



DDC Suite 2.5

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



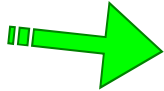
Click with left mouse button at this position



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

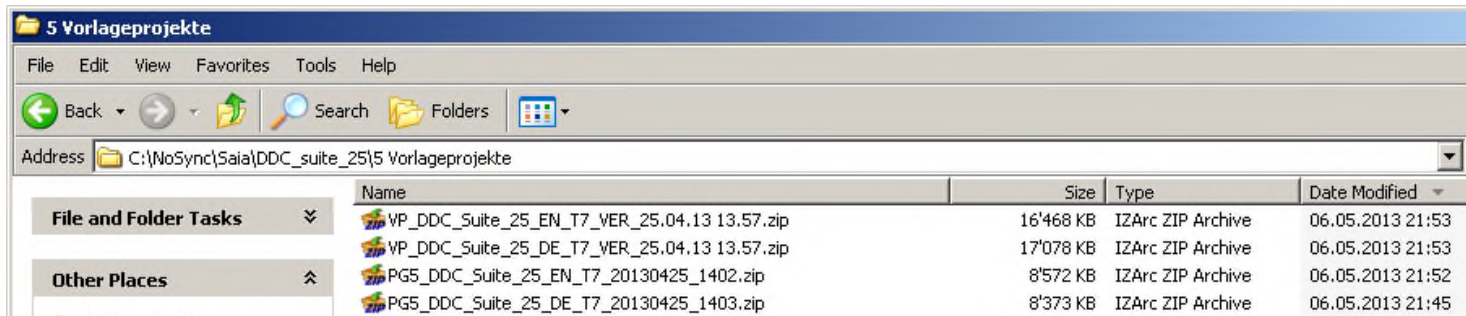
DDC Suite 2.5



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 advised 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

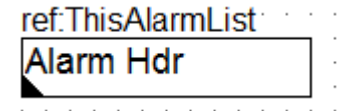
All FBoxes generating alarm now support "-1" as "auto alarm address", so you just have to use only the "Alarm Hdr" FBox once. You can set the Base Address to "1" in the first "Alarm Hdr" Fbox -- all following "Alarm Hdr" FBoxes can use "-1" -- therefore the alarm address of all automatic generated alarms 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):

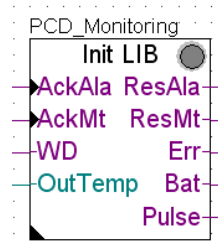
- Setpoint Binary
- Setpoint Integer
- Analog values Binary
- Analog values Integer

- 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

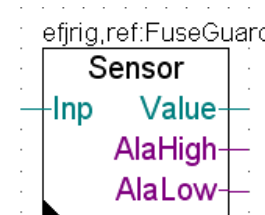


- Now also support alarming for battery and internal XOB failure
- working hours/On-Off counter are untouched after download



[--- System functions ---]	
Description	> General
PCD Alarm administration (Idx)	> -1
BACnet	> Battery&XOB
Working hours	> Mask

- new parameter hysteresis/delay for limits



[--- Alarm limit values ---]	
Hysteresis	> 2.0
Delay	> 10

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.

BAC_DDC_BACnetDevice251.src	BAC_DDC_BACnetNC250.src	DOC_DDC_SETPTINGTEGER250.SRC	DOC_DDC_ALARM1ALARMM5G250,5SRC
BAC_DDC_SystemSwitch3Speed250.src	BAC_DDC_BACnetLoop251.src	DOC_DDC_SETPTHYSTERESIS250.SRC	ALM_DDC_InitLibrary250.src
BAC_DDC_SystemSwitch2Speed250.src	BAC_DDC_BACnetLoop250.src	DOC_DDC_SETPTBINARY250.SRC	ALM_DDC_ControlPump250.src
BAC_DDC_SystemSwitch1Speed250.src	BAC_DDC_BACnetDevice250.src	DOC_DDC_LOOPPREHEATER250.SRC	ALM_DDC_ControlOpenClose250.src
BAC_DDC_SystemStartAHU250.src	BAC_DDC_AnalogSensor250.src	DOC_DDC_LOOPPREHEATER250.SRC	ALM_DDC_ControlMotor3Speed250.src
BAC_DDC_SystemSpeedAHU250.src	BAC_DDC_AnalogSelect250.src	DOC_DDC_LOOPMIXEDAIR250.SRC	ALM_DDC_ControlMotor2Speed250.src
BAC_DDC_SystemRedundant250.src	BAC_DDC_AnalogIntegerMV250.src	DOC_DDC_LOOPMASTER250.SRC	ALM_DDC_ControlMotor1Speed250.src
BAC_DDC_SystemPreserveAHU250.src	BAC_DDC_AnalogIntegerMI250.src	DOC_DDC_LOOPLIMITER250.SRC	ALM_DDC_ControlContinuous250.src
BAC_DDC_SystemHotWater250.src	BAC_DDC_AnalogIntegerAV250.src	DOC_DDC_LOOPHUMID250.SRC	ALM_DDC_AnalogSensor250.src
BAC_DDC_SystemHeatingCircuit250.src	BAC_DDC_AnalogInteger250.src	DOC_DDC_LOOPHEATRECOVERY250.SRC	ALM_DDC_AlarmMotor3Sp250.src
BAC_DDC_SystemBoiler250.src	BAC_DDC_AnalogCounter250.src	DOC_DDC_LOOPDEHUMID250.SRC	ALM_DDC_AlarmMotor2Sp250.src
BAC_DDC_SetPtRoom250.src	BAC_DDC_AnalogBinaryBV250.src	DOC_DDC_LOOPCOOLER250.SRC	ALM_DDC_AlarmMotor1Sp250.src
BAC_DDC_SetPtLean4Pt250.src	BAC_DDC_AnalogBinary250.src	DOC_DDC_LOOPCONTROLLER250.SRC	ALM_DDC_AlarmHysteresis250.src
BAC_DDC_SetPtLean2Pt250.src	BAC_DDC_AnalogAD250.src	DOC_DDC_INITLIBRARY250.SRC	ALM_DDC_AlarmFuse250.src
BAC_DDC_SetPtIntegerMV250.src	BAC_DDC_AlarmMotor3Sp250.src	DOC_DDC_INITFIREDAMPER250.SRC	ALM_DDC_AlarmFrost250.src
BAC_DDC_SetPtInteger250.src	BAC_DDC_AlarmMotor2Sp250.src	DOC_DDC_INITANTIBLOCK250.SRC	ALM_DDC_AlarmFireDamper250.src
BAC_DDC_SetPtHysteresis250.src	BAC_DDC_AlarmMotor1Sp250.src	DOC_DDC_CONTROLPUMP250.SRC	ALM_DDC_AlarmDelayed250.src
BAC_DDC_SetPtBinary250.src	BAC_DDC_AlarmHysteresis250.src	DOC_DDC_CONTROLOPENCLOSE250.SRC	ALM_DDC_Alarm5Alarm250.src
BAC_DDC_LoopPreHeater250.src	BAC_DDC_AlarmFuse250.src	DOC_DDC_CONTROLMOTOR3SPEED250.SRC	ALM_DDC_Alarm1AlarmMsg250.src
BAC_DDC_LoopPreHeater250.src	BAC_DDC_AlarmFrost250.src	DOC_DDC_CONTROLMOTOR2SPEED250.SRC	ALM_DDC_Alarm1Alarm250.src
BAC_DDC_LoopMixedAir250.src	BAC_DDC_AlarmFireDamper250.src	DOC_DDC_CONTROLMOTOR1SPEED250.SRC	AddOn_DDC_InitLibrary250.src
BAC_DDC_LoopMaster250.src	BAC_DDC_AlarmDelayed250.src	DOC_DDC_ANALOGSENSOR250.SRC	AddOn_DDC_ControlPump250.src
BAC_DDC_LoopLimiter250.src	BAC_DDC_Alarm5Alarm250.src	DOC_DDC_ANALOGSELECT250.SRC	AddOn_DDC_ControlOpenClose250.src
BAC_DDC_LoopHumid250.src	BAC_DDC_Alarm1AlarmMsg250.src	DOC_DDC_ANALOGINTEGER250.SRC	AddOn_DDC_ControlMotor3Sp250.src
BAC_DDC_LoopHeatrecovery250.src	BAC_DDC_Alarm1Alarm250.src	DOC_DDC_ANALOGCOUNTER250.SRC	AddOn_DDC_ControlMotor2Sp250.src
BAC_DDC_LoopDeHumid250.src	DOC_DDC_SYSTEMSWITCH3SPEED250.SRC	DOC_DDC_ANALOGBINARY250.SRC	AddOn_DDC_ControlContinuous250.src
BAC_DDC_LoopCooler250.src	DOC_DDC_SYSTEMSWITCH2SPEED250.SRC	DOC_DDC_ANALOGAD250.SRC	AddOn_DDC_AlarmPowerSupply250.src
BAC_DDC_LoopController250.src	DOC_DDC_SYSTEMSWITCH1SPEED250.SRC	DOC_DDC_ALARMGAD250.SRC	AddOn_DDC_AlarmMotor3Sp250.src
BAC_DDC_InitPCSDef250.src	DOC_DDC_SYSTEMSTARTAHU250.SRC	DOC_DDC_ALARM250.SRC	AddOn_DDC_AlarmMotor2Sp250.src
BAC_DDC_InitLibrary250.src	DOC_DDC_SYSTEMSPEEDAHU250.SRC	DOC_DDC_ALARM1ALARM250.SRC	AddOn_DDC_AlarmMotor1Sp250.src
BAC_DDC_InitFireDamper250.src	DOC_DDC_SYSTEMREDUNDANT250.SRC	DOC_DDC_ALARMHYSTERESIS250.SRC	AddOn_DDC_AlarmFrost250.src
BAC_DDC_InitAntiBlock250.src	DOC_DDC_SYSTEMPRESERVEAHU250.SRC	DOC_DDC_ALARMHYSTERESIS250.SRC	AddOn_DDC_AlarmFireDamper250.src
BAC_DDC_ControlPump250.src	DOC_DDC_SYSTEMHOTWATER250.SRC	DOC_DDC_ALARM5ALARMS250.SRC	AddOn_DDC_AlarmDelayed250.src
BAC_DDC_ControlOpenClose250.src	DOC_DDC_SYSTEMHEATINGCIRCUIT250.SRC	DOC_DDC_ALARMFUSE250.SRC	AddOn_DDC_Alarm5Alarms250.src
BAC_DDC_ControlMotor3Speed250.src	DOC_DDC_SYSTEMBOILER250.SRC	DOC_DDC_ALARMFROST250.SRC	AddOn_DDC_Alarm1AlarmMsg250.src
BAC_DDC_ControlMotor2Speed250.src	DOC_DDC_SETPROOM250.SRC	DOC_DDC_ALARMFIRE250.SRC	AddOn_DDC_Alarm1Alarm250.src
BAC_DDC_ControlMotor1Speed250.src	DOC_DDC_SETPLEAN4PT250.SRC	DOC_DDC_ALARMDELAYED250.SRC	
BAC_DDC_ControlContinuous250.src	DOC_DDC_SETPLEAN2PT250.SRC	DOC_DDC_ALARM5ALARM250.SRC	

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

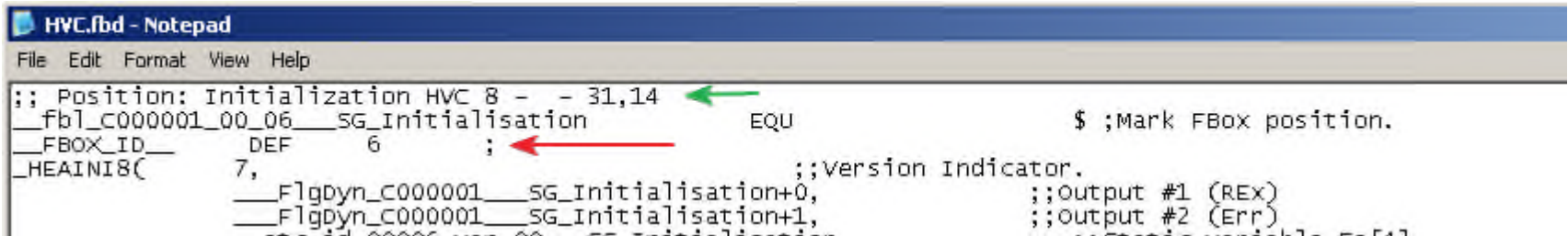
DDC Suite 2.5

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.

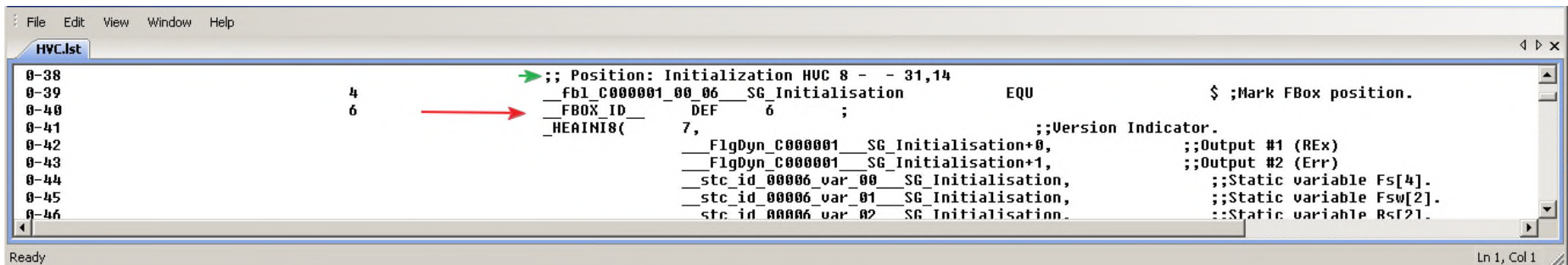
The Fbox ID is used when BACnet configuration is generated to create individual BACnet ID for the BACnet objects.



```
HVC.fbd - Notepad
File Edit Format View Help

;; Position: Initialization HVC 8 - - 31,14
__fbl_C000001_00_06__SG_Initialisation      EQU          $ ;Mark FBox position.
__FBOX_ID__      DEF      6      ;
__HEAINI8(      7,              ;;Version Indicator.
      __FlgDyn_C000001__SG_Initialisation+0,      ;;Output #1 (REX)
      __FlgDyn_C000001__SG_Initialisation+1,      ;;Output #2 (Err)
      .....
```

Annotations: A green arrow points to the position comment ';; Position: Initialization HVC 8 - - 31,14'. A red arrow points to the 'FBOX_ID' definition line.



```
HVC.lst
0-38      ;; Position: Initialization HVC 8 - - 31,14
0-39      4      __fbl_C000001_00_06__SG_Initialisation      EQU          $ ;Mark FBox position.
0-40      6      __FBOX_ID__      DEF      6      ;
0-41      __HEAINI8(      7,              ;;Version Indicator.
0-42      __FlgDyn_C000001__SG_Initialisation+0,      ;;Output #1 (REX)
0-43      __FlgDyn_C000001__SG_Initialisation+1,      ;;Output #2 (Err)
0-44      __stc_id_00006_var_00__SG_Initialisation,      ;;Static variable Fs[4].
0-45      __stc_id_00006_var_01__SG_Initialisation,      ;;Static variable Fsw[2].
0-46      __stc_id_00006_var_02__SG_Initialisation.      ;;Static variable Rs[2].

Ready
Ln 1, Col 1
```

Annotations: A green arrow points to the position comment ';; Position: Initialization HVC 8 - - 31,14'. A red arrow points to the 'FBOX_ID' definition line.



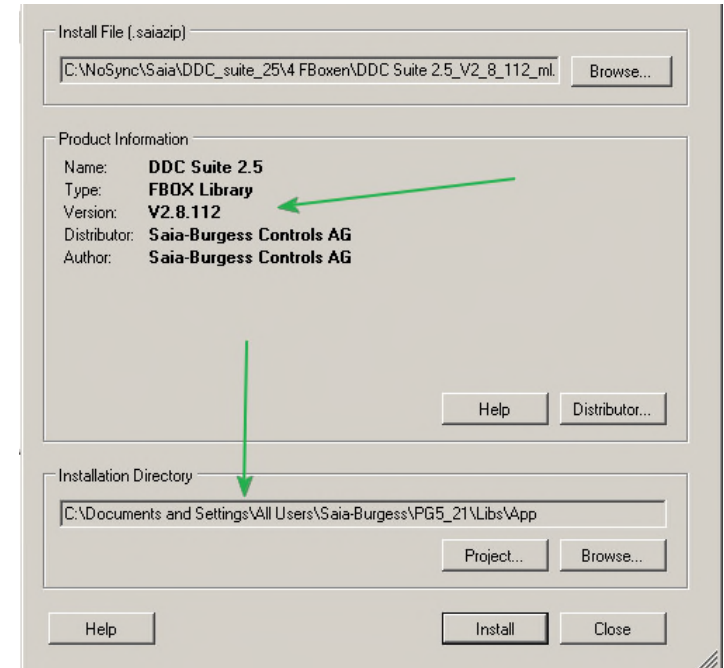
Installation

DDC Suite 2.5 Installation

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



Installation:



PG5 Library Manager:



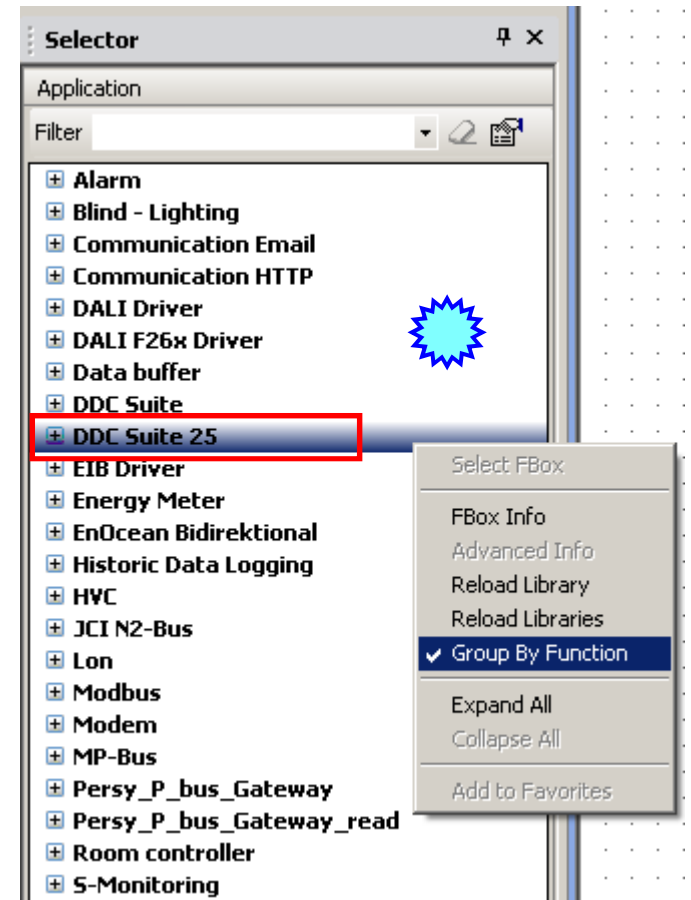
DDC Suite 2.0 and 2.5 can be installed parallel but should not be mixed in one project !!!

Use	Name ▲	Version	Type	ID
<input checked="" type="checkbox"/>	DALI F26x Library	V2.7.100	FBOX	_SAIA_DALIF26
<input checked="" type="checkbox"/>	DALI Library	V2.7.100	FBOX	_SAIA_DALI
<input checked="" type="checkbox"/>	DDC Library	SP2.6.204	FBOX	_DDCLibrary
<input checked="" type="checkbox"/>	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.

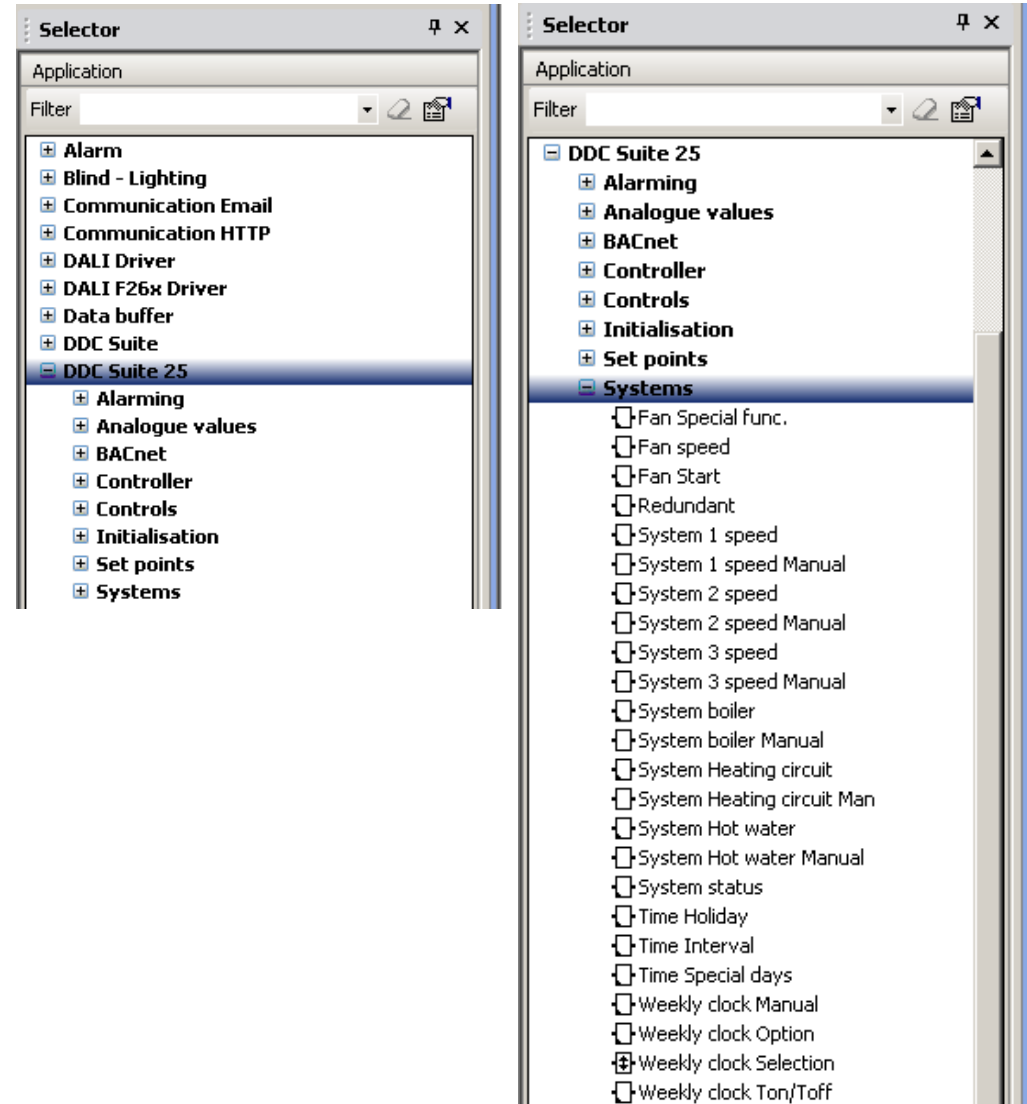


DDC Suite 2.5 Installation

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

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.

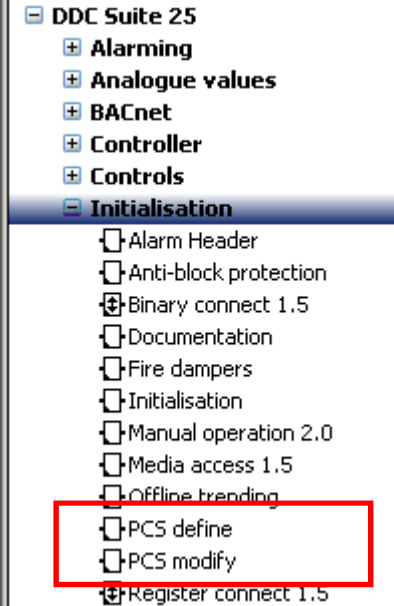
With the DDC Suite 2.5 these keys can be created from FUPLA for generating Alarm text and BACnet Object names and Descriptions.

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

The definition 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 resources 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 existing 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

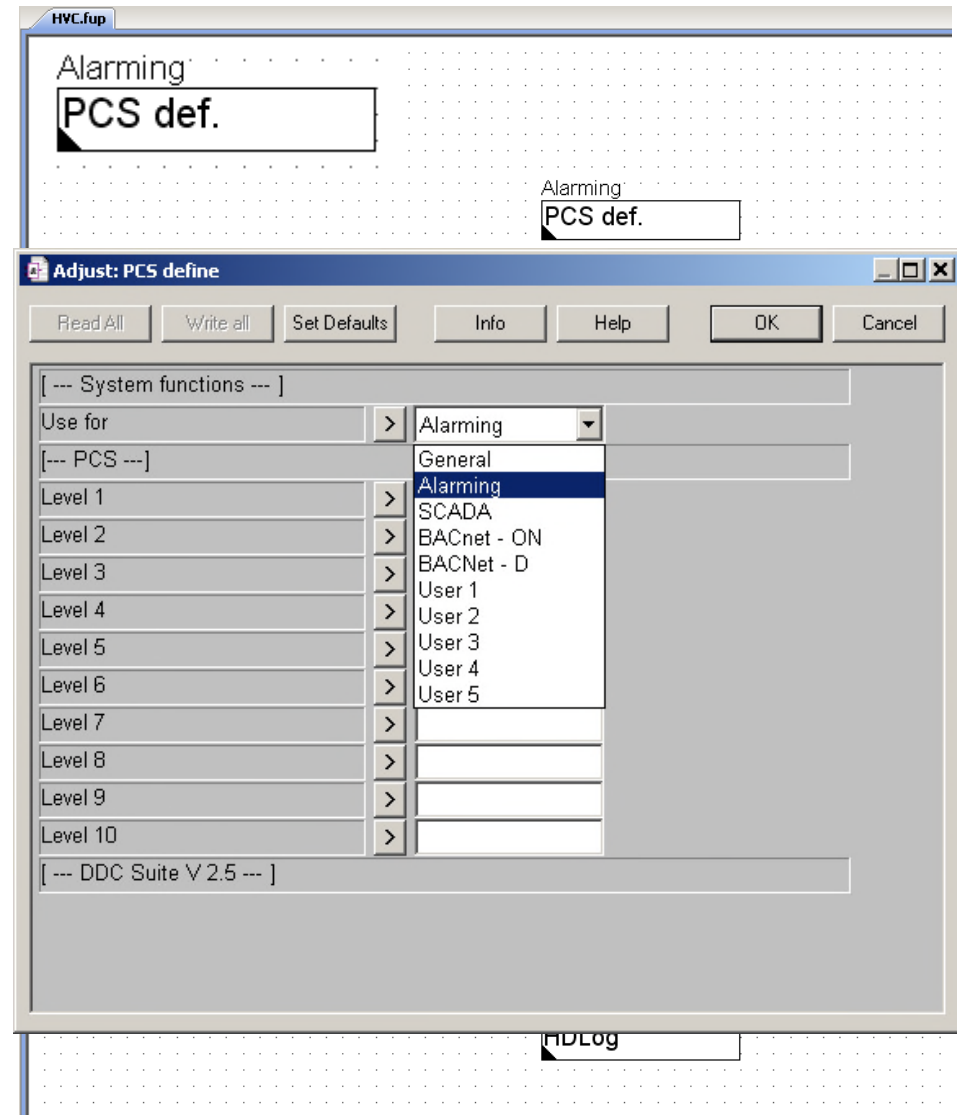
BACnet-ON: Definition of the BACnet

ObjectName

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

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

Please choose „Alarming“



DDC Suite 2.5

Plant coding system (PCS) for alarm text generation

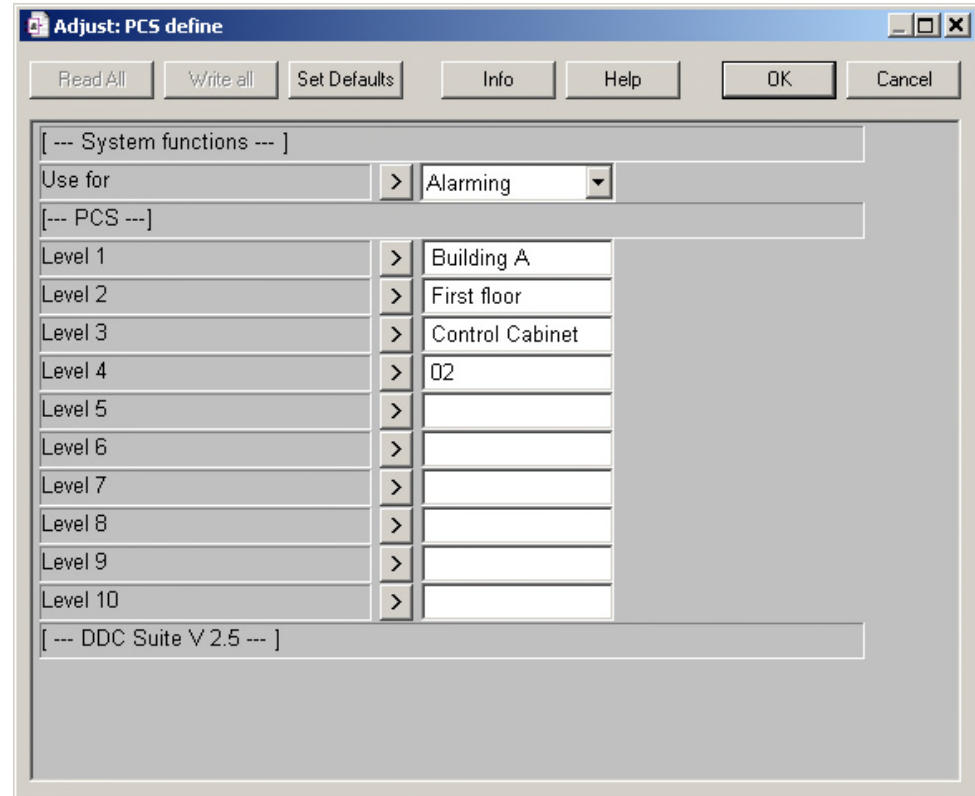
The PCS contains up to 10 Levels.

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.

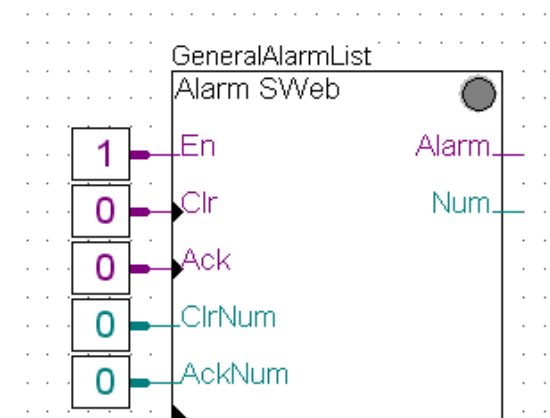
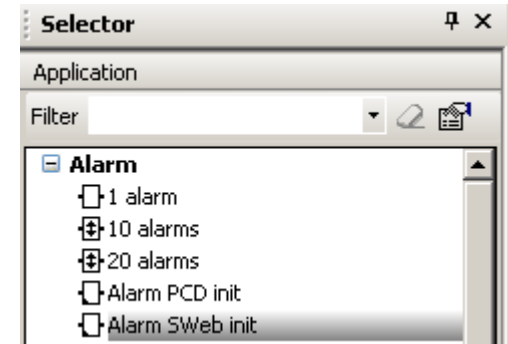


DDC Suite 2.5

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!



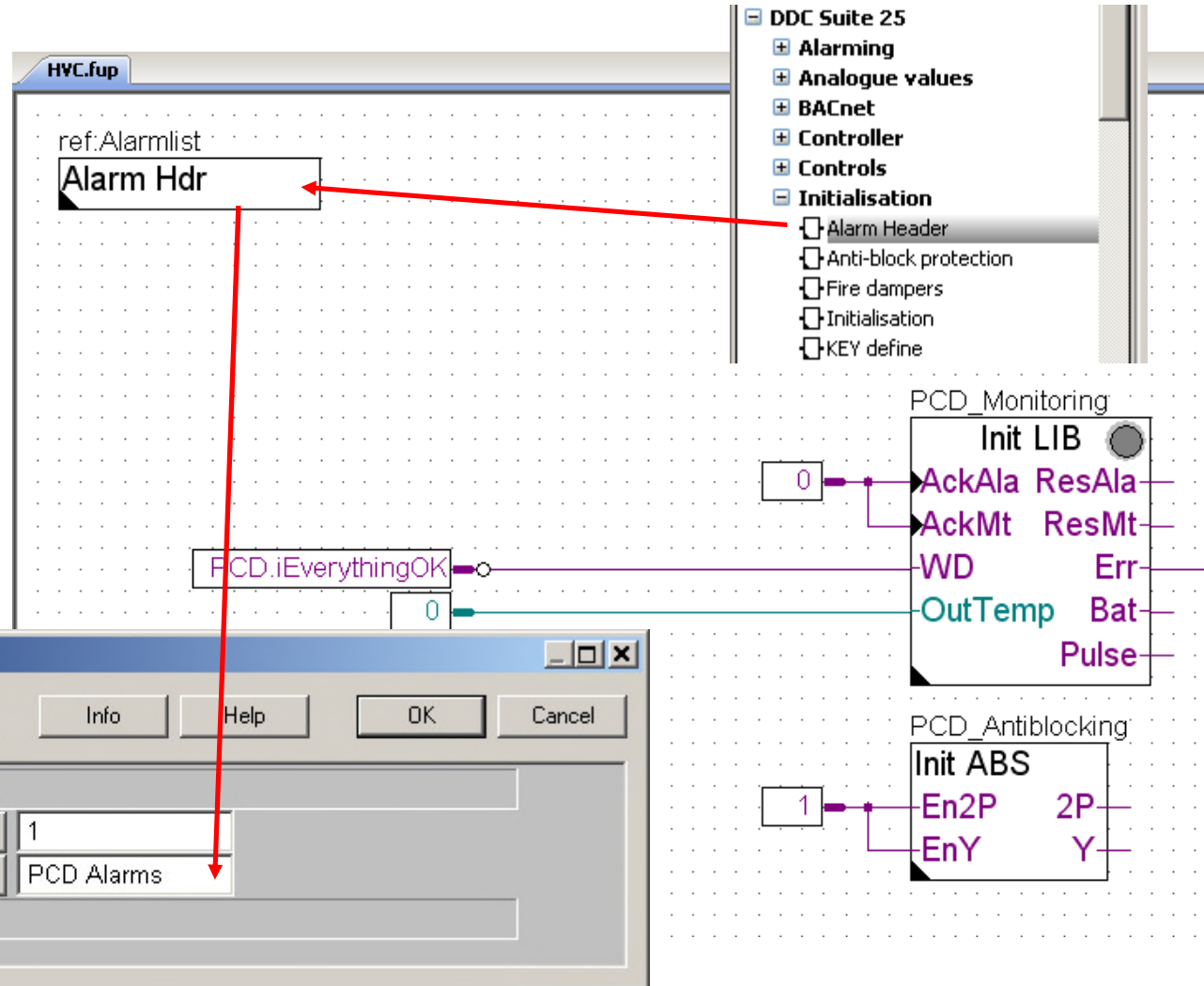
DDC Suite 2.5

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

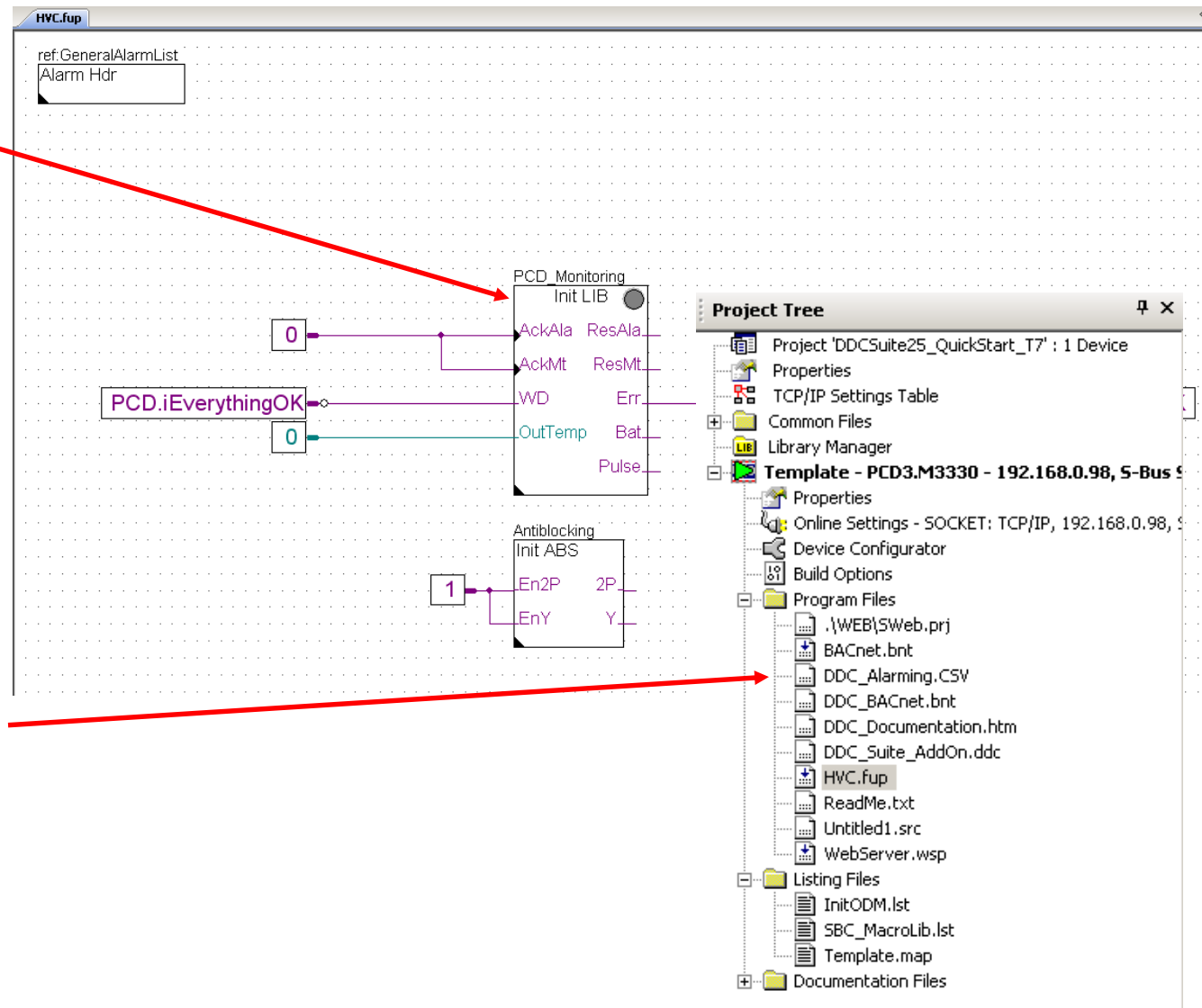
Plant coding system (PCS) for alarm text generation

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

	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				

Adjust: Alarm Header

Base alarm index > 1

Description > PCD Alarms

ref:GeneralAlarmList
Alarm Hdr

Adjust: KEY define

Use for > Alarming

- Level 1 > Building A
- Level 2 > First floor
- Level 3 > Control Cabinet
- Level 4 > 02

Alarming
PCS def.

Adjust: Initialisation

PCD Monitoring

Init LIB

- AckAla
- ResAla
- AckMt
- ResMt
- WD
- Err
- OutTemp
- Bat
- Pulse

Battery

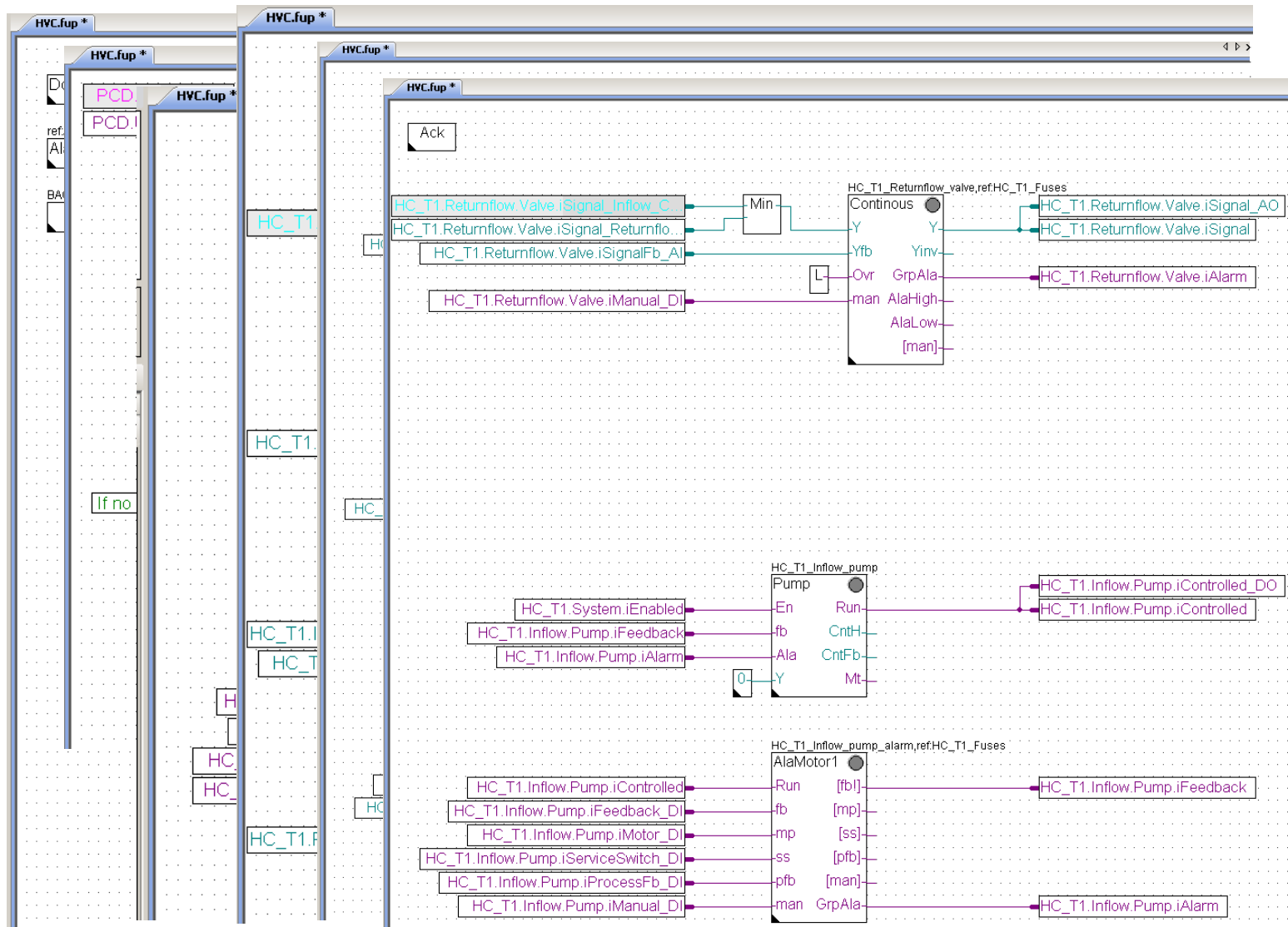
Alarmtext > Battery

How the list is generated?

DDC Suite 2.5

Plant coding system (PCS) for alarm text generation

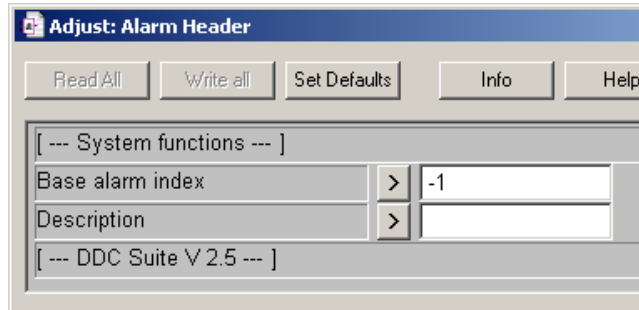
Let us import the Heat circuit T1 FUPLA template to see how the Alarm text generation is working if we have more fboxes for different purposes.



DDC Suite 2.5

Plant coding system (PCS) for alarm text generation

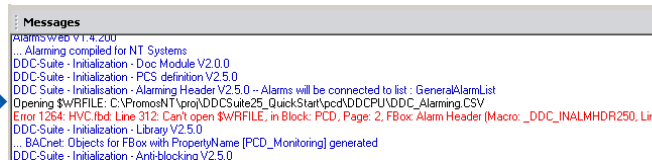
We introduced a new Alarm Header Fbox for the Heat circuit.



We deleted the Description field in the Alarm Header Fbox.

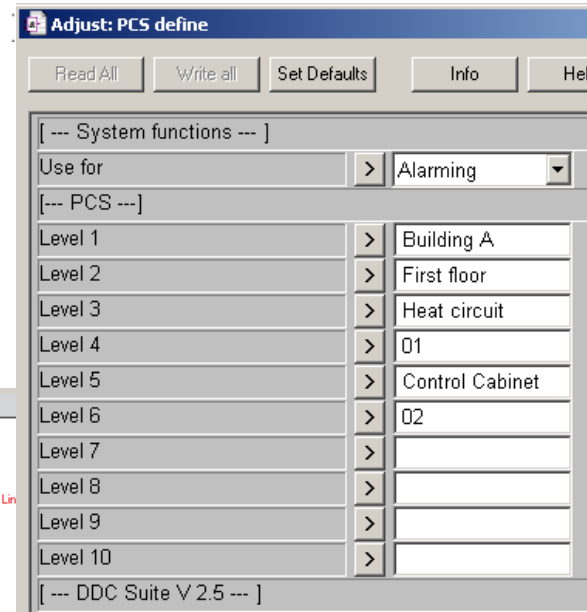
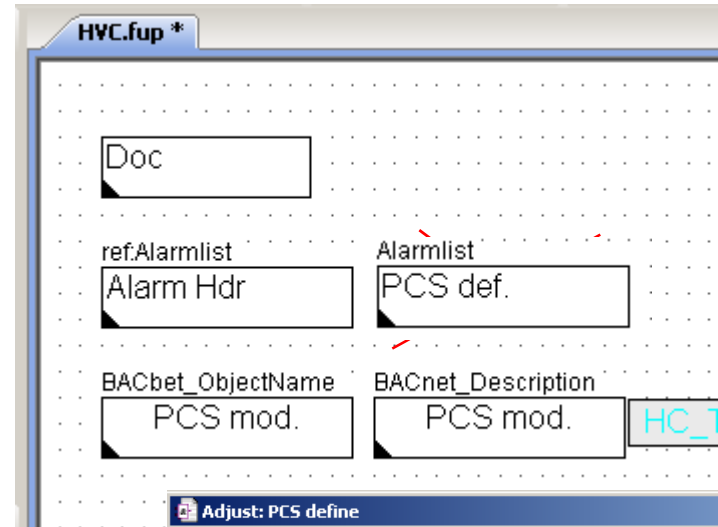
We delete the PCS mod. Fbox and we introduced a new „PCS def.“ Fbox to modify the Alarm text in different places.

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

Adjust: Alarm Header

Read All Write all Set Defaults Info Help

[--- System functions ---]

Base alarm index > -1

Description >

[--- DDC Suite V 2.5 ---]

Adjust: KEY define

Read All Write all Set Defaults Info Help

[--- System functions ---]

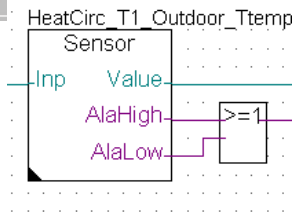
Use for > Alarming

[--- KEY ---]

Level 1	>	Building A
Level 2	>	First floor
Level 3	>	Heat Circuit
Level 4	>	01
Level 5	>	Control Cabinet
Level 6	>	02
Level 7	>	
Level 8	>	
Level 9	>	
Level 10	>	

[--- DDC Suite V 2.5 ---]

Alarmlist
PCS def.



Adjust: Sensor

Read All Write all Set Defaults Info Help

[--- System functions ---]

Description > Outdoor temp.

PCD Offline Trending (KB)... > 0

PCD Alarm administration (Inde... > -1

BACnet > Yes

[--- Sensor ---]

Card type > 1:1 physical

Correction > 0.0

Physical Value (corrected)

<--- BACnet Object Name --->... > Outdoor temperat

Description > Outdoor temperat

Optional text >

<--- BACnet Trendlog ---> > Ringbuffer

Object-Name > Outdoor temperat

Description > Outdoor temperat

Buffer size > 1000

Log Interval (s) > 0.00

[--- Filtering ---]

Smoothing of scanning Sec. > 1.0

Smoothing factor > 10

[--- Conversion ---]

Physical. Value min. > -30.0

Physical. Value max. > 50.0

raw input value min > 0

raw input value max > 4095

Message suppression > for appl. vltg.

[--- Alarm limit values ---]

Hysteresis > 2.0

Delay > 10

High limit > 50.0

... status

Alarmtext > open wire

Low limit > -30.0

... status

Alarmtext > short circuit

<--- Intrinsic Reporting --->

Notification-class > 0

Limit Enable > (-/-)

[--- Definitions ---]

Unit > degrees-Celsius

COV Hysteresis > 0.5

Skaling (decimal) > 1

[--- DDC Suite V 2.5 ---]

DDC Suite 2.5

Plant coding system (PCS) for alarm text generation

What happened here?

	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	

HC_T1_Outdoor_temp.ref.HC_T1_Fuses

Sensor

Inp Value

AlaHigh

AlaLow

Adjust: Sensor

Read All Write all Set Defaults Info Help

[--- System functions ---]

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

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?

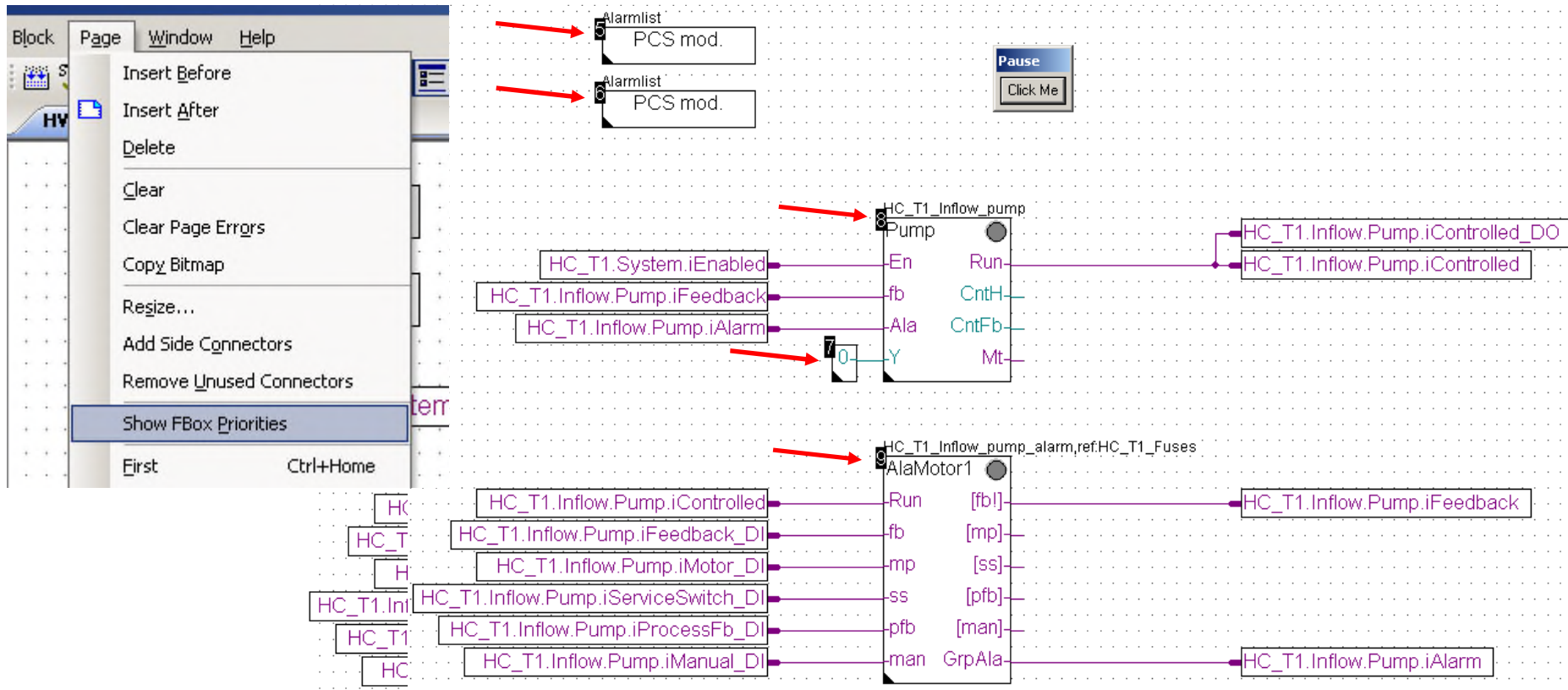
	A	B	C	D
1	ListDefinition=1	Alarmlist		
2	List_1	1 Alarm_1	PCD Alarms Building A First floor Control Cabinet 02 General Battery	
3	List_1	2 Alarm_2	PCD Alarms Building A First floor Control Cabinet 02 General Internal error	
4	List_1	3 Alarm_3	Building A First floor Heat circuit 01 Control Cabinet 02 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	
				Returnflow temp. open wire
				Returnflow temp. short circuit
Imagine that the Pump is in an other cabinet called MCC 102				
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 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

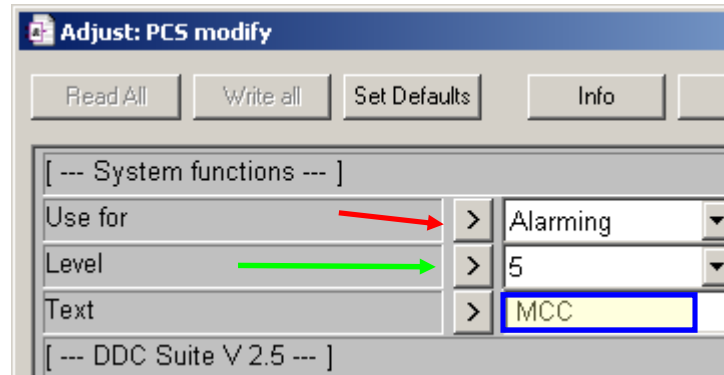
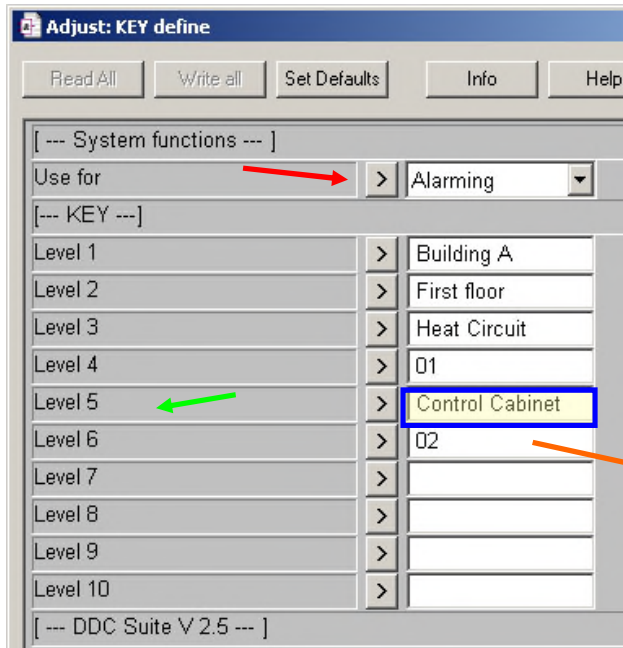
Plant coding system (PCS) for alarm text generation

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.

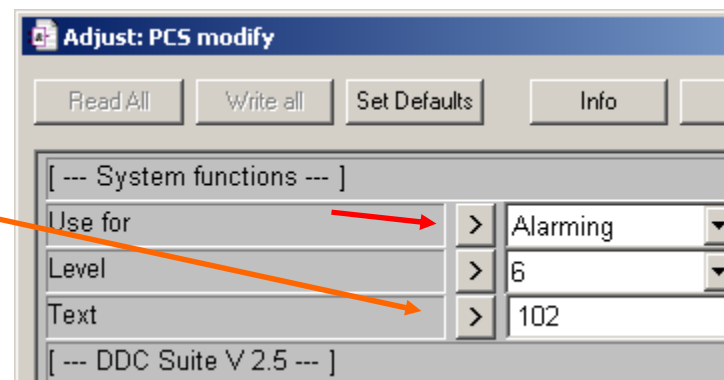
Alarmlist

PCS def.



Alarmlist

PCS mod.



Alarmlist

PCS mod.

DDC Suite 2.5

Plant coding system (PCS) for alarm text generation

The result should look like this.

	F27	fx		
	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 happened 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.

The screenshot shows the 'Adjust: Motor 1 speed' window. At the top, there are buttons for 'Read All', 'Write all', 'Set Defaults', 'Info', and 'H'. Below these is a section titled '[--- System functions ---]' containing a table with the following rows:

Description	>	Pump
PCD Alarm administration (Index...)	>	0
BACnet	>	All
Group alarm from fb/mp/pfb	>	Only these

A red arrow points from the '0' in the 'PCD Alarm administration' field down to the '-1' in the second screenshot.

The screenshot shows the 'Adjust: Motor 1 speed' window. At the top, there are buttons for 'Read All', 'Write all', 'Set Defaults', 'Info', and 'H'. Below these is a section titled '[--- System functions ---]' containing a table with the following rows:

Description	>	Pump
PCD Alarm administration (Index...)	>	-1
BACnet	>	All
Group alarm from fb/mp/pfb	>	Only these

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

[--- Feedback ---]	
Digital input	> -1
Delay	> 5.0
Alarm status	
Alarmtext	> No feedback
Alarmtext	> Process feedback
Alarmtext	> Motor
Alarmtext	> Service switch
Alarmtext	> Manual

Fbox Motor

Alarmtext	> maintenance
Alarmtext	> blocked

Now we can build the program !

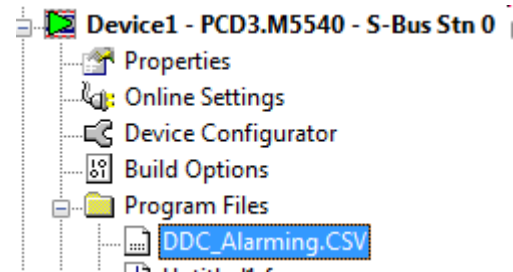
DDC Suite 2.5

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



	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

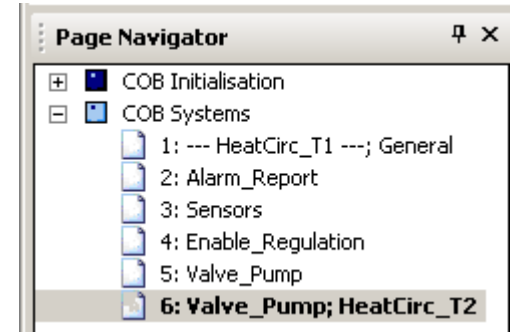
Plant coding system (PCS) for alarm text generation

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

PCS mod.

PCS mod.

PCS mod.

Adjust: PCS modify

Adjust: PCS modify

Adjust: PCS modify

Adjust: PCS modify

KEY define

Level 1	>	Building A
Level 2	>	First floor
Level 3	>	Heat Circuit
Level 4	>	02
Level 5	>	Control Cabinet
Level 6	>	202
Level 7	>	
Level 8	>	
Level 9	>	
Level 10	>	

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

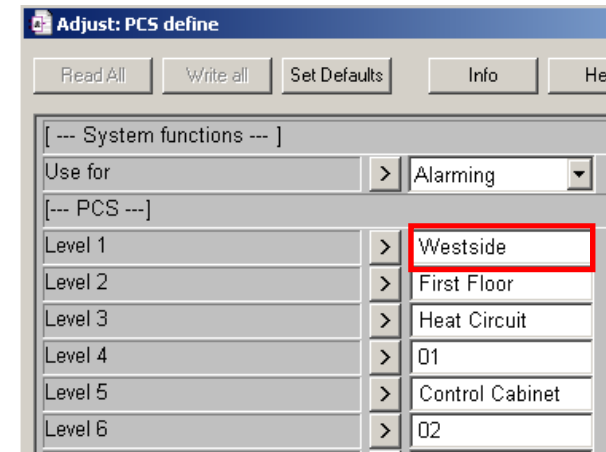
Plant coding system (PCS) for alarm text generation

	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

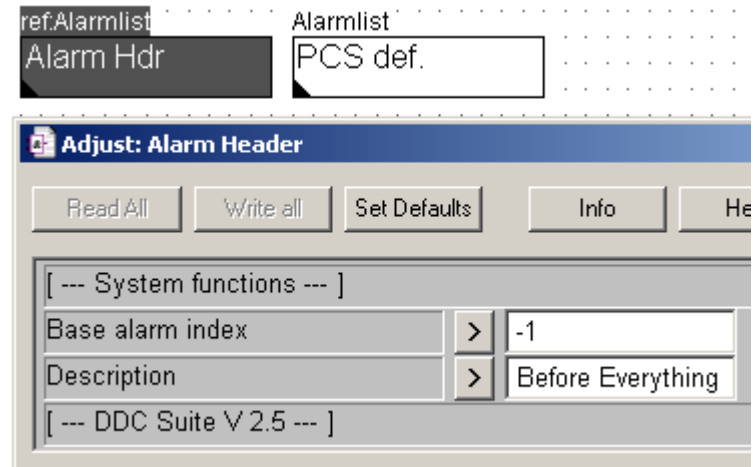


DDC Suite 2.5

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

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 „- ...“ .

<--- BACnet Object Name --->...	>	OutdoorTemperat
- Description	>	Outdoor temperati
- Optional text	>	
<--- BACnet Trendlog --->	>	Ringbuffer
- Object-Name	>	OutdoorTemperat
- Description	>	Outdoor temperati
- Buffer size	>	1000
- Log Interval	>	0.00

DCC Suite 2.5

BACnet - General

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

<--- BACnet Trendlog --->	>	Ringbuffer	▼
- Object-Name	>	OutdoorTemperatu	
- Description	>	Outdoor temperatu	
- Buffer size	>	1000	
- Log Interval	>	0.00	

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.

[--- Alarm limit values ---]			
Hysteresis	>	2.0	< >
Delay	>	10	< >
High limit	>	100.0	< >
... status			
Alarmtext	>	/ broken wire	
Low limit	>	0.0	< >
... status			
Alarmtext	>	/ short circuit	
<--- Intrinsic Reporting --->			
- Notification-class	>	0	
- Limit Enable	>	(-/-)	▼

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.

Feedback			
<--- BACnet Object-Name --->	>	DRV-FB	
- Description	>	Drive feedback	
- Optional text	>		
- Notification-class	>	0	
- Detailed text	>		
Digital input feedback Open	>	-1	< >
Digital input feedback Closed	>	-1	< >
Operating period	>	180.0	< >
Acknowledgement mandatory	>	No	< >
Alarm suppression	>	Never	< >
Alarm no feedback Open			
Alarmtext	>	FB open	
- Detailed text (open)	>	FB open	
Alarm no feedback closed			
Alarmtext	>	FB closed	
- Detailed text (closed)	>	FB closed	

[--- Definitions ---]		
Unit	>	degrees-celsius
COV Hysteresis	>	1.0
Scaling (decimal)	>	1



PCS for BACnet

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 hierarchical order. It can contain numbers and letters and some special characters but **not space**.....

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

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

BACnet_ObjectName
PCS def.

The screenshot shows the 'Adjust: PCS define' dialog box. It has buttons for 'Read All', 'Write all', 'Set Defaults', 'Info', and 'Help'. Below the buttons is a section for 'System functions' with a dropdown menu set to 'BACnet - ON'. Underneath is a section for 'PCS' with four levels:

Level 1	>	BUA-
Level 2	>	FL01-
Level 3	>	HCO1-
Level 4	>	CC02-

BACnet_Description
PCS def.

The screenshot shows the 'Adjust: PCS define' dialog box. It has buttons for 'Read All', 'Write all', 'Set Defaults', 'Info', and 'Help'. Below the buttons is a section for 'System functions' with a dropdown menu set to 'BACnet - D'. Underneath is a section for 'PCS' with four levels:

Level 1	>	Building A
Level 2	>	Floor 1
Level 3	>	Heating Circuit 1
Level 4	>	Control Cabinet 2

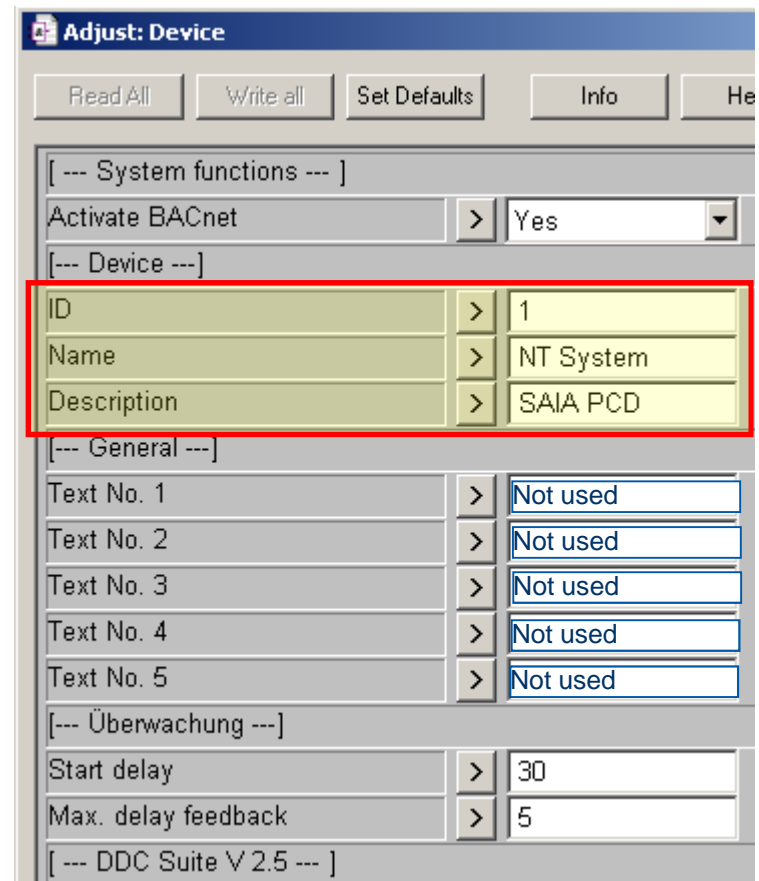
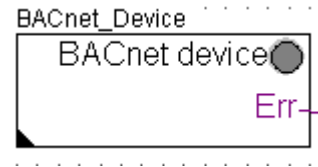
DDC Suite 2.5

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 filed: -1

Adjust: Pump

Read All Write all Set Defaults Info H

[--- System functions ---]

Description	>	Inflow Pump
PCD Alarm administration (Inde...	>	-1
BACnet	>	HMI/fb/Mt/CntH/▼

Output

<--- BACnet Object-Name --->...	>	InflowPump
- Description	>	Inflow pump
- Optional text	>	
- Notification-class	>	-1

Feedback

<--- BACnet Object-Name --->...	>	InflowPump:Feedb
- Description	>	Inflow pump feedb
- Optional text	>	

Maintenance message

		Off
Alarmtext	>	/ in maintenance
<--- BACnet Object-Name --->...	>	InflowPump:Maint
- Description	>	Inflow pump maint
- Optional text	>	
- Notification-class	>	-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 filed: -1

BACnet	>	HMI/fb/Mt/CntH/
Motor status		
Alarmtext	>	/ alarm
<--- BACnet Object-Name --->...	>	InflowPump:Alarm
- Description	>	Inflow pump alarm
- Optional text	>	
- Notification-class	>	-1
[--- Counting ---]		
Feedback	>	0
<--- BACnet Object-Name --->...	>	InflowPump:On/Of
- Description	>	Inflow Pumppt cour
- Optional text	>	
Message after feedback	>	2000
Hours	>	0
<--- BACnet Object-Name --->...	>	InflowPump:Runni
- Description	>	Inflow pump runnir
- Optional text	>	
Message after hours	>	5000
[--- DDC Suite V 2.5 ---]		

DDC Suite 2.5

Plant coding system (PCS) for BACnet

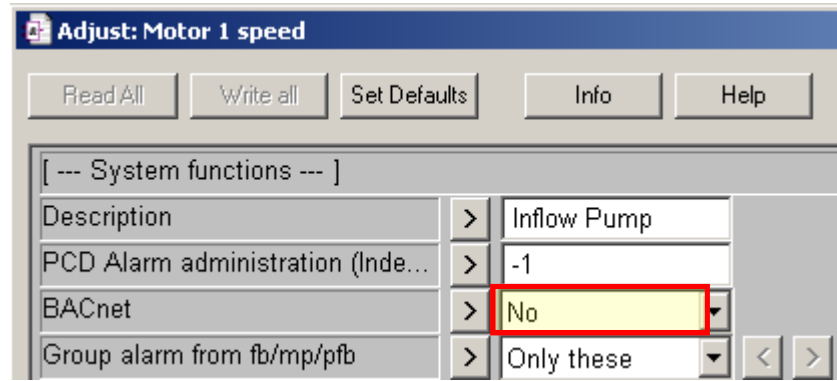
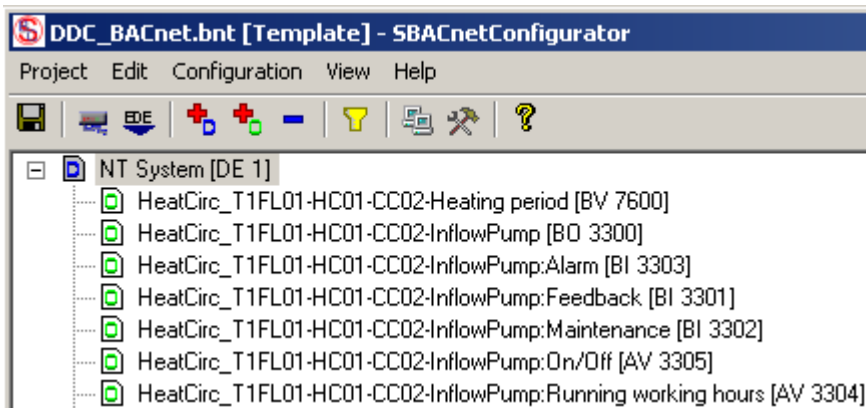
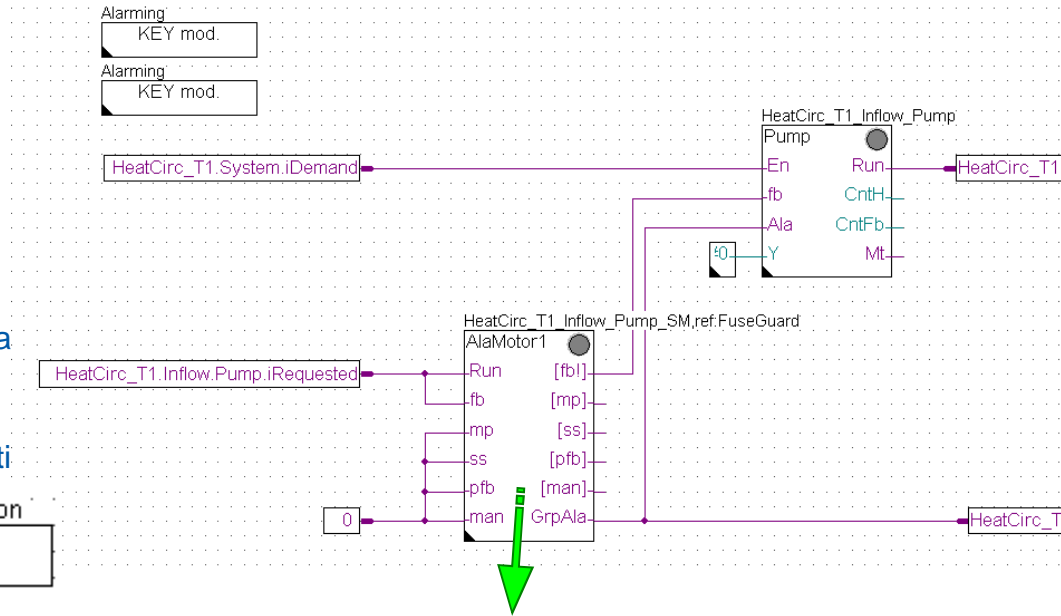
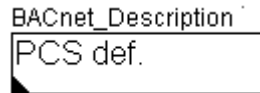
Please deactivate BACnet in all other Fbox.

„Build all“

Check the generated BACnet configuration „DDC_BACnet.bnt“.

You see the Name generation behaves almost equal to the keyname generation for alarming.

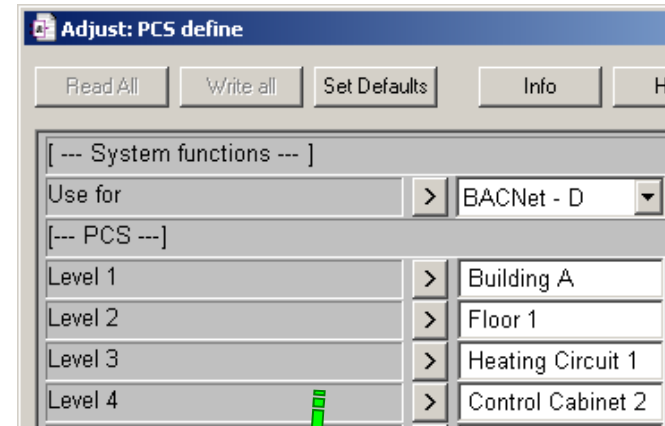
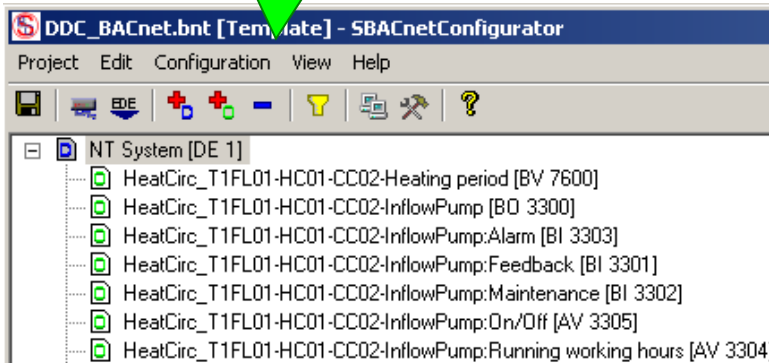
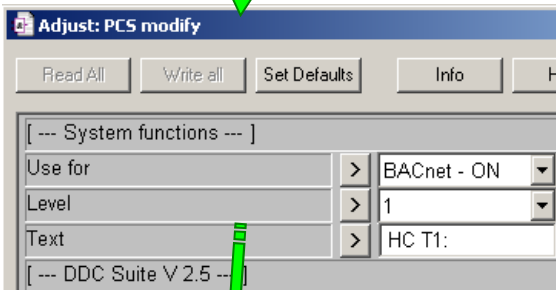
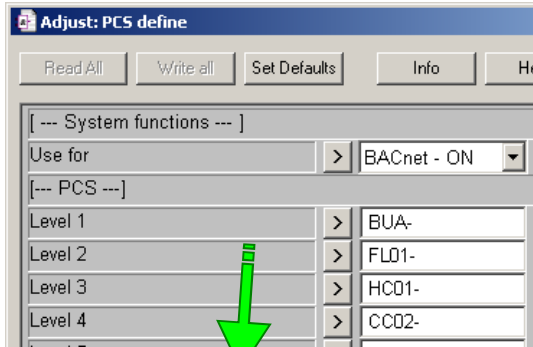
The main difference is here, that we create descriptions with using the „PCS def.“ Fbox.



DDC Suite 2.5

Plant coding system (PCS) for BACnet

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



Name	Value/Link
Present Value	%(HC_T1.System.HeatingPeriod.Output)
Description	Heat Circuit T1Floor 1 Heating Circuit 1 Control Cabinet 2 Heating period
Status Flags	(0,0,0,0)

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 Object-Name --->	>	M01
- Description	>	ZL Motor
- Optional text	>	
- Notification-class	>	-1



BACnet – Intrinsic Reporting

DDC Suite 2.5

Intrinsic reporting

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

Output	
<--- BACnet Object-Name --->...	> InflowPump
- Description	> Inflow pump
- Optional text	>
- Notification-class	> -1

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

Name	Value/Link	Flags
<input checked="" type="checkbox"/> Present Value	%{HeatCirc_T1.Inflow.Pump.Control.Required}	W
Description	Heat Circuit T1 Floor 1Heating Circuit 1Control Cabinet 2...	
<input checked="" type="checkbox"/> 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:

Output	
<--- BACnet Object-Name --->...	> InflowPump
- Description	> Inflow pump
- Optional text	>
- Notification-class	> 27

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

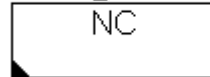
```
Messages
DDC-Suite - Control - Pump V2.5.5
... BACnet: Objects for FBox with PropertyName [HeatCirc_T1_Inflow_Pump] generated
Fatal Error 1320: HVC.fbd: Line 1772: The configured Notification Class [27] is missing!
1 errors, 0 warnings
Assembling: C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Libs\Std\InitODM.src
```

DDC Suite 2.5

Intrinsic reporting

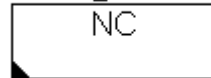
Time to place a „Notification Class“FBox

BACnet_NotificationClass_0

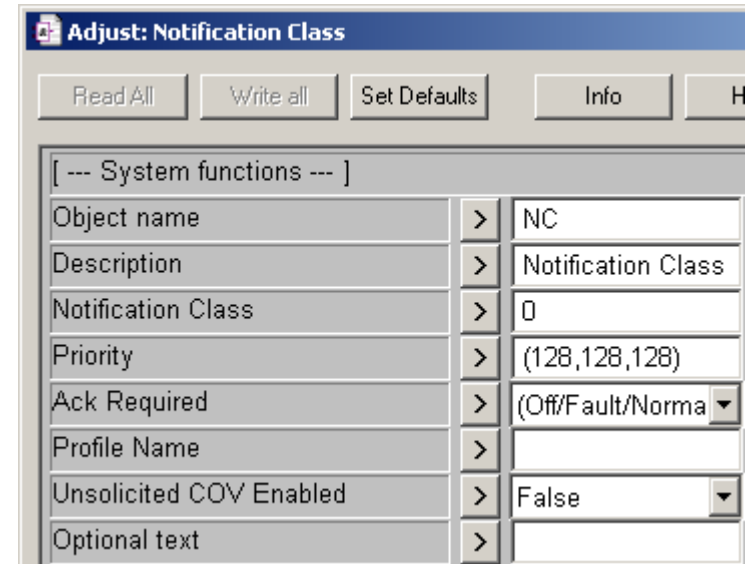


We can adjust all the settings for this Notification Class. We just do the settings for Systemfunctions.

BACnet_NotificationClass_27



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

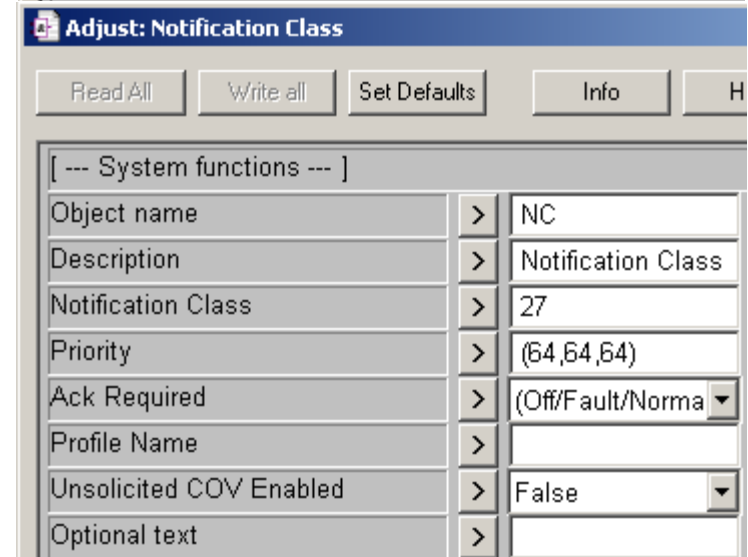


Adjust: Notification Class

Read All Write all Set Defaults Info H

[--- System functions ---]

Object name	>	NC
Description	>	Notification Class
Notification Class	>	0
Priority	>	(128,128,128)
Ack Required	>	(Off/Fault/Norma
Profile Name	>	
Unsolicited COV Enabled	>	False
Optional text	>	



Adjust: Notification Class

Read All Write all Set Defaults Info H

[--- System functions ---]

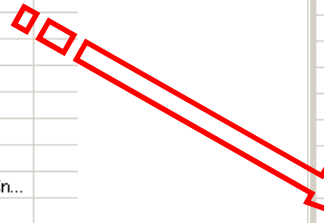
Object name	>	NC
Description	>	Notification Class
Notification Class	>	27
Priority	>	(64,64,64)
Ack Required	>	(Off/Fault/Norma
Profile Name	>	
Unsolicited COV Enabled	>	False
Optional text	>	

DDC Suite 2.5

Intrinsic reporting

Name	Value/Link	Flags
<input checked="" type="checkbox"/> Present Value	%[HeatCirc_T1.Inflow.Pump.Control.Required]	W
Description	Heat Circuit T1 Floor 1Heating Circuit 1Control Cabinet 2...	
<input checked="" type="checkbox"/> 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
<input checked="" type="checkbox"/> Present Value	%[HeatCirc_T1.Inflow.Pump.Control.Required]	W
Description	Heat Circuit T1 Floor 1Heating Circuit 1Control Cabinet 2...	
<input checked="" type="checkbox"/> 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
<input checked="" type="checkbox"/> 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 intrinsic 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.

Adjust: Notification Class

Read All Write all Set Defaults Info He

[--- System functions ---]

Object name	>	NC
Description	>	Notification Class
Notification Class	>	27
Priority	>	(64,64,64)
Ack Required	>	(Off/Fault/Norma
Profile Name	>	
Unsolicited COV Enabled	>	False
Optional text	>	

[--- Preset Intrinsic Reporting ---]

Event Enable	>	(-/Fault/Normal)
Notify Type	>	alarm
Profile Name	>	
Unsolicited COV Enabled	>	False

<--- Event Message Text --->

To Off-Normal	>	Off Normal
To Fault	>	Alarm
To Normal	>	OK


[--- DDC Suite V 2.5 ---]

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

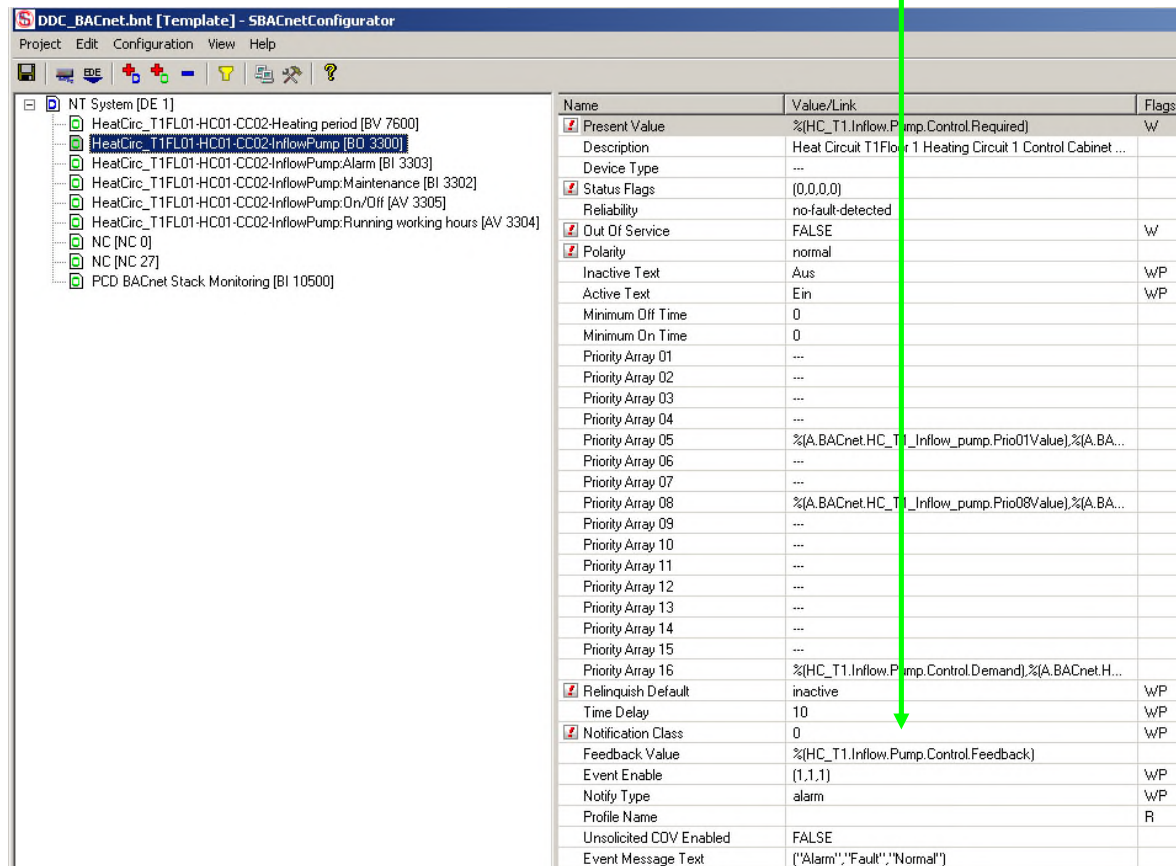
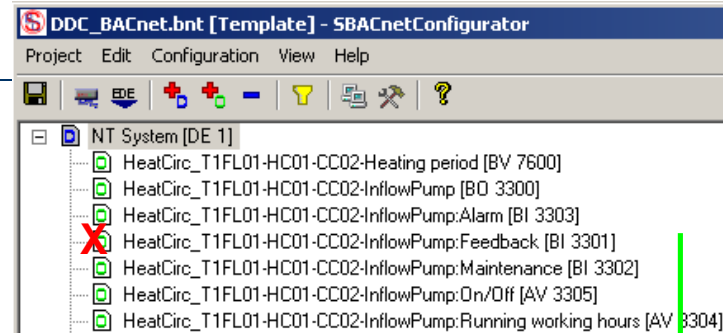
Now someone can find out that the BACnet object for the Feedback signal is missing.

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 generation 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 in 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

BACnet	>	All
<--- BACnet Object-Name --->...	>	InflowPump:Feedb
- Description	>	Inflow pump feedb
- Notification-class	>	0
<--- BACnet Object-Name --->...	>	InflowPump:Proce
- Description	>	Inflow pump proce
- Notification-class	>	0
<--- BACnet Object-Name --->...	>	InflowPump:Motor
- Description	>	Inflow pump motor
- Notification-class	>	0
<--- BACnet Object-Name --->...	>	InflowPump:Servic
- Description	>	Inflow pump servic
- Notification-class	>	0
<--- BACnet Object-Name --->...	>	InflowPump:Manu:
- Description	>	Inflow pump manu
- Notification-class	>	0

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.

The screenshot shows the SBACnetConfigurator interface. On the left, a tree view shows the project structure under 'NT System [DE 1]'. The selected object is 'HeatCirc_T1FL01-HC01-CC02-Pump:Motor [BI 3400]'. On the right, a table displays the properties for this object.

Name	Value/Link
Present Value	%(HC_T1.Inflow.Pump.Alarm.MotAla)
PCD Input Reference	%(A.BACnet.HC_T1_Inflow_pump_alarm.AIMot.PCDInR...
Description	Heat Circuit T1Floor 1 Heating Circuit 1 Control Cabinet ...
Device Type	...
Status Flags	(0,0,0,0)
Reliability	no-fault-detected
Out Of Service	%(A.BACnet.HC_T1_Inflow_pump_alarm.AIMot.OutOfSe...
Polarity	normal
Inactive Text	Aus
Active Text	Ein
Elapsed Active Time Count	0
Time Delay	0
Notification Class	0
Alarm Value	1
Event Enable	(1,1,1)
Notify Type	alarm
Profile Name	
Unsolicited COV Enabled	FALSE
Event Message Text	("Alarm","Fault","Normal")



Overriding properties

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 identify (get the name) the object we want to change.

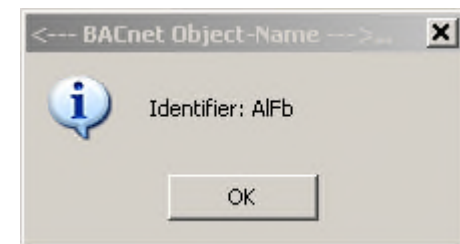
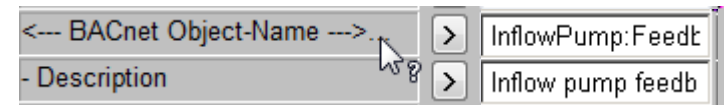
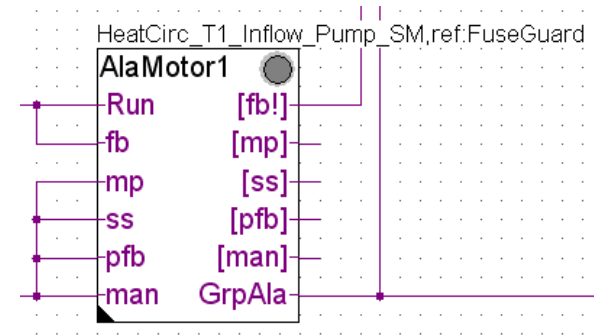
The text definition for this property is stored in this object.

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 „AIFB“ (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 „AIFB“ 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.

... 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\StdUnitDDM.src

FBoxName,ref:Object

Properties

HC_T1_Inflow_pump_alarm,ref:AIFB

Properties

[-- Inactive/Active Text --]	
Inactive text	All fine
Active text	Panic!

HeatCirc_T1:FL01-HC01-CC02-InflowPump:Feedback [BI 2]

Name	Value/Link	Flags
Present Value	%(HeatCirc_T1.Inflow.Pump.Alarming.FbAla)	W
PCD Input Reference	%(A.BACnet.HeatCirc_T1_Inflow_Pump_SM.AIFB.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.AIFB.OutOf...	W
Polarity	normal	
Inactive Text	All Fine	WP
Active Text	Panic!	WP

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.

Adjust: Properties

Read All Write all Set Defaults Info H

[--- Inactive/Active Text ---]

Inactive text > All OK

Active text > Panic !

[--- Intrinsic Reporting ---]

Use > Yes

Event Enable > (Off/-)

Notify Type > alarm

Profile Name > Adjusted

Unsolicted COV Enabled > False

<--- Event Message Text --->

To Off-Normal > Off Normal !

To Fault > Fault !

To Normal > Normal !

[--- DDC Suite V 2.5 ---]

- 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]
 - NC [NC 0]
 - NC [NC 27]
 - PCD BACnet Stack Monitoring [BI 10500]

Name	Value/Link
Present Value	%(HC_T1.Inflow.Pump.Alarm.FbAla)
PCD Input Reference	%(A.BACnet.HC_T1_Inflow_pump_alarm.AIFb.PCDInRef)
Description	Heat Circuit T1Floor 1 Heating Circuit 1 Control Cabinet ...
Device Type	...
Status Flags	{0,0,0,0}
Reliability	no-fault-detected
Out Of Service	%(A.BACnet.HC_T1_Inflow_pump_alarm.AIFb.OutOfSer...
Polarity	normal
Inactive Text	All OK
Active Text	Panic !
Elapsed Active Time Count	0
Time Delay	0
Notification Class	0
Alarm Value	1
Event Enable	{1,0,0}
Notify Type	alarm
Profile Name	Adjusted
Unsolicted COV Enabled	FALSE
Event Message Text	("Off Normal !","Fault !","Normal !")



BACnet – Trendlog

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:

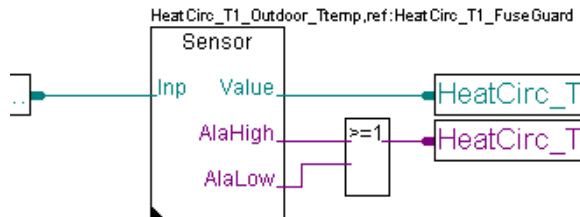
Trendlog

Use	>	SRAM	No
Path	>	/BACnet_Trendlog	SRAM
Notification-class	>	0	FileSystem
notification-threshold	>	10	M2
			S0
			S1
			S2
			S3

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_V] - 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:Manuallnterv [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
<input checked="" type="checkbox"/> Log Device Object Property	((analog-input,1).present-value)	R
Log Interval	0	W
COV Resubscription Interval	3600	
Client COV Increment	1.0	
<input checked="" type="checkbox"/> Stop When Full	FALSE	
Buffer Size	1000	WP
<input checked="" type="checkbox"/> Log Buffer	SRAM	
Record Count	0	W
Total Record Count	0	
Notification Threshold	10	WP
Records Since Notification	0	
Last Notify Record	0	
<input checked="" type="checkbox"/> Notification Class	0	WP
Event Enable	(1,1,1)	WP
Notify Type	alarm	WP
Status Flags	---	
<input checked="" type="checkbox"/> Logging Type	---	
Profile Name		R
Unsolicited COV Enabled	FALSE	
Event Message Text	("Off Normal","Fault","Normal")	



BACnet – Loop

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.

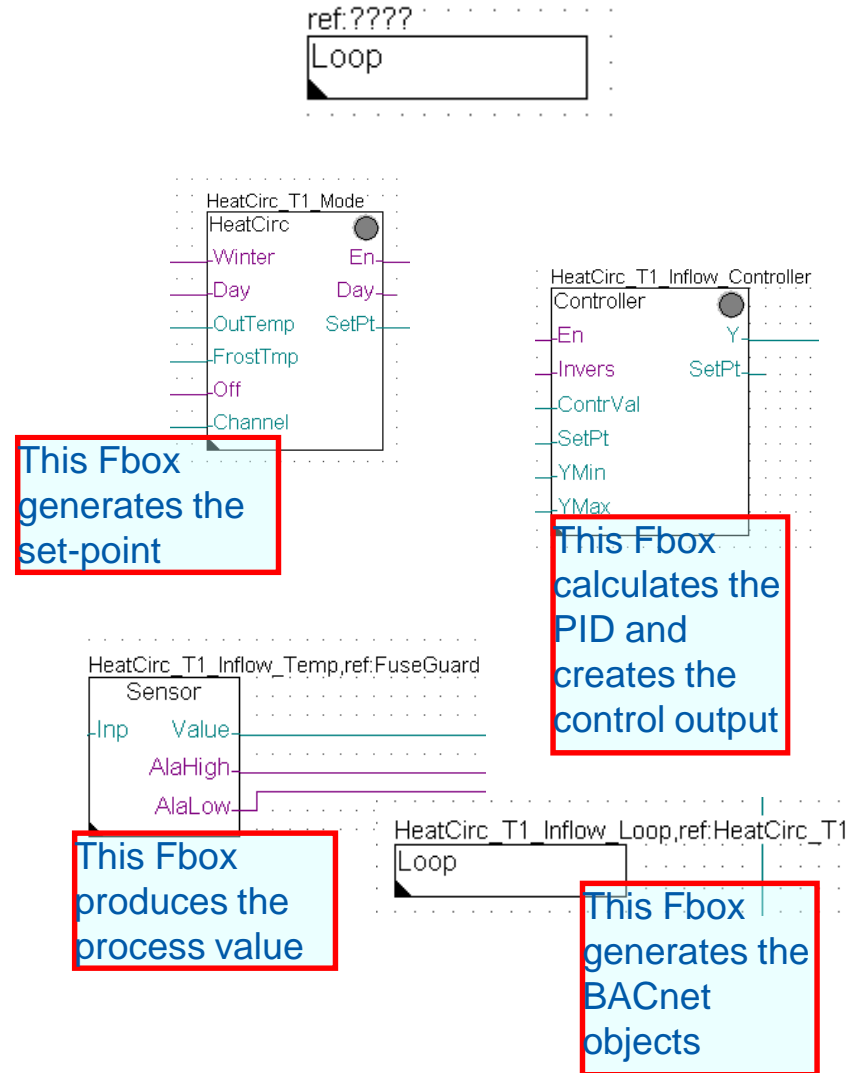
A Loop FBox has been created to be flexible. This FBox creates object for the BACnet loop object, the Fboxes in the "Controller" family creates the loop function itself independently!

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!

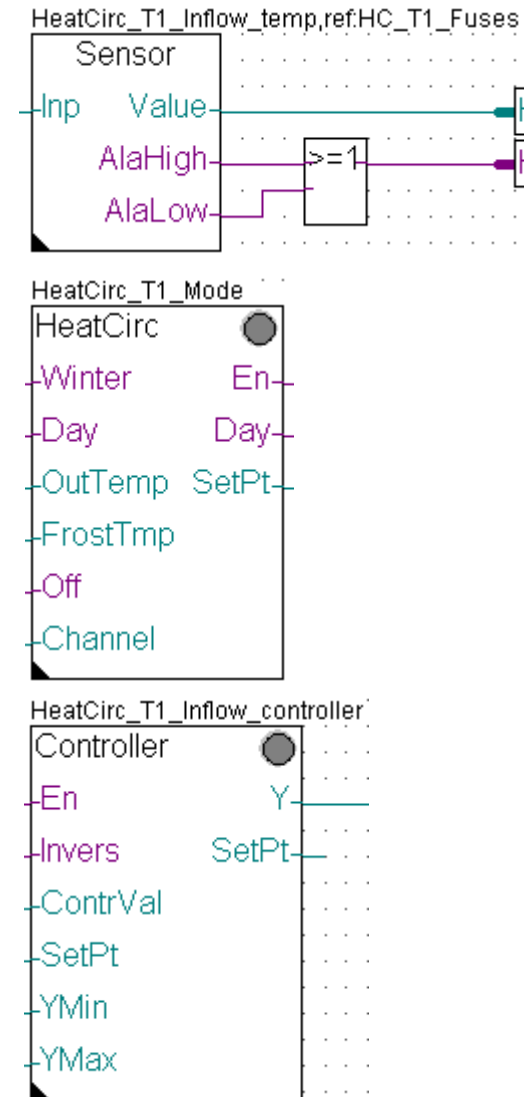
The elements of the control loop in the Heat circuit FUPLA template can be seen on the picture.



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

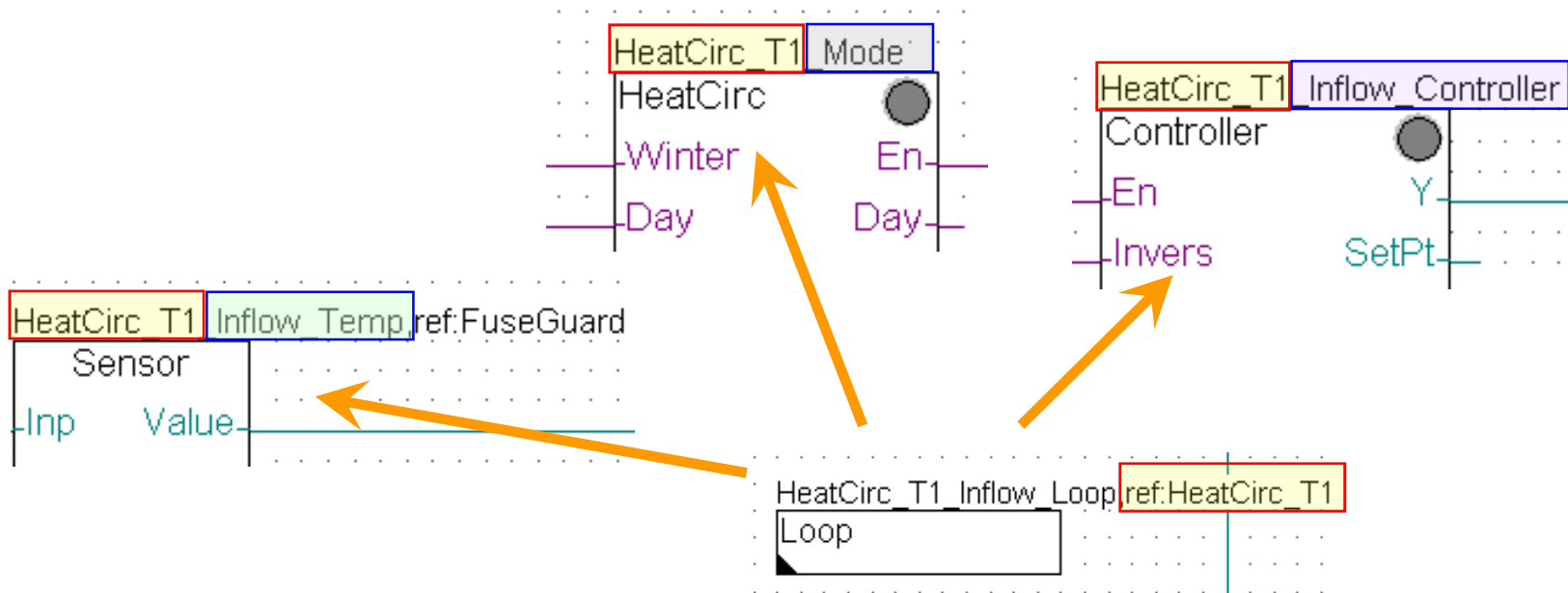
How can we build up the reference system between four Fboxes?

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.



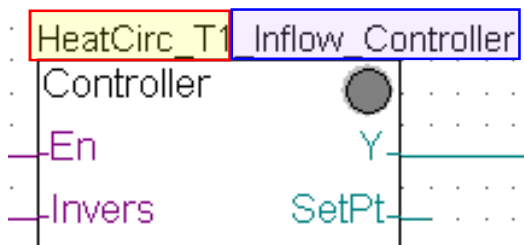
DDC Suite 2.5

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.



HeatCirc_T1 Inflow Loop ref:HeatCirc_T1
Loop

[--- System functions ---]	
Description	> Inflow Temperature
BACnet	> No
<--- BACnet Object-Name --->	> InflowTempControl
- Description	> Inflow temperature
- Optional text	>

[--- References ---]	
Controller	> <u>_Inflow_Controller</u>
Controlled Variable	> <u>_Inflow_Temp</u>
- Object	> analog-input
- Property	> present-value
Setpoint	> <u>_Mode</u>
- Object	> analog-value
- Property	> present-value
Manipulated Variable	> <u>_Inflow_Controller</u>
- Object	> analog-value
- Property	> present-value

[--- Definitions ---]	
COV Hysteresis	> 0.5

[--- DDC Suite V 2.5 ---]

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.



HeatCirc_T1_Inflow_Loop ref:HeatCirc_T1
Loop

Adjust: Loop

Read All Write all Set Defaults Info Help

[--- System functions ---]

Description	>	
BACnet	>	Yes
<--- BACnet Object-Name --->	>	LOOP
- Description	>	Heat circ. Inflow L
- Optional text	>	

[--- References ---]

Controller	>	_Inflow_Controller
Controlled Variable	>	_Inflow_Temp
- Object	>	analog-input
- Property	>	present-value
Setpoint	>	_Mode
- Object	>	analog-value
- Property	>	present-value
Manipulated Variable	>	_Inflow_Controller
- Object	>	analog-value
- Property	>	present-value

[--- Definitions ---]

COV Hysteresis	>	0.5
----------------	---	-----

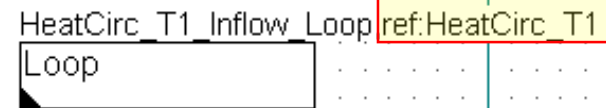
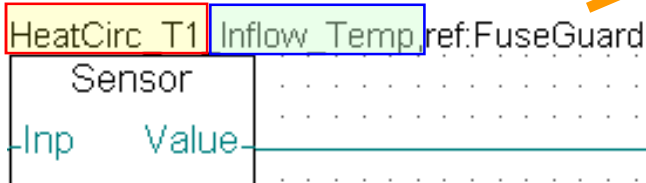
[--- DDC Suite V 2.5 ---]

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.



The screenshot shows the "Adjust: Loop" configuration window. It has a title bar with a gear icon and the text "Adjust: Loop". Below the title bar are five buttons: "Read All", "Write all", "Set Defaults", "Info", and "Help". The main area is divided into several sections:

- [--- System functions ---]
 - Description > []
 - BACnet > Yes [v]
 - <--- BACnet Object-Name ---> > LOOP
 - Description > Heat circ. Inflow L
 - Optional text > []
- [--- References ---]
 - Controller > _Inflow_Controller
 - Controlled Variable > _Inflow_Temp (highlighted in blue)
 - Object > analog-input
 - Property > present-value
 - Setpoint > _Mode
 - Object > analog-value
 - Property > present-value
 - Manipulated Variable > _Inflow_Controller
 - Object > analog-value
 - Property > present-value
- [--- Definitions ---]
 - COV Hysteresis > 0.5
- [--- DDC Suite V 2.5 ---]

DDC Suite 2.5

Loop

Now the Loop object has all necessary references and information.

DDC_BACnet.bnt [CPU1] - BACnet Configurator

Project Edit Configuration View Help

1_Device [DE 1]

HZG T1:STK01- HZG01- SchS02- Vorlauftemperatur:Regler [LO 1]

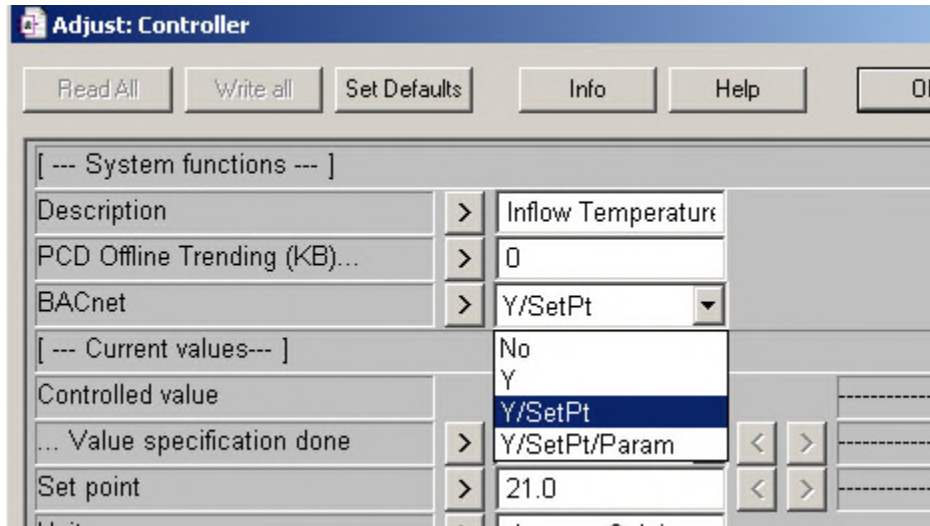
Name	Value/Link	Flags
Present Value	---	
Description	Heizkreis Vorlage 1 Stockwerk 2 Heizung 1 Schaltschrank 2 Vorlauftemperatur Regler	
Status Flags	{0,0,0}	
Reliability	no-fault-detected	
Out Of Service	%[A.BACnet.HZG_T1.HZG_T1_VL_Loop.OutOfService]	W
Update Interval	1000	
Output Units	percent	
Manipulated Variable Reference	{(analog-value,22),present-value}	R
Controlled Variable Reference	{(analog-input,2),present-value}	R
Controlled Variable Units	degrees-Celsius	
Setpoint Reference	{(analog-value,1),present-value}	R
Action	reverse	
Proportional Constant	%[A.BACnet.HZG_T1_VL_Regler.Loop.PropConst]	RS(10.00)
Proportional Units	degrees-Celsius	WP
Integral Constant	%[A.BACnet.HZG_T1_VL_Regler.Loop.IntConst]	RS(10.00)
Integral Constant Units	seconds	WP
Derivative Constant	%[A.BACnet.HZG_T1_VL_Regler.Loop.DerConst]	RS(10.00)
Derivative Constant Units	seconds	WP
Bias	---	
Maximum Output	%[A.BACnet.HZG_T1_VL_Regler.Loop.MaxOut]	RS(10.00)
Minimum Output	%[A.BACnet.HZG_T1_VL_Regler.Loop.MinOut]	RS(10.00)
Priority for Writing	16	
COV Increment	0.5	
Profile Name	---	
Unsolicited COV Enabled	FALSE	
Output to PLC	%[A.BACnet.HZG_T1_VL_Regler.Loop.MVR.OutPLCY]	RS(10.00)
Loop control EXTERNAL	TRUE	

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

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.

[--- Systemfunktionen ---]	
Bezeichnung	> <input type="text"/>
Sollwert	> 21,0
... Einheit	> <input type="text"/>
<--- BACnet Object-Name --->...	> <input type="text"/>
- Description	> <input type="text"/>
- Optional text	> <input type="text"/>
- COV increment	> 1,0

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 in 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](#), [GEQ](#)
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

PCS def.

[--- System functions ---]
Use for > General

[--- System functions ---]
Use for > Alarming

[--- System functions ---]
Use for > SCADA

[--- System functions ---]
Use for > BACnet - ON

[--- System functions ---]
Use for > BACNet - D

[--- System functions ---]
Use for > User 1
User 2
User 3
User 4
User 5

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 definition 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

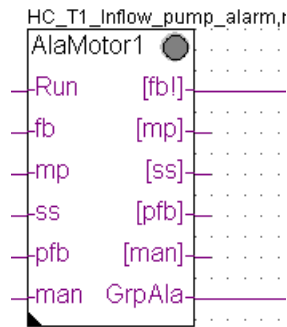
Lookout of an Advanced File

```
=====
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@) || w5(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
```

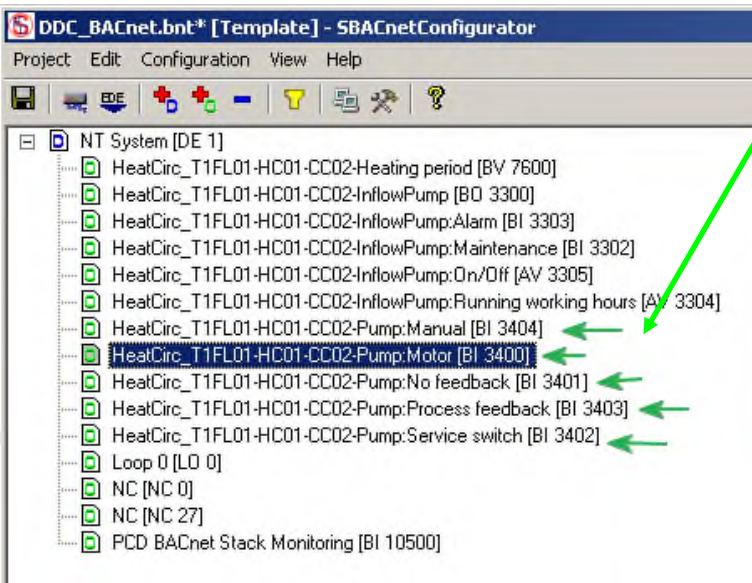

DDC Suite 2.5

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)
```



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.