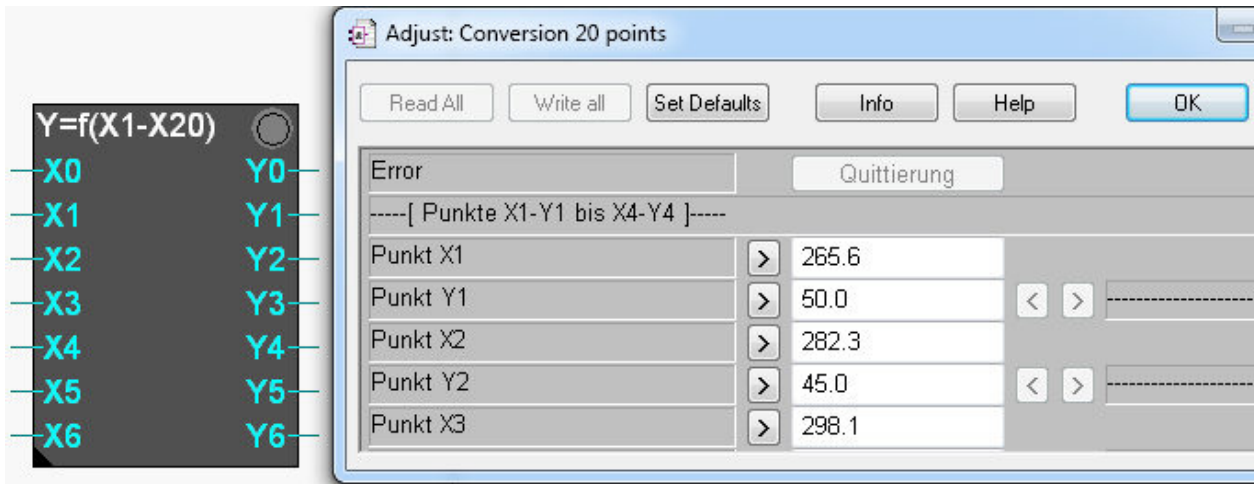
With this method we need for each conversion one Fbox with the correct value loaded.

Method 2 with PG5 2.1:

In PG5 2.1 there is a new function implemented to fill up DB's with DB import files. For that, there is a new conversion 20 Fbox developed which is referring to a DB. This combination allows referring more than one sensor on one Fbox. In addition to that several conversion 20 Fboxes can refer on an DB.
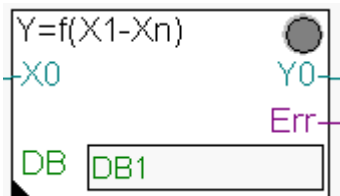

This Fbox "conversion DB n points" you can also find in heavac general. In the DB field you have to adapt the name of the DB, on which this Fbox should refer. After that, the DB must be loaded with the correct curve with the saiadbe file.
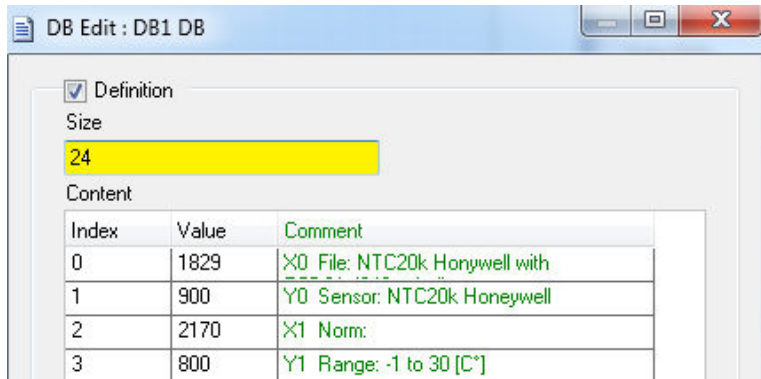
In the symbol editor on the line of the DB, you have to press the button in the row Address/Value.
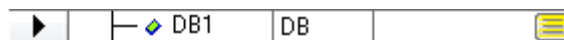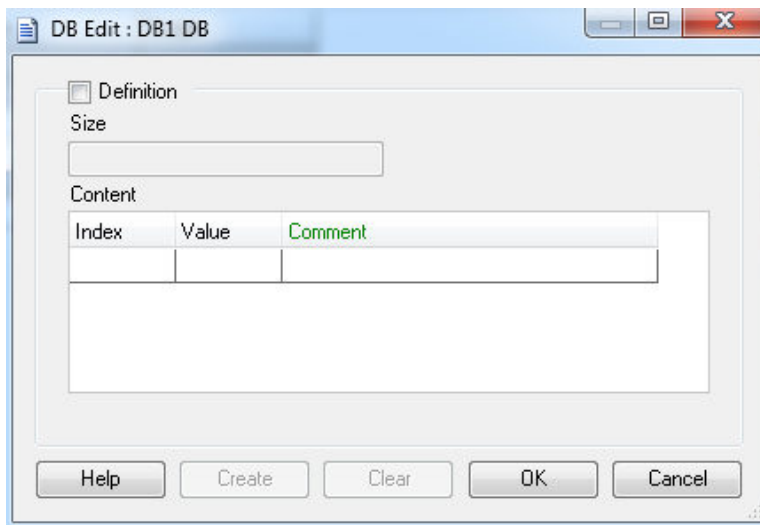
With a right mouse click in the window and the choice "Import" in the menu, you can now upload the correct saiadbe file and fill up the DB with the correct points like that. The saiadbe file you can get from the support.

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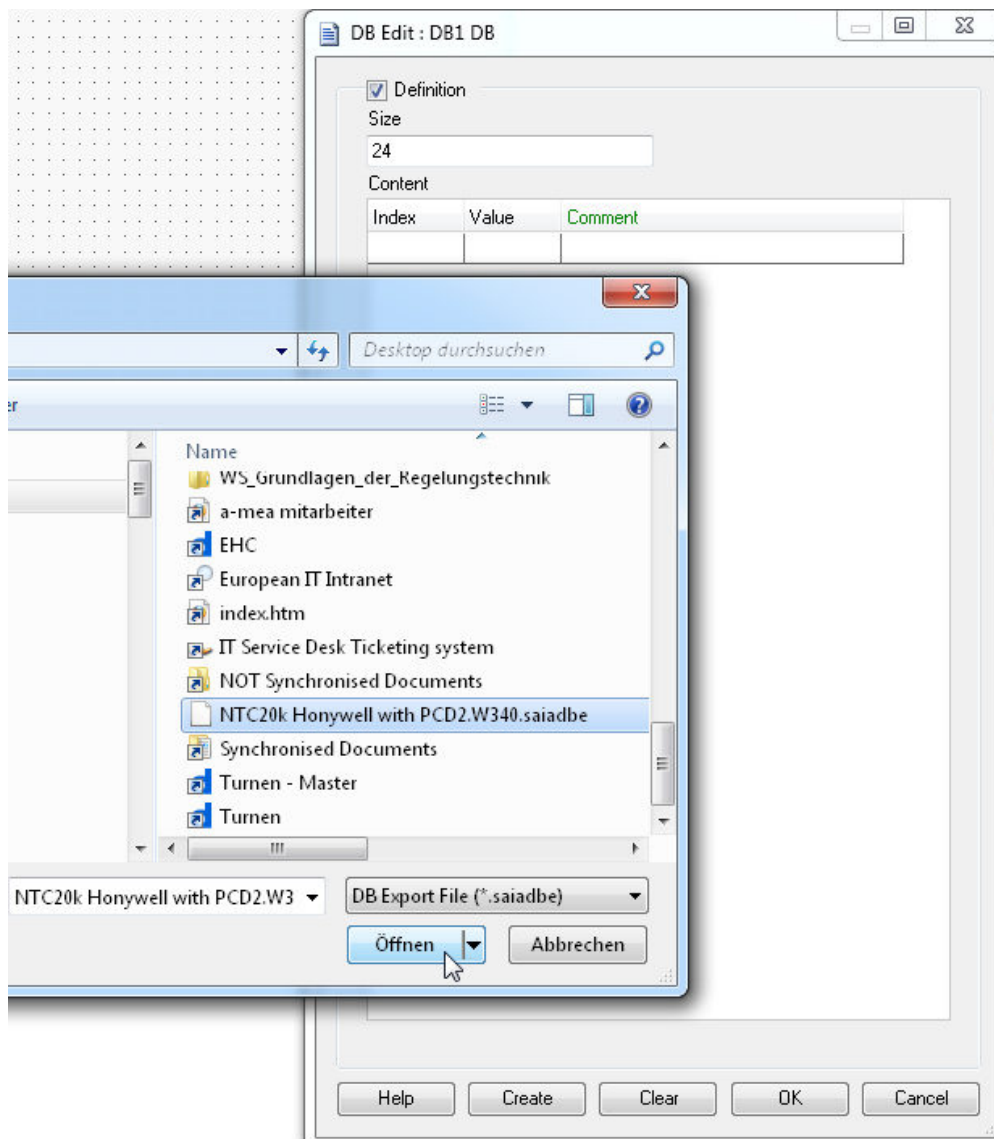
After the import, the values in the DB's are shown in a table. You have to type in the correct amount of table lines in the box "size".

Also the "size", but you have to write the amount of points in the DB, so the half of size of the conversion fbox.

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