
# DDC Suite 2.5

SAIA BURGESS CONTROLS

# DDC Suite 2.5

## Syntax and remarks of actions during workshop

Please follow the teachers advice. Please

- use the same symbol names
- use the same group names
- place the FBoxes approx. at the same position
- do not work faster or different even if you are a “frequent PG5 user”

This workshop will show you some basic mechanism, structured workflow and well structured symbol organisation. Don’t be afraid. You don’t

- have to learn all FBoxes during this workshop
- have to be familiar with application programming
- must be a super programmer

If you just learn the mechanism and philosophy you’ll understand the advantage SI can have with DDC Suite

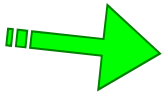
# DDC Suite 2.5

## Syntax and remarks of actions during workshop

Click with left mouse button at this position

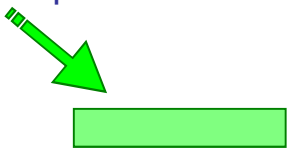
Double-click with left mouse button at this position

Click with right mouse button at this position



Follow the green arrow to next step

Example



Type in the blue text into the high lighted green text field



Watch this area

Changes/different workflow to former versions

# DDC Suite 2.5

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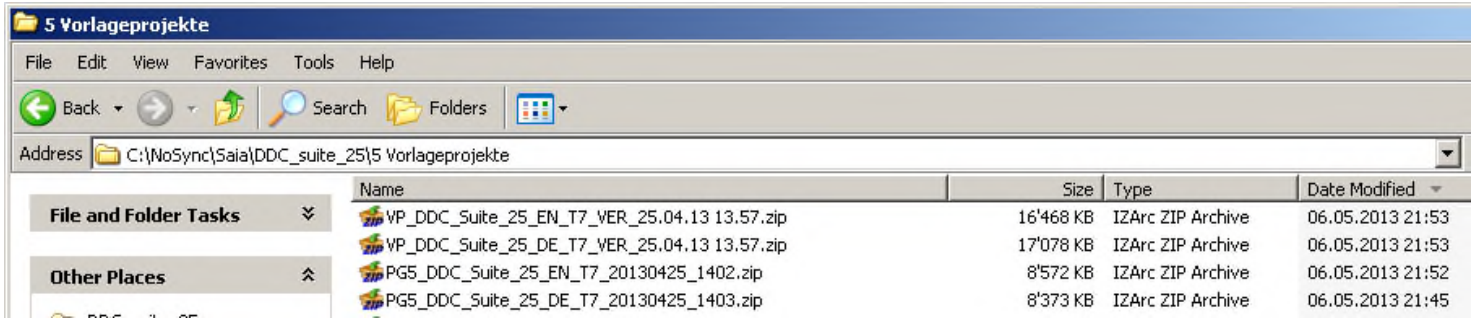
# DDC Suite 2.5
# Generalities

- The general functionality of the DDC Suite Fboxes was not changed, the used symbols are mostly equal. The existing templates Sweb and Visi.Plus has been revised and adviced to be used.

- Both libraries, DDC Suite 2.0 and DDC Suite 2.5 can be installed in parallel. Please do not mix the DDC Suite 2.0 and DDC Suite 2.5 Fboxes within one project. Each DDC Suite 2.0 Fbox has got an equivalent Fbox from the DDC Suite 2.5 library.

- Minimum requirement is PG5 2.1.100 to handle some of the new features.

- There are English and German PG5 Fupla templates and Visi.Plus templates. Actual version is _T7.



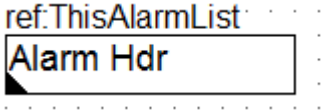
# DDC Suite 2.5
# Generalities

All FBoxes generating alarm now support "-1" as "auto alarm address", so you just have to use only the "Alarm Hdr" FBox once. You can set the Base Address to "1" in the first “Alarm Hdr” Fbox -- all following "Alarm Hdr" FBoxes can use "-1“ -- therefore the alarm address of all automatic generated alarms are in a consecutive block, without double definitions, and without gaps.

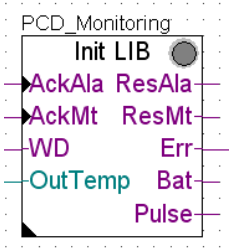
FBoxes got additional parameter (due to the logic of FBox input → out of Service → FBox output):

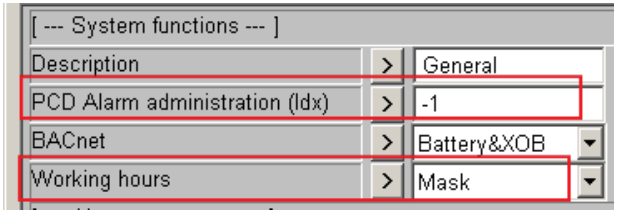
- Setpoint Binary
- Analog values Binary
- Setpoint Integer
- Analog values Integer

- got new text parameters
- Base Address now can be also "-1" what means that alarm address is untouched. This makes only sense when using a single alarm list (as soon as you use 2 list you have to define a real base address). This e.g. makes life easier when you import templates - you do not have to touch this FBox if in template "-1" is defined as base address

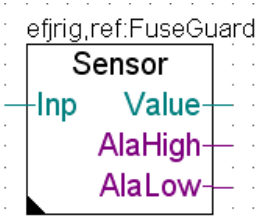


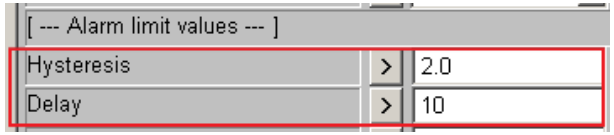

- Now also support alarming for battery and internal XOB failure
- working hours/On-Off counter are untouched after download




- new parameter hysteresis/delay for limits



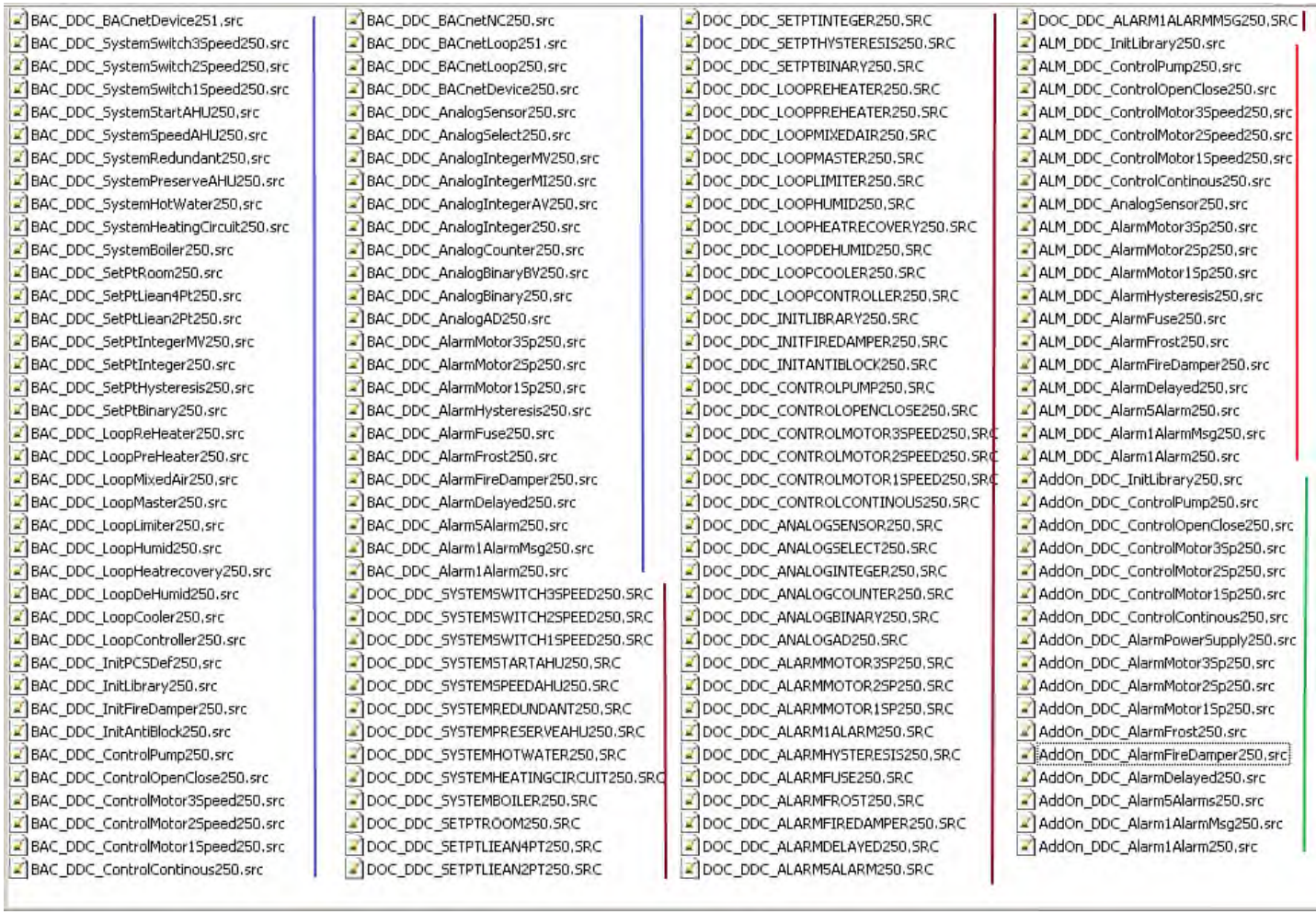
# DDC Suite 2.5 Generalities

**Each DDC Suite 2.5 Fbox has his own text files.**

These text files contents a code extension which describes how and what kind of BACnet object can be generated by the Fbox.

The solution of using external files as code extension has been chosen because this provides the necessary flexibility to change the code or do error correction easily. These files should not be modified except by expert programmer who knows exactly how the files are working together with the Fboxes.

**These files must be copied to the Device folder of the project folder of the PG5 program !**

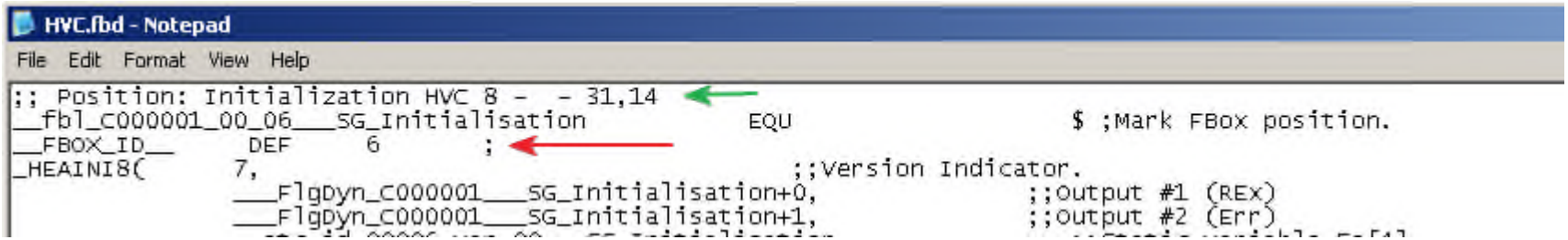


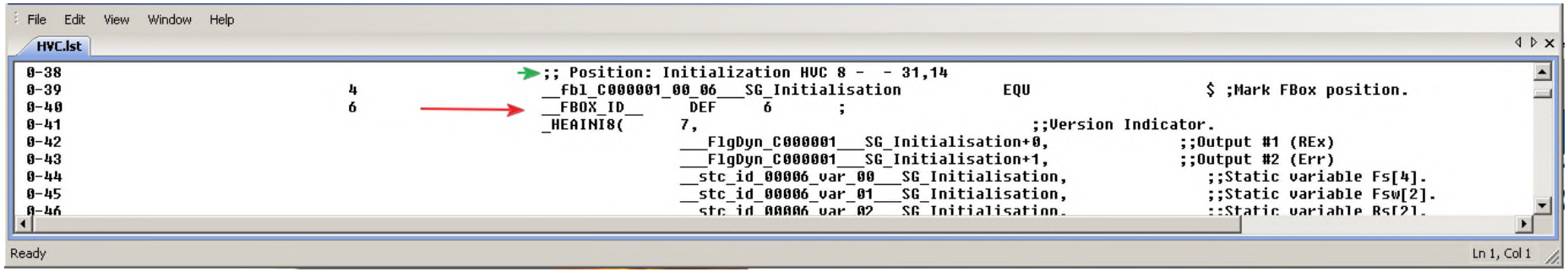
# DDC Suite 2.5
# New feature in the PG5 2.1.100 FUPLA editor

**From the PG5 version 2.1.100 it is possible to see the Fbox ID in the xxx.lst file and the xxx.fbd file. It is also possible to use the Fbox ID in the Fbox program code.**

The Fbox ID is a unique code **within one FUPLA file**. It identifies a placed Fbox with a unique number which is not reused even if the Fbox is deleted or moved to a different place or different page.

The Fbox ID is used when BACnet configuration is generated to create individual BACnet ID for the BACnet objects.




# Installation

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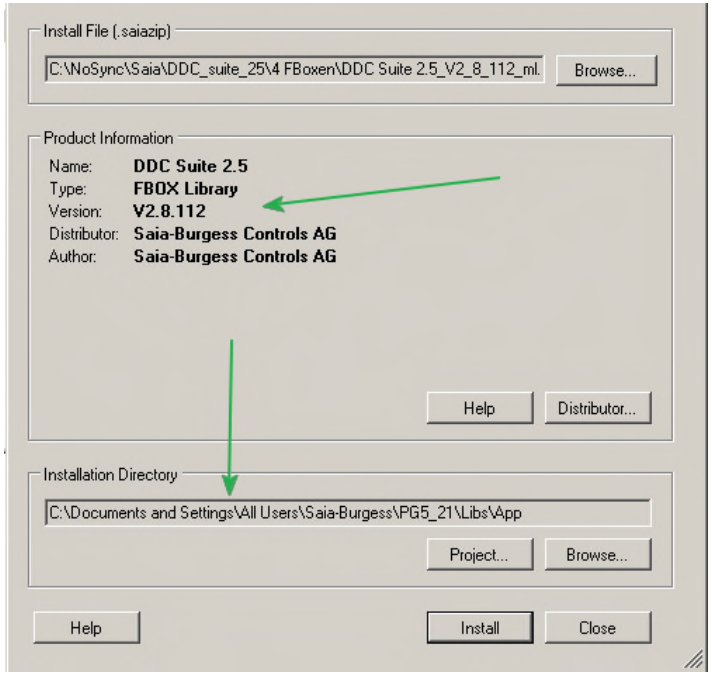
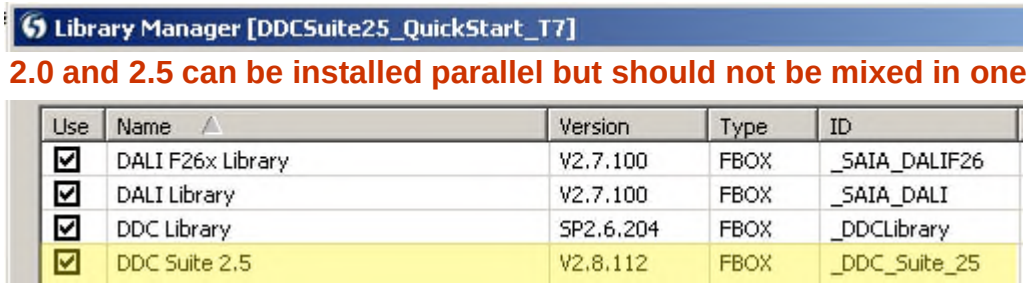
# DDC Suite 2.5 Installation

Installation of the DDC Suite 2.5 is as usual with a installer:


Installation:




PG5 Library Manager:



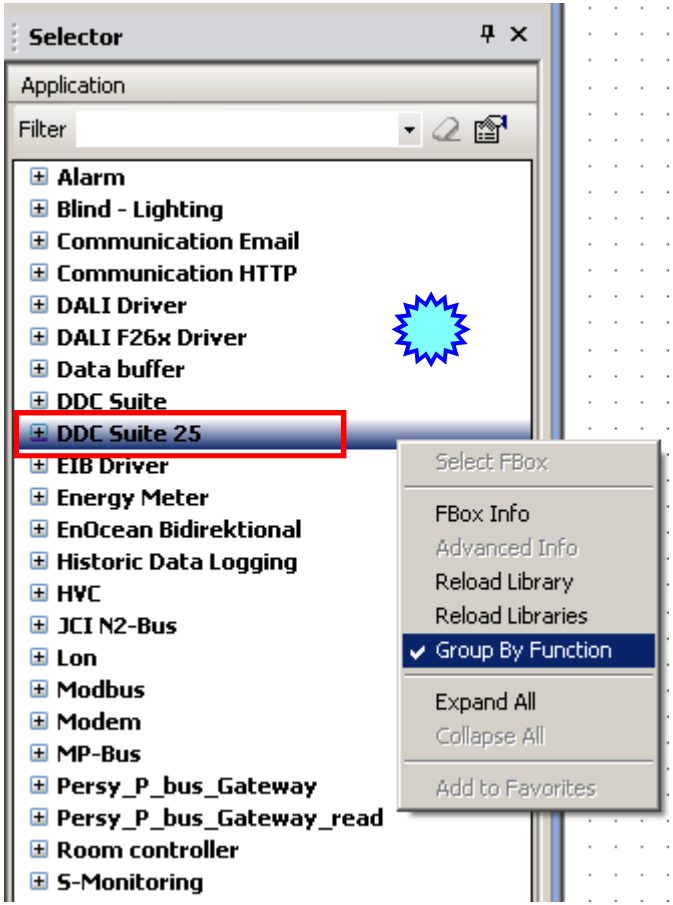

**DDC Suite 2.0 and 2.5 can be installed parallel but should not be mixed in one project !!!**

| Use | Name | Version | Type | ID |
|---|---|---|---|---|
| ☑ | DALI F26x Library | V2.7.100 | FBOX | _SAIA_DALIF26 |
| ☑ | DALI Library | V2.7.100 | FBOX | _SAIA_DALI |
| ☑ | DDC Library | SP2.6.204 | FBOX | _DDCLibrary |
| ☑ | DDC Suite 2.5 | V2.8.112 | FBOX | _DDC_Suite_25 |

# DDC Suite 2.5 Installation

In the FBox Selector you should see now both libs.

Per default PG5 uses the new Option „Group by function“ but it‘s possible to deactivate it and change to the classical mode.

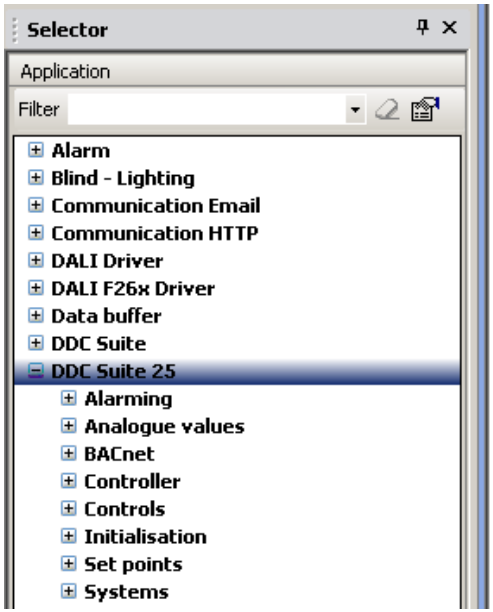


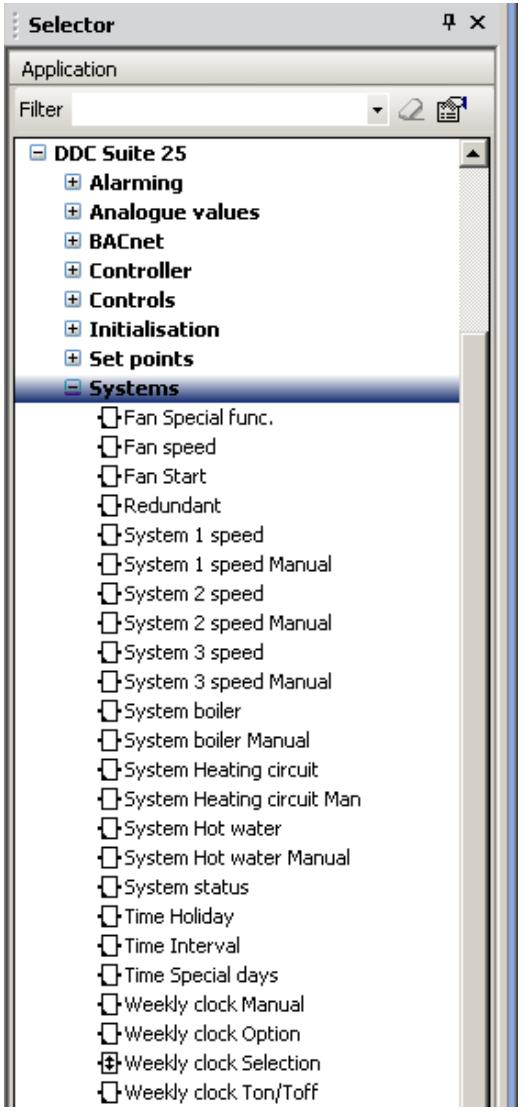
# DDC Suite 2.5 Installation

The DDC Suite 2.5 does also contain 8 Fbox families.

There is one new called Family BACnet. It contains Fboxes that have only functionality for BACnet.

The Family „General“ does not exist in 2.5.




# Plant coding system and Alarming

SAIA BURGESS CONTROLS

# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

Plant coding systems (PCS) are often used in combination with SCADA systems. Basically it is a naming system of the equipments.

All equipments, machines, building parts can be identified exactly with using it.

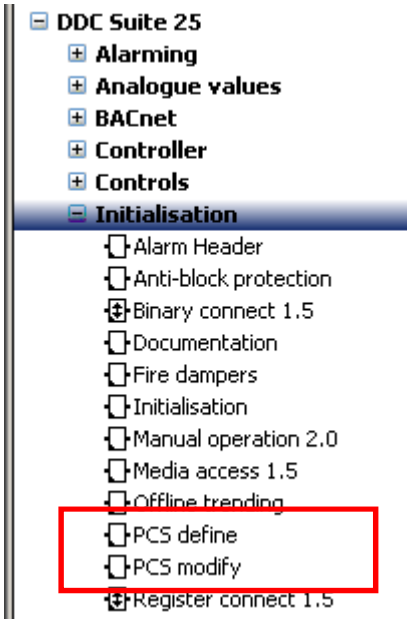
With the DDC Suite 2.5 these keys can be created from FUPLA for generating Alarm text and BACnet Object names and Descriptions.

The BACnet name generation is not anymore connected to the FBox names but connected to freely defined texts.

The definiton of the texts are in special new Fboxes and/or in the Fbox which generates the BACnet object or Alarm.

The resulting informations can be used after a build for things like BACnet Objects, Sweb Alarming, SCADA systems etc.

These PCS uses no ressources or program code in the PCD. It just creates the hierarchical names.



# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

## Main goal to create key names for the elements automatically

**021901L304BEA_E01ULK001SB01EIN**

**Possible problems with the old DDC Suite 2.0 Fboxes :**

- May be the chosen name is too long for Fbox name
- The Fbox name can not be started with number but BACnet object name can
- The name can be concatenated from several parts (only the necessary part should be changed object by object)
- The name should not use PCD resources

**0219 01 L BEA 304 _ E01 ULK001SB01EIN**

# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

How to define PCS for generating Alarm names?

Just use the Fbox „PCS define“ from the family „Initialisation“.

We extended the exsiting template with the new functionality.

A PCS can be used for different functions. Inside of the Fbox you can choose from the following function:

General : not yet used

Alarming : used for creating Alarm description

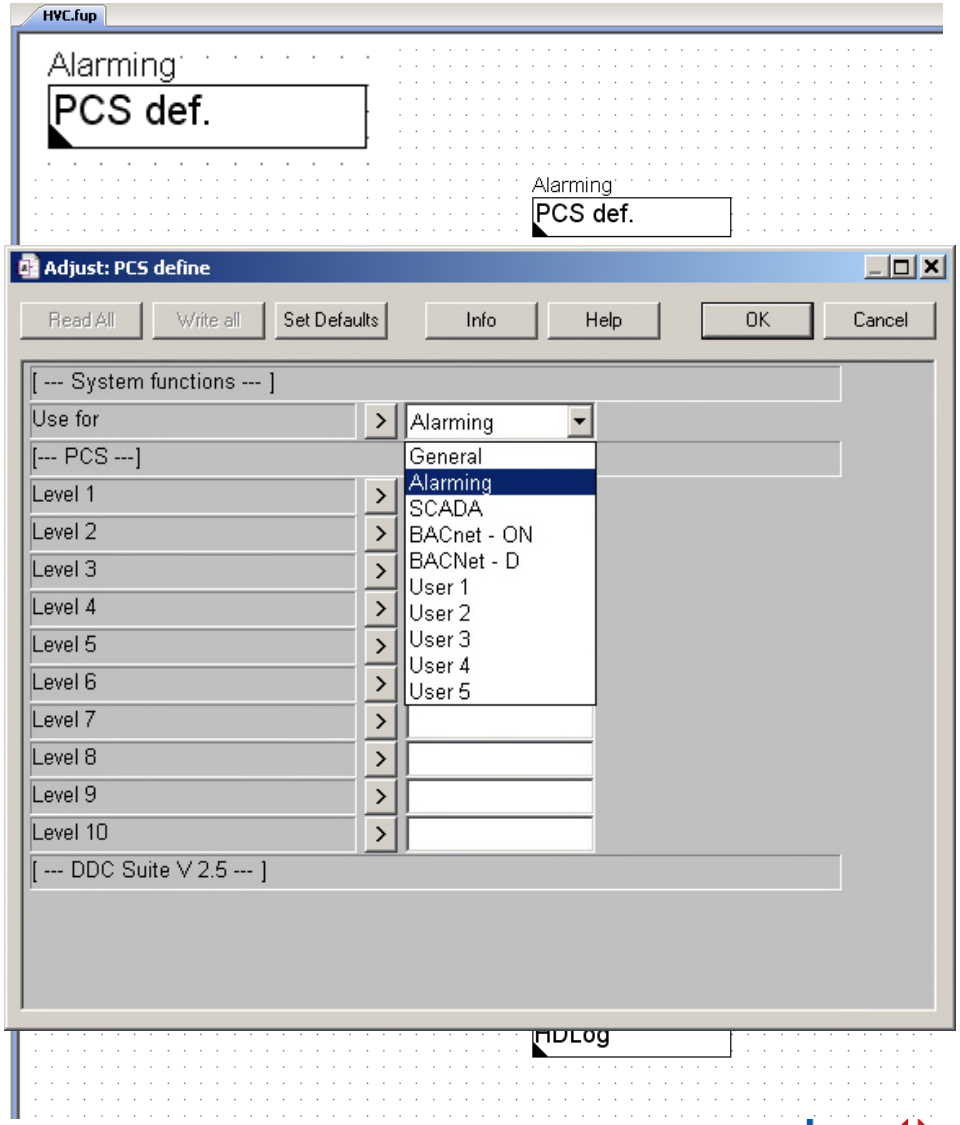
SCADA : not yet used

BACnet-ON: Definition of the BACnet **O**bject**N**ame

BACnet-D : Definition of the BACnet **D**escription

User 1..5 : not yet used – usable by customer

Please choose „Alarming“



# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

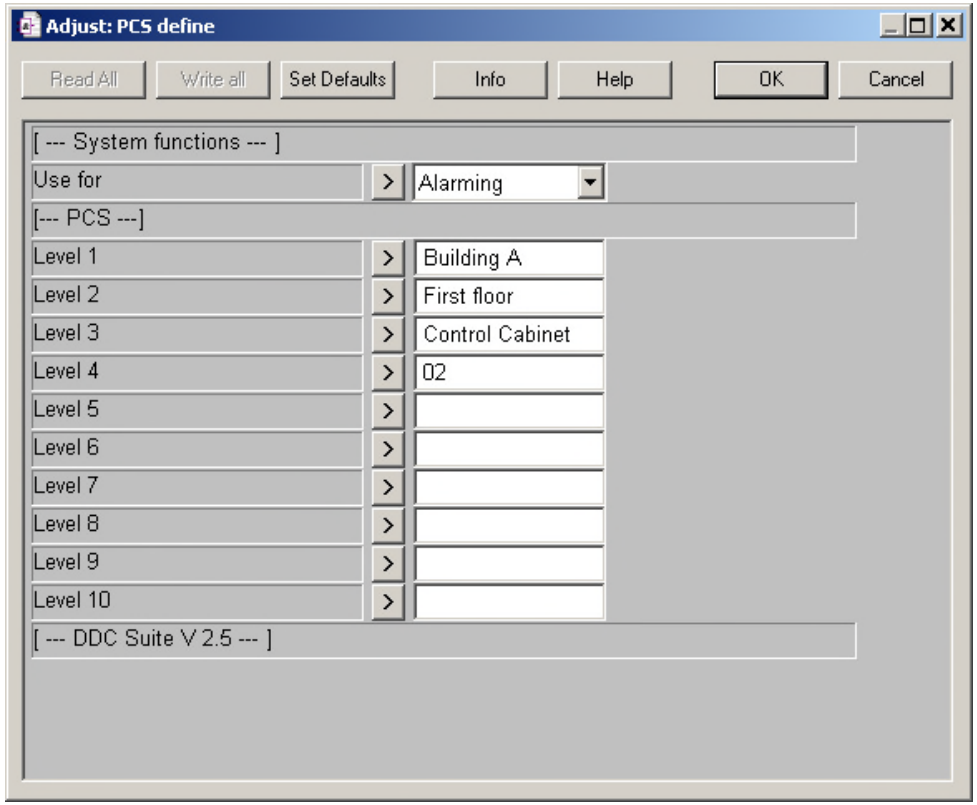
The PCS contains up to 10 Levels.

In our example we want to use a PCS with clear text. Take care to add a space at the end of the entered text to separate the parts of the complete text from each other.

Reason: All alarms should use this Key later on as prefix. The goal is to get a name like this:

„Building A First Floor Control Cabinet 02 .....“

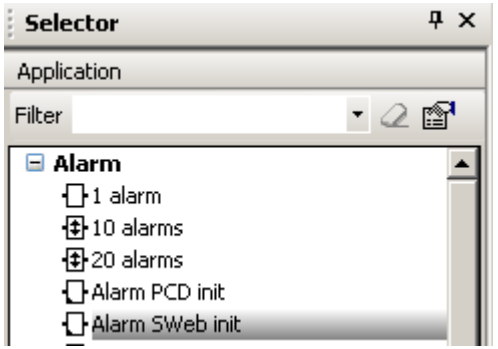
All Alarms will use this prefix and if it has to be changed it can be done at one place.

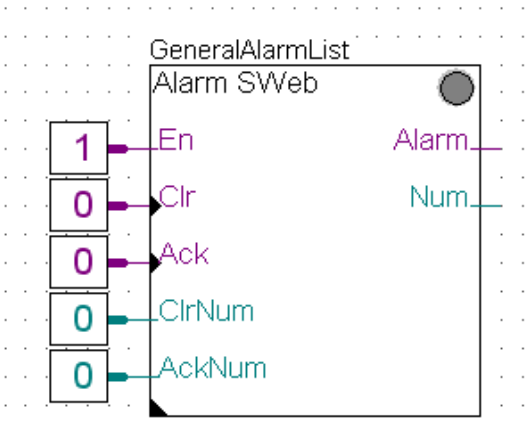


# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

We also need an Alarm List → Family „Alarm“ FBox „Alarm SWeb Init“

This Fbox is already placed on the Init page!



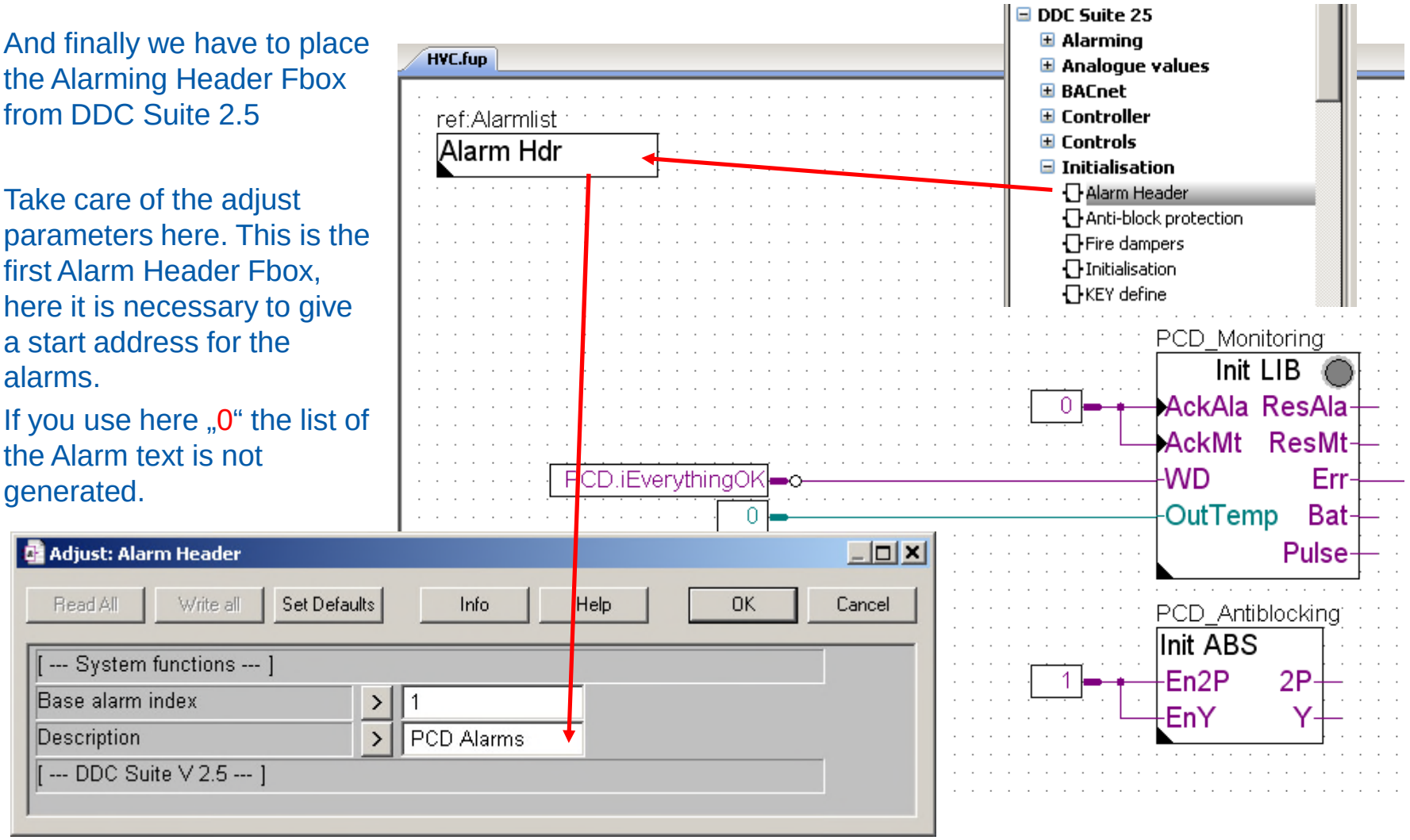



# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

And finally we have to place the Alarming Header Fbox from DDC Suite 2.5

Take care of the adjust parameters here. This is the first Alarm Header Fbox, here it is necessary to give a start address for the alarms.

If you use here „0“ the list of the Alarm text is not generated.



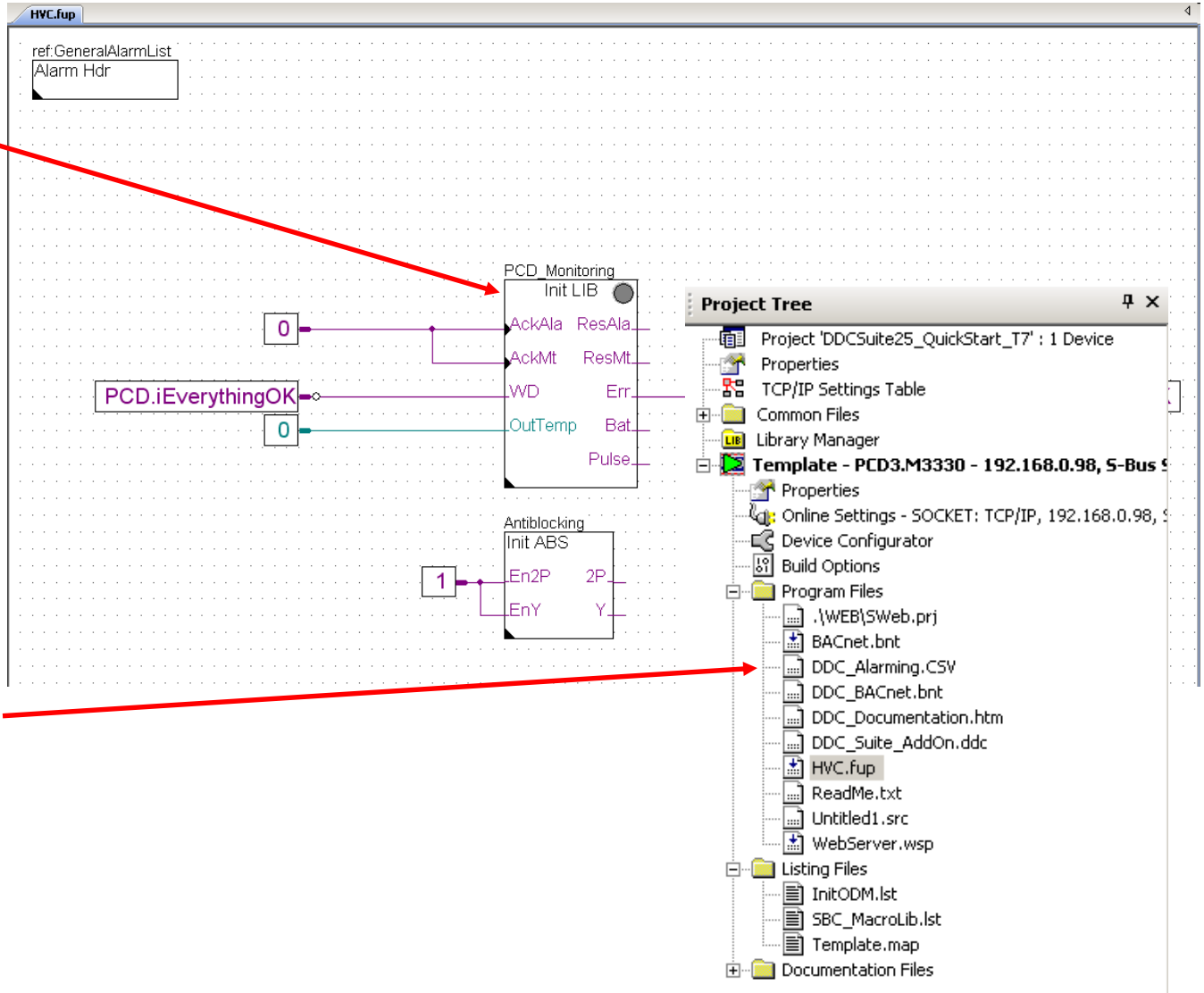
# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

We already have an Init page where this Fboxes is able to generate alarm texts.

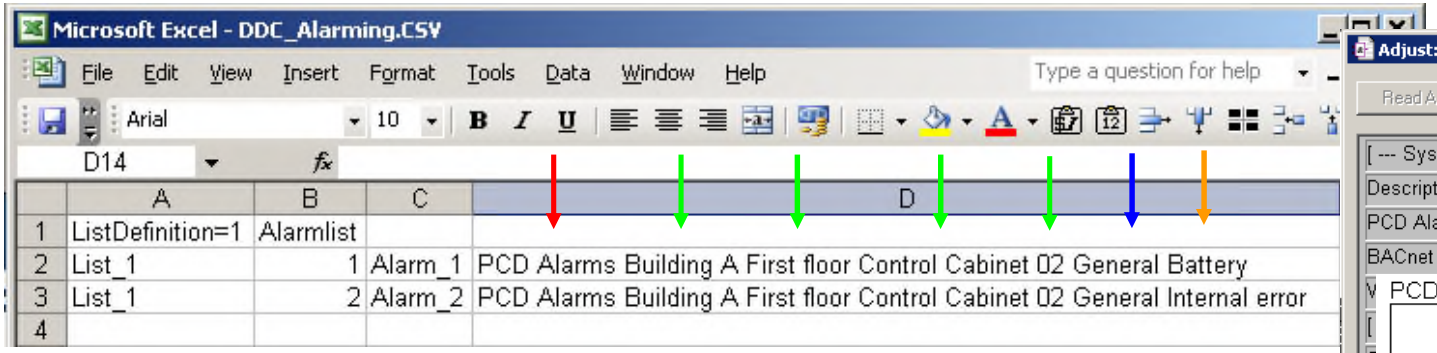
Let us build the project.

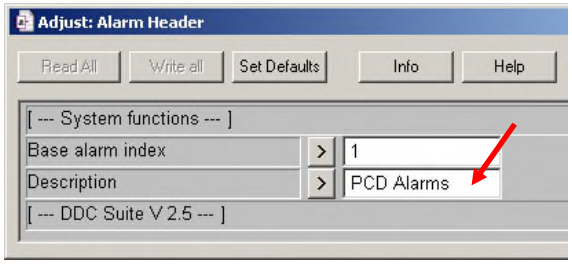
Check what kind of alarm texts are generated.

Open the DDC_Alarming.csv

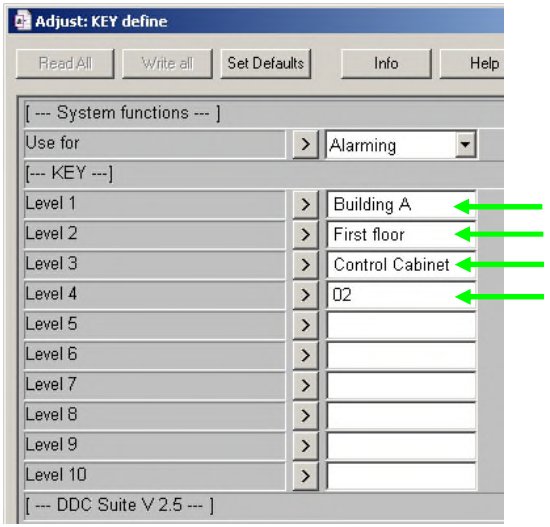


# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

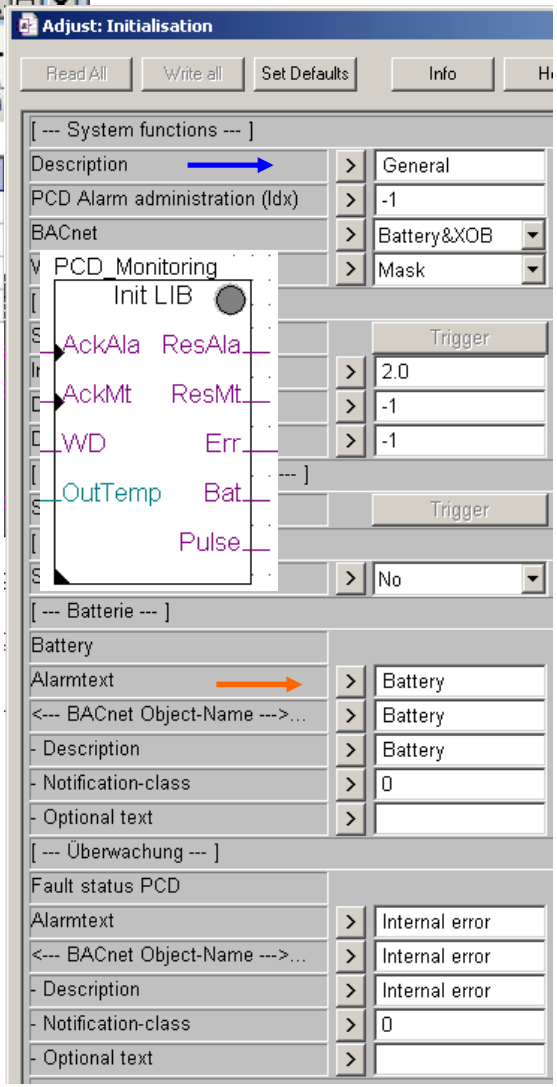



ref:GeneralAlarmList
Alarm Hdr



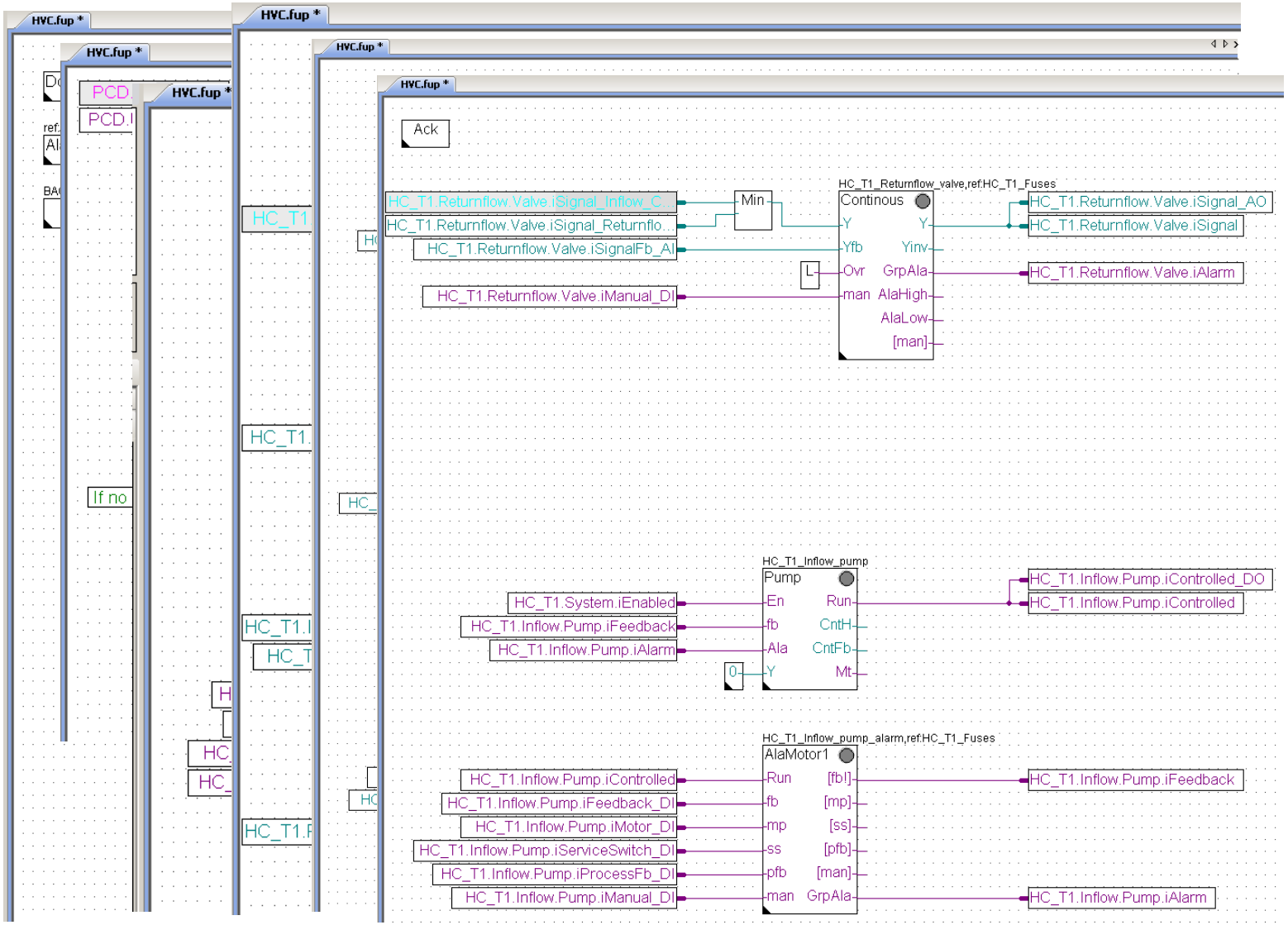

Alarming
PCS def.




How the list is generated?

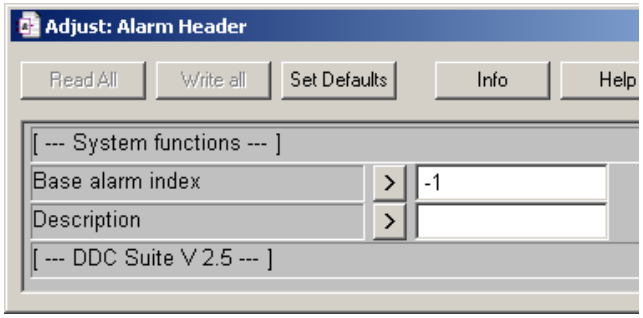
# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

Let us import the Heat circuit T1 FUPLA template to see how the Alarm text generation is working if we have more fboxes for different purposes.

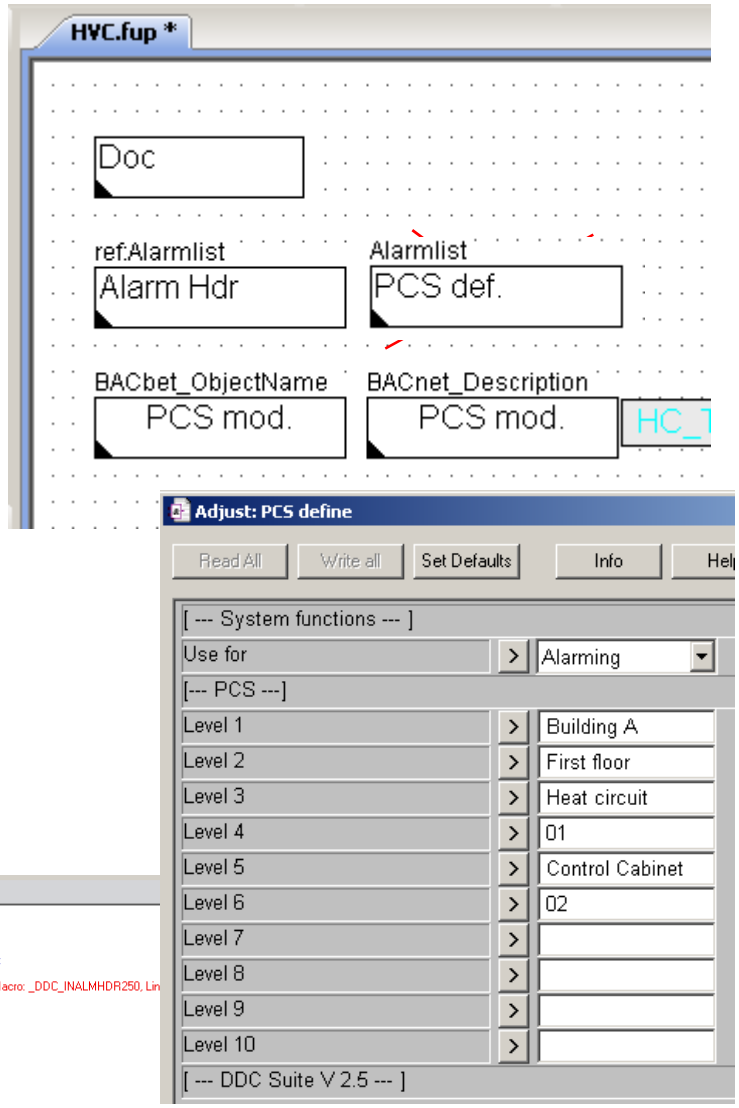


# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

We introduced a new Alarm Header Fbox for the Heat circuit.



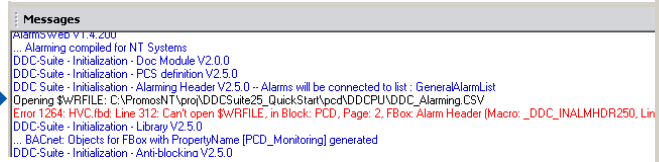

We deleted the Description field in the Alarm Header Fbox.




We delete the PCS mod. Fbox and we introduced a new „PCS def.“ Fbox to modify the Alarm text in different places.

We introduced the „Heat Circuit 01“ as an addition.

Close the CSV file →




Lets build and check the result text file.

# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

The result should look like this in MS Excel.

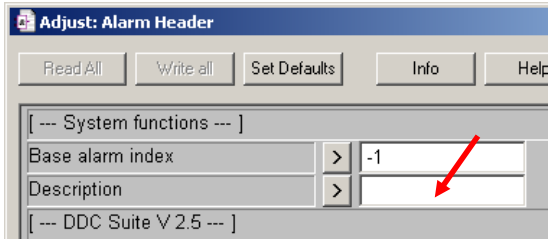
| | A | B | C | D |
|---|---|---|---|---|
| 1 | ListDefinition=1 | Alarmlist | | |
| 2 | List_1 | 1 | Alarm_1 | PCD Alarms Building A First floor Control Cabinet 02 General Battery |
| 3 | List_1 | 2 | Alarm_2 | PCD Alarms Building A First floor Control Cabinet 02 General Internal error |
| 4 | List_1 | 3 | Alarm_3 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 230VAC |
| 5 | List_1 | 4 | Alarm_4 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VAC |
| 6 | List_1 | 5 | Alarm_5 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VDC |
| 7 | List_1 | 6 | Alarm_6 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Phase missing |
| 8 | List_1 | 7 | Alarm_7 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Main fuse |
| 9 | List_1 | 8 | Alarm_8 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. open wire |
| 10 | List_1 | 9 | Alarm_9 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. short circuit |
| 11 | List_1 | 10 | Alarm_10 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. open wire |
| 12 | List_1 | 11 | Alarm_11 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. short circuit |
| 13 | List_1 | 12 | Alarm_12 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. high |
| 14 | List_1 | 13 | Alarm_13 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. low |
| 15 | List_1 | 14 | Alarm_14 | Building A First floor Heat circuit 01 Control Cabinet 02 Returnflow temp. open wire |
| 16 | List_1 | 15 | Alarm_15 | Building A First floor Heat circuit 01 Control Cabinet 02 Returnflow temp. short circuit |
| 17 | List_1 | 16 | Alarm_16 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Feedback high |
| 18 | List_1 | 17 | Alarm_17 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Feedback low |
| 19 | List_1 | 18 | Alarm_18 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Manual |
| 20 | List_1 | 19 | Alarm_19 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump maintenance |
| 21 | List_1 | 20 | Alarm_20 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump blocked |
| 22 | List_1 | 21 | Alarm_21 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump No feedback |
| 23 | List_1 | 22 | Alarm_22 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump Motor |
| 24 | List_1 | 23 | Alarm_23 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump Service switch |
| 25 | List_1 | 24 | Alarm_24 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump Process feedback |
| 26 | List_1 | 25 | Alarm_25 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump Manual |

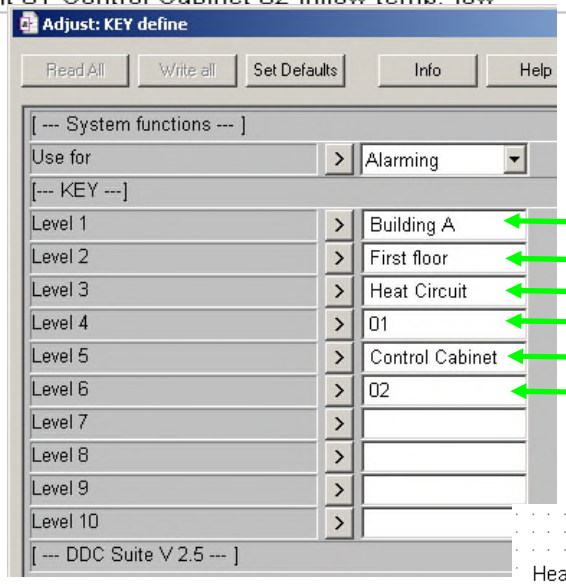
# DDC Suite 2.5

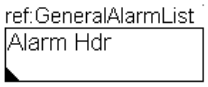
## Plant coding system (PCS) for alarm text generation

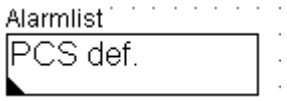
How the list is generated?

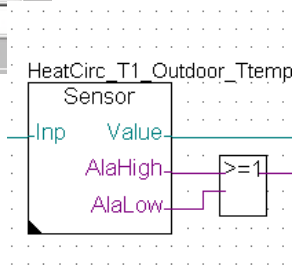
| | | |
|---|---|---|
| 8 | Alarm_8 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. open wire |
| 9 | Alarm_9 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. short circuit |
| 10 | Alarm_10 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. open wire |
| 11 | Alarm_11 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. short circuit |
| 12 | Alarm_12 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. high |
| 13 | Alarm_13 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. low |

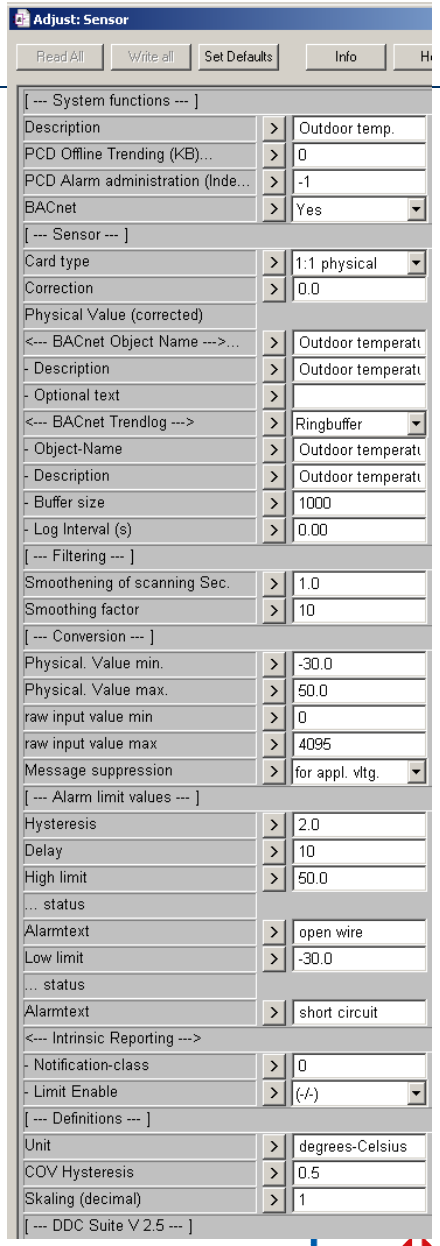


# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

What happened here?

E22

| | A | B | C | D |
|---|---|---|---|---|
| 1 | ListDefinition=1 | Alarmlist | | |
| 2 | List_1 | 1 | Alarm_1 | PCD Alarms Building A First floor Control Cabinet 02 General Battery |
| 3 | List_1 | 2 | Alarm_2 | PCD Alarms Building A First floor Control Cabinet 02 General Internal error |
| 4 | List_1 | 3 | Alarm_3 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 230VAC |
| 5 | List_1 | 4 | Alarm_4 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VAC |
| 6 | List_1 | 5 | Alarm_5 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VDC |
| 7 | List_1 | 6 | Alarm_6 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Phase missing |
| 8 | List_1 | 7 | Alarm_7 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Main fuse |
| 9 | List_1 | 9 | Alarm_9 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. open wire |
| 10 | List_1 | 10 | Alarm_10 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. short circuit |
| 11 | List_1 | 8 | Alarm_8 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. open wire |
| 12 | List_1 | 9 | Alarm_9 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. short circuit |
| 13 | List_1 | 10 | Alarm_10 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. high |
| 14 | List_1 | 11 | Alarm_11 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. low |
| 15 | List_1 | 12 | Alarm_12 | Building A First floor Heat circuit 01 Control Cabinet 02 Returnflow temp. open wire |

uit 01 Control Cabinet 02 Returnflow temp. short circuit
uit 01 Control Cabinet 02 Valve Feedback high
uit 01 Control Cabinet 02 Valve Feedback low
uit 01 Control Cabinet 02 Valve Manual
uit 01 Control Cabinet 02 Pump Process feedback
uit 01 Control Cabinet 02 Pump Manual

HC_T1_Outdoor_temp,ref:HC_T1_Fuses

Sensor
Inp Value
AlaHigh
AlaLow

Adjust: Sensor

Read All | Write all | Set Defaults | Info | He

[ --- System functions --- ]

| | | |
|---|---|---|
| Description | > | Outdoor temp. |
| PCD Offline Trending (KB)... | > | 0 |
| PCD Alarm administration (Inde... | > | 9 |
| BACnet | > | Yes |

HC_T1_Inflow_tem

The mixing of automatic (-1) and the manual addressing (9) causes problem.

Decide which solution you want to use.

# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

How to change the Alarm names in easy way?

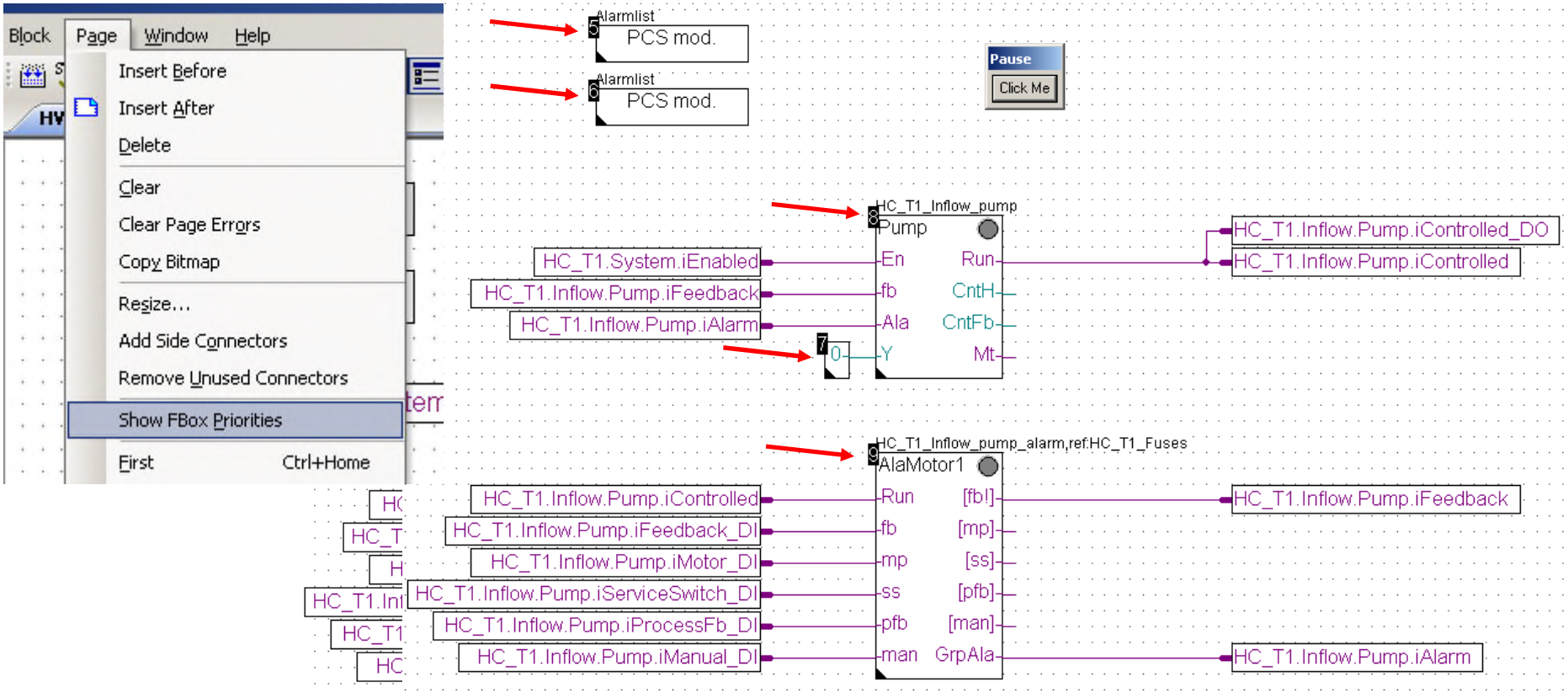
| | A | B | C | D |
|---|---|---|---|---|
| 1 | ListDefinition=1 | Alarmlist | | |
| 2 | List_1 | 1 | Alarm_1 | PCD Alarms Building A First floor Control Cabinet 02 General Battery |
| 3 | List_1 | 2 | Alarm_2 | PCD Alarms Building A First floor Control Cabinet 02 General Internal error |
| 4 | List_1 | 3 | Alarm_3 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 230VAC |
| 5 | List_1 | 4 | Alarm_4 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VAC |
| 6 | List_1 | 5 | Alarm_5 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VDC |
| 7 | List_1 | 6 | Alarm_6 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Phase missing |
| 8 | List_1 | 7 | Alarm_7 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Main fuse |
| 9 | List_1 | 8 | Alarm_8 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. open wire |
| 10 | List_1 | 9 | Alarm_9 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. short circuit |
| 11 | List_1 | 10 | Alarm_10 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. open wire |
| 12 | List_1 | 11 | Alarm_11 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. short circuit |
| 13 | List_1 | 12 | Alarm_12 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. high |
| 14 | List_1 | 13 | Alarm_13 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. low |
| | | | | 2 Returnflow temp. open wire |
| | | | | 2 Returnflow temp. short circuit |
| 17 | List_1 | 16 | Alarm_16 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Feedback high |
| 18 | List_1 | 17 | Alarm_17 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Feedback low |
| 19 | List_1 | 18 | Alarm_18 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Manual |
| 20 | List_1 | 19 | Alarm_19 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump maintenance |
| 21 | List_1 | 20 | Alarm_20 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump blocked |
| 22 | List_1 | 21 | Alarm_21 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump No feedback |
| 23 | List_1 | 22 | Alarm_22 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump Motor |
| 24 | List_1 | 23 | Alarm_23 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump Service switch |
| 25 | List_1 | 24 | Alarm_24 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump Process feedback |
| 26 | List_1 | 25 | Alarm_25 | Building A First floor Heat circuit 01 Control Cabinet 02 Pump Manual |

Imagine that the Pump is in an other cabinet called MCC 102

# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

How to change the Alarm names in easy way?

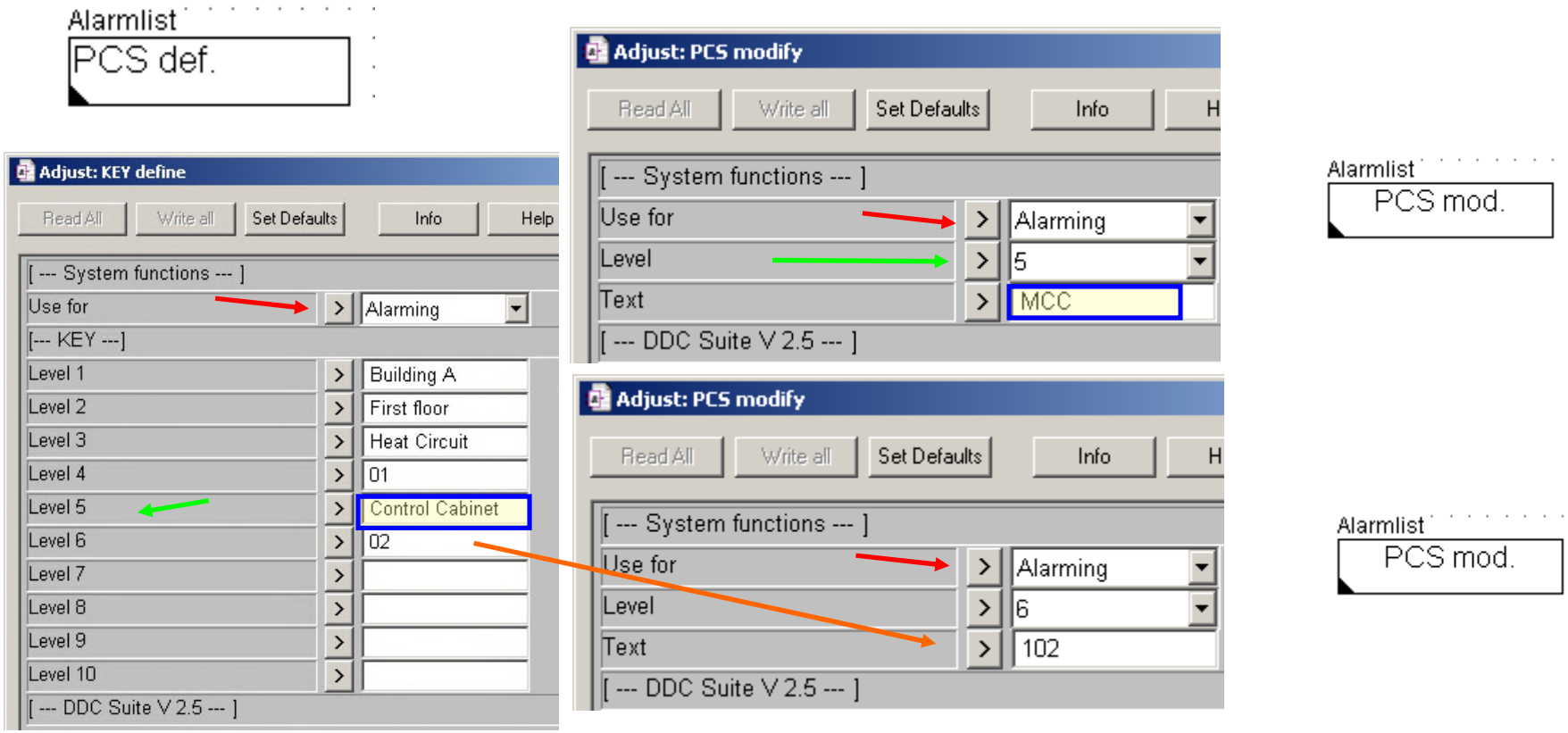
Modification of the FUPLA and Key name structure. Place the Key mod. Fbox two times on to the FUPLA page. Check the Fbox priority (execution order) to be sure the „Key mod.“ Fboxes are executed before the others.



# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

How to change the Alarm names in easy way?

Set up the parameters in the Adjust window of the KEY mod. Fboxes. In the KEY mod. Fbox it is possible to overwrite one part of the code name we have created before.



# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

The result should look like this.

F27

| | A | B | C | D |
|---|---|---|---|---|
| 1 | ListDefinition=1 | Alarmlist | | |
| 2 | List_1 | 1 | Alarm_1 | PCD Alarms Building A First floor Control Cabinet 02 General Battery |
| 3 | List_1 | 2 | Alarm_2 | PCD Alarms Building A First floor Control Cabinet 02 General Internal error |
| 4 | List_1 | 3 | Alarm_3 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 230VAC |
| 5 | List_1 | 4 | Alarm_4 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VAC |
| 6 | List_1 | 5 | Alarm_5 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VDC |
| 7 | List_1 | 6 | Alarm_6 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Phase missing |
| 8 | List_1 | 7 | Alarm_7 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Main fuse |
| 9 | List_1 | 8 | Alarm_8 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. open wire |
| 10 | List_1 | 9 | Alarm_9 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. short circuit |
| 11 | List_1 | 10 | Alarm_10 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. open wire |
| 12 | List_1 | 11 | Alarm_11 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. short circuit |
| 13 | List_1 | 12 | Alarm_12 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. high |
| 14 | List_1 | 13 | Alarm_13 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. low |
| 15 | List_1 | 14 | Alarm_14 | Building A First floor Heat circuit 01 Control Cabinet 02 Returnflow temp. open wire |
| 16 | List_1 | 15 | Alarm_15 | Building A First floor Heat circuit 01 Control Cabinet 02 Returnflow temp. short circuit |
| 17 | List_1 | 16 | Alarm_16 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Feedback high |
| 18 | List_1 | 17 | Alarm_17 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Feedback low |
| 19 | List_1 | 18 | Alarm_18 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Manual |
| 20 | List_1 | 19 | Alarm_19 | Building A First floor Heat circuit 01 MCC 102 Pump maintenance |
| 21 | List_1 | 20 | Alarm_20 | Building A First floor Heat circuit 01 MCC 102 Pump blocked |
| 22 | List_1 | 21 | Alarm_21 | Building A First floor Heat circuit 01 MCC 102 Pump No feedback |
| 23 | List_1 | 22 | Alarm_22 | Building A First floor Heat circuit 01 MCC 102 Pump Motor |
| 24 | List_1 | 23 | Alarm_23 | Building A First floor Heat circuit 01 MCC 102 Pump Service switch |
| 25 | List_1 | 24 | Alarm_24 | Building A First floor Heat circuit 01 MCC 102 Pump Process feedback |
| 26 | List_1 | 25 | Alarm_25 | Building A First floor Heat circuit 01 MCC 102 Pump Manual |

# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

Now we have to make sure the Fbox alarms are added to the Alarm List.

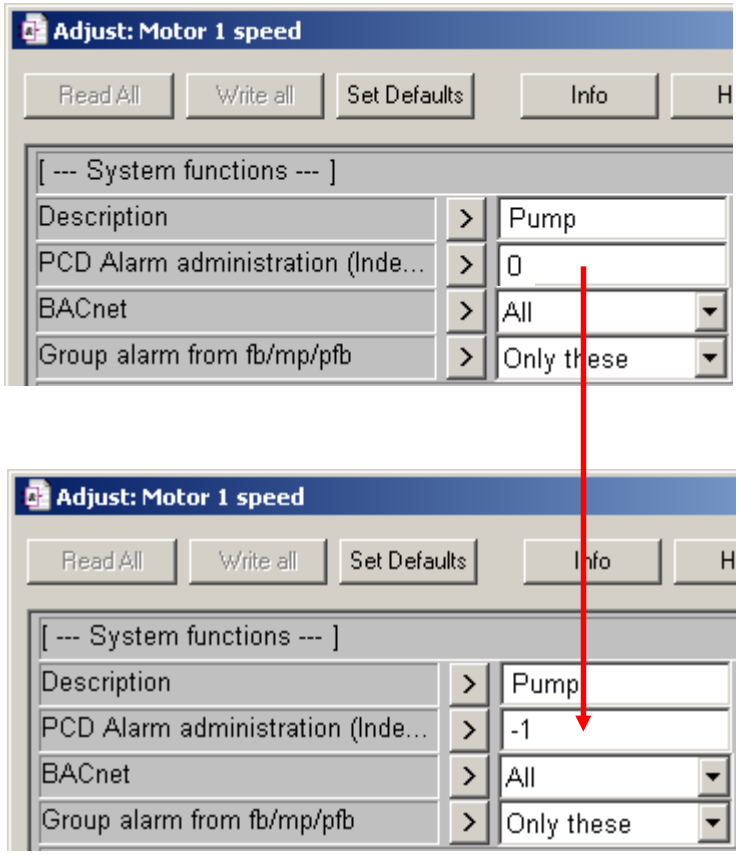
That happaned with the former DDC Suite Version 2.0 by putting a fixed nr. In the alarm field. So you sometimes had to calculate the right number, because some Fboxes can generate more than on alarm.

In the DDC Suite 2.5 just put -1 in the field and everything is done automatically.

Now the Fbox uses the next free alarm index.

-1 = Alarm is generated, automatic index
0 = Alarming not used for this Fbox
>0 = fixed Alarmindex (not recommended anymore)

Remark: The Startindex from the FBox „Alarming Header“ is used.

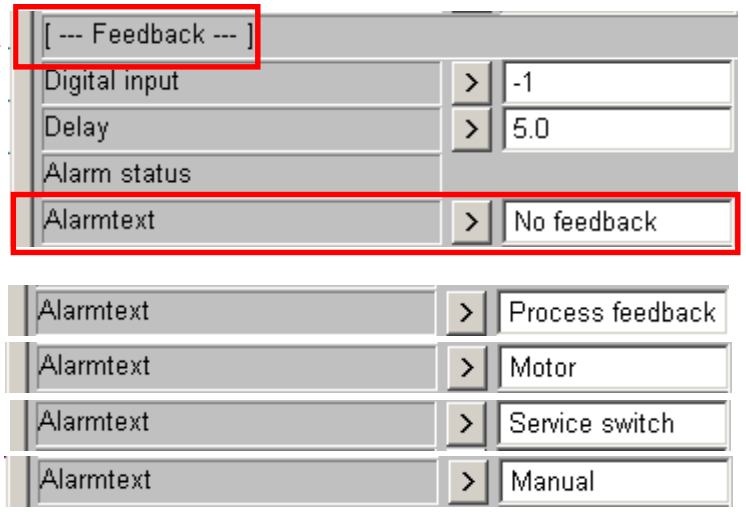


# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

Now we can give the own alarmtexts for all alarms.

You can do this in the Parameter „Alarmtext“ just below the alarm parameter.

Fbox Alarming Motor

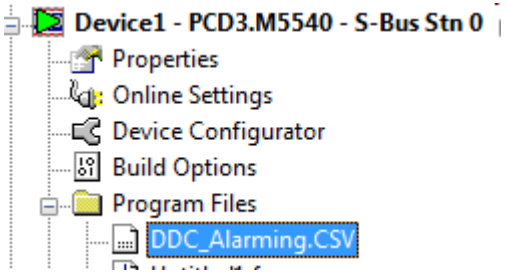



Fbox Motor


Now we can build the program !

# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

Now we can open the file DDC_Alarming.csv and we see all the alarms That have been generated.




The text is coming from

**PCS (Level 1-10) + FBox „Description“ + Alarmtext**

Microsoft Excel - DDC_Alarming.CSV

File Edit View Insert Format Tools Data Window Help

Arial 10

F27

| | A | B | C | D |
|---|---|---|---|---|
| 20 | List_1 | 19 | Alarm_19 | Building A First floor Heat circuit 01 MCC 102 Pump maintenance |
| 21 | List_1 | 20 | Alarm_20 | Building A First floor Heat circuit 01 MCC 102 Pump blocked |
| 22 | List_1 | 21 | Alarm_21 | Building A First floor Heat circuit 01 MCC 102 Pump No feedback |
| 23 | List_1 | 22 | Alarm_22 | Building A First floor Heat circuit 01 MCC 102 Pump Motor |
| 24 | List_1 | 23 | Alarm_23 | Building A First floor Heat circuit 01 MCC 102 Pump Service switch |
| 25 | List_1 | 24 | Alarm_24 | Building A First floor Heat circuit 01 MCC 102 Pump Process feedback |
| 26 | List_1 | 25 | Alarm_25 | Building A First floor Heat circuit 01 MCC 102 Pump Manual |

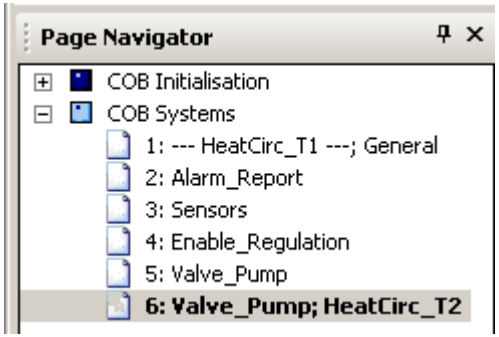
# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

Now its time to explain the real benefit of this Fboxes.

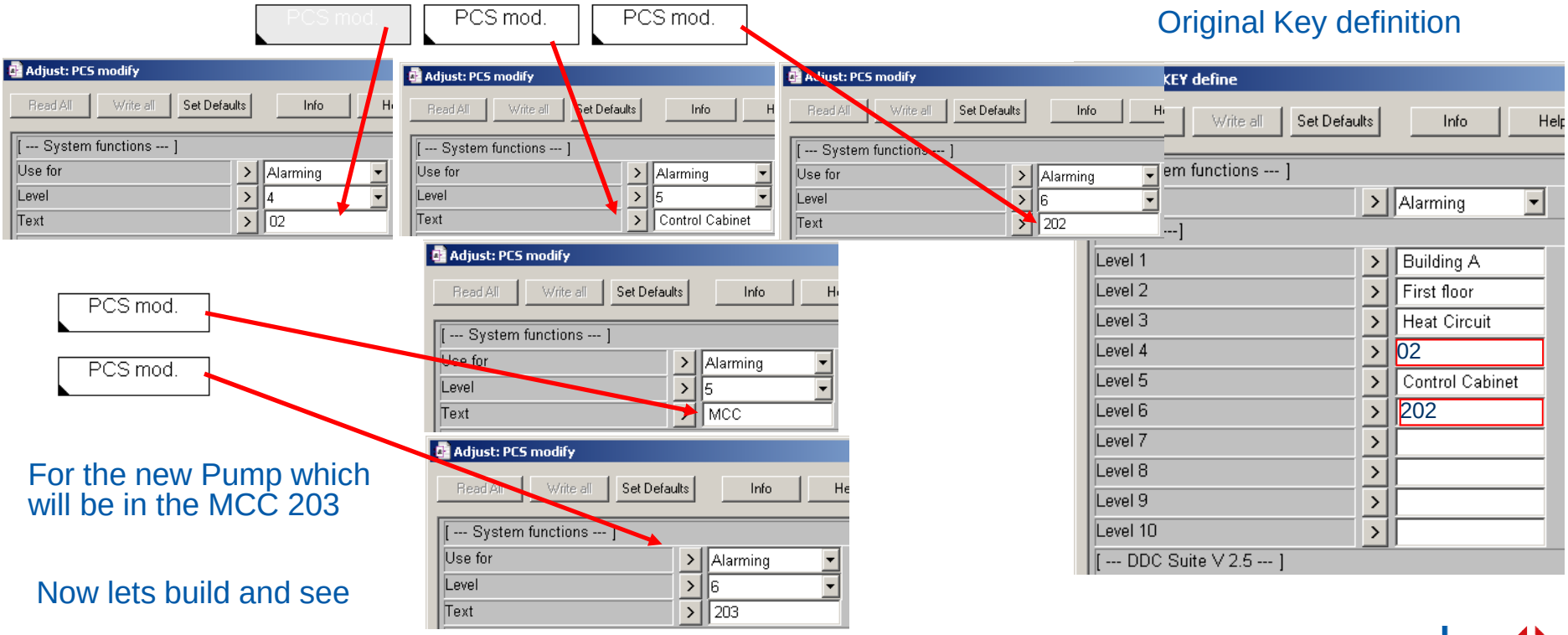
We export the page Valve_Pump from HeatCirc_T1 and import it back. During the import we change everything to HeatCirc_T2 so that we have two Valve_Pump pages for the two systems.

The second Heating circuit is located in the same building but in a different room and with a different name (HeatCirc_T2).

Now we can use the key modify Fbox to change just those levels we need to.




Original Key definition




For the new Pump which will be in the MCC 203

Now lets build and see

# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

## Have you got the idea behind that?

| | A | B | C | D |
|---|---|---|---|---|
| 1 | ListDefinition=1 | Alarmlist | | |
| 2 | List_1 | 1 | Alarm_1 | PCD Alarms Building A First floor Control Cabinet 02 General Battery |
| 3 | List_1 | 2 | Alarm_2 | PCD Alarms Building A First floor Control Cabinet 02 General Internal error |
| 4 | List_1 | 3 | Alarm_3 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 230VAC |
| 5 | List_1 | 4 | Alarm_4 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VAC |
| 6 | List_1 | 5 | Alarm_5 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses 24VDC |
| 7 | List_1 | 6 | Alarm_6 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Phase missing |
| 8 | List_1 | 7 | Alarm_7 | Building A First floor Heat circuit 01 Control Cabinet 02 Fuses Main fuse |
| 9 | List_1 | 8 | Alarm_8 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. open wire |
| 10 | List_1 | 9 | Alarm_9 | Building A First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. short circuit |
| 11 | List_1 | 10 | Alarm_10 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. open wire |
| 12 | List_1 | 11 | Alarm_11 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. short circuit |
| 13 | List_1 | 12 | Alarm_12 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. high |
| 14 | List_1 | 13 | Alarm_13 | Building A First floor Heat circuit 01 Control Cabinet 02 Inflow temp. low |
| 15 | List_1 | 14 | Alarm_14 | Building A First floor Heat circuit 01 Control Cabinet 02 Returnflow temp. open wire |
| 16 | List_1 | 15 | Alarm_15 | Building A First floor Heat circuit 01 Control Cabinet 02 Returnflow temp. short circuit |
| 17 | List_1 | 16 | Alarm_16 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Feedback high |
| 18 | List_1 | 17 | Alarm_17 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Feedback low |
| 19 | List_1 | 18 | Alarm_18 | Building A First floor Heat circuit 01 Control Cabinet 02 Valve Manual |
| 20 | List_1 | 19 | Alarm_19 | Building A First floor Heat circuit 01 MCC 102 Pump maintenance |
| 21 | List_1 | 20 | Alarm_20 | Building A First floor Heat circuit 01 MCC 102 Pump blocked |
| 22 | List_1 | 21 | Alarm_21 | Building A First floor Heat circuit 01 MCC 102 Pump No feedback |
| 23 | List_1 | 22 | Alarm_22 | Building A First floor Heat circuit 01 MCC 102 Pump Motor |
| 24 | List_1 | 23 | Alarm_23 | Building A First floor Heat circuit 01 MCC 102 Pump Service switch |
| 25 | List_1 | 24 | Alarm_24 | Building A First floor Heat circuit 01 MCC 102 Pump Process feedback |
| 26 | List_1 | 25 | Alarm_25 | Building A First floor Heat circuit 01 MCC 102 Pump Manual |
| 27 | List_1 | 26 | Alarm_26 | Building A First floor Heat circuit 02 Control Cabinet 202 Valve Feedback high |
| 28 | List_1 | 27 | Alarm_27 | Building A First floor Heat circuit 02 Control Cabinet 202 Valve Feedback low |
| 29 | List_1 | 28 | Alarm_28 | Building A First floor Heat circuit 02 Control Cabinet 202 Valve Manual |
| 30 | List_1 | 29 | Alarm_29 | Building A First floor Heat circuit 02 MCC 203 Pump maintenance |
| 31 | List_1 | 30 | Alarm_30 | Building A First floor Heat circuit 02 MCC 203 Pump blocked |
| 32 | List_1 | 31 | Alarm_31 | Building A First floor Heat circuit 02 MCC 203 Pump No feedback |
| 33 | List_1 | 32 | Alarm_32 | Building A First floor Heat circuit 02 MCC 203 Pump Motor |
| 34 | List_1 | 33 | Alarm_33 | Building A First floor Heat circuit 02 MCC 203 Pump Service switch |
| 35 | List_1 | 34 | Alarm_34 | Building A First floor Heat circuit 02 MCC 203 Pump Process feedback |
| 36 | List_1 | 35 | Alarm_35 | Building A First floor Heat circuit 02 MCC 203 Pump Manual |

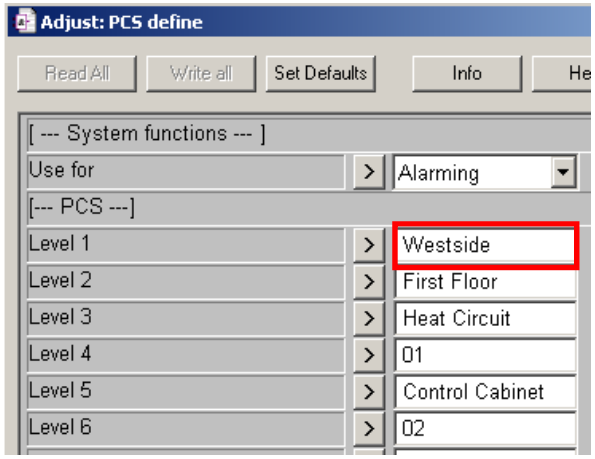
# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

| | A | B | C | D |
|---|---|---|---|---|
| 1 | ListDefinition=1 | Alarmlist | | |
| 2 | List_1 | 1 | Alarm_1 | PCD Alarms Building A First floor Control Cabinet 02 General Battery |
| 3 | List_1 | 2 | Alarm_2 | PCD Alarms Building A First floor Control Cabinet 02 General Internal error |
| 4 | List_1 | 3 | Alarm_3 | Westside First floor Heat circuit 01 Control Cabinet 02 Fuses 230VAC |
| 5 | List_1 | 4 | Alarm_4 | Westside First floor Heat circuit 01 Control Cabinet 02 Fuses 24VAC |
| 6 | List_1 | 5 | Alarm_5 | Westside First floor Heat circuit 01 Control Cabinet 02 Fuses 24VDC |
| 7 | List_1 | 6 | Alarm_6 | Westside First floor Heat circuit 01 Control Cabinet 02 Fuses Phase missing |
| 8 | List_1 | 7 | Alarm_7 | Westside First floor Heat circuit 01 Control Cabinet 02 Fuses Main fuse |
| 9 | List_1 | 8 | Alarm_8 | Westside First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. open wire |
| 10 | List_1 | 9 | Alarm_9 | Westside First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. short circuit |
| 11 | List_1 | 10 | Alarm_10 | Westside First floor Heat circuit 01 Control Cabinet 02 Inflow temp. open wire |
| 12 | List_1 | 11 | Alarm_11 | Westside First floor Heat circuit 01 Control Cabinet 02 Inflow temp. short circuit |
| 13 | List_1 | 12 | Alarm_12 | Westside First floor Heat circuit 01 Control Cabinet 02 Inflow temp. high |
| 14 | List_1 | 13 | Alarm_13 | Westside First floor Heat circuit 01 Control Cabinet 02 Inflow temp. low |
| 15 | List_1 | 14 | Alarm_14 | Westside First floor Heat circuit 01 Control Cabinet 02 Returnflow temp. open wire |
| 16 | List_1 | 15 | Alarm_15 | Westside First floor Heat circuit 01 Control Cabinet 02 Returnflow temp. short circuit |
| 17 | List_1 | 16 | Alarm_16 | Westside First floor Heat circuit 01 Control Cabinet 02 Valve Feedback high |
| 18 | List_1 | 17 | Alarm_17 | Westside First floor Heat circuit 01 Control Cabinet 02 Valve Feedback low |
| 19 | List_1 | 18 | Alarm_18 | Westside First floor Heat circuit 01 Control Cabinet 02 Valve Manual |
| 20 | List_1 | 19 | Alarm_19 | Westside First floor Heat circuit 01 MCC 102 Pump maintenance |
| 21 | List_1 | 20 | Alarm_20 | Westside First floor Heat circuit 01 MCC 102 Pump blocked |
| 22 | List_1 | 21 | Alarm_21 | Westside First floor Heat circuit 01 MCC 102 Pump No feedback |
| 23 | List_1 | 22 | Alarm_22 | Westside First floor Heat circuit 01 MCC 102 Pump Motor |
| 24 | List_1 | 23 | Alarm_23 | Westside First floor Heat circuit 01 MCC 102 Pump Service switch |
| 25 | List_1 | 24 | Alarm_24 | Westside First floor Heat circuit 01 MCC 102 Pump Process feedback |
| 26 | List_1 | 25 | Alarm_25 | Westside First floor Heat circuit 01 MCC 102 Pump Manual |
| 27 | List_1 | 26 | Alarm_26 | Westside First floor Heat circuit 02 Control Cabinet 202 Valve Feedback high |
| 28 | List_1 | 27 | Alarm_27 | Westside First floor Heat circuit 02 Control Cabinet 202 Valve Feedback low |
| 29 | List_1 | 28 | Alarm_28 | Westside First floor Heat circuit 02 Control Cabinet 202 Valve Manual |
| 30 | List_1 | 29 | Alarm_29 | Westside First floor Heat circuit 02 MCC 203 Pump maintenance |
| 31 | List_1 | 30 | Alarm_30 | Westside First floor Heat circuit 02 MCC 203 Pump blocked |
| 32 | List_1 | 31 | Alarm_31 | Westside First floor Heat circuit 02 MCC 203 Pump No feedback |
| 33 | List_1 | 32 | Alarm_32 | Westside First floor Heat circuit 02 MCC 203 Pump Motor |
| 34 | List_1 | 33 | Alarm_33 | Westside First floor Heat circuit 02 MCC 203 Pump Service switch |
| 35 | List_1 | 34 | Alarm_34 | Westside First floor Heat circuit 02 MCC 203 Pump Process feedback |
| 36 | List_1 | 35 | Alarm_35 | Westside First floor Heat circuit 02 MCC 203 Pump Manual |

Now the endcustomer is trying to be nasty with us.

He wants to modify Building A → Westside

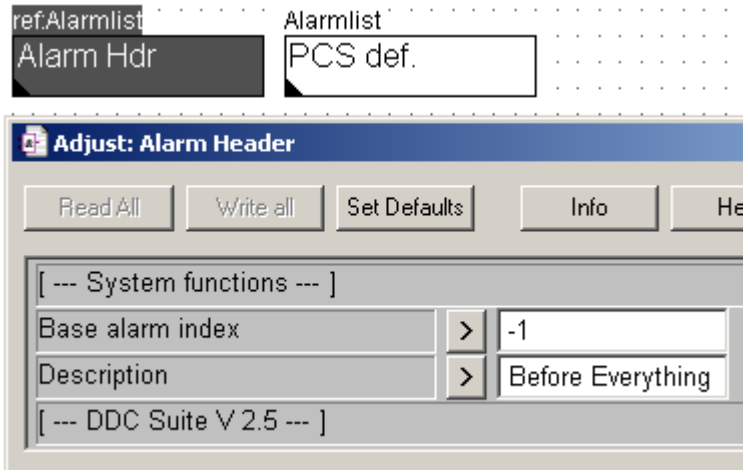
Who cares, no problem. We just change that in the Key Fbox



# DDC Suite 2.5
# Plant coding system (PCS) for alarm text generation

The FBox "Alarming header" can still be given a text for the alarm list.

This text is inserted before the PCS in the alarm text.




| | A | B | C | D |
|---|---|---|---|---|
| 1 | ListDefinition=1 | Alarmlist | | |
| 2 | List_1 | 1 | Alarm_1 | PCD Alarms Building A First floor Control Cabinet 02 General Battery |
| 3 | List_1 | 2 | Alarm_2 | PCD Alarms Building A First floor Control Cabinet 02 General Internal error |
| 4 | List_1 | 3 | Alarm_3 | Before Everything Westside First floor Heat circuit 01 Control Cabinet 02 Fuses 230VAC |
| 5 | List_1 | 4 | Alarm_4 | Before Everything Westside First floor Heat circuit 01 Control Cabinet 02 Fuses 24VAC |
| 6 | List_1 | 5 | Alarm_5 | Before Everything Westside First floor Heat circuit 01 Control Cabinet 02 Fuses 24VDC |
| 7 | List_1 | 6 | Alarm_6 | Before Everything Westside First floor Heat circuit 01 Control Cabinet 02 Fuses Phase missing |
| 8 | List_1 | 7 | Alarm_7 | Before Everything Westside First floor Heat circuit 01 Control Cabinet 02 Fuses Main fuse |
| 9 | List_1 | 8 | Alarm_8 | Before Everything Westside First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. open wire |
| 10 | List_1 | 9 | Alarm_9 | Before Everything Westside First floor Heat circuit 01 Control Cabinet 02 Outdoor temp. short circuit |


# BACnet - General

SAIA BURGESS CONTROLS

# DDC Suite 2.5
# BACnet - General

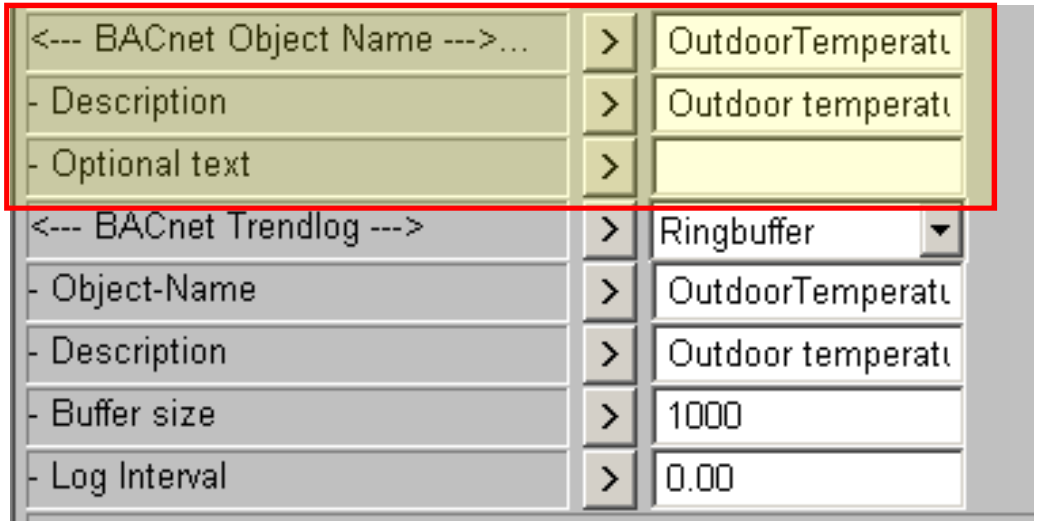
There are new parameters inside the Fboxes to define BACnet objects directly from FUPLA.

To mark this these sections always start with:

<--- BACnet Object Name --->

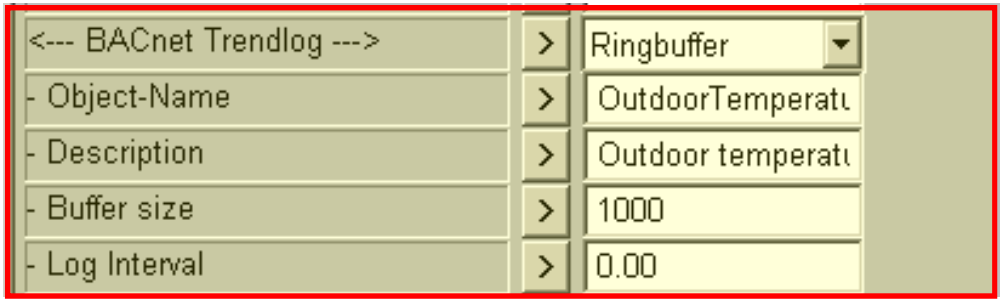
After the Online Value - i.e. „Physical Value corrected“ - there are the corresponding BACnet parameters.

All properties that belong to this BACnet Objekt are marked with „- …“ .

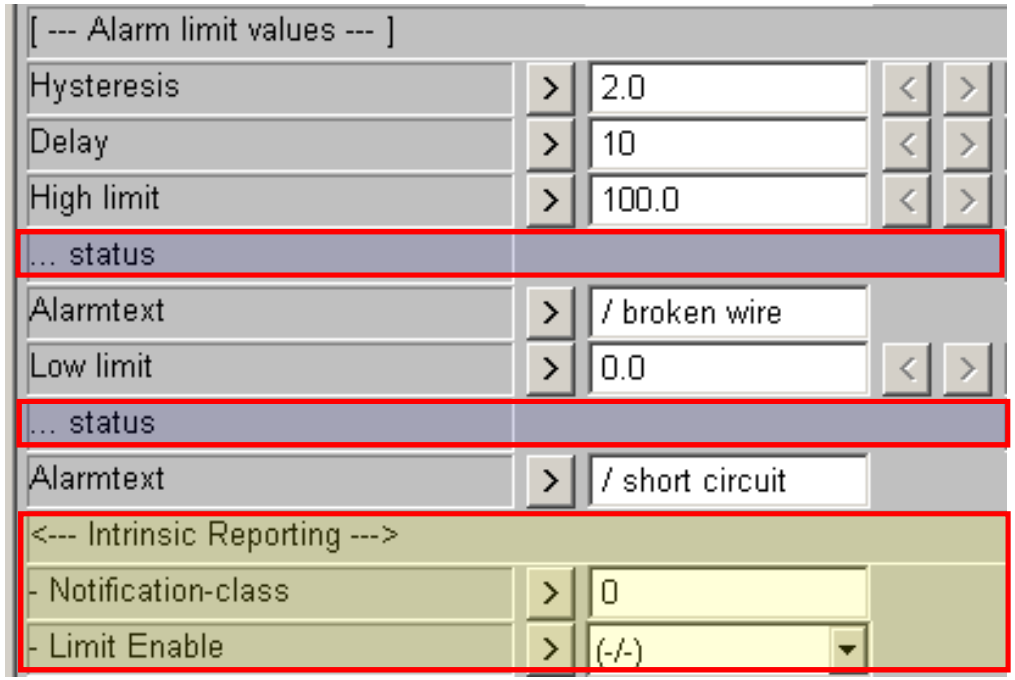


# DCC Suite 2.5
# BACnet - General

If there are definitions for Intrinsic Reporting or trendlog you find there sections also for them.




Sometimes the BACnet parameters belong to more than one Online Values. In that case you'll find the parameters at the end of the Adjust window of the Fbox.



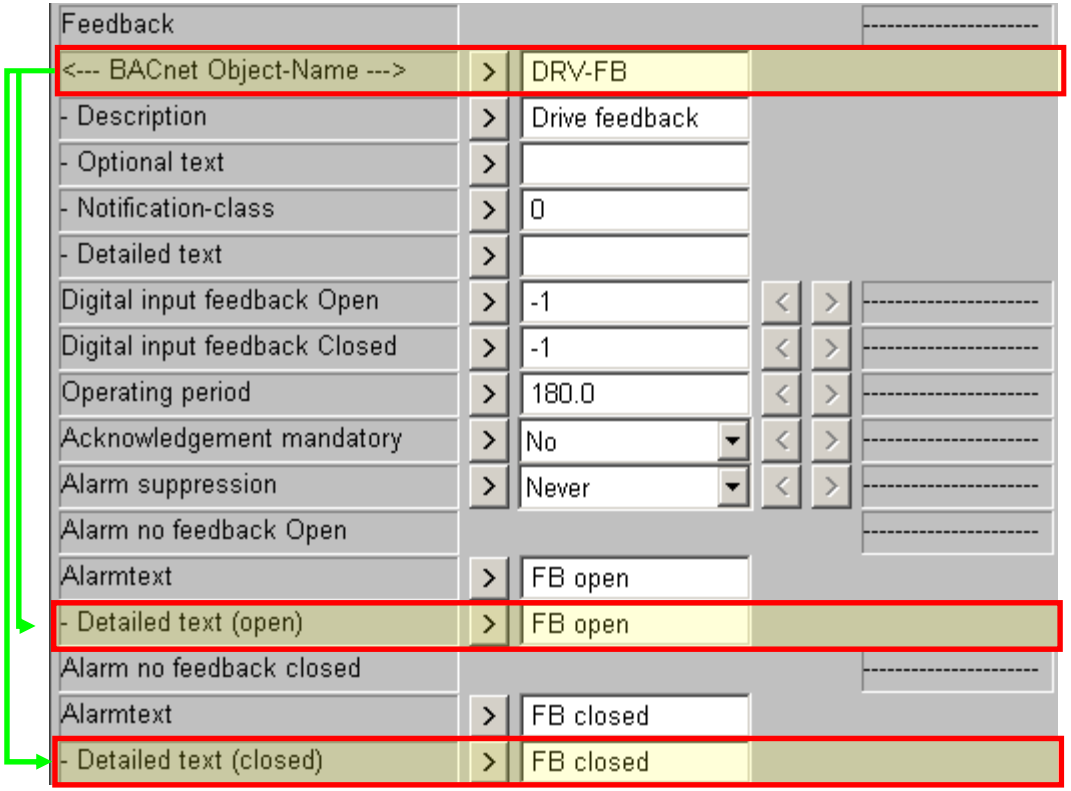
# DDC Suite 2.5
# BACnet - General

In some cases there are more than one object generated from a definition. Then you'll just find the parameter „- Detailed text“ after the corresponding Online Value.

The resulting BACnet Object Name is then combined from the BACnet definition + the detailed text.

Some parameters like Unit, COV Increment and Scaling are valid for every BACnet objects generated by this Fbox. (If many BACnet objects are generated.)

They are at the end of the adjust window.





# PCS for BACnet

SAIA BURGESS CONTROLS

# DDC Suite 2.5
# Plant coding system (PCS) for BACnet

We can use the same mechanism as we used in case of the alarming for the generation of the BACnet objects.

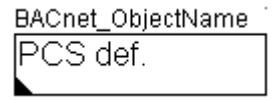
Like for the alarming we have to place a „KEY def.“ Fbox.

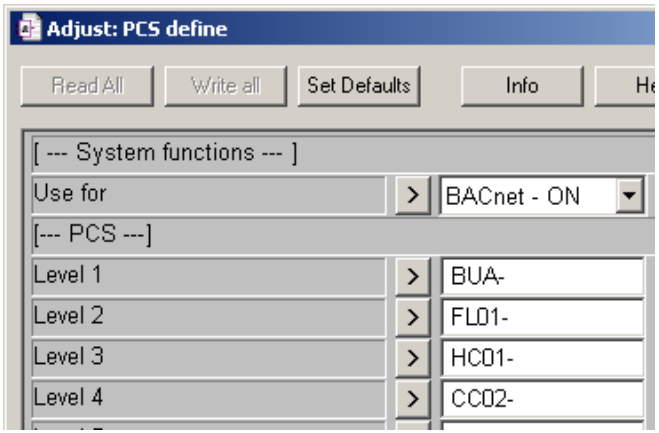
You can place the „KEY def.“ fbox for BACnet two times.

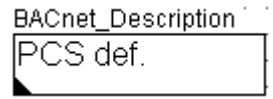
1.„BACnet – ON“ (=ObjectName). The BACnet object name is continuous text made of abbreviations of the names of the equipment in a hiearchial order. It can content numbers and letters and some special charachters but not space.....

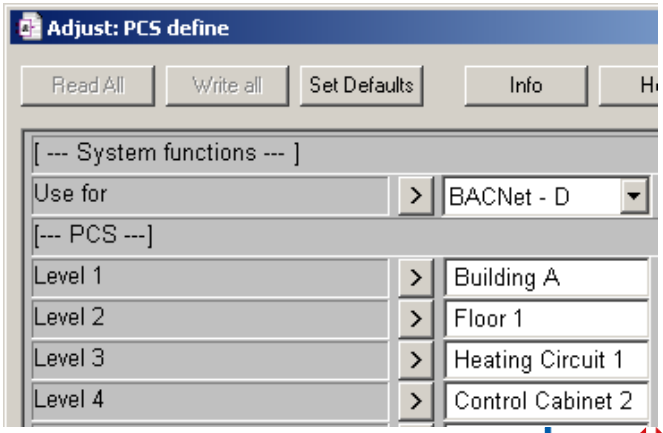
2. „BACnet – D“ (=Description) The Description can be any text made of any kind charachter supported by the choosen codepage.

3. Please avoid using the following signs „**>**“ , „**<**“ in the key definition. These signs could be supported in later PG5 versions .



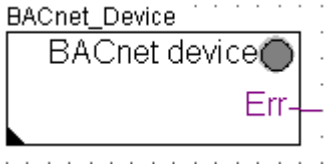



# DDC Suite 2.5
# Plant coding system (PCS) for BACnet

And of course we need the BACnet Device Fbox. We find it in the new family „BACnet“

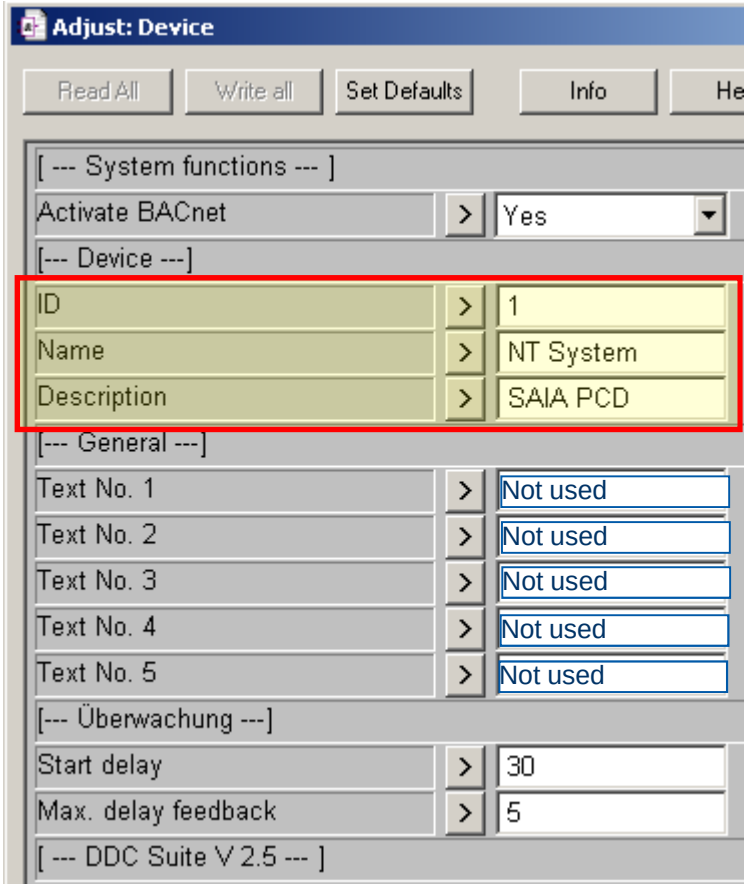



The function is almost identical to the previous version:

1.you can enter the Name of the device without restrictions.

2.The Parameter „Text No. 1“ to „Text No. 5.“ are not yet used and reserved for future things to come.

3.The FBox is monitoring the BACnet Stack, means a BI is toggled on PCDInRef and PresentValue must follow within max. delay time. If time has elapsed and PresentValue is not identically to PCDInRef Value the FBox sets output "Err" to high and all FBoxes parameterized for BACnet will copy automatically their own PCDInRef to PresentValue. Features like OutOfService are disabled.



# DDC Suite 2.5
# Plant coding system (PCS) for BACnet

Lets create the BACnet Objects for the Heat Circuit Inflow pump, but only for the Pump Fbox (not the alarming one).

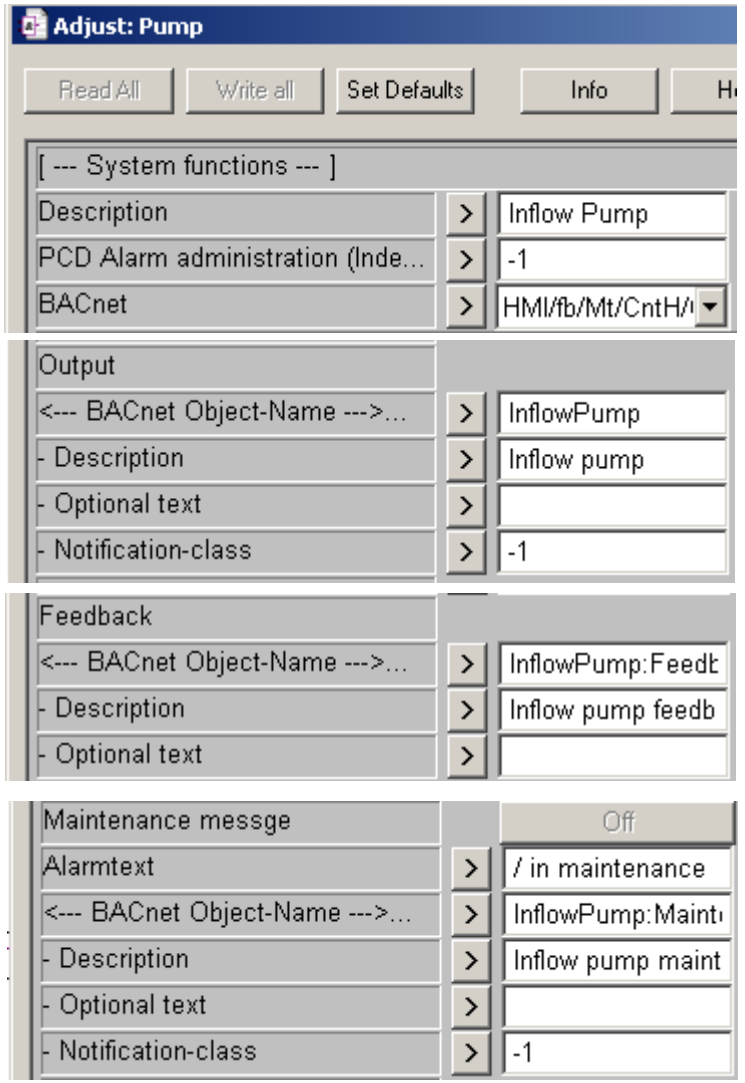
We open the adjust window of the Inflow pump Fbox:

1. Parametrize the Object „Output“

2. Object „Feedback“

3. Object „Maintenance“

Please enter for all – Notification class fileds: -1



# DDC Suite 2.5
# Plant coding system (PCS) for BACnet

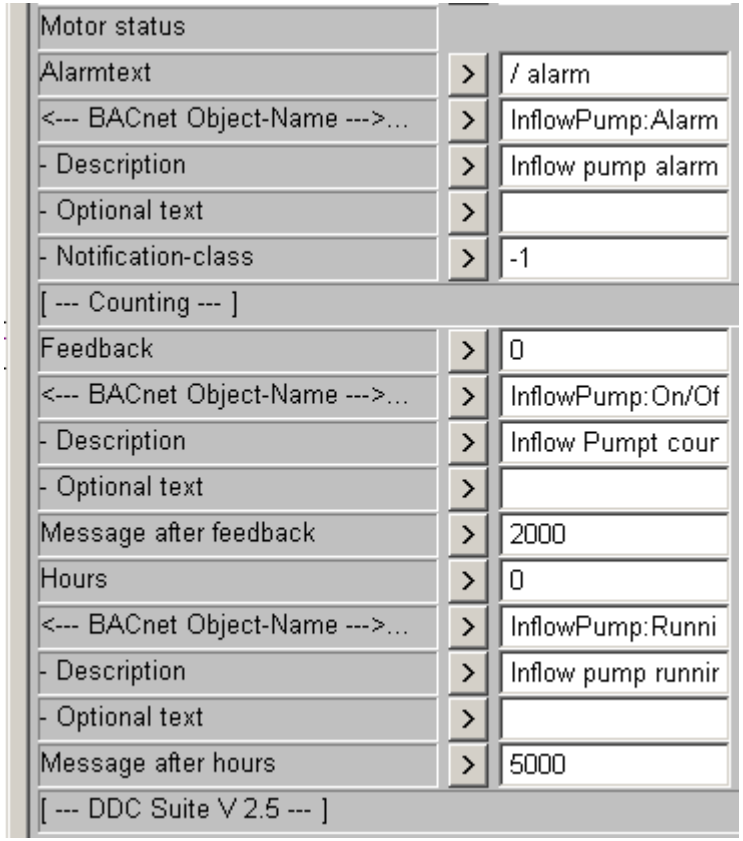
Lets create the BACnet Objects for the Heat Circuit Inflow pump, but only for the Pump Fbox (not the alarming one).


4. Object „Motor status“

5. Object Switching On/Off „Counting Feedback“

6. Object Running „Hours“

Please enter for all – Notification class fileds: -1



# DDC Suite 2.5
# Plant coding system (PCS) for BACnet

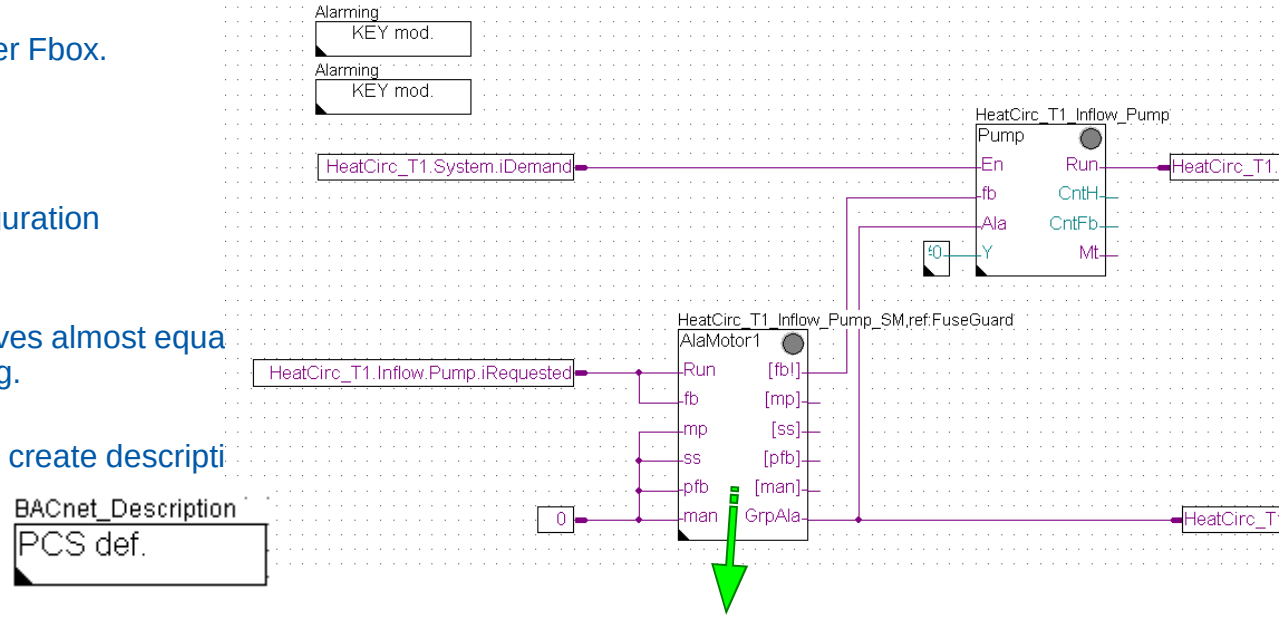
Please deactivate BACnet in all other Fbox.

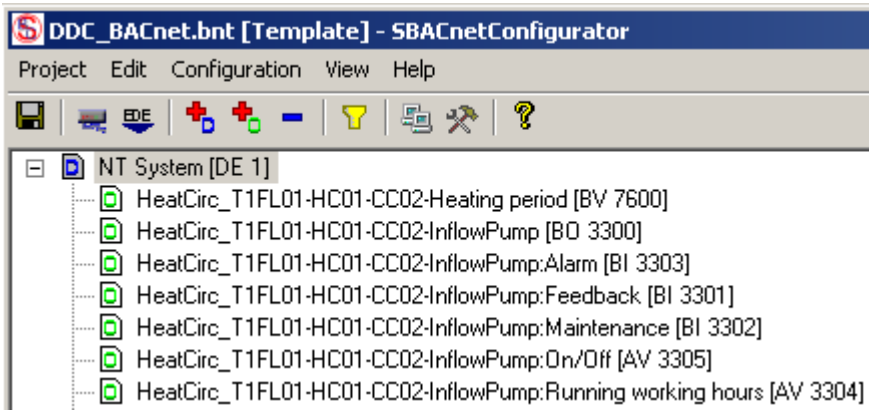
„Build all“

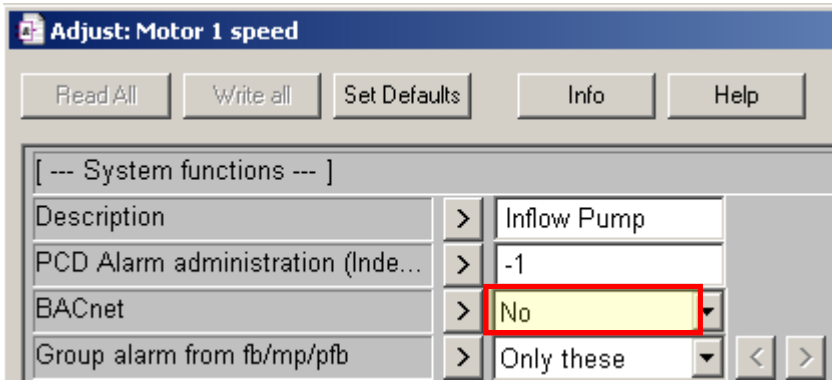
Check the generated BACnet configuration „DDC_BACnet.bnt“.

You see the Name generation behaves almost equa the keyname generation for alarming.

The main difference is here, that we create descripti with useing the „PCS def.“ Fbox.

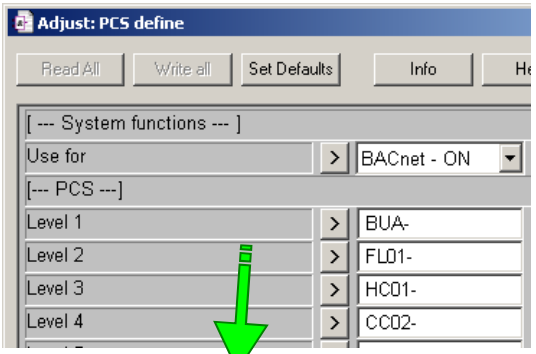


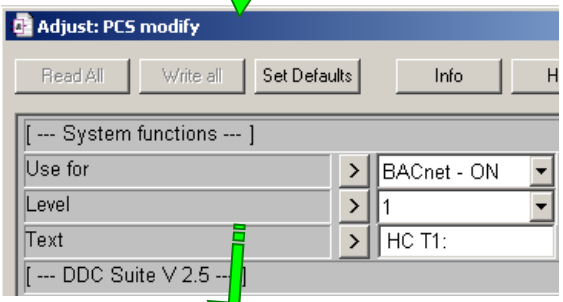



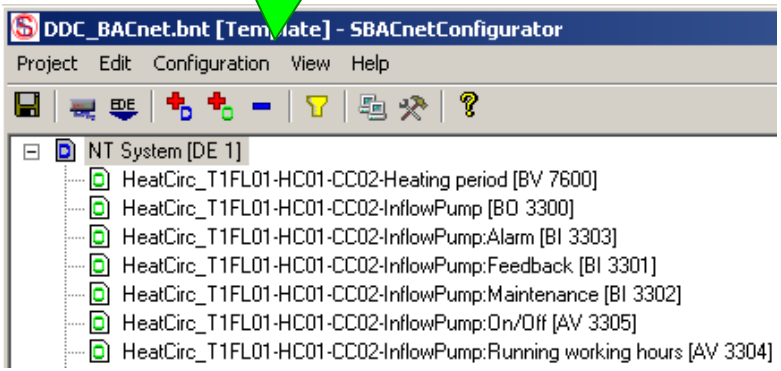



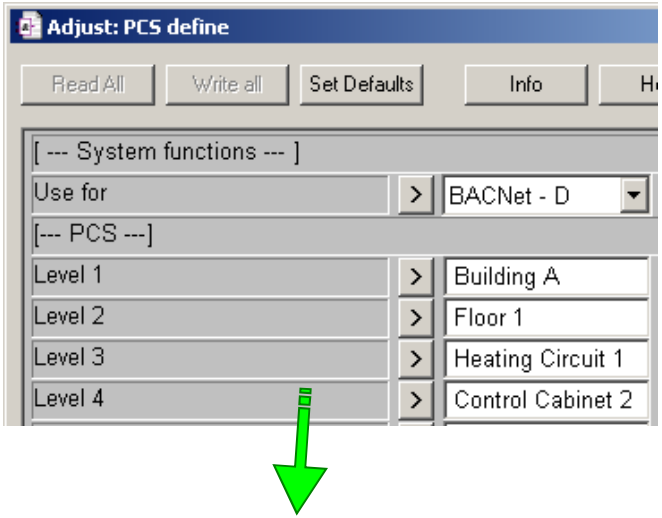
# DDC Suite 2.5
# Plant coding system (PCS) for BACnet

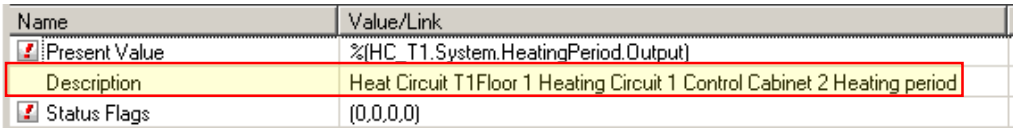
We see the Plant Code System for the Object names and the descriptions



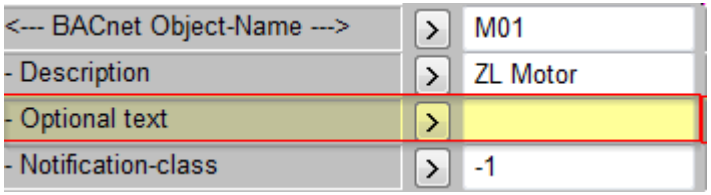



# DDC Suite 2.5
# Plant coding system (PCS) for BACnet

In some Fboxes you can find optional texts.

The parameter "Optional text" is a placeholder and not used yet. It can be used in the xxx.src files for user specific functions.

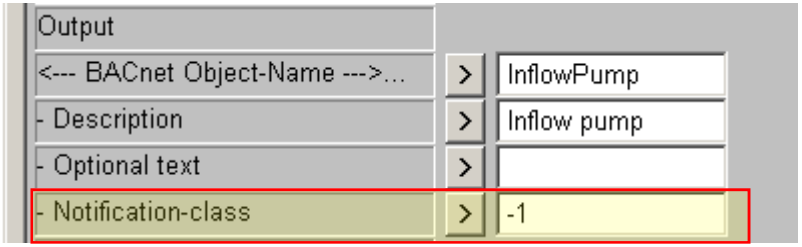



# BACnet – Intrinsic Reporting

SAIA BURGESS CONTROLS

# DDC Suite 2.5
# Intrinsic reporting

In the Pump Fboxes we setup the Notification Class to „-1“.



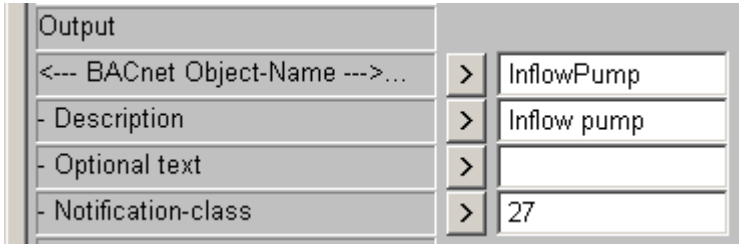

With this setting one BACnet Object is generated, but without „Intrinsic reporting“

| Name | Value/Link | Flags |
|---|---|---|
| Present Value | %(HeatCirc_T1.Inflow.Pump.Control.Required) | W |
| Description | Heat Circuit T1 Floor 1Heating Circuit 1Control Cabinet 2... | |
| Device Type | --- | |
| Status Flags | (0,0,0,0) | |
| Reliability | no-fault-detected | |
| Out Of Service | FALSE | W |
| Polarity | normal | |
| Inactive Text | Aus | WP |
| Active Text | Ein | WP |
| Minimum Off Time | 0 | |
| Minimum On Time | 0 | |
| Priority Array 01 | --- | |
| Priority Array 02 | --- | |
| Priority Array 03 | --- | |
| Priority Array 04 | --- | |
| Priority Array 05 | %(A.BACnet.HeatCirc_T1_Inflow_Pump.Prio01Value),%(... | |
| Priority Array 06 | --- | |
| Priority Array 07 | --- | |
| Priority Array 08 | %(A.BACnet.HeatCirc_T1_Inflow_Pump.Prio08Value),%(... | |
| Priority Array 09 | --- | |
| Priority Array 10 | --- | |
| Priority Array 11 | --- | |
| Priority Array 12 | --- | |
| Priority Array 13 | --- | |
| Priority Array 14 | --- | |
| Priority Array 15 | --- | |
| Priority Array 16 | %(HeatCirc_T1.Inflow.Pump.Control.Demand),%(A.BACn... | |
| Relinquish Default | inactive | |
| Profile Name | --- | |
| Unsolicited COV Enabled | --- | |

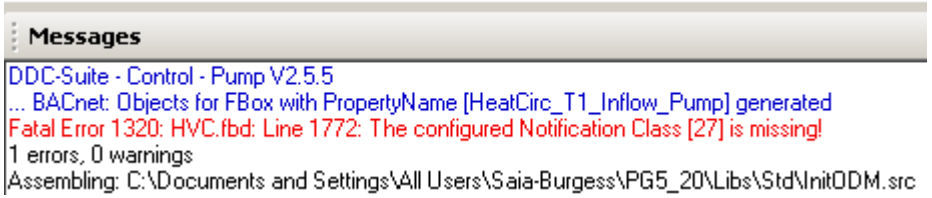
# DDC Suite 2.5
# Intrinsic reporting

Now let us define that the Pump output should use the  Notification Class 27 :

Build the project → The build will fail:




The Fbox tries to create things for a non existing Notification Class and it fails. So the Fbox checks for plausibility.

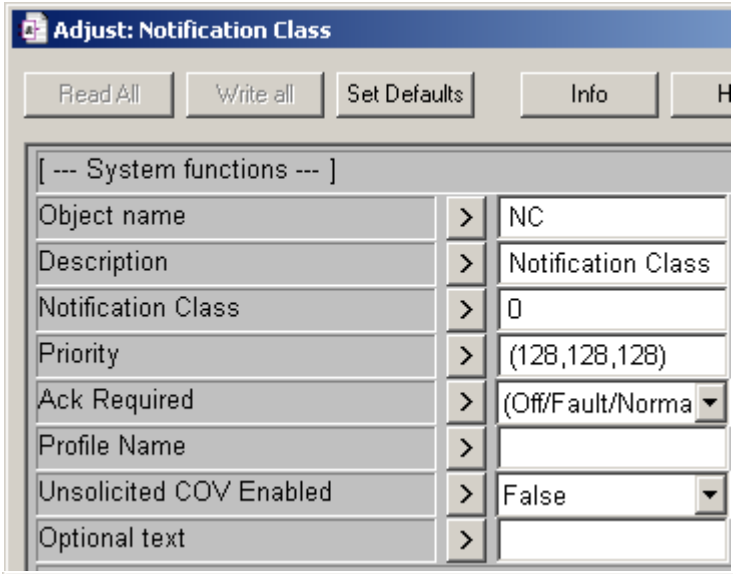


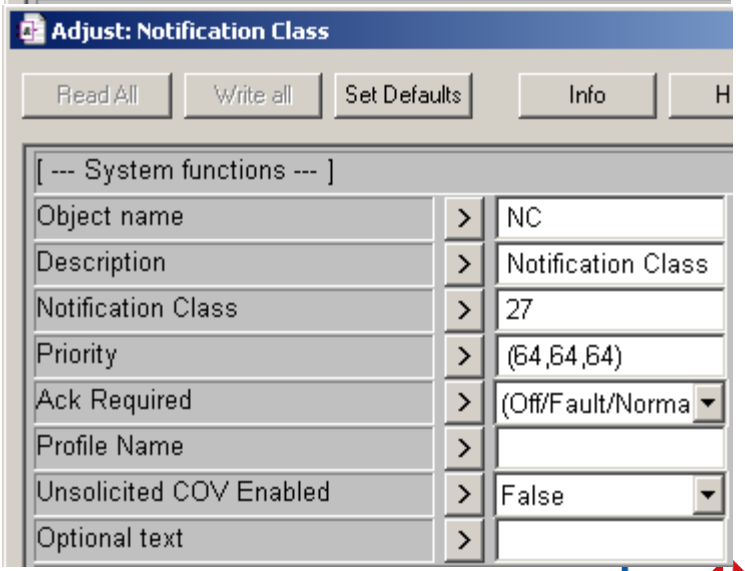
# DDC Suite 2.5
# Intrinsic reporting

Time to place a „Notification Class“FBox


We can adjust all the settings for this Notification Class. We just do the settings for Systemfunctions.


Lets create two NC 0 and 27 with some different settings.



# DDC Suite 2.5
# Intrinsic reporting

| Name | Value/Link | Flags |
|---|---|---|
| Present Value | %(HeatCirc_T1.Inflow.Pump.Control.Required) | W |
| Description | Heat Circuit T1 Floor 1Heating Circuit 1Control Cabinet 2... | |
| Device Type | --- | |
| Status Flags | (0,0,0,0) | |
| Reliability | no-fault-detected | |
| Out Of Service | FALSE | W |
| Polarity | normal | |
| Inactive Text | Aus | WP |
| Active Text | Ein | WP |
| Minimum Off Time | 0 | |
| Minimum On Time | 0 | |
| Priority Array 01 | --- | |
| Priority Array 02 | --- | |
| Priority Array 03 | --- | |
| Priority Array 04 | --- | |
| Priority Array 05 | %(A.BACnet.HeatCirc_T1_Inflow_Pump.Prio01Value),%(... | |
| Priority Array 06 | --- | |
| Priority Array 07 | --- | |
| Priority Array 08 | %(A.BACnet.HeatCirc_T1_Inflow_Pump.Prio08Value),%(... | |
| Priority Array 09 | --- | |
| Priority Array 10 | --- | |
| Priority Array 11 | --- | |
| Priority Array 12 | --- | |
| Priority Array 13 | --- | |
| Priority Array 14 | --- | |
| Priority Array 15 | --- | |
| Priority Array 16 | %(HeatCirc_T1.Inflow.Pump.Control.Demand),%(A.BACn... | |
| Relinquish Default | inactive | |
| Profile Name | --- | |
| Unsolicited COV Enabled | --- | |

| Name | Value/Link | Flags |
|---|---|---|
| Present Value | %(HeatCirc_T1.Inflow.Pump.Control.Required) | W |
| Description | Heat Circuit T1 Floor 1Heating Circuit 1Control Cabinet 2... | |
| Device Type | --- | |
| Status Flags | (0,0,0,0) | |
| Reliability | no-fault-detected | |
| Out Of Service | FALSE | W |
| Polarity | normal | |
| Inactive Text | Aus | WP |
| Active Text | Ein | WP |
| Minimum Off Time | 0 | |
| Minimum On Time | 0 | |
| Priority Array 01 | --- | |
| Priority Array 02 | --- | |
| Priority Array 03 | --- | |
| Priority Array 04 | --- | |
| Priority Array 05 | %(A.BACnet.HeatCirc_T1_Inflow_Pump.Prio01Value),%(... | |
| Priority Array 06 | --- | |
| Priority Array 07 | --- | |
| Priority Array 08 | %(A.BACnet.HeatCirc_T1_Inflow_Pump.Prio08Value),%(... | |
| Priority Array 09 | --- | |
| Priority Array 10 | --- | |
| Priority Array 11 | --- | |
| Priority Array 12 | --- | |
| Priority Array 13 | --- | |
| Priority Array 14 | --- | |
| Priority Array 15 | --- | |
| Priority Array 16 | %(HeatCirc_T1.Inflow.Pump.Control.Demand),%(A.BACn... | |
| Relinquish Default | inactive | |
| Time Delay | 10 | WP |
| Notification Class | 27 | WP |
| Feedback Value | %(HeatCirc_T1.Inflow.Pump.Control.Feedback) | |
| Event Enable | (0,1,1) | WP |
| Notify Type | alarm | WP |
| Profile Name | | R |
| Unsolicited COV Enabled | FALSE | |
| Event Message Text | ("Off Normal","Fault","Normal") | |

Now the build is working and the object contains the properties for instrinsic Alarming.

Important: Notification-class „-1“ deactivates the BACnet Alarming (Intrinsic Reporting)
Notification-class X you can choose which Notification class you want to use.

# DDC Suite 2.5
# Intrinsic reporting

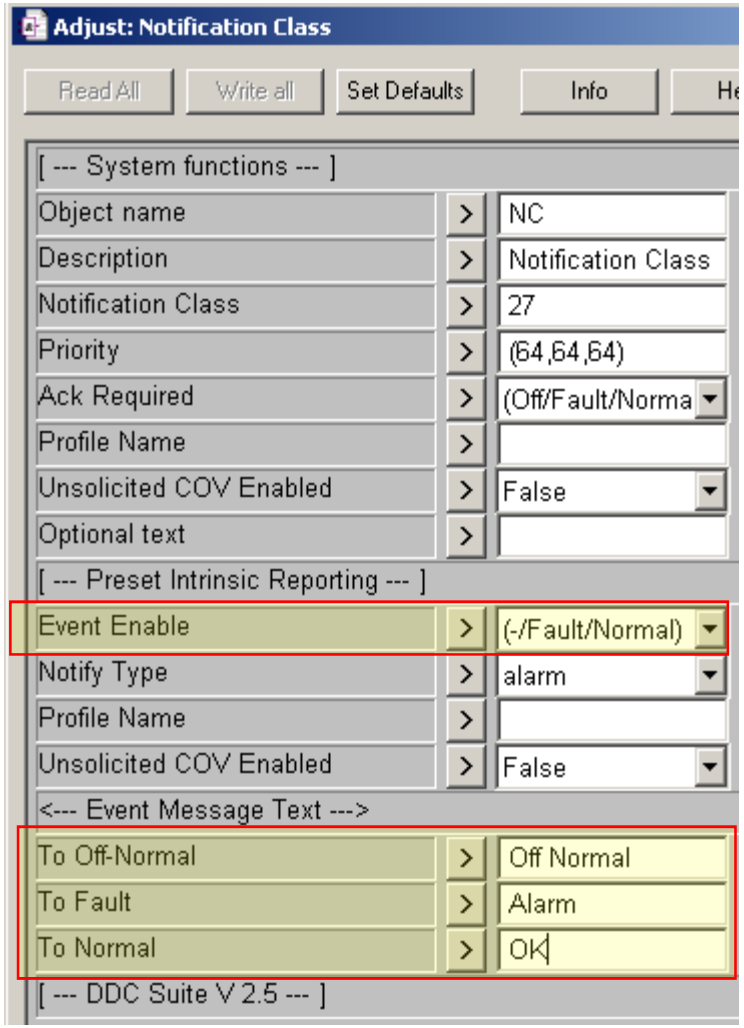
Let us connect the Alarm of the Inflow Pump likewise to NC27. We have now already two Objects connected to NC27.

| Motor status | | |
|---|---|---|
| Alarmtext | > | / alarm |
| <--- BACnet Object-Name --->... | > | InflowPump:Alarm |
| - Description | > | Inflow pump alarm |
| - Optional text | > | |
| - Notification-class | > | 27 |

Now it makes sense to define some more parameters which are needed for Intrinsic reporting.

We can choose presets inside of the NC Fbox.

Or we can write our own text to the appropriate fields.



# DDC Suite 2.5
# Intrinsic reporting

After a build we can check if these settings were really used by the Alarm Object.

| | | |
|---|---|---|
| Priority Array 04 | --- | |
| Priority Array 05 | %(A.BACnet.HeatCirc_T1_Inflow_Pump.Prio01Value),%(... | |
| Priority Array 06 | --- | |
| Priority Array 07 | --- | |
| Priority Array 08 | %(A.BACnet.HeatCirc_T1_Inflow_Pump.Prio08Value),%(... | |
| Priority Array 09 | --- | |
| Priority Array 10 | --- | |
| Priority Array 11 | --- | |
| Priority Array 12 | --- | |
| Priority Array 13 | --- | |
| Priority Array 14 | --- | |
| Priority Array 15 | --- | |
| Priority Array 16 | %(HeatCirc_T1.Inflow.Pump.Control.Demand),%(A.BACn... | |
| Relinquish Default | inactive | |
| Time Delay | 10 | WP |
| Notification Class | 27 | WP |
| Feedback Value | %(HeatCirc_T1.Inflow.Pump.Control.Feedback) | |
| Event Enable | (0,1,1) | WP |
| Notify Type | alarm | WP |
| Profile Name | | R |
| Unsolicited COV Enabled | FALSE | |
| Event Message Text | ("Off Normal","Alarm","OK") | |

# DDC Suite 2.5
# Intrinsic reporting

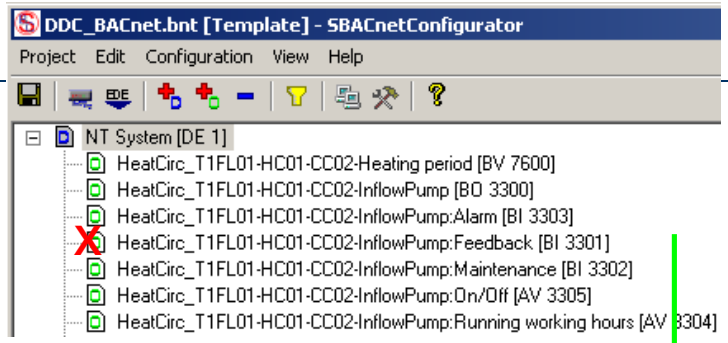
Now someone can find out that the BACnet object for the Feedback signal is missing.

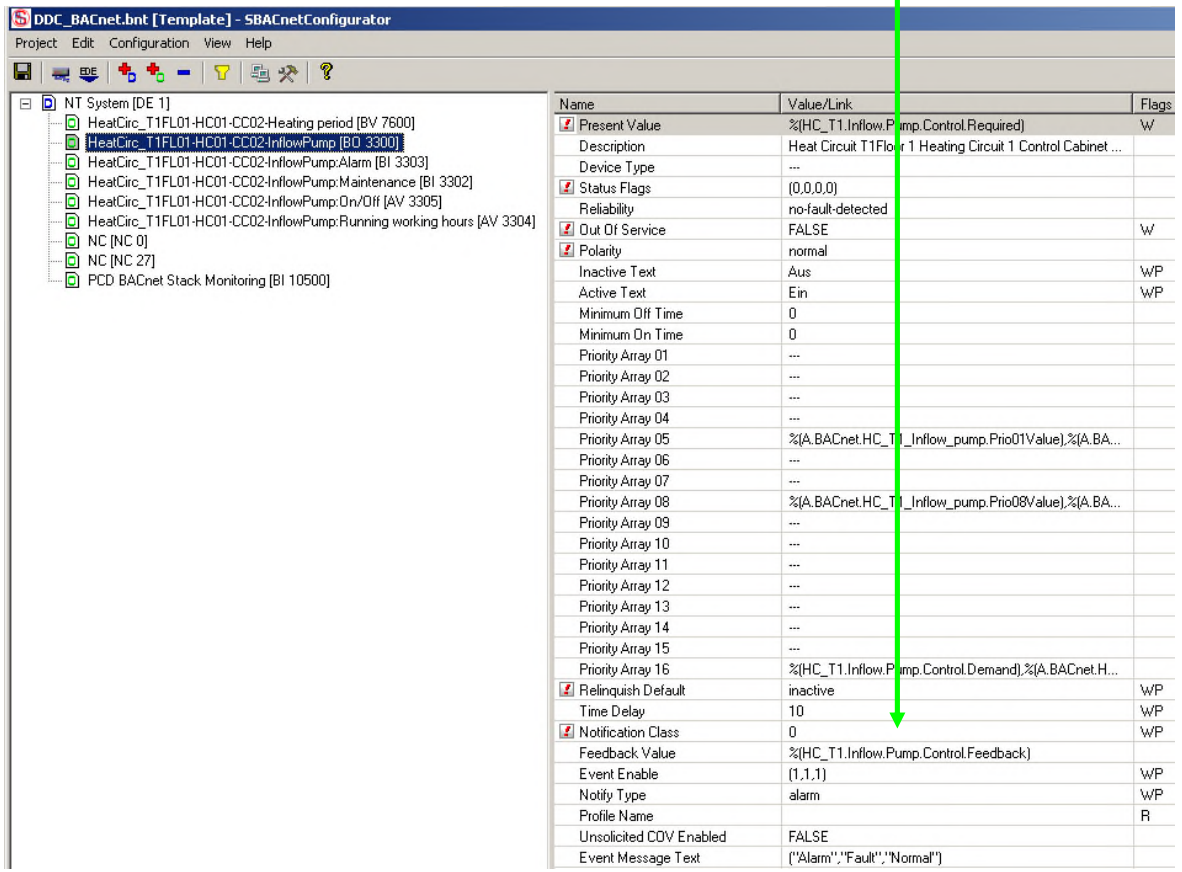
The reason for this is that the Feedback signal is connected to the Binary Output object of the pump as Feedback signal.

The feedback signal is needed for intrinsic reporting for the genereration of the alarm.

This is the case of the Multistate Output BACnet object too which is used for the Motor 2 / 3 stages.

Important that this case the Notification Class configured in the BO or MO takes over the function of the feedback BI object.

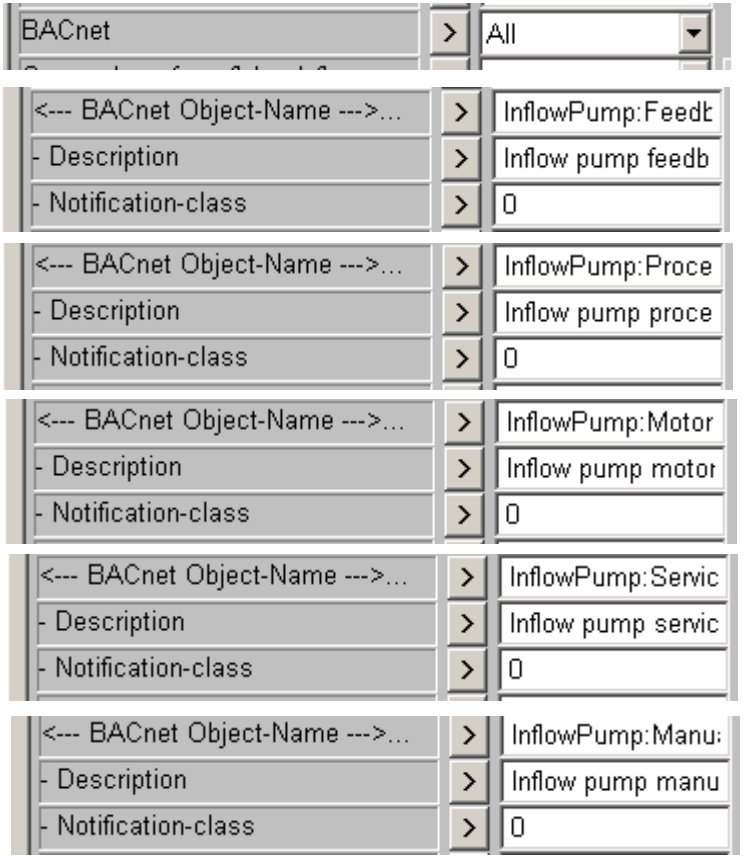


# DDC Suite 2.5
# Intrinsic reporting

Lets activate BACnet in the Alarming Motor and use NC0:

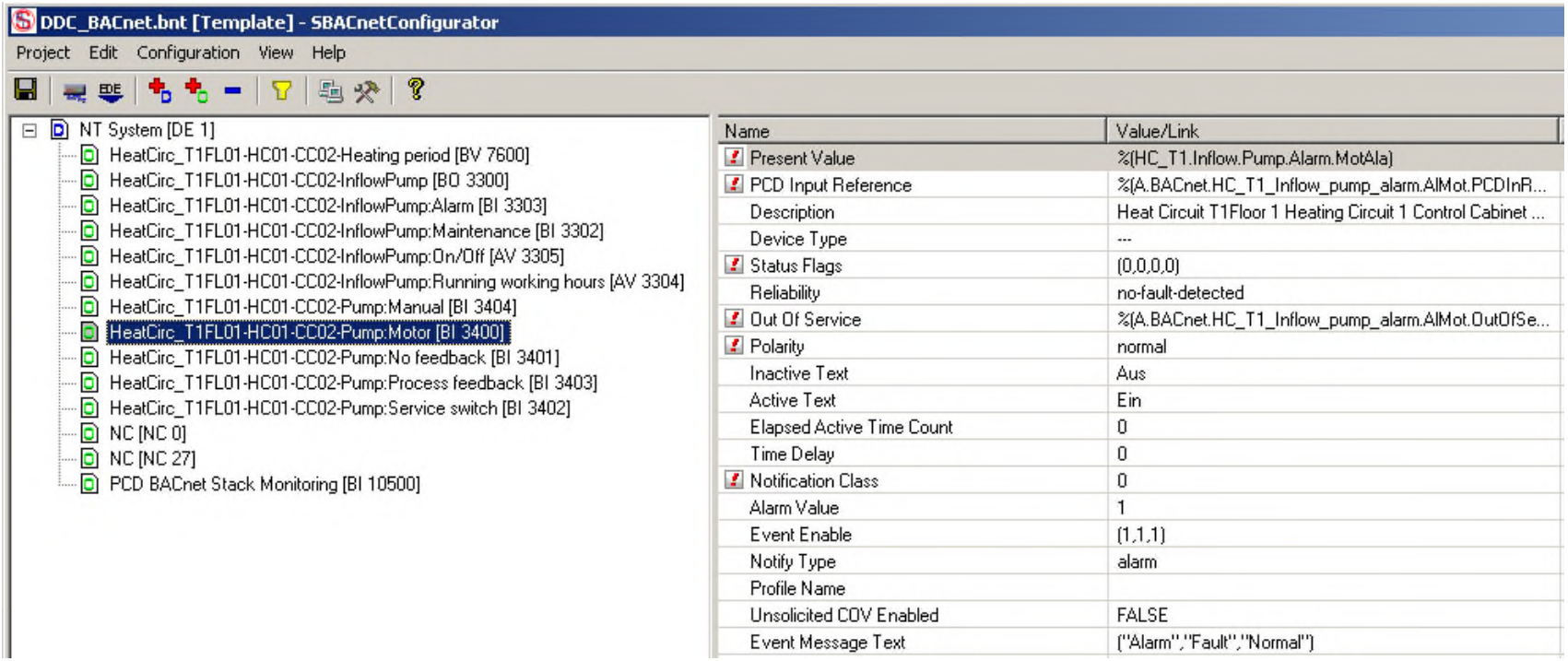
1. Feedback
2. Process Feedback
3. Motor Protection
4. Service Switch
5. Manual Intervention



# DDC Suite 2.5
# Intrinsic reporting

After another build we should have 10 more objects. Some are referenced to NC 27 and the 10 Motor Alarming Objects to the NC 0

All Objects that belong to the same NC use the same presets for Intrinsic reporting.




# Overriding properties

SAIA BURGESS CONTROLS

# DDC Suite 2.5
# Overwriting Properties

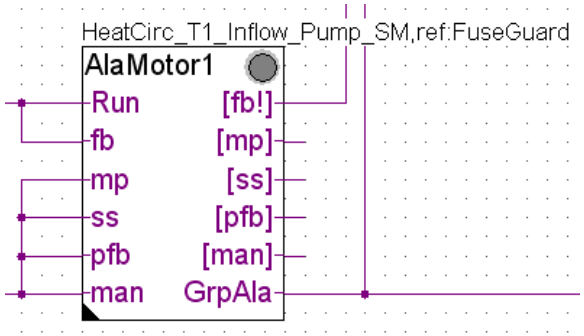
Now we want to change some properties of the BACnet Objects for Feedback alarm of the inflow pump.

We do the property overwriting only for this Fbox!

First we have to indentify (get the name) the object we want to change.

The text definition for this property is stored in this object.

And we want to overwrite the text definition.





In the Adjust Window we see a field „…“ after the „BACnet Object-Name“ parameter. If we click on it it shows us the object identifier of the text definition.


The identifier is „AlFB“ (Alarm FeedBack).

Every BACnet Object created by DDC Suite 2.5 Fboxes can be identified in this way.

# DDC Suite 2.5
# Overwriting Properties

Now we need the "Properties" FBox from family "BACnet".

Under the name/reference must be given the FBox (= Name) and which object (= REF) to be manipulated.

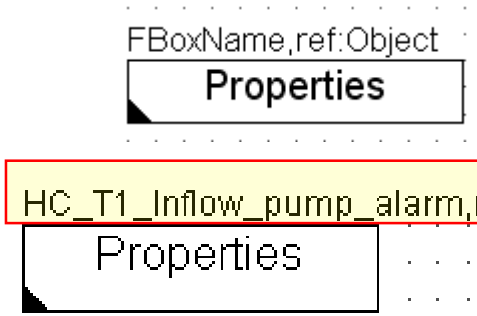
We set the previously identified information „AlFB“as reference here.

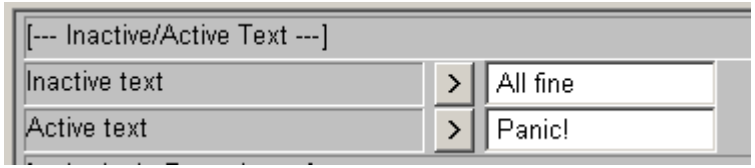
Inside of the adjust window of the Fbox we modify the Active and Inactive text properties.

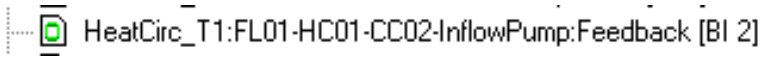
After the “Build all" we see that the above specified texts were used to update only the referenced object.

All other objects still have the default value “Aus" and “Ein“.

Take care the Properties Fbox should be placed right before the referenced Fbox, check Fbox priorities.



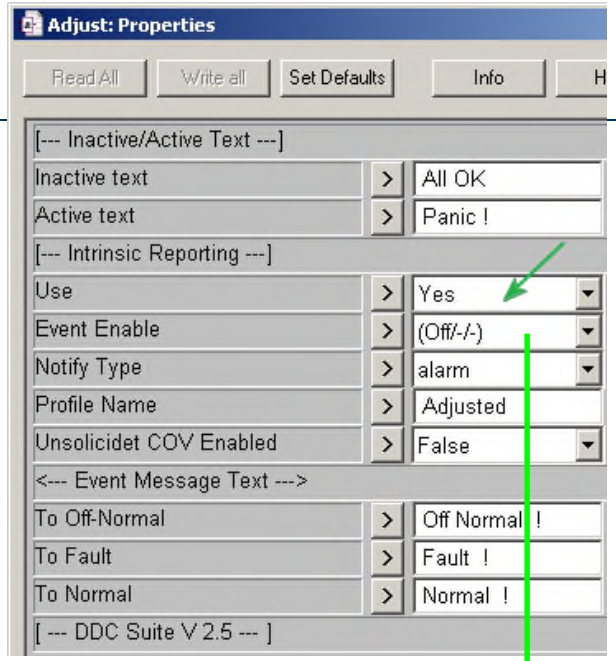

| Name | Value/Link | Flags |
|---|---|---|
| Present Value | %(HeatCirc_T1.Inflow.Pump.Alarming.FbAla) | W |
| PCD Input Reference | %(A.BACnet.HeatCirc_T1_Inflow_Pump_SM.AlFb.PCDI... | W |
| Description | Heat Circuit T1 Floor 1Heating Circuit 1Control Cabinet 2... | |
| Device Type | --- | |
| Status Flags | (0,0,0,0) | |
| Reliability | no-fault-detected | |
| Out Of Service | %(A.BACnet.HeatCirc_T1_Inflow_Pump_SM.AlFb.OutOf... | W |
| Polarity | normal | |
| Inactive Text | All Fine | WP |
| Active Text | Panic! | WP |

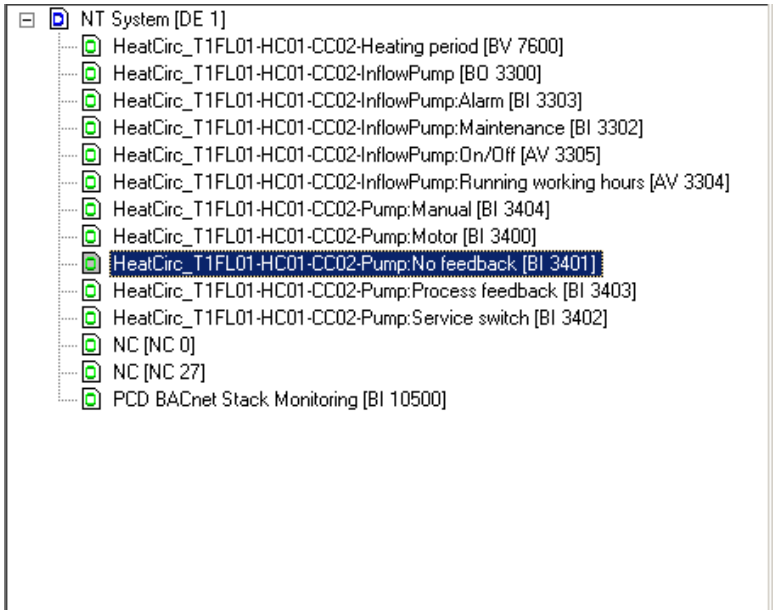
... BACnet: Objects for FBox with PropertyName [HeatCirc_T1_Inflow_Pump] generated
DDC-Suite - BACnet - Properties V2.5.0
Error 1165: HVC.fbd: Line 1793: This Fbox is in wrong compile order, must be placed before FBox [HeatCirc_T1_Inflow_Pump_SM], in Block: Systems, Page: 5, FBox: Properties
1 errors, 0 warnings
Assembling: C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Libs\Std\InitDDM.src

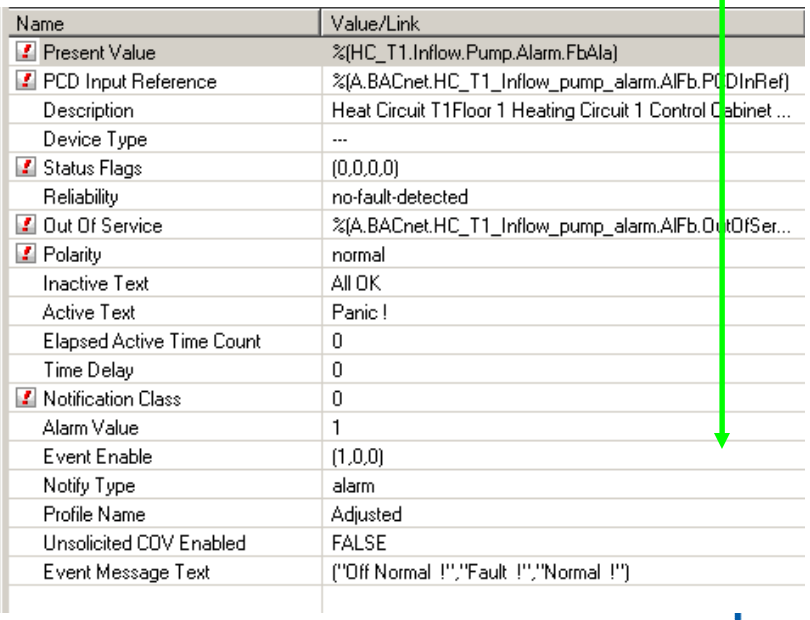
# DDC Suite 2.5
# Overwriting Properties

This overwriting function can also work to modify the part of the Notification Class of the created BACnet object.

Again, the modification applies only to the referenced object.



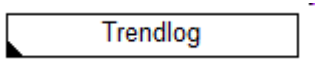




# BACnet – Trendlog

SAIA BURGESS CONTROLS

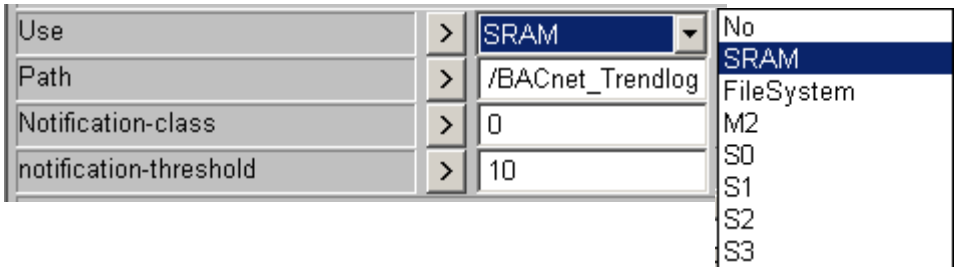
# DDC Suite 2.5
# Trendlog

It is also possible to automatically create BACnet Trendlog Objects.




To activate this we have to place the Fbox „Trendlog“ from the BACnet family.

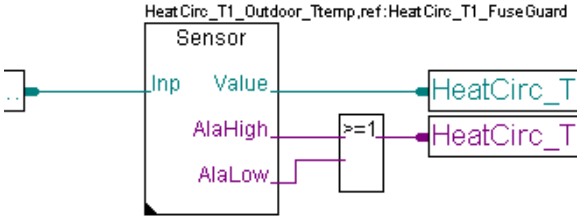
With the option „Use“ – „No“ There are no Trendlogs generated for the whole program, eventhough „Trendlog“ is activated in the Fboxes. So you can deactivate Trendlogs from a central place.




You can choose where to store the trendlogs in the „Path“ option:

# DDC Suite 2.5
# Trendlog

Inside of the Fboxes that can generate trendlogs you can define all other options:




| | | |
|---|---|---|
| <--- BACnet Object Name --->... | > | OutdoorTemperatu |
| - Description | > | Outdoor temperatu |
| - Optional text | > | |
| <--- BACnet Trendlog ---> | > | Ringbuffer |
| - Object-Name | > | OutdoorTemperatu |
| - Description | > | Outdoor temperatu |
| - Buffer size | > | 1000 |
| - Log Interval | > | 0.00 |

DDC_BACnet.bnt [CPU_Y] - BACnet Configurator

Project Edit Configuration View Help

- 1_Device [DE 1]
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump [BO 1]
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump:Alarm [BI 7]
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump:Feedback [BI 2]
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump:Maintenance [BI 6]
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump:ManualInterv [BI 5]
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump:MotorProtection [BI 1]
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump:On/Off_Counter [AV 2]
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump:ProcessFeedback [BI 4]
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump:RunningHour_Counter [A
  - HeatCirc_T1:FL01-HC01-CC02-InflowPump:ServiceSwitch [BI 3]
  - HeatCirc_T1:FL01-HC01-CC02-OutdoorTemperature [AI 1]
  - HeatCirc_T1:FL01-HC01-CC02-OutdoorTemperature:Trend [TR 1]
  - NC [NC 0]
  - NC [NC 27]

| Name | Value/Link | Flags |
|---|---|---|
| Description | Heat Circuit T1 Floor 1Heating Circuit 1Control Cabinet 2Outdoor temperature trend | |
| Log Enable | TRUE | W |
| Start Time | ((?,?-?-?),(?:?:?.?)) | W |
| Stop Time | ((?,?-?-?),(?:?:?.?)) | W |
| Log Device Object Property | ((analog-input,1),present-value) | R |
| Log Interval | 0 | W |
| COV Resubscription Interval | 3600 | |
| Client COV Increment | 1.0 | |
| Stop When Full | FALSE | |
| Buffer Size | 1000 | WP |
| Log Buffer | SRAM | |
| Record Count | 0 | W |
| Total Record Count | 0 | |
| Notification Threshold | 10 | WP |
| Records Since Notification | 0 | |
| Last Notify Record | 0 | |
| Notification Class | 0 | WP |
| Event Enable | (1,1,1) | WP |
| Notify Type | alarm | WP |
| Status Flags | --- | |
| Logging Type | --- | |
| Profile Name | | R |
| Unsolicited COV Enabled | FALSE | |
| Event Message Text | ("Off Normal","Fault","Normal") | |


# BACnet – Loop

SAIA BURGESS CONTROLS

# DDC Suite 2.5
# Loop

The loop is a complex object that is connected to 3 other objects via references.

The objects are the Setpoint (reference) value, the process (measured) value (Controlled variable) and the controller output signal (Manipulated value) object.

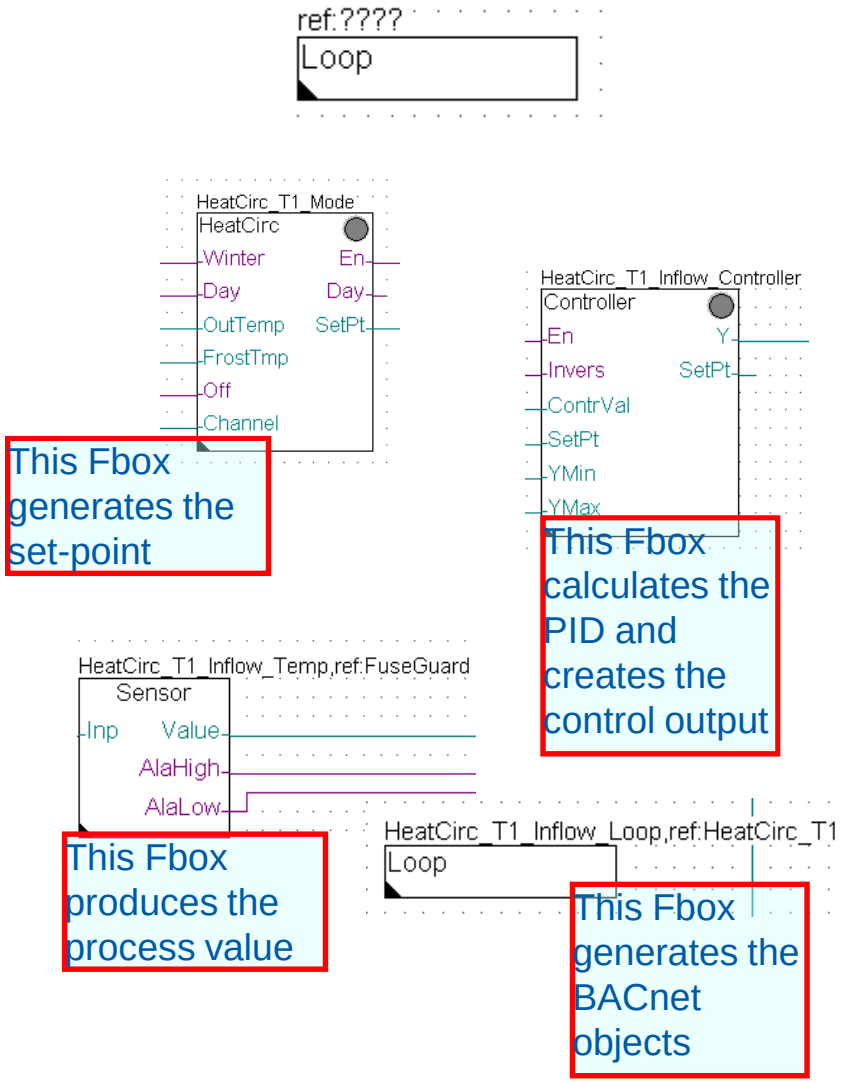
A Loop FBox has been created to be flexible. This FBox creates object for the BACnet loop object, the Fboxes in the “Controller” family creates the loop function itself independently!

We can say the Loop Fbox is an extension.

Our task is that we have the build up the link between the Loop Fbox and the other Fboxes which are necessary to be referenced. This is programmed a clever way that more than one Fbox can be referenced.

This is new thing, everyone must be careful when he is using it!

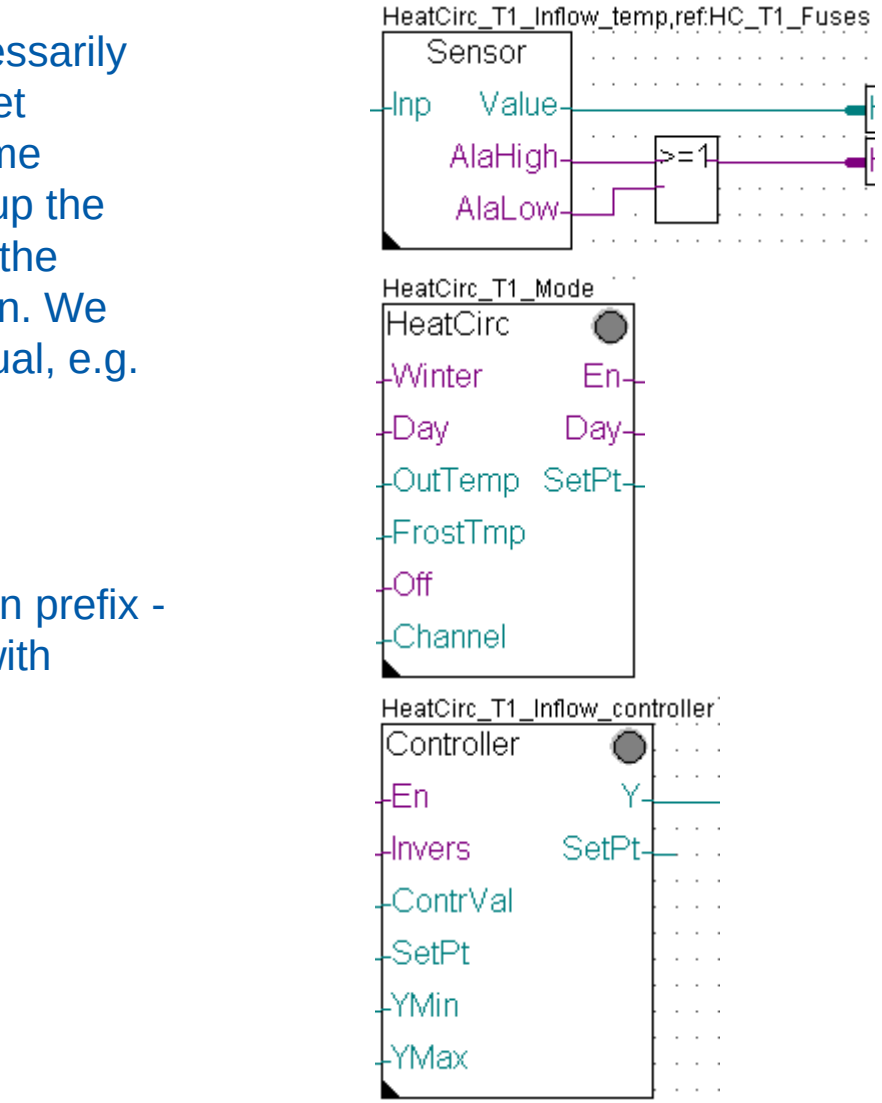
The elements of the control loop in the Heat circuit FUPLA template can be seen on the picture.



# DDC Suite 2.5
# Loop

Formerly, the name of the FBox was necessarily used to generate the names of the BACnet objects. With DDC Suite 2.5 the Fbox name parameter is available again. So to build up the connection to the loop object we can use the normal Fbox name / Ref mechanism again. We give the name of the FBox as we do it usual, e.g.

It should be noted that all share a common prefix - here “HC_T1" have. But this is the case with structured programming anyway.

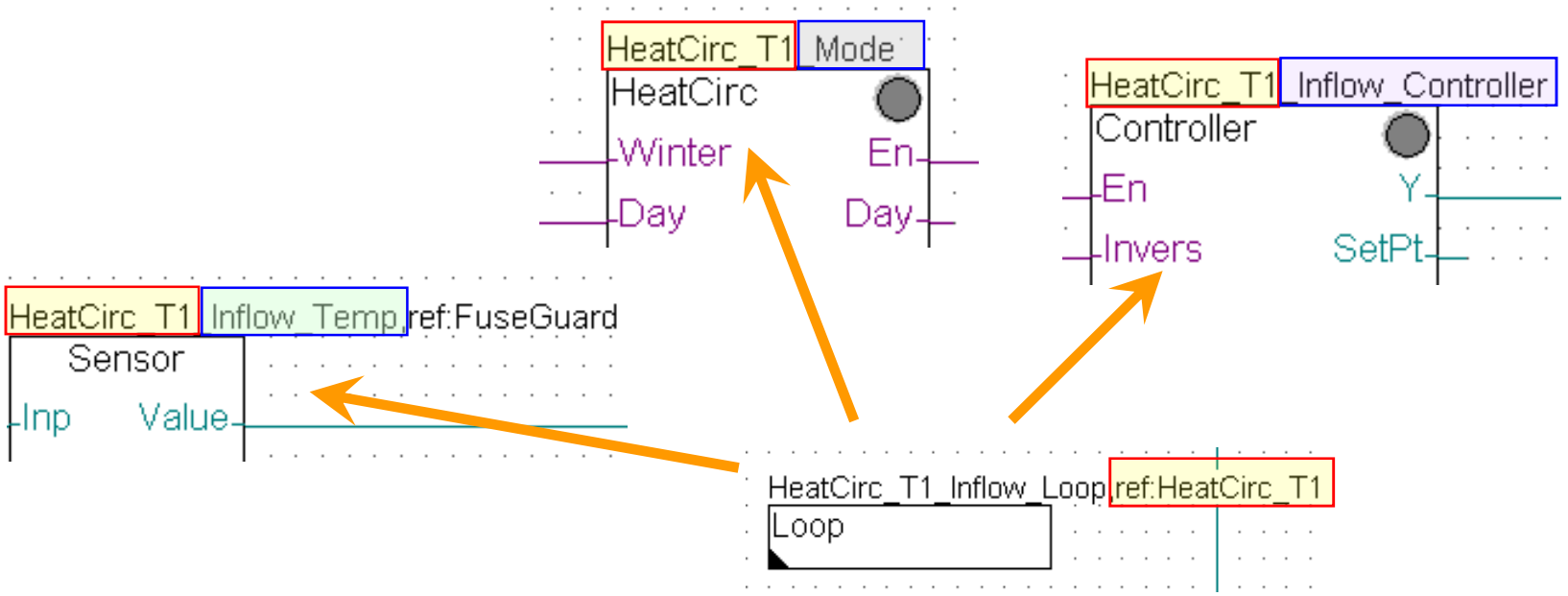


# DDC Suite 2.5
# Loop

**How can we build up the reference system between four Fboxes?**
As we able to give only one reference on the top of the Fbox.

The solution is that we give as reference of the greatest correspondence of the used Fbox names. HeatCirc_T1. The remaining parts of the references should be given in the Loop Fbox adjust window.

The name of the Loop Fbox is just a description, it does not have any special function other than giving an overview.

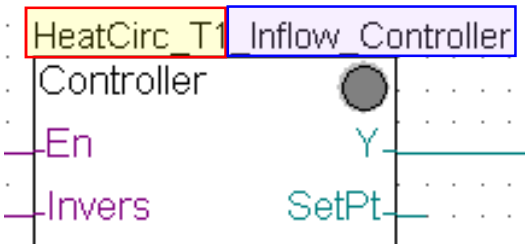


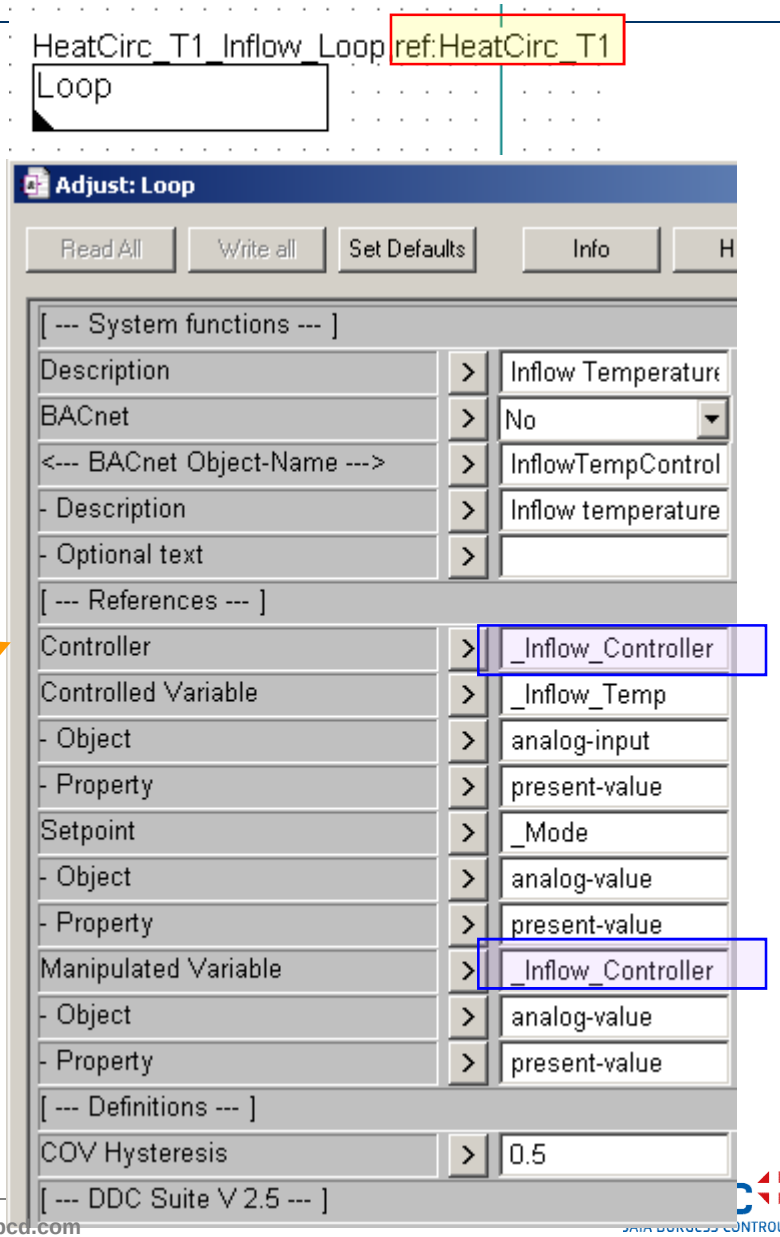
# DDC Suite 2.5
# Loop

In the FBOX adjust parameters we can complete the reference with the suffixes.

First that specify suffix of the controller FBox as: "_Inflow_Controller"

From this FBox the "Loop" FBox brings all control parameters such as P, I and D, the corresponding units and the min and max values for the control signal.



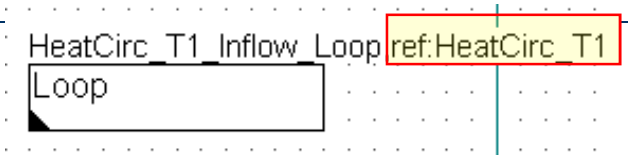



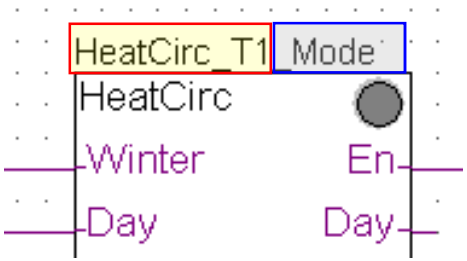
# DDC Suite 2.5
# Loop

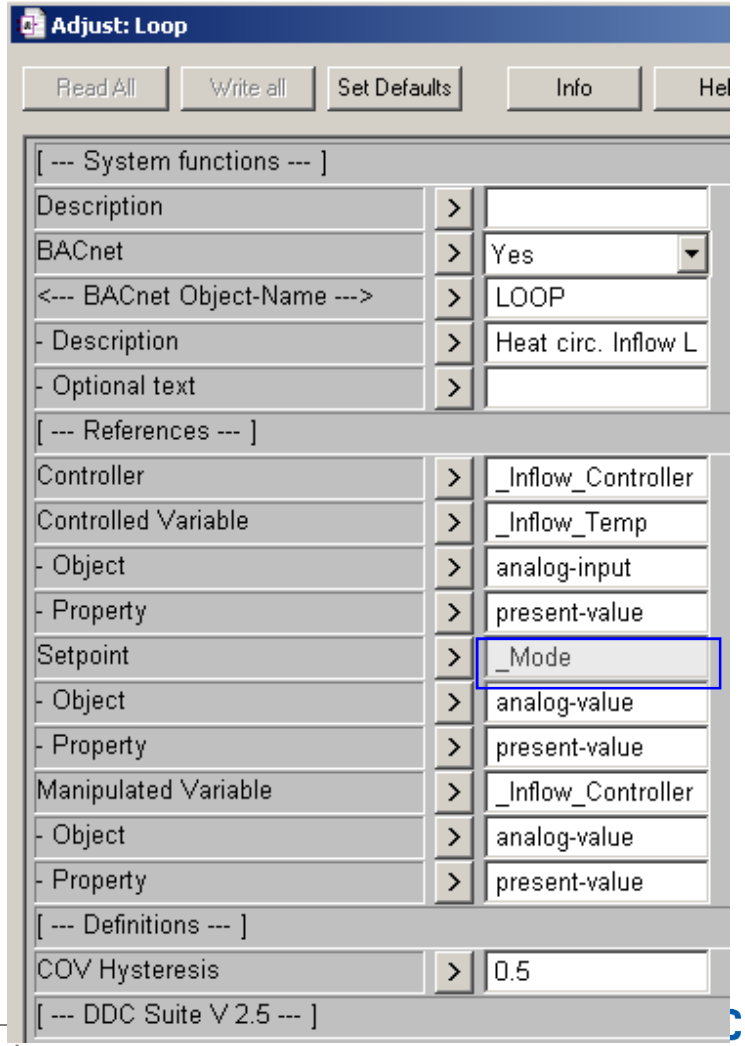
Next we define the suffix to reference the FBox which provides the set point, here "_Mode".

Normally, this is an "analog value" object.

We use the its property called "present-value“ to store the set-point. Can be adjusted if necessary.



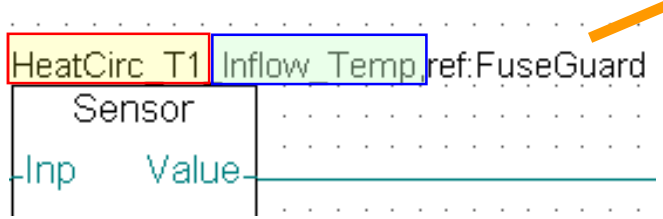



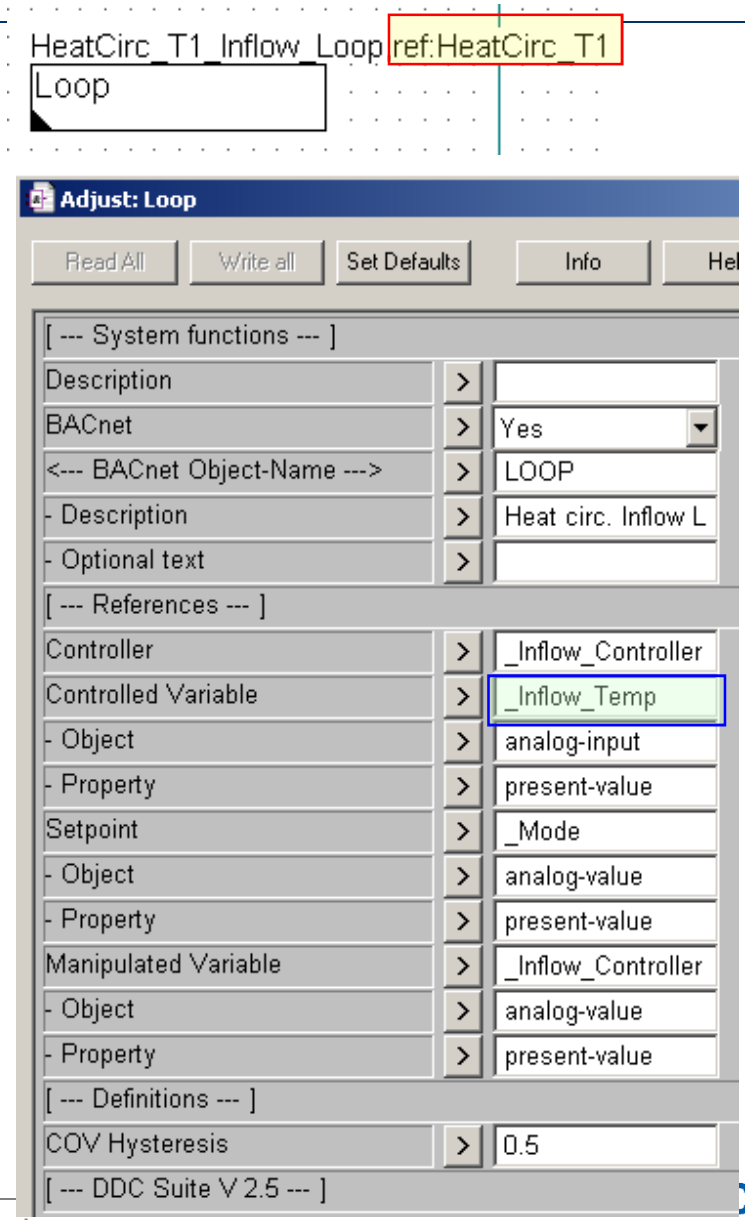



# DDC Suite 2.5
# Loop

Finally we define the suffix of the FBox provides the measured value, here "_Inflow_Temp".

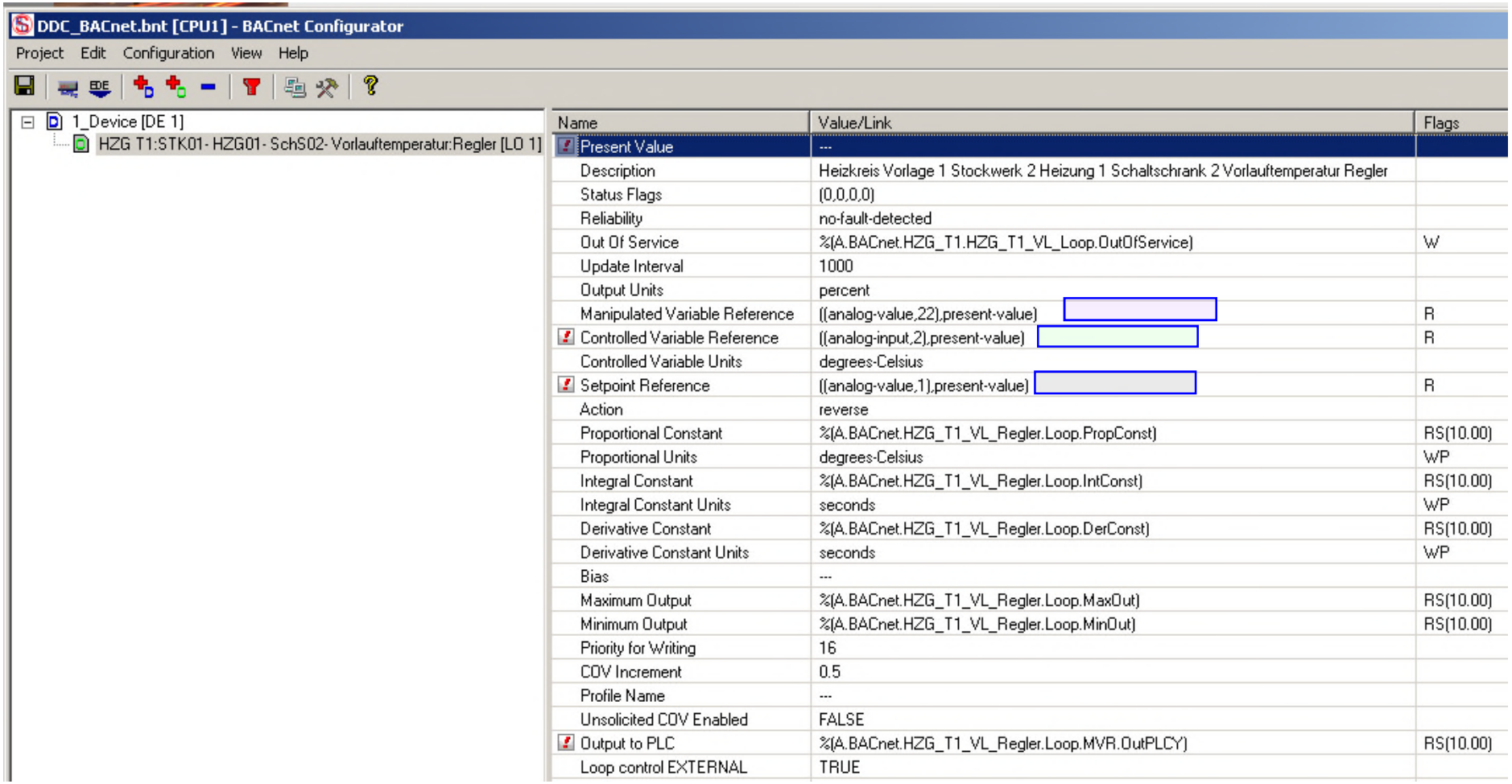
Normally, this is an "analog input" object, the property we use is the "present-value". Can be adjusted if necessary.



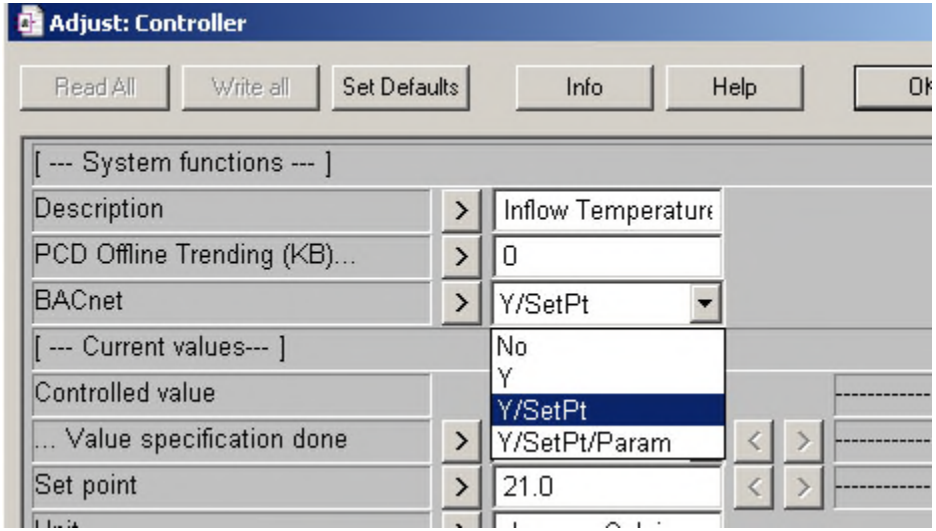
# DDC Suite 2.5
# Loop

Now the Loop object has all necessary references and information.



# DDC Suite 2.5
# Loop

Possible BACnet options in the Controller Fboxes:




- No > Loop Object cannot work

- Y > Loop Object can be referenced to „Controller“ and „Manipulated Variable“

- Y/SetPt, Loop Object can be referenced to „Controller“, „Setpoint“ und „Manipulated Variable“

- Y/SetPt/Param > Loop Object cannot be used, because the Controller is generating Analog values for all parameters (useful for SCADA that do not support Loop Objects)


# Advanced Files

SAIA BURGESS CONTROLS

# DDC Suite 2.5
# Advanced Files

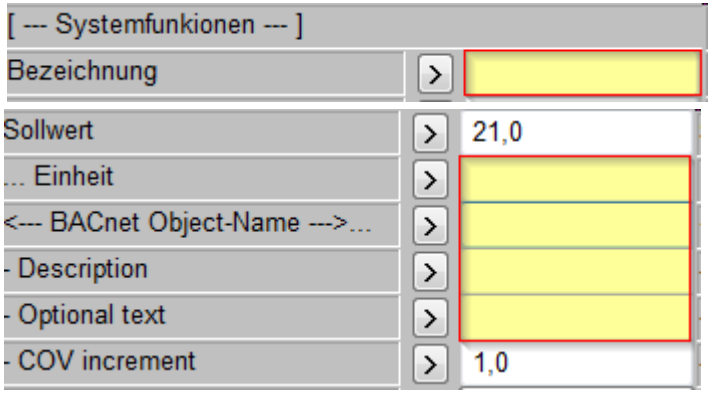
Some basic information about the resources we can use to generate the texts.

PG5 2.0, a new data type was introduced: String (text)

These are not PCD texts they are not stored in a DB but "free text" which can also be specified in the FBox adjust window.

The DDC Suite 2.5 uses them massively. These parameters do not generate code for the controls and are not registered in Symbol Editor - they are only available during the compilation of the program.

With the string definition and the other function called $WRFILE we are able to create text file during the build.




## Strings, STR and @STR( )

**Description**

A *string* is a sequence of characters which can be inserted into the IL cod parameter. But unlike macro parameters, strings can be used anywhere ir Some new FBox Adjust parameters are *strings* - not symbols or values, b string is not a Text (as in Texts and Data Blocks), but it can be used to de

**Defining a string**

Strings can have names and can be defined using DEF, EQU, LDEF, GE( The string's text is enclosed in double quotes "...".

```
string_name DEF|EQU|LDEF|GEQU|GDEF STR "string"
```

The quotes are removed when the string is referenced using the @STR( )

## $WRFILE Writes text to a file during the build

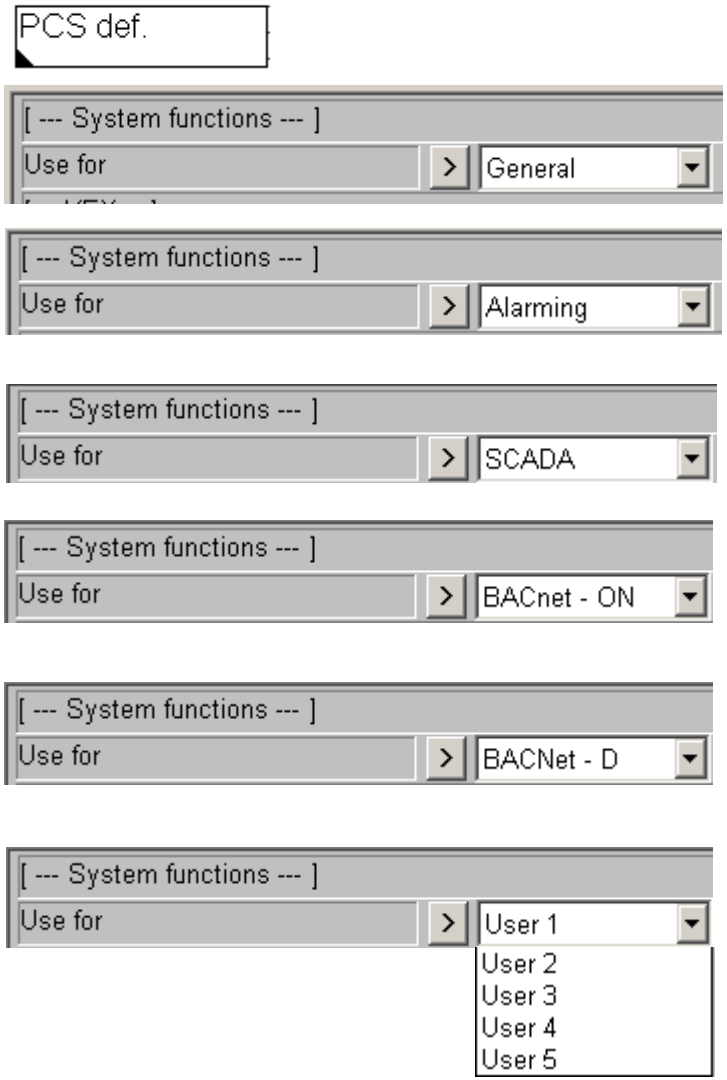
**Description**

Writes a text line to a file during the assembly process. The file is created when the first $WRFILE is assembled, or if the file already exists its length is set to zero. The file is closed at the end of assembly.

**Format**

```
$WRFILE "path" any_text
```

# DDC Suite 2.5
# Plant Code System – possible settings in the PCS def. Fbox




Reference to be used in the xxx.src files for the string content

```
A.General.Key.Level1 .. Level 10
A.General.Key.ToLevel2 .. ToLevel10
```

```
A.Alarming.Key.Level1 .. Level 10
A.Alarming.Key.ToLevel2 .. ToLevel10
```

```
A.SCADA.Key.Level1 .. Level 10
A.SCADA.Key.ToLevel2 .. ToLevel10
```

```
A.BACnet_ON.Key.Level1 .. Level 10
A.BACnet_ON.Key.ToLevel2 .. ToLevel10
```

```
A.BACnet_D.Key.Level1 .. Level 10
A.BACnet_D.Key.ToLevel2 .. ToLevel10
```

```
A.User1..5.Key.Level1 .. Level 10
A.User1..5.Key.ToLevel2 .. ToLevel10
```

# DDC Suite 2.5
# Advanced Files – text symbols in the Advanced files

These texts, defined in the Fboxes are used in the Advanced Files. By the time, more texts will be made available as the programmer will define them in the Fboxes.

You can see the Text symbols that can be used in the header of each .src file for BACnet and Alarming. This is a help to make the text syntax definnition easier.

```
Variablen von FBOx:
-------------------------------------------------------------------
@str(A.FBox.Description)

@str(A.BACnet.Start.ObjectName)
@str(A.BACnet.Start.Description)
@str(A.BACnet.Start.OptionText)

@str(A.BACnet.Stop.ObjectName)
@str(A.BACnet.Stop.Description)
@str(A.BACnet.Stop.OptionText)

@str(A.BACnet.State.ObjectName)
@str(A.BACnet.State.Description)
@str(A.BACnet.State.OptionText)

@str(A.BACnet.CntOK.ObjectName)
@str(A.BACnet.CntOK.Description)
@str(A.BACnet.CntOK.OptionText)

@str(A.BACnet.CntErr.ObjectName)
@str(A.BACnet.CntErr.Description)
@str(A.BACnet.CntErr.OptionText)
```

```
Variablen von FBOx:
---------------------------------
@str(A.FBox.Description)

@str(A.FBox.AlFb.Alarmtext)
@str(A.FBox.AlPFb.Alarmtext)
@str(A.FBox.AlMot.Alarmtext)
@str(A.FBox.AlMSwitch.Alarmtext)
@str(A.FBox.AlMInt.Alarmtext)
```

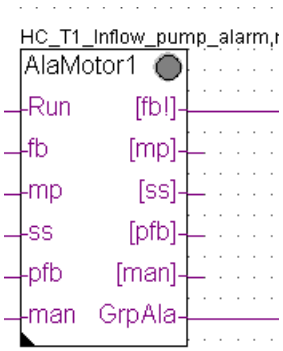
# DDC Suite 2.5
# Lookout of an Advanced File

```
;=====================================================================
;       Object Signal
;=====================================================================
$IF adj_BACnet>0
;
                    A.BACnet.AV.ID DEF A.BACnet.AV.ID +1 ;
;
                    A.BACnet.Name.Loop.MVR.ID def A.BACnet.AV.ID
                    A.BACnet.Name.Loop.MVR.Unit def str "@str(A.FBOx.UnitMV)"
;
$WRFILE "DDC_BACnet.bnt"
$WRFILE "DDC_BACnet.bnt" [AV @A.BACnet.AV.ID@]
$WRFILE "DDC_BACnet.bnt" object-name = @STR(A.BACnet_ON.Key.ToLevel10)@str(A.BACnet.Signal.ObjectName)
$WRFILE "DDC_BACnet.bnt" description = @STR(A.BACnet_D.Key.ToLevel10)@STR(A.BACnet.Signal.Description)
$WRFILE "DDC_BACnet.bnt" present-value = %(@&stc_Y@) || WS(10.00)
;
$WRFILE "DDC_BACnet.bnt" units =  @str(A.FBOx.UnitMV)
$WRFILE "DDC_BACnet.bnt" cov-increment = @A.BACnet.Signal.COVIncrement.1p@
;
$WRFILE "DDC_BACnet.bnt" status-flags = (0,0,0,0)
$WRFILE "DDC_BACnet.bnt" reliability = no-fault-detected
$WRFILE "DDC_BACnet.bnt" out-of-service = FALSE || W

$WRFILE "DDC_BACnet.bnt" priority-array = () || P
$WRFILE "DDC_BACnet.bnt" priority-array-08 = %(@&stc_YHand@),%(@&stc_YWahl@) || S(10.00)
$WRFILE "DDC_BACnet.bnt" relinquish-default = %(A.BACnet.@&name@.Signal.RelinquishDefault)
;
$WRFILE "DDC_BACnet.bnt" unsolicited_cov_enabled = FALSE
```

# DDC Suite 2.5
# BACnet object ID generation

**Previously we discussed that from the PG5 version 2.1.100 it is possible to see the Fbox ID in the xxx.lst file and the xxx.fbd file.**




HVC.fbd - Notepad

File Edit Format View Help

```
;; Position: Motor 1 speed - HC_T1_Inflow_pump_alarm - 40,55
__fbl_C005616_05_22___SG_System_A          EQU                    $ ;Mark FBox position.
__FBOX_ID__      DEF     34      ;HC_T1_Inflow_pump_alarm
__AVI_C005616_05_22___SG_System_A_00 DEF STR "Pump"
__AVI_C005616_05_22___SG_System_A_01 DEF STR "No feedback"
__AVI_C005616_05_22___SG_System_A_02 DEF STR "Pump:No feedback"
__AVI_C005616_05_22___SG_System_A_03 DEF STR "Pump:No feedback"
__AVI_C005616_05_22___SG_System_A_04 DEF STR ""
__AVI_C005616_05_22___SG_System_A_05 DEF STR "Process feedback"
__AVI_C005616_05_22___SG_System_A_06 DEF STR "Pump:Process feedback"
__AVI_C005616_05_22___SG_System_A_07 DEF STR "Pump:Process feedback"
__AVI_C005616_05_22___SG_System_A_08 DEF STR ""
__AVI_C005616_05_22___SG_System_A_09 DEF STR "Motor"
__AVI_C005616_05_22___SG_System_A_0A DEF STR "Pump:Motor"
__AVI_C005616_05_22___SG_System_A_0B DEF STR "Pump:Motor"
__AVI_C005616_05_22___SG_System_A_0C DEF STR ""
__AVI_C005616_05_22___SG_System_A_0D DEF STR "Service switch"
__AVI_C005616_05_22___SG_System_A_0E DEF STR "Pump:Service switch"
__AVI_C005616_05_22___SG_System_A_0F DEF STR "Pump:Service switch"
__AVI_C005616_05_22___SG_System_A_10 DEF STR ""
__AVI_C005616_05_22___SG_System_A_11 DEF STR "Manual"
__AVI_C005616_05_22___SG_System_A_12 DEF STR "Pump:Manual"
__AVI_C005616_05_22___SG_System_A_13 DEF STR "Pump:Manual"
__AVI_C005616_05_22___SG_System_A_14 DEF STR ""
DDC_ALMOT1SP250(                205000,                          ;;Version Indicator.
                HC_T1.Inflow.Pump.iControlled,  ;;Input #1 (Run)
                HC_T1.Inflow.Pump.iFeedback_DI, ;;Input #2 (fb)
```

DDC_BACnet.bnt* [Template] - SBACnetConfigurator

Project Edit Configuration View Help

- NT System [DE 1]
  - HeatCirc_T1FL01-HC01-CC02-Heating period [BV 7600]
  - HeatCirc_T1FL01-HC01-CC02-InflowPump [BO 3300]
  - HeatCirc_T1FL01-HC01-CC02-InflowPump:Alarm [BI 3303]
  - HeatCirc_T1FL01-HC01-CC02-InflowPump:Maintenance [BI 3302]
  - HeatCirc_T1FL01-HC01-CC02-InflowPump:On/Off [AV 3305]
  - HeatCirc_T1FL01-HC01-CC02-InflowPump:Running working hours [AV 3304]
  - HeatCirc_T1FL01-HC01-CC02-Pump:Manual [BI 3404]
  - HeatCirc_T1FL01-HC01-CC02-Pump:Motor [BI 3400]
  - HeatCirc_T1FL01-HC01-CC02-Pump:No feedback [BI 3401]
  - HeatCirc_T1FL01-HC01-CC02-Pump:Process feedback [BI 3403]
  - HeatCirc_T1FL01-HC01-CC02-Pump:Service switch [BI 3402]
  - Loop 0 [LO 0]
  - NC [NC 0]
  - NC [NC 27]
  - PCD BACnet Stack Monitoring [BI 10500]

The Fbox ID is used when BACnet configuration is generated to create individual BACnet ID for the BACnet objects.

The **BACnet object ID = Fbox ID x 100 + Index** (Where index is automatically generated from 0 to 99.)

Right in the example 5 objects are generated for the Fbox which has ID 34.

This way the BACnet ID can be always unique, there can not be bad effect to the BACnet configuration if one or more Fbox are deleted.